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# Biological Resources Assessment

LIBERTY SHIP WAY PROJECT  
SAUSALITO  
MARIN COUNTY  
CALIFORNIA

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**Prepared For:**

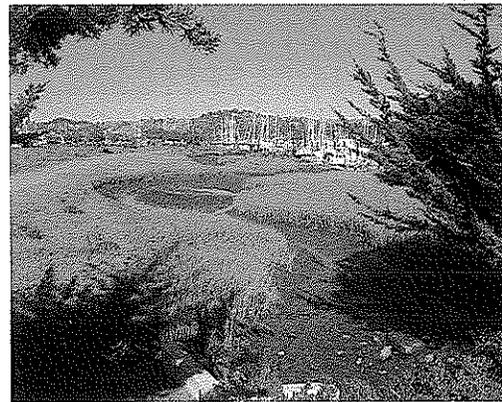
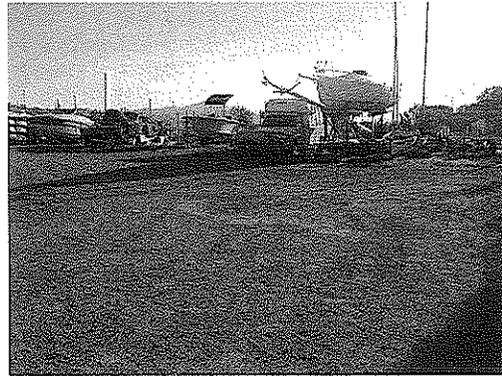
Liberty Ship II  
6614 Lakeville Road  
Petaluma, CA 94954  
Contact: Gary Hendricks

**WRA Contact:**

Justin Semion  
semion@wra-ca.com

**Date:**

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## 1.0 INTRODUCTION

On October 23, 2007, WRA, Inc. performed an assessment of biological resources at the 3.9 acre Libertyship Way property (Study Area) in Sausalito, Marin County, California (Figure 1). The Study Area is located east of Bridgeway Boulevard, at 70-76 Libertyship Way on a peninsula bordering Richardson Bay. The purpose of the assessment was to identify potential areas of sensitive biological habitat and determine the potential for presence of special status plant and wildlife species. This report describes the results of the site visit, which assessed the Study Area for the (1) presence of special status species; (2) potential to support special status species; and (3) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This report also contains a discussion of avoidance and mitigation measures for sensitive biological resources, and recommendations for any further surveys that may be needed.

A biological assessment provides general information on the potential presence of sensitive species and habitats. The biological assessment is not an official protocol level survey for listed species that may be required for project approval by local, state, or federal agencies. However, specific findings on the occurrence of any species or the presence of sensitive habitats may require that protocol surveys be conducted. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

## 2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

### 2.1 Special Status Species

Special status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These Acts afford protection to both listed and proposed species. In addition, California Department of Fish and Game (CDFG) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFG special status invertebrates are all considered special status species. Although CDFG Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). In addition to regulations for special status species, most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, destroying active nests, eggs, and young is illegal. Plant species on California Native Plant Society (CNPS) Lists 1 and 2 are also considered special status plant species. Impacts to these species are considered significant according to CEQA. CNPS List 3 plants have little or no protection under CEQA, but are included in this analysis for completeness.

#### Critical Habitat

Critical habitat is a term defined and used in the Federal Endangered Species Act as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The FESA requires

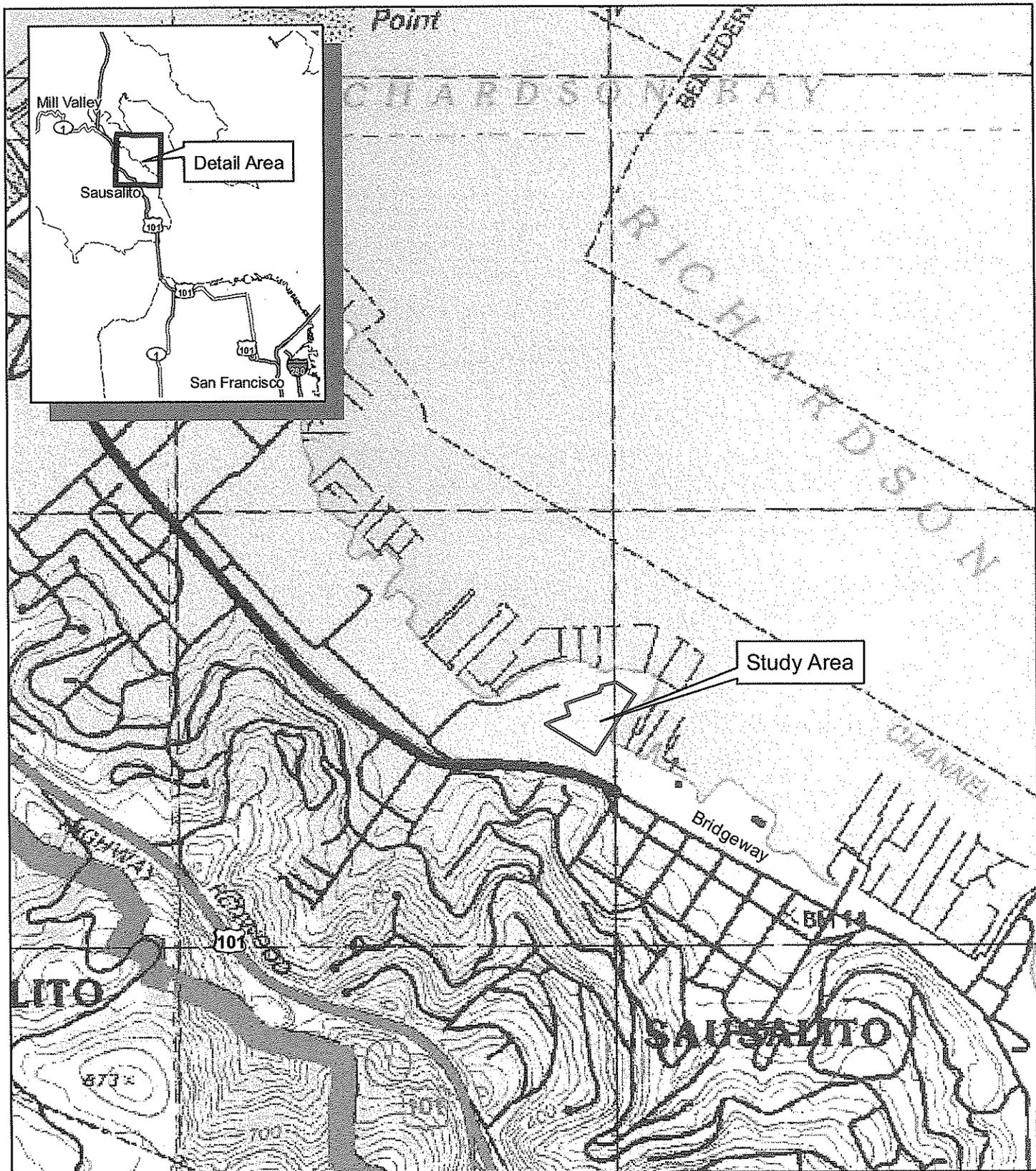
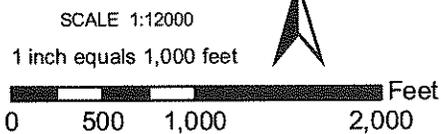


Figure 1. Study Area Location Map

76 Libertyship Way  
 Sausalito  
 Marin County, California



Date: November 2007  
 Basemap: USGS Topo Quad  
 Map By: Derek Chan  
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federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the FESA "jeopardy standard." However, areas that are currently unoccupied by the species but which are needed for the species' recovery, are protected by the prohibition against adverse modification of critical habitat.

## **2.2 Sensitive Biological Communities**

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, and riparian habitat. These habitats are protected under federal regulations (such as the Clean Water Act), state regulations (such as the Porter-Cologne Act, the CDFG Streambed Alteration Program, and CEQA), or local ordinances or policies (City or County Tree Ordinances, Special Habitat Management Areas, and General Plan Elements).

### Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. "Waters of the U.S." are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the *Corps of Engineers Wetlands Delineation Manual* (1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water line (OHW). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into "Waters of the U.S." (including wetlands) generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

### Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements. In addition, the San Francisco Bay Conservation and Development Commission (BCDC) has

regulatory jurisdiction, as defined by the McAteer-Petris Act, over the San Francisco Bay and its shoreline, which generally consists of the area between the Bay shoreline and a line 100 feet landward of and parallel to the shoreline.

#### Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFG under Sections 1600-1616 of the State Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG ESD 1994). Riparian is defined as, "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG ESD 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

#### Essential Fish Habitat

Essential Fish Habitat (EFH) is regulated through the National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA). Protection of EFH is mandated through changes implemented in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to protect the loss of habitat necessary to maintain sustainable fisheries in the United States. The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). NMFS further defines essential fish habitat as areas that "contain habitat essential to the long-term survival and health of our nation's fisheries" (NMFS 2007). EFH can include the water column, certain bottom types such as sandy or rocky bottoms, vegetation such as eelgrass or kelp, or structurally complex coral or oyster reefs. Under regulatory guidelines issued by NMFS, any federal agency that authorizes, funds, or undertakes action that may affect EFH is required to consult with NMFS (50 CFR 600.920).

#### Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game (CDFG). CDFG ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its Natural Diversity Database. Sensitive plant communities are also identified by CDFG on their *List of California Natural Communities Recognized by the CNDDDB*. Impacts to sensitive natural communities identified in local or regional plans, policies, regulations or by the CDFG or USFWS must be considered and evaluated under CEQA (California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in City or County General Plans or ordinances.

## City of Sausalito Tree Preservation

The City of Sausalito's Municipal Code provides for the protection of Heritage Trees and Dedicated Trees on city-owned and undeveloped private property. Heritage Trees are defined as any tree with a circumference at breast height (CBH) of 30 inches, Dedicated Trees are trees that have been dedicated as having special significance by the City of Sausalito. Coast live oak (*Quercus agrifolia*) species measuring 12 inches or greater CBH, and all trees measuring 12 inches or greater CBH on private undeveloped lands are also protected. On developed parcels, only trees measuring 30 inches CBH or greater are protected. Undesirable trees of any size, defined as blue gum eucalyptus (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), Monterey cypress (*Cupressus macrocarpa*), and coast redwood (*Sequoia sempervirens*), are not protected under the City of Sausalito's Municipal Code.

### **3.0 METHODS**

On October 23, 2007, the Study Area was traversed on foot to determine (1) plant communities present within the Study Area, (2) if existing conditions provided suitable habitat for any special status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded, and are summarized in Appendix A.

#### **3.1 Biological Communities**

Prior to the site visit, the Soil Survey of Marin County, California [U.S. Department of Agriculture (USDA) 2007] was examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present in the Study Area. Biological communities present in the Study Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

##### *3.1.1 Non-sensitive Biological Communities*

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special status plant or wildlife species and are identified or described in Section 4.1.1 below.

##### *3.1.2 Sensitive Biological Communities*

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

## Wetlands and Waters

The Study Area was surveyed to determine if any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFG were present. The assessment was based on the

presence of wetland plant indicators as well as any observed indicators of wetland hydrology or wetland soils. Any potential wetland areas were identified as areas dominated by plant species with a wetland indicator status<sup>1</sup> of OBL, FACW, or FAC as given on the U.S. Fish and Wildlife Service List of Plant Species that Occur in Wetlands (Reed 1988). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, surface sediment deposits, algal mats and drift lines, or indirect indicators (secondary indicators), such as oxidized root channels. Some indicators of wetland soils include dark colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual (Environmental Laboratory, 1987) and Field Indicators of Hydric Soils in the United States (NRCS, 2002).

### Other Sensitive Biological Communities

The Study Area was evaluated for the presence of other sensitive biological communities, including riparian areas and sensitive plant communities recognized by CDFG. If present in the Study Area, these sensitive biological communities were mapped and are described in the Section 4.1.2 below.

## **3.2 Special Status Species**

### *3.2.1 Literature Review*

Potential occurrence of special status species in the Study Area was evaluated by first determining which special status species occur in the vicinity of the Study Area through a literature and database search. Database searches for known occurrences of special status species focused on the San Francisco North 7.5 minute USGS quadrangle and the eight surrounding USGS quadrangles. The following sources were reviewed to determine which special status plant and wildlife species have been documented to occur in the vicinity of the Study Area:

- California Natural Diversity Database records (CNDDDB) (CDFG 2007)
- USFWS quadrangle species lists (USFWS 2007)
- CNPS Electronic Inventory records (CNPS 2007)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins, R.C. 2003)

### *3.2.2 Site Assessment*

A site visit was made to the Study Area to search for suitable habitats for species identified in the literature review as occurring in the vicinity. The potential for each special status species to occur in the Study Area was then evaluated according to the following criteria:

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<sup>1</sup> OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

1) No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

2) Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

3) Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

4) High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

5) Present. Species is observed on the site or has been recorded (i.e. CNDDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special status species known to occur in the vicinity in order to determine its potential to occur in the Study Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special status species is observed during the site visit, its presence will be recorded and discussed. Appendix B presents the evaluation of potential for occurrence of each special status plant and wildlife species known to occur in the vicinity of the Study Area with their habitat requirements, potential for occurrence, and rationale for the classification based on criteria listed above. Recommendations for further surveys are made in Section 5.0 below for species with a moderate or high potential to occur in the Study Area.

### 3.2.3 Salt Marsh Harvest Mouse Assessment

Because of the potential presence of suitable habitat and/or nearby occurrences of the salt marsh harvest mouse (*Reithrodontomys raviventris*) (SMHM), a more in-depth habitat assessment was conducted for the mouse in order to assess the potential for the species to be present in the Study Area.

In the 1984 USFWS Recovery Plan (USFWS 1984), the best habitat for the salt marsh harvest mouse was characterized as having 100 percent cover, a cover depth of 30 to 50 cm at summer maximum, greater than 60 percent cover by pickleweed, and habitat complexity which included salt bush (*Atriplex patula*), alkali heath (*Frankenia* sp.), or other halophytes. Since the Recovery Plan was published, several studies have documented SMHM habitat use traditionally thought of as poor. Brackish marsh has traditionally been considered to possess little to no habitat value for the southern subspecies of SMHM, however, recent surveys utilizing a modified live-trapping method in North San Francisco Bay have shown that the northern subspecies of SMHM may utilize brackish marshes (Orland 2007). In addition, one study on Tolay Creek has found no correlation between either pickleweed percent cover or pickleweed height and SMHM abundance (Bias 2003). The USFWS employs three standards for optimal SMHM habitat when conducting saltmarsh restoration work: at least 90% plant cover, at least 60% pickleweed cover and less than 5% non-

native plant species (Jim Browning, USFWS, pers. com.). SMHM have also recently been shown to prefer pickleweed with mid-range salinities (Padgett-Flohr 2003), however, salinity analysis is beyond the scope of this assessment.

### 3.2.4 Rail Assessment

Because of the presence of potentially suitable habitat within and adjacent to the Study Area, species-specific assessments were performed for the federal endangered California Clapper Rail (*Rallus longirostris obsoletus*) (CLRA) and state threatened California Black Rail (*Laterallus jamaicensis coturniculus*).

#### *California Clapper Rail*

According to Evens and Page (1983) and Harvey (1988), the important factors for breeding CLRA are (1) well-developed sloughs and secondary tidal channels; (2) extensive (dense, tall, lush) cordgrass (*Spartina sp.*) stands; (3) dense salt marsh vegetation for cover, nest sites, and brooding areas; (4) intertidal mudflats, gradually sloping banks of tidal channels, and cordgrass beds for foraging; (5) abundant invertebrate food resources; and (6) transitional vegetation at the upland edge of the salt marsh as a refuge during high tides.

In order to determine the suitability of habitat and potential use of the Study Area by the California Clapper Rail, a qualitative assessment of habitat was conducted based on examination of the current range, documented occurrences within proximity to the site and published analyses by Evens and Page (1983), Harvey (1987) and Shuford (1993). Variables which were evaluated for the Clapper Rail included: developed sloughs with secondary channels, extensive cordgrass stands, dense saltmarsh vegetation, intertidal mudflats, gradual sloping channel banks, abundant invertebrate food resources, transitional upland vegetation, and isolation from disturbance.

#### *California Black Rail*

In order to determine the suitability of habitat and potential use of the Study Area by the California Black Rail, a qualitative assessment of habitat was conducted based on examination of the current range, documented occurrences within proximity to the site and published analyses by Evens and Page (1983), Harvey (1987) and Shuford (1993). For Black Rail, variables which were evaluated included: unrestricted or partially restricted pickleweed dominated marshes, presence of bulrush, high marsh elevation, gentle sloping shorelines, near channel banks, transitional upland vegetation and isolation from disturbance.

## 4.0 RESULTS

The Study Area is 3.9 acres, comprised primarily of a dirt and gravel parking lot and boat storage area. The north and east sides of the Study Area are waterfront areas bordering Richardson Bay. A small fringe of tidal marsh vegetation is located along the eastern edge of the Study Area. A multi-use recreational path along the eastern perimeter of the site separates the gravel parking area from existing ruderal vegetation and tidal marsh. The southern perimeter of the site is bounded by Bridgeway Boulevard. The western portion of the Study Area includes several buildings along Marin Ship and Libertyship Way. The majority of the site is developed, with a small fringe of ruderal vegetation fronting the tidal marsh to the east. Elevations of the Study Area range from approximately 0 to 12 feet. At the northern end of the gravel parking lot there is a kayak rental

facility and a small public beach. The following sections present the results and discussion of the biological assessment within the Study Area.

#### 4.1 Biological Communities

Three different biological community types were observed in the Study Area. Non-sensitive biological communities in the Study Area include: (1) developed areas with landscaped vegetation, and (2) ruderal herbaceous vegetation. Two sensitive biological communities were present in the Study Area, tidal marsh and tidal mudflat (Figure 2). Descriptions of these biological communities are contained in the following sections.

The Marin County Soil Survey shows that the site is dominated by one soil type: Urban Land-Xerorthents complex, 0 - 9% slopes (soil map #202). This soil type is considered to be composed of 70% urban land, 20% xerorthents and similar soils, and 10% minor components. Although depth to the water table is more than 80 inches and the frequency of ponding and flooding is classified as none, these soils can have hydraquent inclusions (saline and Novato), which are considered hydric soils.

##### 4.1.1 Non-sensitive biological communities

###### Developed Areas with Landscaped Vegetation

The majority of the Study Area is a non-vegetated dirt and gravel parking area, with some ornamental trees and shrubs planted around the perimeter. These ornamentals include red gum eucalyptus (*Eucalyptus camaldulensis*), Peruvian peppertree (*Schinus molle*), and cotoneaster (*Cotoneaster pannosa*), all of which are non-native invasive plant species.

###### Ruderal Herbaceous Grassland

On the eastern edge of the Study Area there is a thin narrow section of ruderal herbaceous vegetation separating the developed area from the tidal marsh. This area is dominated primarily by sweet fennel (*Foeniculum vulgare*) and non-native annual grasses. Other plants observed in this area included alkali Russian thistle (*Salsola soda*), bristly ox tongue (*Picris echioides*), cut-leaf plantain (*Plantago coronopus*), Mediterranean barley (*Hordeum marinum*), and soft brome (*Bromus hordeaceus*). This area borders a public use pedestrian/bike path within the Study Area.

##### 4.1.2 Sensitive Biological Communities

No development is planned to occur within sensitive biological communities in the Study Area.

###### Tidal marsh

The eastern edge of the Study Area contains a small fringe of tidal marsh vegetation (Figure 2). The tidal marsh plant community observed during the site assessment is similar to the northern coastal salt marsh described in Holland (1986). This marsh is influenced by the tides and its plant life is salt tolerant. The tidal marsh is dominated by saltgrass (*Distichlis spicata*) and pickleweed (*Salicornia virginica*). Other species included coastal gumweed (*Crindelia stricta* var. *playphylla*—also known as *Grindelia latifolia*), fleshy jaumea (*Jaumea carnosa*), cordgrass (*Spartina foliosa*),

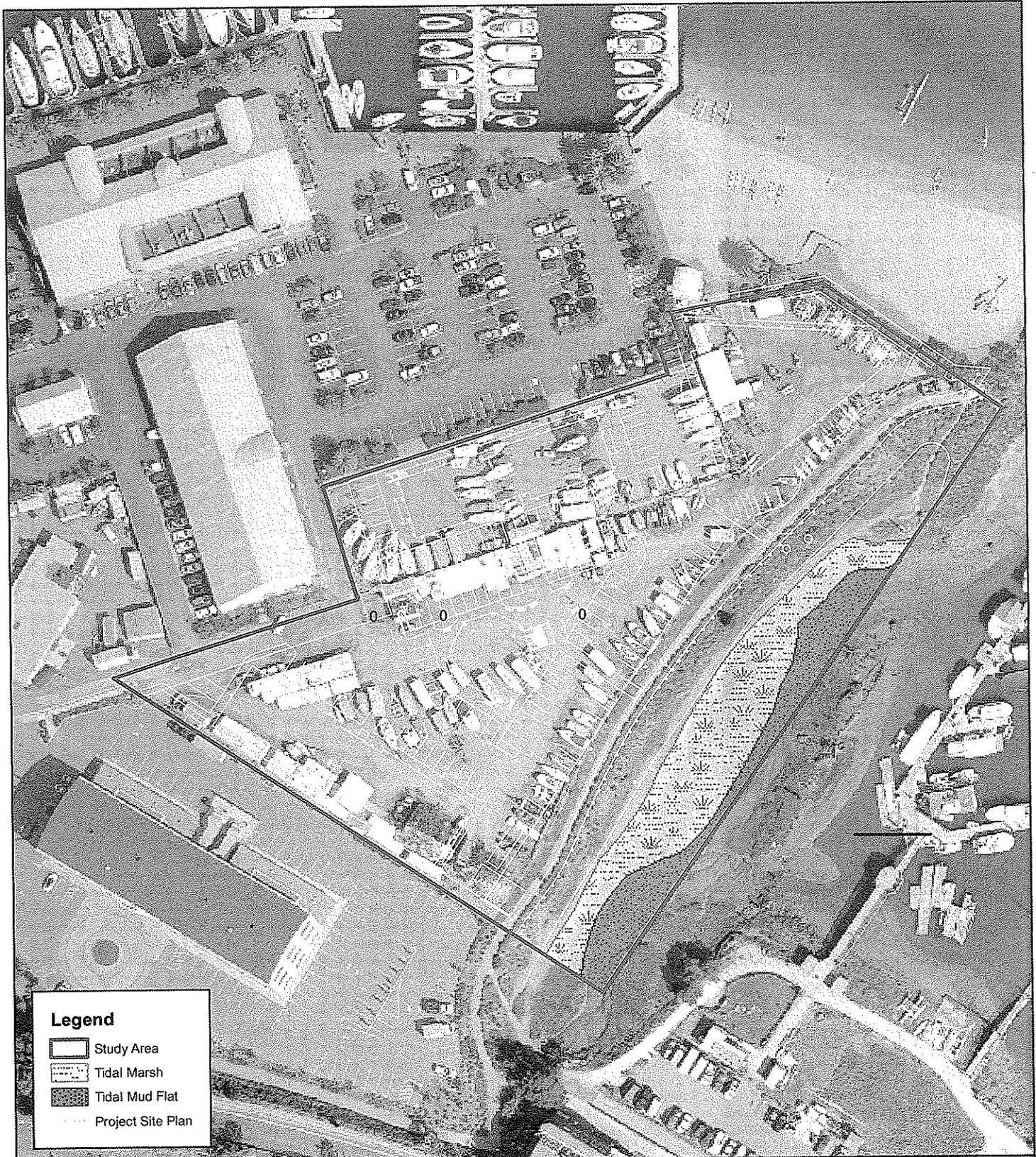
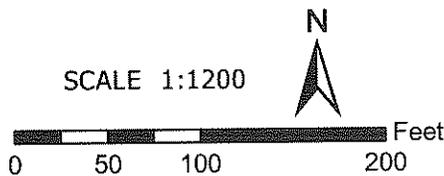


Figure 2. Tidal Marsh Present in the Study Area

76 Libertyship Way  
 Sausalito  
 Marin County, California



Date: October 2007  
 Base Image: Marin County  
 Map By: Derek Chan  
 File: L:\Acad 2000Files\17000\17138\gis\arcmap\  
 Fig2\_BCDC\_TidalMarsh\_20071212.mxd

and spearscale (*Atriplex triangularis*). All these species are native to California. Tidal marsh within the Study Area is within the jurisdiction of the Corps, RWQCB, CDFG, and BCDC.

### Tidal Mudflat

Tidal mudflat are areas that are subject to tidal inundation, but do not support tidal vegetation and are exposed at low tide. A wide area of tidal mudflat is present east of the tidal marsh in the Study Area. Tidal mudflat is within the jurisdiction of the Corps, RWQCB, CDFG, and BCDC. Corps and RWQCB jurisdiction in tidal areas extends upwards to the elevation of the High Tide Line (HTL), which is 4.59 feet NGVD<sup>2</sup> in the Study Area. This elevation is located just above the edge of tidal marsh mapped within the Study Area.

#### 4.1.3 City of Sausalito Tree Preservation

The Study Area is a developed parcels, and therefore, only native coast live oaks and Heritage Trees measuring greater than 30 inches CBH are protected under the City of Sausalito's Tree Ordinance. Trees within the Study Area consist of Peruvian peppertree (*Schinus molle*) and red gum eucalyptus (*Eucalyptus camaldulensis*). Peruvian peppertrees located along the fenceline on the eastern side of the Study Area are smaller than 30 inches CBH. The two red gum eucalyptus trees at the southern portion of the Study Area are greater than 30 inches CBH. Although red gum eucalyptus is not specifically identified as an Undesirable Tree in the Municipal Code, they are non-native invasive species similar to blue gum eucalyptus, and should therefore be considered undesirable. Removal of these trees would reduce the potential for colonization of other areas by these non-native invasive species. No City of Sausalito Dedicated Trees are known to be present in the Study Area.

## 4.2 Special Status Species

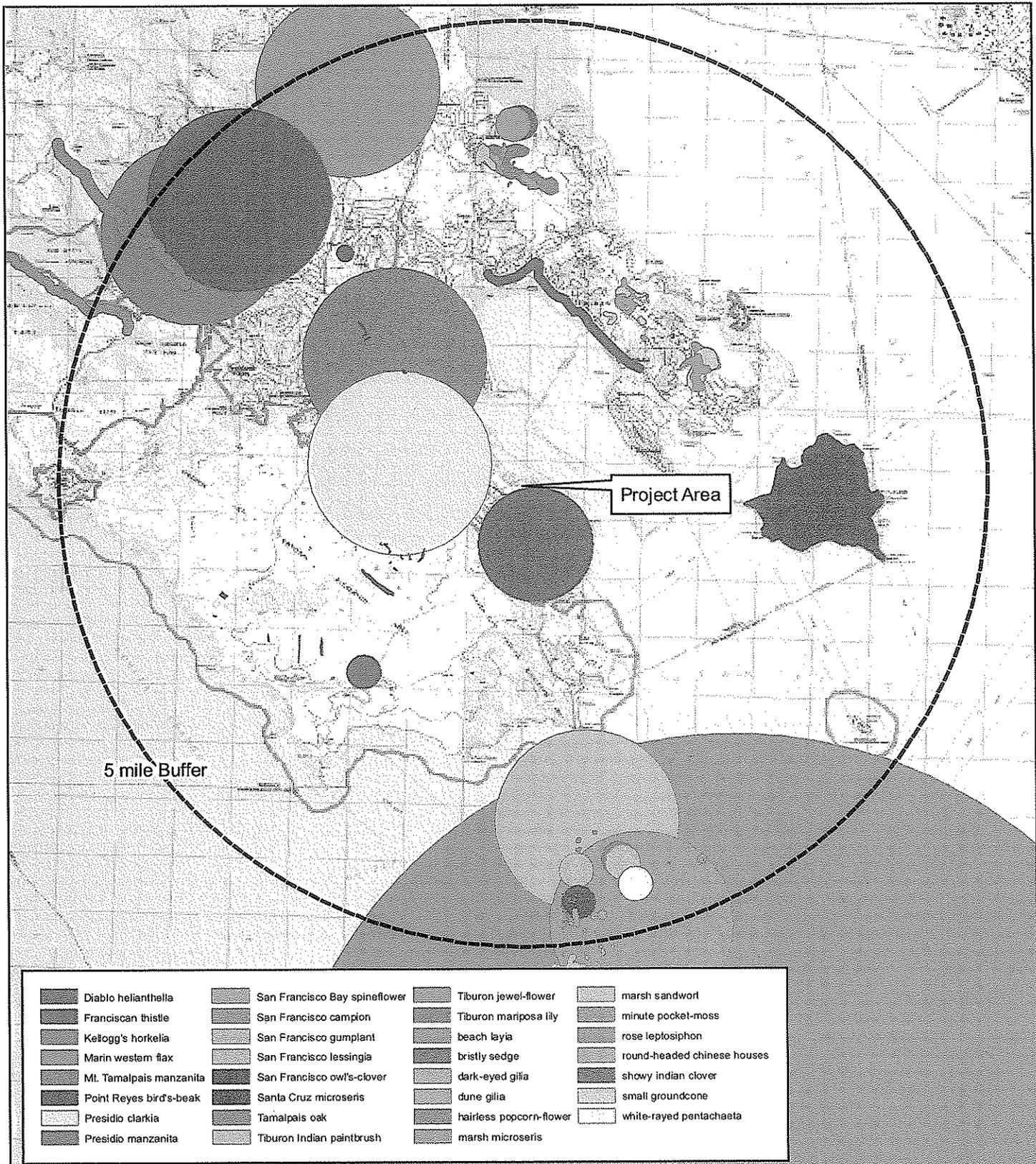
### 4.2.1 Plants

Based upon a review of the resources and databases given in Section 3.2.1, thirty-one special status plant species have been documented in the vicinity of the Study Area (Figure 3). The Study Area has the potential to support one of these species, Point Reyes bird's beak (*Cordylanthus maritimus ssp. palustris*). Appendix B summarizes the potential for occurrence for each special status plant species documented as occurring in the vicinity of the Study Area.

**Point Reyes bird's-beak (*Cordylanthus maritimus ssp. palustris*). CNPS List 1B Species.** Point Reyes bird's-beak is a hemiparasitic annual herb that occurs in coastal salt marshes and swamps at elevations between zero and ten meters. It blooms between June and October. There are six occurrences documented in the California Natural Diversity Database records for this species since 1984. Four of these were from Marin County (in the Mill Valley, Richardson Bay, and Corte Madera area), and two of these sightings were documented from Alameda County. Under natural conditions, this species is almost always found in wetlands. Although the potential is somewhat diminished by the presence of surrounding development, the tidal marsh in the Study Area may provide suitable habitat for this species. Point Reyes bird's-beak was not observed in

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<sup>2</sup>Based on relative elevations of the Corps HTL (7.2 feet MLLW at the Golden Gate Bridge) and tidal datum elevations at the Golden Gate Bridge and Sausalito Corps of Engineers Dock.



## Special Status Plant Species Occurrences within 5 miles of Project Area

76 Libertyship Way  
Sausalito  
Marin County, California



ENVIRONMENTAL CONSULTANTS

Date: October 2007  
 Basemap: USGS Topo Quad  
 Map By: Derek Chan  
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the Study Area during the assessment site visit, which occurred during the blooming period for this species. In addition, no development is proposed for the tidal marsh habitat in which this species has the potential to occur.

#### 4.2.2 Wildlife

Thirty-eight special status species of wildlife have been recorded in the vicinity of the Study Area and are mapped on Figure 4. Appendix B summarizes the potential for each of these species to occur in the Study Area. One special status wildlife species was observed in the Study Area during the site assessment and one special status wildlife species has a moderate potential to occur in the Study Area. Special status wildlife species that were observed, or have the potential to occur in the Study Area are discussed below.

**San Pablo Song Sparrow (*Melospiza melodia samuelis*) California Species of Special Concern, USFWS Bird of Conservation Concern.** San Pablo song sparrows inhabit salt, fresh, and brackish marshes and the moist, brushy, weedy edges of these habitats in the San Pablo Bay. The song sparrow will avoid areas where water is stagnant and/or tidal flow is obstructed (Shuford 1993). This species was observed within the Study Area during the October 23, 2007 site assessment. This species may breed within the tidal marsh in the Study Area. No development is proposed for the tidal marsh habitat in the Study Area, where this species was observed.

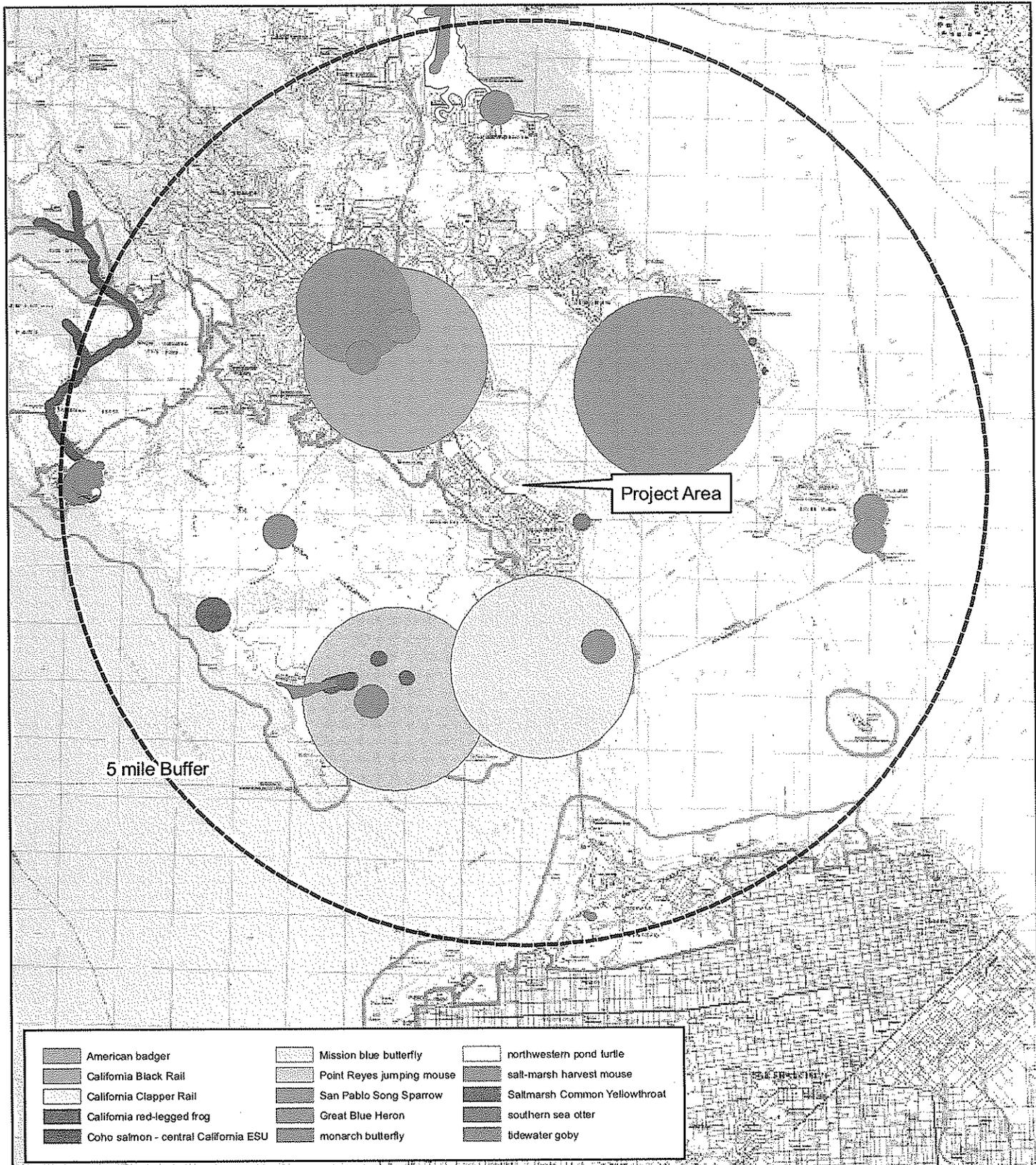
**Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*) California Species of Special Concern, USFWS Bird of Conservation Concern.** This subspecies of the common yellowthroat is found in freshwater marshes, coastal swales, riparian thickets, brackish marshes, and saltwater marshes. Their breeding range extends from Tomales Bay in the north, Carquinez Strait to the east, and Santa Cruz County to the south. This species requires thick, continuous cover such as tall grasses, tule patches, or riparian vegetation down to the water surface for foraging and prefers willows for nesting. The species may forage in the Study Area, but preferred nesting habitat is not present.

#### *Other Special Status Wildlife Species*

The following species are discussed because tidal marsh habitat is present in the Study Area. No development is proposed for tidal marsh habitat in the Study Area. In addition, tidal marsh in the Study Area was determined not to be suitable habitat for these species as discussed below.

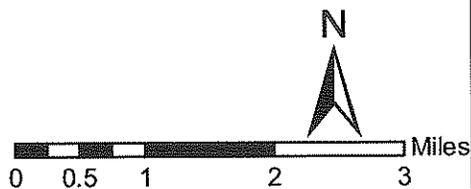
#### Salt Marsh Harvest Mouse

The federal endangered salt marsh harvest mouse (SMHM) is a rodent endemic to the salt and brackish marshes of the San Francisco Bay Estuary. The SMHM is found only in saline emergent wetlands comprised of saltgrass, bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), alkali heath (*Frankenia salina*), and pickleweed support harvest mice (USFWS 1984). SMHM also require dense upland cover for refugia during high tides (Fisler 1965). SMHM is highly dependant on cover. Unvegetated areas as narrow as 33 feet wide may serve as barriers to movement (Shellhammer 1978, as cited in USFWS 1984). Critical Habitat has not been proposed or designated for this species.



**Special Status Wildlife Species Occurrences  
within 5 miles of Project Area**

76 Libertyship Way  
Sausalito  
Marin County, California



ENVIRONMENTAL CONSULTANTS  
Date: October 2007  
Basemap: USGS Topo Quad  
Map By: Derek Chan  
Filepath: L:\Acad 2000Files\17000\17138\gis\  
arcmap\CNDDB\_animals\_20071017.mxd

The primary food source for SMHM is seeds and dense pickleweed. They are also accustomed to drinking moderately saline water and are capable of swimming to dispersal habitats. SMHM males are reproductively active from April through September, but are active throughout the year. Females are reproductively active from March to November and have a mean litter size of four young (Fisler 1965).

SMHM are not likely to occur within the Study Area. The nearest documented occurrence of SMHM was last observed in 1938 at Bothin Marsh, 2.25 miles northwest of the Study Area (CNDDDB 2007). Areas surrounding the Study Area are typified by industrial, residential and maritime development and no contiguous habitat connects the Study Area to the nearest SMHM occurrence. The tidal marsh within the Study Area contains sparse cover of low growing vegetation; poor quality habitat for SMHM. Predators, such as domestic pets, American Crows (*Corvus branchyrhynchos*) and Great Blue Heron (*Ardea herodias*), are abundant in the area. Because of these factors, SMHM are not likely to occur.

#### California Clapper Rail

The federal endangered California Clapper Rail (CLRA) is endemic to tidally influenced salt and brackish marshes of California from Morro Bay, San Luis Obispo County, to Humboldt Bay, Humboldt County. The CLRA The current range of CLRA is limited to tidal marshes in the San Francisco Bay Estuary. This species is typically found in the intertidal zone and along sloughs of salt and brackish marshes. Marshes are typically dominated by pickleweed, Pacific cord grass (*Spartina foliosa*), gumplant (*Grindelia spp.*), saltgrass, jaumea (*Jaumea carnosa*) and adjacent upland habitats which are used as refuge during high tides. CLRA may also occupy habitats dominated by other vegetation including, bulrush (*Scirpus americanus* and *Scirpus maritimus*), cattails (*Typha spp.*), and Baltic rush (*Juncus balticus*).

The Study Area does not provide suitable habitat for CLRA. The nearest documented CLRA occurrences are approximately 2.2 miles northwest at Bothin Marsh (CNDDDB 2007). The marsh within the Study Area has relatively dense, but narrow, bands of cordgrass. A large slough and gently sloping tidal mudflats required by CLRA as foraging habitat are also present. However, the tidal marsh in the Study Area is small in size and lacks the highly developed systems of tidal channels that are preferred by CLRA. Cordgrass stands within the Study Area are subject to tidal inundation and the associated upland vegetation consists of low growing grasses, which is not suitable refugia habitat for CLRA during high tides. The lack of highly developed tidal channels and suitable upland refugia habitat severely limits the cover available for CLRA to protect from predators, such as domestic pets and raccoons, which are abundant in the area. These factors make it unlikely that CLRA occurs in the Study Area.

#### California Black Rail

The California Black Rail is State Threatened, California Fully Protected and a USFWS Bird of Conservation Concern. Manolis (1977) found 95% of Black Rails in marshes dominated by pickleweed and/or bullrush. Spautz and Nur (2002) discovered that California Black Rail occurrence is positively correlated with large areas of tidal-marsh with low growing vegetation. California Black Rails use a variety of plant species as nesting substrate. These plants include: pickleweed, bulrush, salt grass, and gumplant. Spautz and Nur (2002) reported that Black Rails nest preferentially in pickleweed over other short species and taller vegetation, such as alkali

bulrush. This species nests from mid-march through mid-July with peak activity occurring in April and May.

The nearest documented Black Rail occurrences are at the northern portion of Richardson Bay approximately 1.0 mile northwest of the Study Area (CNDDB 2007). While the tidal marsh portion of the Study Area supports pickleweed, gumplant, saltgrass, and jaumea vegetation and intertidal mudflats as foraging habitat, the marsh is not large enough to be high or moderate quality habitat for California Black Rail. In addition, the nearest large marsh is more than a mile from the Study Area and the distribution of pickleweed is sparse and lacks bullrush, a key factor in habitat suitability for California Black Rail. These factors coupled with the presence of potential predators such as domestic dogs and racoons, mean that California Black Rail are unlikely to occur the Study Area.

## **5.0 SUMMARY AND RECOMMENDATIONS**

Two sensitive plant communities, tidal marsh and tidal mudflat, were identified within the Study Area. No special status plant species were observed in the Study Area, and one special status plant species, Point Reyes bird's beak, has the potential to occur. One special status wildlife species was observed and one has a moderate potential to occur within the Study Area. The following sections present recommendations for future surveys and/or measures to avoid or reduce impacts to these species and sensitive habitats. Special status species with the potential to occur in the Study Area are all tidal marsh species. No development is proposed in tidal marsh habitat within the Study Area.

### **5.1 Biological Communities**

Most of the Study Area is comprised of developed areas with landscaped and ruderal vegetation, which are not sensitive biological communities. Impacts to these non-sensitive communities are not considered significant under CEQA. The eastern portion of the Study Area contains a small area of tidal marsh and tidal mudflat, which are sensitive biological communities regulated by the Corps, RWQCB, CDFG, and BCDC. No development is planned to occur within the tidal marsh or tidal mudflat, so no direct impacts to tidal marsh will occur as a result of the proposed project. BCDC should be consulted to determine whether or not a permit is necessary for the proposed Project. The proposed project would not impact sensitive biological communities in the Project Area.

The Study Area is a developed parcel, and therefore, only native coast live oak trees and trees measuring greater than 30 inches CBH are protected under the City of Sausalito's tree ordinance. Although there are two red gum eucalyptus trees present that are greater than 30 inches CBH, they are non-native invasive species. Although these species are not listed as Undesirable Trees by the City of Sausalito, they should be considered undesirable due to their non-native invasive status. It is recommended that the City of Sausalito be consulted to determine if a tree removal permit is required for these trees. However, as long as the recommendations for special status wildlife species are implemented, no impacts to biological resources are anticipated as a result of removal of these trees. Removal of these trees would reduce the potential for the spread of non-native invasive species to nearby areas.

## 5.2 Special Status Plant Species

Thirty-one special status plant species were documented to occur in the vicinity of the Study Area. Most of the species found in the review of background literature occur in upper elevation woodland, forest or grassland habitat, or on serpentine soils so had no potential to occur within the Study Area. One species, Point Reyes bird's-beak, has the potential to occur in the Study Area, but will not be impacted by the project because the area of potential habitat (tidal marsh) is not planned for development.

## 5.3 Special Status Wildlife Species

Of the 38 special status wildlife species known to occur in the Study Area, three were determined to have the potential to occur in the Study Area. The one species observed was the San Pablo Song Sparrow. Saltmarsh Common Yellowthroat has a moderate potential to occur, and may nest in the Study Area. Both of these species nest and/or forage in tidal marsh habitats. Tidal marsh will not be impacted as part of the Project. Most of the species found in the review of background literature occur in habitats not present in the Study Area.

### *Birds*

To avoid potential impacts to breeding bird species covered by the MTBA, it is recommended that ground disturbance in vegetated areas and the removal of vegetation be conducted between September 1 and January 31, during the non-breeding season for birds. If it is not practical to remove vegetation between September 1 and January 31, it is recommended that pre-construction breeding bird surveys be conducted by a qualified biologist within 14 days of ground disturbance activities in vegetated areas. All active passerine nests identified at that time should be protected by a 50-foot radius minimum exclusion zone. Active raptor or special status species nests should be protected by an exclusion buffer with a minimum radius of 100 feet. Exclusion zone sizes may vary depending on habitat characteristics and species, and is generally larger for raptors and colonial nesting birds. Each exclusion zone would remain in place until all young have fledged. Since some birds may have three broods, avoidance would possibly extend through the breeding season into September.

If ground disturbance in vegetated areas or removal of vegetation occurs during the non-breeding season, no preconstruction breeding bird surveys are required. However, if nesting birds are encountered during construction activities in the non-breeding season, it is recommended that ground disturbance in the area surrounding the nest cease immediately and a qualified biologist be notified. All work should remain halted until appropriate corrective measures have been completed (e.g. such as avoidance until fledging).

### *Other species*

Tidal marsh communities can provide habitat for salt marsh harvest mouse, California Clapper Rail, and California Black Rail. However, tidal marsh in the Study Area is unlikely to provide habitat for these species based on the isolation of the site from large, contiguous habitat, the lack of habitat features required by these species and the presence of predators within the Study Area. In addition, tidal marsh will not be impacted by proposed development in the Study Area. Therefore, these species are not likely to be adversely affected by construction activities.

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**SALEMHOWESASSOCIATES INC.**  
 GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Liberty Ship Rpt

5 October 2006

The Law Office of Stephen Steelman  
 656 Eleventh Avenue  
 San Francisco, CA 94118

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 COMMUNITY DEVELOPMENT

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 Gary Hendricks

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**SUBJECT:** Report  
 Geotechnical Investigation,  
 Liberty Shipway Way II, Sausalito, CA

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### Introduction and Summary

This report presents the results of our geotechnical investigation of the proposed commercial building site at the above location. The purpose of our investigation was to evaluate the geotechnical feasibility of the proposed development, assess the suitability of the building site, and provide detailed recommendations and conclusions as they relate to our specialty field of practice, geotechnical engineering and engineering geology. The scope of services specifically excluded any investigation needed to determine the presence or absence of issues of economic concern on the site, or of hazardous or toxic materials at the site in the soil, surface water, ground water, or air. It is understood that others have performed this work.

If this report is passed onto another engineer for review it must be accompanied by the approved architectural drawings so that the reviewer can evaluate the exploration and data in the context of the complete project. Ground conditions and standards of practice change; therefore, we should be contacted to update this report if construction has not been started before the next winter or one-year from the report date.

The fieldwork consisted of reconnaissance mapping of exposed geologic features on the site and in the immediate surrounding area and the drilling of nine test borings. The borings were advanced using a SIMCO tracked hydraulic drill rig with 6-inch hollow stem flight augers and sampled by Standard Penetration Tests <sup>(see "notes to borings logs")</sup>. Fieldwork was conducted in August of 2006. During this period we reviewed select geotechnical references pertinent to the area and examined stereo-paired aerial photographs of the site, which were available from our library. In 1993 Engeo, geotechnical and environmental consultants, performed an investigation on the western portion of the property<sup>(1)</sup>. This investigation expanded the exploration to cover the entire property. The Engeo report contains useful information and should be reviewed along with this report.

In summary, the entire site consists of a random fill placed on up to 90 feet of bay mud. Typical design considerations for construction on this type of sites are long term and differential settlement and seismic stability. The fill was placed in the 1940's as part of the Bechtel-Kaiser Liberty Ship development and subsequently used as a stockpile area for the Schoonmaker sand dredging operation. Based on our experience with bay mud in the Marin bay area, this mud is relatively well consolidated and actually has measurable Standard Penetration Test "N" values (3 to 5). There are typically two options for construction on 'fill over bay mud' sites. One is to use shallow footing type foundations and accept some total and differential settlement, which is given to occur. The other, when no settlement can be tolerated, is to use end bearing piles, which are seated in the underlying bedrock located at a depth of 50 to 90 feet below the surface.

### Field and Laboratory Testing

During field exploration we conducted Standard Penetration Rest to determine the in situ strength and density of the soil material. Subsequently we re-examined the samples in our laboratory to confirm the field classification and select representative samples for testing. Laboratory testing consisted of moisture content, unit weight and Atterberg Limits. Upon examining the samples we determined that the variable nature of the mud would not yield meaningful data from consolidation

tests on a few one-inch thick specimens from such a large area and thickness of bay mud. Our exploration program encountered 430 linear feet of bay. Therefore, for settlement analysis we relied on the general data in the Corps of Engineers comprehensive survey of San Francisco bay mud<sup>(2)</sup>, which we judge is more representative for this size of an area and presents a more realistic view of the potential settlement that several individual consolidation tests would provide.

#### Site Conditions

The property had been previously developed in 1941 for the Bechtel-Kaiser shipyard by placing random fill on the existing bay mud marsh flats. The fill, while medium to very dense, contains a wide range of non-soil material such as glass, wood, wire and metal fragments. Nevertheless, the fill is suitable for shallow foundation bearing. We found the fill to range from 10 to 16 feet in thickness with bedrock at 50 to 90 feet below the surface. The thickness of the fill is more than adequate to spread the foundation load to an acceptable value at the fill/mud contact. The 40 to 80 foot thickness of bay mud is an unconsolidated, jelly-like material that is both highly compressible and subject to lateral flow when loads are placed on it.

Ground water was uniformly encountered at a depth of six feet. The level will fluctuate seasonally and with the tides; since the field work was performed late in the fall the ground water can be expected to be higher in the winter and spring.

#### Settlement

The most significant soils engineering consideration for site development is settlement, particularly differential settlement, resulting from the consolidation of the varying thicknesses of bay mud under the weight of the overlying fill and structure. We calculate that, since fill placement, the surface has undergone an average of 4 ½ feet of settlement and we estimate the total settlement will be on the order of 6 ½ feet, which will occur over the next 200 to 1000 years. The density and in situ strength indicate that the mud is normally consolidated, that is consolidation history of the mud represents the result of the current loading, and will continue to settle as predicted. Based on the 40 to 78 feet thickness of the mud observed in the test borings we calculate that, in the next 50 years, an additional half to one foot of settlement will occur across the site, depending on the local thickness of the mud.

These settlement values represent average values of the observed depth of bay mud. The underlying bedrock formation is a highly dissected irregular surface carved out of the soil existing at the time of the ice age ages when sea level was over 100 feet lower. The borings indicate a general increase in the depth of rock from east to west; however the thickness and composition of the bay mud can vary over a short distance, which will result in the observed differential settlement across the structure. The above estimates assume that there are no new fill loads; any additional fill will increase the amount and rate of settlement.

#### Foundation Design

If differential settlement is within a tolerable range for the planned construction, lightly loaded structures are best supported on a ribbed mat type foundation in the compacted fill. Pile support may be necessary if differential settlement cannot be accommodated by the structure supported on

the fill. Pile foundations have an advantage in that floor elevation will remain constant as the surrounding ground settles.

#### Footing Foundations

For this location we recommend a ribbed mat foundation, slab on grade with thickened edge footings and integral interior footings, instead of continuous wall footings. Isolated footings should not be used. Due to the expected differential settlement the footings should be designed as beams which can span 12 feet or cantilever six feet.

The following values are based on a minimum footing width of 18-inches and depth of 18-inches. If areas of soft soil are encountered during footing excavation, they should be overexcavated and replaced with Caltrans Specification Class 2 Aggregate base compacted to 90-percent. The allowable bearing pressure is calculated at  $\frac{1}{2}$  the ultimate bearing pressure.

- Allowable Bearing:  $Q_{allow} = 1200 \text{ lbs/ft}^2$ .
- Lateral Bearing:  $P_p = 300 \text{ lbs/ft}^3$ .
- Lateral Sliding: Coefficient = 0.25 ( $14^\circ$ )

Lateral bearing and lateral sliding may be combined and a one third increase is allowed for transitory loading.

#### Pile Foundations

Structures can be supported on driven piles to prevent settlement. Piles driven into the basal gravels or bedrock will provide end-bearing support. We expect piles would meet refusal five to ten feet below the top of the rock. Piles driven to refusal in the bedrock may be designed for the structural capacity of the pile minus the negative friction or downdrag forces imposed by the consolidation of the bay mud. Using 1.5 times the cohesion of the bay mud the downdrag force would be  $375 \text{ lbs/ft}^2$  per foot of pile penetrating the mud. Typically the effective capacity of a 12-inch square prestressed concrete pile would be the structural capacity of 105 tons minus 65 tons of downdrag or 40 tons per pile. To resist lateral loads a lateral bearing pressure of  $400 \text{ lb/ft}^3$  may be applied over the projected area of 1.6 diameters for pile spacings greater than four diameters. Closer spacing requires a reduction in individual capacity. This lateral resistance should be applied only in the fill.

Since pile supported structure will experience negligible settlement the differential settlement will occur between the structure and the adjacent ground. Perimeter curtain walls should be extended deep enough to prevent separation due to settlement between the structure and adjacent ground. Flexible utility connections and specially designed entrances should be installed to accommodate the differential settlement; these measures typically require periodic maintenance.

#### Slab on Grade Construction

The base for slabs on grade should consist of a 4-inch capillary moisture break of clean free draining crushed rock or gravel with a gradation between  $\frac{1}{4}$  and  $\frac{3}{4}$  inch in size. The base should be

compacted by a vibratory plate compactor to 90 percent maximum dry density as determined by ASTM D-1557. A 10-mil impermeable membrane moisture vapor retarder should be placed on top of the gravel. The gravel should be "turned down" by a vibratory roller or plate to provide a smooth surface for the membrane. "Recycled" drain rock is never acceptable.

Where migration of moisture vapor would be undesirable (e.g. under living spaces and areas covered by flooring) a "true" under-slab vapor barrier, such as "Stego® Wrap", should be installed. In this case one should consult an expert in waterproofing, our recommendations only apply to the geotechnical aspect of drainage and do not address the prevention of mold or flooring failures.

The top of the membrane should be protected during construction from puncture. Any punctures in the membrane will defeat its purpose. Protection of the membrane and concrete placement is the responsibility of the contractor. *Drains and outlets should be provided from the slab drain rock.* (See Drawing for Typical Under-slab Drains)

#### Earthquake Hazards and Seismic Design

This site is not subject to any unusual earthquake hazards, located near an active fault or within a current Alquist-Priolo Special Studies Zone. There were no geomorphic features observed in the field or on air photos, or geologic features in the literature that would suggest the presence of an active fault trace. However, historically the entire San Francisco Bay Area has the potential for strong earthquake shaking from several fault systems, primarily the San Andreas Fault which lies approximately seven miles to the southwest and the Hayward/Rodgers Creek Faults, 10 miles to the northeast. The U.S. Geologic Survey presently estimates <sup>(2)</sup> there is up to 21 percent chance of a major quake (Magnitude 8) from 2000 to 2030 on the San Francisco Bay region segment of the San Andreas Fault. The probability is lower north of San Francisco and increases to the south. However, in the same period, there is a 32 percent chance of a major event (Magnitude 7) on the Hayward fault and Rodgers Creek Faults. The total 30-year probability of one or more large earthquakes occurring in the entire San Francisco region is 70 percent (see Plate 1). Based on the bedrock and soils observed at the site, we do not anticipate those seismically induced hazards, specifically: liquefaction, settlement and differential compaction are present. Due to low elevation of the site it is subject to tsunami flooding generated by an earthquake. Generally speaking structures founded on fill on bay mud will be subject to severe shaking during a major seismic event.

For Uniform Building Code design purposes this site is in a Seismic Risk Zone 4 with a Soil Profile Type  $S_E$  and located  $10\frac{1}{2}$  kilometers from a type A fault <sup>(3)</sup>. While the ground below the water table consists of bay mud [ML-CH], the upper ten to 12 feet had  $N^{(1)}$  values representative of a medium to dense granular soil. Based on Table 16-J of the UBC, a granular soil with  $N < 15$  is classified as a  $S_E$  Soil Profile Type. According to Table 16-Q the Seismic Coefficient  $C_a$  for this soil profile is  $0.36N_a$ . We judge that this or a large coefficient is acceptable for the design of a structure at this location.

As a owner there are a number of measures one can take to limit structural damage, protect lives and valuable objects in the event of a major earthquake. To be prepared and understand the mechanics of earthquakes we strongly recommend that you purchase a very practical book entitled "Peace of Mind in Earthquake Country" by Peter Yanev. This book is written for the homeowner and,

while currently out of print, used copies are available in paperback (Chronicle Books/S.F.) from Amazon.com and other locations.

#### Drainage

We understand that the site drainage is being designed by a Civil Engineer.

#### Pavement Design

Pavement design should be performed by a Civil Engineer with such expertise. The top 12 inches of soil subbase underlying a pavement section should be scarified and compacted to 95 percent maximum density. All fill densities should be verified by testing procedures ASTM D-1556 and D-1557, or ASTM D-2292 and D-3017 (Nuclear Method).

#### Construction Inspections

In order to assure that the construction work is performed in accordance with the recommendations in this report, SalemHowes Associates Inc. must perform the following applicable inspections. We will provide a full time project engineer to supervise the foundation excavation, drainage, compaction and other geotechnical concerns during construction. Otherwise, if directed by the Owner, these inspections will be performed on an "as requested basis" by the Owner or Owner's representative. We will not be responsible for construction we were not called to inspect. In this case it is the responsibility of the Owner to assure that we are notified in a timely manner to observe and accept each individual phase of the project.

#### Key Inspection Points

- Map excavations in progress to identify and record rock/soil conditions
- Observe and record pile driving
- Accept final footing grade prior to placement of reinforcing steel.
- Test all compacted fill.

#### Additional Engineering Services

We should work closely with your project engineer and architect to interactively review the site grading plan and foundation design for conformance with the intent of these recommendations. We should provide periodic engineering inspections and testing, as outlined in this report, during the construction and upon completion to assure contractor compliance and provide a final report summarizing the work and design changes, if any.

Any engineering or inspection work beyond the scope of this report would be performed at your request and at our standard fee schedule.

#### Limitations on the Use of This Report

This report is prepared for the exclusive use of the Law Office of Stephen Steelman and his design professionals for construction of the proposed project shown on the drawings by Charles Stewart Architects. This is a copyrighted document and the unauthorized copying and distribution is expressly prohibited. Our services consist of professional opinions, conclusions and recommendations developed by a Geotechnical Engineer and Engineering Geologist in accordance

with generally accepted principles and practices established in this area at this time. This warranty is in lieu of all other warranties, either expressed or implied.

All conclusions and recommendations in this report are contingent upon SalemHowes Associates being retained to review the geotechnical portion of the final grading and foundation plans prior to construction. The analysis and recommendations contained in this report are preliminary and based on the data obtained from the referenced subsurface explorations. The borings indicate subsurface conditions only at the specific locations and times, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between such locations. The validity of the recommendations is based on part on assumptions about the stratigraphy made by the geotechnical engineer or geologist. Such assumptions may be confirmed only during earth work and foundation construction for deep foundations. If subsurface conditions different from those described in this report are noted during construction, recommendations in this report must be re-evaluated. It is advised that SalemHowes Associates Inc. be retained to observe and accept earthwork construction in order to help confirm that our assumptions and preliminary recommendations are valid or to modify them accordingly. SalemHowes Associates Inc. cannot assume responsibility or liability for the adequacy of recommendations if we do not observe construction.

In preparation of this report it is assumed that the client will utilize the services of other licensed design professionals such as surveyors, architects and civil engineers, and will hire licensed contractors with the appropriate experience and license for the site grading and construction. We also require that the Owner/Architect assures that the contractor has read and understands this geotechnical report.

We judge that construction in accordance with the recommendations in this report will be stable and that the risk of future instability is within the range generally accepted for construction on fill over bay mud in the San Francisco Bay area. However, one must realize there is an inherent risk of instability associated with such construction and, therefore, we are unable to guarantee the stability during any significant seismic event. For structures constructed on fill over bay mud we recommend that one investigate the economic issues of earthquake insurance.

In the event that any changes in the nature, design, or location of the facilities are made, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by SalemHowes Associates Inc. We are not responsible for any claims, damages, or liability associated with interpretations of subsurface data or reuse of the subsurface data or engineering analysis without expressed written authorization of SalemHowes Associates Inc. Ground conditions and standards of practice change; therefore, we should be contacted to update this report if construction has not been started before the next winter.

We trust this provides you with the information required for your evaluation of geotechnical properties of this site. If you have any questions or wish to discuss this further please give us a call.

Prepared by:

SalemHowes Associates, Inc.

A California Corporation

Reviewed by:



E Vincent Howes

Geotechnical Engineer  
GE #965 exp. 31 Mar 08

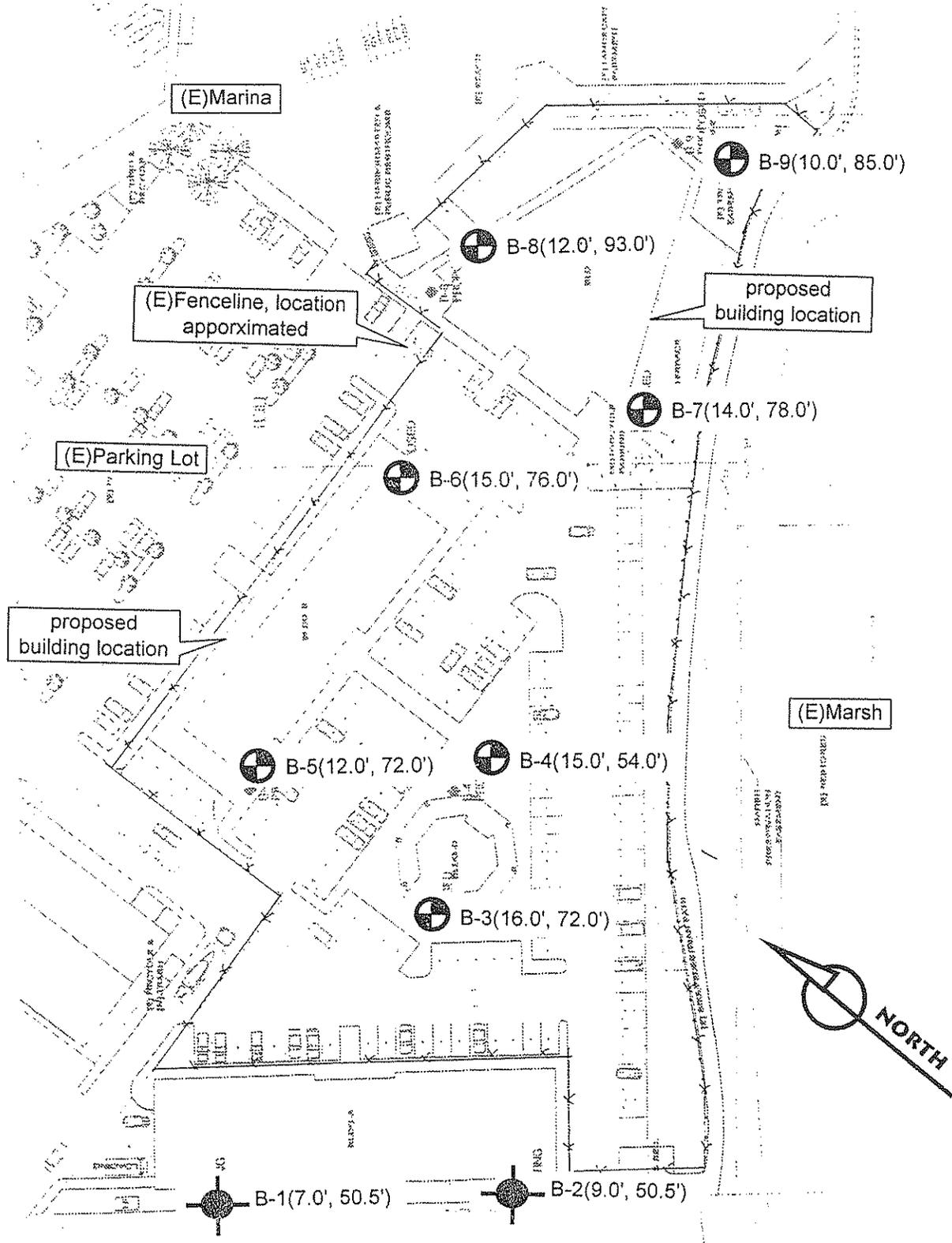


Attachments: Drawing A, Site Plan and Location of Test Borings  
Typical Under-slab Drains  
Logs of Test Borings  
Plate 1, San Francisco Bay Region Earthquake Probabilities  
Design Memorandum 13 Sep 06

References:

- (1) Report, Geotechnical Exploration, Schoonmaker Marina, Engo Incorporated, Geotechnical and Environmental Consultants, 10 August 1993
- (2) US Army, Corps of Engineers, "Percent settlement of fills over time according to thickness of mud", Comprehensive survey of San Francisco Bay and Tributaries, March 1961, Appendix E. Figure 24.
- (3) Rice, Salem J; Smith, Theodore C and Strand, Rudolph G.; Geology for Planning Central and Southeastern Marin County, California, California Divisions of Mines and Geology, 1976 OFR 76-2 SF.
- (4) U.S. Geological Survey, Probabilities of Large Earthquakes in the San Francisco Bay Region, 2000 to 2030, Open-File Report 99-517, 1999
- (5) California Department of Conservation, Division of Mines and Geology, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, February 1988, International conference of Building Officials.
- (6) Department of the Navy, Naval Facilities Engineering Command, Soil Mechanics, Design Manual 7.1, 7.2, (NAVFAC DM-7) May 1982,

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**LEGEND**

-  Location of Test Boring
-  Location of Test Boring Performed by Others
- (n', m')
- Depth of fill in feet (n'),
- Depth to top of weathered bedrock in feet (m')



**SITE PLAN AND LOCATION OF TEST BORINGS**

REDUCED COPY -- S.A.D.

In Reply  
Please Refer to:  
3706-E1

August 10, 1993

Liberty Ship II  
c/o Jim Norman  
655 Redwood Highway, Suite 225  
Mill Valley, CA 94941

Attention: Mr. Jim Norman

Subject: Libertyship Way II - Development Parcel  
Liberty Ship Way  
Sausalito, California

#### GEOTECHNICAL EXPLORATION

Gentlemen:

With your authorization, we conducted a geotechnical exploration at the site for your commercial building off Liberty Ship Way in Sausalito, California.

The accompanying report contains our exploration data and recommendations for geotechnical design. We find that this project is feasible from a geotechnical standpoint provided that the recommendations of this report are followed.

We are pleased to have been of service to you and look forward to further consultations with you and your design team on this project as it progresses.

Very truly yours,

ENGEO INCORPORATED

Reviewed by:

Jean Meuris

Paul C. Guerin

cc: 4 - Client

GEOTECHNICAL EXPLORATION  
for the  
LIBERTYSHIP WAY II - DEVELOPMENT PARCEL  
SAUSALITO, CALIFORNIA

Submitted  
to  
Liberty Ship II  
Mill Valley, California

Prepared  
by  
ENGEO Incorporated

Project 3706-E1

August 10, 1993

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## GEOTECHNICAL EXPLORATION

### Purpose and Scope

The purpose of this geotechnical report is to provide recommendations to assist you and your design team in developing grading and foundation plans for construction of a steel-frame commercial office building at the project site.

The scope of our work included the following services:

1. A review of geotechnical data obtained by others in the near vicinity of this site (Reference 1)
2. Exploratory drilling and cone penetrometer testing of subsurface soil and rock conditions
3. Laboratory testing of subsurface materials from the boreholes
4. Analyses of the geotechnical data obtained
5. Reporting our findings and recommendations

It is our understanding that environmental studies of the subject site have been performed by others. Such studies were therefore not included in the scope of our work.

This report was prepared for the exclusive use of Liberty Ship II and their design team consultants. In the event that any changes are made in the character, design or layout of the development, the conclusions and recommendations contained in this report should be reviewed by our office to determine if modifications of the report are necessary.

### Site Location and Description

The project site is located near the east stub end of Liberty Ship Way, southeast of Schoonmaker Point Marina in Sausalito, California.

The project site is approximately 2.25 acres in area and is relatively level. It is our understanding that the subject site was reclaimed from the Richardson Bay by filling mostly in the early 1900s. At the time of our explorations, a portion of the project site was occupied by small shops and residences. Other portions of the parcel were used for storage of boats, trailers and metal marine containers.

### Proposed Development

According to the plans available to us, it is proposed to construct a 150-foot-long by 50-foot-wide steel frame building at the approximate location shown in Figure 1. This building will be two stories high. It is our understanding that building loads will be light to moderate and will include column loads most likely less than 100 kips in magnitude. A significant portion of the site east of the proposed building will be landscaped. Parking stalls will be provided northeast of the proposed building as shown in Figure 1.

### Site Geology

The project site is located over marine and marsh deposits, near their landward boundary (Figure 2). These deposits include softer clays commonly referred to as "Bay Mud". The nearby steep hillsides are mapped as Franciscan Assemblage, a heterogeneous mixture of marine sediments, volcanics and related igneous and metamorphic rocks of Jurassic and Cretaceous age (Reference 2).

### Site Seismicity

The nearest active earthquake fault system is the San Andreas Fault located about 7 miles off shore and southwest of this site (Figure 3); the Hayward Fault is located approximately 11 miles northeast. Other faults located within a 50-mile radius from the subject site and

their main characteristics are shown in Table I. No active earthquake fault is known to traverse this project site.

### Seismic Hazards

Potential hazards resulting from significant seismic events include the primary hazard of ground rupture and the secondary hazards of ground shaking, lurching, liquefaction, densification, lateral spreading, landsliding, seiches and tsunamis. A description of the secondary hazards is given in the appendix to this report.

Because there are no known active faults traversing the site, the likelihood of ground rupture is considered remote.

Strong ground shaking is one of the significant secondary earthquake effects anticipated at this site. In general, ground shaking in areas underlain by deep and softer soil deposits is greater in magnitude and duration than for sites underlain by firm soils or rock. An evaluation of site specific ground motion would require dynamic response analyses which are beyond the scope of this study. Such analyses commonly provide the site period as well. Using a less sophisticated alternative, we estimate the site period to be in the range of 0.7 to 0.85 seconds.

Lurching can also be expected at this site again because of the underlying softer Bay Mud deposit.

Lateral spreading and landsliding are unlikely as there are no known steep banks on site nor in its immediate vicinity.

The potential for liquefaction is considered high in the loose sand deposits that occur locally at this site; however, these sand deposits were encountered at depth and are confined by the

bay clays. It is therefore our opinion that liquefaction of these sands will not have a noticeable impact on surface improvements.

The project site is mapped as susceptible to the effects of tsunamis (Reference 3). It is estimated that the run-up caused at this site by a tsunami reaching the Golden Gate would be near half the run-up occurring at the entrance to the bay. The effect of the run-up on the proposed development will depend on site elevations with respect to sea level.

### Flood Hazards

The project site is mapped in a generalized manner within the limits of the 100-year flood. The impact of such an event on the proposed development will again depend on whether site elevations are above flood levels. This should be addressed by your Civil Engineer.

### Field Exploration

ENGEO's field explorations of July and August 1993 consisted of drilling two wash-borings and conducting three cone penetrometer tests at the approximate locations shown in Figure 1. The boring and penetrometer test locations were determined by taping and pacing. Elevations at exploratory locations were not available by the time of this writing.

All explorations were performed with truck-mounted equipment. Soil samples were recovered during drilling with 2- and 3-inch O.D. split-spoon samplers. The larger sampler was fitted with 6-inch-long brass liners.

The samplers were driven into the soils using a 140-pound hammer with a 30-inch drop as is done in standard penetration testing. Standard penetration testing (SPT) (used predominantly for cohesionless materials and bedrock) was made with the 2-inch-diameter split-spoon sampler.

The sampler penetration into the native materials is commonly field recorded as the number of blows needed to drive the sampler in 6-inch increments; the sampler is commonly driven for three such increments. Sampler driving is recorded on the boring logs as the number of blows required for the last one-foot penetration. When sampler driving is difficult in relatively dense materials, penetration is recorded as inches penetrated for 50 hammer blows.

For the 3-inch sampler, the blow count number is often modified to approximate the 2-inch sampler (SPT) penetration results by means of a comparison of energy and surface area of the samplers.

Cone penetrometer soundings were performed by advancing a standard cone and its sleeve hydraulically into the soils explored at a rate of about 2 centimeters per second. The standard cone has an area of 10 square centimeters and an apex angle of 60 degrees. Cone resistance, sleeve friction and pore pressures are measured electronically as sounding progresses. Several penetration tests had to be performed at two of the three preselected CPT locations because of hitting refusal in the existing fill.

Boreholes were logged in the field by an ENGEO Engineer. The field logs were then used to develop the report borelogs (Figures 4 and 5 of the Appendix). The penetrometer data was recorded automatically and was interpreted by V B I In-Situ Testing. This data is presented in Figure 6.

The borelogs and penetrometer data depict local subsurface conditions for the date of drilling; however, subsurface conditions may be expected to vary with time.

### Laboratory Testing

Samples recovered during drilling were tested for the following soil characteristics:

Natural unit weights  
Natural moisture contents  
Atterberg Limits  
Grain-size distribution

The purpose of these tests is explained in Table II of the Appendix. The laboratory test results are given on the borelogs and Figures 7 through 9.

### Subsurface Stratigraphy

The subsurface soil conditions generally disclosed in the borings and cone probes include a layer of fill about 7 to 10 feet thick over about 29 to 35 feet of soft clays generally referred to as "Bay Mud". The Bay Mud is underlain by 7 to 13 feet of stiffer clays overlying bedrock. The fill encountered in our explorations consists of interlayered lifts of sands, silts and clays with some gravel, cobbles, pieces of concrete and miscellaneous debris. Our drill rig was able to drill through the concrete debris using a tricone bit; however, as mentioned before, the cone penetrometer was not able to traverse the fill in two of the three test locations selected, even after three attempts were made about each general test location.

The consistency of the fill is quite variable. The sandy fill appears dense to very dense in the top 3 feet, and medium dense to dense depending on location in the next 7 feet. The clayey fill is very stiff in the upper 3 feet and its consistency changes to stiff and medium stiff with depth. A sample of clayey fill was tested to determine its plasticity. A plasticity Index of 9 was obtained. This is an indication of a low potential for swelling.

The Bay Mud encountered below the fill is soft in consistency and includes shells. Gravels, which appear to be slope-wash from the nearby hills, were encountered in both borings at depths ranging between 18 and 20 feet below existing ground surface. The cone

penetrometer data suggests the occurrence of organics, most likely peat in 3- to 6-inch seams in the upper reaches of the Bay Mud deposit.

The stiff clays underlying the bay mud include several feet of older bay mud and lighter colored clays resulting from weathering of bedrock. As expected, the bedrock sampled is Franciscan in nature.

Water was encountered during drilling in the fill at depths ranging from 4 to 5 feet.

## RECOMMENDATIONS

### Site Grading - General

The recommendations for grading contained in this report are of a general nature since grading plans were not available at the time of this writing.

We recommend that the grading plans for the project be developed in coordination with ENGEO in order to mitigate known soil and geologic hazards.

A significant consideration in any site regrading is settlement of the Bay Mud as a result of additional filling. It is estimated that 5 inches of total settlement may result from each additional foot of fill. It is also estimated that 90 percent of this settlement may occur over a period of about 2 to 3 years after the end of filling; 50 percent of this settlement may occur in 2 to 4 months after the end of filling. We would recommend checking these predictions during construction by survey methods. If the desired grading will result in differential filling in the building area, we recommend surcharging the areas of deepest filling in order to mitigate potential differential settlements and their impact on post-construction building performance.

Before contract bidding, the final grading plans need a geotechnical review by ENGEO.

A notification of ENGEO a minimum of 48 hours prior to grading is needed in order for ENGEO to coordinate its schedule with the grading contractor.

Grading operations need full-time observation of the Geotechnical Engineer's field representative and should meet the requirements of the "Guide Grading Specifications" included in the Appendix.

Ponding of storm water is not advisable at the site, and particularly on the building pad during work stoppage for rainy weather. Before the grading is halted by rain, positive slopes should be provided to carry the surface runoff water in a rapid and controlled manner to a collection point.

### Demolition and Stripping

The initial step in grading consists of the removal of existing structures interfering with the proposed development. Demolition includes removal of all buried pipes and utilities.

All excavations from demolition and stripping below design grades should be cleaned to a firm undisturbed soil surface as determined by the Geotechnical Engineer. This surface should then be scarified, moisture conditioned and recompacted prior to backfilling with compacted engineered fill.

No loose or uncontrolled backfilling of depressions resulting from demolition and stripping are permitted.

The requirements for backfill material quality, placement and compaction are the same as for engineered filling.

### Placement of Fill, Monitoring and Testing

Site soils which are not contaminated with organics or debris are suitable for use as fill.

The Geotechnical Engineer should be informed if any importation of soil is contemplated. Import materials, if any are needed in the building area, should have a Plasticity Index of less than 12. A sample of such material should be submitted to the Geotechnical Engineer for evaluation prior to being brought on the site.

All fills should be placed in thin lifts. The lift thickness should not exceed the depth of penetration of the compaction equipment used.

The following compaction control requirements are generally applied to all grading:

Test Procedure:	ASTM D-1557
Required Moisture Content:	Not less than 3 percent above optimum moisture content.
Minimum Relative Compaction:	Generally not less than 90 percent. A higher relative compaction may be required elsewhere to conform to city requirements.

#### Foundation Design

As mentioned before, building loads were not known by the time of this writing. Because of this, the recommendations of this section may have to be reviewed and amended once building loads become known. The Structural and Geotechnical Engineers should consult with each other on this matter at the appropriate time.

For the soil conditions encountered in our explorations, it is our opinion that either deep foundations transferring building loads to firm soils and rock below the Bay Mud or rigid shallow foundations spreading the building loads into the upper fill above the Bay Mud may be considered.

The construction of deep foundations would require casing if cast-in-place caissons were used. Pre-drilling through the fill would be necessary if driven piles were considered because of the expected occurrence of sizeable local obstructions in the existing fill. In addition, if

deep foundations were used, slab-on-grade construction might not be advisable because of the potential for differential settlements between foundations and ground floor slabs. Deep foundation design criteria will be provided on request.

Shallow foundations should consist of interconnected continuous strip footings or a structural slab of sufficient rigidity to reduce potential differential slab movements to values compatible with the superstructure. We expect structural slab foundations to be provided with well-reinforced ribs acting as stiffeners. No isolated spread footings should be considered.

Strip foundations should be deep and reinforced to maximize their bending moment capability and to be capable of bridging at least 15 feet. These footings should also be wide enough to minimize foundation pressures on the Bay-Mud underlying the fill. On the basis of the boring data, we expect that some fill may have to be reworked locally in the footing areas to provide adequate bearing.

Geotechnical design criteria for use in footing sizing are as follows:

Minimum depth of footing section:	36 inches
Minimum depth of footing embedment in subgrade soil:	18 inches below lowest adjacent subgrade level
Minimum footing width:	18 inches
Maximum allowable footing pressure:	1,000 psf for dead plus live loads in firm soil
	1,500 psf for total loads including wind or seismic loads

The Geotechnical Engineer should evaluate foundation settlements once actual footing pressures become known.

A passive pressure of 300 psf per foot of footing embedment (triangular distribution) may be used in firm soil to resist lateral loads. The upper foot of embedment should be neglected from passive resistance computations when in open or landscaped ground.

Foundation plans should be reviewed by the Geotechnical Engineer prior to being finalized.

Because of the expected variability in fill conditions, foundation trenching should be done under the observation of the Geotechnical Engineer so that changes in footing configuration may be made at the appropriate time, if any are required.

Footing trenches should not be allowed to desiccate prior to pouring concrete. Footing trenches should also be cleared of all loose soil and debris prior to pouring concrete.

#### Slab-on-Grade Construction

Cracking of concrete slabs-on-grade can occur as a result of concrete shrinkage. Because of this, as a minimum requirement, the floor slab should be reinforced and jointed. The slab reinforcement should be designed by a Structural Engineer. Slab jointing should be designed as recommended in the American Concrete Institute Publication ACI 302.1R-89.

The slabs-on-grade should also be designed by the Structural Engineer for the anticipated floor loads and potential settlement. The slab should be a minimum of 6 inches thick.

In keeping with accepted practice, a capillary break consisting of a layer of clean gravel or crushed rock a minimum of 4 inches thick should be placed under the floor slab. The Project Architect should select the type of vaporproof membrane to minimize moisture

condensation under the office flooring depending on the type of floor cover used. The Structural Engineer should be consulted on the advisability of providing a sand cushion under the slab.

The slab subgrade soils should be thoroughly and uniformly wetted down prior to pouring concrete to minimize swell of desiccated soils. This operation should preferably be implemented after the placement of the capillary break.

### Site Surface Drainage

No ponding of storm water is to be permitted on the building pad during prolonged periods of inclement weather.

The project site should be positively graded at all times to provide for rapid removal of surface water runoff away from foundation systems and to prevent seepage toward foundation systems at any time during or after the end of construction. Ponding of water may result in undesirable weakening of the subgrade materials, loss of compaction, and slab movements.

As a minimum requirement, finished grades should provide a slope of at least 3 to 5 percent at right angles to and within 7 feet from the exterior walls, to allow surface water to drain positively away from the proposed building. To lower the potential for seepage of storm and irrigation water under the structure, we recommend that, whenever feasible, a drainage swale be constructed around the building at grades lower than interior grades. Care should be exercised to ensure that landscape mounds will not interfere with the above requirements.

No concentrated discharge of roof storm waters should be allowed within 3 feet from foundation systems or the floor slab. Storm water from roof downspouts should be carried away in closed conduits to an intake structure designed and approved by a Civil Engineer.

Requirements for Landscaping Irrigation

Sprinkler systems should not be installed where they may cause ponding or saturation of foundation soils within 3 feet from walls or under the building. As mentioned before, such ponding or saturation could result in undesirable soil weakening, loss of compaction and consequent foundation and slab movements.

Irrigation of landscape areas should be limited strictly to that necessary for plant growth. Excessive irrigation could result in progressive saturation and weakening of the foundation soils.

The Landscape Architect and prospective owners and their gardeners should be informed of the surface drainage and irrigation recommendations included in this report.

Preliminary Pavement Design

Preliminary design pavement sections have been determined for an assumed R-Value of 5 and Traffic Indices of 4 and 5. They are shown in the following table:

Traffic Index	Asphalt Course	Aggregate Base Course R Minimum = 78
4	2½"	9"
5	2½"	12"

These sections are for estimating purposes only. Actual sections to be used should be based on R-value tests performed on samples of actual subgrade materials secured at the time of grading.

Pavement construction should be done according to the requirements of the Standard Specifications of the State of California Division of Highways, latest edition.

### Utilities

If sand is used as utility trench backfill, all utility trenches entering the building must be provided with an impervious seal consisting of native materials where the trench passes under the building perimeter. This impervious plug should extend at least 3 feet into, and out of, the building perimeter. This is to prevent surface water from percolating into the sand under foundations and the building where such water would remain trapped in a perched condition, allowing clays to development their full expansion potential.

Utility companies and Landscape Architects should be made aware of this information.

All trench backfill should be compacted using approved techniques to a minimum of 90 percent compaction. Care should be exercised where utility trenches are located beside foundation areas. Utility trenches constructed parallel to foundations should be located entirely above a plane extending down from the lower edge of the footing at an angle of 45 degrees.

## LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this report to developers, owners, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this report are solely professional opinions.

The professional staff of ENGEO Incorporated strives to perform its services in a proper and professional manner with reasonable care and competence but are not infallible. There are risks of earth movement and property damages inherent in land development. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our work.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's work. This document must not be subject to unauthorized reuse, that is, reuse without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. If actual field or other conditions necessitate clarifications, adjustments, modifications or other changes to ENGEO's work, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

## REFERENCES

1. Geotechnical Engineering Investigation, Schoonmaker Marina, Harding Lawson Associates, February 14, 1985.
2. Preliminary Geologic Map of Marin and San Francisco Counties and Parts of Alameda, Contra Costa and Sonoma Counties, California. Miscellaneous Field Studies Map MF-574; McBlake Jr., J. A. Bartow, V. A. Frizzell Jr., J. Schlocker, D. Sorg, C. M. Wentworth and R. H. Wright, HUD Basic Data Contribution 64, 1974.
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4. Miscellaneous Field Studies MF-480, Areas of Potential Inundation by Tsunamis in the San Francisco Bay Region, John R. Ritter and William R. Dupre, USGS, 1972.
5. Flood-Prone Areas in the San Francisco Bay Region, J. T. Limerinos, K. W. Lee and P. E. Lugo, USGS, 1973.
6. Geologic and Engineering Aspects of San Francisco Bay Fill Special Report 97, CDMG, 1969.

# **MEMORANDUM**

**DATE:** February 7, 2008

**TO:** Sierra Russell, Associate Planner

**FROM:** Todd Teachout, City Engineer

**SUBJECT:** 70-76 Libertyship Way, DRSP/EMND 07-017, Industrial PUD

This Engineering Division staff review is based on the review of the following documents:

1. Draft Traffic Impact Study prepared by W-trans dated 1/23/08
2. Geotechnical Report dated October 5, 2006 by Salem Howes Associates
3. BCDC Permit 5-85 for Schoonmaker Point Marina
4. Porous Pavement Fact Sheet
5. ALTA Survey Parcel 2, 23 PM 54 dated 8/13/07
6. Site Lighting Plan dated 4/6/2007
7. Biological Assessment dated December 2007
8. 70-76 Libertyship Way prepared by Charles M. Stewart Architects dated 1/11/08

We previously reviewed the following documents in June of 2007

1. 70-76 Liberty ship Way, dated 11-01-06 by Charles M. Stewart Architects.
2. Application cover letter dated May 11, 2007 by Bruce Huff of the Kimber Companies
3. Title Report Dated July 1, 2003 for 63-080-06
4. Geotechnical Exploration for Libertyship Way II by Engeo dated August 10, 1993

The revised plan is much improved as compared to the initial submittal. There now are clear routes for vehicle up to 80 Libertyship. Engineering Staff continues to believe that there should be an additional sheet showing vehicular and pedestrian circulation and connection to public streets and public paths near Bridgeway. This desire is partially realized with Sheet VS1.0 but it should include information about connection to Marinship Way and the signalized intersection at Bridgeway and Easterby. Sheet 3 of the A.L.T.A Survey shows relevant information in the context of the existing land uses. Staff would like to see truck turning templates plotted at intersections near the southeasterly corner of 80 Libertyship Way and at the southwesterly corner of 74 Libertyship Way

**Drainage:** The proposal to place pervious pavement to allow percolation in lieu of a conventional closed pipe drainage conveyance is an interesting proposal. This proposal, if it works as conceived, would presumably cost less and create fewer negative impacts

into protected waters. Regrettably, the proposal is outside of accepted conventions. Before staff can prepare a positive recommendation we need to review both site specific and generalized studies that evaluate hydraulic performance of pervious pavement under ideal conditions and when the pavement has aged some (20 years in tidal areas, if available). We need to evaluate the structural capability of this type of pavement in filled tidal zones. There is ample evidence that conventional flexible pavement structures perform poorly in the filled tidal zones. Lacking evidence to suggest otherwise, staff believes that pervious pavement will not be as durable as conventional flexible or rigid pavements. The plans include a preliminary grading plan showing conventional inlets and closed drains. This plan conflicts with the Landscape Plan and the Narrative proposal for pervious pavement and the geotechnical engineer recommendations against ponding. The plans need to be made consistent.

**Stormwater Pollution Prevention:** The plan provides insufficient information with regard to stormwater pollution control. Because this project is over one acre in size it needs address the new regulations issued under the Phase 2 National Pollution Discharge Elimination System Discharge System (NPDES) Permit, as outlined by the Marin County Stormwater Pollution Prevention Requirements (MCSTOPP). Staff recommends the applicant quantify the drainage using the documentation procedures outlined in Chapter 4 of the MCSTOPP Guidelines.

**Traffic and Circulation:** The revised project site formalizes the looping cul-de-sac nature of Libertyship Way. Staff believes these revisions, along with adequate roadway signage and building signage plans, will go a long way toward improving circulation and navigation for visitors unfamiliar with the area. The plan is constrained by existing offsite structures and offsite conditions. These conditions prevent the design of smooth uniform roadway “right-of-way” lines that are the norm in large scale land development projects. Staff is concerned that the design of the southerly access point between 80 Libertyship Way and 70 Libertyship Way is sub-optimal. It appears as though the road will have to operate as one-way as laid out.

Staff is torn by this issue. One the one hand the sidewalk extension is from the 30 Libertyship site is very orderly and appealing. On the other hand all other travel ways in the area operate as two-way. A short segment of one-way street could reduce safety in the area in the event motorists ignore operational signage. Staff believes 70 Libertyship should be reduced in size, slightly, or moved southerly to allow an access road with a width that is consistent with other existing offsite primary roads (aisle?). Offsite conforming improvements westerly of 70 Libertyship should be evaluated and laid out on the plans. ADA accessibility is not strongly detailed at this stage of the plan process. Though there may be some localized challenges staff believes that compliance can be achieved during the construction design phase of the project.

**Sewer:** The responses to staff’s earlier concerns are satisfactory. There will need to be a development condition for the project requiring welded pipe that is pressure tested. Designation of area for potential future pump station. The sewer design could also account for the estimated 1 foot of settlement that may occur in the next 50 years.

Geotechnical: Recent geotechnical report doesn't adequately discuss the structural implications of the proposed pervious pavement. There needs to be a supplement that considers revisions to recommendation based on the saturated base and sub-base conditions. Recommendations for R-values or an equivalent soil bearing parameter(s) for rigid pavement design should be included in the supplement.

Pervious Pavement: Staff can accept the proposal for pervious pavement but we would like to see a water quality sampling program and flow measurement program operated for two years following completion to assess performance of this material.

Improvement design: With this scale of project the site plan, grading, plan and roadway signage plan needs to be designed by a registered Civil Engineer.

Flood Elevation: The site plan proposes localized filling of the 100 year flood plain. Building Pad Elevations are acceptably above the flood elevation. This design will require the preparation of Flood Insurance Rate Map Amendment. This issue continues to exist with the plan revisions.

Utilities: Staff is satisfied with the applicants response to our concern about utility services.

Trash and Recycling: The proposal calls out for centralized trash/recycling collection. Staff is concerned about the practical operation of such a facility thinking that the individual buildings should be served separately. The revised plan did not respond to earlier comments regarding being served by a hose bib and sanitary sewer drain to facilitate periodic cleaning and treatment of the surface cleaning waste water.

Traffic Study: Staff recommends revisions to the study to analyze westbound to northbound turning movements and lane capacity in the afternoon at Harbor Drive and Bridgeway. Staff would welcome recommendations for improved detection and modification to allow possible traffic adaptive signal timing plans at this location. October traffic counts do not capture the variability of traffic conditions. Staff suggests the data be adjusted to account for effective operation in the summertime tourist months. Given the proximity to the water staff suggests that consideration be given to travel mitigations from ferry or water taxi.

There are too many unresolved issues to recommend conditional approval at this time. Staff recommends further revisions and supplementation to address the issues discussed, above. The design is very close to being acceptable.

**CSW | ST2**

CSW/Stuber-Stroeh Engineering Group, Inc.

Engineers | Land Planners | Surveyors | Landscape Architects

**RECEIVED**

JAN 18 2008

CITY OF SAUSALITO

Date: January 16, 2008  
File: 3.957.07

Ms. Sierra Russell  
Associate Planner  
City of Sausalito  
420 Litho Street  
Sausalito, CA 94965

**RE: 70-76 LIBERTY SHIP WAY  
OUTSTANDING APPLICATION ITEMS**

Dear Sierra,

The following information pertains to items in your letter of October 31, 2007 to Gary Hendricks and which was discussed in our meeting with you on November 13, 2007. This letter specifically addresses items 10, 13, 19, 20, and 22.

**Item 10. Porous Pavement System: Please provide staff with a more detailed description of the porous pavement system to be used.**

The concept behind the use of porous pavement is in allowing rainfall to migrate through the pavement and infiltrate into the subgrade material below. This site has never really ponded water after even the most severe rainstorms because the infiltration rate is high. In developing the storm water mitigation system for the site, it was decided to take advantage of this. With the exception of one test hole in a proposed landscape area at the extreme east end of the site, the percolation rate in the top 24 inches of site material varies from a low of 4.0 inches per 24 hours to a high of 21.8 inches per 24 hour period. The pavement section will consist of a layer of pervious concrete over a layer of open graded drain rock on filter fabric. The total thickness of the paving section will be based on the reservoir volume required to retain the design storm plus some reserve as well as on the structural depth required for the design traffic. The pervious concrete section will be designed as a rigid pavement.

**Item 13. Hydrology Study: Please submit a hydrology study completed by a certified Hydrologist that outlines impacts on water quality standards, groundwater recharge, drainage, and runoff.**

In California there is no certification for a hydrologist. The practice of hydrology, dealing with rainfall drainage and runoff, is an area of practice within Civil Engineering and is covered under the Professional Engineers Act. Pervious pavement is proposed for this project with the idea that rainfall will be retained on site for infiltrating into the underlying soil and thus

Ms. Sierra Russell  
70-76 Liberty Ship Way  
Outstanding Application Items  
Page 2

eliminate runoff. The EPA recognizes pervious concrete pavement as a BMP for first-flush pollution mitigation measure for stormwater management. There is an existing underground piped storm drain system connected to an offsite outfall pipe that discharges into the Bay that will be used for secondary overflow purposes only. The proposed site will be graded to basin areas that will catch any surface accumulation and transmit it through the existing piping system. It is expected that the piping system will only get used during the most severe rainfall.

**Item 19. Drainage: Before staff can prepare a positive recommendation for the pervious pavement, we need to review both site specific and generalized studies that evaluate hydraulic performance of pervious pavement under ideal conditions and when the pavement has aged some (20 years in tidal areas, if available). We need to evaluate the structural capability of this type of pavement in filled tidal zones. There is ample evidence that conventional flexible pavement structures perform poorly in the filled tidal zones. Lacking evidence to suggest otherwise, staff believes that pervious pavement will not be as durable as conventional flexible or rigid pavements. The plans include a preliminary grading plan showing conventional inlets and closed drains. This plan conflicts with the Landscape Plan and the Narrative proposal for pervious pavement and the geotechnical engineer recommendations against ponding. The plans need to be made consistent. A 15 inch drain is proposed to be routed under Bldg B. Such routing is unacceptable and must be redesigned.**

Properly designed pavements can perform quite well in filled tidal zones. The parking areas on both sides of the project are performing as intended. The parking area north of the project is about three times older than the parking area on the southwest side and both are still holding up extremely well. The proposed pervious concrete paving is designed as a rigid pavement. The perception is that because the site is on fill over bay mud the pavement won't hold up very well; that it will somehow settle unevenly and end up with ruts or low spots. The actuality is that the fill will settle fairly uniformly and blocks of rigid pavement will move together. Geofabric under the pervious aggregate base will spread the surface loads over a wide area and help to prevent localized subgrade failure.

The thickness of fill at the project site and throughout the Schoonmaker point area varies from ten to sixteen feet. The fill was placed in the early 1940's and the underlying bay mud has undergone about 65 years of consolidation. While the mud is expected to consolidate further, the majority of the consolidation settlement at the site has already occurred, and according to the soils report the remaining settlement will occur within the next 200 to 1,000 years. The project proposes to remove overburden from the site and thus slow down the settlement process.

Our only comment on the poor performance of flexible pavements on fill is that they may not have been properly designed or constructed. Flexible pavements generally fail when the

Ms. Sierra Russell  
70-76 Liberty Ship Way  
Outstanding Application Items  
Page 3

subgrade yields. Rigid pavements spread the load more evenly and at a wider dispersion and will help reduce localized subgrade yielding.

The durability of any pavement is measured in terms of resistance to abrasion and resistance to freeze-thaw cycles. Freeze-thaw durability is not rally an issue in Sausalito. Portland cement concrete pavements are typically more durable than asphalt cement pavements. The durability of pervious concrete paving in states with mild climate has shown to be sufficient to be used in thousands of applications for parking lots, streets, driveways, sidewalks, etc..

The plan shows catch basins and a closed pipe system, as explained above, because there is an existing underground piped system that will be used as a secondary means of drainage. In the event the pervious paving reservoir is overwhelmed by back-to-back storms exceeding the design rainfall, the piping system would relieve ponding. The 15 inch diameter pipe running under Building B is existing and will be abandoned. The piping will be re-routed.

The geotechnical report addresses ponding as if the site were to receive conventional paving; which is a typical recommendations. The pervious paving at the site will allow percolation of surface water. The pavement design will take subgrade moisture into account. The buildings will be on piles or rigid mat foundations and thus not be effected by surface moisture in the paved areas.

**Item 20. Stormwater Pollution Prevention: The plan provides insufficient information with regard to stormwater pollution control. Because this project is over one acre in size it needs to include design elements to capture and treat stormwater runoff before it is discharged offsite. These are new regulations issued under the Phase 2 National Pollution Discharge Elimination System (NPDES) permit.**

Per previous discussion in Items 10, 13, and 19 above, for design storm conditions there will not be offsite discharge. The purpose of using pervious pavement is to allow rainfall to percolate into the ground. Pervious pavement is recognized by the EPA as a first-flush mitigation.

**Item 22. Sewer: Staff suggests that the sewer be designed and built for gravity operation (if feasible) but also designed in a manner to be easily converted to force main operation. The project needs to anticipate force main conditions and show where such equipment would be located and screened. The applicant needs to verify that the sewage use plan land uses sewage loadings can be accommodated by the Sausalito-Marin City Sanitary District.**

The sanitary sewer for the buildings on the project site will discharge into a street-manhole in front of 30 Liberty Ship Way. Detailed sewer design will be part of the design-documents

Ms. Sierra Russell  
70-76 Liberty Ship Way  
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Page 4

phase. Design of a redundant gravity and force system is not warranted at this time. Solvent welded PVC pipe can be used so that it could be converted to a pressure system in the future if the need arises. Conversion to a force system could be accomplished in the future by constructing a flush-surface wet-well and installing submersible pumps hooked up to the PVC discharge line. Pumps would have an emergency power back-up system.

The sanitary sewers for all buildings adjacent to Liberty Ship Way ultimately discharge into the Sausalito-Marin City Sanitary District (SMCSD) gravity main that parallels Bridgeway. In prior discussions with SMCSD regarding other projects tying into this line there was ample capacity. The planned development at the Arques Shipyard has not taken place and this project appears on track to be developed before the Arques project.

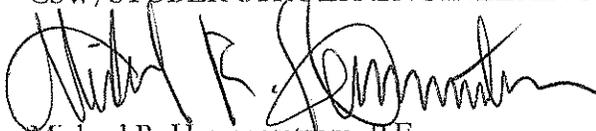
We hope this clears up the outstanding issues on the application and we can move on to Design Review. We believe the application is now complete for processing and understand that the CEQA time limits for the project Initial Study and Negative Declaration will now govern the continuing processing. We would greatly appreciate a letter from you confirming the completeness date.

If you have any questions regarding our narrative or require further information, please do not hesitate to call. Please contact me or the project sponsor directly by telephone or e-mail if additional information or clarification is needed.

Our team has enjoyed working with you and wishes you success in this New Year.

Sincerely,

CSW/STUBER-STROEH ENGINEERING GROUP, INC.



Michael R. Hammerstrom, P.E.  
Engineer Manager  
R.C.E. #22,643 Expires 12/31/09  
[Mhammerstrom@cswst2.com](mailto:Mhammerstrom@cswst2.com)  
(415) 883-9850 tel  
(415) 883-9835 fax

MRH:lb



# **MEMORANDUM**

**DATE:** June 27, 2007

**TO:** Sierra Russell, Associate Planner

**FROM:** Todd Teachout, City Engineer

**SUBJECT:** 70-76 Libertyship Way, DRSP/EMND 07-017, Industrial PUD

The Engineering Division reviewed this project on June 26, 2007. Our review is based on the review of the following documents:

1. 70-76 Liberty ship Way, dated 11-01-06 by Charles M. Stewart Architects.
2. Application cover letter dated May 11, 2007 by Bruce Huff of the Kimber Companies
3. Title Report Dated July 1, 2003 for 63-080-06
4. Geotechnical Exploration for Libertyship Way II by Engeo dated August 10, 1993

A limited completeness review was provided verbally on June 20, 2007. We believe that the plans and development proposal are incomplete.

**Access:** The project site abuts Mono Street. Mono is generally located under water and cannot be considered acceptable legal access for vehicular, pedestrian or utility access. The site plan sheets needs revision to detail alternative legal access across abutting dry land properties to Bridgeway.

**Easements:** The site is encumbered with a number of easements. These easements are not fully illustrated as needed to title evaluate conflicts with the proposal. Revise the various site plans to show the easements.

**Drainage:** The proposal to place pervious pavement to allow percolation in lieu of a conventional closed pipe drainage conveyance is an interesting proposal. This proposal, if it works as conceived, would presumably cost less and create fewer negative impacts into protected waters. Regrettably, the proposal is outside of accepted conventions. Before staff can prepare a positive recommendation we need to review both site specific and generalized studies that evaluate hydraulic performance of pervious pavement under ideal conditions and when the pavement has aged some (20 years in tidal areas, if available). We need to evaluate the structural capability of this type of pavement in filled tidal zones. There is ample evidence that conventional flexible pavement structures perform poorly in the filled tidal zones. Lacking evidence to suggest otherwise, staff believes that pervious pavement will not be as durable as conventional flexible or rigid pavements. The plans include a preliminary grading plan showing conventional inlets and closed drains. This plan conflicts with the Landscape Plan and the Narrative

proposal for pervious pavement and the geotechnical engineer recommendations against ponding. The plans need to be made consistent. A 15 inch drain is proposed to be routed under Bldg B. Such routing is unacceptable and must be redesigned.

**Stormwater Pollution Prevention:** The plan provides insufficient information with regard to stormwater pollution control. Because this project is over one acre in size it needs to include design elements to capture and treat stormwater runoff before it is discharged offsite. These are new regulations issued under the Phase 2 National Pollution Discharge Elimination System Discharge System (NPDES) Permit.

**Traffic and Circulation:** The project site is configured similar to conventionally laid out shopping center. The lack of defined roadway paths, now, makes navigating through the Libertyship area difficult. The proposal continues that problematic pattern. It is a layout that the Engineering staff cannot support. The project creates an opportunity to improve spatial order. Staff encourages the applicant to redesign the parking field to more clearly separate the circulation component from the parking component. The revised plan should show streets instead of parking lot aisles to create a circle type circulation pattern. Given the size of the existing and proposed Libertyship area, consideration for creating a loop road should be considered. If this suggestion will not be considered further the plans must be revised to show truck turning templates at all circulation direction changes. The aisles should accommodate tractor trailer truck combinations at all times and still allow delivery truck sized vehicles to pass. The site plan does not give adequate consideration to other modes of travel. The plan needs to demonstrate integration with circulation elements of the Marinship Specific Plan. There is shoreline path accommodation however that facility is primarily a recreational facility. There needs to be facilities for utilitarian uses (a walking trip to work, a local pedestrian shopping trip). The plan is not clear with regard to ADA accessibility.

**Sewer:** There is no detail for the sewers. The area is settling. The settlement rate is slow but the site is settling at a much faster rate than naturally occurring dry land areas in the City. Gravity sewer systems that are designed neglecting these settling rates are likely to become inoperable over time. Staff suggests that the sewer be designed and built for gravity operation (if feasible) but also designed in a manner to be easily converted to force main operation. The project needs to anticipate force main conditions and show where such equipment would be located and screened. The applicant needs to verify that the sewage use plan land uses sewage loadings can be accommodated by the Sausalito-Marín City Sanitary District.

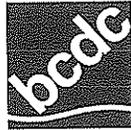
**Geotechnical:** The development plan described in the geotechnical report is much different than that proposed. The report is 14 years old. Standards and laws have changed in the intervening years. The report needs to be revised to address the new development plan, to update the recommendations relative to revised building codes. Staff would like to see additional analysis and recommendations with regard to tsunami risk, long term settling of the site, and on-site storm water treatment facilities.

Flood Elevation: The site plan proposes localized filling of the 100 year flood plain. Building Pad Elevations are acceptably above the flood elevation. This design will require the preparation of Flood Insurance Rate Map Amendment.

Utilities: The plans do not detail utilities beyond storm drains. Sewer issues were discussed above. There should be some consideration, now, of street lighting and placement of utility vaults or pedestals. Utility service lines must be undergrounded. The applicant needs to demonstrate that necessary utilities have access to mainline facilities beyond the project boundaries.

The recycling enclosure should be served by a hose bib and sanitary sewer drain to facilitate periodic cleaning and treatment of the waste water.

The plans are too preliminary to recommend conditional approval. Staff recommends revisions and supplementation to address the issues discussed, above.



Making San Francisco Bay Better

August 9, 2007

Sierra Russell  
City of Sausalito  
420 Litho Street  
Sausalito, California 94965

**SUBJECT:** Notice of BCDC Jurisdiction

Dear Ms. Russell:

We have received notice that you are planning a construction project at 70-76 Libertyship Way, which we believe is located in the Commission's jurisdiction. In order to construct the project, the owner of the property will need the Commission's authorization before any work may begin at the site.

We believe that the proposed project at Libertyship Way is located both in the Commission's Bay and shoreline band jurisdiction on the North and East side of the proposed project site. The Commission's permit jurisdiction includes all tidal areas of the Bay up to the line of mean high tide or up to five feet above Mean Sea Level or the extent of wetland vegetation in marshlands, all areas formerly subject to tidal action that have been filled since September 17, 1965, and the shoreline band that extends 100 feet inland from and parallel to the Bay jurisdiction. The Commission also has jurisdiction over managed wetlands adjacent to the Bay, salt ponds, and certain waterways.

With regards to the Commission's shoreline band jurisdiction, Section 66602 of the McAteer-Petris Act states, in part, that: "that maximum feasible public access, consistent with a proposed project, should be provided...." In evaluating projects with potential impacts on existing or future public access to the Bay, the Commission evaluates each project for maximum feasible public access as it relates to the law and related policies of the Bay Plan. We are initially concerned about the lack of new public access at the site. It appears that the proposed public access is limited to improvements of existing public access and landscaping around the site, which may not provide maximum feasible public access.

In designing public access, we encourage the use of BCDC's Public Access Design Guidelines of the San Francisco Bay. This document is available on our website at <http://www.bcdc.ca.gov> and can be downloaded for your use. The seven public access objectives of the Design Guidelines are: (1) make public access public; (2) make public access usable; (3) provide, maintain and enhance visual access to the bay and shoreline; (4) maintain and enhance the visual quality of the bay, shoreline and adjacent developments; (5) provide connections to and continuity along the shoreline; (6) take advantage of the Bay setting; and (7) ensure that public access is compatible with wildlife through siting, design and management strategies.

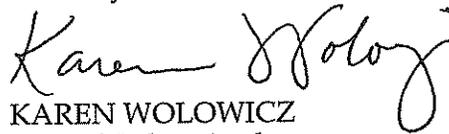
These design guidelines also encourage site planning that includes a configuration where buildings engage the shoreline and take advantage of the Bay setting as a design asset. The design of the Libertyship Way Project places most of the parking along the shoreline and two buildings on the interior of the site. We believe this project provides an ideal opportunity for the uses within the buildings to have a strong relationship with the public shoreline. We firmly believe that shoreline developments that take advantage of the Bay setting have greater economic value than those that do not.

The Commission must also consider a project's potential impacts on public views of the Bay. The Commission's Bay Plan policies on appearance, design and scenic views state, in part, "[a]ll bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay. Maximum efforts should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas...." Therefore, the proposed project should include diagrams that depict the potential view opportunities from the nearest public road showing how the Bay view would be affected from that location, and also from the adjacent properties and public streets.

Due to the above concerns, the location of the project, and the potential impact on public access and views, this project as proposed, may require review by BCDC's Design Review Board (DRB) in addition to review by the Commission.

Please contact me at (415) 352-3600 or [karenw@bcdc.ca.gov](mailto:karenw@bcdc.ca.gov) to discuss the proposed project, determine which permit is necessary, and review the process for obtaining one.

Sincerely,

  
KAREN WOLOWICZ  
Coastal Policy Analyst

KW/mm



# MARIN MUNICIPAL WATER DISTRICT

220 Nellen Avenue Corte Madera CA 94925-1169  
www.marinwater.org

July 25, 2007  
File No. 246.0  
Map No. 020-04

Sierra Russell  
City of Sausalito Planning Dept  
420 Litho St  
Sausalito CA 94965

**RE: WATER AVAILABILITY – Development**  
Assessor's Parcel No.: 063-080-06  
Location: 70-76 Liberty Ship Wy., Sausalito

Dear Ms. Russell:

The above referenced parcel is not currently being served. Upon submittal of the approved development plan, the District will determine the necessary facilities and water entitlement required for the project. This property will be eligible for water service upon request and fulfillment of the requirements listed below.

1. Complete High Pressure Water Service Applications.
2. Submit a copy of the building permit.
3. Pay appropriate fees and charges.
4. Complete the structure's foundation within 120 days of the date of application.
5. Comply with the District's rules and regulations in effect at the time service is requested, including the installation of a meter per structure.
6. All landscape and irrigation plans must be designed in accordance with the most current District landscape requirements (currently from Ordinance #385). Prior to providing water service for new landscape areas, or improved or modified landscape areas, the District must review and approve the project's working drawings for planting and irrigation systems. Any questions regarding the District's current water conservation and landscape Ordinance should be directed to Charlene Burgi at (415) 945-1525.
7. Comply with the backflow prevention requirements, if upon the District's review backflow protection is warranted, including installation, testing and maintenance. Questions regarding backflow requirements should be directed to the Backflow Prevention Program Coordinator at (415) 945-1559.

If you have any questions regarding this matter, please contact me at (415) 945-1531.

Very truly yours,

Joseph Eischens  
Engineering Technician  
JE:dh



DEPARTMENT OF FISH AND GAME

<http://www.dfg.ca.gov>

POST OFFICE BOX 47  
YOUNTVILLE, CALIFORNIA 94599  
(707) 944-5500



July 31, 2007

Ms. Sierra Russell  
City of Sausalito  
Community Development Department  
420 Litho Street  
Sausalito, CA 94965

Dear Ms. Russell:

Subject: 70-76 Liberty Ship Way Use Permit and Design Review Application,  
Sausalito, Marin County

The Department of Fish and Game (DFG) has reviewed the documents provided for the subject project, and we have the following comments.

Please provide a complete assessment (including but not limited to type, quantity and locations) of the habitats, flora and fauna within and adjacent to the project area, including endangered, threatened, and locally unique species and sensitive habitats. The assessment should include the reasonably foreseeable direct and indirect changes (temporary and permanent) that may occur with implementation of the project. Rare, threatened and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380). DFG recommended survey and monitoring protocols and guidelines are available at [http://www.dfg.ca.gov/hcpb/species/stds\\_gdl/survmonitr.shtml](http://www.dfg.ca.gov/hcpb/species/stds_gdl/survmonitr.shtml).

Please be advised that a California Endangered Species Act (CESA) Permit must be obtained if the project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the project. Issuance of a CESA Permit is subject to CEQA documentation; therefore, the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the project will impact CESA listed species, early consultation is encouraged, as significant modification to the project and mitigation measures may be required in order to obtain a CESA Permit.

If you have any questions, please contact Mr. Jeremy Sarrow, Environmental Scientist, at (707) 944-5573 or Mr. Greg Martinelli, Water Conservation Supervisor, at (707) 944-5570.

Sincerely,

Charles Armor  
Regional Manager  
Bay Delta Region

*Conserving California's Wildlife Since 1870*





March 27, 2007

City of Sausalito  
420 Litho Street  
Sausalito, CA 94965

Attention: Mr. Paul Kermoyan  
Community Development Director

**Subject:** 30 Liberty Ship Way  
Sausalito, Marin County, California  
AEI Project No. 263064

Dear Mr. Kermoyan:

The purpose of this letter is to address certain on-going environmental conditions and remediation activities that involve the property located at 70 Liberty Ship Way, Sausalito, California.

All Environmental, Inc. (AEI Consultants) has been actively involved in providing environmental engineering and consulting services for the adjoining property know as 30 Liberty Ship Way, Sausalito, California since early 1997. In February 1997, AEI conducted at Phase I Environmental Assessment Report for 30 Liberty Ship Way. In March of 1997, AEI removed a 500-gallon gasoline underground storage tank (UST) located at 30 Liberty Ship Way.

In early 2000, AEI was contracted by Kimber Management, LLC, on behalf of the property owner (Harrison Holdings, LLC), to for the following purposes:

1. To over excavate and backfill the area occupied by the previous 500-gallon UST.
2. Perform environmental monitoring and testing during the removal of railroad tracks from the former Pacific Northwestern Railroad yard.
3. Perform and Asbestos Survey Report for the existing structure at 30 Liberty Ship Way
4. Identify and address any environmental concerns that would arise during the remodeling and construction of the buildings at 30 Liberty Ship Way.

The properties located on Liberty Ship Way were operated by the Marinship Corporation as a ship servicing facility during the Second World War. 30 Liberty Ship Way was acquired in the 1990s by the current owner and beginning in 1999, significant rehabilitation of the former building began. During the course of these activities, a release of petroleum products was discovered along with a previously unknown UST. UST removal activities were performed under the jurisdiction of Marin County Health Department. During excavation work for utility installation and structural upgrades, AEI performed inspection and sampling to identify impacted soil and where necessary, disposal at appropriate landfill facilities. Following confirmation that the release had impacted groundwater,

regulatory oversight of the matter was transferred from Marin County to the RWQCB as the lead agency.

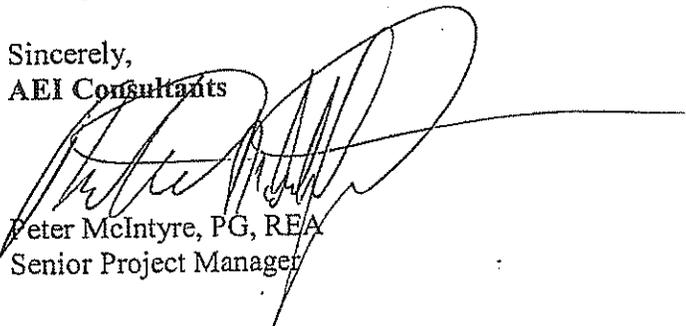
Since the discovery of the release from the former fuel underground storage tanks (USTs), the San Francisco Bay Regional Water Quality Control Board (RWQCB) has provided oversight of the mitigation of the release.

Under the direction of and working with the RWQCB, preliminary site assessment activities began in late 2000 through 2002. Groundwater monitoring has been performed continuously since 2002. Based on the results of the prior investigation and extensive groundwater monitoring, additional characterization was reviewed by the RWQCB in September 2006 and implemented in January 2007. Some of this work will be conducted on 70 Liberty Ship Way.

Following review of the findings of this recent investigation by the RWQCB, AEI expects to begin evaluation and design of remedial measures for the impacted properties in the coming months. During the planned development of 70 Liberty Ship Way, AEI and the owners of 30 Liberty Ship Way will be working closely with the developer of the 70 Liberty Ship Way and their environmental engineers to ensure that any pollution is adequately mitigated in a safe and proper manner. The RWQCB will be involved in all aspects of site cleanup to ensure that all applicable regulatory guidelines are met with respect to this matter.

I can be reached at 925/283-6000, extension 104 or at [pmcintyre@aeiconsultants.com](mailto:pmcintyre@aeiconsultants.com), if you have questions or need any additional information.

Sincerely,  
AEI Consultants



Peter McIntyre, PG, REA  
Senior Project Manager