SEABREEZE MARINA TUNNEL SEALING AND WETLAND ENHANCEMENT PROJECT

Seabreeze Marina
Oakland, California

Draft Initial Study/Mitigated Negative Declaration

Prepared By:
Port of Oakland, Lead Agency
530 Water Street
Oakland, CA 94607

Draft: October 17, 2001

Port of Oakland
Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project
Draft Initial Study / Mitigated Negative Declaration

TABLE OF CONTENTS

Environmental Dept. File Nos. 01051/01052

MITIGATED NEGATIVE DECLARATION

PROJECT PROPONENT: Port of Oakland

PROJECT TITLE: Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project

PROJECT LOCATION: Seabreeze Marina (Clinton Basin)

LEAD AGENCY:
Port of Oakland
530 Water Street
Oakland, CA 94607
Contact: Christy Herron, Environmental Planning Department

BRIEF DESCRIPTION: The Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project (project) involves a combination of remediation and habitat enhancement elements which will take place at the project site within approximately the same time frame. The Port proposed to remediate and close two remnant, underground tunnels associated with a former power plant at the project site. In addition, the Port is proposing a plan for habitat restoration and wetland enhancement along the beach on the southwest portion of the site.

MITIGATION MEASURES: The project has been modified to include mitigation measures that would reduce potentially significant adverse impacts to a less-than-significant level. These mitigation measures include:

- measures to reduce, minimize and control dust emissions during construction activities;
- measures to monitor the potential effects of project activity on sensitive habitat;
- measures to ensure that impacts from the excavation, transport, and disposal of possible subsurface soil contamination, and potential hazardous materials on the site, are reduced to acceptable levels;
- measures to address potential erosion at the site (the preparation of a Storm Water Pollution Prevention Plan) due to project activities; and
- measures to address potential noise associated with construction activities.

DETERMINATION: Although the proposed project could have a significant impact on the environment, there will not be a significant impact in this case because mitigation measures have been recommended in the Initial Study and agreed by the project proponent. A MITIGATED NEGATIVE DECLARATION has been prepared.

FINDING OF NO SIGNIFICANT EFFECT ON THE ENVIRONMENT: Based on the Initial Study of possible significant effects of the proposed project and mitigation measures, it has been determined that the project will not have a significant adverse effect on the environment. Preparation of an EIR is not required.

DECLARATION OF COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT: This document has been prepared in accordance with the California Environmental Quality Act and the Port of Oakland's Guidelines for the Implementation of the California Environmental Quality Act.

Date: 10-16-01

By: James McGrath
James McGrath
Environmental Manager

DETERMINATION

1. I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

X 2. I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described in Chapter VII of this Initial Study have been added to the project by the project sponsor. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

3. I find that the project **MAY** have a significant effect on the environment and an **ENVIRONMENTAL IMPACT REPORT** is required.

4. I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

5. I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR or NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

James McGrath

James McGrath - Signature
Environmental Department Manager

10-16-01
Date

INITIAL STUDY

I. General Information

Project Name

Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project

Lead Agency/Project Sponsor Name and Address

Port of Oakland
530 Water Street
Oakland, CA 94607

Contact Persons and Phone Numbers

Christy Herron, Port of Oakland, Environmental Planning: (510) 627-1149
Douglas Herman, Port of Oakland, Environmental Health and Safety Compliance: (510) 627-1184

Project Location

Seabreeze Marina (also known as Clinton Basin)

Assessor Parcel Numbers

0-043-000-102
0-046-000-300

General Plan Designation

City of Oakland Land Use Designation: Mixed Use Waterfront/Estuary Plan Area
Estuary Policy Plan Land Use Designation: Planned Waterfront Development (PWD-1)

Zoning

NA

Project Description

The Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project (project) involves a combination of remediation and habitat enhancement elements which will take place at the project site within approximately the same time frame. The Port proposes to remediate and close two remnant, underground tunnels that previously transported cooling water to and from a former power plant at the project site. The two tunnels extend from the northern portion of the site to the southwest and northwest shoreline areas, respectively. Tunnel remediation would include the excavation of some contaminated material inside the tunnels, and the sealing of the tunnels approximately 50 feet from the shoreline to prevent the potential for the discharge of contaminants contained in the tunnels to surface waters.

In addition, the Port is proposing a plan for habitat restoration and wetland enhancement at the project site, along the beach on the southwest side of the site. Wetland enhancement activities would

include the creation of a tidal channel, the creation of a tidal marsh and the enhancement of roosting areas for shore and water birds.

For more information, refer to Chapter II, Project Description, of this Initial Study.

Surrounding Land Uses and Setting

See Chapter II, Project Description, of this Initial Study.

Other Public Agencies Whose Approval is Required

U. S. Army Corps of Engineers
San Francisco Bay Conservation and Development Commission
San Francisco Regional Water Quality Control Board
City of Oakland

II. Project Description

A. Introduction

Project Context and Objectives

The San Francisco Bay Regional Water Quality Control Board (Water Board) issued Amended Complaint Number 00-040 for Administrative Civil Liability against the Port of Oakland (Port) in August 2000 for activities conducted at the Seabreeze Marina site involving the removal of a vessel, the Moby Dick, the preceding spring. As part of the Settlement Agreement with the Water Board and BayKeeper, the Port elected to implement a Supplemental Environmental Project (SEP).

The Port, with input from the State Coastal Conservancy, Golden Gate Audubon Society and the local community has developed the SEP into a proposed plan for habitat restoration and wetland enhancement at the Seabreeze Marina site, along the beach on the west side of the site. Wetland enhancement activities would include the creation of a tidal channel, the creation of a tidal marsh and the enhancement of roosting areas for shore and water birds.

At the same time that planning for wetland enhancement activities took place, but unrelated to the Water Board complaint, the Port also prepared a workplan for the remediation and closure of two remnant, underground tunnels associated with a former power plant at the Seabreeze Marina site. The two tunnels, an intake and a discharge tunnel previously used in the transport of cooling water to and from the Oakland Estuary for power plant operation, extend from the northern portion of the site to the southwest and northwest shoreline areas, respectively. The workplan and other project-related materials were submitted to the Alameda County Health Services Agency, Department of Environmental Health (ACDEH), the regulatory agency responsible for oversight of site cleanup activities, as well as the Water Board in April and July 2001. The workplan and other materials were approved in August 2001.

The two elements described above – the remediation and closure of the two underground tunnels, and the wetland enhancement plan – are described as one project, the Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project (project) for the purposes of this Initial Study. As such, the proposed project involves a combination of remediation and habitat enhancement objectives, which will take place at the site within approximately the same time frame. Both project elements involve on-site excavation. Both project elements are described in detail in this section.

The potential environmental impacts of the proposed project are described in Chapter III, Evaluation of Potential Project Impacts. The environmental setting for specific parameters (air quality, biological resources, etc.) are included in Chapter III as necessary for each topical section.

Initial Study Preparation

This Initial Study has been prepared in accordance with the California Environmental Quality Act (CEQA), Title 14 of the California Administrative Code, and the Port of Oakland's Guidelines for the Implementation of the California Environmental Quality Act. This document is a preliminary analysis to determine whether an Environmental Impact Report (EIR), Negative Declaration, or Mitigated Negative Declaration is the appropriate CEQA document for the project.

Pursuant to CEQA, a Negative Declaration is a written statement by the lead agency which briefly describes the reasons that a proposed action would not have a significant effect on the environment and would therefore not require the preparation of an EIR. A Mitigated Negative Declaration,

although similar to a Negative Declaration, is prepared when potentially significant impacts of a project can be reduced to a less-than-significant level with the application of specified mitigation measures.

Throughout this document, outside materials are cited by reference to a source list presented in Chapter V, References and Report Preparers.

B. Project Location and Setting

The regional location and setting for the proposed project is on the Oakland, California waterfront in Alameda County, as shown in Figure 1. The project site is located at the Seabreeze Marina (also known as Clinton Basin), at the west end of Sixth Avenue, between the Embarcadero and the Oakland Estuary, as shown in Figure 2. The site is approximately 7 acres in size, and is vacant of structures except for various commercial buildings that line Sixth Avenue. The site is currently used by the Port for storage of construction and maintenance materials, in conjunction with an adjacent corporation yard. The site is also informally used by the local community for dog walking and passive recreation.

A large concrete foundation from the former power plant is located at the northern portion of the site, as shown in Figure 3. Two small beaches, which formed as the result of erosion at the shoreline, are located at the southwest end of the site. The beaches are separated by a circular area of soil, gravel, and rocks approximately 60 feet in diameter.

The current habitat conditions on the site are highly disturbed. The upland area of the site is partially paved; the remainder of the site is not landscaped, and is covered with weedy plants. The low marsh zone at the site is gradually sloped and is vegetated by a patchy cover of smooth cordgrass (*Spartina alterniflora*), a non-native species that has largely displaced the native Pacific cordgrass (*Spartina foliosa*) in many South Bay tidal marshes.

Local Planning Context

The Project site is located within the "Oak-to-Ninth" planning district as designated by the *Estuary Policy Plan* (Estuary Plan), a Port of Oakland and City of Oakland planning document that describes land use, urban design, circulation, public access and open space along the Estuary waterfront. This waterfront planning district is adjacent to the Oakland Estuary and is situated south of I-880, east of Oak Street, and west of Embarcadero Cove and Ninth Avenue. The area is in transition from its historic role as a break-bulk cargo, maritime support and industrial area to one that will eventually offer more public-oriented activities along the waterfront.[1]

The Estuary Plan envisions the Oak-to-Ninth area as an opportunity to create a recreational and cultural park at the waterfront. Land use in the Oak-to-Ninth district as envisioned in the Estuary Plan revolves around the creation of a significant civic open space at the foot of the Lake Merritt Channel and Estuary Park, with a chain of parks that would link the Channel to Lake Merritt and the business and cultural community located to the north. In March 2001, the Port's Commercial Real Estate Division released its Request for Developer Qualifications for the Oak-to-Ninth District Development, envisioned as a mixed-use development.

[1] Port of Oakland, 1999. *Estuary Policy Plan, Oakland, California.* June.

Site Access
The site is located at the west end of Sixth Avenue, which can be accessed from the Embarcadero. Views to Seabreeze Marina are currently obscured from points along the Embarcadero, and the site itself is not highly accessible. Although the site is posted "no trespassing" and is not currently available for public access, the site is used informally by local residents. A linkage between the activities of the downtown Oakland area with waterfront areas, such as the project site, in the Oak-to-Ninth district is currently obstructed by the main rail line tracks which run along the northern edge of the Embarcadero.

Historical Site Condition and Uses
Historically, the project site consisted of subtidal water and intertidal mudflats fronting a large tidal marsh system along the Bay. This tidal system probably supported more shore birds and other water birds than the existing, highly modified habitat.[2] The project site area was filled by the late 1920s and has been used for a variety of maritime purposes and functions, including ship decommissioning.[3] A Pacific Gas and Electric fuel-powered steam-generating power plant formerly operated at the site from 1909 through the late 1950s.[4] The power plant was constructed of reinforced concrete at the northern corner of the site; underground intake and discharge tunnels used to transport cooling water to and from the Oakland Estuary for power plant activities were also constructed at the site.

A concrete containment structure was formerly located at the southwest end of the site, and housed a 440,000-gallon above-ground fuel tank. This structure, associated with the former power plant, was removed in 1996 along with accumulated soil/sludge and contaminated soil underlying the structure.[5] The circular area of soil, gravel and rocks (referenced above) at the southwest end of the site marks the former location of this containment structure.

Other former uses at the site include boat repair and maintenance activities, used tire storage, and boat, automobile, and container storage. Subsurface (soil and groundwater) conditions have been extensively investigated at the site, under the primary oversight of the ACDEH. Groundwater monitoring conducted over the last few years has shown concentrations of petroleum hydrocarbons to be very low or non-detect above laboratory reporting limits.

Surrounding Land Uses
The project site is located on the Oakland Estuary. The Oakland Estuary is heavily used for commercial and industrial purposes, and also provides a popular local recreational resource. The waters of the Oakland Estuary are typically protected and calm – because of these characteristics, and because of its convenient location, the Estuary is often host to a variety of water-oriented sports, particularly rowing, canoeing and kayaking. The shoreline also offers opportunities for a wide variety of other water-oriented activities, including fishing, bicycling, jogging and birdwatching.

---

[2] Philip Williams and Associates, 2001. *Former Seabreeze Yacht Harbor – Wetland Enhancement Project, Oakland, Alameda County, California.* October 5.

[3] Ibid.

[4] BASELINE Environmental Consulting, 1999. *Phase One Tunnel Remediation Investigation and Phase Two Work Plan, Intake and Discharge Tunnels.* August.

[5] The Alameda County Health Care Services Agency, Department of Environmental Health, which directs investigation and remediation of the site for subsurface contaminants, has not required further remedial actions related to the former concrete containment structure.

Land uses in an approximate ¼-mile radius surrounding the project site are briefly described below, and are shown on Figure 2.

Seabreeze Marina. Seabreeze Marina is located to the south and east of the land area of the project site. The Marina currently accommodates 100 sheltered berths. The Port has recently closed this marina for occupancy, but does not plan to remove the existing berths,[6] some of which are currently in informal use.

Ninth Avenue Terminal. The Ninth Avenue Terminal is located southeast of Seabreeze Marina. The Ninth Avenue Terminal Transit Shed is situated on a wharf at the Ninth Avenue Terminal and is currently used for warehousing. The Transit Shed has been identified as a significant historical resource, and has been nominated for local landmark designation. The nomination is under review by Oakland's Landmarks Preservation Advisory Board.[7] Policy OAK-2.4 of the Estuary Plan calls for the establishment of "a park in the area of the existing Ninth Avenue Terminal to establish a location for large civic events and cultural activities."

Fifth Avenue Point. A 4.7-acre enclave at the southern extension of Fifth Avenue and northwest of the project site, known as the Fifth Avenue Point community, is a small but distinctive neighborhood consisting of live-work uses. Members of this artisan community include boat builders, printers, artists, architects and ironworkers. The Estuary Plan includes a policy, OAK-4.1, to "preserve and expand the existing Fifth Avenue Point community as a neighborhood of artists and artisan studios, small businesses, and water-dependent activities."[8]

Kaiser Sand and Gravel. Northwest of the Fifth Avenue Point community, an approximately 5-acre industrial site contains the operations of Kaiser Sand and Gravel, a sand and gravel batch plant. A public park is proposed for this site in the Estuary Plan.

Pacific Dry Dock/Crowley Yard. The Pacific Dry Dock/Crowley Yard II site is adjacent to and northwest of the Kaiser Sand and Gravel site. This site is approximately four acres in size, and was formerly operated as a dry dock and maritime support facility. Three buildings were demolished on this site in 1998; the former building foundations still exist. Two underground storage tanks were also removed from this site, with associated soil and groundwater remediation. A public park is proposed for the site in the Estuary Plan.

Embarcadero Corridor. To the north of the project site, industrial uses including warehouses are scattered along either side of the Embarcadero, a City-maintained public street. Interstate 880 (an elevated freeway) and railroad tracks serving the Union Pacific and Amtrak railroads are located north of the Embarcadero.

C. Project Description

The proposed project involves a combination of remediation and habitat enhancement activities. The project comprises two elements: the remediation and closure of two remnant underground

---

[6] Port of Oakland, 2001. *Request for Developer Qualifications, Oak-to-Ninth District Properties.* March, p. 18.

[7] Port of Oakland, 2001, p. 19.

[8] Port of Oakland, 1999. p. 93.

tunnels at the site, and the enhancement of a wetland area located along the beach. Both elements involve excavation and the potential disposal of contaminated material. The project is described in detail below.

Tunnel Sealing and Remediation

The underground tunnels at the site are the intake and discharge tunnels associated with the power plant formerly located at the northern corner of the site (see Figure 3). The plant's concrete foundation still exists at the site. While the power plant was operational, water was pumped from the Estuary through the intake tunnel to provide cooling water for the power plant's steam condensers; used cooling water was then discharged to Clinton Basin through the separate underground discharge tunnel.

Intake and Discharge Tunnels: Physical Characteristics. The intake tunnel runs parallel to Fifth Avenue, extending from the northern edge of the power plant foundation to a location at the southwest shoreline of the site. The intake tunnel is approximately 710 feet long, approximately 160 feet of which is located within the concrete foundation of the power plant formerly located at the northern portion of the site.[9] The discharge tunnel extends from the southern boundary of the concrete foundation to a location at the northwest shoreline of the site, in the vicinity of an existing wharf. The discharge tunnel is approximately 410 feet long, approximately 160 feet of which is within the footprint of the concrete foundation (parallel with the intake tunnel within the footprint of the concrete foundation).[10] See Figure 3 for the locations of these underground tunnels.

The intake tunnel is approximately 6 feet high and 3 feet wide; a horizontal barrier appears to be present inside the tunnel at approximately three feet from the tunnel base, dividing the tunnel into two equal sections (top and bottom sections) along the length of the tunnel. The depth from the ground surface to the top of the tunnel appears to vary as the tunnel is sloped. A manway, believed to be connected to the intake tunnel, was exposed at about 160 feet south of the southern concrete foundation boundary during an investigation conducted in 1995. The manway was encountered at approximately 2 feet below ground surface. Other existing information indicates that 2 additional access points (i.e., hatchways) to the intake tunnel are present within the concrete foundation.

The height and width of the discharge tunnel outside the foundation appear to be similar to the intake tunnel. The depth from the ground surface to the top of the discharge tunnel also appears to vary as the tunnel is sloped.

Tunnel Remediation/Closure. Since 1990, several soil and groundwater investigations have been conducted in the area of the intake and discharge tunnels. These investigations indicated that the tunnels contain debris and sediments, as well as water with an oily sheen. Water samples collected in the tunnel hatchways in 1995 and subject to chemical analysis contained levels of contaminants above reporting limits. Results of the investigations also indicated that the water contained in the tunnels may be connected to Clinton Basin and the Estuary, since water level measurements taken in the intake and discharge tunnel hatchways fluctuated with rising and falling tides.

---

[9] BASELINE Environmental Consulting, 2001. *Soil and Groundwater Sampling Plan and Closure Plan, Intake and Discharge Tunnels, Former Seabreeze Yacht Center, Oakland, California.* April. p. 1.

[10] Ibid.

In August 1999, in response to a request by the ACDEH, a tunnel investigation and remediation workplan was prepared on behalf of the Port by BASELINE Environmental Consulting.[11] The remediation workplan proposes to seal sections of the intake and discharge tunnels located near the shoreline. Sealing the tunnels would prevent the tunnels from acting as a pathway to surface waters and, as a result, prevent the potential for contaminants contained in the tunnels to be discharged directly to surface waters (i.e., Clinton Basin and the Estuary).

In order to access the tunnels for sealing, soil above the tunnel would be excavated so that between 5 and 10 feet of each respective tunnel section would be exposed. Less than 300 cubic yards of material total would be excavated for both tunnels. See Figures 4 and 5 for the proposed locations of the excavations. A protective board would be placed against the open, bay-facing end of the discharge tunnel to prevent debris and sealing materials from discharging into Clinton Basin and the Estuary during tunnel sealing activities. Site investigations have indicated that the bay-facing end of the intake tunnel appears to be completely blocked, and a protective barrier between the tunnel and the Estuary would not be required. A concrete mixture would be used to form the seal. After the seal is in place, the excavation would be backfilled with clean fill to the surface. Excavated soils would be characterized and transported to an appropriate off-site disposal facility, and a report would be prepared to document tunnel remediation and waste management.

A Phase I and Phase II tunnel investigation and remediation workplan was submitted to the ACDEH in August 1999. The ACDEH approved the workplan in concept, but provided specific comments on the workplan for the Port to address. Final versions of the Project Manual, plan drawings, soil and groundwater sampling plan, and closure plan for the intake and discharge tunnels were submitted to the ACDEH and the Water Board in July 2001. The ACDEH approved the workplan, along with additional information submitted by the Port, in August 2001.

Wetland Enhancement

As part of the Settlement Agreement with the Water Board and BayKeeper referenced earlier in this chapter, the Port elected to implement the SEP in the project area. The Port, with input from the State Coastal Conservancy, Golden Gate Audubon Society and the local community has developed the SEP into a proposed plan for habitat restoration and wetland enhancement along the beach on the west side of the site.

The wetland enhancement project plans were prepared by Philip Williams and Associates.[12] The primary site goals are to improve habitat conditions for a diversity of water birds by:

- Creating a more naturalistic habitat gradient, consisting of subtidal (open water), intertidal mudflat, tidal marsh, and upland habitats;
- Creating a small island to provide water bird roosting habitat that is protected from disturbance by people and dogs; and
- In future phases of the project, providing public access that would minimize disturbance of wildlife through the use of buffers, fencing, and signs.

Wetland enhancement activities would take place within an area of less than one acre in the area between the two beaches at the southwest end of the site, as shown in Figure 6. Components of the

[11] Ibid.

[12] Philip Williams and Associates, 2001.

wetland enhancement plan are described below. Figures 7 and 8 show plan and cross-sectional views, respectively, of the proposed wetland enhancement.

Channel Creation. Proposed wetland enhancement includes the creation of a new channel connecting the two beach areas. The created channel would be approximately 80 feet wide (top of bank to top of bank) and 5 to 7 feet deep. Approximately 1,800 cubic yards of material would be excavated to create the channel. Rock and other rip-rap material at the shoreline would be removed during channel creation.

The banks of the channel would support a vegetated (cordgrass and pickleweed) marsh area. In addition, the channel should provide mudflat areas in low tide conditions. At high tides, the circular area between the two beaches would be isolated by water, effectively becoming an island and further enhancing the roosting area for shorebirds.

Re-vegetation. Some upland areas and the tidal channel would be regraded at elevations suitable for cordgrass and pickleweed establishment. Limited re-vegetation work may accompany the grading work in order to encourage the establishment of desired marsh plant species, although it is anticipated that most plant establishment will occur through a process of natural colonization. A coordinated effort to remove smooth cordgrass (*Spartina alterniflora*) from the site will also be considered as part of the wetland enhancement.

Re-Use and Disposal of Excavated Soil. Soil sampling at the proposed wetland enhancement site was conducted in May 2001 to classify the material that would be excavated from the proposed channel. The *Investigation of Soil Quality for Habitat Enhancement Project, Former Seabreeze Yacht Center* report is included as Appendix B to this Initial Study.

Analytical results indicated that the soil excavated in the creation of the channel does not pose a risk to human health or the environment, and is appropriate for on-site re-use, in the creation of an upland berm.[13]

Analytical results from the sampling of the soils in the top three feet below the future channel bottom and side slopes showed levels of contaminants in two areas (out of the five areas sampled) that exceeded the wetlands creation cover criteria. Sampling that took place at locations HE-4 and HE-5 showed levels of some contaminants that exceeded wetlands creation cover criteria (refer to Appendix B for more detail). Based on the soil analytical results, the channel will be "over-excavated" approximately 3 feet below the originally proposed depth for the two locations which showed levels of contaminants above those for wetland cover criteria. Clean fill material will be imported and deposited in these over-excavated areas, bringing the level of the channel back to the originally proposed depth. It is anticipated that approximately 200 to 400 cubic yards of fill material would be required for this purpose. The fill material would be composed of Merritt sand excavated from the Berths 55 to 58 project area. This sand has been approved for use as wetland cover.[14]

Berm Creation. A berm would be created in the upland transition area between the channel and the rest of the site, to provide a visual and habitat buffer. The berm would also serve to delineate project boundaries and provide barriers to the tidal influence on the site. Some material removed in the

---

[13] BASELINE Environmental Consulting, 2001. *Investigation of Soil Quality for Habitat Enhancement Project, Former Seabreeze Yacht Center, Oakland, California.* September.

[14] URS Greiner Woodward Clyde, 1998. *Berths 55-58 Project Draft Environmental Impact Report.* December 11, pp. 3.9-11 to 3.9-15.

grading process would be used in the creation of the berm; clean fill may also be imported for this purpose. Approximately 200 cubic yards of material would be used in the creation of the berm. The berm would be approximately 260 feet long, 16 feet wide at its base, and approximately three feet above the existing grade of the site. Excavated soil remaining after berm creation (estimated at 1,800 cubic yards) would be spread evenly across the flat areas of the Seabreeze Marina site, upland of the project area.[15]

Further details of the wetland enhancement plan are provided in Appendix C.

D. Permits, Approvals, and Agreements

The two elements of the proposed project will require several approvals from agencies with jurisdiction over the project area, as described below.

Tunnel Sealing and Remediation

CEQA Review. The project site is an active remediation site. Per CEQA Guidelines Section 15300.2, a categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code; active remediation sites under the oversight of the ACDEH, such as the Seabreeze Marina site, are included on the list referenced in this section. An initial study which assesses the potential environmental impacts of the project is required for the tunnel sealing element of the proposed project.

BCDC: Facilities Maintenance Permit. The location of the site and the nature of the tunnel sealing and remediation activities fall under the Port's existing Facilities Maintenance Permit from the BCDC, a 5-year approval applicable to general maintenance activities conducted within the 100-foot shoreline band. The tunnel sealing and remediation activities will be included in the annual report for activities conducted in 2001.

U.S. Army Corps of Engineers. The project does not fall within the jurisdiction of the U.S. Army Corps of Engineers (Corps) and does not require an approval.

Alameda County Health Care Services Agency, Department of Environmental Health. Tunnel sealing and remediation activities are under the primary oversight of the County, with some additional oversight from the Water Board. The County's approval of the plans and specifications and workplan for tunnel sealing and remediation is required prior to initiating any activity at the site.

Water Board. Because the project is not subject to the jurisdiction of the U.S. Army Corps of Engineers, an application for water quality certification is not required from the Water Board for the tunnel sealing and remediation.

Wetland Enhancement

CEQA Review. An initial study, as described above for tunnel sealing and remediation, is required for the wetland enhancement.

BCDC: Administrative Approval. The wetland enhancement component of the proposed project will require an application to the BCDC, most likely for approval of an administrative permit. BCDC review typically includes evaluating the potential impacts from shoreline projects on public access and visual quality, as well as evaluating those projects involving dredge and fill activities in San Francisco Bay.

[15] Philip Williams and Associates, 2001.

U.S. Army Corps of Engineers. The wetland enhancement activities would take place within Corps jurisdiction, and will require pre-construction notification to the Corps, most likely under Corps Nationwide Permit 27 (Wetland and Riparian Restoration and Creation Activities). A nationwide permit is a general permit that authorizes certain activities to occur in navigable waters on a nationwide basis. In addition, minor discharges into the Estuary associated with excavation and fill activities will likely be permitted under Nationwide Permit 18, Minor Discharges, to satisfy both Section 10 and Section 404 requirements of the Clean Water Act.

Water Board. The Water Board's approval of the plans for wetland enhancement, including the proposed excavation, fill, and disposal or re-use of excavated material, is required prior to initiating any activity at the site.

In addition, the Corps nationwide permit may trigger a requirement for a Section 401 Water Quality Certification, issued by the Water Board. State water quality certification is required for nationwide permits which result in any discharge into U.S. waters. Because of the limited discharge associated with the wetland enhancement, permit conditions may be waived by the Water Board.

E. Potential Environmental Impacts

The project may have potentially significant environmental impacts in the following resource areas: air quality (fugitive dust emissions), biology (impacts to sensitive habitat), hazards/hazardous materials (excavation and disposal of on-site soils); hydrology (increased sedimentation or erosion during construction); and noise (noise emissions from construction equipment).

Mitigation measures for potential impacts are discussed in Chapter III, Evaluation of Potential Project Impacts and are summarized in Chapter IV, Mitigation Measures. These mitigation measures will reduce all impacts to a less-than-significant level. Also identified are mitigation measures for potential impacts which will be less-than-significant prior to implementation of the specified mitigation, but would further reduce the level of impact.

III. Evaluation of Potential Project Impacts

While the CEQA Guidelines do not specify the precise format for an Initial Study, the Guidelines do require that the Initial Study identify a project's potential environmental effects. A checklist is commonly adopted by lead agencies as an efficient screening mechanism to satisfy this requirement and focus the attention of decision makers, the project team, and the public on key environmental issues. The checklist must also contain factual data and/or explanations to support its conclusions. In the checklist on the following pages, this supporting information is provided in the Comments section following each set of checklist questions.

Environmental Checklist

The format for the environmental checklist has been taken from Appendix G, Environmental Checklist Form, of the CEQA Guidelines, with some minor changes. The methods for completing the environmental checklist, as they are found in Appendix G, are listed below.

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analysis," may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable

legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c) Mitigation Measures. For effects that are "Less Than Significant With Mitigation Measures Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to a less than significant level.

CEQA CHECKLIST

A. AESTHETICS

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Have a substantial adverse effect on a scenic vista?				X
2.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
3.	Substantially degrade the existing visual character or quality of the site and its surroundings?				X
4.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

Comments:

Item 1:
No Impact. The visual character of the area surrounding the project site is predominately industrial and maritime. The project site is flat and is at a similar elevation to the surrounding buildings and streets. The proposed project would not result in a long-term impact to the visual quality of the site, and would not have a substantial adverse effect on a scenic vista.

Item 2:
No Impact. No scenic highways are located near the proposed project; no scenic resources would be affected.

Item 3:
No Impact. The potential views related to the project site that may be affected by the project are views of the site from the Embarcadero (from the north) or the waters of the Estuary (from the west), and views from the site towards the Estuary (to the west) or the Embarcadero (to the north).

Views of the Site. Views of the site from the Embarcadero are almost completely obstructed by existing buildings. Views of the site, especially of the two beaches, can, however, be seen from the waters of the Estuary.

Views From the Site. Views of the Estuary and the Alameda shoreline can be seen looking west from the site. Views toward the Embarcadero and downtown Oakland from the site are obstructed by buildings and Interstate 880, an elevated freeway.

Views of the project site from the Estuary, and from the site looking west towards the Estuary and the Alameda shoreline, may be temporarily obstructed by equipment during construction (excavating and grading) activities at the site. The tunnel sealing element of the proposed project will not significantly change the post-construction (long-term) visual appearance of the site. The wetland enhancement element of the proposed project will affect the post-construction visual appearance of the site – specifically, the creation of a channel and "island" area in the southwest portion of the site, and the revegetation of this area, would change the appearance of the project area. The changed appearance of the project site would be consistent with the overall visual character of the area.

The project would not result in a long-term impact to the visual quality of the project site nor its surroundings; the wetland enhancement project would, in fact, enhance the visual appearance of the site. Because the proposed project would pose no long-term impacts to the visual quality of the project site or its surroundings, no impact would result.

Item 4:
No Impact. The project would not involve the installation of new lighting or reflective surfaces, and would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

B. AGRICULTURAL RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
2.	Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
3.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X

Comments:

Items 1 to 3:
No Impact. The project site is located in a primarily industrial area, not on designated agricultural or farm lands; no impacts to agricultural resources will result from the project.

C. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Conflict with or obstruct implementation of the applicable air quality plan?		X		
2.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
3.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
4.	Expose sensitive receptors to substantial pollutant concentrations?		X		
5.	Create objectionable odors affecting a substantial number of people?			X	

Comments:

Environmental Setting

The project site is located in the San Francisco Bay Area basin, and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD's responsibilities include the preparation of plans for attaining and maintaining ambient air quality standards in the region, and the adoption and enforcement of rules and regulations concerning air pollutant sources. Air quality plans implemented by the BAAQMD include the Bay Area Air Quality Plan and the Bay Area Clean Air Plan.

The San Francisco Bay Area is subject to a combination of topographical and climatic factors. In the subregion including northern Alameda County, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The prevailing winds for most of this subregion are from the west. Air pollution potential is lowest for the parts of the subregion that are closest to the Bay, due largely to good ventilation and less influx of pollutants from upwind sources. The subregion contains a variety of industrial air pollution sources; some industries are quite close to residential areas. The subregion is also traversed by frequently congested major freeways; traffic and congestion, and the motor vehicle emissions they generate, continue to increase in this area. The BAAQMD air quality monitoring stations closest to the project site are located in Oakland and San Leandro. Ozone and carbon monoxide are monitored at the Oakland site, and ozone and particulate matter are monitored at the San Leandro site.

Potential Project Impacts

Item 1:
Potentially Significant Impact Unless Mitigation Incorporated. After construction (excavation, grading, and revegetation activities), the project would not result in any additional vehicle trips to the site, and the project would not violate an existing or projected air quality standard.

During grading and other construction activities at the project site, air emissions and dust could potentially be generated. Fugitive dust emissions (particulate matter) from clearing, grading and earthmoving activities would comprise the major source of construction dust emissions; but vehicle travel on paved and unpaved surfaces, vehicle equipment exhaust, and general disturbance of the soil may also generate significant emissions. Depending on the weather, soil conditions, and the amount of activity taking place, dust emissions could potentially affect construction workers and sensitive receptors (residents and recreational users) in the area. This potential impact would occur over a period of approximately one month while project construction is underway. Although this impact would not significantly conflict with nor obstruct implementation of any air quality plans, this is a potentially significant impact. The BAAQMD has identified feasible control measures for pollutants, such as particulate matter, from such construction activities.[16] Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

Mitigation Measure AIR-1: During construction, the project sponsor will be required to implement the following measures:

- Water exposed or disturbed soil surfaces at least twice daily, and water or cover stockpiles of debris, soil or other materials that can be blown by the wind;
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;
- Sweep (with water sweepers) daily all paved access roads, parking areas and staging areas at construction sites; and
- Sweep (with water sweepers) streets daily if visible soil material is carried onto adjacent public streets.

[16] BAAQMD, 1999. *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans.* December. Page 15.

Item 2:
Potentially Significant Impact Unless Mitigation Incorporated. See response to Item C.1. With the implementation of Mitigation Measure AIR-1, above, no impact would result.

Item 3:
Less-than-significant Impact. The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard. No impact would result.

Item 4:
Potentially Significant Impact Unless Mitigation Incorporated. See response to Item C.1. With the implementation of Mitigation Measure AIR-1, above, no impact would result.

Item 5:
Less-than-significant Impact. During project construction activities, emissions from construction equipment could result in some unpleasant odors. This impact, however, is temporary, and less than significant.

D. BIOLOGICAL RESOURCES

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
2.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?		X		
3.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
4.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	

5.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X
6.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	X

Comments:

Environmental Setting

Several listed species (federally and/or State protected animal or plant species) may occur in the Oakland Estuary (Estuary). The federal- and State-listed endangered California brown pelican (*Pelecanus occidentalis californicus*), and the federal- and State-listed California least tern (*Sterna antillarum browni*), have been observed to forage in Oakland Harbor. A California listed species of special concern, the double crested cormorant, has been observed near Estuary Park north of the project site; the Barrow's goldeneye, another species of concern, has been observed along the Lake Merritt Channel.[17] The federal- and State-listed Sacramento River winter-run Chinook salmon occurs in some areas of the San Francisco Bay. The Central California Coast steelhead trout also may occur in the project area, and is listed as threatened by the federal government.

Estuary waters are also considered a limited habitat resource for commercial fish such as Pacific herring, jacksmelt, and topsmelt, which are found throughout San Francisco Bay.

Potential Project Impacts

Item 1:
Potentially Significant Impact Unless Mitigation Incorporated. The potential for exposure of listed or sensitive species or other wildlife to contaminants or pollution originating from the project site after project construction is not significant.

Some areas of contaminated soil may be exposed during the excavation of the channel at the site as part of the wetland enhancement. As described earlier in Chapter II, Project Description, of this Initial Study, clean fill material would be imported to the site and deposited in these areas. This fill material would effectively act as a cap for the soil below, preventing the exposure of any residual contaminants from below the channel excavation. The fill material would be composed of Merritt Sand excavated from the Berths 55 to 58 project area (this material has been approved for use as wetland cover[18]).

Some of the on-site soils to be excavated during project construction contain levels of contaminants above sediment screening criteria developed by the Water Board for wetlands creation cover. These soils will be re-used on site, or disposed of properly and in accordance with the requirements of the Water Board. Re-use of the soils would not pose a hazard to sensitive species that may occur on or

[17] Port of Oakland, 1998. *Jack London Aquatic Center at Estuary Park Final Mitigated Negative Declaration/ Initial Study*. November 10, p. 21.

[18] URS Greiner Woodward Clyde, 1998.

around the site. For more details on the handling, re-use and disposal of contaminated materials at the site, refer to Section G., Hazards and Hazardous Materials.

During construction activities associated with the wetland enhancement, there is potential for off-site runoff due to excavation and grading activities, and for disturbance to Estuary waters resulting from the creation of the channel. Implementation of Best Management Practices (BMPs) and the Port-required Storm Water Pollution Prevention Plan (SWPPP), as described in Mitigation Measure HYDRO-1 in Section H., Hydrology and Water Quality, would control any temporary construction impacts associated with runoff.

Excavation of the channel and removal of rocks along the shoreline would result in a temporary increase in turbidity and a minor disturbance to the benthic community in the immediate vicinity of construction-related activities in the water. The potential impact to benthic species due to construction-related activities will be very limited in magnitude and duration; no significant impact would result.

Common shore birds have been observed frequently at the Seabreeze Marina, but the project area has not been designated as critical habitat, and does not appear to provide significant habitat, for any shore bird species. The listed California least tern is a migratory bird known to forage the Estuary waters from late spring through mid-summer, but has not been known to forage in significant numbers in recent years in the Estuary waters around the project area.[19] The Estuary also provides foraging habitat for the listed California brown pelican; this species, however, is not common in the project area.[20] Marine birds, in general, are likely to avoid the immediate project area during construction activities; short-term disturbances to the Estuary and loss of potential foraging habitat during prime breeding season for sensitive (listed) species is not likely, and no significant impact would result.

The Sacramento River winter-run Chinook salmon has been observed in the Estuary, but the Estuary is not designated as critical habitat for this species,[21] nor are significant numbers of winter-run Chinook salmon likely to occur in the Estuary at the project area.[22] The Estuary is designated as critical habitat for the Central California Coast steelhead trout;[23] this species, however, has not been widely observed in the Estuary, and is not likely to occur in significant numbers in the Estuary due to anthropogenic changes in the historic watershed.[24] The Oakland Harbor is not located within the main migration route for the endangered Chinook salmon or the threatened steelhead trout, and few

---

[19] Collins, Laura D. and Leora R. Feeney, 1993. *California Least Tern Foraging and Other Off-Colony Activities Around Alameda Naval Air Station During 1992.* June.

[20] ENTRIX, Inc., 1997. *Volume I: Biological Assessment for the Berths 55-58 and Oakland Harbor Navigation Improvement (-50') Project.* December 9, p. 6-2.

[21] National Marine Fisheries Service, National Oceanic and Atmospheric Administration, 2001. Protected Resources: Chinook Salmon, Sacramento Winter-Run ESU. August 21.

[22] Jahn, Andy, Port of Oakland Environmental Planning Department, 2001. Personal communication with Christy Herron, Port of Oakland Environmental Planning Department. August.

[23] National Marine Fisheries Service, National Oceanic and Atmospheric Administration, 2001. Protected Resources: Steelhead, Central California Coast ESU. August 21.

[24] Jahn, 2001.

individuals are expected to occur in the Harbor or the Estuary.[25] In addition, there are no Chinook spawning areas near or upstream of Oakland Harbor; therefore, juvenile salmon are not expected to be adversely affected. Therefore, the proposed project would have no significant impact on these sensitive fish species.

Item 2:
Potentially Significant Impact Unless Mitigation Incorporated. Wetland enhancement activities are intended to enhance and expand existing wetland habitat at the project site; during construction activities (channel creation), however, the existing wetland area will be adversely affected. The affected wetland area would be effectively re-created, however, and this impact would be temporary and less than significant.

After construction, most plant establishment in the channel area is anticipated to take place due to a process of natural colonization (i.e., man-made revegetation will be limited). To reduce any potential long-term impacts to the wetland habitat at the project site, the success of the created wetland should be monitored after construction to ensure that plant colonization takes place. The implementation of the following mitigation measure should reduce this potential long-term impact to a less-than-significant level:

> Mitigation Measure BIO-1: The Port or the Port's consultant shall provide a qualified biologist to monitor the project site on a quarterly basis for two (2) years following project construction to ensure that appropriate plant colonization, as described in the project plans, takes place. If the biologist determines that satisfactory plant colonization is not taking place, a new planting plan for the project site shall be prepared by the Port or the Port's consultant.

Item 3:
Potentially Significant Impact Unless Mitigation Incorporated. See response to Item D.2. The implementation of Mitigation Measure BIO-2 would reduce any potential long-term impacts to wetlands at the project site to a less-than-significant level.

Item 4:
Less-than-significant Impact. See response to Item D.1. Short-term construction impacts to commercial fish such as herring are not anticipated to result from the proposed project. The project would also not cause significant impacts to the endangered Sacramento winter-run Chinook salmon or the threatened Central California Coast steelhead trout.

Item 5:
No Impact. The project would enhance existing habitat, and would not conflict with any local (City of Oakland or Port of Oakland) policies or ordinances protecting biological resources.

Item 6:
No Impact. The project would not conflict with the provisions of any Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

[25] Ibid.

E. CULTURAL RESOURCES

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				X
2.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?				X
3.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
4.	Disturb any human remains, including those interred outside of formal cemeteries?				X

Comments:

Items 1 to 4:
No Impact. No historical resources exist at the project site. The project area consists of previously disturbed Bay fill; no known archaeological or paleontological resources are known to exist at the project site. Pursuant to Section 21083.2 (i) of the Public Resources Code, in the event any archaeological resources are encountered during site preparation or construction, all work in the immediate vicinity (within 20 meters of the discovered resources) shall cease and a qualified archaeologist or historian will be consulted to evaluate the find. No further mitigation is necessary.

F. GEOLOGY and SOILS

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				X
	i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
	ii. Strong seismic ground shaking?				X
	iii. Seismic-related ground failure, including liquefaction?				X
	iv. Landslides?				X
2.	Result in substantial soil erosion or the loss of topsoil?		X		
3.	Be located on a geologic unit or soil that is unstable, or that would become unstable a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
4.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
5.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

Comments:

Environmental Setting

The project site is located within the seismically active San Francisco Bay Area region. The site is located in an area that has been identified as having a Modified Mercalli Intensity Damage Level of 9 to 10, indicating that damage from an earthquake would range from heavy to extreme. The faults in the region are capable of generating earthquakes of at least 7.0 in magnitude; therefore, it can be expected that earthquakes would produce very strong ground shaking at the project site. The nearest major earthquake fault in the project area is the Hayward fault, which is located approximately 2 miles northeast of the site. The Calaveras fault is also located approximately 6 miles east of the site, and the San Andreas fault is located approximately 16 miles southwest of the site.

The Inner Harbor area would be subject to ground shaking in the event of a moderate earthquake. Soils in the project vicinity are unconsolidated, loose sediments, and are susceptible to earthquake-induced differential settlement and secondary ground failures (ground lurching, liquefaction).

Potential Project Impacts

Item 1.i. to 1.iv:
No Impact. The project site is not traversed by any identified active faults; thus, fault rupture would not be expected to occur within the project site. Because the proposed project does not involve the construction of buildings, and would not result in an increase in use of the site, the rupture of a known earthquake fault, strong seismic groundshaking, and seismic-related ground failure such as liquefaction would not result in substantial adverse effects.

The project site is relatively flat and would not be at risk for slope failure. Therefore no additional risks related to geology (i.e., landslides) would be caused by the proposed project.

Item 2:
Potentially Significant Impact Unless Mitigation Incorporated. Wetland enhancement activities would include the excavation of a channel at the southwest end of the site. Standard construction practices would be employed during the creation of the channel to prevent sedimentation. Erosion of the new channel surface from tidal action could occur, dependent on the characteristics of the soil lining the new channel. Mitigation Measure HYDRO-1, in Section H., Hydrology and Water Quality, addresses the potential for erosion at the site after construction is completed. With the implementation of this mitigation measure, this potential impact would be reduced to a less-than-significant level.

Item 3:
Less-than-significant Impact. Soils at the project site include significant amounts of sand,[26] indicating that there could be a risk of liquefaction at the site. The project, however, is very limited in scale, and would not increase the potential for liquefaction to occur at the project site, either during or after construction.

Item 4:
No Impact. The project is located on Bay fill, and on soils with shrink/swell potential (expansive soils). The project does not include the construction of any buildings, and would not increase the use

[26] Philip Williams and Associates, 2001.

of the site by residents or recreational users. The project would not result in an increase in traffic to and from the site; therefore, the project would not create substantial risks to life or property.

Item 5:
No Impact. Project construction and operation would not involve the use of septic tank or alternative waste water disposal systems. No impact would result.

G. HAZARDS and HAZARDOUS MATERIALS

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X
2.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
3.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?		X		
4.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5 and, as a result, would it create a significant hazard to the public or the environment?		X		
5.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
6.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
7.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X

8.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	X

Comments:

Environmental Setting

The project site is located on the Oakland Estuary. Artificial fill was placed at the site over native materials sometime before the 1920s. The origin for the fill is unknown, but previous excavations at sites near the Estuary that consist of filled areas have revealed the presence of various metals, glass, bricks, and other debris.[27]

Numerous environmental assessments have been conducted at the project site. Recent soil investigations in the areas of the underground tunnels and the wetland enhancement area are described below, along with proposed plans for excavation, remediation, and re-use of excavated soil.

Underground Tunnels

Investigation and Observation. Since 1990, several soil and groundwater investigations have been conducted in the area of the intake and discharge tunnels. These investigations indicated that the tunnels contain debris and sediments, as well as water with an oily sheen. Water samples collected in the tunnel hatchways in 1995 contained total petroleum hydrocarbons as diesel (ranging from 0.33 to 2.2 milligrams per liter, mg/L) and bunker C (at less than the laboratory reporting limit of 6.8 mg/L).[28] Results of the investigations indicated that the water contained in the tunnels may be connected to Clinton Basin and the Estuary, since water level measurements collected in the intake and discharge tunnel hatchways fluctuated with rising and falling tides.

The most recent investigation to determine the condition and endpoint locations of the intake and discharge tunnels was conducted by BASELINE Environmental Consulting in June 1999.[29] During field activities, three tunnel hatchways and one manway were located and exposed; Figure 3 shows the hatchway and manway locations. The intake and discharge tunnel ends could not be located using a video camera and hydrosystem locater, due to the tunnel conditions observed during field activities.

Approximately 5 cubic yards of excavated soils and debris/sediments contained in the hatchways and manway were stockpiled at the site during tunnel investigation activities.

---

[27] BASELINE Environmental Consulting, 2000. *Final Initial Study/Mitigated Negative Declaration, Oakland Telecommunication Access Building, Oakland, California.* May 10. p. 35.

[28] BASELINE Environmental Consulting, 1995. *Third Interim Data Report, Additional Subsurface Investigation, Seabreeze Yacht Center, Oakland.* October.

[29] BASELINE Environmental Consulting, 1999. *Phase One Tunnel Remediation Investigation and Phase Two Work Plan Intake and Discharge Tunnels.* August.

Tunnel Remediation/Closure Workplan. In August 1999, a tunnel investigation and remediation workplan was prepared on behalf of the Port by BASELINE Environmental Consulting.[30] The remediation workplan proposes to seal sections of the intake and discharge tunnels located near the shoreline. The seals would be constructed with concrete (see Figure 5). Sealing the tunnels would eliminate the tunnels from acting as a pathway to surface waters and, as a result, prevent the potential for the discharge of contaminants contained in the tunnels directly to surface waters (i.e., Clinton Basin and the Estuary).

The remediation workplan proposes to identify and expose a tunnel section approximately 50 feet from its shoreline end for exploratory excavation, using existing drawings and past field observations to determine locations. Based on previous site investigations, the tops of the tunnels are expected to be greater than 9 feet below ground surface. In order to access the tunnels for sealing, soil above the tunnel would be excavated so that between 5 and 10 linear feet of each respective tunnel section would be exposed. Less than 300 cubic yards total of material would be excavated. A protective board would be placed against the open, bay-facing end of the discharge tunnel to prevent debris and sealing materials from discharging into Clinton Basin and the Estuary. The bay-facing end of the intake tunnel appears to be completely blocked, and a protective barrier between the tunnel and the Estuary would not be required. A concrete mixture would be used to form the seal. After the seal is in place, the excavation would be backfilled to the surface. A report would then be prepared to document tunnel remediation efforts and waste management.

The tunnel remediation workplan was submitted to the ACDEH in August 1999. For further details of the proposed remediation plan, please refer to Appendix A. In a May 18, 2000 letter, the ACDEH requested additional information regarding the Port's plans for tunnel remediation at the site. Specifically, the ACDEH stated that the Port should complete and submit the following requirements:

- A closure plan that prescribes the methods to be used to seal the tunnels, and the steps to be taken to assure the adequacy of the seal;
- A sampling plan to take additional soil and groundwater samples along the intake and discharge tunnels to complete site characterization;
- Evidence of filing a deed restriction or risk management plan limiting the future use of the site;
- A health and safety plan for future maintenance or construction workers;
- A Soil and Groundwater Management Plan; and
- Closure of all on-site monitoring wells.

The Port responded in a August 9, 2000 letter, stating that the Port would comply with the ACDEH's requirements, and would prepare a risk management plan addressing the future use of the site. In April 2001, the plans and specifications for the tunnel sealing, the sampling plan, and the closure plan were submitted to the ACDEH. The ACDEH's approval of the workplan and the additional information submitted by the Port, which is required prior to tunnel remediation work, was granted in August 2001.

Wetlands Enhancement Project

Re-Use and Disposal of Excavated Soil. Soil sampling at the proposed wetland enhancement area was conducted in May 2001 to classify the material that would be excavated from the proposed channel. The purpose of the sampling was to determine the suitability of the material for re-use, and to compare the chemical quality of the soils in the top three feet below the future channel bottom

[30] Ibid.

and side slopes against sediment screening criteria developed by the Water Board for wetlands creation cover. Appendix B contains the results of this sampling in detail.

Analytical results for samples from the center of the channel excavation area showed total lead and copper concentrations below criteria for a California hazardous waste (i.e., total threshold limit concentration). In addition to total lead analysis, soluble WET lead was also analyzed for two of the samples; soluble lead concentrations were also below the California hazardous waste criterion (i.e., soluble threshold limit concentration). The data from soil sampling indicated that the soil excavated in the creation of the channel would be appropriate for on-site re-use, in the creation of the upland berm (and possibly to be spread evenly in areas upland of the project site, at the direction of the Water Board. Alternatively, the soil could be considered a nonhazardous waste, and would be appropriate for disposal at a Class II landfill.[31]

Analytical results from the sampling of the soils in the first three feet below the future channel bottom and side slopes showed levels of contaminants in two areas (out of five areas sampled) that exceeded the wetlands creation cover criteria. Analysis of samples from locations HE-4 and HE-5 showed concentrations of contaminants that exceeded the wetlands creation cover criteria for polynuclear aromatic hydrocarbons (PAHs), copper, lead, mercury, nickel, selenium, silver, and zinc.[32] (Refer to Appendix B for further detail regarding sampling results.) Soil samples were also analyzed for total petroleum hydrocarbons (as Bunker C). At two locations, Bunker C was identified at levels above 1,000 milligrams per kilogram.[33] No wetlands cover criteria currently exist for petroleum hydrocarbons. Furthermore, PAH analysis indicated that the identification of Bunker C may have been erroneous, because the PAH pattern (a much more accurate indication of the presence of petroleum constituents) did not indicate petroleum contamination. Based on these results, the channel will be "over-excavated" approximately 3 feet below the originally proposed depth at the two locations which showed levels of contaminants above those for wetland cover criteria. Clean fill material (Merritt sand from the Berths 55 to 58 project area that has been approved for use by the Water Board for wetlands creation cover, as described in Chapter II, Project Description, of this Initial Study) will be imported and deposited in these over-excavated areas, bringing the level of the channel back to the originally proposed depth. It is anticipated that approximately 200 to 400 cubic yards of fill material would be required for this purpose.

Potential Project Impacts

Item 1:
No Impact. After the project is constructed, no routine transport, use, or disposal of hazardous materials would occur at the project site.

Item 2:
Potentially Significant Impact Unless Mitigation Incorporated. The construction of the project may entail the excavation and transport off-site of contaminated soils that could potentially affect construction workers, adjacent properties, and the environment. During project construction, contaminated soils could also result in the generation of contaminant-containing dust being blown off-site, which could affect the environment as well as off-site residents or workers. The compounds

---

[31] BASELINE Environmental Consulting, 2001. *Investigation of Soil Quality for Habitat Enhancement Project, Former Seabreeze Yacht Center, Oakland, California.* September.

[32] Ibid.

[33] Ibid.

identified in the soil could also affect the health of future site workers. Debris such as glass and bricks in the Bay fill material could be exposed through excavation, and could affect construction workers, future users of the site, and the environment.

In accordance with federal and State regulations, construction workers must be trained and perform work in accordance with a site-specific health and safety plan. The implementation of the following mitigation measure would reduce impacts associated with the excavation of soils at the project site to a less-than-significant level:

Mitigation Measure HAZ-1:

a) All construction activities at the site shall be undertaken by trained workers, in accordance with a site-specific health and safety plan prepared by a trained professional. Prior to the start of construction, the health and safety plan shall be submitted for review to the Port of Oakland Environmental Health and Safety Compliance Department.

b) The site-specific health and safety plan must include action levels for dust at the site boundary, and air monitoring provisions at the site boundary, to ensure that contaminated dust does not move off-site at concentrations that could affect the environment and off-site populations. The air monitoring results must be submitted to the Port of Oakland Environmental Health and Safety Compliance Department on each day that construction activities take place at the project site for review and demonstration that action levels have not been exceeded. If action levels are exceeded, mitigation must be implemented that would reduce contaminated dust generation at the project boundary. Such measures could include more frequent watering, reducing the size of excavated areas, or covering excavated areas on an interim basis.

c) Five days prior to any on-site excavation or grading activities, public notice of such activities shall be provided to tenants and property owners with addresses within a 500 foot radius of the project site, and the project site shall be posted with a notice of scheduled construction activities.

The implementation of Mitigation Measure AIR-1, which includes provisions such as the covering of all trucks hauling soil, sand, and other loose materials, further addresses the potential impacts associated with the excavation of the contaminated soils at the project site.

The project would result in the excavation and re-use or disposal of up to approximately 2,000 cubic yards of soil. Although soil testing conducted at the project site indicates that the soil to be excavated would not contain levels of contaminants above California hazardous waste criteria, the potential exists that some excavated soil may contain levels of contaminants above these criteria. The implementation of the following mitigation measure would reduce impacts related to the disposal of soil from excavation at the site to a less-than-significant level:

Mitigation Measure HAZ-2: Any soil excavated from the site must be classified and re-used on site as permitted by the San Francisco Regional Water Quality Control Board, or disposed of off-site as appropriate. Any off-site disposal must be managed in accordance with applicable local, State, and federal statutes and regulations, and transported by a licensed contractor to an appropriate landfill. Soil determined to be nonhazardous shall be transported to either a Class II or Class III facility.

Item 3:
Potentially Significant Impact Unless Mitigation Incorporated. The project site is within one-quarter mile of Laney College, a community college located at 900 Fallon Street in downtown Oakland. There is a slight possibility that soils that would be excavated, transported by truck from the site to an appropriate disposal facility, and disposed as part of the proposed project may contain levels of contaminants above California hazardous waste criteria. Any potential impacts related to the excavation and disposal of contaminated soil at the site are addressed by Mitigation Measures HAZ-1 and HAZ-2, above, in section G.2.

Item 4:
Potentially Significant Impact Unless Mitigation Incorporated. Active contaminated soil remediation sites under the oversight of the ACDEH, such as the project site, are included on the list compiled pursuant to Section 65962.5 of the Government Code referenced in this item. Any potential impacts related to the excavation and disposal of contaminated soil at the site are addressed by Mitigation Measures HAZ-1 and HAZ-2, above, in section G.2.

Item 5:
No Impact. The site is not located within two miles of the Metropolitan Oakland International Airport, nor is it within an airport land use plan area, and therefore would not result in a safety hazard for people living or working in the area.

Item 6:
No Impact. No private airstrips are located in the vicinity of the project site.

Item 7:
No Impact. The project activity would not cause any delay in response time for fire and police protection. Construction activities involving heavy equipment would take place within less than one month; trucks and equipment would not need access to the Embarcadero on a regular basis. No equipment would be parked on the street.

Item 8:
No Impact. The project site is located in an urban/industrial area, which is mostly paved. The project site is not located near any wildland areas.

H. HYDROLOGY and WATER QUALITY

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Violate any water quality standards or waste discharge requirements?		X		
2.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
3.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		X		
4.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			X	
5.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		X		
6.	Otherwise substantially degrade water quality?			X	
7.	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
8.	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
9.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
10.	Inundation by seiche, tsunami, or mudflow?				X

Comments:

Item 1:
Potentially Significant Impact Unless Mitigation Incorporated. During project construction activities, degradation in runoff water quality could occur due to disturbance of site soils. Ground clearing and the excavation, handling, and transport of soils could expose soil to erosion during storms. The proposed spreading of excavated soils onto the upland areas of the site may also expose soil to erosion. Fine soil particles and contaminants potentially contained in soils could be transported in runoff and enter the Estuary and San Francisco Bay, impacting surface water quality. The degree of impact on surface water quality will depend on the extent and type of soils disturbed, stormwater flows, and the nature of construction activities.

The grading plan for the proposed project would include Best Management Practices (BMPs) to minimize the potential for erosion and sedimentation associated with soil handling (excavation, stockpiling, and transport). BMPs employed during construction may include scheduling excavation and grading activities for dry weather periods, taking measures to prevent erosion, keeping construction materials protected from rain, and other general measures. Even with the implementation of BMPs, the discharge of runoff that may contain elevated levels of pollutants into the Estuary during project construction could cause a significant impact. In addition, after channel creation, erosion at the site may expose contaminated soil, which could be a source of contaminants into the Estuary. The implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

> Mitigation Measure HYDRO-1: The Port or the Port's selected project contractor shall prepare a project-specific Storm Water Pollution Prevention Plan (SWPPP), which will include an erosion and sedimentation control element. The SWPPP shall identify site-specific best management practices (BMPs) that will reduce potential short-term impacts to receiving waters. The project design will address and reduce or eliminate the erosion and discharge of on-site soils into the Estuary after project construction.

No use of groundwater is proposed at the project site, although some dewatering could potentially be required during construction activities. The project would not substantially change the amount of precipitation currently infiltrating through the soil to groundwater. Due to its existing poor quality (high total solids and poor chemical quality), shallow groundwater underlying the project site is not currently used as a source of drinking water. The potential temporary effects the project may pose to groundwater during project construction would not be significant.

Item 2:
Less-than-significant Impact. See H.1. The project would not substantially deplete groundwater supplies nor interfere substantially with groundwater recharge.

Item 3:
Potentially Significant Impact Unless Mitigation Incorporated. The proposed project involves excavation of a channel at a shoreline area, which would change the drainage pattern of the area around the site; this may result in increased erosion or siltation. The implementation of Mitigation Measure HYDRO-1, as listed above in Section H.1., will reduce this impact to a less-than-significant level.

Item 4:
Less-than-significant Impact. The existing drainage pattern of the site would be altered by the project, but the site is in an existing topographically low area, and the area affected by the proposed project is relatively small; therefore, the project would not result in flooding on- or off-site.

Item 5:
Potentially Significant Impact Unless Mitigation Incorporated. The project could result in additional sources of polluted runoff, as described above, during and after project construction. The implementation of Mitigation Measure HYDRO-1, as listed above in Section H.1., will reduce this impact to a less-than-significant level.

Item 6:
Less-than-significant Impact. The project is not anticipated to otherwise substantially degrade water quality. Any other potential impacts would be mitigated by the implementation of Mitigation Measure HYDRO-1, as listed above in Section H.1., to a less-than-significant level.

Item 7:
No Impact. The Environmental Hazards Element of the *Oakland Comprehensive Plan* shows that the project site is not located in an area subject to potential flooding and/or dam inundation.[34] No housing is proposed for the project; no impact would result.

Item 8:
No Impact. See H.7. No structures are proposed as part of the project.

Item 9:
No Impact. See H.7. The project would not involve the construction of new structures, nor increased use of the site by local residents or recreational users.

Item 10:
No Impact. The Environmental Hazards Element of the *Oakland Comprehensive Plan* shows that much of the shoreline of the City of Oakland is "protected" from seismic waves by the City of Alameda. The project site is not located in an area of potential inundation by tsunami. The project would not expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

[34] City of Oakland, 1974. *Oakland Comprehensive Plan*, Environmental Hazards Element. September. pp. 23-25.

I. LAND USE AND PLANNING

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Physically divide an established community?				X
2.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but no limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	
3.	Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

Comments:

Environmental Setting

As with other urban waterfronts, many governmental agencies have planning jurisdiction within the area of the Estuary.

Applicable Plans and Policies

City of Oakland General Plan. The Port of Oakland is governed by a Board of Commissioners, and is an independent department of the City of Oakland. The planning policies of the City of Oakland are contained in a combination of several elements of the *Oakland Comprehensive Plan*. The Land Use and Transportation Element of the *Oakland Comprehensive Plan* (adopted in 1998) designates the project site as "Mixed Use Waterfront/Estuary Plan Area."[35] The Estuary Plan provides more detailed land use classifications for areas along the Estuary.

Because the Port is an autonomous City department, the Port area is not subject to City zoning designations; however, Port uses must be consistent with the *Oakland Comprehensive Plan*.

The Estuary Policy Plan. The Estuary Plan, adopted in 1999 by the Port of Oakland and the City of Oakland, essentially constitutes a separate element of the *Oakland Comprehensive Plan*, and sets forth specific recommendations related to land use and urban design, circulation, public access, and open space for the Estuary area. The primary goals of the Estuary Plan are related to the waterfront and include increasing the awareness of the waterfront throughout the City and the region, promoting the diversity of the waterfront by providing opportunities for new open space areas, and preserving and enhancing the existing natural areas along the waterfront. Specific policies and objectives contained in the Estuary Plan that are applicable to the proposed project are discussed below, in section I.2.

[35] Port of Oakland, 1999. p. 130.

San Francisco Bay Conservation and Development Commission Bay Plan. The *San Francisco Bay Conservation and Development Commission Bay Plan* (Bay Plan) was adopted by BCDC in 1969, in the same year that the California legislature approved the enactment and designation of the BCDC as the agency responsible for maintaining and implementing the Bay Plan. The goals of the Bay Plan include protection of the Bay itself as well as its sloughs, estuaries, salt ponds, tidal marshes, managed wetlands and other natural resources; and to develop the Bay and shoreline to the highest potential with a minimum of fill. The BCDC reviews and issues separate permits for filling or dredging, and for shoreline development. The regulatory jurisdiction of the BCDC extends to activities that take place within 100 feet of the Bay shoreline (the "100-foot shoreline band").

Among other goals, regulation of shoreline development by the BCDC is intended to ensure that public access is provided to the Bay to the maximum extent feasible, that shoreline areas not needed for "priority uses" are developed in ways that do not preclude public access to the Bay, and that attractive design of shoreline development is encouraged.

San Francisco Bay Trail Plan. The Association of Bay Area Governments (ABAG) adopted the *San Francisco Bay Trail Plan* (Bay Trail Plan) in 1989, as part of a plan to develop a regional hiking and bicycling system of trails around the perimeter of San Francisco and San Pablo Bays. The Bay Trail Plan provides policies on trail alignment, design, environmental protection, transportation access, and implementation. Among other goals, the Bay Trail is intended to link existing parks and recreational facilities, to be situated as close to the Bay as is feasible, and to avoid adverse effects on environmentally sensitive areas.

Potential Project Impacts

Item 1:
No Impact. The project involves minor alterations to the shoreline, and excavation and remediation of soil at the project site. Project activities would not physically divide the nearby Fifth Avenue Point residential community, nor any other existing residential neighborhoods.

Item 2:
Less-than-significant Impact. The project is consistent with all applicable policies and development regulations contained in the *Oakland Comprehensive Plan*, the *Estuary Plan*, the *Bay Plan*, and the *Bay Trail Plan*. General Plan Conformity determinations have been obtained by Port of Oakland staff from the City of Oakland for both the tunnel sealing and wetland enhancement elements of the proposed project, and are included in Appendix D. The project's relation to specific applicable development regulations is described below.

The *Estuary Plan* designates the land use at the project site as Planned Waterfront Development (PWD-1).[36] The intent of this designation is to "provide for the transformation of maritime and marine uses into a public-oriented waterfront that encourages significant public access and open space opportunities."[37] The project would contribute to this objective through the remediation of contaminated soil at the site and by enhancing an existing wetland/open space area.

The project's relation to specific plans and policies in the *Estuary Plan* is discussed below.

[36] Ibid. p. 132.

[37] Ibid. p. 135.

Objective SA-1: Create a clear and continuous system of public access along the Estuary shoreline.

The *Estuary Plan* includes an illustrative circulation plan that shows a Class I bikeway/pathway that would follow the shoreline area around the Fifth Avenue area and Seabreeze Marina. The wetland enhancement element of the proposed project would take place at an area of the existing shoreline at the Seabreeze Marina, occupying approximately 0.63 of an acre, and would enhance and enlarge a sensitive habitat (wetland) area which would not be suitable for public access. Project plans, however, include the creation of a berm upland of the wetland enhancement area that would serve as a buffer between the wetland habitat and other, public uses. Discussions with Port Strategic Planning staff have indicated that a pedestrian/bike path that would provide public access to the waterfront in the area of the Seabreeze Marina would not be precluded by the proposed wetland enhancement, and could be planned for the area upland of the berm.[38] Any potential impact to public access caused by the project would be less than significant.

Objective SA-5: Enhance natural areas along the shoreline.

The proposed project includes a wetland enhancement element that would enhance a natural area along the shoreline.

Policy OAK-1: Protect and enhance the natural and built components that establish the waterfront's unique environment.

OAK-1.1: Encourage the preservation and enhancement of wetland areas.

As stated above, the proposed project includes a wetland enhancement element that would enhance a natural area along the shoreline.

OAK-1.2: Provide for continuous pedestrian and bicycle movement along the water's edge.

As stated above, the proposed wetland enhancement element of the project would not preclude continuous pedestrian and bicycle movement near the water's edge.

OAK-1.3: Undertake remediation of contaminants in conjunction with development and/or improvement of relevant sites.

The proposed project includes excavation and re-use or disposal of contaminated soil at the project site, as well as the sealing of an underground tunnel that could otherwise potentially discharge contaminants contained in the tunnels directly to surface waters (i.e., the Estuary or the Bay).

Policy OAK-2: Establish a well-structured, integrated system of major recreational facilities which accommodate a wide variety of activities and which take advantage of the unique waterfront setting.

OAK-2.3: Enhance Clinton Basin.

- *Establish a linear open space composed of a series of smaller parks around Clinton Basin.*

[38] Henny, Anne, Port of Oakland Strategic Planning Department, 2001. Personal communication with Andy Jahn, Port of Oakland Environmental Planning Department. March.

The proposed project would help enhance existing open space around Seabreeze Marina/Clinton Basin, and would not conflict with the goal to establish linear open space as stated above.

The project would enhance an existing wetland area, and would not prevent public access and the establishment of a waterfront trail; therefore, the project conflicts with neither the *Bay Plan* nor the *Bay Trail Plan*. As part of the permitting requirements, the project will undergo a review by the BCDC to ensure conformance with BCDC *Bay Plan* policies, including the *Bay Plan* Policy on View Preservation and Public Access Design Guidelines. The Port will be required to comply with the conditions of the permit issued by the BCDC. The final project plans can incorporate any BCDC recommendations and requirements.

Item 3:
No Impact. The project site is not located within any habitat conservation plan or natural community conservation plan area.

J. MINERAL RESOURCES

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
2.	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

Comments:

Item 1:
No Impact. No known mineral resources are present at the project site.

Item 2:
No Impact. See J.1.

K. NOISE

Would the project result in:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		
2.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?		X		
3.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
4.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
5.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
6.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

Comments:

Item 1:
Potentially Significant Impact Unless Mitigation Incorporated. The City of Oakland Planning Code contains noise performance standards that apply to temporary, short-term noise such as construction activity (the project, however, is not required to comply with zoning and related regulations of the Oakland Municipal Code). Chapter 17.120.050(H) of the City Planning Code requires that any "nonscheduled, intermittent, short-term construction or demolition operation" for industrial uses shall not exceed a noise level of over 85 decibels (dBA) during the daytime hours, or 70 A-weighted dBA during weekends.

Excavation and grading activities at the project site would involve the use of diesel-powered heavy equipment for earth moving, delivery of materials, and backfilling of excavated areas. Based on

U.S. EPA data on typical noise ranges generated by construction equipment, impact equipment (jackhammers and rock drills) would generate temporary noise levels of approximately 82 to 98 dBA at 50 feet from the source. Earth-moving vehicles (excavators, backhoes, and trucks) would generate temporary noise levels of approximately 72 to 95 dBA at 50 feet. In general, noise levels generated by construction activity at the project site would range from 72 to 95 dBA at 50 feet, with the loudest noise being cause by impact equipment, should its use be required.

Due to the relatively small scale of the project and the temporary nature of the construction noise (construction would take place over the course of less than one month), this increase in noise level would not be substantial, but still may affect nearby residents of the Fifth Avenue Point community during project construction. To reduce construction-related noise to a less-than-significant level, the following mitigation measure should be implemented:

Mitigation Measure NOISE-1:

a) Construction equipment shall be equipped and maintained with effective muffling devices.

b) Prior to construction, the Port shall provide public notice of scheduled construction activities, as required by Mitigation Measure HAZ-1.c.

c) Noise-generating construction activities will generally be limited to the hours of 7 a.m. to 7 p.m. on weekdays. No construction equipment will be operated on weekends, unless advance public notice is provided.

Item 2:
Potentially Significant Impact Unless Mitigation Incorporated. See K.1. During project construction, groundborne vibration or groundborne noise levels could be increased; this is a short-term, temporary impact. Implementation of Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

Item 3:
No Impact. See K.1.

Item 4:
Potentially Significant Impact Unless Mitigation Incorporated. See K.1. The project would cause a temporary increase in ambient noise levels in the project vicinity above levels existing without the project. Implementation of Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

Item 5:
No Impact. The proposed project is not located within an airport land use plan or within two miles of a public airport or public use airport.

Item 6:
No Impact. The proposed project is not located within the vicinity of a private airstrip.

L. POPULATION/HOUSING

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
2.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
3.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

Comments:

Item 1:
No Impact. The project would not result in the construction of buildings, recreational areas, or any other components that could affect population growth. The project would not directly nor indirectly induce substantial population growth.

Item 2:
No Impact. See L.1. The project would have no effect on existing housing.

Item 3:
No Impact. See L.1. The project would not displace any people.

M. PUBLIC SERVICES

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?				X
ii. Police protection?				X
iii. Schools?				X
iv. Parks or other recreation facilities?				X
v. Other public facilities?				X

Comments:

Items 1.i. to 1.v.
No Impact. The proposed project would affect less than one acre at the project site, and would not require additional fire or police protection. The project would have no effect on schools or recreational areas, or other public facilities.

N. RECREATION

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X

2.	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Comments:

Items 1 and 2:
No Impact. Use of the project site by recreational users would not increase as a result of the project, nor would other recreational facilities in the area experience an increase in use as a result of the project. The project would not involve the construction or expansion of recreational facilities.

O. TRANSPORTATION / TRAFFIC

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X
2.	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
3.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
4.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
5.	Result in inadequate emergency access?				X
6.	Result in inadequate parking capacity?				X
7.	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X

Comments:

Items 1 to 3:
No Impact. The project would affect an area of less than one acre, and would not be designed to attract people to the site. No increase in vehicular or air traffic would occur as a result of the project, and therefore the project would have no effect on capacity or level of service standards.

Item 4:
No Impact. The project would not involve the construction of new roads, paths, or other circulation elements, and would not increase hazards related to traffic due to a design feature or incompatible uses.

Item 5:
No Impact. The project does not involve the construction of new buildings or new circulation elements, nor would existing buildings or circulation elements be affected by the project. The project would not result in inadequate emergency access.

Item 6:
No Impact. The project does not involve the construction of buildings for which parking facilities would be required; existing parking would not be affected by the proposed project. The project would not result in inadequate parking capacity.

Item 7:
No Impact. The project would not affect nor be affected by adopted policies, plans, or programs supporting alternative transportation, and would not be in conflict with such policies, plans, and programs.

P. UTILITIES and SERVICE SYSTEMS

Would the project:

		Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
2.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
3.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X

4.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	X
5.	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	X
6.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	X
7.	Comply with federal, state, and local statutes and regulations related to solid waste?	X

Comments:

Items 1 to 7:
No Impact. The proposed project would not generate any wastewater or runoff that would affect wastewater or stormwater facilities. The project would not generate any demand for water. The project would generate up to approximately 1,700 cubic yards of soil to be re-used on site or disposed at a Class II landfill; existing capacity at local landfills can accommodate this amount of material. The project would comply with federal, state, and local statutes and regulations related to solid waste.

Q. MANDATORY FINDINGS OF SIGNIFICANCE

Pursuant to Section 15065 of the State of California CEQA Guidelines, a project shall be found to have a significant effect on the environment if any of the following are true:

		YES	NO
1.	**Potential to degrade:** The project has the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.		X
2.	**Cumulative:** The project has possible environmental effects which are individually limited but cumulatively considerable. ("Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effect of past projects, the effects of other current projects, and the effects of probable future projects.)		X
3.	**Substantial adverse:** The environmental effects of the project will cause substantial adverse effects on human beings, either directly or indirectly.		X

IV. Proposed Mitigation Measures

1. Mitigation Measure AIR-1: During construction, the project sponsor will be required to implement the following measures:
   - Water exposed or disturbed soil surfaces at least twice daily, and water or cover stockpiles of debris, soil or other materials that can be blown by the wind;
   - Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;
   - Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;
   - Sweep (with water sweepers) daily all paved access roads, parking areas and staging areas at construction sites; and
   - Sweep (with water sweepers) streets daily if visible soil material is carried onto adjacent public streets.

2. Mitigation Measure BIO-1: The Port or the Port's consultant shall provide a qualified biologist to monitor the project site on a quarterly basis for two (2) years following project construction to ensure that appropriate plant colonization, as described in the project plans, takes place. If the biologist determines that satisfactory plant colonization is not taking place, a new planting plan for the project site shall be prepared by the Port or the Port's consultant.

3. Mitigation Measure HAZ-1:
   a) All construction activities at the site shall be undertaken by trained workers, in accordance with a site-specific health and safety plan prepared by a trained professional. Prior to the start of construction, the health and safety plan shall be submitted for review to the Port of Oakland Environmental Health and Safety Compliance Department.

   b) The site-specific health and safety plan must include action levels for dust at the site boundary, and air monitoring provisions at the site boundary, to ensure that contaminated dust does not move off-site at concentrations that could affect the environment and off-site populations. The air monitoring results must be submitted to the Port of Oakland Environmental Health and Safety Compliance Department on each day that construction activities take place at the project site for review and demonstration that action levels have not been exceeded. If action levels are exceeded, mitigation must be implemented that would reduce contaminated dust generation at the project boundary. Such measures could include more frequent watering, reducing the size of excavated areas, or covering excavated areas on an interim basis.

   c) Five days prior to any on-site excavation or grading activities, public notice of such activities shall be provided to tenants and property owners with addresses within a 500 foot radius of the project site, and the project site shall be posted with a notice of scheduled construction activities.

4. Mitigation Measure HAZ-2: Any soil excavated from the site must be classified and re-used on site as permitted by the San Francisco Regional Water Quality Control Board, or disposed of off-site as appropriate. Any off-site disposal must be managed in accordance with applicable local, State, and federal statutes and regulations, and transported by a licensed contractor to an appropriate landfill. Soil determined to be nonhazardous shall be transported to either a Class II or Class III facility.

5. Mitigation Measure HYDRO-1: The Port or the Port's selected project contractor shall prepare a project-specific Storm Water Pollution Prevention Plan (SWPPP), which will include an erosion and sedimentation control element. The SWPPP shall identify site-specific best management practices (BMPs) that will reduce potential short-term impacts to receiving waters. The project design will address and reduce or eliminate the erosion and discharge of on-site soils into the Estuary after project construction.

6. Mitigation Measure NOISE-1:
   a) Construction equipment shall be equipped and maintained with effective muffling devices.

   b) Prior to construction, the Port shall provide public notice of scheduled construction activities, as required by Mitigation Measure HAZ-1.c.

   c) Noise-generating construction activities will generally be limited to the hours of 7 a.m. to 7 p.m. on weekdays. No construction equipment will be operated on weekends, unless advance public notice is provided.

V. References and Report Preparers

A. Written References

The following materials are available for review at the Port of Oakland, 530 Water Street, Oakland, California. To make arrangements to review any of the materials listed below during regular business hours, please contact the Environmental Planning Department at (510) 272-1100.

BAAQMD, 1999. *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans*. December.

BASELINE Environmental Consulting, 2000. *Final Initial Study/Mitigated Negative Declaration, Oakland Telecommunication Access Building, Oakland, California.* May 10.

BASELINE Environmental Consulting, 2001. *Investigation of Soil Quality for Habitat Enhancement Project, Former Seabreeze Yacht Center, Oakland, California.* September.

BASELINE Environmental Consulting, 2001. *Soil and Groundwater Sampling Plan and Closure Plan, Intake and Discharge Tunnels, Former Seabreeze Yacht Center, Oakland, California.* April.

BASELINE Environmental Consulting, 1999. *Phase One Tunnel Remediation Investigation and Phase Two Work Plan, Intake and Discharge Tunnels*. August.

BASELINE Environmental Consulting, 1995. *Third Interim Data Report, Additional Subsurface Investigation, Seabreeze Yacht Center, Oakland.* October.

City of Oakland, 1974. *Oakland Comprehensive Plan*, Environmental Hazards Element. September.

Philip Williams and Associates, 2001. *Former Seabreeze Yacht Harbor – Wetland Enhancement Project, Oakland, Alameda County, California.* October 5.

Port of Oakland, 2001. *Request for Developer Qualifications, Oak-to-Ninth District Properties.* March.

Port of Oakland, 1999. *Estuary Policy Plan*, Oakland, California. June.

Port of Oakland, 1998. *Jack London Aquatic Center at Estuary Park Final Mitigated Negative Declaration/Initial Study*. November 10.

B. Persons Consulted

Jon Amdur, Environmental Assessment Supervisor, Port of Oakland Environmental Planning Department

Tony Chu, Port Civil Engineer, Port of Oakland Engineering Division

Anne Henny, Port Transportation Planner, Port of Oakland Commercial Real Estate Division

Douglas Herman, Port Environmental Scientist, Port of Oakland Environmental Health and Safety Compliance Department

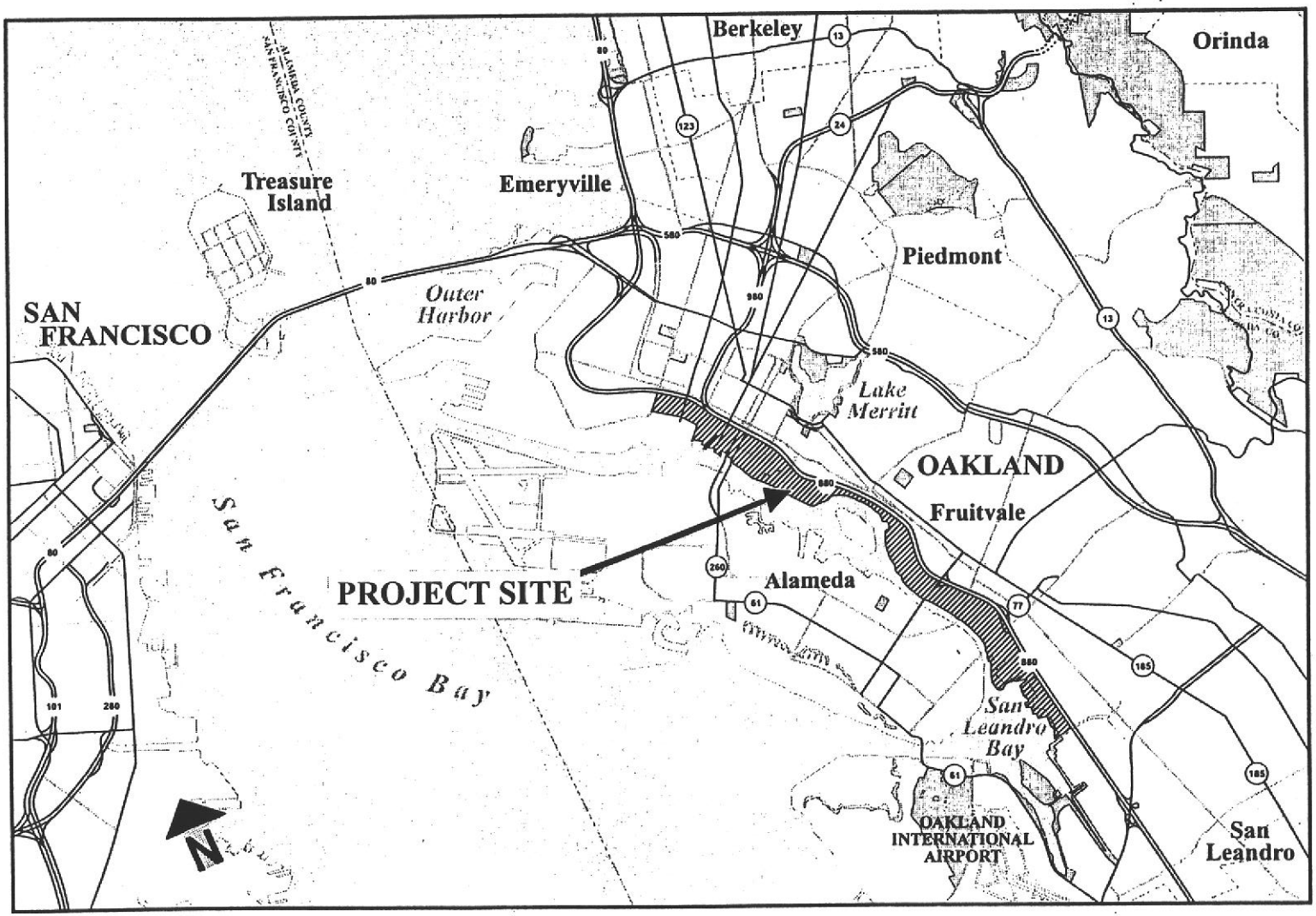
Andy Jahn, Port Environmental Planner, Port of Oakland Environmental Planning Department

Dwane Jensen, Planner II, City of Oakland Community and Economic Development Agency

Yane Nordhav, President, BASELINE Environmental Consulting, Emeryville, California

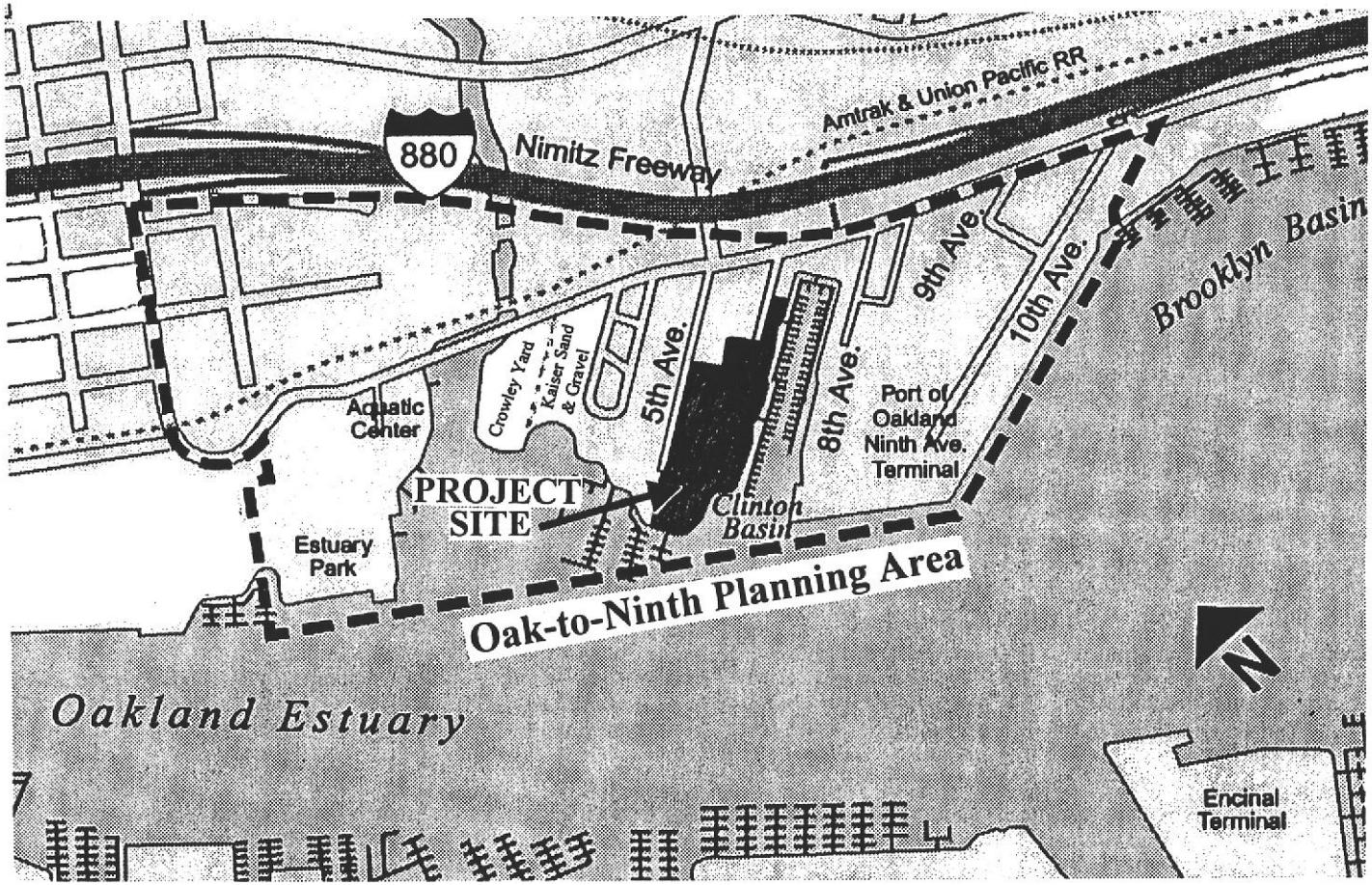
C. Report Preparer

Christy Herron, Port Environmental Planner, Port of Oakland Environmental Planning Department



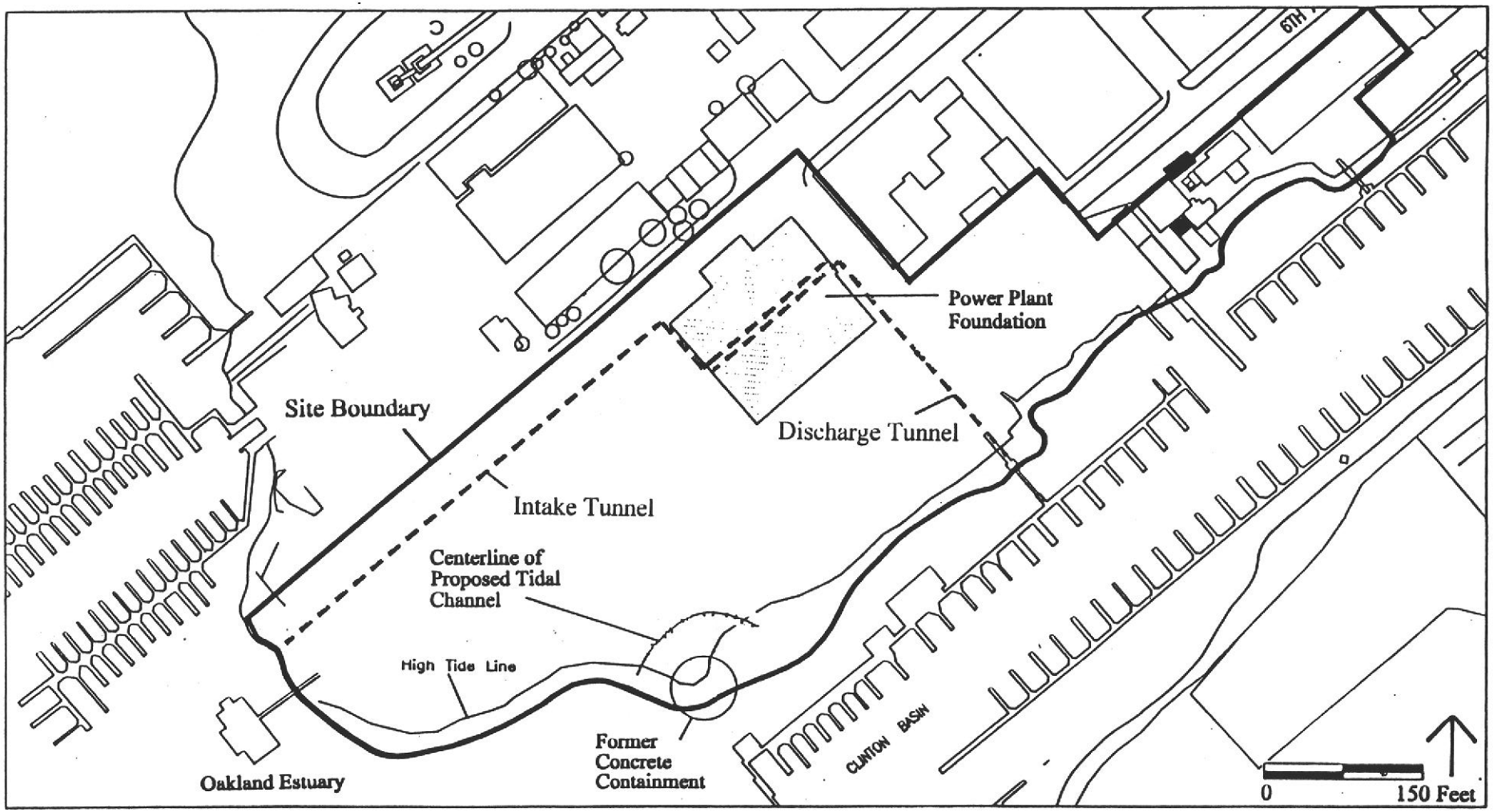
SOURCE: Estuary Policy Plan, 1999

Port of Oakland **October 17, 2001**	*Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project* Initial Study/Mitigated Negative Declaration	**Figure 1** **Project Site Vicinity**



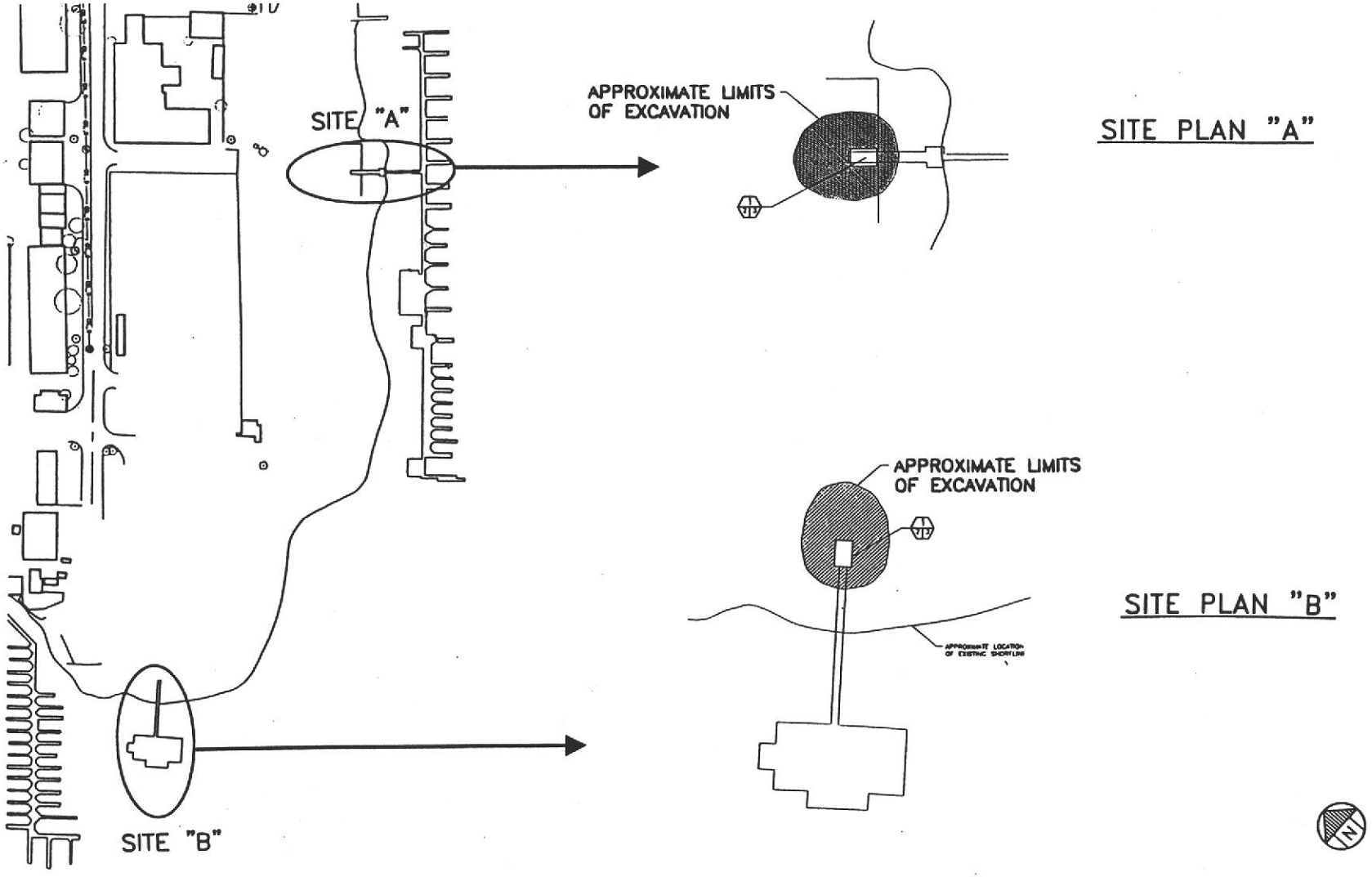
SOURCE: Estuary Policy Plan, 1999

Port of Oakland **October 17, 2001**	*Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project* Initial Study/Mitigated Negative Declaration	**Figure 2** **Project Site Location and Surrounding Land Uses**

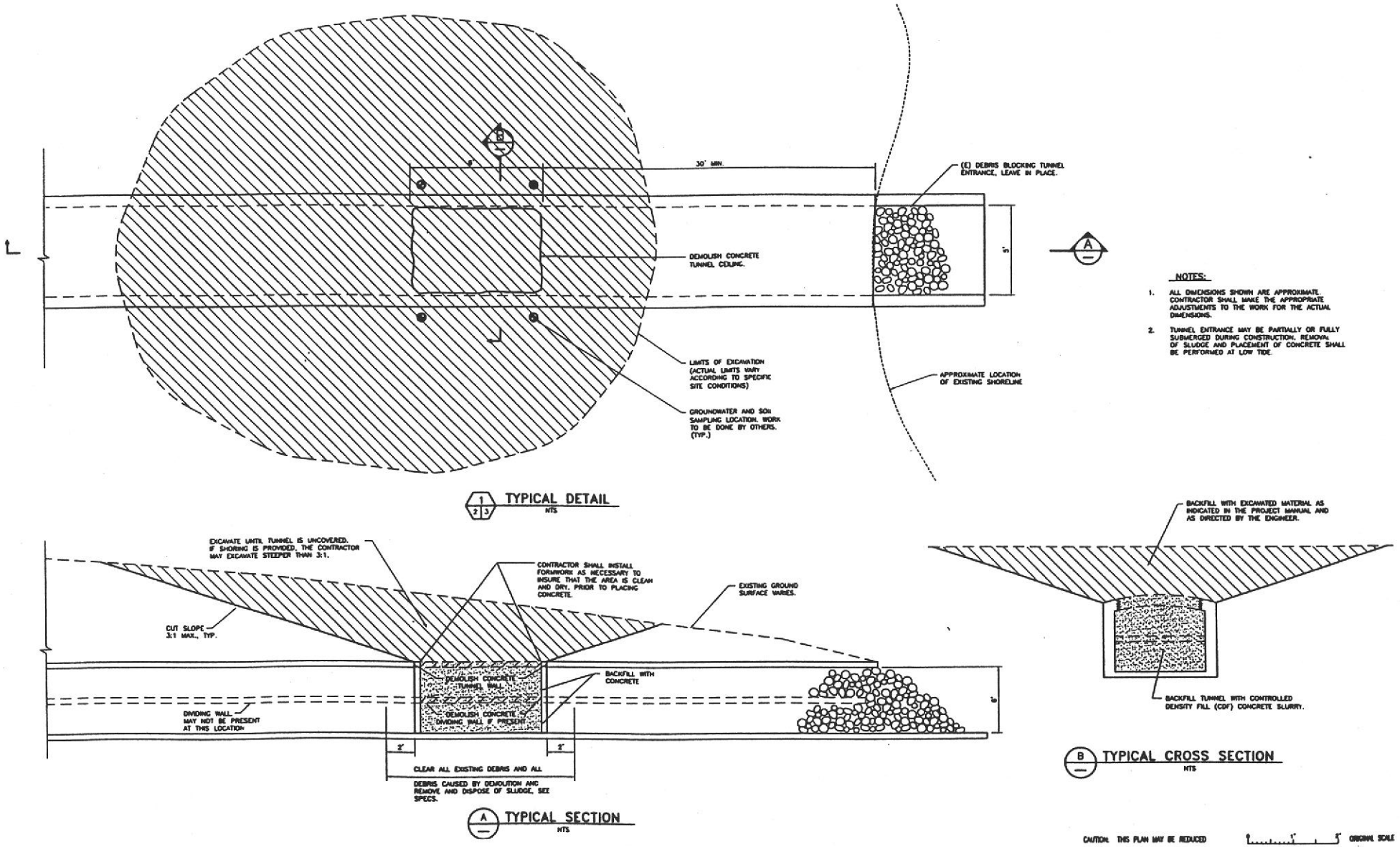


SOURCE: BASELINE Environmental Consultants, 2001

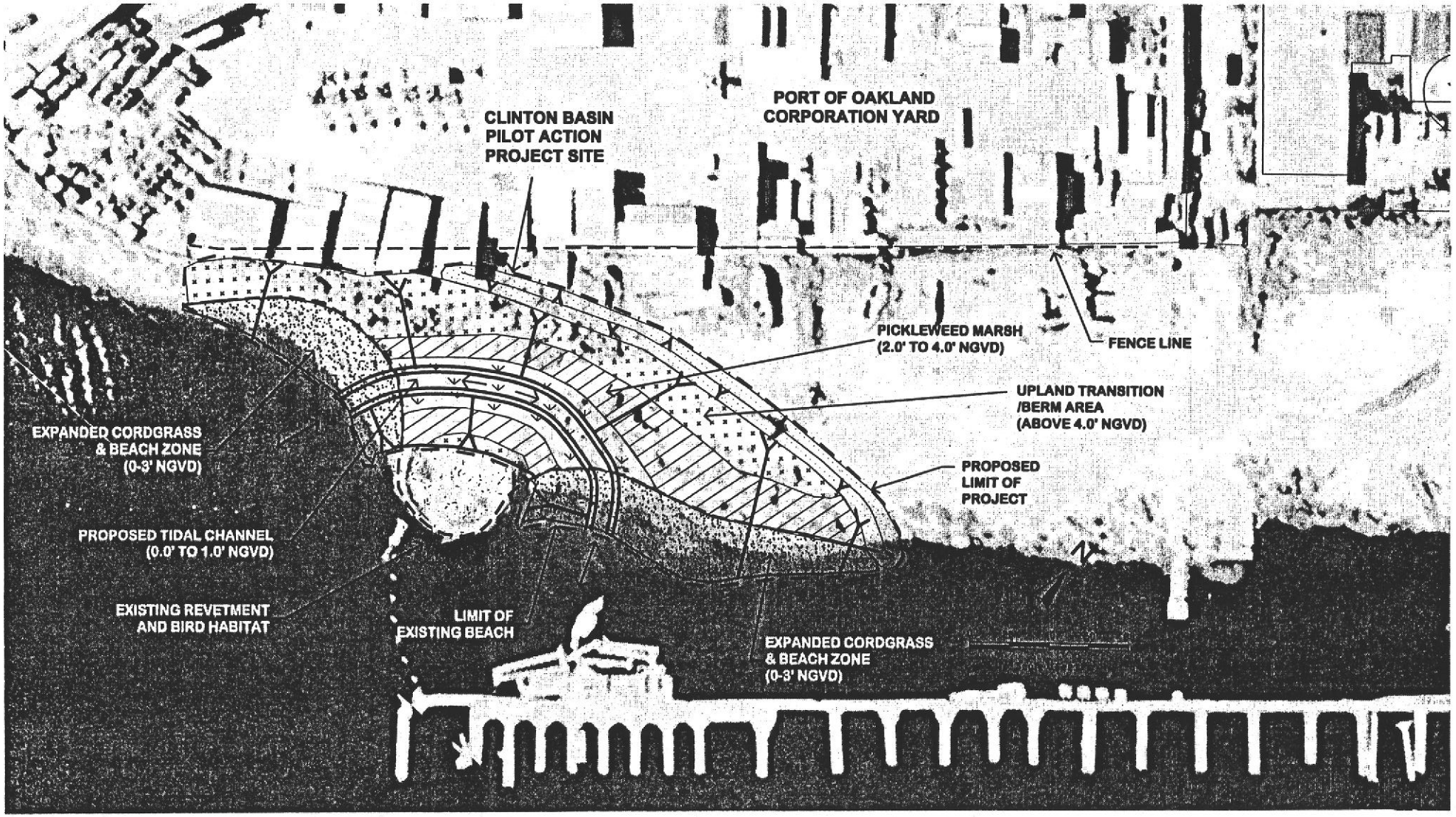
Port of Oakland **October 17, 2001**	*Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project* Initial Study/Mitigated Negative Declaration	**Figure 3** **Project Site Characteristics**



Port of Oakland **October 17, 2001**	*Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project* Initial Study/Mitigated Negative Declaration	**Figure 4** **Proposed Location of Excavations for Tunnel Sealing**



Port of Oakland **October 17, 2001**	*Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project* Initial Study/Mitigated Negative Declaration	**Figure 5** **Tunnel Sealing, Cross-Section**



SOURCE: PWA, 2001

Port of Oakland **October 17, 2001**	*Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project* Initial Study/Mitigated Negative Declaration	**Figure 6** **Conceptual Wetland Enhancement, Plan View**

APPROXIMATE LIMIT OF EARTHWORK

FENCE

NEW BERM
ON-SITE DISPOSAL OF EXCAVATED MATERIAL WITHIN PROJECT LIMIT. REMAINING MATERIAL TO BE SPREAD ON ADJACENT SITE.

MONITORING WELL TYPICAL

NEW CHANNEL

+-3.1 SURVEY SPOT ELEVATION

REVETMENT

BEACH

CORD GRASS, BELOW EL. 2.0

PICKLEWEED, EL. 2.0 TO 4.0

UPLAND, ABOVE EL. 4.0

NEW BERM
UPLAND AND
TRANSITION PLANTING

EXISTING REVETMENT
BIRD ROOSTING AREA
PROTECT IN PLACE

0' NGVD

ESTIMATED EXISTING TOP OF BANK

N

0 20 40 60 80

Scale (feet)

CLINTON BASIN

ESTIMATED EXISTING TOP OF BANK

APPROXIMATE LIMIT OF EARTHWORK

0' NGVD

NOTES:
1) TOTAL PROJECT AREA = 0.63 ACRES
2) SPOT ELEVATIONS FROM GROUND SURVEY ON 5/31/01 BY PWA.
3) BASE MAP DATA IS APPROXIMATE. VERIFY IN FIELD.
4) DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION.
5) VERTICAL DATUM FOR ALL ELEVATIONS IS NGVD.

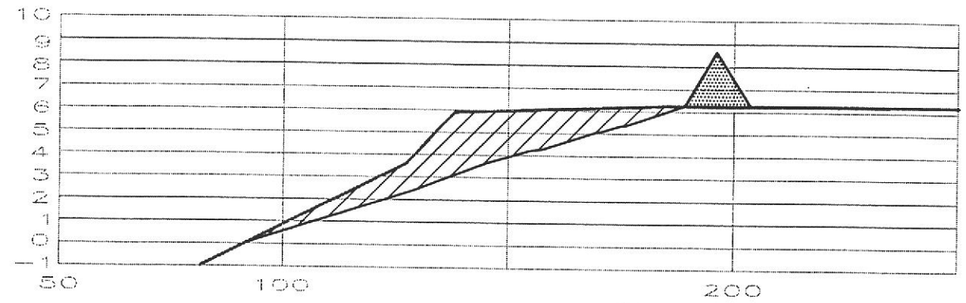
DRAFT

SOURCE: PWA, 2001

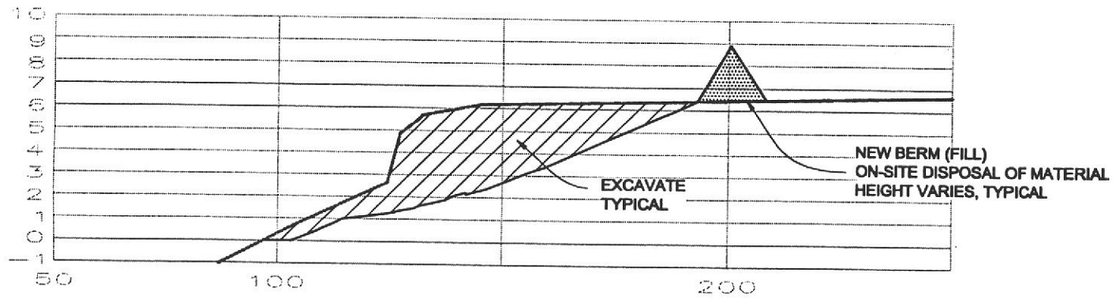
Port of Oakland
October 17, 2001

Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project
Initial Study/Mitigated Negative Declaration

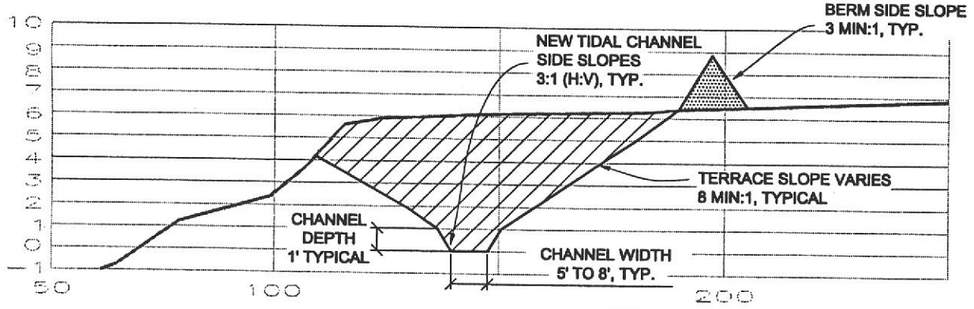
Figure 7
Conceptual Wetland Enhancement, Grading and Planting Plan



CROSS SECTION A — A (1 | 2)



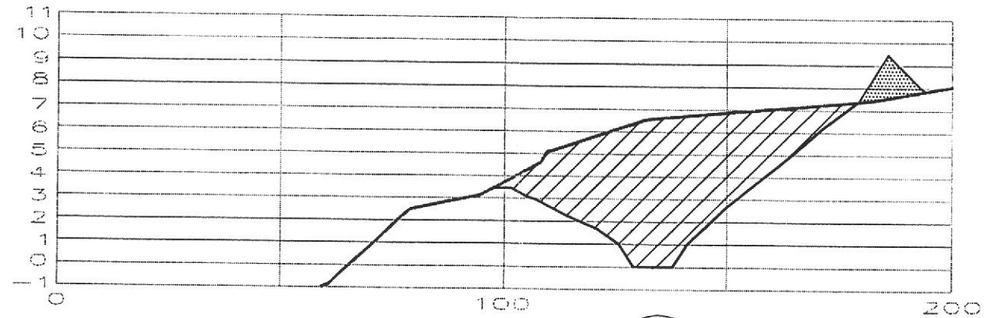
CROSS SECTION B — B (1 | 2)



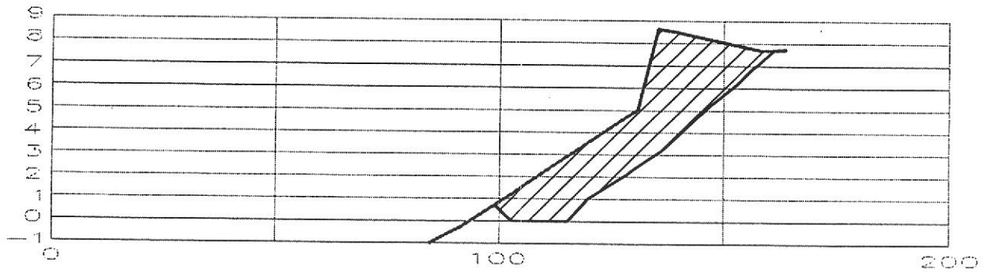
CROSS SECTION C — C (1 | 2)

NOTES:

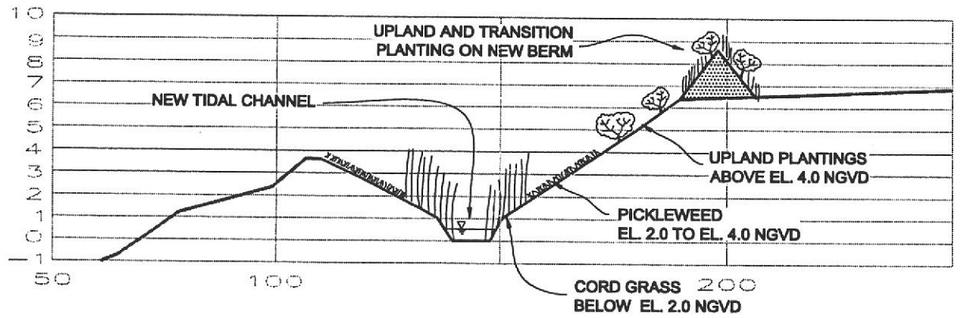
1) EXISTING GRADES ARE APPROXIMATE. VERIFY IN FIELD.
2) DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION.



CROSS SECTION D — D (1 | 2)



CROSS SECTION E — E (1 | 2)



TYPICAL SECTION
PLANTING — F (1 | 2)

LEGEND

- EXCAVATION
- FILL (BERM)

DRAFT

SOURCE: PWA, 2001

Port of Oakland
October 17, 2001

Seabreeze Marina Tunnel Sealing and Wetland Enhancement Project
Initial Study/Mitigated Negative Declaration

Figure 8
Conceptual Wetland Enhancement, Cross-Sections

APPENDIX A
Tunnel Remediation Workplan

BASELINE

SOIL AND GROUNDWATER SAMPLING PLAN AND CLOSURE PLAN INTAKE AND DISCHARGE TUNNELS

JULY 2001

FORMER SEABREEZE YACHT CENTER
Oakland, California

For:

Environmental Health and
Safety Compliance Department
Port of Oakland
Oakland, California

S9171-C1

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686

BASELINE

ENVIRONMENTAL CONSULTING

25 July 2001
S9171-C1.01

Douglas Herman
Environmental Health and Safety Compliance Department
Port of Oakland
530 Water Street, 2nd Floor
Oakland, CA 94607

Subject: Soil and Groundwater Sampling Plan and Closure Plan, Intake and Discharge Tunnels, Former Seabreeze Yacht Center, Oakland, California

Dear Douglas:

Enclosed please find five copies of the Soil and Groundwater Sampling Plan and Closure Plan. As we discussed, a copy of the final report, along with the Project Manual and Plans prepared by the Port Engineering Department, should be submitted to Alameda County Health Care Agency and the California Regional Water Quality Control Board in response to their 13 May 2000 letter to the Port. Should you have any questions, or need further information, please do not hesitate to contact us at your convenience.

Sincerely,

Rhodora Del Rosario, P.E.
Civil Engineer

Yane Nordhav
Principal
Reg. Geologist No. 4009

RPD:YN:km
Enclosure

S9171C11.pln.wpd-7/253/01

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX: (510) 420-1707
Emeryville Petaluma San Francisco

SOIL AND GROUNDWATER SAMPLING PLAN AND CLOSURE PLAN INTAKE AND DISCHARGE TUNNELS

JULY 2001

FORMER SEABREEZE YACHT CENTER
Oakland, California

For:

Environmental Health and Safety Compliance Department
Oakland, California

S9171-C1

BASELINE Environmental Consulting
5900 Hollis Street, Suite D • Emeryville, California 94608
(510) 420-8686

TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

SOIL AND GROUNDWATER SAMPLING PLAN AND CLOSURE PLAN INTAKE AND DISCHARGE TUNNELS

INTRODUCTION

This Soil and Groundwater Sampling Plan and Closure Plan (Plan) has been prepared in response to the 13 May 2000 letter from Alameda County Health Care Agency (County) requesting the collection of additional soil and groundwater samples at the former Seabreeze Yacht Center (site) located in Oakland, California. In particular, the County requested samples be collected along the intake and discharge tunnels to complete site characterization. A copy of the letter is provided in Appendix A and a copy of the Port of Oakland's 9 August 2000 response letter, indicating that a Sampling Plan will be prepared, is provided in Appendix B. In April 2001, a draft of this Plan was submitted to the County and the San Francisco Regional Water Quality Control Board (RWQCB). Comments were received electronically on 25 June 2001 (Appendix C). This Final Plan has been prepared in response to the comments received on 25 June 2001.

BACKGROUND

A steam generating power plant was operating at the site from 1909 through the late 1950s. The power plant was constructed at the northern corner of the site (Figure 2). Saltwater was pumped from an underground intake tunnel to provide cooling water for the steam condensers of the former power plant. Used cooling water was then discharged to Clinton Basin through a separate underground discharge tunnel. The foundation of the power plant and the underground tunnels remain on the site.

The intake tunnel parallels Fifth Avenue, and extends from the northern edge of the power plant concrete foundation to about the southwest shoreline of the site. The intake tunnel is approximately 710 feet long; about 160 feet is within the concrete foundation (Figure 2). The discharge tunnel extends from the southern boundary of the concrete foundation to about the northwest shoreline at the site, in the vicinity of the existing wharf. The discharge tunnel is about 410 feet long; about 160 feet are within the concrete foundation. Other structures associated with the power plant included an aboveground fuel storage tank within a concrete containment and aboveground fuel pipeline; the concrete containment, the tank, and the pipelines have been removed.

Several soil and groundwater investigations at the site have been conducted since 1990. Approximately 250 soil and 69 groundwater samples from nine wells have been collected and analyzed for various chemical compounds. A compilation of the soil and groundwater quality data from the site through January 1999 is provided in the *Compilation of Historic Site Data, Bunker C Toxicity, and Tunnel Remediation Workplan Report* (BASELINE, 1999). The data originally compiled in that report were documented in the following:

- Preliminary Remedial Investigation, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, California, November 1990 (BASELINE, 1990)

- Phase II Remedial Investigation, Seabreeze Yacht Center, Inc., Oakland, California, March 1992 (BASELINE, 1992)

- Phase III Remedial Investigation, Seabreeze Yacht Center, Inc., Oakland, California, September 1994 (BASELINE, 1994a)

- Subsurface Investigation, Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, December 1994 (BASELINE, 1994b)

- Subsurface Investigation, Second Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, April 1995 (BASELINE, 1995a)

- Third Interim Report, Additional Subsurface Investigation, Seabreeze Yacht Center, Inc., Oakland, California, October 1995 (BASELINE, 1995b)

- Analytical Results for Soil Sampling, 4 October 1995, at Seabreeze Site, Oakland, 16 October 1995 (BASELINE, 1995c)

- Concrete Containment Structure Removal and Remediation Oversight, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, California, January 1997. (BASELINE, 1997)

- Quarterly and Annual Groundwater Monitoring Reports dated 19 August 1996, 18 October 1996, 22 January 1997, 14 May 1997, 29 July 1997, 25 February 1998, January 1999, February 2000, and February 2001 (BASELINE, 1996 to 2001).

In August 1999, a tunnel investigation and remediation workplan was prepared by BASELINE on behalf of the Port. The investigation identified the presence of soil and debris/sediments in the tunnel hatchways and manway. The remediation approach presented in the August 1999 workplan was conceptually approved by the County in their 18 May 2000 letter to the Port with the following requirements:

1. Closure plan which prescribes the methods to be used to seal the tunnels and steps to be taken to assure the adequacy of the seal (absence of voids and assure long-term stability and integrity);

2. Sampling plan to take additional soil and groundwater samples along the intake and discharge tunnels to complete site characterization (groundwater samples are to be filtered and passed through silica gel cleanup prior to chemical analysis);

3. Evidence of filing a deed restriction or Risk Management Plan limiting the future land use of the site following completion of site remediation;

4. Health and safety plan for future maintenance or construction workers prior to future site development;
5. Soil and groundwater management plan prior to future site development; and
6. Properly close all on-site monitoring wells and proof of all required items prior to requesting site closure.

The purpose of this Sampling and Closure Plan is to fulfill the first and second requirements described above. In addition, the Port has prepared a Project Manual and Plans that provide technical details for sealing the tunnels (submitted as a separate attachment. The remaining requirements will be addressed following tunnel remediation.

Following tunnel sealing activities, the Port will prepare a Risk Management Plan to fulfill Requirement 4, described above. The Risk Management Plan will identify protocol for managing risks associated with COCs that could potentially be encountered at the site and, at a minimum, will include institutional controls to eliminate exposure to impacted soils (e.g., capping the entire site with clean fill or impervious material). The population to be targeted in the Risk Management Plan will include construction workers, future utility workers, and future commercial site tenants.

SITE CHARACTERIZATION

Past Soil Investigations

In 1989, the County collected soil samples throughout the site, which revealed the presence of high levels of metals (specifically copper) in subsurface soils. In response to these data, the County issued a Notice of Violation to the Port. Since then, approximately 250 random and source-specific soil samples have been collected at the site to fully characterize both the lateral and vertical extent of contamination in subsurface soils.

Samples were collected at potential source areas, including the former power plant, former pipeline supplying fuel to the power plant, stained soil areas, and the aboveground fuel storage tank. In addition, randomly selected soil samples were collected to characterize the soil quality throughout the entire site, independent of the source-specific areas. Both source-specific and randomly selected soil samples were collected in the vicinity of the intake and discharge tunnels. Soil samples were analyzed for one or more of the following constituents (Tables 1 and 2) (soil sample locations are shown on Figures 3 through 5):

- Metals
- Total petroleum hydrocarbons (TPH) as kerosene, diesel, motor oil, and bunker C
- Oil and grease
- Volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)
- Creosote
- Polycyclic biphenyls (PCBs)

The results of past soil investigations are documented in the previously-referenced reports which have all been submitted to the County. Data from the site investigations indicated that the contaminants of concern (COCs) at the site are metals and TPH as diesel, motor oil, and bunker C fuel. Contaminated soil located within the vicinity of the former aboveground fuel tank was removed during remediation activities conducted in 1996.

Past and Ongoing Groundwater Investigations

Groundwater investigations at the site began in 1991. Nine shallow groundwater monitoring wells have been installed throughout the site. A total of 69 groundwater samples have been collected from hydropunches and wells. The samples were analyzed for one or more of the following (Tables 1 and 2) (groundwater monitoring well locations are shown on Figure 6):

- Metals
- TPH as gasoline, kerosene, diesel, motor oil, and bunker C
- Oil and Grease
- VOCs
- Methyl tertiary butyl ether (MTBE)

The results of past groundwater investigations are documented in the previously-referenced reports. The COCs in the groundwater are limited to metals and TPH as diesel, motor oil, and bunker C. From July 1996 through June 1997, quarterly groundwater monitoring was conducted at five wells, as required by the County (County, 1997). The samples were analyzed for copper, lead, and TPH as diesel. Following the June 1997 monitoring event, the County approved the Port's request to 1) reduce monitoring to annually 2) monitor four wells instead of five, and 3) to analyze subsequent groundwater samples for TPH as diesel only. The most recent groundwater monitoring occurred in January 2001. None of the groundwater samples collected during any of the annual monitoring events (since January 1998) have contained TPH as diesel above the laboratory reporting limits of approximately 0.05 milligram per liter (mg/L).

The groundwater at the site would not be considered a potential drinking water source based on the electrical conductivity measured during monitoring activities. The State Water Resources Control Board (SWRCB) has defined a potential drinking water source as one that contains an electrical conductivity of less than 5,000 micromhos per centimeter (µmhos/cm) or produces more than 200 gallons per day per well. The electrical conductivity of the groundwater at the site has consistently exceeded 5,000 µmhos/cm.

Past Human Health Risk Assessment

In 1998, a human health risk assessment was conducted to evaluate risks to current beach cleanup workers under existing conditions and to future commercial workers from potential exposure to site contaminants (i.e., TPH and metals) in soil and groundwater.[1] The assessment concluded that the

[1] The human health risk assessment included evaluation of contaminants present along the shoreline.

calculated cumulative excess lifetime cancer risk and hazard index for current and future workers are below the negligible excess lifetime cancer risk of 1 x 10^{-6} (one-in-one million) and below the hazard index of 1.0. For metals (i.e., lead), the assessment concluded that the blood lead concentration in current and future workers would not exceed the threshold of 10 micrograms per deciliter at the 99th percentile. Based on the assessment results, institutional controls to protect current site users and future commercial workers were not warranted.

SOIL AND GROUNDWATER DATA EVALUATION

The purpose of this section is to demonstrate that representative samples have already been collected from the site to fully characterize the soil and groundwater quality and to evaluate whether the COCs constitute a potential excess risk to users of the site or ecological receptors.

Representativeness of Data

Both random and source-specific soil samples have been collected at depths ranging from zero to 8.5 feet below ground surface. Random soil samples were collected to provide representative samples of the subsurface soils at the site, as specified in the U.S. Environmental Protection Agency's (U.S. EPA) *Test Methods for Evaluating Solid Waste, Physical/Chemical Method, SW-846* (SW-846) (U.S. EPA, 1986). Source-specific soil samples were collected to determine the horizontal and vertical extent of contamination from known sources at the site.

Regional Water Quality Control Board Risk-Based Screening Levels

The San Francisco Regional Water Quality Control Board (SFRWQCB) has prepared a document entitled *Application of Risk-Based Screening Levels (RBSLs)and Decision Making to Sites with Impacted Soil and Groundwater, Interim Final* (SFRWQCB, 2000). The document presents RBSLs for soil and groundwater that consider protection of both human health and ecological receptors.

The RBSLs for **soil** take into account: 1) protection of human health through direct and indirect contact of impacted soil, and inhalation of vapors in indoor air; 2) protection of groundwater quality from leaching of contaminants; 3) protection of terrestrial ecological receptors; and 4) protection against nuisance concerns and general resource degradation.

For **groundwater** quality, the RBSLs consider: 1) protection of human health by ingestion of contaminated groundwater and inhalation of vapors in indoor air; 2) protection of aquatic life (from discharge to surface water); and 3) protection against nuisance concerns (e.g., odors) and general resource degradation.

In general, contaminants present at concentrations below the corresponding RBSLs would not be considered to pose a significant threat to human health and the environment. However, contaminant concentrations above the RBSLs do not necessarily indicate that a significant risk exists at a site. It does, however, generally indicate that additional investigation and/or a more in-depth evaluation of potential risks is warranted.

The RBSLs presented in the SFRWQCB document are compiled in a series of four lookup tables each of which includes RBSLs for soil and groundwater.[2]

For each lookup table, soil RBSLs are provided for two land use scenarios, residential and industrial/commercial. Each lookup table also provides two groundwater RBSLs for 1) drinking water resource (either threatened or not threatened) and 2) "elevated threat to surface water." The RBSLs established under the drinking water resource scenario are intended to protect aquatic life. According to the SFRWQCB document, the levels provided under the "elevated threat to surface water" scenario are intended to protect human health from consumption of aquatic organisms in which chemicals have bioaccumulated. Consideration of the bioaccumulation criteria, will be most appropriate for sites where the potential discharge of large plumes of impacted groundwater have long-term impacts to surface water quality.

Methodology for Soil and Groundwater Data Comparison with RBSLs

Soil and groundwater data for the COCs (i.e., metals and TPH diesel, motor oil, and bunker C) collected from the site were compared to the corresponding RBSLs to determine whether soils and groundwater could potentially pose a significant threat to human health and the environment.[3] Specifically, the 95 percent one-tailed Upper Confidence Limits (95UCL) for the individual metals and TPH (as diesel, motor oil, and bunker C) in soil and groundwater were calculated (Tables 3 through 8) and compared to the RBSLs. In calculating the 95UCLs, a value of one-half of the laboratory reporting limits was used for data that were not reported above the laboratory reporting limits.[4]

For the TPH diesel and motor oil groundwater data, the 95UCL was calculated only using the data from samples that were subjected to silica gel cleanup. The 95UCL for TPH bunker C was not calculated since none of the samples subjected to a silica gel cleanup contained TPH bunker C above the laboratory reporting limits of 0.3 or 0.5 mg/L.

---

[2] The four lookup tables are referenced as Tables A, B, C, and D. Lookup tables A and B provide RBSLs for near-surface soil at depths less than three meters; Table A also provides RBSLs for groundwater that is considered a current or potential source of drinking water and Table B provides RBSLs for groundwater that is not considered a current or potential source of drinking water. Table C and D provide RBSLs for soil at deeper than three meters; Table C also provides RBSLs for groundwater that is considered a current or potential source of drinking water and Table D provides RBSLs for groundwater that is not considered a current or potential source of drinking water.

[3] Previous soil samples collected in areas that have been removed as part of past remediation activities (e.g., concrete containment removal) are not included in this data evaluation.

[4] For TPH as bunker C, two sets of soil and groundwater data are available; one set is based on bunker C quantification using the laboratory standard and the second is based on quantification using the site standard. For this evaluation, the 95UCL was individually calculated for the two sets of soil data. For groundwater, only the data quantified using the laboratory standard were considered since none of the site standard data were from samples subjected to a silica gel cleanup.

The 95UCLs were then compared to the corresponding RBSLs provided in "Table B" of the SFRWQCB document. These RBSLs provide screening levels for near-surface soils less than three meters (ten feet) below ground surface and for groundwater that is not considered a potential drinking water source. The soil RBSLs for the commercial/industrial land-use scenario were used since the site will not be developed for residential purposes. (deed restriction) (Gw not considered drinking water source)

The groundwater RBSLs for "Drinking Water Resource not Threatened" were used for comparison (Appendix C of the SFRWQCB document).[5] In addition, a dilution attenuation factor (DAF) of ten was conservatively applied to the groundwater RBSLs to account for groundwater attenuation.[6] The average distance from the groundwater monitoring wells to the surveyed highwater tide line of the Oakland Estuary Clinton Basin is estimated to be greater than 90 feet. Therefore, application of a DAF to the RBSLs is reasonable to account for the attenuation of COCs in groundwater between the sampling location and the point of discharge to the Oakland Estuary/Clinton Basin, where the ecological receptors are present.[7]

Soil and Groundwater Data Evaluation Results

The 95UCLs for metals and TPH in soil and groundwater are provided in Tables 3 through 8. The 95UCLs for **arsenic, chromium, and TPH as diesel, motor oil, and bunker C** (laboratory and site standards) exceeded the corresponding soil RBSLs; the 95UCLs for the remaining metals were below the corresponding soil RBSLs.[8]

For groundwater, the 95UCLs for **barium, lead, selenium, and silver** exceeded the corresponding groundwater RBSLs. The 95UCLs for the remaining metals and for TPH as diesel, motor oil, and bunker C were below the corresponding RBSLs.[9] The following discussion provides further evaluation of whether the COCs for which the 95UCLs exceeded RBSLs could contribute to unacceptable human health risks or environmental degradation.

---

[5] The SFRWQCB also includes mercury RBSLs for the "to protect against elevated threats to surface water" scenario. The mercury data were also compared with this RBSLS.

[6] The National Oceanic and Atmospheric Association (NOAA) acknowledges that some level of dilution occurs when groundwater is discharged to surface water. NOAA considers a dilution attenuation factor of ten to be a conservative dilution factor for the discharge of groundwater to surface water.

[7] Similar DAFs have been established for other RWQCB-adopted site cleanup requirements within the Bay Area, including the adoption of site cleanup requirements for the proposed Eastshore Park Property in Alameda and Contra Costa Counties (Order No. 98-072). For this order, a DAF of ten was applied on the groundwater action levels for areas beyond the 50-foot shoreline (SFRWQCB, 1998).

[8] The 95UCLs were not calculated for selenium or thallium since none of the soil samples contained these metals above the laboratory reporting limit of 2.5 mg/kg. However, one-half of the laboratory reporting limit is below the corresponding selenium and thallium RBSLs of 10 and 29 mg/kg, respectively.

[9] The 95UCL was not calculated for cadmium, chromium, mercury, nickel, and zinc, since none of the samples contained these metals above the laboratory reporting limits. However, one-half of the laboratory reporting limits for these metals is below the corresponding DAF-adjusted RBSLs.

Arsenic in Soil

The 95UCL for arsenic in soil is 7.7 milligrams per kilogram (mg/kg). The RBSLS for arsenic is 2.7 mg/kg and is based on direct contact of humans with soil (ingestion and dermal contact). The RBSLS was back calculated from an excess lifetime cancer risk of 1×10^{-6} (one-in-one million). In calculating the RBSLS, it was assumed that the industrial/commercial worker would spend 250 days a year at the site for 25 years, ingest 50 mg of soil per day, and other conservative assumptions. Exposure of industrial/commercial workers to 7.7 mg/kg (calculated 95UCL concentration) would contribute to a 2.85×10^{-6} excess lifetime cancer risk, which is within the range considered by regulatory agencies to be of no significant risk (1×10^{-4} to 1×10^{-6}).

Exposure of impacted arsenic soil to future tenants would also be controlled through the implementation of the Risk Management Plan. Therefore, the presence of arsenic at the site would not present an unacceptable health risk for future users at the site.

Chromium in Soil

The 95UCL for chromium in soil is 25 mg/kg. The RBSLS for total chromium is 12 mg/kg and is also based on direct contact with soil by construction/trench workers. Exposure by the construction/trench worker to 25.3 mg/kg total chromium would result in a 2.1×10^{-6} excess lifetime cancer risk. As previously indicated, this risk estimate is within the range of risk estimates considered to be no significant risk by regulatory agencies. Exposure of impacted chromium soil to future tenants would also be controlled through the implementation of the Risk Management Plan. Therefore, the presence of chromium at the site would not present an unacceptable health risk for future users at the site.

TPH as Diesel, Motor Oil, and Bunker C in Soil

The 95UCLs for TPH as diesel, motor oil, bunker C quantified using the laboratory standard, and TPH as bunker C quantified using the site standard are 1,007.3, 1,050, 5,474.9, and 5,602.9 mg/kg, respectively; the corresponding soil SFRWQCB RBSLs for these contaminants are 500 mg/kg for TPH diesel (middle distillates), and 1,000 mg/kg for TPH as motor oil or bunker C (residual fuels).

The RBSLs for TPH as diesel, motor oil, and bunker C are for the protection of groundwater quality through the mechanism of constituents leaching from the soil into the groundwater. These RBSLs were developed to protect aquatic life from discharge of impacted groundwater to surface water.[10] The RBSLs were conservatively calculated by assuming no dilution would occur before discharge to surface water. The RBSLS document indicates that these soil RBSLs presented for many of the petroleum-related compounds and TPH do not consider the widely recognized potential for natural attenuation in groundwater (SFRWQCB, 2000). If actual threat to groundwater quality can be demonstrated to be minimal, then significantly less stringent screening levels for soil may be appropriate (SFRWQCB, 2000).

---

[10] The corresponding human health direct contact SFRWQCB RBSLS for TPH as diesel, motor oil, and bunker C are 11,000 mg/kg. The calculated 95UCLs for these constituents are below the SFRWQCB RBSLs.

The source of petroleum contamination at the site is attributed to the operation of the former power plant. The power plant operated at the site from 1909 until the late 1950s and was then abandoned in 1959. The large aboveground concrete containment for the former fuel tank was removed in 1996. Equilibrium between the petroleum hydrocarbons in the soil and the groundwater is expected to have been reached over the past 40+ years. Therefore, the TPH concentrations in groundwater were compared to the corresponding groundwater RBSLs to determine whether there would be a potential risk to aquatic life from contaminants in soil leaching into the groundwater and subsequently to the Oakland Estuary/Clinton Basin.

The 95UCL for TPH diesel and motor oil (silica gel cleanup data) in groundwater (4.2 and 0.17, mg/L, respectively) are below the corresponding groundwater DAF-adjusted RBSLs of 6.4 mg/L. In addition, none of the laboratory reporting limits for TPH bunker C exceed the corresponding DAF adjusted RBSLS of 6.4 mg/L.[11] Therefore, these data indicate that the TPH in the soils are not a threat to groundwater quality since actual groundwater concentrations are below the DAF-adjusted RBSLs.

Barium in Groundwater

The 95UCL for barium in groundwater is 0.11 mg/L. Since none of the groundwater samples were filtered prior to analysis the value is likely an over-estimate of the barium concentration dissolved in the groundwater. The RBSLS for barium is 0.0039 mg/L and is based on the freshwater ecotox chronic threshold established by U.S. EPA. Since the groundwater discharges to a saltwater environment, use of a freshwater criterion is inappropriate. However, SFRWQCB has not identified a corresponding ecotox chronic threshold for saltwater. According to the 1986 U.S. EPA Water Quality Criteria for Water, soluble barium concentrations in marine water (saltwater) generally would have to exceed 50 mg/L before toxicity to aquatic life would be expected (1986, U.S. EPA). The 95UCL for barium (0.11 mg/L) in the groundwater is well below this threshold (50 mg/L) and, therefore, does not appear to contribute an adverse risk to aquatic receptors.

Lead in Groundwater

The 95UCL for lead in groundwater is 0.017 mg/L. It should be noted that the 95UCL for lead in groundwater is based on 46 data points, of which only 16 samples were reported above the laboratory reporting limit. Of these samples, five were filtered prior to analysis. Therefore, the calculated 95UCL is likely artificially elevated and is greater than the dissolved lead concentration.

The RBSLS for lead in groundwater is based on the Region 2 Basin Plan and is equivalent to the U.S. EPA freshwater criteria for continuous concentration (0.0032 mg/L) (SFRWQCB, 2000). The corresponding saltwater criterion for continuous concentration is 0.0081 mg/L (under the California Toxics Rule) (SFRWQCB, 2000). The 95UCL concentration of 0.017 mg/L slightly exceeds this level and is well below the DAF-adjusted RBSLS concentration of 0.081 mg/L. None of the actual dissolved lead concentrations (from filtered samples) reported above the laboratory reporting limits

---

[11] None of the samples subjected to a silica gel cleanup contained TPH bunker C above the laboratory reporting limits.

was above the saltwater criterion of 0.0081 mg/L or DAF-adjusted criterion of 0.081 mg/L. Therefore, the dissolved lead concentrations in the groundwater do not appear to pose an adverse risk to aquatic receptors.

Selenium in Groundwater

The 95UCL for selenium in groundwater is 0.01 mg/L. The 95UCL was based on four data points, three were reported as "ND" (laboratory reporting limit of 0.005 mg/L). The one sample quantified above the laboratory reporting limit was 0.011 mg/L and was not filtered prior to analysis.

The RBSLS for selenium in groundwater (0.005 mg/L) is based on the ecological freshwater criteria for continuous concentration. The corresponding saltwater continuous concentration is 0.071 mg/L (SFRWQCB, 2000). The 95UCL concentration (and the one reported selenium concentration above the laboratory reporting limit) was well below this level (as well as the DAF-adjusted concentration of 0.71 mg/L). Therefore, selenium in the groundwater does not appear to pose an adverse risk to aquatic life.

Silver in Groundwater

None of the samples contained silver above the laboratory reporting limits of 0.01 and 0.007 mg/L. The RBSLS for silver (0.00012 mg/L) is based on the freshwater criteria for continuous concentration established by U.S. EPA. The corresponding saltwater criteria for continuous concentration is 0.00092 mg/L. One-half of each of the two laboratory reporting limits (0.005 and 0.0035 mg/L) is below the DAF-adjusted saltwater criteria. Therefore, silver in the groundwater does not appear to contribute to adverse ecological impacts.

Conclusion

The concentrations of COCs (metals and TPH) in soil and groundwater at the site do not appear to contribute to adverse human health or ecological impacts. This conclusion is based on a comparison of representative soil and groundwater quality site data against SFRWQCB RBSLs. Therefore, additional site characterization is not needed to assess potential human health and ecological risks from soil and groundwater at the site.

SOIL AND GROUNDWATER SAMPLING PLAN ALONG INTAKE AND DISCHARGE TUNNELS

As indicated in the Closure Plan for the intake and discharge tunnel remediation, a section of the each tunnel would be exposed, punctured, and sealed with concrete fill. During tunnel remediation, the grab soil and groundwater samples with be collected in the excavation areas where the tunnels would be exposed. The purpose of the soil and groundwater sampling would be to evaluate the soil and groundwater quality in the intake and discharge tunnel vicinity and ensure that the soil and groundwater quality in these areas are consistent with the quality found throughout the rest of the site.

Four soil borings will be installed at each excavation area down to the estimated bottom of the tunnel (Figure 7). Up to four soil samples will be collected in each soil boring, at depths between the top and bottom of the tunnel. Up to 16 soil samples will be collected from each excavation. The soil samples collected from each boring will be composited into one sample by the laboratory before analysis, resulting in a total of eight composite soil samples. The laboratory would retain a portion of each discrete sample in the event additional analyses of these samples were needed.

Direct-push method will be used to install the soil borings and collect the soil samples. Continuous samples will be collected to identify the lithology. All samples retained for chemical analysis will be handled in accordance with BASELINE's Standard Operating Procedures and submitted to a State-certified laboratory for analysis. Soil samples will be submitted to STL Chromalab in Pleasanton and analyzed for Title 22 metals using EPA Methods 6000/7000 series and TPH as diesel, motor oil, and bunker C using Modified EPA Method 8015 with silica gel cleanup.

Grab groundwater samples will be collected from two of the four soil borings in each excavation area. The grab groundwater samples will be collected by inserting a temporary perforated well casing with a sand pack filter into the boring until sufficient water has accumulated in the boring. Groundwater samples will be retrieved either with a new disposable bailer or a peristaltic pump and new tubing. The groundwater samples will be submitted to STL Chromalab in Pleasanton and analyzed for Title 22 metals and TPH diesel, motor oil, and bunker C. The groundwater samples will be filtered by the laboratory prior to performing the metals and TPH analyses; the samples would also be subjected to a silica gel cleanup prior to performing the TPH analysis.[12]

A site-specific health and safety plan will be prepared prior to commencement of field activities. All field activities will be directed by a BASELINE registered geologist. Generated soil cuttings will be placed in drums, sealed, labeled, and retained at the site. Decontamination water will also be drummed and retained on-site. Disposal of the drummed soil and decontamination water will be undertaken by the Port.

Initial screening of the soil data would be conducted to evaluate whether soil excavated during tunnel remediation activities could be reused as backfill on-site. The soil screening evaluation would be conducted using Risk-Based Screening Levels (RBSLs) developed for protection of human health from direct exposure of chemicals contained in the soil and compiled by the RWQCB, San Francisco Bay Region. The RBSLs are based on the U.S. EPA Region IX Preliminary Remediation Goals and are compiled in the 2000 RWQCB document (Application of RBSLs and Decision Making to Sites with Impacted Soil and Groundwater, Interim Final). The RBSLs would be based on a commercial/industrial scenario.[13] The RBSLs of TPH (diesel, motor oil, and bunker C), lead, and copper would be 11,000, 750, and 15,000 mg/kg, respectively.

Table B-2

[12] The laboratory method spike samples will be subjected to the same procedures as the collected samples and will be spiked before sample preparation.

[13] Soil quality data would not be compared to RBSLs developed for protection of ecological receptors since groundwater monitoring data collected from the site have indicated that the contaminants present at the site do not pose an adverse ecological impact.

The evaluation would compare the reported maximum concentrations of the chemicals of concern with the RBSLs; soil data not reported above the laboratory reporting limits would not be considered. Chemical concentrations that exceed the RBSL would further be evaluated by: 1) calculating the 95% UCL of the mean of the soil data (from all composited samples) if one of the composited samples exceeded the RBSL; and 2) comparing the 95% UCL with the corresponding RBSL. If the 95% UCL exceeded the RBSL, the individual samples from the composites would be analyzed discretely to assess whether the 95% UCL for all samples would exceed the RBSL. If the RBSL were exceeded, the soil would not be reused on-site.

A groundwater risk-based screening evaluation would also be conducted to confirm the groundwater quality in the tunnel vicinity will not constitute potentially adverse human health or ecological risks. The evaluation would include using RBSLs developed for protection of human health (from indoor air impact), aquatic life, and elevated threat to surface water. These RBSLs would be based on the San Francisco Bay Area Basin Plan for Region 2, Interim California Toxics Rule Criterion for Continuous Concentration, U.S. EPA Criterion for Continuous Concentration, and screening levels carried our for the Presidio of San Francisco and San Francisco Airport; the RWQCB RBSL document includes a summary of these screening levels. The RBSLs for TPH (diesel, motor oil, and bunker C), lead, and copper would be 0.64, 0.0081, and 0.0031 mg/L, respectively. The methodology for conducting the evaluation would be similar to the approach described above for the soil evaluation.

A report will be prepared to document field sampling activities, data evaluation, conclusions, and recommendations. Sampling activities will be undertaken following approval of this sampling plan by the County and the RWQCB.

CLOSURE PLAN FOR SEALING INTAKE AND DISCHARGE TUNNELS

Previous investigations at the tunnel hatchways indicate that the tunnels contain debris/sediments, water with an oily sheen on the surface, and free product. Water samples collected in the tunnel hatchways in 1995 contained total petroleum hydrocarbons as diesel and bunker C in the tunnel water, ranging from 0.33 to 2.2 mg/L for TPH diesel and less than the laboratory reporting limit to 6.8 mg/L for TPH bunker C (BASELINE, 1995). The water contained in the tunnels appears to be directly connected to Clinton Basin and the Estuary, since water level measurements collected in the intake and discharge tunnel hatchways fluctuated with rising and falling tides.

This Closure Plan describes the approach for sealing the intake and discharge tunnels, as required by the County. The purpose of sealing the tunnels is to prevent petroleum contaminated water and/or sediments, potentially present in the tunnels, from discharging to the Estuary. This Closure Plan supercedes the tunnel sealing approach described in the August 1999 Phase One Tunnel Remediation and Phase Two Work Plan Intake and Discharge Tunnels Report submitted to the County (BASELINE, 1999).[14]

---

[14] As indicated previously, the Project Manual and Plans provide the technical details for sealing the tunnels; the Manual and Plans have been provided to the County as a separate attachment.

A section of the intake and discharge tunnels will be sealed within the shoreline vicinity.[15] The seal will consist of concrete and will be approximately five to ten feet long, three feet wide (tunnel width), and six feet high (tunnel height). The tunnel seals will be located approximately 30 feet from the nearest high tide shoreline (Figure 7).

The tunnel seal sections will be located using exploratory excavation methods. Existing drawings and past field information will be used to determine the sections.[16] Thereafter, the concrete tunnel top and inner horizontal dividing wall (if present) will be demolished using a backhoe or similar excavation equipment. Generated concrete debris (from tunnel top/wall demolition) and sediment or sludge encountered in and within two feet of the tunnel seal section will be completely removed from the excavation.[17] Concrete and sediment or sludge will be removed during lowest tide to ensure that water from the Estuary/Clinton Basin is not present in the excavation during removal activities. The tunnel side walls and bottom will be left in place (Figure 7).

After the seal sections are cleared, formwork will be installed in the seal sections, as necessary, to prevent water (from the Estuary/Clinton Basin) or sludge or sediment from entering the seal sections. The formwork will include the placement of barriers at the seal section ends and along the length of the tunnels (Figure 7). At lowest tide, controlled density fill concrete slurry will be poured within the formwork to create the concrete seal. The slurry will be poured to the top of the tunnel to ensure a complete and adequate seal.

After the seal is constructed, the excavation will be backfilled to the surface with excavated soil pending the results of the soil screening evaluation (see Sampling Plan section). Excavated soil not used for backfill would be characterized and disposed of off-site in accordance with regulatory requirements.[18] Concrete debris (from tunnel top/wall demolition) and sediment or sludge removed from the tunnels will also be characterized and transported off-site for disposal, in accordance with regulatory requirements.

This Closure Plan would be implemented following receipt of approval by the County. The Port will be responsible for implementing this workplan and oversee contractor activities. Following completion of tunnel sealing activities, a report would be prepared by the Port to document field activities, conclusions, and disposal activities.

---

[15] Existing drawings and past site visits indicate that the tunnel ends extend beyond the shoreline and terminate within the estuary/basin. It would not be feasible to attempt to seal the tunnel ends.

[16] The precise tunnel locations could not be determined using the video camera and hydrosystem locator unit during the 1999 tunnel investigation (BASELINE, 1999).

[17] Sediment and/or sludge removed from the tunnels would be stockpiled on top of, and covered with, visquene.

[18] All excavated soil will be stockpiled on top of and underneath visquene.

LIMITATIONS

The conclusions presented in this report are professional opinions based on the indicated data described in this report. They are intended only for the purpose, site, and project indicated. Opinions and recommendations presented herein apply to site conditions existing at the time of our study. Changes in the conditions of the subject property can occur with time due to natural processes or the works or the works of man, on the subject sites or on adjacent properties. Changes in applicable standards can also occur as the result of legislation or from broadening knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control.

REFERENCES

Alameda County Health Care Services, Environmental Health Services, 1997, Letter to the Port of Oakland, August 28.

BASELINE, 1996 to2001, Quarterly and Annual Groundwater Monitoring Reports dated 19 August 1996, 18 October 1996, 22 January 1997, 14 May 1997, 29 July 1997, 25 February 1998, January 1999, February 2000, and February 2001.

BASELINE, 1999, Compilation of Historic Site Data, Bunker C Toxicity, and Tunnel Remediation Work Plan, Seabreeze Yacht Center Study Area, Oakland, April.

BASELINE, 1997, Concrete Containment Structure Removal and Remediation Oversight, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, California, January.

BASELINE, 1995a, Subsurface Investigation, Second Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, April.

BASELINE, 1995b, Third Interim Report, Additional Subsurface Investigation, Seabreeze Yacht Center, Inc., Oakland, California, October.

BASELINE, 1995c, Analytical Results for Soil Sampling, 4 October 1995, at Seabreeze Site, Oakland, 16 October.

BASELINE, 1994a, Phase III Remedial Investigation, Seabreeze Yacht Center, Inc., Oakland, California, September.

BASELINE, 1994b, Subsurface Investigation, Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, December.

BASELINE, 1992, Phase II Remedial Investigation, Seabreeze Yacht Center, Inc.,Oakland, California, March.

BASELINE, 1990, Preliminary Remedial Investigation, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, California, November.

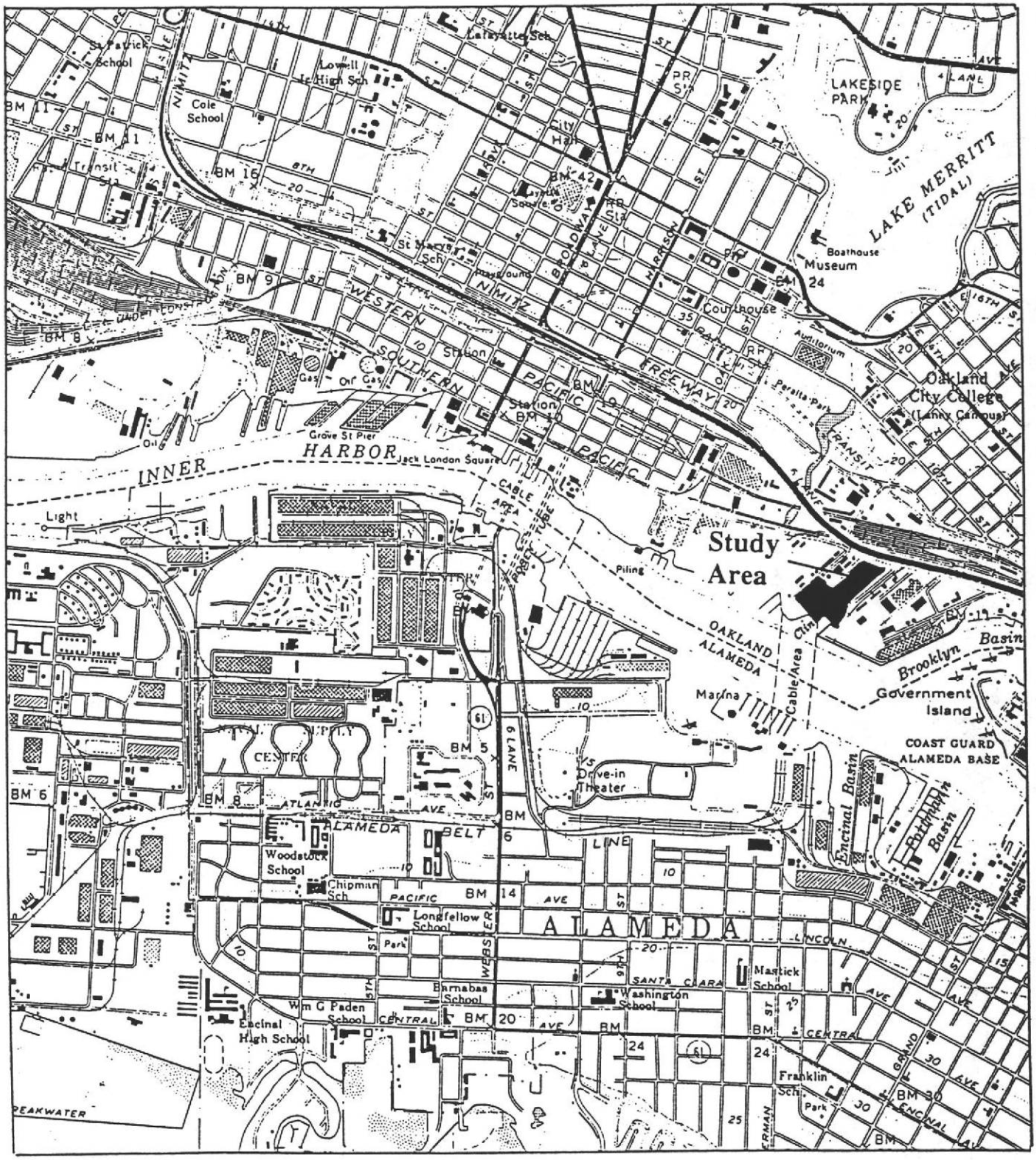
San Francisco Regional Water Quality Control Board (SFRWQCB), 2000, Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater, Interim Final, September.

San Francisco Regional Water Quality Control Board (SFRWQCB), 1998, Order No. 98-072, Adoption of Site Cleanup Requirements for Catellus Development Corporation and San Francisco Pacific Property, Inc., Proposed Eastshore Park Property, Berkeley and Albany (Alameda County) and Richmond (Contra Costa County), July 15.

U.S. Environmental Protection Agency, 1986, Quality Criteria for Water, May 1.

REGIONAL LOCATION

Figure 1



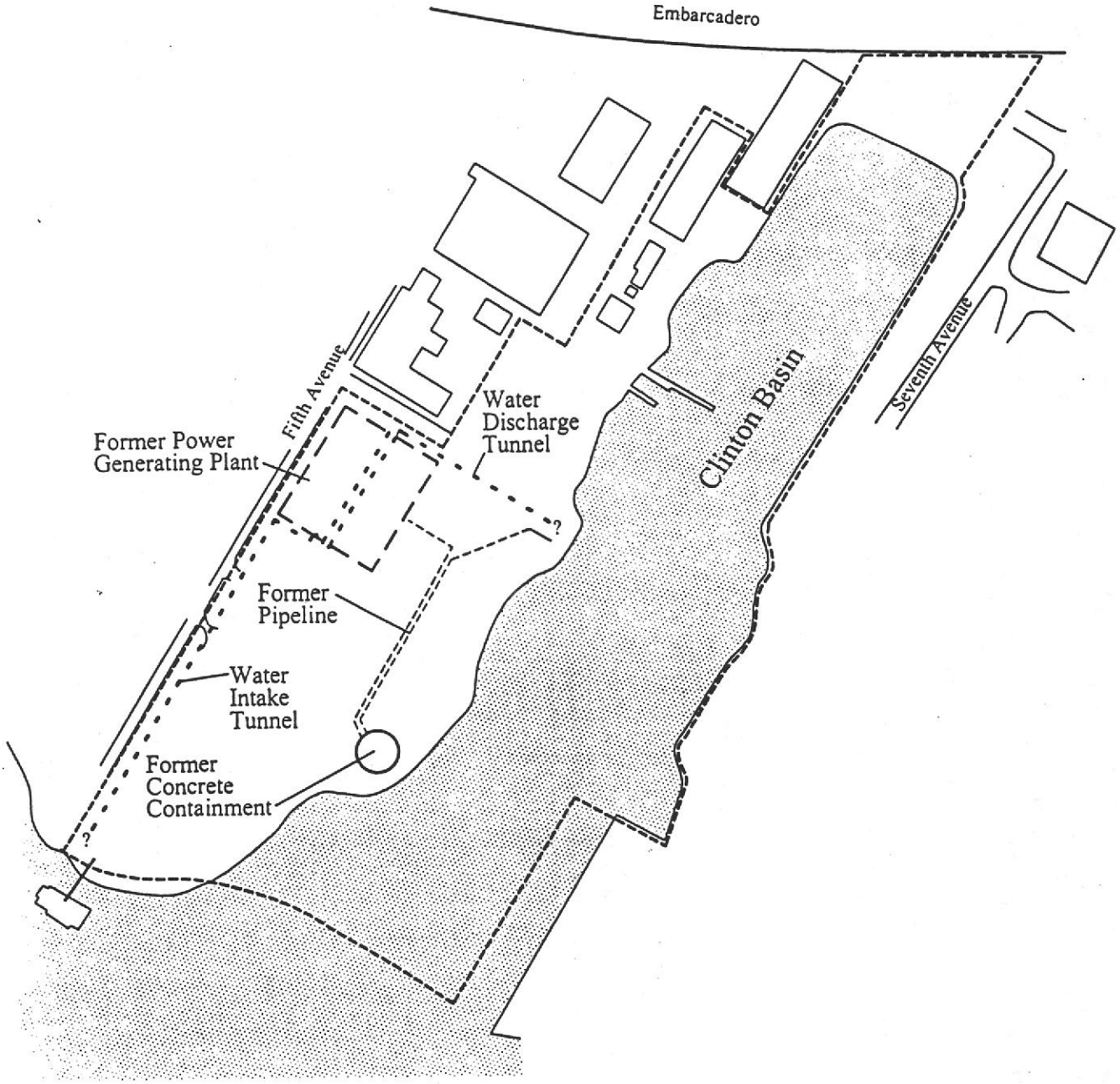
Seabreeze Yacht Center Study Area
Oakland, California

BASELINE

S9171-C1 4/12/99

STUDY AREA

Figure 2



Legend

------ Seabreeze Yacht Center Study Area Boundary

Seabreeze Yacht Center Study Area
Oakland, California

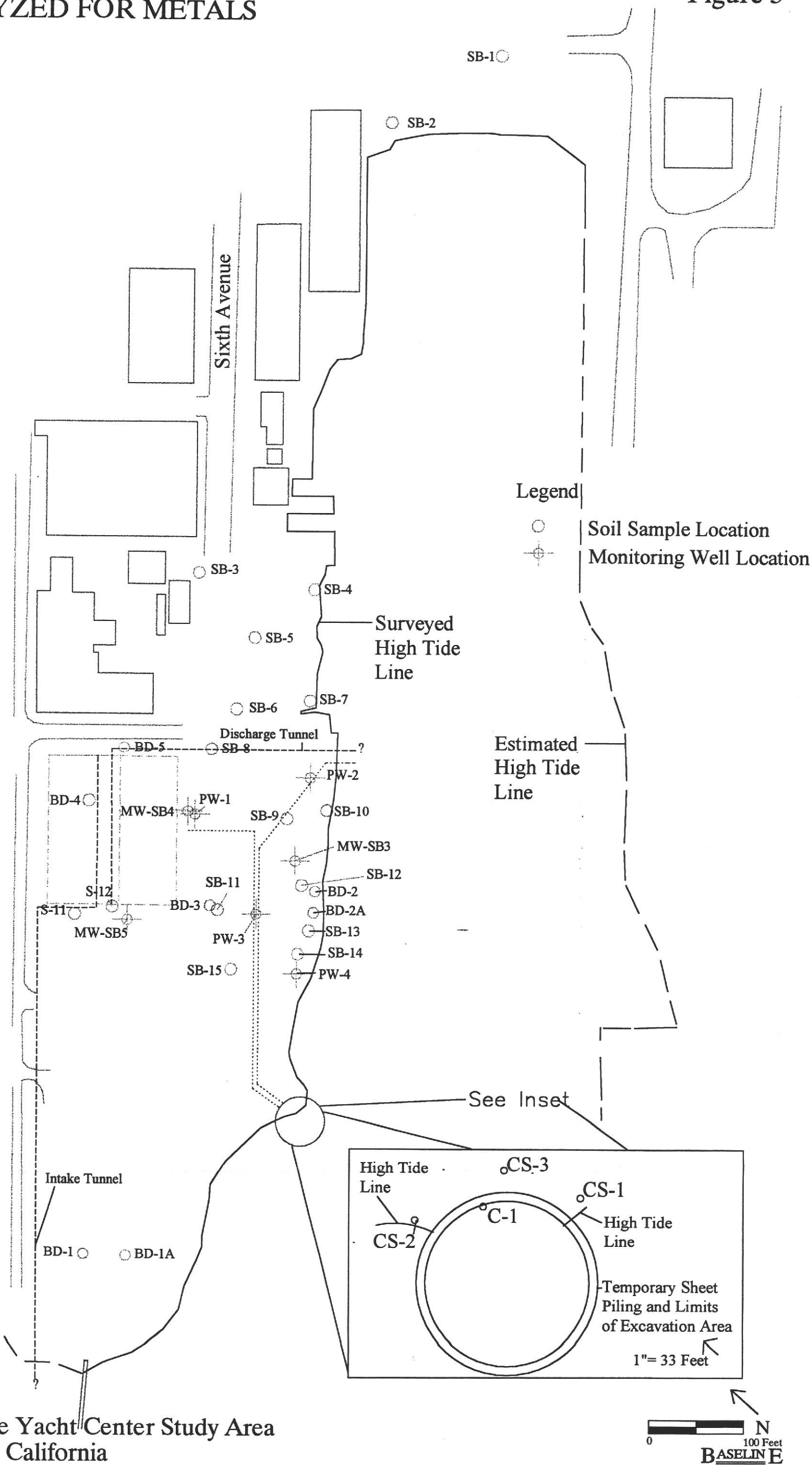
0 200 Feet

BASELINE

D:\Graphics\Seabreeze\Study Area.vcd 3/22/99

LOCATION OF SOIL SAMPLES ANALYZED FOR METALS

Figure 3

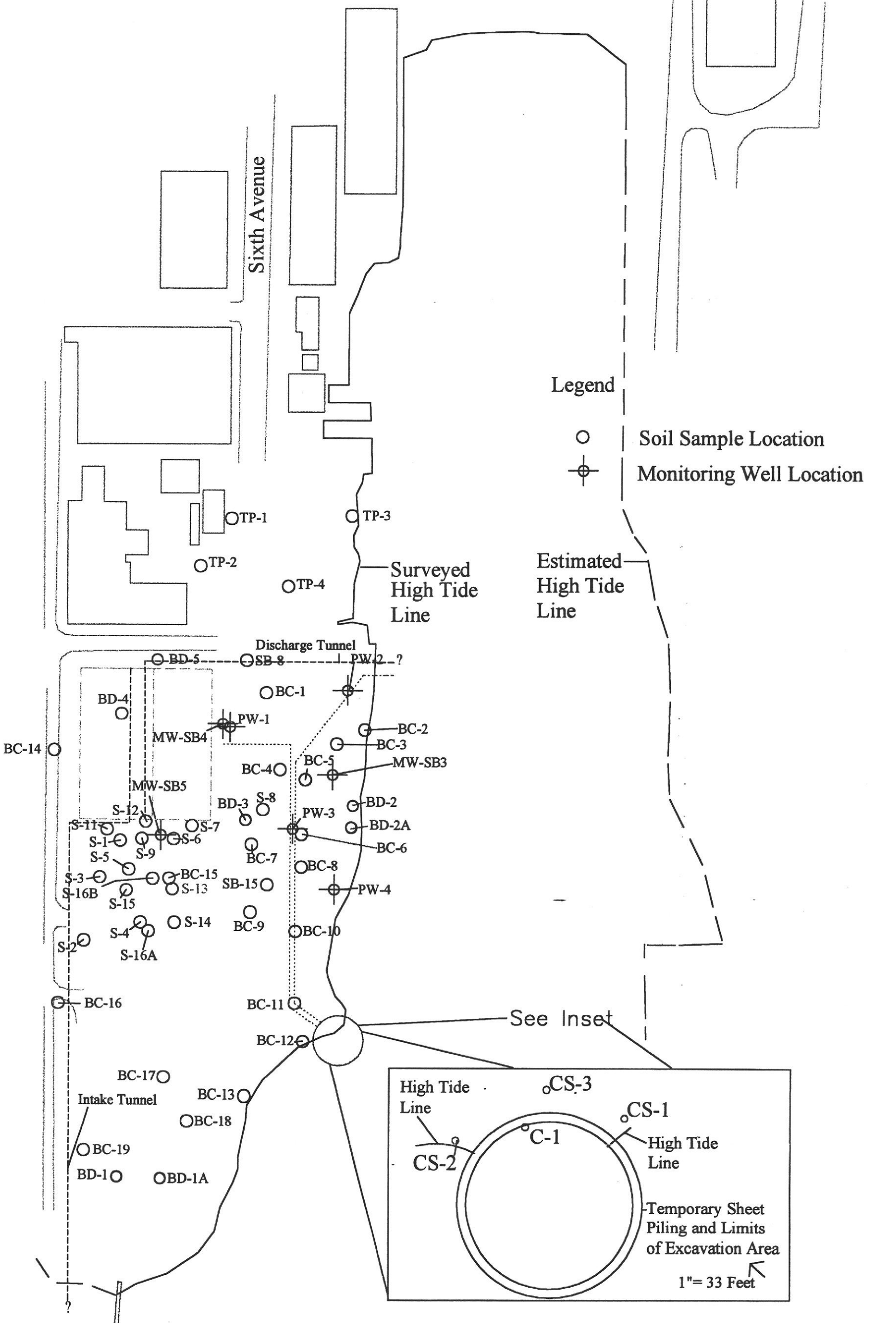


Seabreeze Yacht Center Study Area
Oakland, California

D:\GRAPHICS\S9171-C1\Fig_3 Metal.dwg Lt 2/13/01

LOCATION OF SOIL SAMPLE ANALYZED FOR PETROLEUM

Figure 4



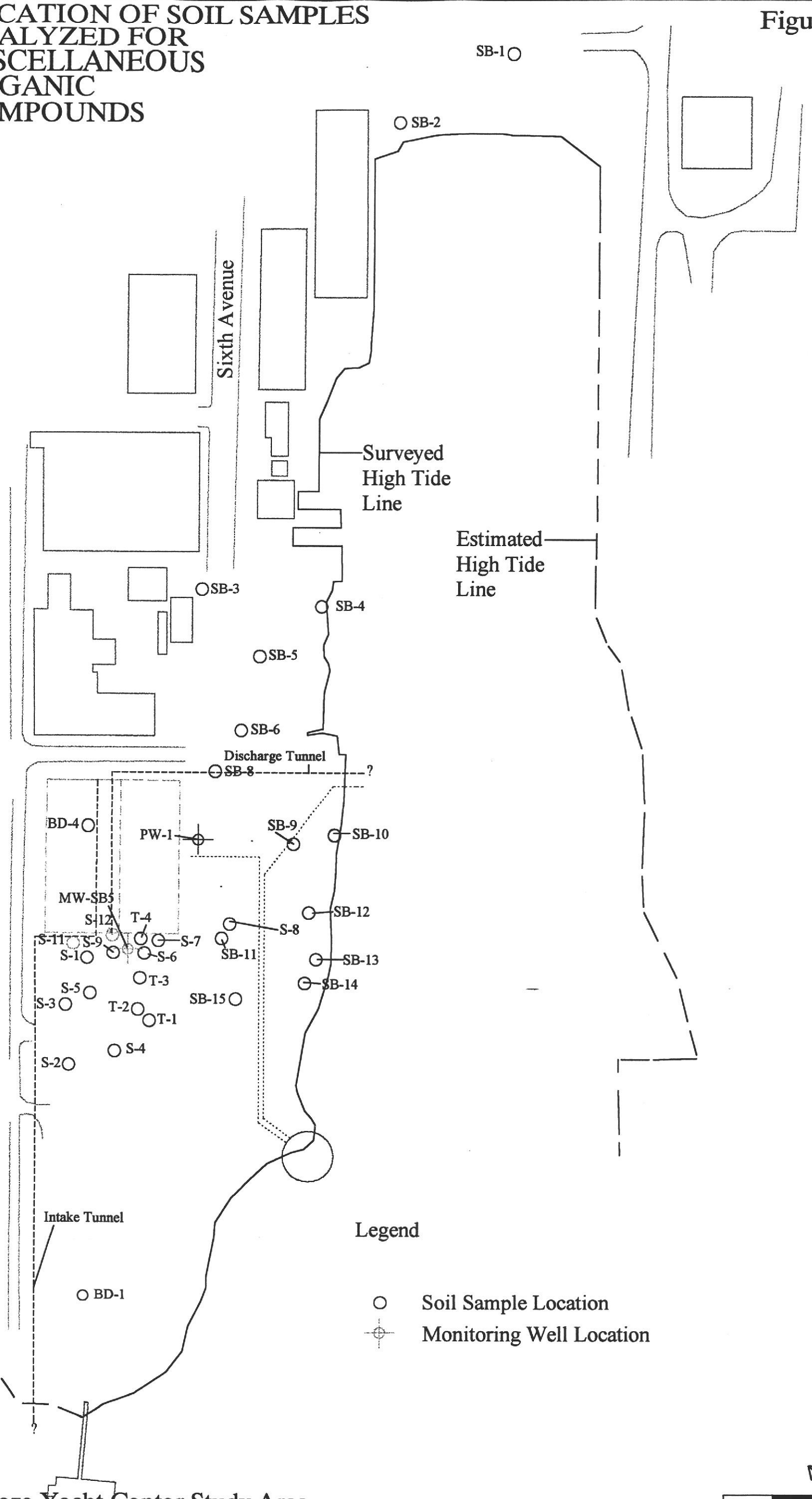
Seabreeze Yacht Center Study Area
Oakland, California

N
0 100 Feet
BASELINE

D:\GRAPHICS\S9171-C1\Fig_4 Petroleum. LTcadd 2/13/01

LOCATION OF SOIL SAMPLES ANALYZED FOR MISCELLANEOUS ORGANIC COMPOUNDS

Figure 5

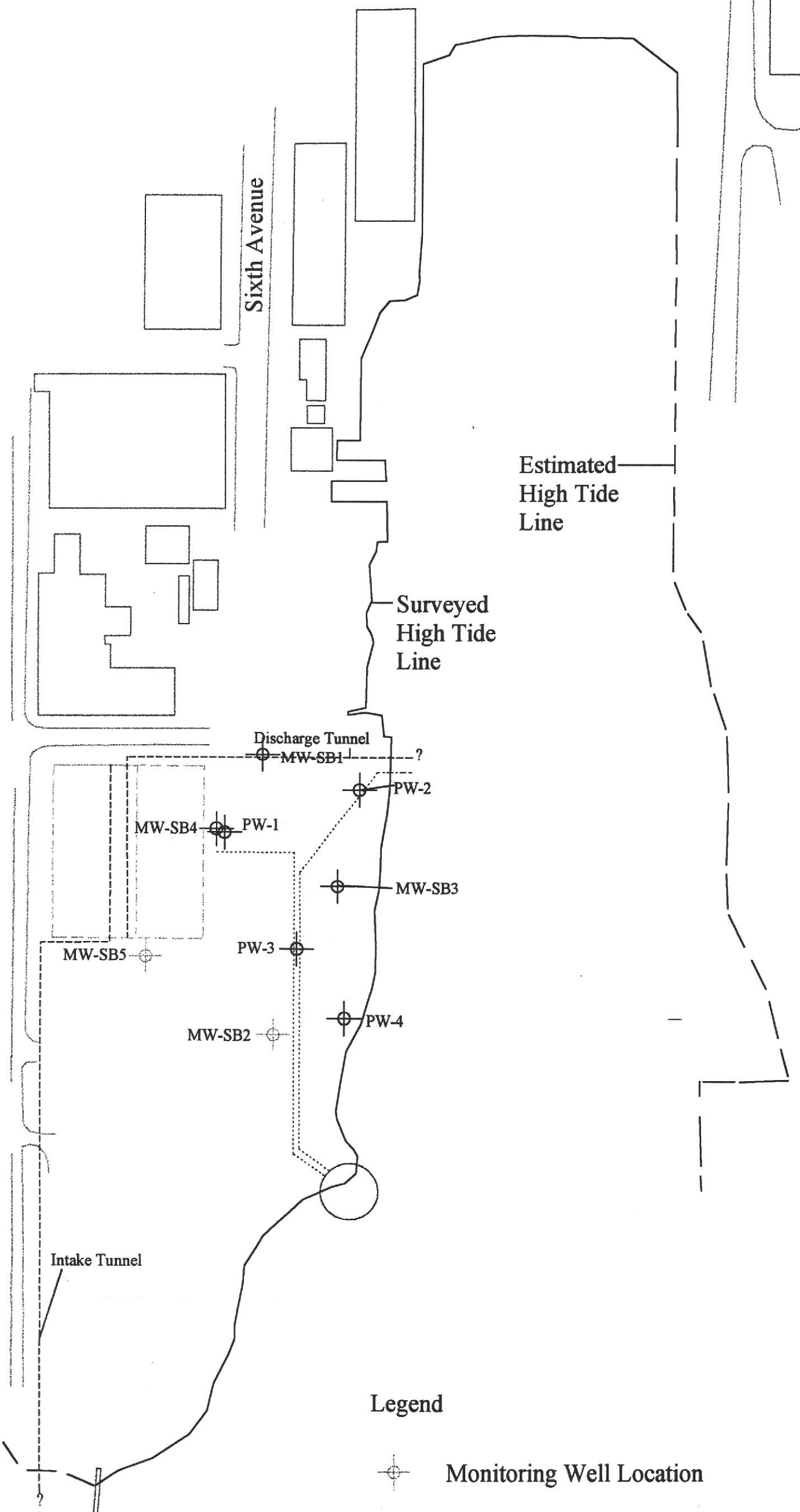


Seabreeze Yacht Center Study Area
Oakland, California

D:\GRAPHICS\S9171-C1\Fig_5 Misorga. Dwg.LT cadd 2/12/01

LOCATION OF GROUNDWATER MONITORING WELLS

Figure 6



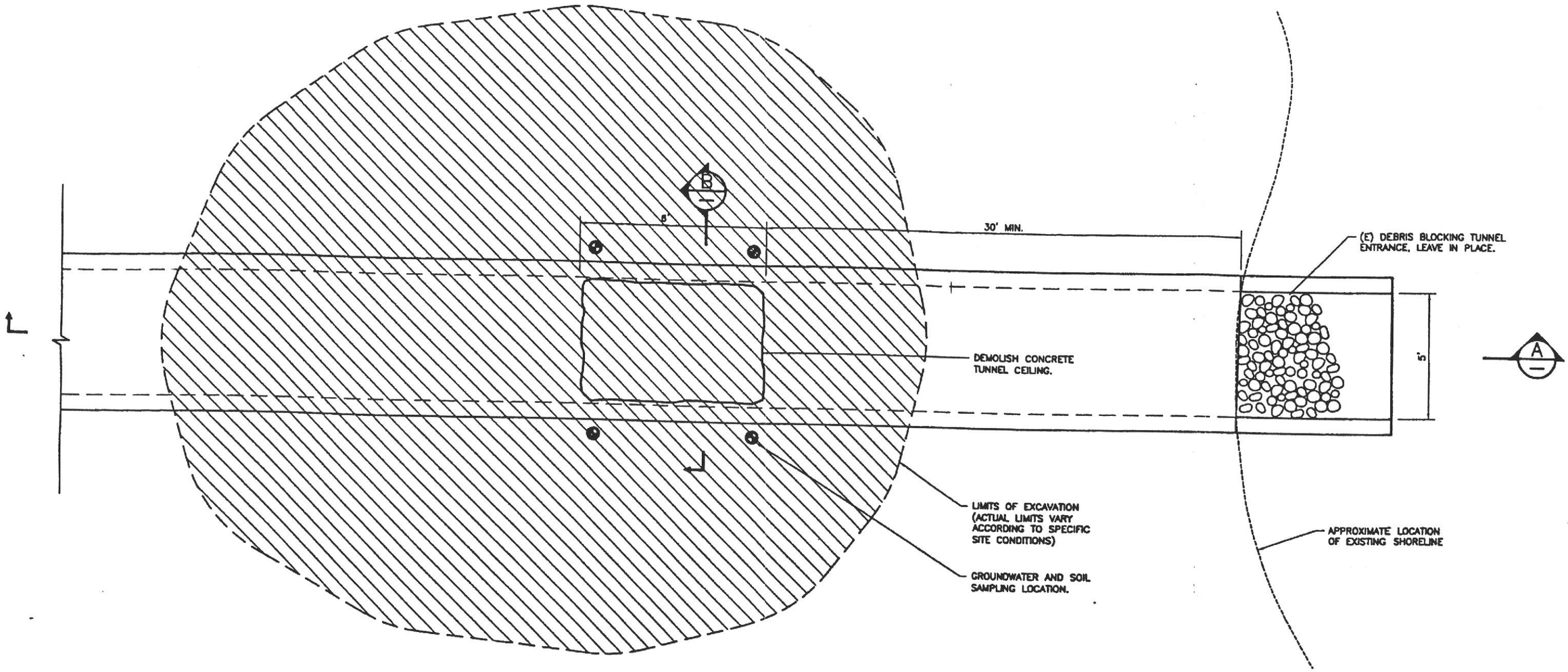
Seabreeze Yacht Center Study Area
Oakland, California

N
0
100 Feet
BASELINE

D:\GRAPHICS\S9171-C1\Fig -6 gwmWELLS.dwg LTcadd 2/13/01

PROPOSED GRAB SOIL AND GROUNDWATER SAMPLING LOCAITON

Figure 7



1 / 2 3 TYPICAL DETAIL
NTS

NOTES:

1. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL MAKE THE APPROPRIATE ADJUSTMENTS TO THE WORK FOR THE ACTUAL DIMENSIONS.

2. TUNNEL ENTRANCE MAY BE PARTIALLY OR FULLY SUBMERGED DURING CONSTRUCTION. REMOVAL OF SLUDGE AND PLACEMENT OF CONCRETE SHALL BE PERFORMED WITHIN TWO HOURS OF PUBLISHED LOW LOW TIDE TO PREVENT CLINTON BASIN/OAKLAND ESTUARY WATER FROM INTERFERING WITH THE SEALING PROCESS.

Seabreeze Yacht Center Study Area
Oakland, California

Source: Port of Oakland, Project Plans for construction of seals for intake and discharge tunnels at former Seabreeze Yacht Center.

D:\Graphics\S9171-C1\Closure Plan\Proposed Grab Soil.cdr 4/18/01

Not to Scale

BASELINE

APPENDIX B
Wetland Enhancement Area Sampling and Analysis Results

INVESTIGATION OF SOIL QUALITY FOR HABITAT ENHANCEMENT PROJECT

SEPTEMBER 2001

FORMER SEABREEZE YACHT CENTER
Oakland, California

For:

Environmental Health and Safety Compliance Department
Port of Oakland

S9171-C1

BASELINE Environmental Consulting
5900 Hollis Street, Suite D • Emeryville, California 94608
(510) 420-8686

BASELINE

ENVIRONMENTAL CONSULTING

21 September 2001
S9171-C0

Mr. Douglas Herman
Port of Oakland
EH&SC
530 Water Street, 2nd Floor
Oakland, CA 94607

Subject: Soil Sampling to Evaluate Subsurface Soil Quality for Habitat Enhancement Project, Former Seabreeze Yacht Center, Oakland

Dear Mr. Herman:

Please find enclosed our report documenting the soil sampling activities conducted at the former Seabreeze Yacht Center in support of the proposed habitat enhancement project. Based on the sampling results, soil quality at the proposed location of the tidal channel is adequate for wetland creation provided over-excavation is performed along a portion of the channel. In addition, excavated soils may be reused on-site without posing unacceptable human or ecological health risks.

Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

Yane Nordhav
Principal

Lydia Huang, P.E.
Senior Engineer

YN:LH:cr
Enclosure

S9171hab.rpt.wpd-9/21/01

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX: (510) 420-1707
Emeryville Petaluma San Francisco

TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

INVESTIGATION OF SOIL QUALITY FOR HABITAT ENHANCEMENT PROJECT

INTRODUCTION

This report documents sampling activities undertaken for the proposed habitat enhancement project at the Seabreeze Yacht Center, Oakland (Figure 1). The Port is considering the construction of a tidal channel in the southern portion of the site to enhance wildlife habitat (Figure 2). BASELINE was directed to develop and implement a sampling and analysis plan to assess the feasibility of the proposed habitat enhancement project with respect to the potential contaminants that may be present in the affected soils.

Site History

The Seabreeze Yacht Center was historically occupied by a steam generating plant, boat maintenance activities, and a gravel loading/unloading facility. These historic land uses have introduced contaminants into the subsurface. Investigations during the past eleven years have identified lead, copper, and Bunker C fuel and associated polycyclic aromatic hydrocarbons (PAHs) as being contaminants of concern for human and ecological receptors. Alameda County has been the lead agency overseeing site investigations and planned site remediation. Past remediation at the site has included the removal of a concrete foundation formerly housing an aboveground tank used for storage of fuel for the steam generating plant, and soil contamination underlying the foundation. Future remediation includes the sealing of two tunnels used for water intake and discharge to the steam generating plant, which is expected to occur in 2001.

SAMPLING PLAN

Sampling at the site was conducted to achieve two objectives: 1) to evaluate the soils that would be excavated for the proposed channel to determine management options; and 2) to compare the chemical quality of the soils within the top three feet below the future channel bottom and side slopes to sediment screening criteria developed by the RWQCB (Wolfenden and Carlin, 1992) for appropriateness of wetlands creation cover.

The sampling scheme was to choose five cross-section locations, labeled HE-1 through HE-5, approximately equally spaced along the channel centerline for sampling (Figure 2). At each cross-section, three sample locations were chosen: one on the centerline, one landward of the centerline, and one Bayward of the centerline (Figures 3 through 7).. The two locations on either side of the centerline were chosen to intercept the future surface of the channel side slopes.

The approach was to collect soil samples along the proposed channel from within the materials that would need to be excavated, and from the three feet of soil beneath the future bottom of the channel. The samples within the excavation prism would be analyzed for constituents that could affect soil management options. One sample from the centerline of the channel at each of the five cross-

sections, from 2.0 to 2.5 feet below ground surface (bgs), was to be collected within the prism of excavation for evaluation of soil management options. About four samples within the top four feet of soil from below the proposed channel bottom were to be collected for evaluation of the suitability of the newly exposed soils for wetlands cover.

FIELD ACTIVITIES

BASELINE obtained a drilling permit from Alameda County (Permit No. W01-172) on 13 March 2001 for the installation of borings on the site (Appendix A). We also prepared a health and safety plan for use by BASELINE staff during field activities.

A surveyor with Philip Williams & Associates (PWA), the firm designing the proposed habitat enhancement project, surveyed and staked the centerline and outer extent of the proposed tidal channel in the field on 19 March 2001. PWA staff indicated that the slope on the landward side of the channel would be about 6:1, and about 8:1 on the Bayward side. We chose five cross-section locations, labeled HE-1 through HE-5, approximately equally spaced along the channel centerline for sampling (Figure 2). At each cross-section, we marked three boring locations: one on the centerline, one landward of the centerline, and one Bayward of the centerline (Figures 3 through 7). The two locations on either side of the centerline were chosen to intercept the middle of the future channel side slopes. The elevation and location of the chosen sample locations were surveyed by PWA staff relative to existing groundwater monitoring well MW-SB2.

The first round of sampling occurred on the 20th and 28th of March 2001; the follow-up round of sampling occurred on 11 May 2001. The borings drilled in March 2001 was completed with a direct push technology drilling rig. Resampling along the channel centerline of the material to be excavated for soil management evaluation in May 2001 was accomplished by using hand tools and a slide hammer sampler. Following sample collection, each borehole was grouted to the surface. Each borehole was logged by a registered BASELINE geologist. The drilling logs are included in Appendix B to this report.

Samples were collected in six-inch stainless steel tubes. Each sample tube was sealed with teflon film and plastic caps, and silicon tape, and was marked to indicate which end the laboratory was to use for analysis. The samples were placed in a zip-lock bag into a cooled container and transported to a certified laboratory for analysis. The March 2001 samples were submitted to STL Chromalab for analysis. Subsequently, a portion of these samples were transferred to Curtis & Tompkins laboratory for selenium analysis because Chromalab was unable to achieve the needed reporting limit. The May 2001 samples were submitted directly to Curtis & Tompkins laboratory.

Evaluation for Soil Management

On 20 March 2001, one soil sample was collected from the five cross-section locations along the channel centerline at two feet below existing grade. The purpose for collecting these samples was to determine soil management options. These samples were analyzed for Total Petroleum Hydrocarbons (TPH) as Bunker C (fuel oil) with silica get cleanup, total lead, total copper, and benzene, toluene, ethylbenzene, and xylenes (BTEX).

Additional samples immediately adjacent to the original locations along the middle of the proposed channel were collected on 11 May 2001 to supplement the initial data for the purpose of evaluating whether the excavated material could be reused on-site for construction of an upland berm. These samples were analyzed for Title 22 metals and PAHs.

Wetlands Cover Evaluation

At each of the sample locations along the centerline and on both future slopes of the channel, we attempted to collect three samples, spaced at one-foot intervals, within the top three feet of soil below the future bottom of the channel. The three discrete samples from each boring were to be composited by the laboratory and analyzed for Title 22 metals, TPH as Bunker C, PAHs, and percent moisture. In addition, composite samples from the borings located along the centerline were analyzed for the pesticide DDT and polychlorinated biphenyls (PCBs). One deeper sample was also collected from each boring but was not initially analyzed pending the results from the first round of analyses.

The actual samples collected deviated slightly from the ideal scheme because of incomplete recovery in the samplers and uncertainties in extrapolating the proposed channel bottom in the field. At boring location HE-4A, a brick and cobble debris layer was encountered and we were unable to collect samples below the proposed channel; a second attempt for this boring was made about two feet toward HE-3A, where the same material was encountered; a third and final attempt was made an additional four feet toward HE-3A, where we were able to collect one sample below the elevation of the debris layer encountered during the previous two attempts. Petroleum odor was noticed at an elevation corresponding to just below the surface of the future channel slope at the final location for HE-4A.

SUBSURFACE CONDITIONS

The near-surface soil in the proposed channel area is artificial fill. The fill consists predominantly of sand, silty sand, and clayey sand with some gravel. The fill varies in thickness from about 3.5 to 6.5 feet and is underlain by Bay mud. At locations HE-2 through HE-5, the bottom of the proposed channel would be within the fill and not intersect the Bay mud surface (Figures 3 through 7).

At boring location HE-4A, a layer of brick debris was encountered at a depth of about 3.75 feet below the ground surface (Figure 6). The lateral extent of this material is unknown. At locations HE-1B, HE-3A, HE-3B, HE-4A, and HE-5C, petroleum odor or sheen was noticed or observed during drilling. The petroleum odor noted at location HE-5C was within the prism of soil to be excavated and above the bottom of the future channel (Figure 7). The odor or sheen noted at the other locations was in materials below the bottom of the proposed channel and would remain in-place following channel creation.

EVALUATION FOR WETLANDS COVER

The San Francisco Bay Region of the California Regional Water Quality Control Board (RWQCB) issued a guidance document titled, *Sediment Screening Criteria and Testing Requirements for*

Wetland Creation and Upland Beneficial Reuse, Interim Final, in December 1992. This document provides screening criteria for the beneficial reuse of dredged materials for the creation of wetlands for numerous chemical constituents. If chemical concentrations of soil being considered for wetlands creation were less than the "Wetlands Creation Cover" criteria, then that soil may be used at any depth within the wetland. If chemical concentrations in the subject soils were higher than the "Wetlands Creation Cover" criteria and less than the "Wetlands Creation Noncover" criteria, then that soil may be used in the wetland provided that at least three feet of soils meeting the "Wetland Creation Cover" criteria or uncontaminated native soils were placed on top of the subject soils.

Three borings were installed at each of the five cross-sections (HE-1 through HE-5) (Figure 2). One composite sample, made up of three discrete samples collected within the top three feet of soil below the bottom of the proposed channel, was analyzed from each boring. For example, composite sample COMP 1A was made up of the samples collected from boring HE-1A at 2.5 to 3.0 feet, 3.5 to 4.0 feet, and 4.5 to 5.0 feet bgs (Figure 3). The only exception to the compositing scheme was for boring HE-4A, where brick was encountered at the elevation of the bottom of the proposed channel, and one sample was analyzed discretely (Figure 6).

Laboratory results were reported on a "wet weight" basis, so the results were converted to a "dry weight" basis using the measured percent moisture values for comparison against the "Wetlands Creation Cover" criteria (Table 1).

In general, results from cross-sections HE-1, HE-2, and HE-3 (samples COMP 1A through COMP 3C in Table 1) were below "Wetlands Creation Cover" criteria. The only exceptions were for silver where the laboratory reporting limit was higher than the criterion, and for selenium in one sample where the concentration was 0.71, just above the criterion of 0.7 mg/kg.

One or more of the composite samples collected within the top three feet of soil below the bottom of the proposed channel from cross-sections HE-4 and HE-5 had concentrations that exceeded the "Wetlands Creation Cover" criteria for PAHs, copper, lead, mercury, nickel, selenium, silver, and zinc (Table 1). Slightly deeper samples from locations HE-4B, HE-4C, HE-5A, and HE-5C, which were collected but initially placed on hold, were also analyzed for the same constituents. The deeper samples from HE-4C and HE-5A also exceeded the "Wetlands Creation Cover" criteria. However, it should be noted that these two samples were collected across the interface between the fill and Bay mud. Chemical quality of samples collected entirely within Bay mud at cross-sections HE-4 and HE-5 had concentrations below the "Wetlands Creation Cover" criteria (i.e., samples HE-4B; 8.0-8.5', HE-5C; 7.5-8.0') (Figures 6 and 7). It is reasonable to conclude that only soils within the fill layer contain constituent concentrations that could exceed the "Wetlands Creation Cover" criteria.

Based on the analytical results, the soils within the top three feet of the future bottom of the channel at cross-sections HE-1 through HE-3 would be suitable for wetlands cover since constituent concentrations are below the "Wetlands Creation Cover" criteria. At cross-sections HE-4 and HE-5, the tidal channel would need to be over-excavated, then backfilled with clean Merritt Sands dredged

from the Vision 2000 project.[1] The depth of over-excavation would be dictated either by the depth of fill at each location (based on the conclusion that potential contamination is limited to the fill), or deeper than the Bay mud interface if composite samples containing at least a portion of Bay mud exceeded the "Wetlands Creation Cover" criteria (e.g., sample COMP 4B, Figure 6). At cross-section HE-4, the bottom of the channel would need to be over-excavated by an additional three feet or to the top of the native Bay mud, whichever is deeper (Figure 6). At cross-section HE-5, the channel would need to be over-excavated to the top of the Bay mud, which may range from an additional one to about three feet below the bottom as designed, to reach soils that meet the "Wetlands Creation Cover" criteria (Figure 7).

EVALUATION OF HEALTH RISKS FROM ON-SITE REUSE OF EXCAVATED SOILS

Data from this sampling effort were used to evaluate whether the excavated soils from creation of the proposed channel, including over-excavation of cross-sections HE-4 and HE-5, may be reused on-site for construction of the upland berm, inland of the proposed channel, without posing unacceptable human health or ecological risks. These data are summarized in Table 2. It was assumed that the upland berm area would be used for recreational/open space purposes.[2]

A human health risk evaluation was performed assuming that future recreational/open space users could be exposed to chemicals of potential concern (COPCs) in the soils excavated from the proposed channel and used to construct the upland berm via ingestion and dermal contact, and inhalation of particulates and volatiles. Potential harm to terrestrial ecological receptors posed by COPCs in the excavated soils and to aquatic organisms by leaching of the COPCs to the groundwater, with subsequent discharge of the groundwater to the Clinton Basin, were also evaluated.

Human Health Risk Assessment

Methodology

Chemicals of potential concern were selected based on analytical results for soil samples collected from the prism of excavation above the future channel bottom and the soil requiring over-excavation (at cross-sections HE-4 and HE-5). All chemicals reported above the laboratory reporting limits were considered in the screening. Chemicals not reported above the laboratory reporting limits were not considered.

Initial screening consisted of comparing the maximum concentrations found in the soil samples against applicable risk-based screening levels compiled by the RWQCB (2000). Chemicals were

---

[1] The Port has received approval from the Dredge Material Management Office to use the Merritt Sands from the Vision 2000 project for wetlands creation.

[2] Commercial/industrial land uses may occur on portions of the site where the habitat enhancement project would not take place

selected as COPCs for further evaluation if the maximum soil concentration exceeded the RBSLs developed for human health residential site users.

The use of residential soil RBSLs is very conservative for assessing risks to future recreational/open space users visiting the site, since these users would be present at the site only a small fraction of the time compared to residential users. Residential site users were assumed to be adults and children, present at the site for 24 hours a day, 350 days per year, for 30 years. If the maximum site concentration of a COPC was above the residential soil RBSL, the chemical was evaluated further, as described below.

Human Health Assessment Results

All chemicals identified above the laboratory reporting limits are listed in Table 3, along with the maximum concentrations and the residential RBSLs. Based on the initial screening process, chemicals with maximum concentration greater than the residential RBSLs are naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h) anthracene, indeno(1,2,3-cd)pyrene, arsenic, total chromium, copper, and lead. Each of these COPCs is further evaluated, as described below.

Naphthalene. The residential RBSL for naphthalene of 1.7 mg/kg is based on exposure to the chemical in indoor air. This is not an applicable exposure pathway for recreational/open space users and is therefore not applicable to this site. The most restrictive applicable RBSL is 11 mg/kg based on direct contact with the soil. Since the maximum site concentration of 4.2 mg/kg is below this RBSL, naphthalene does not pose an unacceptable human health risk for future open space/recreational site users.

Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene. The lowest RBSL for these PAHs is 0.38 mg/kg based on direct human contact (ingestion, dermal contact, inhalation) with soil. This value was back-calculated based on an excess lifetime cancer risk of 1×10^{-6}. The maximum site concentration of these PAHs (1.9, 2.4, 0.84, and 1.6 mg/kg, respectively) exceed the RBSL of 0.38 mg/kg. The risk to residential site users from the maximum site concentrations of these PAHs would be: 5×10^{-6} for benz(a)anthracene, 6.3×10^{-6} for benzo(b)fluoranthene, 2.2×10^{-6} for benzo(k)fluoranthene, and 4.2×10^{-6} for indeno(1,2,3-cd)pyrene. These risks are within the range of risks (1×10^{-4} to 1×10^{-6}) considered "acceptable" by U.S. EPA under the National Contingency Plan. Therefore, these PAHs do not pose unacceptable human health risks for residential users; future open space/recreational site users would have significantly smaller exposure .

Benzo(a)pyrene. The RWQCB RBSL of 0.038 mg/kg is based on direct human contact with soil, assuming an "acceptable" excess lifetime cancer risk of 1×10^{-6}. The calculated risk for residential site users, assuming the maximum site concentration of 2.4 mg/kg, would be 6.3×10^{-5}. The maximum concentration is within the range of "acceptable" risks. Therefore, benzo(a)pyrene does not pose an unacceptable human health risk, even for residential users who would have higher exposure than future open space/recreational site users.

Dibenz(a,h)anthracene. The RBSL of 0.11 mg/kg is based on direct human contact with soil, assuming a excess lifetime cancer risk of 1×10^{-6}. The calculated risk for residential site users, assuming the maximum concentration of 0.68 mg/kg would be 6.2×10^{-6}, which is within the range of "acceptable" risks. Dibenz(a,h)anthracene therefore does not pose an unacceptable risk to residential or open space/recreational site users.

Arsenic. The RWQCB RBSL is 0.39 mg/kg, which is based on back-calculation of an excess lifetime cancer risk of 1×10^{-6} and direct human contact with soils. Frequently, the RBSL concentration is below the background arsenic concentration at sites in the Bay Area. The maximum concentration of arsenic in the soil that may be reused on-site, 11 mg/kg, exceeds the RBSL based on the cancer endpoint (0.39 mg/kg), but does not exceed the residential RBSL based on the non-cancer endpoint (22 mg/kg).

The U.S. EPA has at times used the non-cancer preliminary remediation goal (similar to an RBSL) to evaluate sites, recognizing that this value tends to be above background levels, yet still falls within the range of soil concentrations that equates to U.S. EPA's "acceptable" cancer risk range of 1×10^{-4} to 1×10^{-6} (Smucker, 2000).

The calculated 95th percent upper confidence limit (UCL) of arsenic concentration from colluvium and fill soils in the Berkeley Hills is 14.0 mg/kg as reported by Lawrence Berkeley National Laboratory (LBNL, 1995). The maximum on-site concentration is below this value. Arsenic, therefore, is not considered to pose an unacceptable health risk to potential residential and open space/recreational users based on the fact that the maximum site concentration is below the non-cancer RBSL and the LBNL background concentrations.

Chromium (total). The RWQCB RBSL for total chromium is 9.8 mg/kg, which is based on back-calculation of an excess lifetime cancer risk of 1×10^{-6} and direct human contact with soils. The calculated risk for residential site users, assuming the maximum site concentration of 53 mg/kg, would be 5.4×10^{-6}, which is within the range of "acceptable" risks. Chromium is therefore eliminated as a COPC for open space/recreational site users.

Lead. The maximum site concentration of lead (490 mg/kg), exceeds the RBSL developed for human health (400 mg/kg). However, the range of lead concentrations found in the 18 soil samples collected from the potential reuse soils ranged between 3.8 and 490 mg/kg; all but one reported concentration is below the human health RBSL of 400 mg/kg. The calculated 95th percent UCL of the lead concentrations from the 18 samples is 119 mg/kg, which is below the RBSL developed for human health protection.[3] Therefore, lead in the soils is not considered to pose an unacceptable human health risk for residential or open space/recreational users.

---

[3] All samples collected from the soils that may be used to construct the upland berm, including duplicate sample results, were included in the calculation of the 95th percent UCL.

Cumulative Human Health Risk

The cumulative risk, assuming a residential exposure scenario due to the presence of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h) anthracene, indeno(1,2,3-cd)pyrene, and total chromium was calculated to be 9.2×10^{-5}, which is also within the range of "acceptable" risks. The potential risk to future recreational/open space users would be significantly lower than this calculated risk because of their shorter exposure times and durations, compared to potential residential users.

Conclusions

The1998 human health risk assessment (BASELINE, 1998), and this human health risk assessment provide evidence to support the conclusion that the quality of soils to be excavated and potentially reused on the site, as part of the habitat restoration project, would not constitute an unacceptable human health risk to future recreational/open space users.

Ecological Health Risk Evaluation

Methodology

The maximum site soil concentrations from data collected in March and May 2001 were compared to Urban Area Ecotoxicity Criteria developed by the Ontario Ministry of Environment and Energy, as compiled by the RWQCB.[4] These criteria were developed to protect direct soil contact exposure for terrestrial ecological receptors. The maximum site soil concentrations were also compared with RWQCB RBSLs developed for protection of aquatic ecological receptors from the potential leaching of chemicals from soil into groundwater (with subsequent discharge of groundwater to surface water). A comparison of the maximum concentrations of chemicals with these two criteria is presented in Table 3.

Ecological Risk Assessment Results

Only concentrations of copper and lead exceeded either the ecotoxicity criteria or the RBSL for leaching from soils (Table 1). The ecological risks associated with these metals are discussed below.

Copper. The maximum concentration of copper reported in soil samples, 430 mg/kg, is above the ecotoxicity criteria of 225 mg/kg. Of the 18 sample results, the copper concentrations ranged from 5.9 to 430 mg/kg, with only two values exceeding the ecotoxicty criteria of 225 mg/kg. The calculated 95th percent UCL concentration is 120 mg/kg,[5] which is below the ecotoxicity criteria. Therefore, copper is not considered to pose an ecological threat.

Lead. The maximum concentration of lead, 490 mg/kg, exceeds the ecotoxicity criteria of 200 mg/kg. As discussed previously, the range of lead concentrations is between 3.8 and 490 mg/kg.

---

[4] RWQCB (2000), Table B-1, for near surface soils (less than three meters below ground surface), assuming potentially impacted groundwater is not a potential drinking water source.

[5] See note 2 above.

Only one reported concentration exceeds the ecotoxicty criteria of 200 mg/kg. The calculated 95thpercent UCL of the lead concentrations from the 18 samples is 119 mg/kg, which is below ecotoxicity criteria for protection of ecological receptors.[6] Lead is therefore not considered a threat to ecological health.

Conclusion

The quality of soils to be excavated and potentially reused on the site, as part of the habitat restoration project, would not pose an unacceptable terrestrial or aquatic ecological health risk.

CONCLUSION

Sampling of subsurface soils has been completed to assess the feasibility of creating a tidal channel and associated wetlands at the former Seabreeze Yacht Center. The laboratory results indicate that the soil quality below the bottom of the proposed channel at cross-sections HE-1 through HE-3 meets the "Wetland Creation Cover" criteria. Soil quality under the channel at cross-sections HE-4 and HE-5 does not meet the "Wetlands Creation Cover" criteria. Therefore, over-excavation should occur along the portion of the channel represented by data from cross-sections HE-4 and HE-5. The Port may choose to backfill the over-excavation to the design elevation with clean, dredged Merritt Sands from the Vision 2000 project.

The materials to be excavated for the proposed channel, including over-excavation at cross-sections HE-4 and HE-5, were screened for human health and ecological risk assuming that the materials would be used on-site to construct an upland berm, which is part of the proposed habitat enhancement project. The screening indicates that the excavated material could be used to construct the berm and not pose an unacceptable risk to future site recreational/open space users, or to potential ecological receptors.

REFERENCES

BASELINE Environmental Consulting, 1998, Health Risk Assessment, Seabreeze Yacht Center, Oakland, California, September.

Lawrence Berkeley National Laboratory, 1995, Protocol for Determining Background Concentrations of Metals in Soil at Lawrence Berkeley National Laboratory, Environmental Restoration Program, August.

Regional Water Quality Control Board (RWQCB), 2000, Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater, Interim Final, August.

Smucker, Stanford, U.S. Environmental Protection Agency, 2000, Memorandum regarding Region 9 PRGS Table 2000 Update to PRG Table Users, 1 November.

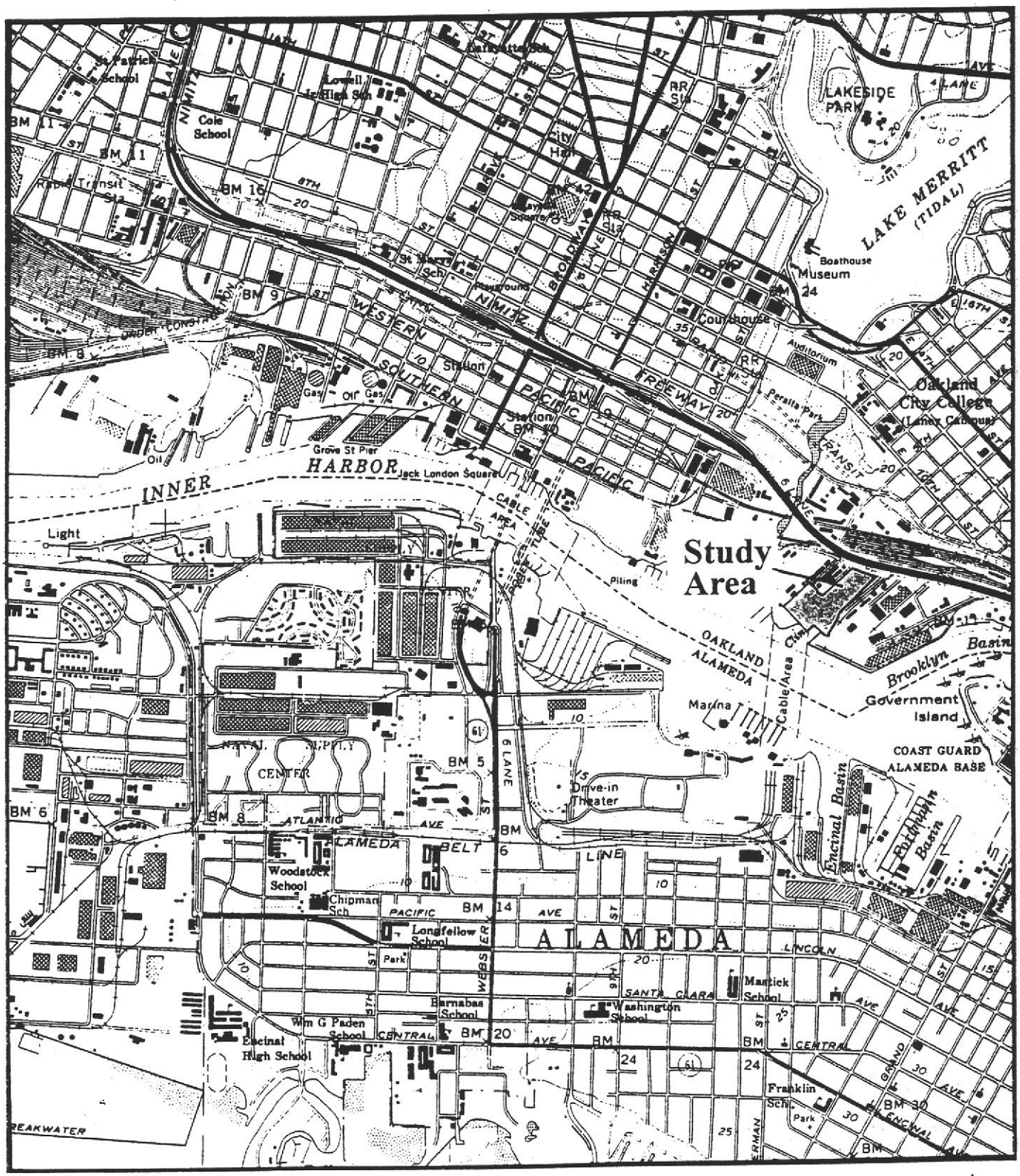
---

[6] See note 2 above.

Wolfenden and Carlin, 1992, Sediment Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Reuse, Interim Final, California Regional Water Quality Control Boards, December.

REGIONAL LOCATION

Figure 1



0 2000 Feet

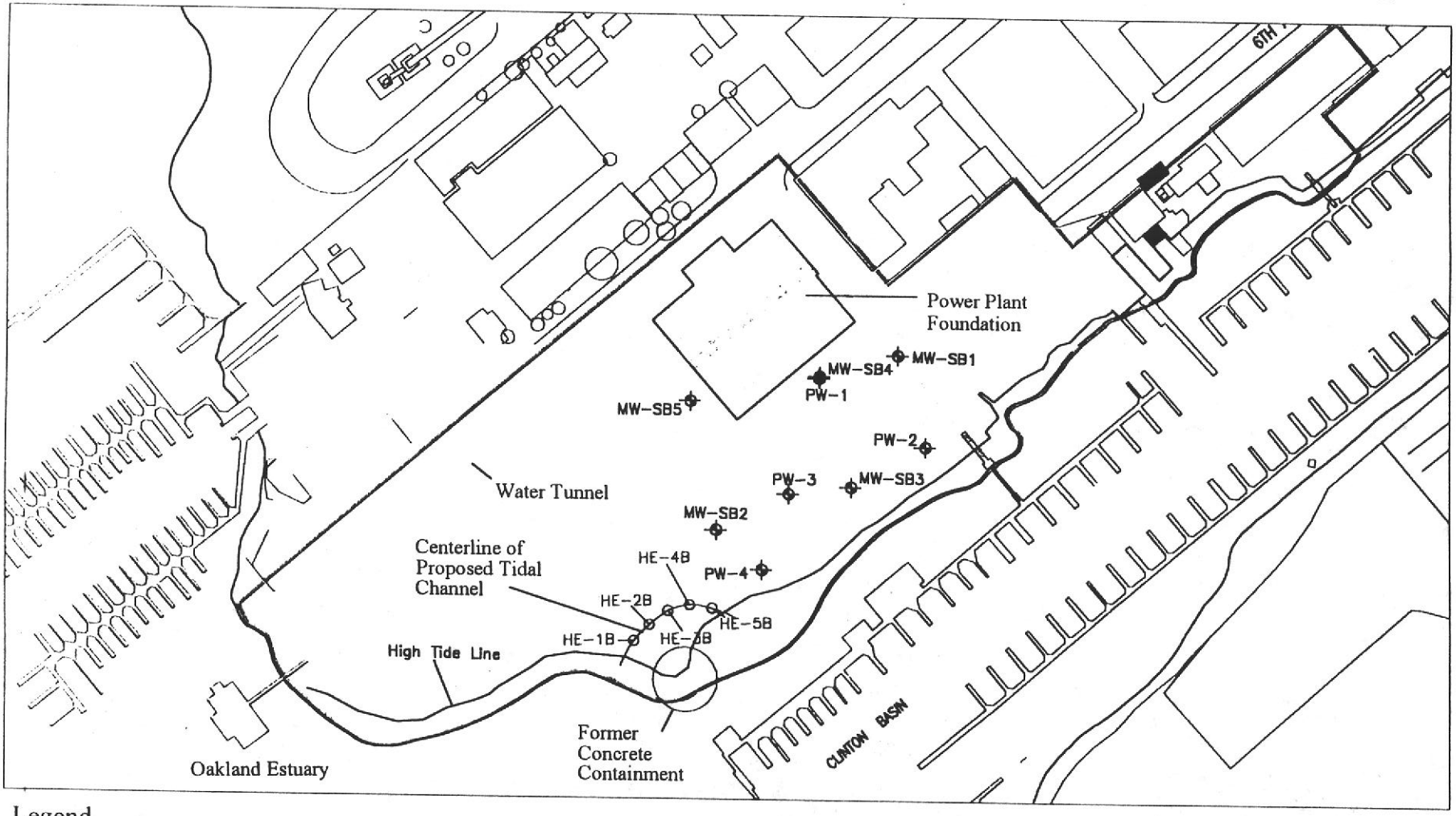
Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

BASELINE

D:\Graphics\S9-171Seabreeze\HabitatEnhance\Fig1-RL.cdr 9/21/01

SAMPLING LOCATION

Figure 2



Legend

——— Site Boundary

⌖ Groundwater Monitoring Well

o Soil Boring (only boring on the centerline of channel is shown)

Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

0 150 Feet

BASELINE

D:\Graphics\Seabreeze CAD\F2_HabEnh.dwg 9/20/01

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
SOIL										
Preliminary	SB-1	9/6/90	0.5	x	x	x				
Preliminary	SB-1	9/6/90	1	x	x	x				
Preliminary	SB-1	9/6/90	3.5	x	x	x				
Preliminary	SB-2	9/6/90	0.5	x	x	x				
Preliminary	SB-2	9/6/90	1	x	x	x				
Preliminary	SB-2	9/6/90	3	x	x	x				
Preliminary	SB-2	9/6/90	5	x	x	x				
Preliminary	SB-3	9/6/90	0.5	x	x	x				
Preliminary	SB-3	9/6/90	1	x	x	x				
Preliminary	SB-3	9/6/90	3.5	x	x	x				
Preliminary	SB-4	9/6/90	0.5	x	x	x				
Preliminary	SB-4	9/6/90	1	x	x	x				
Preliminary	SB-4	9/6/90	3.5	x	x	x				
Preliminary	SB-5	9/6/90	0.5	x	x	x				
Preliminary	SB-5	9/6/90	1	x	x	x				
Preliminary	SB-5	9/6/90	3.5	x	x	x				
Preliminary	SB-6	9/6/90	0.5	x	x	x				
Preliminary	SB-6	9/6/90	2	x	x	x				
Preliminary	SB-7	9/6/90	1	x	x	x				
Preliminary	SB-8	9/6/90	0.5	x	x	x				
Preliminary	SB-8	9/6/90	1	x	x	x				
Preliminary	SB-8	9/6/90	2.5	x	x	x				
Preliminary	SB-9	9/6/90	0.5	x	x	x				
Preliminary	SB-9	9/6/90	1	x	x	x				
Preliminary	SB-9	9/6/90	3.5	x	x	x				
Preliminary	SB-10	9/6/90	0.5	x	x	x				
Preliminary	SB-10	9/6/90	1	x	x	x				
Preliminary	SB-10	9/6/90	3	x	x	x				
Preliminary	SB-11	9/7/90	0.5	x	x	x				
Preliminary	SB-11	9/7/90	1	x	x	x				
Preliminary	SB-11	9/7/90	3	x	x	x				
Preliminary	SB-12	9/7/90	0.5	x	x	x				
Preliminary	SB-12	9/7/90	1	x	x	x				
Preliminary	SB-12	9/7/90	2.5	x	x	x				
Preliminary	SB-13	9/7/90	0.5	x	x	x				
Preliminary	SB-13	9/7/90	1	x	x	x				
Preliminary	SB-13	9/7/90	2.5	x	x	x				
Preliminary	SB-14	9/7/90	0.5	x	x	x				
Preliminary	SB-14	9/7/90	1	x	x	x				
Preliminary	SB-14	9/7/90	3	x	x	x				
Preliminary	SB-15	9/7/90	0.5	x	x	x				
Preliminary	SB-15	9/7/90	1	x	x	x				
Preliminary	SB-15	9/7/90	3.5	x	x	x				
Phase II	SB-6A	4/9/91	0.5		x					
Phase II	SB-6A	4/9/91	1.0		x					
Phase II	SB-6B	4/9/91	0.5		x					

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
Phase II	SB-6B	4/9/91	1.0		x					
Phase II	SB-6C	4/9/91	0.5		x					
Phase II	SB-6C	4/9/91	1.0		x					
Phase II	SB-6D	4/9/91	0.5		x					
Phase II	SB-6D	4/9/91	1.0		x					
Phase II	SB-6E	4/9/91	0.5		x					
Phase II	SB-6E	4/9/91	1.0		x					
Phase II	SB-6F	4/9/91	0.5		x					
Phase II	SB-6F	4/9/91	1.0		x					
Phase II	SB-6G	4/9/91	0.5		x					
Phase II	SB-6G	4/9/91	1.0		x					
Phase II	SB-6H	4/9/91	0.5		x					
Phase II	SB-6H	4/9/91	1.0		x					
Phase II	SB-9A	4/9/91	0.5		x					
Phase II	SB-9A	4/9/91	1.0		x					
Phase II	SB-9B	4/9/91	0.5		x					
Phase II	SB-9B	4/9/91	1.0		x					
Phase II	SB-9C	4/9/91	0.5		x					
Phase II	SB-9C	4/9/91	1.0		x					
Phase II	SB-9D	4/9/91	0.5		x					
Phase II	SB-9D	4/9/91	1.0		x					
Phase II	SB-9E	4/9/91	0.5		x					
Phase II	SB-9E	4/9/91	1.0		x					
Phase II	SB-9F	4/9/91	0.5		x					
Phase II	SB-9F	4/9/91	1.0		x					
Phase II	SB-9G	4/9/91	0.5		x					
Phase II	SB-9G	4/9/91	1.0		x					
Phase II	SB-9H	4/9/91	1.0		x					
Phase II	SB-12A	4/9/91	0.5		x	x				
Phase II	SB-12A	4/9/91	1.0		x	x				
Phase II	SB-12B	4/9/91	0.5		x	x				
Phase II	SB-12B	4/9/91	1.0		x	x				
Phase II	SB-12C	4/9/91	0.5		x	x				
Phase II	SB-12C	4/9/91	1.0		x	x				
Phase II	SB-12D	4/9/91	0.5		x	x				
Phase II	SB-12D	4/9/91	1.0		x	x				
Phase II	SB-12E	4/9/91	0.5		x	x				
Phase II	SB-12E	4/9/91	1.0		x	x				
Phase II	SB-12F	4/9/91	0.5		x	x				
Phase II	SB-12F	4/9/91	1.0		x	x				
Phase II	SB-12G	4/9/91	0.5		x	x				
Phase II	SB-12G	4/9/91	1.0		x	x				
Phase II	SB-14A	4/8/91	0.5		x					
Phase II	SB-14A	4/8/91	1.0		x					
Phase II	SB-14B	4/8/91	0.5		x					
Phase II	SB-14B	4/8/91	1.0		x					
Phase II	SB-14C	4/8/91	0.5		x					

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
Phase II	SB-14C	4/8/91	1.0		x					
Phase II	SB-14D	4/8/91	0.5		x					
Phase II	SB-14D	4/8/91	1.0		x					
Phase II	SB-14E	4/8/91	0.5		x					
Phase II	SB-14E	4/8/91	1.0		x					
Phase II	SB-14F	4/8/91	0.5		x					
Phase II	SB-14F	4/8/91	1.0		x					
Phase II	SB-14G	4/9/91	0.5		x					
Phase II	SB-14G	4/9/91	1.0		x					
Phase III	SB-6H	1/7/94	1.5		x					
Phase III	SB-6I	1/7/94	0.5		x					
Phase III	SB-6I	1/7/94	1.0		x					
Phase III	SB-6J	1/7/94	0.5		x					
Phase III	SB-6K	1/7/94	0.5		x					
Phase III	SB-6K	1/7/94	0.5		x					
Phase III	SB-6L	1/7/94	1.0		x					
Phase III	SB-9	1/7/94	1.5		x					
Phase III	SB-9D	1/7/94	1.5		x					
Phase III	SB-9F	1/7/94	1.5		x					
Phase III	SB-9G	1/7/94	1.5		x					
Phase III	SB-9H	1/7/94	1.5		x					
Phase III	SB-9I	1/7/94	0.5		x					
Phase III	SB-9J	1/7/94	0.5		x					
Phase III	SB-9J	1/7/94	1.0		x					
Phase III	SB-9K	1/7/94	0.5		x					
Phase III	SB-9K	1/7/94	1.0		x					
Phase III	SB-9L	1/7/94	1.0		x					
Phase III	SB-9M	1/7/94	0.5		x					
Phase III	SB-9M	1/7/94	1.0		x					
Phase III	SB-9N	1/7/94	1.0		x					
Phase III	SB-9O	1/7/94	0.5		x					
Phase III	SB-9O	1/7/94	1.0		x					
Phase III	SB-9O	1/7/94	1.5		x					
Phase III	SB-12A	1/7/94	1.5		x	x				
Phase III	SB-12C	1/7/94	1.5		x	x				
Phase III	SB-12H	1/7/94	0.5		x	x				
Phase III	SB-12H	1/7/94	1.0		x	x				
Phase III	SB-12H	1/7/94	1.5		x	x				
Phase III	SB-12I	1/7/94	0.5		x	x				
Phase III	SB-12I	1/7/94	1.0		x	x				
Phase III	SB-12J	1/7/94	0.5		x	x				
Phase III	SB-12J	1/7/94	1.0		x	x				
Phase III	SB-12K	1/7/94	1.0		x	x				
Phase III	SB-12L	1/10/94	0.5		x	x				
Phase III	SB-12L	1/10/94	1.0		x	x				
Phase III	SB-12L	1/10/94	1.5		x	x				
Phase III	SB-14C	1/7/94	1.5		x					

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
Phase III	SB-14H	1/7/94	1.0		x					
Phase III	SB-14I	1/7/94	1.0		x					
Phase III	BC-1	8/15/94	1.0						x	x
Phase III	BC-2	8/15/94	2.5						x	x
Phase III	BC-3	8/15/94	1.0						x	x
Phase III	BC-4	8/15/94	1.75						x	x
Phase III	BC-5	8/15/94	2.5						x	x
Phase III	BC-6	8/15/94	2.5						x	x
Phase III	BC-7	8/15/94	0.5						x	x
Phase III	BC-8	8/15/94	2.5						x	x
Phase III	BC-9	8/15/94	3.0						x	x
Phase III	BC-10	8/15/94	0.0						x	x
Phase III	BC-11	8/15/94	2.0						x	x
Phase III	BC-12	8/15/94	0.0						x	x
Phase III	BC-13	8/15/94	0.5						x	x
Phase III	BC-14	8/15/94	2.5						x	x
Phase III	BC-15	8/15/94	3.5						x	x
Phase III	BC-16	8/15/94	2.5						x	x
Phase III	BC-17	8/15/94	2.5						x	x
Phase III	BC-18	8/15/94	3.5						x	x
Phase III	BC-19	8/15/94	3.5						x	x
Interim	BD-1	11/10/94	2.0		x	x	x		x	x
Interim	BD-1	11/10/94	6.0		x	x	x		x	x
Interim	BD-1A	11/10/94	2.0		x	x	x		x	x
Interim	BD-1A	11/10/94	4.0		x	x	x		x	x
Interim	BD-2	11/10/94	2.0		x	x	x		x	x
Interim	BD-2	11/10/94	4.0		x	x	x		x	x
Interim	BD-2A	11/10/94	2.0		x	x	x		x	x
Interim	BD-2A	11/10/94	4.5		x	x	x		x	x
Interim	BD-3	11/22/94	2.5		x	x	x		x	x
Interim	BD-3	11/22/94	5	x	x	x	x		x	x
Interim	BD-4	11/10/94	0	x	x	x	x		x	x
Interim	BD-5	11/22/94	2.5		x	x	x		x	x
Interim	MW-SB3	11/10/94	2		x	x	x		x	x
Interim	MW-SB3	11/10/94	4.5		x	x	x		x	x
Interim	MW-SB4	11/22/94	2		x	x	x		x	x
Interim	MW-SB4	11/22/94	5	x	x	x	x		x	x
Interim	MW-SB4A	11/10/94	5	x	x	x	x		x	x
Interim	MW-SB5	11/22/94	2.0		x	x	x		x	x
Interim	MW-SB5	11/22/94	3	x	x	x	x		x	x
Interim	MW-SB5grab	11/22/94					x		x	x
2nd Interim	PW-1 18"	1/31/95	1.5				x			
2nd Interim	PW-1 24"	1/31/95	2				x			
2nd Interim	PW1 36"	1/31/95	3	x	x					
2nd Interim	PW1 B5'	1/31/95	5	x	x					
2nd Interim	PW-2 6"	1/30/95	0.5				x			

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
2nd Interim	PW2 4.5-6"	1/30/95	4.5	x	x		x			
2nd Interim	PW2 12"	1/30/95	1	x	x					
2nd Interim	PW-3 @ 6"	1/30/95	0.5				x			
2nd Interim	PW3 12"	1/30/95	1	x	x					
2nd Interim	PW-3 @ 5'	1/30/95	5				x			
2nd Interim	PW3 5.6'	1/30/95	5.6	x	x					
2nd Interim	PW-4 @ .6	1/30/95	0.5				x			
2nd Interim	PW4 12"	1/30/95	1	x	x					
2nd Interim	PW-4 @36"	1/30/95	3.0				x			
2nd Interim	PW4 42"	1/30/95	3.5	x	x					
2nd Interim	TP-1	3/6/95	3.0				x	x	x	
2nd Interim	TP-2	3/6/95	3.0				x	x	x	
2nd Interim	TP-2	3/6/95	5.5				x	x	x	
2nd Interim	TP-3	3/6/95	3.0				x	x	x	
2nd Interim	TP-4	3/6/95	3.0				x	x	x	
3rd Interim	S-1	8/11/95	2.0				x	x	x	
3rd Interim	S-1	8/11/95	3.0				x	x[1]	x	
3rd Interim	S-2	8/11/95	2.0				x	x[1]	x	
3rd Interim	S-2	8/11/95	3.0				x	x[1]	x	
3rd Interim	S-3	8/11/95	2.0				x	x	x[1]	
3rd Interim	S-3	8/11/95	3.0				x	x	x[1]	
3rd Interim	S-4	8/11/95	2.0				x	x	x	
3rd Interim	S-4	8/11/95	3.0				x	x	x[1]	
3rd Interim	S-5	8/11/95	2.0				x	x[1]	x	
3rd Interim	S-5	8/11/95	3.0				x	x	x	
3rd Interim	S-6	8/11/95	2.0				x	x	x[1]	
3rd Interim	S-6	8/11/95	3.0				x	x	x[1]	
3rd Interim	S-7	8/11/95	2.0				x	x[1]	x	
3rd Interim	S-7	8/11/95	3.0				x	x[1]	x	
3rd Interim	S-8	8/11/95	2.0				x	x[1]	x	
3rd Interim	S-8	8/11/95	3.0				x	x[1]	x	
3rd Interim	S-9	8/11/95	2.0				x	x	x	
3rd Interim	S-9	8/11/95	3.0				x	x[1]	x	
3rd Interim	S-11	8/11/95	1.0		x	x				
3rd Interim	S-11	8/11/95	2.0				x	x[1]	x	
3rd Interim	S-11	8/11/95	3.0		x	x	x	x[1]	x	
3rd Interim	S-12	8/11/95	1.0		x	x				
3rd Interim	S-12	8/11/95	2.0				x	x[1]	x	
3rd Interim	S-12	8/11/95	3.0				x	x[1]	x	
3rd Interim	S-12	8/11/95	4.0		x	x				
3rd Interim	S-12	8/11/95	6.0		x	x				
10/95 Data Rpt	S-13	10/4/95	4.5				x	x	x[1]	
10/95 Data Rpt	S-13	10/4/95	6.5				x	x	x[1]	
10/95 Data Rpt	S-14	10/4/95	5				x[1]	x[1]	x	

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
10/95 Data Rpt	S-14	10/4/95	7				x[1]	x[1]	x	
10/95 Data Rpt	S-15	10/4/95	6.5				x	x	x[1]	
10/95 Data Rpt	S-15	10/4/95	8.5				x	x	x[1]	
10/95 Data Rpt	S-16A	10/4/95	4				x	x	x[1]	
10/95 Data Rpt	S-16A	10/4/95	6				x	x	x[1]	
10/95 Data Rpt	S-16B	10/4/95	4.5				x	x[1]	x	
10/95 Data Rpt	S-16B	10/4/95	7				x	x	x[1]	
CC Removal	C-1	11/12/96	0.5		x	x	x	x	x	
CC Removal	CS-1	11/27/96	5.0		x	x	x	x	x	
CC Removal	CS-2	11/27/96	5.0		x	x	x	x	x	
CC Removal	CS-3	11/27/96	5.0		x	x	x	x	x	
Total Number of Soil Samples				56	178	98	67	25	68	39
GROUNDWATER										
2nd Interim	PW-1	2/2/95		x	x					
2nd Interim	PW-1	3/3/95					x	x[1]	x	
2nd Interim	PW-2	2/2/95		x	x					
2nd Interim	PW-2	3/3/95					x	x	x	
Q-rpt	PW-2	7/1/96			x	x	x		x	
Q-rpt	PW-2	9/16/96			x	x	x	x	x	
Q-rpt	PW-2	12/11/96			x	x	x	x	x	
Q-rpt	PW-2	3/14/97			x	x	x	x	x	
Q-rpt	PW-2	6/20/97					x			
2nd Interim	PW-3	2/2/95		x	x					
2nd Interim	PW-3	3/3/95					x	x	x	
2nd Interim	PW-4	2/2/95		x	x					
2nd Interim	PW-4	3/3/95					x	x	x	
Phase II	MW-SB1	4/17/91			x	x				
Phase II	MW-SB1 (dup)	4/17/91			x	x				
Phase II	MW-SB1	7/9/91			x	x				
Phase II	MW-SB1 (dup)	7/9/91			x	x				
Phase III	MW-SB1	1/10/94			x	x				
Phase III	MW-SB1 (dup)	1/10/94			x	x				
Phase III	MW-SB1	1/26/94			x	x				
Phase III	MW-SB1 (dup)	1/26/94			x	x				
Interim	MW-SB1	11/28/94			x	x	x		x	x
2nd Interim	MW-SB1	3/3/95					x	x	x	
Phase II	MW-SB2	4/17/91			x	x				
Phase II	MW-SB2	7/9/91			x	x				
Phase III	MW-SB2	1/10/94			x	x				
Phase III	MW-SB2	1/26/94			x	x				
Interim	MW-SB2	11/28/94			x	x	x		x	x

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
2nd Interim	MW-SB2	3/6/95					x	x	x	
2nd Interim	MW-SB2 (dup)	3/6/95					x	x	x	
Q-rpt	MW-SB2	7/1/96			x	x	x		x	
Q-rpt	MW-SB2 (dup)	7/1/96			x	x	x		x	
Q-rpt	MW-SB2	9/16/96			x	x	x	x	x	
Q-rpt	MW-SB2 (dup)	9/16/96		x	x	x	x	x	x	
Q-rpt	MW-SB2	12/11/96			x	x	x	x	x	
Q-rpt	MW-SB2	3/14/97			x	x	x	x	x	
Q-rpt	MW-SB2	1/28/98					x			
Q-rpt	MW-SB2	1/6/99					x			
Q-rpt	MW-SB2	1/19/01					x			
Interim	MW-SB3	11/14/94			x	x				x
Interim	MW-SB3 (dup)	11/14/94			x	x				x
Interim	MW-SB3	12/7/94					x		x	x
Interim	MW-SB3 (dup)	12/7/94					x		x	x
2nd Interim	MW-SB3	3/6/95					x	x	x	
Q-rpt	MW-SB3	7/1/96			x	x	x		x	
Q-rpt	MW-SB3	9/16/96			x	x	x	x	x	
Q-rpt	MW-SB3	12/11/96			x	x	x	x	x	
Q-rpt	MW-SB3	3/14/97			x	x	x	x	x	
Q-rpt	MW-SB3	6/20/97					x			
Q-rpt	MW-SB3 (dup)	6/20/97					x			
Q-rpt	MW-SB3	1/28/98					x			
Q-rpt	MW-SB3	1/6/99					x			
Q-rpt	MW-SB3 (dup)	1/6/99					x			
Q-rpt	MW-SB3	2/4/00					x			
Q-rpt	MW-SB3 (dup)	2/4/00					x			
Q-rpt	MW-SB3	1/19/01					x			
Interim	MW-SB4	11/28/94			x	x	x		x	x
2nd Interim	MW-SB4	3/3/95					x	x	x	
Q-rpt	MW-SB4	7/1/96			x	x	x		x	
Q-rpt	MW-SB4	9/16/96			x	x	x	x	x	
Q-rpt	MW-SB4	12/11/96			x	x	x	x	x	
Q-rpt	MW-SB4	3/14/97			x	x	x	x	x	
Q-rpt	MW-SB4	6/20/97					x			
Q-rpt	MW-SB4	1/28/98					x			
Q-rpt	MW-SB4	1/6/99					x			
Q-rpt	MW-SB4	2/4/00					x			
Q-rpt	MW-SB4	1/19/01					x			

TABLE 1
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
METALS, AND TPH AS DIESEL, MOTOR OIL, AND BUNKER C
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Sample Date	Depth (feet bgs)	Metals (excluding Pb and Cu)	Total Lead	Total Copper	TPH as Diesel	TPH as Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
Interim	MW-SB5	11/28/94			x	x	x		x	x
2nd Interim	MW-SB5	3/6/95					x	x	x	
2nd Interim	MW-SB5 (dup)	3/6/95					x	x	x	
Q-rpt	MW-SB5	7/1/96			x	x	x		x	
Q-rpt	MW-SB5	9/16/96			x	x	x	x	x	
Q-rpt	MW-SB5	12/11/96			x	x	x	x	x	
Q-rpt	MW-SB5 (dup)	12/11/96			x	x	x	x	x	
Q-rpt	MW-SB5	3/14/97			x	x	x	x	x	
Q-rpt	MW-SB5 (dup)	3/14/97			x	x	x	x	x	
Q-rpt	MW-SB5	6/20/97					x			
Q-rpt	MW-SB5	1/28/98					x			
Q-rpt	MW-SB5	1/6/99					x			
Q-rpt	MW-SB5	2/4/00					x			
Q-rpt	MW-SB5	1/19/01					x			
Total Number of Groundwater Samples				5	46	42	63	28	41	8

Notes:

bgs = below ground surface.
See Figures 3, 5, and 6 for sample locations.
Laboratory reports are included in the corresponding original report.
Metal samples analyzed by EPA Method 6000/7000 series.
TPH samples analyzed by Modified EPA Method 8015 or California DOHS Method, LUFT Manual, October 1989.
Std. = Standard.
Preliminary = Preliminary Remedial Investigation, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, California, November 1990 (BASELINE, 1990).
Phase II = Phase II Remedial Investigation, Seabreeze Yacht Center, Inc.,Oakland, California, March 1992 (BASELINE, 1992).
Phase III = Phase III Remedial Investigation, Seabreeze Yacht Center, Inc., Oakland, California, September 1994 (BASELINE, 1994a).
Interim = Subsurface Investigation, Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, December 1994 (BASELINE, 1994b).
2nd Interim = Subsurface Investigation, Second Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, April 1995 (BASELINE, 1995a).
3rd Interim = Third Interim Report, Additional Subsurface Investigation, Seabreeze Yacht Center, Inc., Oakland, California, October 1995 (BASELINE, 1995b).
10/95 Data Rpt = Analytical Results for Soil Sampling, 4 October 1995, at Seabreeze Site, Oakland, 16 October 1995 (BASELINE, 1995c).
CC Removal = Concrete Containment Structure Removal and Remediation Oversight, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, California, January 1997. (BASELINE, 1997).
Q-rpt = Quarterly and Annual Groundwater Monitoring Reports dated 19 August 1996, 18 October 1996, 22 January 1997, 14 May 1997, 29 July 1997, 25 February 1998, January 1999, February 2000, and February 2001 (BASELINE, 1996 to 2001).

[1] Analysis performed; however, concentration not reported due to hydrocarbon overlap.

TABLE 2
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
TPH AS GASOLINE AND KEROSENE, OIL AND GREASE, VOCs, SVOCs, and PCBs
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Date Sampled	Sample Depth (feet bgs)	TPH as Gasoline	TPH as Kerosene	Nonpolar O&G	Total O&G	MTBE	SVOCs	VOCs	PCBs
SOIL											
Preliminary	SB-1	9/6/90	3.5							x	
Preliminary	SB-2	9/6/90	5.0							x	
Preliminary	SB-3	9/6/90	3.5							x	
Preliminary	SB-4	9/6/90	3.5							x	
Preliminary	SB-5	9/6/90	3.5							x	
Preliminary	SB-6	9/6/90	2.0								
Preliminary	SB-8	9/6/90	0.5			x	x				
Preliminary	SB-8	9/6/90	2.5			x	x			x	
Preliminary	SB-9	9/6/90	3.5							x	
Preliminary	SB-10	9/6/90	3.0							x	
Preliminary	SB-11	9/7/90	3.0							x	
Preliminary	SB-12	9/7/90	2.5							x	
Preliminary	SB-13	9/7/90	2.5							x	
Preliminary	SB-14	9/7/90	3.0							x	
Preliminary	SB-15	9/7/90	0.5			x	x				
Preliminary	SB-15	9/7/90	1.0			x	x				
Preliminary	SB-15	9/7/90	3.5			x	x			x	
Phase III	BD-1	11/10/94	2.0						x [1]		
Phase III	BD-1	11/10/94	6.0						x [1]		
Interim	BD-4	11/10/94	0.0							x	
Interim	MW-SB5grab	11/22/94								x	
2nd Interim	PW-1	1/31/95	3.0						x		
2nd Interim	TP-1	3/6/95	3.0		x						
2nd Interim	TP-2	3/6/95	3.0		x						
2nd Interim	TP-2	3/6/95	5.5		x						
2nd Interim	TP-3	3/6/95	3.0		x						
2nd Interim	TP-4	3/6/95	3.0		x						
2nd Interim	T-1	3/6/95	3								x
2nd Interim	T-1	3/6/95	5.5								x
2nd Interim	T-2	3/6/95	3								x
2nd Interim	T-3	3/6/95	3								x
2nd Interim	T-4	3/6/95	3								x
3rd Interim	S-1	8/11/95	2.0								x
3rd Interim	S-1	8/11/95	3.0								x
3rd Interim	S-2	8/11/95	2.0								x
3rd Interim	S-2	8/11/95	3.0								x
3rd Interim	S-3	8/11/95	2.0								x
3rd Interim	S-3	8/11/95	3.0								x
3rd Interim	S-4	8/11/95	2.0								x
3rd Interim	S-4	8/11/95	3.0								x
3rd Interim	S-5	8/11/95	2.0								x
3rd Interim	S-5	8/11/95	3.0								x
3rd Interim	S-6	8/11/95	2.0								x
3rd Interim	S-6	8/11/95	3.0								x
3rd Interim	S-7	8/11/95	2.0								x
3rd Interim	S-7	8/11/95	3.0								x
3rd Interim	S-8	8/11/95	2.0								x
3rd Interim	S-8	8/11/95	3.0								x
3rd Interim	S-9	8/11/95	2.0								x

TABLE 2
SUMMARY OF SOIL AND GROUNDWATER ANALYSES PERFORMED
TPH AS GASOLINE AND KEROSENE, OIL AND GREASE, VOCs, SVOCs, and PCBs
Seabreeze Yacht Center Study Area, Oakland, California

Report	Sample Number	Date Sampled	Sample Depth (feet bgs)	TPH as Gasoline	TPH as Kerosene	Nonpolar O&G	Total O&G	MTBE	SVOCs	VOCs	PCBs
3rd Interim	S-9	8/11/95	3.0								x
3rd Interim	S-11	8/11/95	2.0								x
3rd Interim	S-11	8/11/95	3.0								x
3rd Interim	S-12	8/11/95	2.0								x
3rd Interim	S-12	8/11/95	3.0								x
GROUNDWATER											
2nd Intrm	PW-2	3/3/95			x						
2nd Intrm	PW-3	3/3/95			x						
Phase II	MW-SB1	4/17/91				x				x	
Phase III	MW-SB1	1/26/94				x				x	
Interim	MW-SB1	11/28/94								x	
Phase II	MW-SB2	4/17/91				x				x	
Phase III	MW-SB2	1/26/94				x				x	
Interim	MW-SB2	11/28/94								x	
2nd Intrm	MW-SB2	3/6/95			x						
Q-Rpt	MW-SB2	2/4/00							x		
Q-Rpt	MW-SB2	1/19/01							x		
Interim	MW-SB3	12/7/94		x						x[2]	
2nd Intrm	MW-SB3	3/6/95			x						
Q-Rpt	MW-SB3	2/4/00							x		
Q-Rpt	MW-SB3	1/19/01							x		
Interim	MW-SB4	11/28/94								x	
Q-Rpt	MW-SB4	2/4/00							x		
Q-Rpt	MW-SB4	1/19/01							x		
Interim	MW-SB5	11/28/94								x	
2nd Intrm	MW-SB5	3/6/95			x						
Q-Rpt	MW-SB5	2/4/00							x		
Q-Rpt	MW-SB5	1/19/01							x		

Notes:

bgs = below ground surface.
TPH = Total petroleum hydrocarbons.
O&G = Oil and grease.
MTBE = Methyl tertiary butyl ether.
SVOCs = Semivolatile organic compounds.
VOCs = Volatile organic compounds.
PCBs = Polychlorinated biphenyls.
MTBE = Methyl tertiary butyl ether.
See Figures 4, 5, and 6 for sample locations.

O&G samples analyzed by Method SMWW 17:5520 E&F.
TPH samples analyzed by Modified EPA Method 8015.
SVOC samples analyzed by EPA Method 8270.
VOC samples were analyzed by EPA Method 8240.
PCB samples were analyzed by EPA Method 8080.
MTBE samples analyzed by EPA Method 8021B.
Laboratory reports are included in the corresponding original report.

Preliminary = Preliminary Remedial Investigation, Seabreeze Yacht Center, Inc., 280 Sixth Avenue, Oakland, Californa, November 1990 (BASELINE, 1990).
Phase III = Phase III Remedial Investigation, Seabreeze Yacht Center, Inc., Oakland, California, September 1994 (BASELINE, 1994a).
Interim = Subsurface Investigation, Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California, December 1994 (BASELINE, 1994).
2nd Interim = Subsurface Investigation, Second Interim Data Report, Seabreeze Yacht Center, Inc., Oakland, California. April 1995 (BASELINE, 1995a).
3rd Interim = Third Interim Report, Additional Subsurface Investigation, Seabreeze Yacht Center, Inc., Oakland, California, October 1995 (BASELINE, 1995b).
Q-rpt = Quarterly and Annual Groundwater Monitoring Reports dated February 2000, and February 2001 (BASELINE, 1996 to 2001).

[1] Analyzed only for cresote; analyzed using EPA Method 8270.
[2] Only analyzed for benzene, toluene, ethylbenzene, and xylenes using EPA Method 602.

TABLE 3
SUMMARY OF METALS CONCENTRATIONS IN SOIL
(Excluding Lead and Copper)
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample Number	Sample Date	Depth (feet bgs)	Total Sn	Total Sb	Total As	Total Ba	Total Be	Total Cd	Total Cr	Total Co	Total Hg	Total Mo	Total Ni	Total Se	Total Ag	Total Tl	Total V	Total Zn
SB-1	9/6/90	0.5	<5.0	--	--	--	--	<0.5	9.1	--	--	--	8.1	--	--	--	--	--
SB-1	9/6/90	1	<5.0	--	--	--	--	<0.5	14	--	--	--	25	--	--	--	--	--
SB-1	9/6/90	3.5	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	2.9	--	--	--	--	--
SB-2	9/6/90	0.5	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	<2.5	--	--	--	--	--
SB-2	9/6/90	1	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	<2.5	--	--	--	--	--
SB-2	9/6/90	3	<5.0	--	--	--	--	<0.5	18	--	--	--	27	--	--	--	--	--
SB-2	9/6/90	5	<5.0	--	--	--	--	<0.5	4.5	--	--	--	13	--	--	--	--	--
SB-3	9/6/90	0.5	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	<2.5	--	--	--	--	--
SB-3	9/6/90	1	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	<2.5	--	--	--	--	--
SB-3	9/6/90	3.5	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	2.5	--	--	--	--	--
SB-4	9/6/90	0.5	<5.0	--	--	--	--	0.5	11	--	--	--	24	--	--	--	--	--
SB-4	9/6/90	1	<5.0	--	--	--	--	<0.5	6.7	--	--	--	15	--	--	--	--	--
SB-4	9/6/90	3.5	<5.0	--	--	--	--	<0.5	3.5	--	--	--	6.6	--	--	--	--	--
SB-5	9/6/90	0.5	<5.0	--	--	--	--	0.6	18	--	--	--	19	--	--	--	--	--
SB-5	9/6/90	1	<5.0	--	--	--	--	<0.5	<2.5	--	--	--	<2.5	--	--	--	--	--
SB-5	9/6/90	3.5	<5.0	--	--	--	--	<0.5	13	--	--	--	17	--	--	--	--	--
SB-6	9/6/90	0.5	11	--	--	--	--	1.6	22	--	--	--	120	--	--	--	--	--
SB-6	9/6/90	2	<5.0	--	--	--	--	<0.5	6.6	--	--	--	21	--	--	--	--	--
SB-7	9/6/90	1	<5.0	--	--	--	--	<0.5	19	--	--	--	27	--	--	--	--	--
SB-8	9/6/90	0.5	<5.0	--	--	--	--	0.8	9.1	--	--	--	14	--	--	--	--	--
SB-8	9/6/90	1	<5.0	--	--	--	--	<0.5	20	--	--	--	20	--	--	--	--	--
SB-8	9/6/90	2.5	<5.0	--	--	--	--	<0.5	20	--	--	--	32	--	--	--	--	--
SB-9	9/6/90	0.5	<5.0	--	--	--	--	<0.5	36	--	--	--	26	--	--	--	--	--
SB-9	9/6/90	1	<5.0	--	--	--	--	<0.5	9.2	--	--	--	15	--	--	--	--	--
SB-9	9/6/90	3.5	<5.0	--	--	--	--	<0.5	12	--	--	--	14	--	--	--	--	--
SB-10	9/6/90	0.5	<5.0	--	--	--	--	<0.5	6.0	--	--	--	14	--	--	--	--	--
SB-10	9/6/90	1	<5.0	--	--	--	--	<0.5	4.0	--	--	--	9.5	--	--	--	--	--
SB-10	9/6/90	3	<5.0	--	--	--	--	<0.5	12	--	--	--	38	--	--	--	--	--
SB-11	9/7/90	0.5	<5.0	--	--	--	--	<0.5	21	--	--	--	38	--	--	--	--	--
SB-11	9/7/90	1	<5.0	--	--	--	--	<0.5	26	--	--	--	69	--	--	--	--	--
SB-11	9/7/90	3	<5.0	--	--	--	--	<0.5	28	--	--	--	28	--	--	--	--	--
SB-12	9/7/90	0.5	6.2	--	--	--	--	1.5	22	--	--	--	37	--	--	--	--	--
SB-12	9/7/90	1	<5.0	--	--	--	--	0.5	5.4	--	--	--	7.4	--	--	--	--	--
SB-12	9/7/90	2.5	<5.0	--	--	--	--	<0.5	22	--	--	--	26	--	--	--	--	--
SB-13	9/7/90	0.5	<5.0	--	--	--	--	<0.5	23	--	--	--	17	--	--	--	--	--
SB-13	9/7/90	1	<5.0	--	--	--	--	<0.5	13	--	--	--	18	--	--	--	--	--
SB-13	9/7/90	2.5	<5.0	--	--	--	--	<0.5	17	--	--	--	28	--	--	--	--	--
SB-14	9/7/90	0.5	<5.0	--	--	--	--	0.7	23	--	--	--	35	--	--	--	--	--
SB-14	9/7/90	1	<5.0	--	--	--	--	<0.5	15	--	--	--	25	--	--	--	--	--
SB-14	9/7/90	3	<5.0	--	--	--	--	<0.5	25	--	--	--	20	--	--	--	--	--
SB-15	9/7/90	0.5	<5.0	--	--	--	--	<0.5	12	--	--	--	25	--	--	--	--	--
SB-15	9/7/90	1	<5.0	--	--	--	--	<0.5	14	--	--	--	28	--	--	--	--	--
SB-15	9/7/90	3.5	<5.0	--	--	--	--	<0.5	14	--	--	--	32	--	--	--	--	--
BD-3	11/22/94	5	--	<3.0	<2.5	33	0.40	<0.25	41	5.5	<0.10	<0.99	35	<2.5	<0.50	<2.5	31	43
BD-4	11/10/94	0	--	<5.9	11	360	0.63	0.77	31	8.2	0.29	<2.0	39	<2.5	<0.99	<2.5	40	300
MW-SB4	11/22/94	5	--	<3.0	3.9	35	0.33	<0.25	37	4.5	<0.091	<1.0	28	<2.5	<0.50	<2.5	29	32
MW-SB4A	11/10/94	5	--	<6.0	13	440	1.0	<0.50	29	8.1	<0.091	<2.0	34	<2.5	<1.0	<2.5	30	30
MW-SB5	11/22/94	3	--	<3.0	11	200	1.2	2.4	38	11	0.40	1.7	180	<2.5	<0.50	<2.5	250	280
PW1 36"	1/31/95	3	--	--	2.6	54	--	<0.25	48	--	<0.095	--	--	<2.5	<0.50	--	--	--
PW1 B5'	1/31/95	5	--	--	5.0	120	--	0.49	22	--	<0.091	--	--	<2.5	<0.50	--	--	--
PW2 4.5-6	1/30/95	4.5	--	--	<2.5	28	--	<0.25	55	--	<0.10	--	--	<2.5	<0.50	--	--	--
PW2 12"	1/30/95	1	--	--	4.9	190	--	0.53	140	--	0.22	--	--	<2.5	<0.50	--	--	--
PW3 12"	1/30/95	1	--	--	5.7	140	--	0.58	35	--	<0.091	--	--	<2.5	<0.50	--	--	--
PW3 5.6'	1/30/95	5.6	--	--	4.4	61	--	<0.25	51	--	0.18	--	--	<2.5	<0.50	--	--	--
PW4 12"	1/30/95	1	--	--	5.5	86	--	0.40	31	--	<0.10	--	--	<2.5	<0.50	--	--	--
PW4 42"	1/30/95	3.5	--	--	6.7	180	--	0.25	33	--	0.13	--	--	<2.5	<0.50	--	--	--
No. of Samples			43	5	13	13	5	56	56	5	13	5	48	13	13	5	5	5
Maximum Concentration			11	<5.9	13	440	1.2	2.4	140	11	0.4	1.7	180	<2.5	<0.99	<2.5	250	300
Minimum Concentration			<5	<3	<2.5	28	0.33	<0.25	<2.5	4.5	<0.091	<1.0	<2.5	<2.5	<0.50	<2.5	29	30
Mean Concentration			2.784	2.090	5.862	148.23	0.7120	0.3838	20.60	7.460	0.1230	0.9390	26.38	--	0.2881	--	76.00	137.0
Variance			1.964	0.6530	13.79	16,433	0.1428	0.1522	443.8	6.523	0.01359	0.2441	893.1	--	0.008640	--	9,481	19,582
Standard Deviation			1.401	0.8081	3.713	128.19	0.3778	0.3902	21.07	2.554	0.1166	0.4941	29.88	--	0.09295	--	97.37	139.9
Standard Error			0.2137	0.3614	1.030	35.55	0.1690	0.05214	2.815	1.142	0.03233	0.2210	4.313	--	0.02578	--	43.54	62.58

TABLE 3
SUMMARY OF METALS CONCENTRATIONS IN SOIL
(Excluding Lead and Copper)
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample Number	Sample Date	Depth (feet bgs)	Total Sn	Total Sb	Total As	Total Ba	Total Be	Total Cd	Total Cr	Total Co	Total Hg	Total Mo	Total Ni	Total Se	Total Ag	Total Tl	Total V	Total Zn
t_{95}			1.682	2.132	1.782	1.782	2.132	1.673	1.673	2.132	1.782	2.132	1.678	--	1.782	--	2.132	2.132
95UCL			3.1	2.9	7.7	212	1.1	0.47	25	9.9	0.18	1.4	33.6	--	0.33	--	169	270
Risk Based Screening Level for Industrial Commercial Land Use (Table B. SFRWQCB. 2000)			--	40	2.7	1500	8	12	12	80	10	40	150	10	40	29	200	600

Notes:
bgs = below ground surface
mg kg = milligrams per kilogram.
<x = Metal not identified above laboratory reporting limit of x.
See Figure 3 for sample locations.
-- = not applicable not analyzed.
Data used to calculate the 95UCL; for metals not identified above the laboratory reporting limit , the adjusted value is 1/2 the laboratory reporting limit.
95UCL = One-tailed 95% Upper Confidence Limit.
t_{95} = Student's t value for one-tailed 95UCL.

Sn = Tin
Sb = Antimony
As = Arsenic
Ba= Barium
Be = Beryllium
Cd = Cadmium
Cr = Chromium
Co = Cobalt
Hg = Mercury
Mo = Molybdenum
Ni = Nickel
Se = Selenium
Ag = Silver
Tl = Thallium
V = Vanadium
Zn = Zinc

TABLE 4
SUMMARY OF LEAD AND COPPER CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample ID	Sample Date	Depth (feet bgs)	Total Lead	Total Copper
SB-1	9/6/90	0.5	40	31
SB-1	9/6/90	1.0	36	20
SB-1	9/6/90	3.5	14	12
SB-2	9/6/90	0.5	<2.5	17
SB-2	9/6/90	1.0	<2.5	19
SB-2	9/6/90	3.0	36	19
SB-2	9/6/90	5.0	87	11
SB-3	9/6/90	0.5	<2.5	10
SB-3	9/6/90	1.0	3	12
SB-3	9/6/90	3.5	2.5	9.0
SB-4	9/6/90	0.5	69	100
SB-4	9/6/90	1.0	<2.5	21
SB-4	9/6/90	3.5	14	16
SB-5	9/6/90	0.5	6.5	34
SB-5	9/6/90	1.0	<2.5	26
SB-5	9/6/90	3.5	11	19
SB-6	9/6/90	0.5	650	140
SB-6	9/6/90	2.0	<2.5	11
SB-7	9/6/90	1.0	67	37
SB-8	9/6/90	0.5	51	79
SB-8	9/6/90	1.0	2.9	7.3
SB-8	9/6/90	2.5	5.9	16
SB-9	9/6/90	0.5	200	18
SB-9	9/6/90	1.0	160	12
SB-9	9/6/90	3.5	2.5	9.5
SB-10	9/6/90	0.5	12	130
SB-10	9/6/90	1.0	<2.5	79
SB-10	9/6/90	3.0	25	18
SB-11	9/7/90	0.5	72	33
SB-11	9/7/90	1.0	22	18
SB-11	9/7/90	3.0	5.5	29
SB-12	9/7/90	0.5	340	730
SB-12	9/7/90	1.0	17	20
SB-12	9/7/90	2.5	67	19
SB-13	9/7/90	0.5	31	10
SB-13	9/7/90	1.0	19	9.9
SB-13	9/7/90	2.5	33	76
SB-14	9/7/90	0.5	61	47
SB-14	9/7/90	1.0	55	81
SB-14	9/7/90	3.0	<2.5	18
SB-15	9/7/90	0.5	12	8.4
SB-15	9/7/90	1.0	39	9.8

TABLE 4
SUMMARY OF LEAD AND COPPER CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample ID	Sample Date	Depth (feet bgs)	Total Lead	Total Copper
SB-15	9/7/90	3.5	14	11
SB-6A	4/9/91	0.5	990	--
SB-6A	4/9/91	1.0	101	--
SB-6B	4/9/91	0.5	145	--
SB-6B	4/9/91	1.0	16.8	--
SB-6C	4/9/91	0.5	11.3	--
SB-6C	4/9/91	1.0	3.5	--
SB-6D	4/9/91	0.5	8.5	--
SB-6D	4/9/91	1.0	7.9	--
SB-6E	4/9/91	0.5	7.8	--
SB-6E	4/9/91	1.0	142	--
SB-6F	4/9/91	0.5	9.3	--
SB-6F	4/9/91	1.0	8.4	--
SB-6G	4/9/91	0.5	<3.0	--
SB-6G	4/9/91	1.0	67.3	--
SB-6H	4/9/91	0.5	50.5	--
SB-6H	4/9/91	1.0	102	--
SB-9A	4/9/91	0.5	<3.0	--
SB-9A	4/9/91	1.0	<3.0	--
SB-9B	4/9/91	0.5	60.8	--
SB-9B	4/9/91	1.0	34.8	--
SB-9C	4/9/91	0.5	483	--
SB-9C	4/9/91	1.0	45.3	--
SB-9D	4/9/91	0.5	119	--
SB-9D	4/9/91	1.0	82.4	--
SB-9E	4/9/91	0.5	138	--
SB-9E	4/9/91	1.0	125	--
SB-9F	4/9/91	0.5	152	--
SB-9F	4/9/91	1.0	509	--
SB-9G	4/9/91	0.5	217	--
SB-9G	4/9/91	1.0	53.7	--
SB-9H	4/9/91	1.0	382	--
SB-12A	4/9/91	0.5	413	1,780
SB-12A	4/9/91	1.0	490	40
SB-12B	4/9/91	0.5	116	368
SB-12B	4/9/91	1.0	70.5	87
SB-12C	4/9/91	0.5	86.8	237
SB-12C	4/9/91	1.0	97.0	55
SB-12D	4/9/91	0.5	82.2	418
SB-12D	4/9/91	1.0	68.5	51
SB-12E	4/9/91	0.5	128	2,280

TABLE 4
SUMMARY OF LEAD AND COPPER CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample ID	Sample Date	Depth (feet bgs)	Total Lead	Total Copper
SB-12E	4/9/91	1.0	51.7	210
SB-12F	4/9/91	0.5	115	95
SB-12F	4/9/91	1.0	17.9	23
SB-12G	4/9/91	0.5	68.6	164
SB-12G	4/9/91	1.0	28.1	33
SB-14A	4/8/91	0.5	52	-
SB-14A	4/8/91	1.0	73	-
SB-14B	4/8/91	0.5	6.4	-
SB-14B	4/8/91	1.0	51	-
SB-14C	4/8/91	0.5	105	-
SB-14C	4/8/91	1.0	91	-
SB-14D	4/8/91	0.5	90	-
SB-14D	4/8/91	1.0	52	-
SB-14E	4/8/91	0.5	38.1	-
SB-14E	4/8/91	1.0	91.3	-
SB-14F	4/8/91	0.5	36.5	-
SB-14F	4/8/91	1.0	70.1	-
SB-14G	4/9/91	0.5	126	-
SB-14G	4/9/91	1.0	79.8	-
SB-6H	1/7/94	1.5	<4.9	-
SB-6I	1/7/94	0.5	80	-
SB-6I	1/7/94	1.0	45	-
SB-6J	1/7/94	0.5	24	-
SB-6K	1/7/94	0.5	180	-
SB-6K	1/7/94	0.5	3700	-
SB-6L	1/7/94	1.0	49	-
SB-9	1/7/94	1.5	26	-
SB-9D	1/7/94	1.5	120	-
SB-9F	1/7/94	1.5	75	-
SB-9G	1/7/94	1.5	34	-
SB-9H	1/7/94	1.5	270	-
SB-9I	1/7/94	0.5	310	-
SB-9J	1/7/94	0.5	110	-
SB-9J	1/7/94	1.0	84	-
SB-9K	1/7/94	0.5	240	-
SB-9K	1/7/94	1.0	93	-
SB-9K	1/7/94	1.5		
SB-9L	1/7/94	1.0	<4.9	-
SB-9M	1/7/94	0.5	87	-
SB-9M	1/7/94	1.0	74	-
SB-9M	1/7/94	1.0	93	-

TABLE 4
SUMMARY OF LEAD AND COPPER CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample ID	Sample Date	Depth (feet bgs)	Total Lead	Total Copper
SB-9N	1/7/94	1.0	180	--
SB-9O	1/7/94	0.5	<5	--
SB-9O	1/7/94	1.0	<5	--
SB-9O	1/7/94	1.5	58	--
SB-12A	1/7/94	1.5	140	350
SB-12C	1/7/94	1.5	340	360
SB-12H	1/7/94	0.5	150	190
SB-12H	1/7/94	1.0	300	3,500
SB-12H	1/7/94	1.5	23	23
SB-12I	1/7/94	0.5	230	100
SB-12I	1/7/94	1.0	200	150
SB-12J	1/7/94	0.5	48	86
SB-12J	1/7/94	1.0	63	240
SB-12K	1/7/94	1.0	19	170
SB-12L	1/10/94	0.5	220	240
SB-12L	1/10/94	1.0	75	120
SB-12L	1/10/94	1.5	140	39
SB-14C	1/7/94	1.5	65	--
SB-14H	1/7/94	1.0	120	--
SB-14I	1/7/94	1.0	230	--
BD-1	11/10/94	2.0	<5.0	7.6
BD-1	11/10/94	6.0	190	15
BD-1A	11/10/94	2.0	21	13
BD-1A	11/10/94	4.0	23	14
BD-2	11/10/94	2.0	230	18
BD-2	11/10/94	4.0	130	20
BD-2A	11/10/94	2.0	590	23
BD-2A	11/10/94	4.5	91	28
BD-3	11/22/94	2.5	160	2,300
BD-3	11/22/94	5.0	8.1	19
BD-4	11/10/94	0.0	150	53
BD-5	11/22/94	2.5	78	38
MW-SB3	11/10/94	2.0	190	50
MW-SB3	11/10/94	4.5	310	53
MW-SB4	11/22/94	2.0	79	35
MW-SB4	11/22/94	5.0	10	15
MW-SB4A	11/10/94	5.0	6.2	13
MW-SB5	11/22/94	2.0	63	24
MW-SB5	11/22/94	3.0	320	150
PW1 36"	1/31/95	3.0	9.3	--

TABLE 4
SUMMARY OF LEAD AND COPPER CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample ID	Sample Date	Depth (feet bgs)	Total Lead	Total Copper
PW1 B5'	1/31/95	5.0	38	--
PW2 4.5-6B	1/30/95	4.5	6.4	--
PW2 12"	1/30/95	1.0	210	--
PW3 12"	1/30/95	1.0	81	--
PW3 5.6'	1/30/95	5.6	28	--
PW4 12"	1/30/95	1.0	43	--
PW4 42"	1/30/95	3.5	63	--
S-11	8/11/95	1.0	150	28
S-11	8/11/95	3.0	210	50
S-12	8/11/95	1.0	7.4	5.4
S-12	8/11/95	4.0	79	36
S-12	8/11/95	6.0	13	30
C-1	11/12/96	0.5	9.36	22.8
CS-1	11/27/96	5.0	10.9	19.7
CS-2	11/27/96	5.0	19.3	24.4
CS-3	11/27/96	5.0	26.2	27.4
No. of Samples			179	98
Maximum Concentration			3,700	3,500
Minimum Concentration			<2.5	7.3
Mean Concentration			117.9	32.79
Variance			89,984	1,264
Standard Deviation			300.0	35.56
Standard Error			22.42	3.592
t_{95}			1.653	1.661
95UCL			**154.9**	**38.76**
Risk Based Screening Level for Industrial/Commercial Land Use (Table B, SFRWQCB, 2000)			1,000	225

Notes:

bgs = below ground surface.

mg/kg = milligrams per kilogram.

<x = Metal not identified above laboratory reporting limit of x.

See Figure 3 for sample locations.

-- = not analyzed/not applicable.

Data used to calculate the 95UCL: for metals not identified above the laboratory reporting limit , the adjusted value is 1/2 the laboratory reporting limit.

95UCL = One-tailed 95% Upper Confidence Limit.

t95 = Student's t value for one-tailed 95UCL.

TABLE 5
SUMMARY OF TPH DIESEL, MOTOR OIL, AND BUNKER C CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample Number	Date Sampled	Sample Depth (feet bgs)	TPH as Diesel	TPH Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
BC-1	8/15/94	1.0	--	--	1,900	1,900
BC-2	8/15/94	2.5	--	--	1,300	1,300
BC-3	8/15/94	1.0	--	--	1,100	1,100
BC-4	8/15/94	1.8	--	--	3,000	3,000
BC-5	8/15/94	2.5	--	--	2,000	2,000
BC-6	8/15/94	2.5	--	--	1,200	1,200
BC-7	8/15/94	0.5	--	--	1,000	1,100
BC-8	8/15/94	2.5	--	--	240	240
BC-9	8/15/94	3.0	--	--	<25	<25
BC-10	8/15/94	0.0	--	--	<25	<25
BC-11	8/15/94	2.0	--	--	200	200
BC-12	8/15/94	0.0	--	--	<25	<25
BC-13	8/15/94	0.5	--	--	2,000	2,300
BC-14	8/15/94	2.5	--	--	130	150
BC-15	8/15/94	3.5	--	--	750	670
BC-16	8/15/94	2.5	--	--	2,600	2,600
BC-17	8/15/94	2.5	--	--	<25	<25
BC-18	8/15/94	3.5	--	--	<25	<25
BC-19	8/15/94	3.5	--	--	240	240
BD-1	11/10/94	2.0	2	--	210	230
BD-1	11/10/94	6.0	6	--	370	410
BD-1A	11/10/94	2.0	<1	--	<30	<30
BD-1A	11/10/94	4.0	2	--	280	250
BD-2	11/10/94	2.0	40	--	1,600	1,800
BD-2	11/10/94	4.0	<20	--	2,300	2,500
BD-2A	11/10/94	2.0	<1	--	110	100
BD-2A	11/10/94	4.5	<20	--	12,000	11,000
BD-3	11/22/94	2.5	70	--	1,700	1,500
BD-3	11/22/94	5.0	480	--	2,000	1,800
BD-4	11/10/94	0.0	<10	--	1,600	1,900
BD-5	11/22/94	2.5	350	--	7,800	7,100
MW-SB3	11/10/94	2.0	66	--	4,000	4,500
MW-SB3	11/10/94	4.5	11	--	300	340
MW-SB4	11/22/94	2.0	2	--	160	140
MW-SB4	11/22/94	5.0	21	--	460	410
MW-SB4A	11/10/94	5.0	11,000	--	49,000	55,000
MW-SB5	11/22/94	2.0	30	--	1,200	1,100
MW-SB5	11/22/94	3.0	820	--	16,000	15,000
MW-SB5grab	11/22/94		8	--	140	150
PW-1 18"	1/31/95	1.5	30[1]	--	--	--

TABLE 5
SUMMARY OF TPH DIESEL, MOTOR OIL, AND BUNKER C CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample Number	Date Sampled	Sample Depth (feet bgs)	TPH as Diesel	TPH Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
PW-1 24"	1/31/95	2.0	410[1]	--	--	--
PW-2 6"	1/30/95	0.5	1,000[1]	--	--	--
PW-2 @ 4.5-6'	1/30/95	4.5	620[1]	--	--	--
PW-3 @ 6"	1/30/95	0.5	<50[1]	--	--	--
PW-3 @ 5'	1/30/95	5.0	<50[1]	--	--	--
PW-4 @ .6	1/30/95	0.5	<50[1]	--	--	--
PW-4 @36"	1/30/95	3.0	<50[1]	--	--	--
TP-1	3/6/95	3.0	28	200	340	--
TP-2	3/6/95	3.0	<1	<25	<25	--
TP-2	3/6/95	5.5	14	120	190	--
TP-3	3/6/95	3.0	92	190	400	--
TP-4	3/6/95	3.0	<1	<25	<25	--
S-1	8/11/95	2.0	<1	<25	<25	--
S-1	8/11/95	3.0	11	--	170	--
S-2	8/11/95	2.0	85	--	2,700	--
S-2	8/11/95	3.0	40	--	360	--
S-3	8/11/95	2.0	150	220	--	--
S-3	8/11/95	3.0	560	630	--	--
S-4	8/11/95	2.0	1.5	<25	<25	--
S-4	8/11/95	3.0	1,400	<625	--	--
S-5	8/11/95	2.0	7.9	--	83	--
S-5	8/11/95	3.0	<1	<25	<25	--
S-6	8/11/95	2.0	67	250	--	--
S-6	8/11/95	3.0	580	1,700	--	--
S-7	8/11/95	2.0	1,700	--	30,000	--
S-7	8/11/95	3.0	110	--	770	--
S-8	8/11/95	2.0	22	--	450	--
S-8	8/11/95	3.0	11	--	99	--
S-9	8/11/95	2.0	<1	<25	32	--
S-9	8/11/95	3.0	24	--	90	--
S-11	8/11/95	2.0	18	--	850	--
S-11	8/11/95	3.0	130	--	20,000	--
S-12	8/11/95	2.0	6.1	--	950	--
S-12	8/11/95	3.0	73	--	490	--
						--
S-13	10/4/95	4.5	3,000	2,500	--	--
S-13	10/4/95	6.5	1,800	1,400	--	--
S-14	10/4/95	5	--	--	420	--
S-14	10/4/95	7	--	--	530	--
S-15	10/4/95	6.5	1,900	1,300	--	--

TABLE 5
SUMMARY OF TPH DIESEL, MOTOR OIL, AND BUNKER C CONCENTRATIONS IN SOIL
Seabreeze Yacht Center Study Area, Oakland, California
(mg/kg)

Sample Number	Date Sampled	Sample Depth (feet bgs)	TPH as Diesel	TPH Motor Oil	TPH as Bunker C Lab. Std.	TPH as Bunker C Site Std.
S-15	10/4/95	8.5	2,600	1,000	--	--
S-16A	10/4/95	4	2,600	<250	--	--
S-16A	10/4/95	6	6,300	2,000	--	--
S-16B	10/4/95	4.5			57,000	--
S-16B	10/4/95	7	4,700	4,700	--	--
						--
C-1	11/12/96	0.5	<5	<10	<10	--
CS-1[2]	11/27/96	5.0	19	44	<10	--
CS-2[2]	11/27/96	5.0	10	43	<10	--
CS-3[2]	11/27/96	5.0	22	30	<10	--
No. of Samples			66	25	68	39
Maximum Concentration			11,000	4,700	57,000	55,000
Minimum Concentration			<1	<10	<10	<25
Mean Concentration			654.3	672.2	3,456	3,162
Variance			2,955,004	1,220,764	99,680,536	81,764,521
Standard Deviation			1,719	1,105	9,984	9,042
Standard Error			211.6	221.0	1,211	1,448
t_{95}			1.669	1.711	1.668	1.686
95UCL			**1,007.3**	**1,050**	**5,474.9**	**5,602.9**
Risk Based Screening Level for Industrial/Commercial Land Use (Table B, SFRWQCB, 2000)			500	1,000	1,000	1,000

Notes:

bgs = below ground surface.

mg/kg = milligrams per kilogram.

-- = nota analyzed.

<x = Compound(s) not identified above laboratory reporting limit of x.

TPH = Total petroleum hydrocarbons.

Std. = Standard.

See Figure 4 for sample locations.

Data used to calculate the 95UCL; for samples not identified above the laboratory reporting limit , the adjusted value is 1/2 the laboratory reporting limit.

95UCL = One-tailed 95% Upper Confidence Limit.

t_{95} = Student's t value for one-tailed 95UCL.

[1] Quantification based on an extended range spanning both diesel and motor oil retention times.

[2] Silica gel cleanup performed on sample.

TABLE 6

SUMMARY OF METAL CONCENTRATIONS IN GROUNDWATER (EXCLUDING LEAD AND COPPER)

Seabreeze Yacht Center Study Area, Oakland, California

(mg/L)

Report	Sample Date	Total As	Total Ba	Total Cd	Total Cr	Total Hg	Total Ni	Total Se	Total Ag	Total Zn	Total Fe
MW-SB2 [1]	9/16/96	<0.005	–	<0.005	<0.007	<0.0002	<0.03	–	<0.007	<0.1	0.13
PW-1	2/2/95	0.019	0.018	<0.005	<0.01	<0.0002	–	<0.005	<0.01	–	–
PW-2	2/2/95	0.014	0.1	<0.005	<0.01	<0.0002	–	0.011	<0.01	–	–
PW-3	2/2/95	0.015	0.084	<0.005	<0.01	<0.0002	–	<0.005	<0.01	–	–
PW-4	2/2/95	0.014	0.081	<0.005	<0.01	<0.0002	–	<0.005	<0.01	–	–
No. of Samples		5	4	5	5	5	1	4	5	1	1
Maximum Concentration		0.019	0.1	<0.005	<0.01	<0.0002	<0.03	0.011	<0.01	<0.1	0.13
Minimum Concentration		<0.005	0.018	<0.005	<0.007	<0.0002	<0.03	<0.005	<0.007	<0.1	0.13
Mean Concentration		0.01290	0.07075	–	–	–	–	0.0046	–	–	–
Variance		0.00003805	0.0013063	–	–	–	–	0.00001806	–	–	–
Standard Deviation		0.006168	0.03614	–	–	–	–	0.004250	–	–	–
Standard Error		0.002759	0.01807	–	–	–	–	0.002125	–	–	–
t_{90}		2.132	2.353	–	–	–	–	2.353	–	–	–
95UCL		**0.019**	**0.11**	–	–	–	–	**0.010**	–	–	–
DAF-Adjusted RBSL (SFRWQCB, 2000)		0.36	50 [2]	0.011	1.8	0.00012/ 0.00051 [3]	0.082	0.71 [4]	0.0092 [5]	0.23	–

Notes: <x = Metal not identified above laboratory reporting limit of x.

mg/L = milligrams per liter.

-- = not applicable/ not analyzed

See Figure 6 for monitoring well locations.

t_{95} = Student's t value for one-tailed 95UCL

Data used to calculate the 95UCL; for samples not identified above the laboratory reporting limit , the adjusted value is 1/2 the laboratory reporting limit.

DAF-Adjusted RBSL = Risk Based Screening Level for drinking water resource not threatened multiplied by a Dilution Attenuation Factor of ten (2000, San Francisco Bay Regional Water Quality Control Board), unless otherwise specified.

As = Arsenic Ni = Nickel

Ba= Barium Se = Selenium

Cd = Cadmium Ag = Silver

Cr = Chromium Zn = Zinc

Hg = Mercury Fe = Iron

[1] Sample was filtered prior to analysis.

[2] The SFRWQCB RBSL for barium is 0.0039 mg/L. However, this RBSL is based on the ecotox threshold for freshwater. No corresponding saltwater threshold has been published. However, the 1986 USEPA Quality Criteria for Water indicates that the soluble barium concentaration in marine water generally would have to exceed 50 mg/L before toxicity to aquatic life would be expected. See text for further discussion.

[3] xx/yy = Mercury DAF-Adjusted RBSL for drinking water resource / Mercury DAF-Adjusted RBSL for elevated threat to surface water.

[4] The SFRWQCB RBSL for selenium is 0.005 mg/L. However, this RBSL is based on the the ecological freshwater criteria for continuous concentration. The corresponding saltwater criteria for continuous concentration is 0.071 mg/L. See text for further discussion.

[5] The SFRWQCB RBSL for silver is 0.00012 mg/L. However, this RBSL is based on the the ecological freshwater criteria for continuous concentration. The corresponding saltwater criteria for continuous concentration is 0.00092 mg/L. See text for further discussion.

TABLE 7
SUMMARY OF TOTAL LEAD AND COPPER CONCENTRATIONS IN GROUNDWATER
Seabreeze Yacht Center Study Area, Oakland, California
(mg/L)

Sample ID	Sample Date	Total Lead	Total Copper
PW-1	2/2/95	0.006	--
PW-2	2/2/95	0.0043	--
PW-2	7/1/96	<0.003	<0.01
PW-2	9/16/96	<0.003	<0.005
PW-2	12/11/96	0.0101	<0.003
PW-2	3/14/97	0.00401	<0.003
PW-3	2/2/95	<0.003	--
PW-4	2/2/95	<0.003	--
MW-SB1[1]	4/17/91	<0.07	0.0198
MW-SB1[1]	4/17/91	<0.07	0.0144
MW-SB1[1]	7/9/91	<0.06	<0.02
MW-SB1[1]	7/9/91	<0.06	<0.02
MW-SB1	1/10/94	<0.1	<0.02
MW-SB1	1/10/94	<0.1	<0.02
MW-SB1	1/26/94	0.012	0.037
MW-SB1	1/26/94	0.0039	0.026
MW-SB1	11/28/94	<0.003	0.014
MW-SB2[1]	4/17/91	<0.07	0.0481
MW-SB2[1]	7/9/91	<0.06	<0.02
MW-SB2	1/10/94	<0.10	0.02
MW-SB2	1/26/94	0.0048	0.014
MW-SB2	11/28/94	<0.003	0.054
MW-SB2	7/1/96	<0.003	0.055
MW-SB2	7/1/96	<0.003	0.065
MW-SB2[1]	9/16/96	<0.003	<0.005
MW-SB2[1]	9/16/96	<0.003	<0.005
MW-SB2[1]	12/11/96	0.00855	0.00354
MW-SB2[1]	3/14/97	0.00314	<0.003
MW-SB3	11/14/94	<0.003	<0.01
MW-SB3	11/14/94	<0.003	0.01
MW-SB3	7/1/96	0.0036	<0.01
MW-SB3[1]	9/16/96	<0.003	<0.005
MW-SB3[1]	12/11/96	<0.003	<0.003
MW-SB3[1]	3/14/97	<0.003	0.00529
MW-SB4	11/28/94	0.093	0.078
MW-SB4	7/1/96	0.014	0.013
MW-SB4[1]	9/16/96	<0.003	<0.005
MW-SB4[1]	12/11/96	0.00465	0.00674
MW-SB4[1]	3/14/97	0.00519	<0.003

TABLE 7
SUMMARY OF TOTAL LEAD AND COPPER CONCENTRATIONS IN GROUNDWATER
Seabreeze Yacht Center Study Area, Oakland, California
(mg/L)

Sample ID	Sample Date	Total Lead	Total Copper
MW-SB5	11/28/94	<0.003	0.019
MW-SB5	7/1/96	0.0031	0.012
MW-SB5[1]	9/16/96	<0.003	<0.005
MW-SB5[1]	12/11/96	0.00344	<0.003
MW-SB5[1]	12/11/96	<0.003	<0.003
MW-SB5[1]	3/14/97	<0.003	<0.003
MW-SB5[1]	3/14/97	<0.003	0.00318
No. of Samples		46	42
Maximum Concentration		0.093	0.078
Minimum Concentration		<0.003	<0.003
Mean Concentration		0.01275	0.01453
Variance		0.0003607	0.0003571
Standard Deviation		0.01899	0.01890
Standard Error		0.002800	0.002916
t_{95}		1.679	1.683
95UCL		**0.017**	**0.019**
DAF-Adjusted RBSL (SFRWQCB, 2000)		0.081 [2]	0.024

Notes: <x = Metal not identified above laboratory reporting limit of x.
mg/L = milligrams per liter.
-- = not analyzed.
See Figure 6 for monitoring well locations.
Data used to calculate the 95UCL; for samples not identified above the laboratory reporting limit , the adjusted value is 1/2 the laboratory reporting limit.
95UCL = One-tailed 95% Upper Confidence Limit.
t_{95} = Student's t value for one-tailed 95UCL.
DAF-Adjusted RBSL = Risk Based Screening Level for drinking water resource not threatened multiplited by a Dilution Attenuation Factor of ten (2000, San Francisco Bay Regional Water Quality Control Board), unlessotherwise specified.

[1] Sample was filtered prior to analysis.

[2] The SFRWQCB RBSL for lead is 0.0032 mg/L. However, this RBSL is based on the the ecological freshwater criterion for continuous concentration. The corresponding ecotox threshold for saltwater is 0.0081 mg/L. See text for further discussion.

TABLE 8
SUMMARY OF TPH DIESEL, MOTOR OIL, AND BUNKER C CONCENTRATIONS IN GROUNDWATER
Seabreeze Yacht Center Study Area, Oakland, California
(mg/L)

Sample ID	Sample Date	TPH Diesel	TPH Diesel with silica gel cleanup	TPH Motor Oil	TPH Motor Oil with silica gel cleanup	TPH Bunker C Lab Standard	TPH Bunker C Lab Standard with silica gel cleanup
PW-1	3/3/95	1.7	--	--	--	3.9	--
PW-2	3/3/95	1.7	--	1.1	--	4.4	--
PW-2[1]	7/1/96	<0.049	<0.049	--	--	<0.3	<0.3
PW-2[1]	9/16/96	<0.05	<0.05	<0.25	<0.25	<0.5	<0.5
PW-2[1]	12/11/96	0.11	0.11	<0.25	<0.25	<0.5	<0.5
PW-2[1]	3/14/97	<0.05	<0.05	<0.25	<0.25	<0.5	<0.5
PW-2	6/20/97	<0.05	--	--	--	--	--
PW-3	3/3/95	5.8	--	1.2	--	9.4	--
PW-4	3/3/95	0.61	--	<1.3	--	1.6	--
MW-SB1	11/28/94	1.3	--	--	--	4.8	--
MW-SB1	3/3/95	1.8	--	1.4	--	4.8	--
MW-SB2	11/28/94	12	--	--	--	30	--
MW-SB2	3/6/95	16	--	4.9	--	28	--
MW-SB2	3/6/95	18	--	<25	--	33	--
MW-SB2[1]	7/1/96	<0.05	<0.05	--	--	<0.3	<0.3
MW-SB2[1]	7/1/96	0.17	0.17	--	--	<0.3	<0.3
MW-SB2[1]	9/16/96	<0.05	<0.05	<0.25	<0.25	<0.5	<0.5
MW-SB2[1]	9/16/96	0.17	0.17	<0.25	<0.25	<0.5	<0.5
MW-SB2[1]	12/11/96	0.16	0.16	<0.25	<0.25	<0.5	<0.5
MW-SB2[1]	3/14/97	0.061	0.061	<0.25	<0.25	<0.5	<0.5
MW-SB2	6/20/97	0.15	--	--	--	--	--
MW-SB2	1/28/98	<0.05	--	--	--	--	--
MW-SB2	1/6/99	<0.048	--	--	--	--	--
MW-SB2	1/19/01	<0.05	--	--	--	--	--
MW-SB3	11/14/94	--	--	--	--	--	--
MW-SB3	11/14/94	--	--	--	--	--	--
MW-SB3	12/7/94	1.4	--	3	--	3	--
MW-SB3	12/7/94	1.1	--		--	2.5	--
MW-SB3	3/6/95	2.3	--	1.5	--	5.8	--
MW-SB3[1]	7/1/96	<0.049	<0.049	--	--	<0.3	<0.3
MW-SB3[1]	9/16/96	<0.05	<0.05	0.28	0.28	<0.5	<0.5
MW-SB3[1]	12/11/96	0.19	0.19	<0.25	<0.25	<0.5	<0.5
MW-SB3[1]	3/14/97	0.085	0.085	<0.25	<0.25	<0.5	<0.5
MW-SB3	6/20/97	0.15	--	--	--	--	--
MW-SB3	6/20/97	0.1	--	--	--	--	--
MW-SB3	1/28/98	<0.05	--	--	--	--	--

TABLE 8
SUMMARY OF TPH DIESEL, MOTOR OIL, AND BUNKER C CONCENTRATIONS IN GROUNDWATER
Seabreeze Yacht Center Study Area, Oakland, California
(mg/L)

Sample ID	Sample Date	TPH Diesel	TPH Diesel with silica gel cleanup	TPH Motor Oil	TPH Motor Oil with silica gel cleanup	TPH Bunker C Lab Standard	TPH Bunker C Lab Standard with silica gel cleanup
MW-SB3	1/6/99	<0.049	--	--	--	--	--
MW-SB3	1/6/99	0.13	--	--	--	--	--
MW-SB3	2/4/00	<0.05	--	--	--	--	--
MW-SB3	2/4/00	<0.05	--	--	--	--	--
MW-SB3	1/19/01	<0.05	--	--	--	--	--
MW-SB4	11/28/94	1.1	--	--	--	4.3	--
MW-SB4	3/3/95	1.4	--	0.66	--	3	--
MW-SB4[1]	7/1/96	<0.049	<0.049	--	--	<0.3	<0.3
MW-SB4[1]	9/16/96	<0.05	<0.05	<0.25	<0.25	<0.5	<0.5
MW-SB4[1]	12/11/96	0.12	0.12	<0.25	<0.25	<0.5	<0.5
MW-SB4[1]	3/14/97	<0.05	<0.05	<0.25	<0.25	<0.5	<0.5
MW-SB4	6/20/97	0.11	0.11	--	--	--	--
MW-SB4	1/28/98	<0.05	<0.05	--	--	--	--
MW-SB4	1/6/99	<0.049	<0.049	--	--	--	--
MW-SB4	2/4/00	<0.05	<0.05	--	--	--	--
MW-SB4	1/19/01	<0.05	<0.05	--	--	--	--
MW-SB5	11/28/94	34	34		--	74	--
MW-SB5	3/6/95	15	15	8.1	--	34	--
MW-SB5	3/6/95	16	16	6.9	--	31	--
MW-SB5[1]	7/1/96	<0.049	<0.049	--	--	<0.3	<0.3
MW-SB5[1]	9/16/96	0.14	0.14	<0.25	<0.25	<0.5	<0.5
MW-SB5[1]	12/11/96	0.16	0.16	<0.25	<0.25	<0.5	<0.5
MW-SB5[1]	12/11/96	0.081	0.081	<0.5	<0.5	<0.5	<0.5
MW-SB5[1]	3/14/97	0.29	0.29	<0.25	<0.25	<0.5	<0.5
MW-SB5[1]	3/14/97	0.22	0.22	<0.5	<0.5	<0.5	<0.5
MW-SB5	6/20/97	0.27	--	--	--	--	--
MW-SB5	1/28/98	<0.05	--	--	--	--	--
MW-SB5	1/6/99	<0.05	--	--	--	--	--
MW-SB5	2/4/00	<0.05	--	--	--	--	--
MW-SB5	1/19/01	<0.05	--	--	--	--	--
No. of Samples		--	32	--	18	--	24
Maximum Concentration		--	34	--	0.28	--	<0.5
Minimum Concentration		--	<0.049	--	<0.25	--	<0.3
Mean Concentration		--	2.107	--	0.1475	--	--
Variance		--	48.23	--	0.002715	--	--
Standard Deviation		--	6.945	--	0.052	--	--
Standard Error		--	1.228	--	0.012	--	--

TABLE 8
SUMMARY OF TPH DIESEL, MOTOR OIL, AND BUNKER C CONCENTRATIONS IN GROUNDWATER
Seabreeze Yacht Center Study Area, Oakland, California
(mg/L)

Sample ID	Sample Date	TPH Diesel	TPH Diesel with silica gel cleanup	TPH Motor Oil	TPH Motor Oil with silica gel cleanup	TPH Bunker C Lab Standard	TPH Bunker C Lab Standard with silica gel cleanup
t_{95}		--	1.696	--	1.740	--	--
95UCL		--	**4.2**	--	**0.17**	--	--
DAF-Adjusted RBSL		--	6.4	--	6.4	--	6.4

Notes:

TPH = Total Petroleum Hydrocarbons.

<x = TPH not identified above laboratory reporting limit of x.

mg/L = milligrams per liter.

-- = not analyzed / not applicable.

See Figure 6 for monitoring well locations.

Data used to calculate the 95UCL; for samples not identified above the laboratory reporting limit , the adjusted value is 1/2 the laboratory reporting limit.

95UCL = One-tailed 95% Upper Confidence Limit.

t_{95} = Student's t value for one-tailed 95UCL.

DAF-Adjusted RBSL = Risk Based Screening Level for drinking water resource not threatened multiplited by a Dilution Attenuation Factor of ten (2000, San Francisco Bay Regional Water Quality Control Board), unlessotherwise specified.

' Sample subjected to a silica gel cleanup prior to analysis.

APPENDIX A

ALAMEDA COUNTY HEALTH CARE AGENCY
13 MAY 2000 LETTER

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

May 18, 2000
SLIC # 236

Mr. Douglas Herman
Port of Oakland
530 Water St.
Oakland CA 94604-2064

Re: Tunnel Remediation Work Plan for Seabreeze Yacht Center, 280 Sixth Ave., Oakland CA 94606

Dear Mr. Herman:

Our office has received and reviewed the April 15, 1999 **Transmittal of Requested Information** prepared for you by Baseline Environmental Consulting for the above referenced site including the proposed tunnel remediation work plan and the August 1999 **Phase One Tunnel Remediation Investigation and Phase Two Work Plan Intake and Discharge Tunnels.** I have discussed the findings and the proposal with the San Francisco Regional Water Quality Control Board (SFRWQCB).

Investigations at this site have been on-going since 1990. These investigations have identified historic uses of the site, characterized contamination of shallow soils and groundwater, and evaluated human health risks.

Remedial actions to date have included the removal and excavation of hydrocarbon contaminated soils from within the vicinity of the former above ground heating fuel storage container. The fuel was used to fuel the boilers, which generated steam to power the turbines of the former power plant.

By letter dated March 3, 1999, ACDEH requested submittal of a work plan for the remediation of the intake and discharge cooling water tunnels for the former power station. The April 15, 1999 Tunnel Remediation Work Plan met this requirement. It proposed using a video camera and hydro-system locator unit to investigate the condition, contents, dimensions and endpoint locations of the intake and discharge tunnels. However, the August 1999 Phase One Tunnel Remediation Investigation report stated that the video camera could not be used due to potential interference with embedded rebar. It proposes, as an alternative, that the intake and discharge tunnels be sealed near the shoreline without further investigation and that accumulated debris, sediment and oily material be left in place within the tunnels. This conceptual approach is approved, however, the proposed method of placing concrete over rip rap is not considered sufficient. This method would leave voids, thus defeating the main objective of the remedial action. Therefore, please adhere the to following additional requirements:

- Port shall provide a closure plan, which prescribes the methods to be used to seal the tunnels and the steps to be taken to assure the adequacy of the seal (absence of voids and assure long-term stability and integrity). This plan must be approved prior to starting the project.
- Port will provide a sampling plan to take additional soil and groundwater samples along the intake and discharge tunnels to complete site characterization. Groundwater samples should be filtered and passed through silica gel prior to chemical analysis. Your sampling plan must also be approved prior starting the project.
- After the completion of the remediation, the Port shall provide evidence of filing a deed restriction or Risk Management Plan (RMP), which limits the future land use of the site, prohibits the use of groundwater beneath the site and requires either an impervious cap or a clean soil covering over areas of known shallow soil contamination.
- Port shall prepare a health and safety plan for future maintenance or construction workers prior to any future site development.
- Port shall prepare a Soil and Groundwater Management Plan prior to any future site development.
- Port must properly close all on-site monitoring wells and provide proof of the aforementioned requirements prior to requesting site closure.

You may contact Ms. Betty Graham at (510) 622-2358 or myself at (510) 567-6765 or, if you have any questions.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

C: files, B. Chan
Ms. Betty Graham, RWQCB
Ms. Y. Nordhav, Baseline Environmental Consulting, 5900 Hollis St., Suite D, Emeryville, CA, 94608

SeabreezeWP

APPENDIX B

PORT OF OAKLAND 9 AUGUST 2000 LETTER

FOR 5917-C1

PORT OF OAKLAND

August 9, 2000

RECEIVED
AUG 11 2000
BASELINE

Mr. Barney M. Chan, Hazardous Materials Specialist
Alameda County Health Care Services
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Responses to Additional Requirements for Seabreeze Yacht Center, 280 6th Avenue, Oakland, California - SLIC #236

Dear Mr. Chan:

We are in receipt of your letter dated May 18, 2000 regarding the August 1999, Phase One Tunnel Remediation and Phase Two Work Plan for the intake and discharge tunnels at the Seabreeze Yacht Center (site). Your letter indicates that the County approved the proposed tunnel remediation conceptual approach of sealing the tunnels near the shoreline without further investigation and leaving accumulated debris, sediment, and oil material potentially in the tunnels. However, you requested the proposed method of sealing the tunnels (placing concrete over rip-rap) be elaborated upon in a closure plan to describe the steps to be taken to assure the adequacy of the seal. In addition, the following requirements were requested in the letter:

- Prepare a Sampling Plan to collect additional soil and groundwater samples along the intake and discharge tunnels to complete site characterization;
- Provide evidence of filing a Deed Restriction or Risk Management Plan after the completion of site remediation;
- Prepare a Health and Safety Plan for future maintenance or construction workers prior to any future site development;
- Prepare a Soil and Groundwater Management Plan prior to any future site development; and
- Properly close all on-site monitoring wells and provide proof of aforementioned requirements prior to requesting site closure.

A discussion of the Port's approach to address the County's requirements is provided below.

Closure Plan

The Port is currently preparing plans and specifications to seal the intake and discharge tunnels near the shoreline. The closure plan, which will include the plans and specifications, will be a modification of the August 1999 Phase One Tunnel Remediation and Phase Two Work Plan. The Closure Plan will address the method(s) to be implemented to seal the tunnels and steps to assure the adequacy of the seal.

Following completion, the plans and specifications will be submitted to the County for review and approval. The Port will then proceed with preparation of appropriate bid documents to solicit bids for the remediation.

530 Water Street ■ Jack London Square ■ P.O. Box 2064 ■ Oakland, California 94604-2064
Telephone (510) 272-1100 ■ Fax (510) 272-1172 ■ TDD (510) 763-5703 ■ Cable address, PORTOFOAK, Oakland

Sampling Plan

The Port has conducted several comprehensive soil and groundwater investigations at the site from 1990 through 1996 and are continuing to perform annual groundwater monitoring at the site. These past efforts have fully characterized the site and contaminants of concern. The past investigations identified petroleum-containing sediments and oily water with oily sheen within the tunnels and petroleum-containing soils above the tunnels. The potential for petroleum-containing sediments within the tunnel to transport to the Clinton Basin would be eliminated once the tunnels are sealed. In addition, past groundwater monitoring events at the site have not identified contaminants of concern in the groundwater discharging into Clinton Basin that could affect ecological receptors.

To address the County's request for additional soil and groundwater samples along the tunnels, grab soil and groundwater samples will be collected in the excavations prior to sealing the tunnels. The samples will be analyzed for contaminants of concern (petroleum hydrocarbons and polynuclear aromatic hydrocarbons) to evaluate the soil condition adjacent to the tunnels. A sampling plan for the soil and groundwater sampling efforts will be included with the closure plan, discussed above, and submitted to the County for review and approval prior to implementation.

Deed Restriction or Risk Management Plan

Following completion of site remediation and prior to site development, the Port will prepare a Risk Management Plan (RMP). The RMP will identify soil and groundwater management procedures that will be followed during site development, and long term maintenance. The RMP will be submitted to the County for review and comment.

The Port could also file a deed restriction for the site that follows a format amenable to the County.

Health and Safety Plan for Future Maintenance or Construction Workers Prior to any Future Site Development

A site-specific Health and Safety Plan will be prepared following completion of site remediation and prior to the commencement of future site development. The Health and Safety Plan will be part of the requirements in the contractor bid documents for site development. The plan will address the health and safety of future maintenance and construction workers at the site. The plan will be required to meet the requirements of Title 8, California Code of Regulations, Section 5192(b)(4).

Soil and Groundwater Management Plan Prior to any Future Site Development

Soil and groundwater management procedures will be part of the Risk Management Plan for the site and will be prepared following completion of site remediation and prior to the commencement of future site development. The RMP will address proper on-site soil and groundwater management during site development and operation to protect human and ecological receptors.

On-site Monitoring Well Closure Prior to Requesting Site Closure

All on-site monitoring wells will be abandoned in accordance with the Alameda County Public Works Agency, Water Resources Section prior to requesting site closure from the County. Proof of the additional County requirements described above would also be submitted to the County prior to requesting site closure.

Should you have any questions or need further information, please do not hesitate to contact me at (510) 627-1184.

Sincerely,

Douglas P. Herman
Associate Port Environmental Scientist

Cc: Joyce Washington, Port of Oakland
Anne Henny, Port of Oakland
Betty Graham, RWQCB
Yane Nordhav, Baseline

C:\win\mydocs\projects\seabreeze\response to workplan comments

APPENDIX C

COUNTY AND RWQCB COMMENTS ON APRIL 2001 DRAFT WORKPLAN

June 25, 2001

Letter to Doug Herman

RE: Seabreeze Yacht Center, Comments on the Report "Project Manual and Plan Drawings and Soil and Groundwater Sampling Plan and Closure Plan, Intake and Discharge Tunnels, Former Seabreeze Yacht Center, Oakland" April 19, 2001

Approved: Approved w/conditions: X Rejected:
Revise and Resubmit

Upon review and discussion of this office and that of the SFRWQCB, I request that you revise and resubmit the subject report in accordance with the following comments.

1) The sampling plan proposes that four soil borings to the depth of the tunnel invert be completed for each excavation and that up to four samples per boring be composited for laboratory analysis. In addition, two grab groundwater samples per excavation would be collected. This sampling design is acceptable, provided that discrete soil samples from each boring are retained for further analysis, if needed. Obviously contaminated borings should be analyzed discretely.

   In addition, please clarify the analytical procedures to be used for the groundwater samples. Will the metals samples be filtered in the field or in the lab? Will the TPH samples be filtered in addition to being treated with silica gel? Please insure that the method spike samples receive the same sample preparation as the field samples and are spiked **before** sample preparation?

2) For each chemical of concern set screening criteria that express allowable threshold concentrations for materials to be left in place or to be reused on-site. Include a table that lists each chemical of concern, its representative site concentrations, in soil and groundwater, and its respective screening criteria.

   The calculated 95% UCLs presented in the subject report are not acceptable as screening criteria. The RBSLs may be used, provided they are not cited as a primary reference.

3) Specify the applicable regulatory requirements for characterization, handling, transport, and disposal of contaminated materials. As written, it is not clear what regulatory requirements are anticipated or who is responsible for compliance.

TA[illegible] 1

SUMMARY OF ANALYTICAL RESULTS FOR WETLANDS COVER EVALUATION

Seabreeze Yacht Center, Oakland, California

(mg/kg, dry weight basis)

	Cross Section HE-1			Cross Section HE-2			Cross Section HE-3			Wetlands Creation Cover Criteria
Sample ID	**COMP 1A**	**COMP 1B**	**COMP 1C**	**COMP 2A**	**COMP 2B**	**COMP 2C**	**COMP 3A**	**COMP 3B**	**COMP 3C**	
Sample Interval (feet bgs)	2.5-5.0	6.25-8.75	5.0-7.5	3.0-5.5	5.75-8.25	4.5-7.0	3.0-5.5	5.75-8.25	4.0-6.5	
Sample Date	3/20/2001	3/20/2001	3/20/2001	3/20/2001	3/20/2001	3/20/2001	3/20/2001	3/20/2001	3/20/2001	
Percent Moisture	18	31	23	16	33	25	12	32	20	none
Petroleum Hydrocarbons										
TPH as Bunker C	<74	1,230	<84	290	<110	<89	1,100	2,060	84	none
Polycyclic Aromatic Hydrocarbons										
Total PAHs	0.060	0.32	<0.006	0.25	<0.007	<0.007	1.8	2.3	0.27	4
Title 22 Metals										
Antimony	<2.4	<2.9	<2.6	<2.4	<3.0	<2.7	<2.3	<2.9	<2.5	none
Arsenic	5.6	2.6	3.5	4.2	3.0	4.5	8.9	1.8	10	33
Barium	170	75	130	120	160	130	110	110	160	none
Beryllium	<0.61	<0.72	<0.65	<0.60	<0.75	<0.67	<0.57	<0.74	<0.63	none
Cadmium	2	1.4	1.3	1.5	1.4	1.5	0.82	1.3	4.1	5
Chromium	66	46	47	48	48	44	32	46	34	220
Cobalt	16	10	9.4	10	12	12	8.8	7.6	13	none
Copper	45	26	29	33	25	25	89	28	33	90
Lead	20	12	29	20	14	28	47	16	11	50
Mercury	0.083	0.094	0.21	0.11	0.10	0.20	0.33	0.31	0.14	0.35
Molybdenum	<1.2	<1.4	<1.3	<1.2	<1.5	<1.3	<1.1	<1.5	<1.3	none
Nickel	79	58	57	58	57	65	53	44	44	140
Selenium	0.51	0.43	<0.3	<0.25	<0.36	0.71 *	<0.23	<0.34	0.36	0.7
Silver	*0.06*	<1.4 RL	*0.099*	*0.067*	<1.5 RL	*0.12*	*0.16*	*0.056*	*0.12*	1.0
Thallium	<1.2	<1.4	<1.3	<1.2	<1.5	<1.3	<1.1	<1.5	<1.3	none
Vanadium	41	38	39	35	37	37	56	37	26	none
Zinc	130	58	58	75	57	61	93	49	38	160

TABLE 1

SUMMARY OF ANALYTICAL RESULTS FOR WETLANDS COVER EVALUATION

Seabreeze Yacht Center, Oakland, California

(mg/kg, dry weight basis)

	Cross Section HE-4					Cross Section HE-5					Wetlands Creation Cover Criteria
Sample ID	**HE-4A**	**COMP 4B**	**HE-4B**	**COMP 4C**	**HE-4C**	**COMP 5A**	**HE-5A**	**COMP 5B**	**COMP 5C**	**HE-5C**	
Sample Interval (feet bgs)	4.0-4.5	5.5-8.0	8-8.5	3.5-6.0	6.5-7	0.5-2.5	3-3.5	5.0-7.5	4.0 - 7.0	7.5-8	
Sample Date	3/20/2001	3/20/2001	3/20/2001	3/20/2001	3/28/2001	3/20/2001	3/20/2001	3/20/2001	3/28/2001	3/28/2001	
Percent Moisture	48	31	49	8.3	39	15	11	33	24	26[1]	none
Petroleum Hydrocarbons											
TPH as Bunker C	310	650	<98	<60	820	<69	<56	120	<86	<70	none
Polycyclic Aromatic Hydro											
Total PAHs	**44 ***	0.80	0.046	<0.0055	0.31	0.60	0.031	0.30	0.26	<0.01	4
Title 22 Metals											
Antimony	<3.8	<2.9	<3.9	<2.2	<3.3	<2.4	<2.2	<3.0	<2.6	<2.7	none
Arsenic	4.6	16	3.9	9.8	6.4	5.4	10.7	7.8	5.4	4.3	33
Barium	52	360	50	22	490	41	130	42	74	32	none
Beryllium	<0.96	<0.72	<0.98	<0.55	<0.82	<0.59	<0.56	<0.75	<0.66	<0.68	none
Cadmium	1.5	1.7	2.4	<0.55	2.8	0.60	1.1	0.99	0.67	1.5	5
Chromium	73	54	71	17	59	29	34	48	38	49	220
Cobalt	13	13	12	4.5	8.0	6.4	9.0	11	9.0	8.4	none
Copper	48	51	47	10	**700 ***	**95 ***	**190 ***	25	41	31	90
Lead	37	**200 ***	31	9.3	**800 ***	**110 ***	**190 ***	14	36	22	50
Mercury	**1.3 ***	**0.75 ***	0.13	<0.06	0.31	0.18	**0.56 ***	0.22	**0.41 ***	0.27	0.35
Molybdenum	<1.9	<1.4	<2.0	<1.1	1.8	<1.2	<1.1	<1.5	<1.3	<1.4	none
Nickel	75	**170 ***	73	23	80	35	49	55	51	49	140
Selenium	<0.42	0.32	<0.41	<0.24	**0.75 ***	<0.24	0.39	0.43	<0.29	0.66	0.7
Silver	*0.33*	*0.17*	**<2.0 RL**	*0.12*	**2.5 ***	*0.032*	**<1.1 RL**	**<1.5 RL**	**<1.3 RL**	**<1.4 RL**	1
Thallium	<1.9	<1.4	<2.0	<1.1	<1.6	<1.2	<1.1	<1.5	<1.3	<1.4	none
Vanadium	62	160	59	15	64	28	45	40	45	42	none
Zinc	110	**200 ***	80	26	**640 ***	92	130	55	66	57	160

Notes:

<xx = Constituent not identified above the laboratory reporting limit of xx.

* = Concentration exceeds Wetland Cover Criterion.

RL = Reporting limit exceeds Wetland Cover Criterion.

x.x = Estimated concentration; value is below the reporting limit but above the method detection limit.

Sample locations are shown on Figures 2 through 7.

Laboratory reports are provided in Appendix C.

[1] Actual moisture content not determined; value is estimated as the average of the moisture contents reported for all other samples.

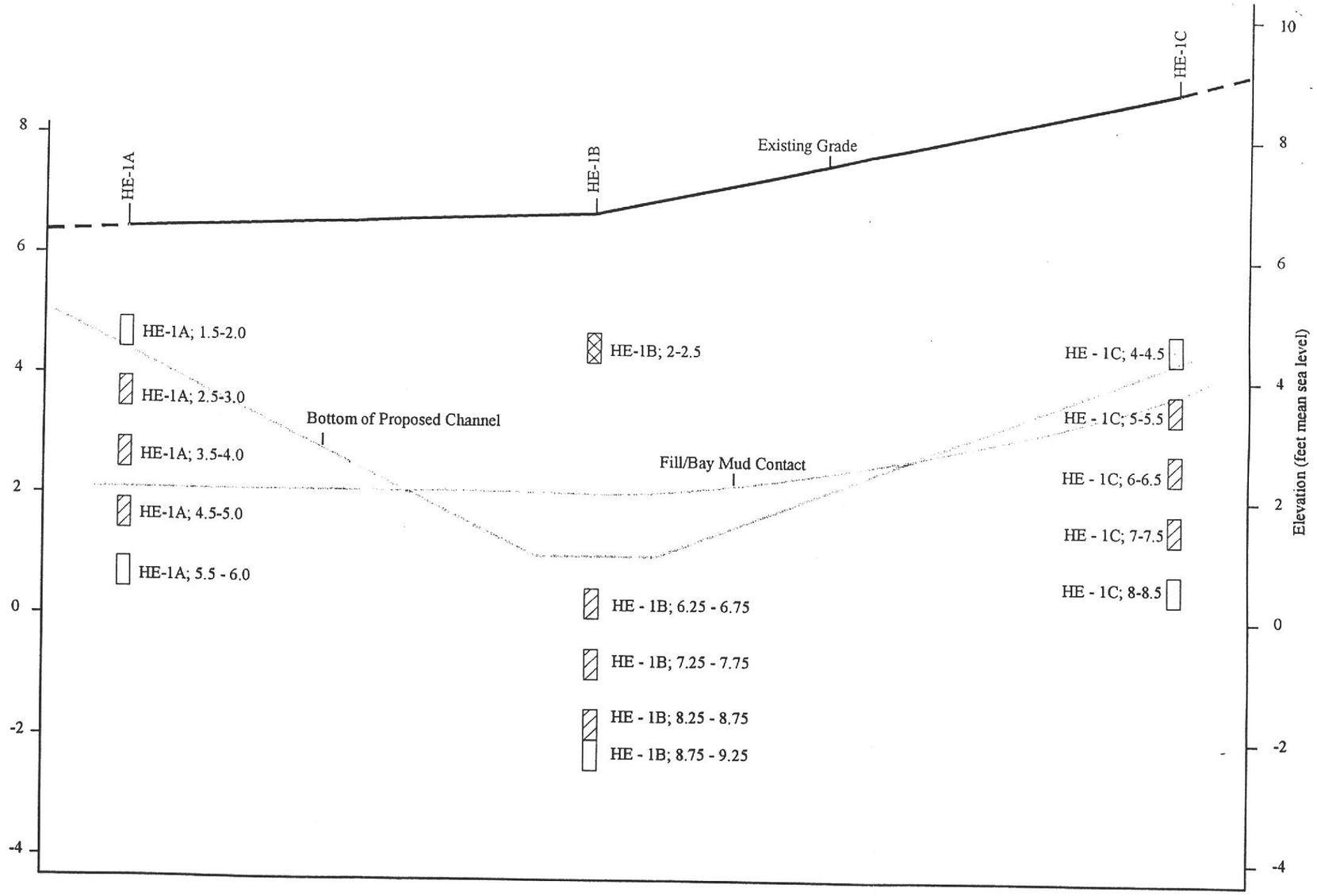
TABLE 2
SUMMARY OF ANALYTICAL RESULTS FOR SOIL MANAGEMENT EVALUATION
Habitat Enhancement Project
Seabreeze Yacht Center, Oakland, California
(mg/kg, wet weight basis)

Sample ID	Cross Section HE-1	Cross Section HE-2	Cross Section HE-3	Cross Section HE-4					Cross Section HE-5				
Sample Interval (feet bgs)	HE-1B 2.0-2.5	HE-2B 2.0-2.5	HE-3B 2.0-2.5	HE-4B 2.0-2.5	HE-4A 4.0-4.5	COMP 4B 5.5-8.0	COMP 4C 3.5-6.0	HE-4C; 6.5-7 6.5-7	HE-5B 2.0-2.5	COMP 5A 0.5-2.5	COMP 5B 5.0-7.5	COMP 5C 4.0 - 7.0	HE-5A; 3-3.5 3-3.5
Sample Date	3/20 and 5/11/01	3/20 and 5/11/01	3/20 and 5/11/01	3/20 and 5/11/01	3/20/01	3/20/01	3/20/01	3/20/01	3/20 and 5/11/01	3/20/01	3/20/01	3/20/01	3/20/01
Percent Moisture	**11**	**7**	**12**	**28**	**48**	**31**	**8.3**	**39**	**10**	**15**	**33**	**24**	**11**
Petroleum Hydrocarbons													
TPH as Bunker C	<50	**70**	<50	**70**	**160**	**450**	<55	**500**	**60**	<59	**79**	<65	<50
Polycyclic Aromatic Hydrocarbons													
Acenaphthene	<0.19	<0.036	<0.038	<0.23	<0.05	<0.05	<0.01	<0.02	**1.5**	<0.05	<0.01	<0.026	<0.01
Acenaphthylene	<0.37	<0.071	<0.075	<0.46	<0.05	<0.05	<0.01	<0.02	<0.73	<0.05	<0.01	<0.026	<0.01
Anthracene	<0.094	<0.018	<0.019	<0.11	**0.34**	**0.074**	<0.005	<0.01	**1.3**	<0.025	**0.012**	<0.013	<0.005
Benzo(a)anthracene	**0.40**	<0.0036	**0.042**	**0.092**	**1.9**	<0.025	<0.005	<0.01	**0.48**	<0.025	<0.005	<0.013	<0.005
Benzo(a)pyrene	**0.58**	<0.0036	**0.053**	**0.18**	**2.4**	<0.025	<0.005	<0.01	**0.49**	<0.025	**0.027**	<0.013	<0.005
Benzo(b)fluoranthene	**0.47**	<0.0073	**0.041**	**0.15**	**2.4**	<0.025	<0.005	<0.01	**0.48**	<0.025	**0.023**	<0.013	<0.005
Benzo(g,h,i)perylene	**0.69**	<0.0073	**0.050**	**0.31**	**1.2**	<0.05	<0.01	<0.02	**0.60**	<0.05	<0.01	<0.026	<0.01
Benzo(k)fluoranthene	**0.22**	<0.0036	**0.021**	**0.072**	**0.84**	<0.025	<0.005	<0.01	**0.27**	<0.025	<0.005	<0.013	<0.005
Chrysene	**0.51**	<0.0036	**0.047**	**0.13**	**1.4**	<0.025	<0.005	<0.01	**0.51**	**0.052**	**0.017**	<0.013	<0.005
Dibenz(a,h)anthracene	**0.68**	<0.0073	**0.044**	**0.47**	<0.05	<0.05	<0.01	<0.02	**0.46**	<0.05	<0.01	<0.026	<0.01
Fluoranthene	**0.88**	<0.014	**0.093**	**0.20**	**4.9**	<0.025	<0.005	0.096	**2.6**	**0.36**	**0.041**	**0.066**	**0.011**
Fluorene	<0.19	<0.036	<0.038	<0.23	<0.025	<0.025	<0.005	<0.01	**1.6**	<0.025	<0.005	<0.013	<0.005
Indeno(1,2,3-cd)pyrene	**0.76**	<0.0036	**0.067**	**0.37**	**1.6**	<0.05	<0.01	<0.02	**0.49**	<0.05	<0.01	<0.026	<0.01
Naphthalene	<0.19	<0.036	<0.038	<0.23	<0.075	<0.075	<0.015	<0.03	**4.2**	<0.075	<0.015	<0.039	**0.017**
Phenanthrene	**0.55**	<0.018	**0.074**	<0.11	**1.6**	<0.025	<0.005	0.052	**5.0**	<0.025	**0.032**	**0.053**	<0.005
Pyrene	**1.1**	<0.0073	**0.11**	**0.25**	**4.2**	**0.48**	<0.005	0.042	**2.2**	**0.1**	**0.046**	**0.077**	<0.005
Total PAHs	**6.8**	<0.0036	**0.64**	**2.2**	**23**	**0.55**	<0.005	0.19	**22**	**0.51**	**0.20**	**0.20**	**0.028**
Aromatic Hydrocarbons													
Benzene	<0.005	<0.005	<0.005	<0.005	--	--	--	--	<0.005	--	--	--	--
Toluene	<0.005	<0.005	<0.005	<0.005	--	--	--	--	<0.005	--	--	--	--
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	--	--	--	--	<0.005	--	--	--	--
Xylenes	<0.005	<0.005	<0.005	<0.005	--	--	--	--	<0.005	--	--	--	--
Title 22 Metals													
Antimony	<3.1	<2.9	<3.2	<4.2	<2.0	<2.0	<2.0	<2.0	<3.1	<2.0	<2.0	<2.0	<2.0
Arsenic	**6.6**	**7.6**	**5.2**	**8.1**	**2.4**	**11**	**9.0**	**3.9**	**6.8**	**4.6**	**5.2**	**4.1**	**9.5**
Barium	**170**	**89**	**17**	**81**	**27**	**250**	**20**	**300**	**39**	**35**	**28**	**56**	**120**
Beryllium	**0.36**	**0.32**	**0.16**	**0.46**	<0.50	<0.50	<0.50	<0.50	**0.15**	<0.50	<0.5	<0.50	<0.50
Cadmium	**1.9**	**2.5**	**1.4**	**2.3**	**0.79**	**1.2**	<0.50	**1.7**	**1.5**	**0.51**	**0.66**	**0.51**	**0.95**
Chromium	**38**	**1.2**	**23**	**53**	**38**	**37**	**16**	**36**	**26**	**25**	**32**	**29**	**30**
Cobalt	**10**	**5.6**	**6.8**	**9.9**	**6.6**	**9.0**	**4.1**	**4.6**	**7.0**	**5.4**	**7.1**	**6.6**	**8.0**
Copper	**280 (15) / 9**	**11 / 25**	**5.9 / 24**	**76 / 54**	**25**	**35**	**9.3**	**430 (<0.5)**	**19 / 21**	**81**	**17**	**31**	**170**
Lead	**110 (9.4) / 30**	**3.8 / 13**	**4.4 / 24**	**37 / 53 (4.4)**	**19**	**140 (4.6)**	**8.5**	**490 (0.79)**	**32 / 33**	**92 (2.9)**	**9.7 (1.4)**	**27**	**170**
Molybdenum	<1.0	<0.96	<1.1	<1.4	<1.0	<1.0	<1.0	**1.1**	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	**73**	**17**	**37**	**73**	**39**	**120**	**21**	**49**	**56**	**30**	**37**	**39**	**44**
Selenium	**0.51**	**0.83**	**0.39**	**0.69**	<0.22	**0.22**	<0.22	**0.46**	**0.26**	<0.20	**0.29**	<0.22	**0.35**
Silver	<0.26	<0.24	<0.27	<0.35	***0.17***	***0.12***	***0.11***	**1.5**	<0.26	***0.027***	<1.0	<1.0	<1.0
Thallium	<0.26	**0.37**	<0.27	<0.35	<1.0	<1.0	<1.0	<1.0	<0.26	<1.0	<1.0	<1.0	<1.0
Vanadium	**57**	**16**	**23**	**66**	**32**	**110**	**14**	**39**	**54**	**24**	**27**	**34**	**40**
Zinc	**170**	**75**	**25**	**92**	**57**	**140**	**24**	**390**	**53**	**78**	**37**	**50**	**120**
Mercury	**1.0**	**0.17**	**0.024**	**0.34**	**0.68**	**0.52**	<0.055	**0.19**	**0.082**	**0.15**	**0.15**	**0.31**	**0.50**

Notes: <xx = Constituent not identified above the laboratory reporting limit of xx.
(yy) = Soluble concentration as determined using the Waste Extraction Test in mg/L.
x.x = Estimated concentration; value is below the reporting limit but above the method detection limit.
-- = Not analyzed.
Sample locations are shown on Figures 2 through 7.
Laboratory reports are provided in Appendix C.

CROSS-SECTION HE-1

Figure 3



Legend

- Soil Sample Analyzed Discretely
- Soil Sample Collected and Not Analyzed
- Soil Sample Composited and Analyzed
- Fill/ Bay Mud Contact (dashed where approximate)
- Bottom of Proposed Channel

Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

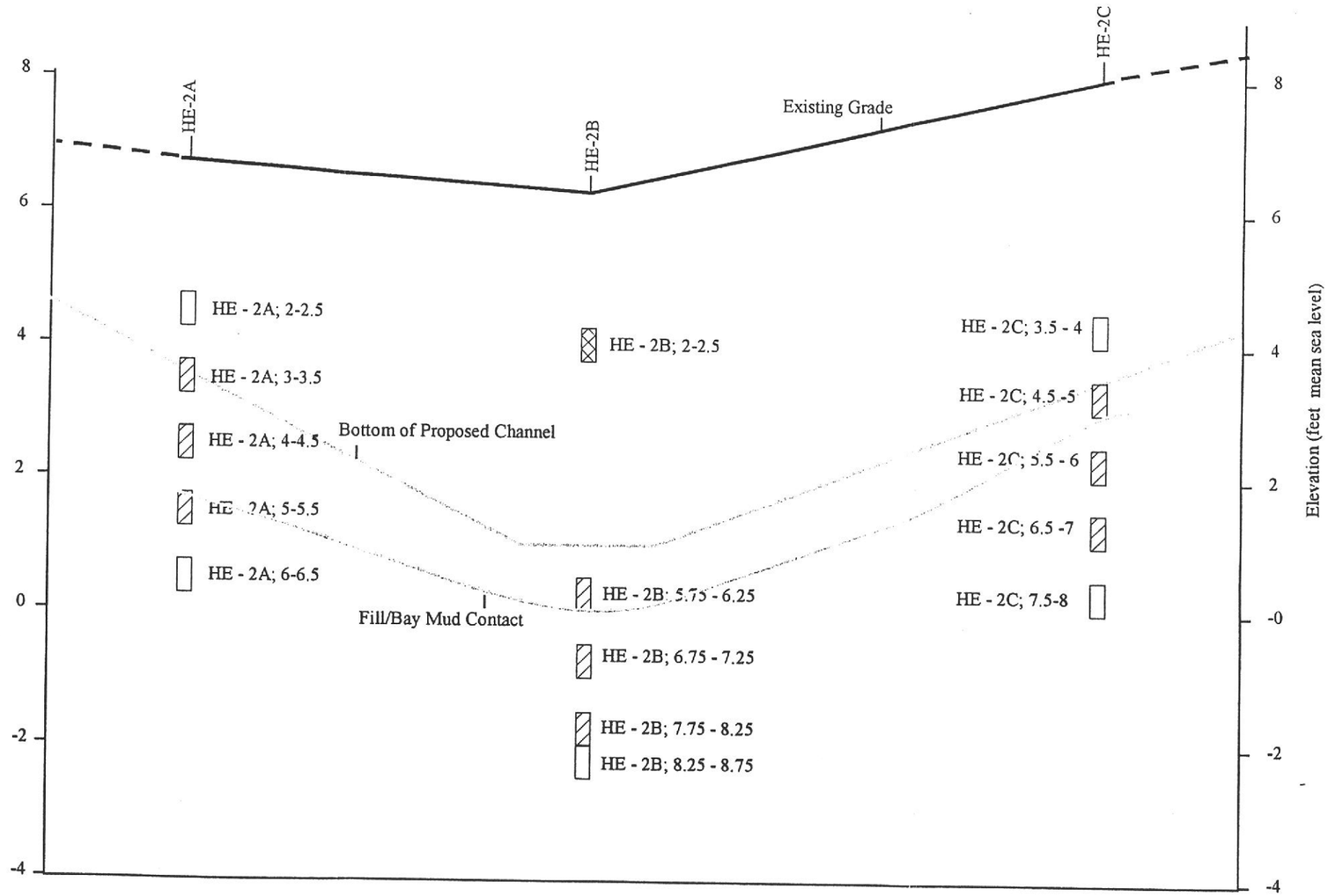
Horizontal
0 6 Feet
Vertical
0 2 Feet

BASELINE

D:\Graphics\S9171-C1\HabitatEnhance\HE-1.cdr 4/30/01

CROSS-SECTION HE-2

Figure 4



Legend

- Soil Sample Analyzed Discretely
- Soil Sample Collected and Not Analyzed
- Soil Sample Composited and Analyzed
- Fill/ Bay Mud Contact (dashed where approximate)
- Bottom of Proposed Channel

Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

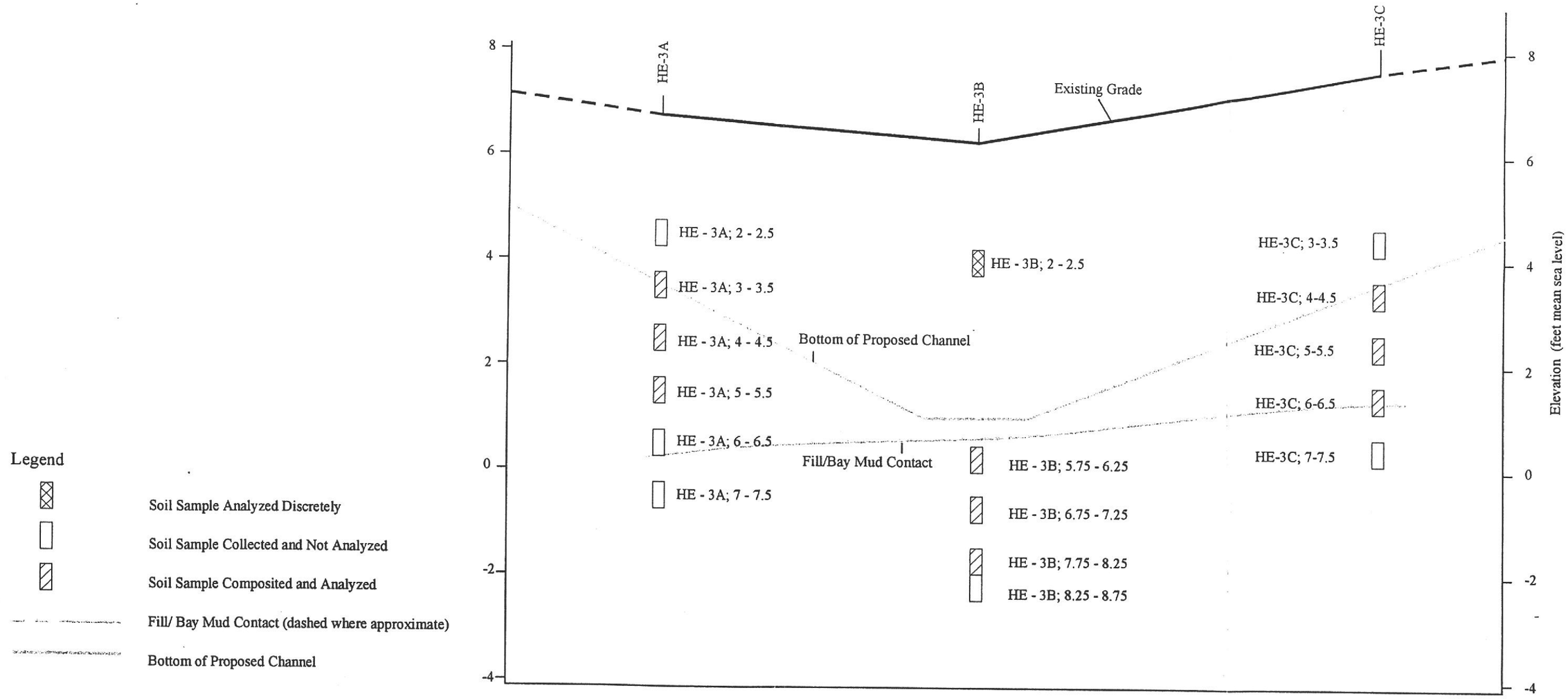
Horizontal
0 6 Feet
Vertical
0 2 Feet

BASELINE

D:\Graphics\S9171-C1\HabitatEnhance\HE-2.cdr 4/30/01

CROSS-SECTION HE-3

Figure 5



Legend

- Soil Sample Analyzed Discretely
- Soil Sample Collected and Not Analyzed
- Soil Sample Composited and Analyzed
- Fill/ Bay Mud Contact (dashed where approximate)
- Bottom of Proposed Channel

Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

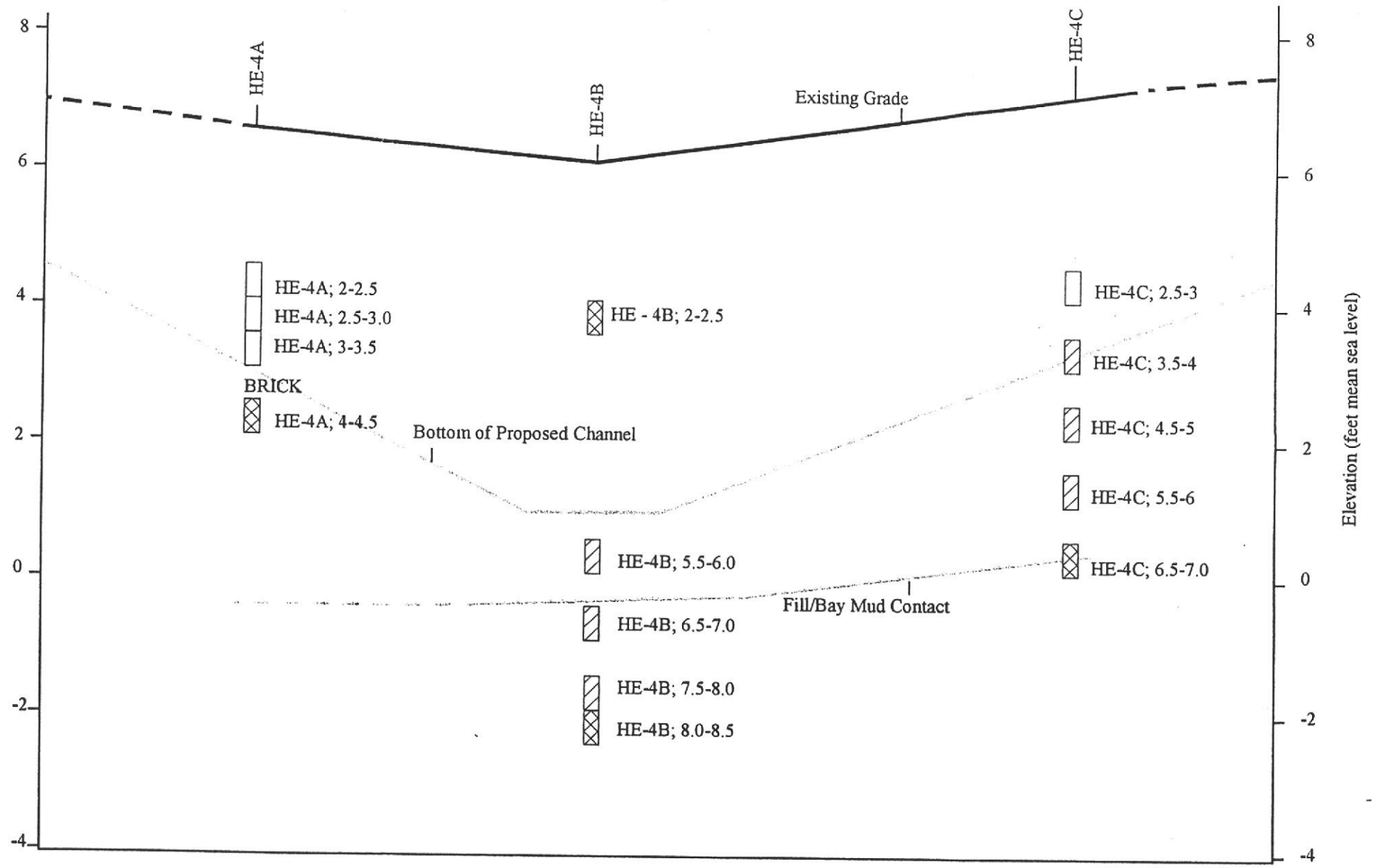
Horizontal
0 6 Feet
Vertical
0 2 Feet

BASELINE

D:\Graphics\S9171-C1\HabitatEnhance\HE-3.cdr 4/30/01

CROSS-SECTION HE-4

Figure 6



Legend

- Soil Sample Analyzed Discretely
- Soil Sample Collected and Not Analyzed
- Soil Sample Composited and Analyzed
- Fill/ Bay Mud Contact (dashed where approximate)
- Bottom of Proposed Channel

Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

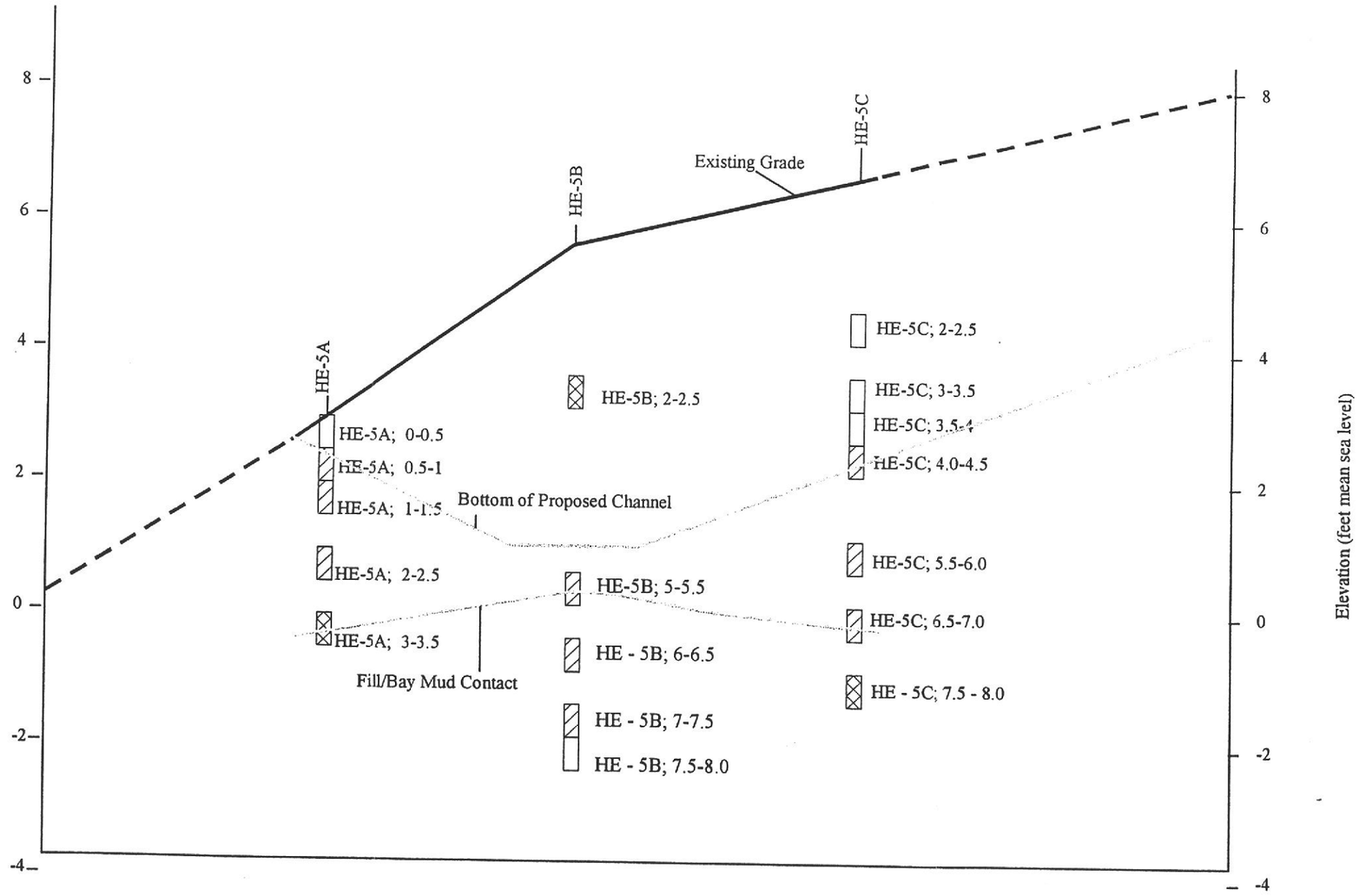
Horizontal
0 6 Feet
Vertical
0 2 Feet

BASELINE

D:\Graphics\S9171-C1\HabitatEnhance\HE-4.cdr 4/30/01

CROSS-SECTION HE-5

Figure 7



Legend

- Soil Sample Analyzed Discretely
- Soil Sample Collected and Not Analyzed
- Soil Sample Composited and Analyzed
- Fill/ Bay Mud Contact (dashed where approximate)
- Bottom of Proposed Channel

Seabreeze Yacht Center
Habitat Enhancement Project
Oakland, California

D:\Graphics\S9171-C1\HabitatEnhance\HE-5.cdr 4/30/01

Horizontal
0 6 Feet
Vertical
0 2 Feet

BASELINE

TABLE 3
SCREENING OF CHEMICALS OF POTENTIAL CONCERN FOR POTENTIAL REUSE ON-SITE
HABITAT ENHANCEMENT PROJECT
Seabreeze Yacht Center, Oakland, California

Chemical	Maximum Site Concentration (mg/kg)	Lowest RBSL (Residential Human and Ecological Health) (mg/kg)	Soil RBSL for Direct Human Contact (mg/kg)	Exceed RBSL for Human Health?	RBSL for Soil Leaching to Groundwater (assuming groundwater is not a drinking water source) (mg/kg)	Urban Area Ecotoxicity RBSL (mg/kg)	Exceed Most Restrictive RBSL for Ecological Health?
Petroleum Hydrocarbons							
TPH as Bunker C	500	500	500	No	1,000	None	No
Polycyclic Aromatic Hydrocarbons							
Naphthalene	4.2	1.7[1]	11	No	4.9	40	No
Acenaphthene	1.5	16	740	No	16	None	No
Fluorene	1.6	5.1	530	No	5.1	None	No
Phenanthrene	5.0	11	530	No	11	40	No
Anthracene	1.3	2.9	4,400	No	2.9	40	No
Fluoranthene	4.9	40	460	No	60	40	No
Pyrene	4.2	55	460	No	55	None	No
Benzo(a)anthracene	1.9	0.38	0.38	Yes[3]	12	40	No
Chrysene	1.4	3.8	3.8	No	4.7	40	No
Benzo(b)fluoranthene	2.4	0.38	0.38	Yes[3]	640	None	No
Benzo(k)fluoranthene	0.84	0.38	0.38	Yes[3]	37	40	No
Benzo(a)pyrene	2.4	0.038	0.038	Yes[3]	130	40	No

Table 3 - *(continued)*

Chemical	Maximum Site Concentration (mg/kg)	Lowest RBSL (Residential Human and Ecological Health) (mg/kg)	Soil RBSL for Direct Human Contact (mg/kg)	Exceed RBSL for Human Health?	RBSL for Soil Leaching to Groundwater (assuming groundwater is not a drinking water source) (mg/kg)	Urban Area Ecotoxicity RBSL (mg/kg)	Exceed Most Restrictive RBSL for Ecological Health?
Dibenz(a,h)anthracene	0.68	0.11	0.11	Yes[3]	140	None	No
Benzo(g,h,i)perylene	1.2	5.3	460	No	5.3	40	No
Indeno (1,2,3-cd)pyrene	1.6	0.38	0.38	Yes[3]	72	40	No
Title 22 Metals							
Arsenic	11	0.39	0.39	No[2]	None	20	No
Barium	300	750	1,100	No	None	750	No
Beryllium	0.46	4.0	31	No	None	4.0	No
Cadmium	2.5	7.4	7.4	No	None	12	No
Chromium (total)	53	9.8	9.8	Yes[3]	None	750	No
Cobalt	10	40	940	No	None	40	No
Copper	430	225	580	No	None	225	Yes[4]
Lead	490	200	400	Yes	None	200	Yes[4]
Nickel	120	150	310	No	None	150	No
Selenium	0.83	10	78	No	None	10	No
Thallium	0.37	1.1	1.1	No	None	None	No
Vanadium	110	110	110	No	None	200	No
Zinc	390	600	4,700	No	None	600	No
Mercury	1.0	4.7	4.7	No	None	10	No

Table 3 - *(continued)*

Chemical	Maximum Site Concentration (mg/kg)	Lowest RBSL (Residential Human and Ecological Health) (mg/kg)	Soil RBSL for Direct Human Contact (mg/kg)	Exceed RBSL for Human Health?	RBSL for Soil Leaching to Groundwater (assuming groundwater is not a drinking water source) (mg/kg)	Urban Area Ecotoxicity RBSL (mg/kg)	Exceed Most Restrictive RBSL for Ecological Health?
Molybdenum	1.1	40	78	No	None	40	No
Silver	1.5	20	78	No	None	20	No

Source:
Regional Water Quality Control Board, 2000, Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater, Interim Final, August 2000 for surface soil (<3 m bgs), where groundwater is not a current or potential source of drinking water.

Notes:
See Table 2 for a summary of analytical results for samples collected from soils that potentially may be reused on-site.
Chemicals not identified below their laboratory reporting limits were not included in the screening of chemicals of potential concern.
Shaded RBSL values indicate most restrictive RBSL that is applicable to this site, and therefore was used for comparison to site data.

1 The lowest RBSL is based on human exposure to indoor air. In door air exposure is not a potential exposure route for open space/recreational site users.
2 Arsenic is considered not to pose an unacceptable health risk because the maximum concentration did not exceed the residential PRG based on the non-cancer endpoint (22 mg/kg), even though the maximum site concentration did exceed the PRG developed for the cancer endpoint (0.39 mg/kg). The EPA has at times used the non-cancer PRG to evaluate sites, recognizing that this value tends to be above background levels yet still falls within the range of soil concentrations that equates to EPA's "acceptable" cancer risk range of 1×10^{-4} to 1×10^{-6} (Smucker, 2000).
3 The maximum concentration is within the range of "acceptable" risks (1×10^{-4} to 1×10^{-6}) for residential site users. Risks for recreational/open space users would be much lower.
4 The calculated 95th percent UCL is below the most restrictive RBSL for ecological health.

APPENDIX C
Conceptual Wetland Enhancement Plan

PWA
PHILIP WILLIAMS & ASSOCIATES
CONSULTANTS IN HYDROLOGY
770 TAMALPAIS DR. STE 401 CORTE MADERA, CA 94925-1708
TEL 415 945 0600 FAX 415 945 0606
E-MAIL ...@PWAHYDRO.COM

Former Seabreeze Yacht Harbor – Wetland Enhancement Project Oakland, Alameda County, California

Prepared for:

Port of Oakland

Prepared by:

Philip Williams & Associates, Ltd.

with

LSA Associates, Inc.

October 5, 2001

PWA Ref. # 1498

Services provided pursuant to this Agreement are intended solely for the use and benefit of the Port of Oakland.

No other person or entity shall be entitled to rely on the services, opinions, recommendations, plans or specifications provided pursuant to this agreement without the express written consent of Philip Williams & Associates, Ltd., 770 Tamalpais Drive, Suite 401, Corte Madera, California 94925.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

The Port of Oakland (Port) is funding environmental and water quality enhancement projects on a portion of the former Seabreeze Yacht Harbor in the Oakland Estuary, in coordination with the California Regional Water Quality Control Board (RWQCB) and the California Coastal Conservancy (Conservancy). Local community representatives have participated in initial project planning and goals establishment. Project funds have been allocated specifically for the identification, development and implementation of a pilot scale enhancement project leading to improved habitat and water quality conditions at the former Seabreeze Yacht Harbor site (Figure 1).

1.1 PROJECT OVERVIEW

This report describes recommendations for a wetland enhancement project at the former Seabreeze Yacht Harbor site (project site) in the Oakland Estuary. The recommendations focus on objectives outlined by the project participants, and defined by opportunities and constraints of the site. The report directs mitigation actions at specific areas of the site to enhance and expand tidal wetland habitats in response to Section 404 requirements.

Existing available data was used in addition to a preliminary site analysis and survey for the assessment of the site and development of enhancement recommendations. The recommendations within this report describe a preliminary design plan. It is recognized that site layout and verification of elevations and limits of grading work are required prior to project construction. Soil composition, permitting requirements, construction access, management and maintenance needs will be important project design considerations in the final project design.

Historic land uses at the site have introduced some contaminants into the subsurface, and a soil quality investigation was directed by the Port to assess the feasibility of the proposed enhancement project. The Investigation of Soil Quality report was undertaken by Baseline Environmental Consulting, Emeryville, California and appears in Appendix A. The results of the tests and evaluations did not identify contamination levels that would limit project implementation. Additional considerations and actions may be required if specific, unanticipated soil conditions are encountered during construction. Based on Port data, the design assumes that utilities and other infrastructure are either not present and/or are not constraints within the area identified for project implementation.

1.2 PROJECT CONTEXT

On a larger scale, the Port of Oakland is currently considering several planning and development alternatives for the Oak Street to 9th Avenue corridor (Port of Oakland General Plan, 2000). These planning and development efforts will affect the ultimate configuration and land use on the project site. The project team reviewed available general plan documents and possible development scenarios in order

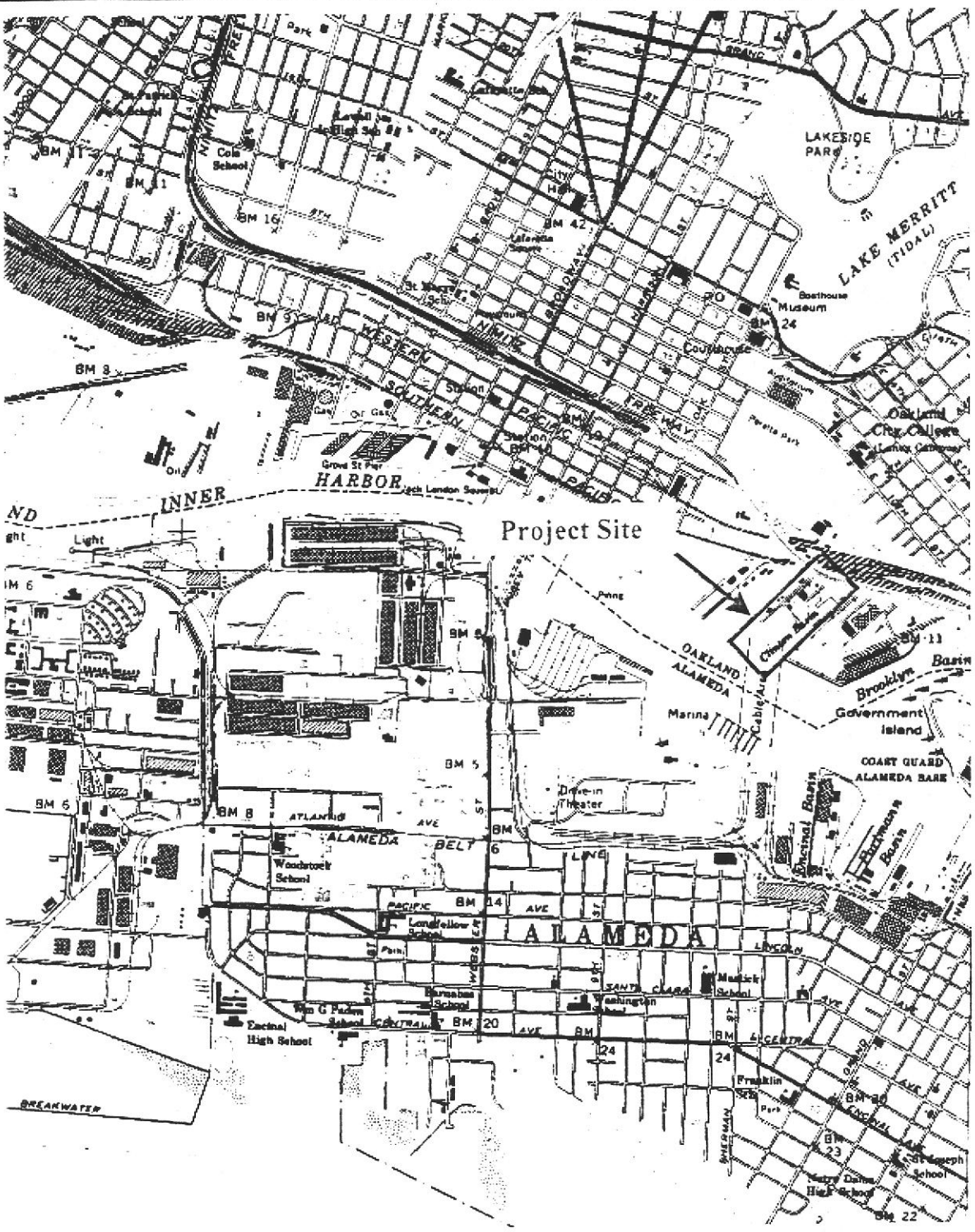


figure 1

Location Map
Seabreeze Yacht Harbor

to integrate the pilot enhancement project with future planning efforts. The goal was to develop a project that would not be adversely impacted by likely future development scenarios. Based on these conditions the proposed project is limited to 0.63 acres.

In addition, the enhancement project may also serve as a useful reference for future restoration and enhancement projects in the estuary. Other locations and areas at the former Seabreeze Yacht Harbor site were assessed for potential enhancement activities; in particular, several intertidal and vegetated areas along the interior shoreline exhibit existing habitat value. A diversity of shorebirds has been regularly observed by interested local residents along this section of the project site's shoreline.

Since the project will provide improved habitat quality and increased use by wildlife, the design of future development projects in the area should address disturbance (noise, foot traffic, dogs, etc.) at the project site. Future habitat design elements could include elevated roosting areas, visual screens and fencing, interpretive signage and controlled public access areas.

1.3 SITE GOALS

The goals of the project are to improve habitat conditions for a diversity of water birds by: (1) creating a more natural habitat gradient, consisting of subtidal (open water), intertidal mudflat and sand flats, tidal marsh, and upland habitats; and (2) creating a small island to provide an unvegetated water bird roosting habitat that restricts disturbance by people and dogs.

These habitat improvements would primarily benefit water birds such as shorebirds, ducks, coots, grebes, herons, egrets, and gulls. The primary objective for the island is to provide a less disturbed roost site for shorebirds during high tides, but ducks, gulls, and other water birds may also use it. The site is unlikely to be used by threatened or endangered species such as California clapper rails and salt marsh harvest mice, due to the small extent of tidal marsh in the vicinity.

2. PRELIMINARY SITE ASSESSMENT

2.1 HISTORICAL CONDITIONS

Historically, the project site consisted of subtidal water and intertidal mudflats fronting a large contiguous and mature tidal marsh system along the eastern shore of the Central Bay. The marsh was characterized by extensive tidal influence and included vegetated marshlands, tidal channels and mudflats (*Baylands Ecosystem Habitat Goals*, San Francisco Bay Area Wetlands Ecosystem Goals Project, 1999). These habitats supported rich and diverse wildlife populations, which have declined in response to the highly modified habitats that presently occur in the area. Exact historic elevations of the project site are unknown, but are likely comparable to other existing tidal marshes in the Central Bay. These marshes typically occur within the mean higher high water (MHHW) and mean tide level (MTL) or 0.49 to 3.41 feet National Geodetic Vertical Datum (NGVD).

2.2 CURRENT CONDITIONS

Topography and Soils

Based on a preliminary review of historic documents and photographs, the former Seabreeze Yacht Harbor site was filled by the late 1920s and has been occupied by a steam generation plant, ship decommissioning facility, and a gravel loading/unloading facility. The current elevations across the site limit tidal influences and actions to the shoreline edges. Two small beach areas are located at the southwest end of the site. The project site varies from 0 to 7 feet above NGVD (PWA survey, 12/21/2000) with the highest points found along mounds of concrete construction debris and unconsolidated materials. The project site is generally flat with an elevation of approximately +6 feet NGVD.

The soils in the upland areas of the Seabreeze Yacht Harbor site are compacted and vary in their texture by locations. There are significant amounts of sand within the fill materials most likely as a result of dredge material deposits. The open sand flats have formed as a result of erosion at the edge of the fill, which removes the finer grained materials leaving the sand behind. The project site's shorelines differ in their form and character and are separated by a circular area of revetment roughly 60 feet in diameter. The smaller shoreline along the southern edge of the site is protected from wave action by an area of revetment and has a gentle and shallow gradient. At low tides this beach becomes a valuable exposed intertidal habitat. The larger beach along the western or estuary edge of the site is subject to higher wave action (resulting from the 2000 feet of fetch to the west and prevailing southwesterly winds). This beach is steeper and consists of coarser sand materials (Figure 2).

The soils across site appear to be low in organic materials and at higher elevations support a weedy plant community. This condition may have implications for the implementation and rate of establishment of a vegetated marsh at the project site. Tidal marshes require soils with organic materials to establish and

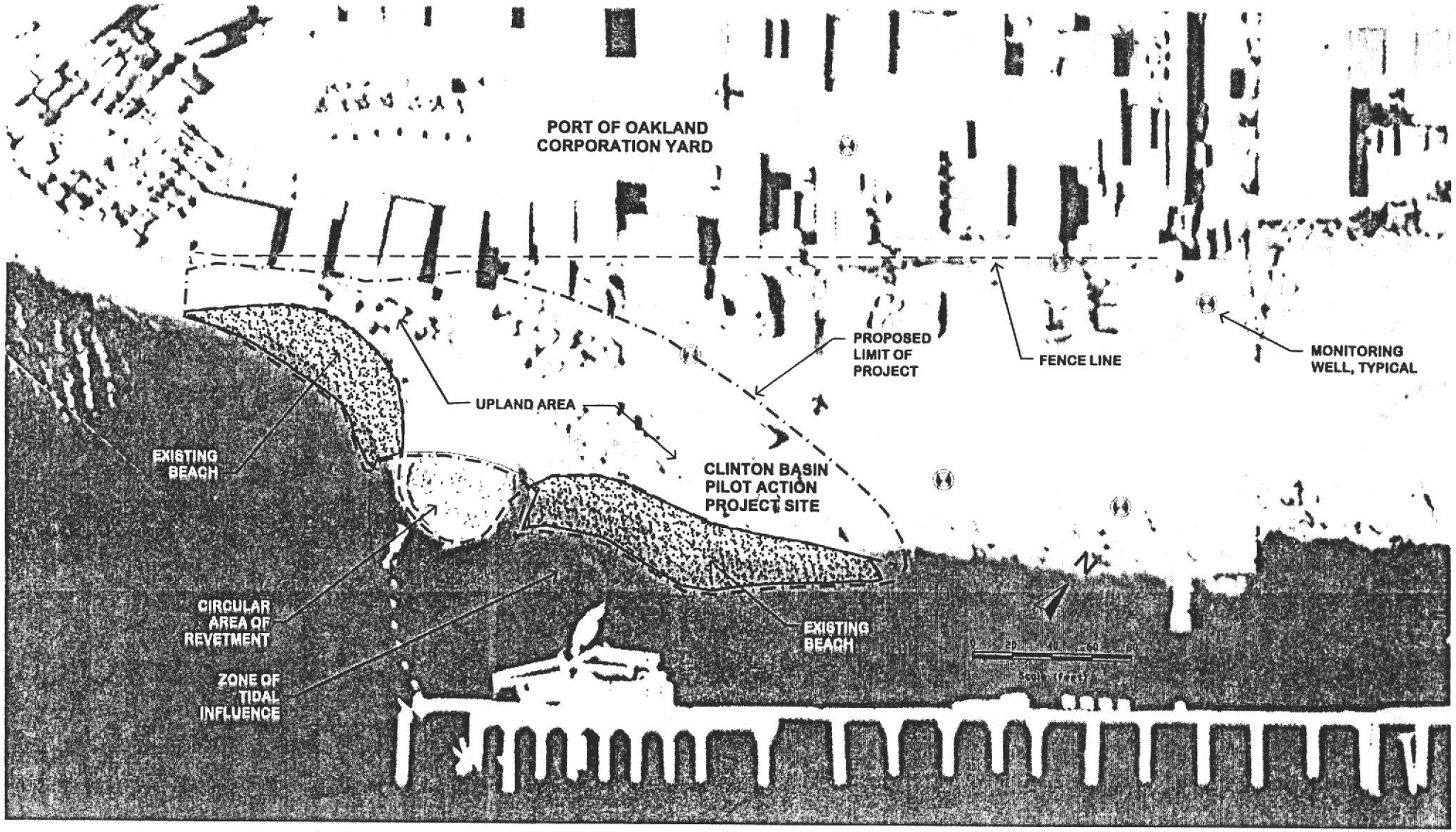


figure 2

Existing Conditions
Seabreeze Yacht Harbor

PWA

thrive. Soils that are low in organics will support tidal marsh, however, these marshes typically will take longer to establish. As wetland plants establish, they in turn, will provide debris and material as well as function to capture and accumulate sediment that will contribute to the levels of organic material in the soil. This accumulation of sediments can be expected to help support the vegetated marsh.

A screening and analysis program was undertaken in order to evaluate the soil quality and help determine construction and management options. Results from this study indicate that portions of the site may have to be over-excavated and filled with clean, dredged Merritt Sands in order to meet criteria set forth by the RWQCB. Analysis of the soil samples indicates that excavated material does not pose an unacceptable human or ecological risk, and may be re-used on site. Baseline Environmental Consulting undertook a human health screening as part of the *Investigation of Soil Quality for Habitat Enhancement Project, Former Seabreeze Yacht Center, June 2001,* (Appendix A). This assessment, a Site Specific Threshold Limits (SSTL) assessment, considered potential future users, levels of exposure and duration of exposure to the contaminated soils excavated to create the proposed channel. Human risks were evaluated for future park users and exposure routes considered were ingestion and dermal contact with the soil, and inhalation of particulates and volatile compounds. Ecological risks considered included exposure of terrestrial animals, and of aquatic organisms by leaching of chemicals from the soil into the groundwater, with subsequent discharge of the groundwater to the Clinton Basin. Based on this screening the soils do not present significant health risks to humans as defined by parameters and applicable risk-based screening levels (RBSLs) compiled by the San Francisco RWQCB (2000). If these soils were used as wetland cover, certain aquatic species could have greater exposure to the soils. The soils were determined to pose a potential environmental risk due to the direct and prolonged exposure by aquatic species. Despite these constraints, no soil quality issues were identified that would prevent project implementation.

Hydrodynamics

The Oakland Estuary is subject to the full tidal regime characteristic of the San Francisco Bay. Tides in the San Francisco Bay are referred to as a mixed, meso-tidal regime, with two unequal occurrences of high and low tides daily. Tidal characteristics at the project site are summarized in Table 1, and will provide adequate circulation for the proposed wetland enhancement project.

Table 1. Tidal Datums at Oakland Inner Harbor (from NOAA Station 9414764)

Elevation (feet)	Datum
3.41	Mean High Higher Water (MHHW)
2.81	Mean High Water (MHW)
0.49	Mean Tide Level (MTL)
0.00	National Geodetic Vertical Datum of 1929 (NGVD 29)
-1.83	Mean Low Water (MLW)
-2.94	Mean Lower Low Water (MLLW)

Based on field analysis and observations at the project site, shoreline erosion is highest along the southwestern edge due to boat wakes and wind driven waves over the open water of the estuary channel.

This will not be a significant constraint to the proposed enhancement project. The more western-facing portions of the project site will be exposed to higher wave energy and are more suitable as un-vegetated sand flats. It is anticipated that this section of the proposed project will maintain the existing character. Finer-grained sediment accumulation and vegetation establishment is more suitable and can be expected for the south-facing shoreline and interior channel areas of the proposed project.

2.3 BIOTIC PROCESSES

Although habitat values at the site have been degraded since historic times, substantial numbers of water birds were observed in the vicinity of the site on two recent site visits (Steve Granholm, LSA Associates, Inc., personal observations, October 17 and December 21, 2000). Water birds included two species of ducks (mallard and American wigeon), one species of shorebird (Least Sandpiper), five species of gulls (California, ring-billed, mew, western, and glaucous-winged), and several other water bird species (pied-billed grebe, American coot, double-crested cormorant, and snowy egret). Most of the water birds were near the shoreline in shallow water or on mudflats, except that many of the gulls were perched on docks, pilings, or nearby rooftops. The intertidal mudflats and patchy low marsh on the site provide valuable foraging habitat, both at low tide (for shorebirds and wading birds) and at high tide (for ducks, other water birds, and fish).

Birds observed in the disturbed upland habitats, on and adjacent to the site, included a red-tailed hawk, American crows, black phoebes, mourning doves, rock doves, and several species of songbirds. LSA did not visit the site during a high tide period, but according to a local resident (Patty St. Louis, pers. comm., October 17, 2000), flocks of shorebirds sometimes roost in this upland area during high tides.

The current habitat conditions on the site are highly disturbed. The restoration site itself consists of a small point with a gradually sloped (10:1) rip-rapped shoreline. Tidal marsh and intertidal mudflat are present on both sides of the point. The low marsh zone is gradually sloped and is vegetated by a patchy cover of smooth cordgrass (*Spartina alterniflora)* or a cordgrass hybrid. This is a non-native species that has largely displaced the native Pacific cordgrass (*Spartina foliosa*) in many South Bay tidal marshes. It is possible that the non-native *Spartina* identified at the site was not pure *S. alterniflora* (personal communication 10/02/01 with Debra Smith, California Coastal Conservancy biologist). The cordgrass plants at the site may be various hybrid clones (back-crosses with *S. alterniflora* and *S. foliosa*). This identification has potential implications to the proposed project because the hybrids are threatening to extend the vertical range of cordgrass within the intertidal zone. Preliminary research indicates that the cordgrass hybrids could colonize and displace mudflat as well as pickleweed habitat. The Conservancy has identified the removal of *S. alterniflora* and *S. hybrid* as a regional and local priority within the San Francisco Estuary Invasive Spartina Project.

Higher marsh zones on the site are more poorly defined and are compressed into narrow bands on a steep bank of fill material. Higher on the marsh gradient are zones dominated by saltgrass (*Distichlis spicata*), followed by pickleweed (*Salicornia virginica*), and then gumplant (*Grindelia stricta*). The gumplant zone is often called the transition zone, representing a transition from wetland to upland habitat. Above

the gumplant zone is a highly disturbed, relatively level upland zone with a variety of ruderal plants (mostly non-native species) amongst the concrete debris and compacted fill.

3. RECOMMENDED PROJECT ELEMENTS

The objective of this project is to expand tidal influence onto and into the project site, creating a small wetland area. As shown in Figure 3, this marsh area integrates a tidal channel, expanded mudflats, cordgrass marsh, pickleweed marsh and limited extents of transitional upland areas. The project will augment the existing, but limited, habitat areas.

3.1 BEACH HABITATS

The two existing beach habitats will be preserved as part of the proposed enhancement project. In addition, it is anticipated that these beaches will expand through the proposed regrading of the project site (Figure 4). In particular, the beach on the south side of the site will be expanded by approximately 2000 square feet. The beach areas will provide additional sparsely vegetated, intertidal habitat.

3.2 TIDAL MARSH

The project site provides an opportunity to restore a small area of tidal marsh along the southwest edge of the site. Integrated with the marsh are enhanced roosting areas for shore and water birds and an upland transition area to increase habitat diversity at the site.

The proposed wetland enhancement project would create a new channel connecting the two beach areas at the end of the site. The channel would be approximately 60 feet wide (top of bank to top of bank) and 5 to 7 feet deep. The banks of the channel would support a vegetated marsh fringe as described above. In addition, the channel should provide additional mudflat areas at low tide. At high tides the channel will isolate the circular area of revetment further enhancing the roosting area for shorebirds.

Marsh areas will be expanded at the former Seabreeze Yacht Harbor by regrading the specified upland areas and the tidal channel, as shown in Figures 4 and 5. As summarized in Table 2, these elevations will be suitable for cordgrass (1.5 to 3.0 ft NGVD) and pickleweed (2.0 to 4.0 ft NGVD) establishment, and will reconnect areas of the project site with tidal influence. Limited revegetation efforts could accompany the grading work in order to encourage the establishment of desired marsh plant species. It is anticipated that most plant establishment will occur through a process of natural colonization over a period of 3 to 5 years.

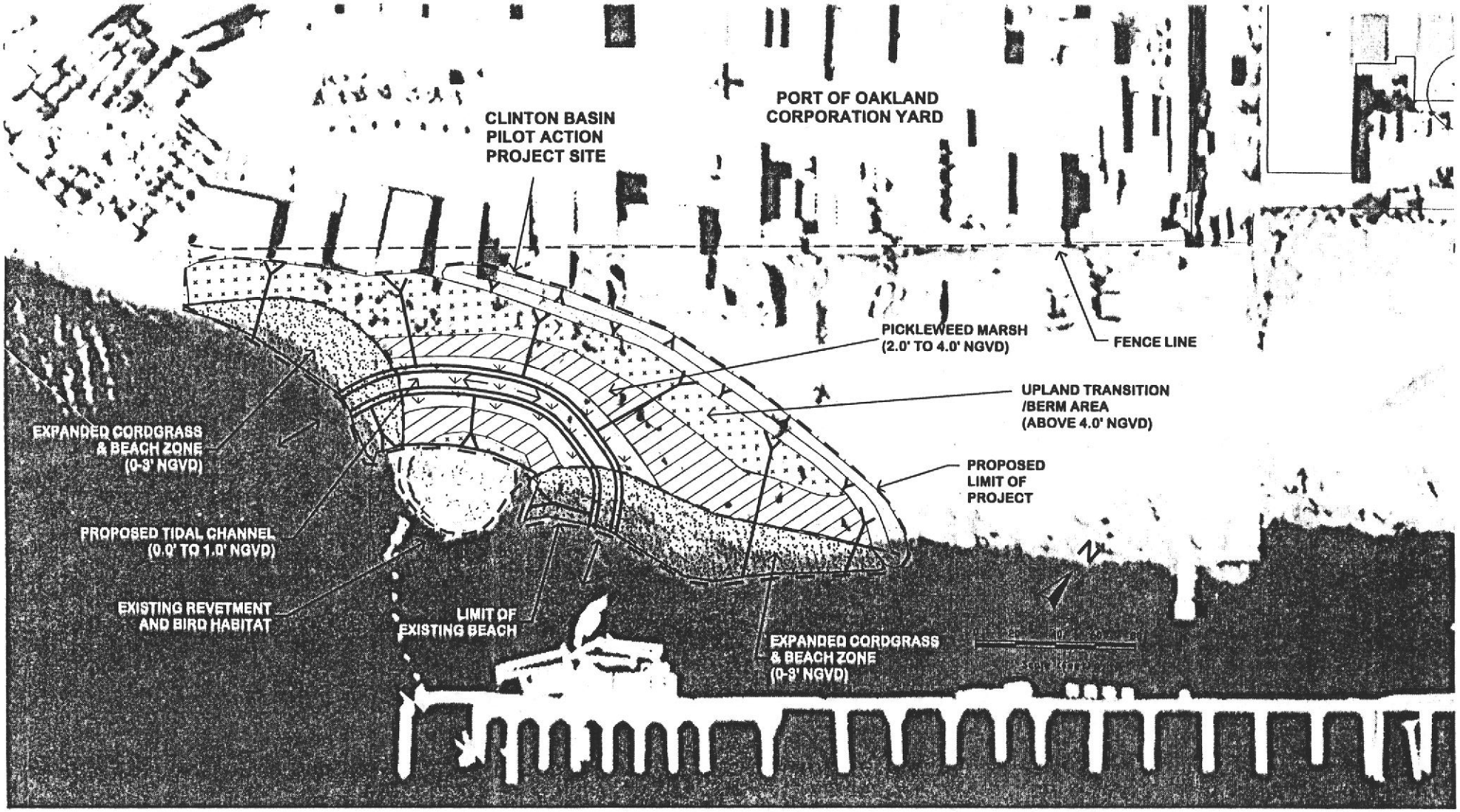


figure 3

Proposed Pilot Enhancement Plan
Seabreeze Yacht Harbor

O:\Projects\1498\Figures\Fig3_genplan.dwg

PWA

APPROXIMATE LIMIT OF EARTHWORK

FENCE

NEW BERM
ON-SITE DISPOSAL OF EXCAVATED MATERIAL WITHIN PROJECT LIMIT. REMAINING MATERIAL TO BE SPREAD ON ADJACENT SITE.

MONITORING WELL TYPICAL

NEW CHANNEL

+3.1 SURVEY SPOT ELEVATION

REVETMENT

BEACH

CORD GRASS, BELOW EL. 2.0

PICKLEWEED, EL. 2.0 TO 4.0

UPLAND, ABOVE EL. 4.0

NEW BERM
UPLAND AND
TRANSITION PLANTING

EXISTING REVETMENT
BIRD ROOSTING AREA
PROTECT IN PLACE

0' NGVD

ESTIMATED EXISTING TOP OF BANK

N

0 20 40 60 80
Scale (feet)

CLINTON BASIN

NOTES:
1) TOTAL PROJECT AREA = 0.63 ACRES
2) SPOT ELEVATIONS FROM GROUND SURVEY ON 5/31/01 BY PWA.
3) BASE MAP DATA IS APPROXIMATE. VERIFY IN FIELD.
4) DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION.
5) VERTICAL DATUM FOR ALL ELEVATIONS IS NGVD.

ESTIMATED EXISTING TOP OF BANK

APPROXIMATE LIMIT OF EARTHWORK

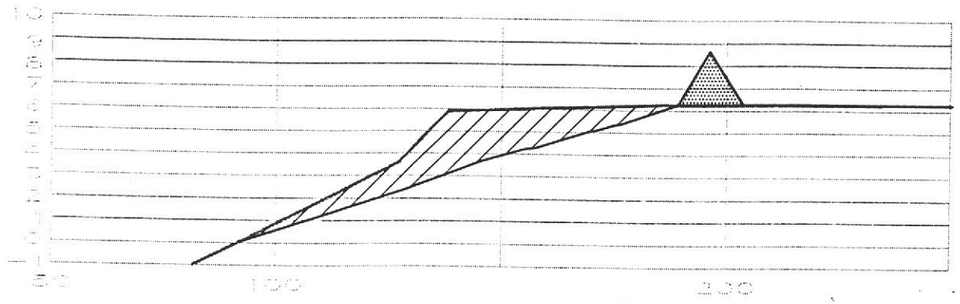
0' NGVD

DRAFT

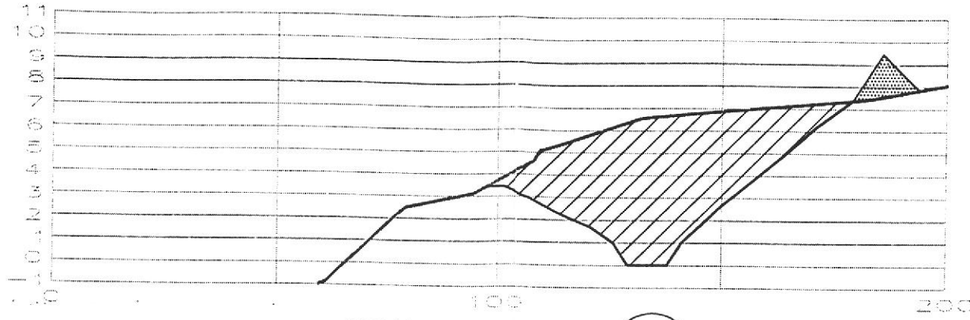
FILENAME: Projects\1498\Figures\Fig4_Plan.dwg

REVISIONS				DESIGNED BY	CERTIFICATIONS:	APPROVED		Seabreeze Yacht Harbor Wetland Enhancement	PREPARED BY: PWA PHILIP WILLIAMS & ASSOCIATES, LTD. 770 TAMALPAIS DRIVE, SUITE 401 CORTE MADERA, CALIFORNIA 94925 PHONE (415) 945-0500 FAX (415) 945-0505			
NO.	DATE	BY	DESCRIPTION	DRAWN BY			DATE		SCALE	JOB NO.	CONTOUR INTERVAL	DATE
				CHECKED BY		APPROVED			AS SHOWN	1498	AS SHOWN	10/4/01
				IN CHARGE			DATE					

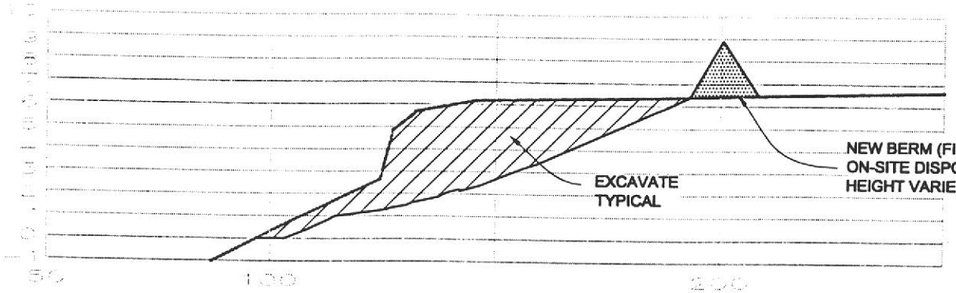
Figure 4.
Grading and Planting Plan



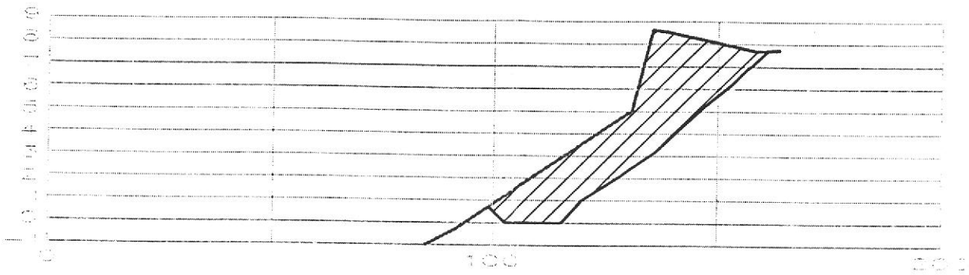
CROSS SECTION A (A 1|2)



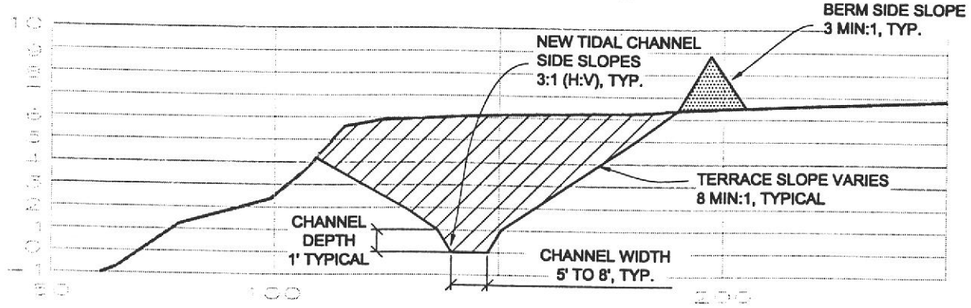
CROSS SECTION D (D 1|2)



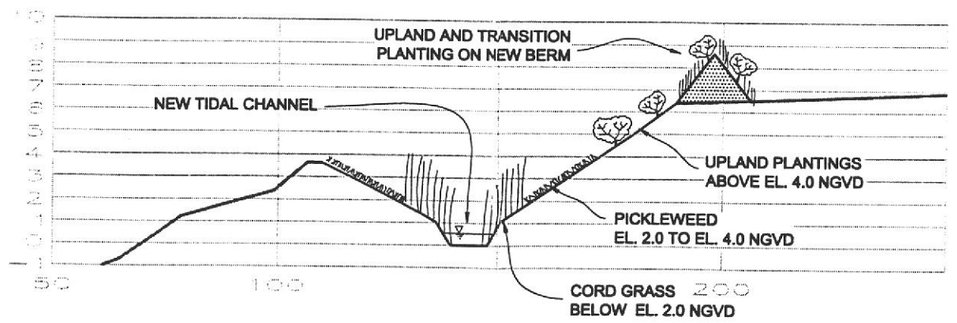
CROSS SECTION B (B 1|2)



CROSS SECTION E (E 1|2)



CROSS SECTION C (C 1|2)



TYPICAL SECTION
PLANTING (F 1|2)

NOTES:

1) EXISTING GRADES ARE APPROXIMATE. VERIFY IN FIELD.
2) DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION.

LEGEND

- EXCAVATION
- FILL (BERM)

DRAFT

FILENAME: Projects\1498\Figures\Fig5_XS.dwg

REVISIONS				DESIGNED BY	CERTIFICATIONS:	APPROVED	Seabreeze Yacht Harbor Wetland Enhancement	PREPARED BY: PWA — PHILIP WILLIAMS & ASSOCIATES, LTD. 770 TAMALPAIS DRIVE, SUITE 401 CORTE MADERA, CALIFORNIA 94925 PHONE (415) 945-0800 FAX (415) 945-0808	Figure 5. Cross Sections
NO.	DATE	BY	DESCRIPTION	DRAWN BY		DATE			
				CHECKED BY		APPROVED			
				IN CHARGE		DATE			

SCALE	JOB NO.	CONTOUR INTERVAL	DATE
AS SHOWN	1498	AS SHOWN	10/4/01

Table 2. Elevational Ranges (NGVD) for habitats based on the Port of Oakland Datum

Marsh Habitat Type	Typical Elevation
Tidal Channel	-3 to 1.5 feet
Cordgrass Marsh	1.5 to 3.0 feet
Tidal Pickleweed Marsh	2.0 to 4.0 feet
Upland Transition Zone	4.0 to 7.0 feet
Upland or Grassland	7.0 feet and above

Appropriate plant species for the enhancement project are listed in Table 3 below. A coordinated effort to remove smooth cordgrass (*S. alterniflora and S. hybrids*) from the site should be considered as part of the enhancement work. The cost implications of this effort have not been determined however, and may constrain budgets for other proposed project elements.

Table 3. Key Plant Species to the Seabreeze Yacht Harbor Enhancement Project

Common Name	Scientific Name
Gumplant	*Grindelia stricta*
Pickleweed	*Salicornia virginica*
Saltgrass	*Distichlis spicata*
Pacific Cordgrass	*Spartina foliosa*

The proposed grading plan shown in Figures 4 and 5 would produce approximately 1,800 cubic yards (cy) of excavated material that would either be re-used on site to construct a 'naturalistic' berm or spread across areas adjacent to the site at the former Seabreeze Yacht Harbor.

Soil quality analysis indicates that over-excavation would be required to meet environmental criteria for wetland cover in certain areas of the proposed project. The amount of additional excavated material should be determined as part of a more detailed final design, but is not expected to pose a significant construction problem since the Port has indicated that clean Merritt Sands from the Vision 2000 project are available to be used as backfill.

The Merritt Sands will be used in the tidal channel as wetland cover specifically in areas of over-excavation resulting from the removal of contaminated soils. These sands meet general criteria for appropriate wetland cover. Merritt and other similar fine-grained depositional sands have been used successfully in similar restoration and enhancement projects throughout the Bay. The placement of this material should improve conditions for wetland vegetation establishment as well as provide valuable sand flat habitat. The Merritt Sands are expected to remain in place in the tidal channel and wetland areas although some minor shifting within the project can be expected. Due to the generally quiescent tidal conditions of the project site, it is anticipated that the proposed enhancement project may become a depositional area over time. Approximately 200 to 400 cubic yards (cy) of Merritt Sands will be supplied and imported for use in this project.

3.3 UPLAND BERM

The grading of the proposed tidal channel and banks would produce approximately 1,800 cubic yards (cy) of excavated material that would be used on site to construct a 'naturalistic' berm 260 feet long, 3 feet high, and approximately 16 feet wide at its base. The balance of remaining excavated soil not used in the construction of the berm will be spread evenly across the flat areas of the former Seabreeze Yacht Harbor directly adjacent to the project site. These activities would allow on-site placement of the excavated material, as well as create visual and habitat buffers and delineate project boundaries.

Table 4. Anticipated Soil Volumes

Soil Volumes: Type and Activity	Anticipated Volume
Total material volume excavated for channel creation and re-used on site	*~1800 cy*
Volume that meets RWQCB Wetlands Cover Criteria	*~1500 cy*
Volume that does not meet RWQCB Wetlands Cover Criteria	*~200 – 400 cy*
Volume of clean fill material (Merritt sand) to be imported to the site	*~200 – 400 cy*
Volume of excavated material to be used on-site in berm construction	*~200 cy*
Volume of excavated material to be spread on-site, upland of project site	*~1800 cy*

4. SUMMARY

A wetland enhancement plan is proposed for the former Seabreeze Yacht Harbor. The proposed plan would restore intertidal sand flat, a small tidal marsh at the site, enhance roosting areas for shore and water birds, and include an upland transition area to increase habitat diversity at the site. Material excavated during construction would be used to construct an upland berm that would serve as a visual and habitat buffer.

Analysis of the soil quality indicates that portions of the tidal channel will require over-excavation to meet environmental criteria. However, Merritt Sands could be used as backfill, and material not used to construct the berm can be placed on site. Specific volumes of over-excavation should be determined as part of the final design, but are not expected to be prohibitively large.

Costs for implementation of the proposed wetland enhancement project have not been estimated. Several important factors relating to soil quality and appropriate use on-site or disposal off-site will impact project costs. Cost estimates for the proposed project will be developed in subsequent design phases and will reflect further input from Baseline Environmental Consulting and the Port of Oakland.

5. LIST OF PREPARERS

This report was prepared by the following PWA staff:

Jorgen Blomberg, Associate, Project Manager
Don Danmeier, Ph.D., Associate
Dennis Ruttenberg, Design Engineer
Jeffrey Haltiner, Ph.D., P.E., Principal-in-Charge

with:

LSA Associates, Inc.

157 Park Place
Point Richmond, California 94801
Steve Granholm, Ph.D., Principal

APPENDIX D
General Plan Conformity Determinations

Project Referral Form

For Projects on Port Owned Property in City of Oakland Jurisdiction

RECEIVED
MAR 14 2001
CITY PLANNING COMMISSION
ZONING DIVISION

Date: MARCH 13, 2001

Port Staff Contact (name and phone number):
TONY CHU 627-1239

Project Applicant (name and phone number):
TONY CHU 627-1239

Project Site Address/Location:
FORMER SEABREEZE YACHT CENTER, BETWEEN 5th & 6th AVE., CLINTON BASIN

Project Description (attach additional sheets if necessary):
TWO UNDERGROUND TUNNELS REMAIN FROM THE REMOVAL OF A PG&E POWER PLANT FORMERLY LOCATED ON THE SITE. TO PREVENT CONTAMINATION FROM THE TUNNELS FROM POLLUTING THE CLINTON BASIN, THE PORT IS PROPOSING TO EXCAVATE DOWN TO THE TUNNEL CEILING, BREAK THROUGH, REMOVE & DISPOSE OF THE SLUDGE IN THE IMMEDIATE VICINITY, PLACE A 6' WIDE CONCRETE PLUG, AND BACKFILL.
(Note: Additional project description information may be requested by City Planning staff to formulate determination, such as: site plans; project operational information; building elevations; etc.)

Information above line to be completed by project applicant or property owner and submitted to City of Oakland Planning .

Attn: Dwane Jensen

Information below line to be completed by City Planning Department and returned to Port of Oakland Staff Contact.

General Plan Designation for Property: PLANNED WATERFRONT DEVELOPMENT 2

Zoning Designation for Property: M-40

The proposed project conforms X does not conform ____ (check one line) to the Oakland General Plan.
Comments:

The proposed project does ____ does not X (check one line) require obtainment of zoning permits. The zoning permits required for the proposed project include:

The proposed project does ____ does not X (check one line) require obtainment of discretionary City permits, other than zoning permits. These other discretionary permits include:

Environmental (CEQA) Determination for Project:
MINISTERIAL (SEC. ~~15303~~ 15268)

City Planning Department Contact (name and phone number):
DWANE JENSEN

City Planning Department Representative Signature and Date: 3/16/01

Project Referral Form

For Development Projects on Port Owned Property in City of Oakland Jurisdiction

Date: September 12, 2001

Port Staff Contact (name and phone number):
Christy Herron, Environmental Planning Department: 627-1149

Project Applicant (name and phone number):
Port of Oakland, 530 Water Street, Oakland, CA 94607

Project Site Address/Location:
Seabreeze Marina (Clinton Basin), at western terminus of 6th Ave., between Embarcadero & Oakland Estuary

Project Description (attach additional sheets if necessary):

The wetland enhancement project involves a combination of remediation and habitat enhancement elements. Wetland enhancement activities would take place at the Seabreeze Marina site within approximately the same time frame as additional remediation work associated with the sealing of two underground tunnels associated with a former power plant at the site.

The Port is proposing a plan for habitat restoration and wetland enhancement at the project site, along the beach on the southwest side of the site. Wetland enhancement activities would include the excavation and disposal of contaminated soil, the creation of a tidal channel, the creation of a tidal marsh, and the enhancement of roosting areas for shore and water birds.

(Note: Additional project description information may be requested by City Planning staff to formulate determination, such as: site plans; project operational information; building elevations; etc.)

Information above line to be completed by project applicant or property owner and submitted to City of Oakland Planning Department, Attn: Dwane Jensen and Scott Miller.

Information below line to be completed by City Planning Department and returned to Port Staff Contact listed above.

General Plan Designation for Property: Planned Waterfront Development (PWD-1)

Zoning Designation for Property: M-40 Heavy Industrial

The proposed project conforms__X__ does not conform _____ (select one) to the Oakland General Plan. Comments:

The proposed project does _____ does not___X_ (select one) require obtainment of zoning permits. The zoning permits required for the proposed project include:

The proposed project does _____ does not___X_ (select one) require obtainment of discretionary City permits, other than zoning permits. These other discretionary permits include:

Environmental (CEQA) Determination for Project: Exempt per CEQA Guideline 15268:Minsterial Project

City Planning Department Contact (name and phone number):

Dwane P Jensen 238-6344

City Planning Department Representative Signature and Date:

Dwane P. Jensen 9/12/01