Flood Control & Water Conservation District
Alameda County

Daniel Woldesenbet, Ph.D., P.E., General Manager

399 Elmhurst Street • Hayward, CA 94544 • (510) 670-5480 • www.acgov.org/pwa

June 28, 2022

Honorable Board of Supervisors
County of Alameda
1221 Oak Street, Suite 536
Oakland, CA 94612-4305

SUBJECT: ADOPT THE RESOLUTION ACCEPTING AND ADOPTING THE ADDENDUM TO THE LAKE ELIZABETH/STIVERS LAGOON MARSH DESIGN AND IMPROVEMENT PROGRAM ENVIRONMENTAL IMPACT REPORT (SCH # 1993105082) AND MAKE RELATED FINDINGS

Dear Board Members:

RECOMMENDATION:

A. Adopt a resolution accepting and adopting the Addendum to the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Environmental Impact Report (Program EIR) pursuant to CEQA Guidelines Section 15162, and

B. Make related findings.

DISCUSSION/SUMMARY:

The Alameda County Flood Control and Water Conservation District (District) and the City of Fremont have applied for grant funds from the California Coastal Conservancy (CCC) to restore Stivers Lagoon near Lake Elizabeth in the City of Fremont, as described in the Stivers Lagoon Marsh Restoration/Enhancement Plan, dated February 1993. The Program Environmental Impact Report (EIR) (SCH # 1993105082) for the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement, and Mitigation and Monitoring Program were certified by the City of Fremont (City) on 8/3/1993. The District was a responsible Agency per CEQA Guidelines Section 15096.

To be considered for the grant funding, the CCC requires that an updated CEQA document be provided. Pursuant to Section 15162 of the CEQA Guidelines, an Addendum to the Program EIR has been prepared by the District including updated Biological Resources Assessment, Hydraulic Analysis, and Cultural Resources Review to meet current CEQA guidelines and requirements for its implementation.

The Addendum concludes that the Project would not cause new significant impacts not previously identified in the program EIR, or result in a substantial increase in the severity of previously identified significant impacts. No new mitigation measures would be necessary to reduce significant impacts. No changes have occurred with respect to circumstances surrounding the Program EIR that would cause significant environmental impacts to which the Project would contribute considerably. Therefore, no supplemental environmental review is required in accordance with Public Resources Code Section 21166, and CEQA Guidelines Sections 15162 through 15164.

FINANCING:

This is related to an approval of project environmental documents. There will be no impact to the County General Fund, and no increase in net County cost as a result of this action.

VISION 2026 GOAL:

The acceptance of the Addendum to the Program EIR helps advance the 10X goal of **Accessible Infrastructure** by ensuring that this portion of flood control infrastructure meets the highest safety standards which will ultimately help us achieve our shared visions of **Safe and Livable Communities** and a **Thriving and Resilient Population**.

Yours truly,

DocuSigned by:

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Daniel Woldesenbet, Ph.D., P.E.
Director of Public Works

DW/jb
Attachment

c: Kathy Lee, Deputy County Counsel
Jeffrey Rayos, CAO Analyst

THE BOARD OF SUPERVISORS OF THE ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RESOLUTION NUMBER: R-2022- 347F

A RESOLUTION ACCEPTING AND ADOPTING AN ADDENDUM TO THE LAKE ELIZABETH/STIVERS LAGOON MARSH DESIGN AND IMPROVEMENT PROGRAM ENVIRONMENTAL IMPACT REPORT IN FREMONT, ALAMEDA COUNTY, CALIFORNIA (SCH # 1993105082) AND MAKING RELATED FINDINGS

WHEREAS, the Alameda County Flood Control and Water Conservation District (District) and the City of Fremont have applied for grant funds from the California Coastal Conservancy to restore Stivers Lagoon (the "Project") as described in the Stivers Lagoon Marsh Restoration/Enhancement Plan, dated February 1993, near Lake Elizabeth in the City of Fremont, Alameda County; and

WHEREAS, the Stivers Lagoon Marsh Restoration/Enhancement Plan, prepared by the City of Fremont provides a comprehensive plan for managing the natural marsh and water resources on District-owned property adjacent to Lake Elizabeth for flood control and environmental stewardship purposes in the City of Fremont, California; and

WHEREAS, the Stivers Lagoon Marsh Restoration project would preserve and enhance the habitat of the marsh; improve habitat values and return the area to a more fully functioning freshwater marsh; improve water quality; maintain the marsh as a conservation area with opportunities for environmental education; and incorporate the marsh into the overall water management system of Lake Elizabeth; and

WHEREAS, a Program Environmental Impact Report (EIR) (SCH # 1993105082) for the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement, including its Mitigation Monitoring Program, was prepared in accordance with the California Environmental Quality Act; and

WHEREAS, said Program EIR and Mitigation Monitoring Program were certified by the City of Fremont (City) on August 3, 1993; and

WHEREAS, pursuant to Section 15162 of the CEQA Guidelines, an Addendum to said Program EIR (the "Addendum") has been prepared including an updated Biological Resources Assessment, Hydraulic Analysis, and Cultural Resources Review to meet current CEQA guidelines and requirements for its implementation; and

WHEREAS, the Program EIR includes impact avoidance and measures to reduce the severity of potentially significant impacts to a less-than-significant level; and

WHEREAS, the following findings are made pursuant to the California Environmental Quality Act (Public Resources Code section 21000 et seq.; "CEQA") and the CEQA Guidelines (Cal. Code Regs. title 14, section 15000 et seq.; "CEQA Guidelines") by the District in connection with the environmental analysis of the effects of implementation of the Stivers Lagoon Marsh Design and Improvement project, prepared in the document entitled "Addendum to Program Environmental Impact Report (SCH# 1993105082) for the Lake Elizabeth/Stivers Lagoon Design and Improvement Program" dated June 7, 2022. These CEQA findings are attached and incorporated by reference into each and every decision associated with approval of the Project and are based on substantial evidence in the entire administrative record:

Finding: The comparison of potential environmental impacts of the project relative to the Stivers Lagoon marsh restoration project that was presented and evaluated in the certified Program EIR demonstrates that the Project qualifies for an addendum as well as an exemption from additional environmental review. Activities included in the proposed Project are consistent with the Stivers Lagoon Marsh Restoration/Enhancement Plan (February 1993) and Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program EIR (Program EIR) (August 1993), and any potential environmental impacts associated with the Project were adequately analyzed and covered by the analysis in the Program EIR. The Project will comply with the applicable mitigation measures identified in the Program EIR. With implementation of the applicable mitigation measures the Project would not result in a substantial increase in the severity of previously identified significant impacts in the Program EIR or result in any new significant impacts that were not previously identified. In accordance with CEQA Guidelines Sections 15162 and 15164, and as set forth in the CEQA Analysis attached to this report, the Project qualifies for an addendum.

Finding: The Program EIR analyzed the impacts of program implementation. The Project would not result in substantial changes or involve new information not already analyzed in the Program EIR because the project proposed for implementation is substantially similar to the Stivers Lagoon Marsh Restoration component analyzed in the program EIR. The Project would not cause new significant impacts not previously identified in the program EIR or result in a substantial increase in the severity of previously identified significant impacts. No new mitigation measures are necessary to reduce significant impacts. No changes have occurred with respect to circumstances surrounding the Program EIR that would cause significant environmental impacts to which the Project would contribute considerably. Therefore, no subsequent EIR is required in accordance with Public Resources Code Section 21166, and CEQA Guidelines Sections 15162 through 15164; and

WHEREAS, the documents or other material which constitute the record of proceedings upon which this Board’s decision is based are located at the offices of the County of Alameda’s Flood Control and Water Conservation District at 399 Elmhurst St, Hayward, CA 94544; and

WHEREAS, on June 28, 2022, this Board considered the Addendum.

NOW, THEREFORE, BE IT RESOLVED that this Board of Supervisors of the Alameda County Flood Control and Water Conservation District:

1. Determines that the findings stated in the recitals to this Resolution are restated in full and adopted by reference; and

2. Finds, on the basis of the whole record before it, that none of the conditions requiring preparation of a subsequent EIR have occurred; and

3. Finds, on the basis of the whole record before it, including the Program EIR and the Addendum, that there is no substantial evidence the Project will have any significant effects on the environment that have not been addressed under the Program EIR; and

4. Accepts and adopts said Addendum to the Program EIR.

The foregoing Resolution was passed and adopted by the Board of Supervisors of the Alameda County Flood Control and Water Conservation District on the 12th day of July, 2022, by the following vote:

Ayes: Supervisors Haubert, Valle, Brown, and Miley - 4

Noes: None

Excused: President Carson

Keith Carson

KEITH CARSON
PRESIDENT, BOARD OF SUPERVISORS

ATTEST:
ANIKA CAMPBELL-BELTON
CLERK OF THE BOARD OF SUPERVISORS

By: ______________________
Deputy

APPROVED AS TO FORM:
DONNA R. ZIEGLER, COUNTY COUNSEL

DocuSigned by:

By: Kathy Lee
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Kathy Lee, Deputy County Counsel

Addendum

to Program Environmental Impact Report (SCH# 1993105082)

for the Lake Elizabeth/Stivers Lagoon Design and Improvement Program

Prepared By:

BASELINE ENVIRONMENTAL CONSULTING

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June 2022

MEMORANDUM

Date: **June 7, 2022** **Job No.:** 21221-01

To: Jim Browne, R.P.F, Acting Environmental Services Supervisor
Alameda County Flood Control and Water Conservation District
399 Elmhurst Street
Hayward, CA 94544
jimb@acpwa.org

From: Bruce Abelli-Amen, Principal
Sandi Potter, Planning Associate

Subject: **California Environmental Quality Act (CEQA) Review and Program EIR Addendum in Accordance with Section 15164 of the CEQA Guidelines, Stivers Lagoon Marsh Restoration Project, Alameda County, California**

The purpose of this memorandum is to provide CEQA evaluation of a proposed Alameda County Flood Control and Water Conservation District (District) marsh restoration project located in Fremont, California. The District is seeking grant funding to support implementation of the project from California Coastal Conservancy (CCC).

BACKGROUND

The District proposes to restore and enhance the hydrology and habitat value of the existing Stivers Lagoon, which is located adjacent to Lake Elizabeth in Fremont. The project would create new, and enhance existing, wetland habitat values. A more detailed description of the project is included below under *Current Project Description*.

The City of Fremont (City) certified a Program Environmental Impact Report for the Lake Elizabeth/Stivers Lagoon Design and Improvement Program (Improvement Program) (SCH# 1993105082) in 1993 in accordance with the CEQA. Hereafter the term "EIR" refers to the certified 1993 Program EIR Improvement Program. The EIR identified potential impacts of the Improvement Program with actions to be taken by the City (Lead Agency) and the District (Responsible Agency) and recommended mitigation measures and a monitoring program to reduce potential impacts. The Program EIR evaluated the following project components:

- Dredging Lake Elizabeth
- Turf Development North of Lake Elizabeth
- Shoreline Rehabilitation of Lake Elizabeth
- Boathouse demolition/removal

- Sailboard beach on Lake Elizabeth
- Dock extension
- Restoration of Stiver's Lagoon marsh

Many of these projects have been implemented, either by the City or the District. However, restoration of the Stivers Lagoon marsh has not been completed. The District is undertaking this environmental analysis to pursue funding for the Stivers Lagoon restoration component of the Improvement Program.

Basis for Program EIR Addendum

As described above, the certified EIR evaluated the Stivers Lagoon restoration project for environmental impacts under CEQA. With the passage of time and the potential for changed conditions (and minor project design changes responding to those changed conditions), District staff considered it possible that the current Stivers Lagoon project (project) envisioned to be completed by the District may have changed relative to the Stivers Lagoon project evaluated in the EIR. Therefore, the District initiated a review of the CEQA status related to the project.

CEQA establishes the type of environmental documentation required when changes to a project occur after an EIR is certified. Specifically, Section 15164(a) of the CEQA Guidelines states that:

> *The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred*.

Section 15162 of the CEQA Guidelines requires a Subsequent EIR when an EIR has been certified and one or more of the following circumstances exist:

> a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration.
>
> b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
>
> c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Based upon review of the project, none of the circumstances described in Sections 15162 and 15164 of the State CEQA Guidelines apply. There are no substantial changes to the project, no changes in circumstances have occurred, and no new information of substantial importance has manifested that would result in new significant or substantially increased adverse impacts as a result of the project. Therefore, the District determined that an addendum to the EIR (Addendum) was appropriate. This memorandum constitutes an addendum and has been prepared in accordance with Section 15164 of the CEQA Guidelines. Per CEQA Guidelines (15164.c) "an addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration."

This Addendum provides a comparison of potential environmental impacts of the project relative to the Stivers Lagoon marsh restoration project that was presented and evaluated in the certified EIR. The EIR evaluated impacts in the areas of recreation and other land uses; aesthetics; public services and utilities; traffic and parking; hydrology; water quality and public health; geology and seismicity; vegetation and wetlands; wildlife; and noise and energy. This Addendum provides additional analysis of hydrology, biological resources, greenhouse gas (GHG) emissions, noise, air quality, and cultural resources.

CURRENT PROJECT DESCRIPTION

Project Location

Stivers Lagoon marsh encompasses an area of approximately 40 acres to the southeast of Lake Elizabeth in Fremont's Central Park within the project study area (**Figure 1**). The approximately 56-acre project study area boundary (which is also the area of potential effect [APE]) represents the area within which project activities will take place and/or ground disturbance could occur **(Figure 1).**

Lake Elizabeth is an 88-acre, constructed lake first developed in 1968 and subsequently expanded in 1986. Stivers Lagoon marsh is a remnant of a formerly larger body of natural open water and marsh which, due in large part to an altered surface and groundwater hydrologic regime, has evolved into an emergent wetland that dries out in the summertime.

Central Park is a 440-acre urban park in central Fremont bounded by Stevenson Boulevard on the north and west, Paseo Padre Parkway on the west and south, and the Southern Pacific and Union Pacific railroads on the east. Land uses in the vicinity surrounding Central Park generally include residential neighborhoods.

Legend

★ Project Site Location

Project Site Boundary (approximate)

0 1,000 Feet

N

BASELINE ENVIRONMENTAL CONSULTING

21221-03 Figures.cdr 05/26/22

Figure 1
Project Location

Stivers Lagoon Improvement Project

The Stivers Lagoon marsh is adjacent to Lake Elizabeth and provides habitat and open space recreational value. The quality of Stivers Lagoon marsh habitat has been deteriorating over time as lower groundwater levels and other hydrologic changes in the marsh have reduced habitat values for wetland plant species and have facilitated the growth of upland plant species. **Table 1** describes the vegetative types and land cover in the project area.

Table 1: Vegetation Communities and Land Cover Types in the Study Area

Vegetation Community/Land Cover Type	Area (Acres)
Non-Native Grassland	9.91
Coyote Brush Scrub	2.72
Coastal and Valley Freshwater Marsh	7.88
Central Coast Riparian Scrub	27.58
Total Vegetated Land Cover:	**48.09**
Open Water	0.10
Developed	8.17
Total Unvegetated Land Cover:	**8.27**
Total	**56.36**

Source: Draft Biological Resources Assessment, Stiver's Lagoon Marsh Restoration Project, Alameda County, May 2022.

Objectives

The original primary objectives in proposing restoration of Stiver's Lagoon marsh as stated in the Program EIR (which are consistent with the objectives of the project) are to improve habitat quality and recreational opportunities for Central Park users. Specific objectives supporting this goal include:

- Preserve and enhance the habitat of the marsh
- Improve habitat values and return the area to a more fully functioning freshwater marsh
- Improve water quality
- Maintain the marsh as a conservation area with opportunities for environmental education
- Incorporate the marsh into the overall water management system of Lake Elizabeth

Project Activities

Proposed activities to implement the Stiver's Lagoon marsh restoration project are outlined in the original EIR and in the restoration feasibility study (ESA, 1993). Of the projects components evaluated in the EIR, two have been completed: 1) the installation of inlet/outlet structure and flashboard weir at Mission Creek (2010); and 2) the new bridge on Mission Creek on the north portion of the project site (2016).

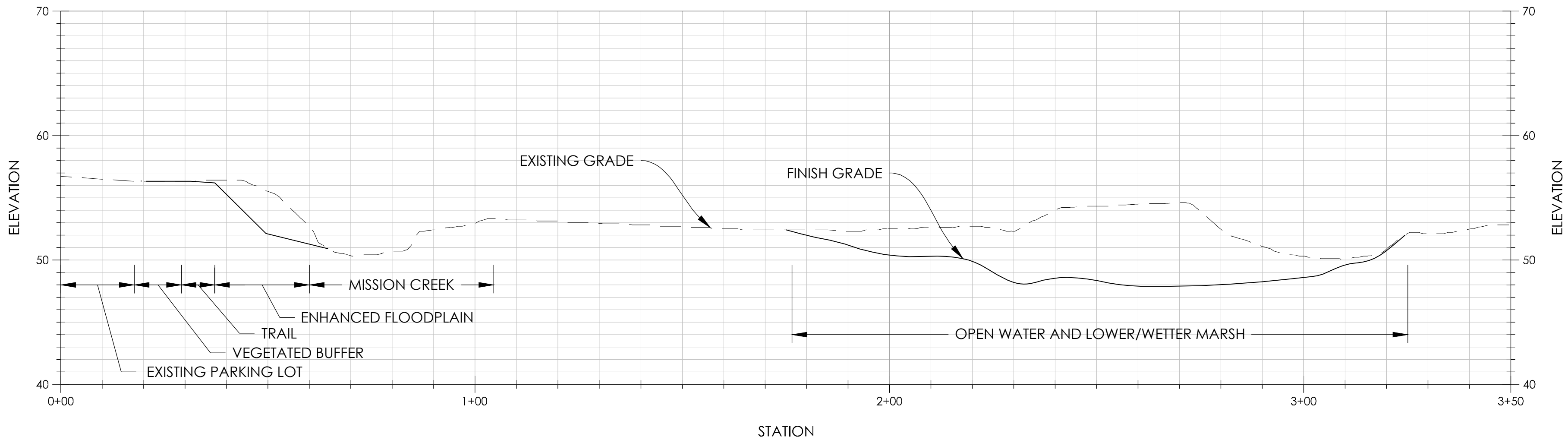
The project includes the remaining components of the Stivers Lagoon marsh restoration that have not yet been constructed to achieve the goals of the Lake Elizabeth/Stivers Lagoon Design and Improvement Program. These components, described in more detail below, include creation of an open water pond in the marsh, improved riparian corridor west of Mission Creek, vegetation management, and improved pedestrian access and new catwalk. Project components and conceptual design are shown in **Figure 2**.

New Open Water Pond

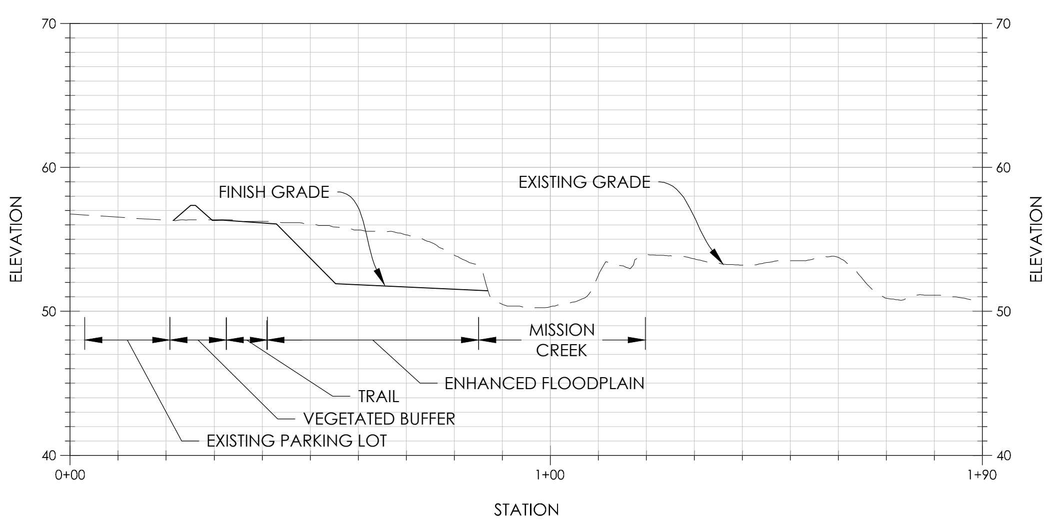
A new open water pond, referred to as the "long pond", would be excavated in the western portion of the existing marsh, as illustrated in **Figure 2**. The 1.8-acre long pond would be excavated to four feet below existing grade and would create new seasonal open water wetland habitat and enhance existing wetland habitat values. The long pond would be hydraulically connected to Mission Creek through two openings in the existing east channel bank. These changes in wetland morphology would promote seasonal ponding. Open water ponds within the tule stands will add structural diversity and enhance habitat for animal species that depend on open water.

Improved Riparian Corridor and Trail on West side of Mission Creek

The project includes improvements on the west side of Mission Creek to enhance riparian habitat, improve pedestrian trails and provide a buffer from the existing parking lot. The conceptual grading plan (**Figure 2**) shows a proposed terrace shelf along the west side of Mission Creek that would allow expansion of riparian vegetation and increase wetland habitat. The terrace would vary in extent but would typically be 20 to 30 feet wide and range in elevation from 48 feet above the North American Vertical Datum of 1988 (NAVD) near Mission Creek and sloping upward to 55 feet NAVD at the path. A conceptual design for these various treatments is shown on **Figure 3**. New plantings would be bare-root or small containerized stock and planted according to accepted horticultural practices. Species for the elevations between 51 and 53 feet NAVD would include red alder, Fremont cottonwood, California walnut, western sycamore, and/or Oregon Ash, and box elder with arroyo and polished willow interspersed for rapid growth. The understory would be planted with California blackberry, Mexican elderberry, buttonbush, California rose, and/or California grape. Trees would be planted at about 15-to 20-foot intervals, spaced irregularly with members of the same species in proximity as would be found in a natural habitat. A berm would be installed west of the terrace to create a buffer from the parking lot and to prevent stormwater from entering the marsh.



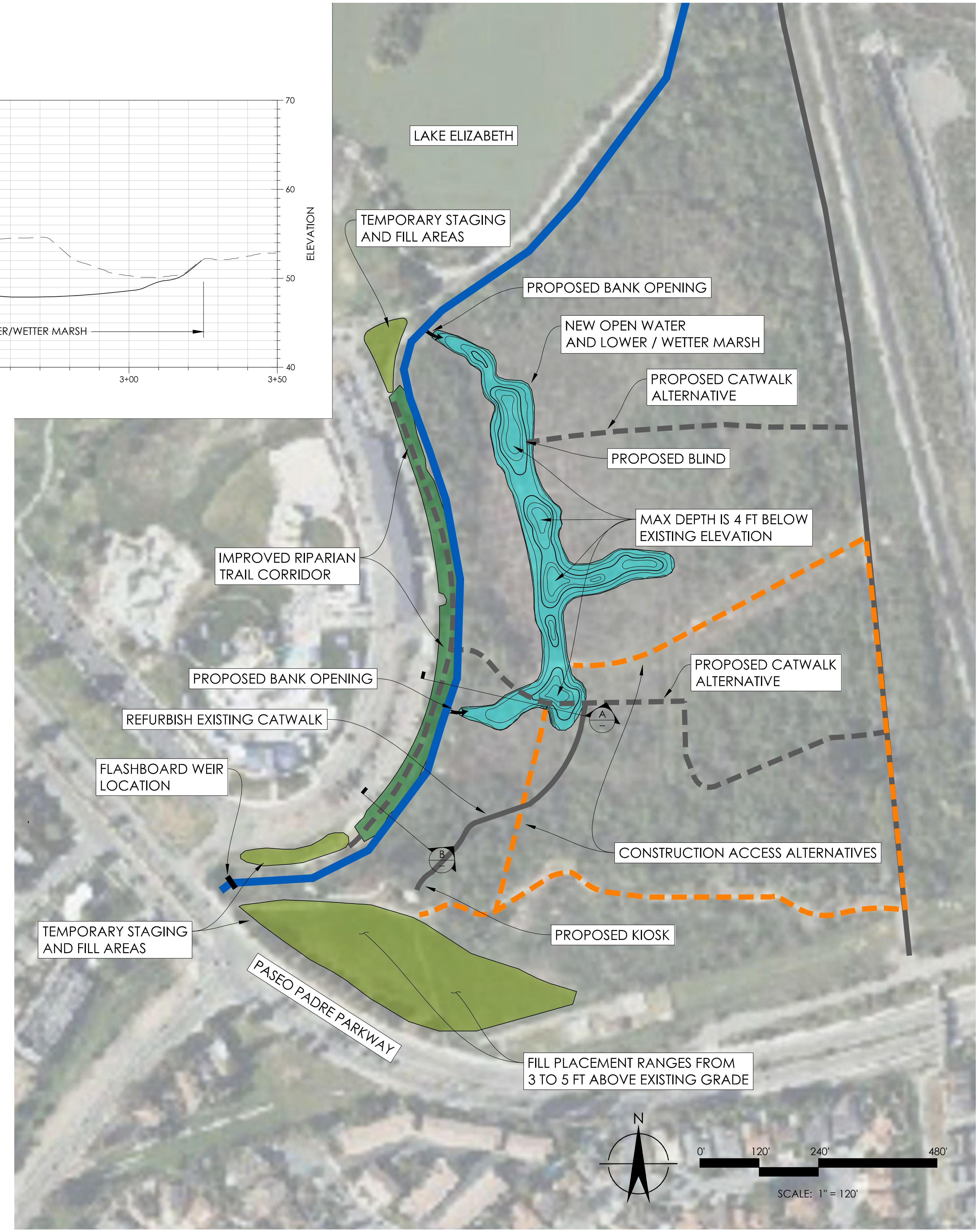
A SECTION
SCALE: 1" = 20'



B SECTION
SCALE: 1" = 20'

NOTES

1. TOTAL MATERIAL EXCAVATED TO CREATE NEW OPEN WATER AND LOWER / WETTER MARSH: 6,100 CY
2. TOTAL MATERIAL EXCAVATED TO CREATE THE ENHANCED FLOODPLAIN WEST OF THE CHANNEL: 1,100 CY
3. AREA OF NEWLY CREATED OPEN WATER AND LOWER / WETTER MARSH: 1.8 ACRES
4. BANK OPENING LOCATIONS HAVE CHANGED SLIGHTLY TO AVOID TREES.
5. HORIZONTAL COORDINATE SYSTEM IS CALIFORNIA STATE PLANE NAD83 ZONE III.
6. ELEVATIONS ARE RELATIVE TO THE NAVD88 DATUM.



Balance Hydrologics, Inc.
800 Bankroft Way, Suite 101
Berkeley, CA 94710
tel (510) 704-100
www.balancehydro.com

DATE	BY	SUBMITTALS / REVISIONS
06-03-22	ZR	CONCEPTUAL DESIGN

DESIGNED BY	DRAWN BY	CHECKED BY	IN CHARGE	DATE
ZR	JC	TA	TA	06-03-22

NOT FOR CONSTRUCTION

CONCEPTUAL LAGOON RESTORATION PLAN

STIVERS LAGOON RESTORATION

CITY OF FREMONT, ALAMEDA COUNTY, CALIFORNIA

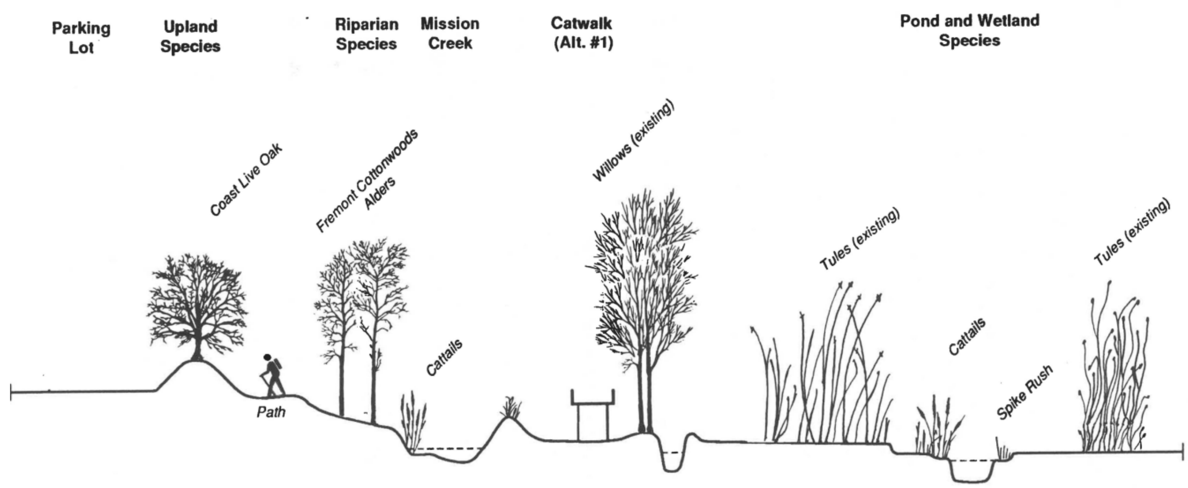
PROJECT NUMBER
221200

SCALE (AT 22" X 34")
AS NOTED

SHEET
1.0

CONCEPTUAL DESIGN - NOT FOR CONSTRUCTION

Figure 3. Conceptual Design Riparian Corridor and Trail Improvements



Vegetation Management

The proposed vegetation management strategy consists of three major activities, (1) improving conditions for native plant species already present by habitat enhancement; (2) planting native plant species in areas where project actions will change the topography; and (3) eliminating invasive, weedy plant species.

A vegetation management plan, including specification for invasive plant removal and revegetation would be developed in consultation with the resource agencies. Revegetation would be with native species and would be accomplished with small equipment and hand tools. Invasive species, such as Fuller's teasel (Discus fullorum) and bristly ox-tongue (Picris echioides) occur throughout the marsh project site, and will be controlled as feasible post restoration to keep the project on track to meet established success criteria. If hand removal, mowing, and/or mulching are determined to be ineffective or infeasible the herbicide Glysophate 5.4 aquatic herbicide, or a selective broadleaf herbicide may be used to control emergent invasive plants. Removal of invasive non-native species would provide more habitat for obligate wetland vegetation.[1] The transplanting of rhizome sections and seeding and container planting in the new pond would diversify wildlife habitat and could restore nesting habitat for the tricolored blackbird, a California threatened species that historically used the Stivers Lagoon marsh area. The plant material would be harvested locally or purchased from a native plant nursery. The plant materials and rhizomes would be spread or planted in late fall or early spring.

[1] "Obligate"wetland plants occur almost always under natural conditions in wetlands, typically in standing water.

Improved Pedestrian Access and Catwalk

To improve access to existing viewpoints, and provide access to proposed restoration areas, the project proposes the construction of a pedestrian bridge across Mission Creek and approximately 200 feet of new catwalk to connect with the north end of the existing catwalk and create a circular path (**Figure 2**). Improved access would allow for human exposure to a variety of habitat types without inviting human activity into the central part of the marsh. The proposed path would cross through the freshwater marsh habitat near the kiosk, riparian habitat along Mission Creek, and open water habitat of proposed long pond on the south end. Public access as proposed would also require the repair and maintenance of approximately 1,150 feet of existing trail through mixed riparian habitat and 300 feet of existing trail through mixed riparian habitat parallel to the railroad tracks, and construction of approximately 600 feet of new catwalk/path across the marsh/riparian woodland to meet the north end of the existing catwalk. An optional wildlife viewing blind (Figure 2) is also a possible project element, and the District will determine whether to include it in the final project during the detailed design phase.

Habitat Modification

Creation of seasonal open water and associated hydrologic changes would promote increased wetland habitat diversity and function. The long pond would create new open water habitat. The proposed terrace and berm along the west side of Mission Creek would allow riparian trees and a narrow band of new marsh to grow along the creek. The proposed terrace would promote the establishment of riparian trees and habitat function.

One of the main objectives of the project is to increase habitat quality overall. **Table 2** describes the type and quantity of habitat types that would be affected by project implementation, based on the conceptual grading plan.

Table 2: Habitat Types, Quantities and Quality (in acres)

	Pre Project (In Grading Envelope)	**Post Project (In Grading Envelope)**	**Change**
Riparian	0.19	1.27	1.08
Freshwater Marsh	1.71	1.12	-0.59
Open Water	0.00	0.67	0.67
Non-Native Grassland	3.03	2.00	-1.03
Developed (includes turf)	0.15	0.02	-0.13
Total	**5.08**	**5.08**	0.00

Source: Draft Biological Resources Assessment, Stiver's Lagoon Marsh Restoration Project, Alameda County, May 2022

Earth Work Quantities

Excavation and grading are proposed to improve water circulation, restore upland areas to wetland, and create additional open water area. An estimated 6,100 cubic yards of soil would be excavated to create the long pond. Additional earthworks would be needed to enhance the riparian corridor along Mission Creek and improve the creek trail.

The conceptual design and grading plan (**Figure 2**), includes the following features:

- Excavating a shallow channel and open water area long pond
- Connecting the long pond to the east side of Mission Creek
- Excavating several deep open water areas within the newly created wetlands
- Creating additional wetland areas adjacent to the kiosk
- Improving the riparian corridor on the west side of the Mission Creek channel

Soil excavated from the long pond (approximately 6,100 cubic yards) would be placed in the southwest corner of the project area, about 800 feet from the wetland restoration area and would be designed to provide improved upland habitat. Earthworks for the riparian improvements would be balanced locally to create the creek bank terrace and berm. The grading plan specifies that cut and fill volumes will be balanced within the project footprint (**Figure 2**).

Construction Methodology

Construction of the long pond would include excavation of soils and vegetation removal within the grading area using an excavator and a bulldozer. Native plant material will be salvaged to the extent feasible for replanting. Nonnative vegetation will be cleared and grubbed and will be placed/managed in the fill areas or hauled off-site for recycling/disposal. Remaining excavated soil after cleared and grubbed will be placed and compacted in the designated fill area. Moist soil material would be loaded in dump trucks (one to two trucks) and transported about 800 feet to the fill location. A skidsteer may be used to move earth materials and re-grade. Minor excavation would be required to connect the pond to Mission Creek. Construction of the pedestrian access catwalk would be accomplished using a drill rig for placement of catwalk piers and a concrete mixer truck for bridge footings.

Anticipated Construction Sequence

The first phase of construction would, in general, involve grading of the marsh lagoon to create open water features and movement of earth material to fill area in the southwest portion of the site and construction of bridge foundations/abutments, and flashboard structure by Paseo Padre Parkway culvert (**Figure 2**). The improved riparian corridor and trails along the west side of Mission Creek would follow. Pedestrian features would be constructed after wetland and riparian earthworks are complete.

Anticipated Construction Access and Staging

Multiple construction equipment access routes have been identified and are shown on **Figure 2**. Earth materials would be transported on haul routes within the project site. Soils would be moved by dump truck from areas of excavation to fill areas. Some materials will be re-worked locally to create berms and lowlands. Construction materials and equipment would be staged and /or temporarily stored at one or more designated fill areas (**Figure 2**).

Anticipated Equipment and Truck Trips

Construction grading is designed to balance cut and fill material on site. An estimate 6,100 cubic yards of material would be excavated and re-placed on-site. Assuming dump trucks with a capacity of about 12 cubic yards, an estimated 500 truck trips would be generated. Excavated material could be transported to the fill location on one of several internal access routes shown in **Figure 2**. Excavation of the long pond is estimated to take 6 weeks generating about three truck trips per hour during construction. Therefore, at the peak period of grading and earth moving, about 21 trucks trips per day would occur from the cut area to the fill area, within the site boundary. These truck trips would be short distances and internal to the project site. There would also be occasional delivery trucks for construction equipment and materials to the site using the public roadway network.

Anticipated Construction Schedule

It is estimated that construction would take place over approximately 6 months. All work in Mission Creek below the top of bank will occur during the in-stream construction window (in this case May 1 to October 15). That would include any construction element within the creek such as bridge footings, bank opening at the inlet and outlet to the lagoon, flashboard weir, and catwalk construction

Construction is anticipated to occur between May 1 and October 15 in 2023. If necessitated due to elevated groundwater elevations in the marsh and dry-season flows in Mission Creek, temporary diversion or dewatering may be required. Replanting, grading, and trail construction on west side of Mission Creek, and vegetation monitoring could continue until the end of 2023. Although special status species are not anticipated at this urban site, construction periods may be limited further should such species be documented in the pending Biological Resource Assessment. Any tree pruning or tree removal (it is anticipated that less than 15 trees would need to be removed) would occur outside the nesting season, which begins February 1 and extends to September 1. Work windows will be prescribed in regulatory permits issued by the Army Corps of Engineers, Regional Water Quality Control Board, and California Department of

Fish and Wildlife. If project permit approvals are not obtained by February 17, 2023, construction may be delayed to the 2024 construction season.

Construction, which would be performed in general accordance with City of Fremont Noise Ordinance,[2] which states

> *Except as modified herein, construction activity for development projects in any zoning district on any property within 500 feet of one or more residences, lodging facilities, nursing homes or inpatient hospitals shall be limited to the weekday hours of 7:00 a.m. to 7:00 p.m. and the Saturday or holiday hours of 9:00 a.m. to 6:00 p.m., while Sunday construction is not allowed.*

REQUIRED PERMITS AND APPROVALS

The following permits and approvals would be required to proceed with the proposed lagoon marsh restoration plan and pedestrian improvements:

- U.S. Army Corps of Engineers, Section 404 Clean Water Act permit for wetland dredge and fill, proposed Nationwide Permit 27;
- California Department of Fish and Wildlife Section 1600 Fish and Game Code streambed alteration agreement; and
- San Francisco Regional Water Quality Control Board, Section 401 Clean Water Act, Water Quality Certification.

IMPACT ANAYLSIS

The project would implement the Stivers Lagoon Marsh restoration project as proposed in the EIR, with minor modifications as described in the *Current Project Description* section in this Addendum. All project modifications are minor and would occur within the original project study area that was evaluated in the EIR.

The 1993 EIR identified potentially significant geologic impacts related to seismically-induced lateral spreading that could affect the sailboard beach and Stivers Lagoon Marsh restoration projects. The EIR determined that this seismically-induced lateral slumping and slope failure impact could not be feasibly mitigated to a level of less than significant and found the impact to be significant and unavoidable even after implementation of available mitigation. All other

[2] City of Fremont Noise Ordinance 18.160.010 (a) Construction hours – Limitations.

geologic and seismic impacts were determined to be less than significant in the EIR (either with or without implementation of mitigation).

Since the EIR was certified, CEQA court case law has clarified that impacts of strong ground shaking on a project do not constitute environmental impacts (i.e., CEQA impacts) of a project. The California Supreme Court concluded in the California Building Industry Association vs. Bay Area Air Quality Management District (CBIA v. BAAQMD) decision, that "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents."[3]

In general, many of the CEQA Appendix G geology and soils significance criteria consider potential impacts that existing geologic hazards (i.e., existing environmental conditions) could have on the project. Per the CBIA decision, this Addendum does not find impacts of the environment on the project to be significant CEQA impacts, unless the project, in some way, exacerbates the existing geologic hazard. Based on the results of the environmental review conducted for this Addendum, the project is not expected to exacerbate existing geologic hazards.

Table 3 (below) provides a summary and overview of each environmental topic addressed in the 1993 EIR. Several environmental topics that are included in the current CEQA Appendix G Environmental Checklist form were not addressed in the 1993 EIR. **Table 3** addresses all the topics.

The discussion provided in **Table 3** indicates that there would be no new significant impacts, nor would there be an increase in the severity of impacts resulting from the proposed minor modifications to the project and there is no information in the record or otherwise available that indicates that there are substantial changes in circumstances that would require major changes to the EIR. Additional analyses used to support this environmental evaluation included an updated biological resources assessment (**Appendix A**) and a cultural resources review (**Appendix B**).

[3] Supreme Court of California. CBIA, Plaintiff and Respondent, v. BAAQMD Defendant and Appellant. No. S213478. Decided: December 17, 2015

TABLE 3: Summary of Potential Stivers Project Impacts Relative to the Impacts Identified in the Environmental Impact Report

Environmental Factor	Discussion	Program EIR Impact Significance Determination (all program components)	Stivers Project (Marsh Restoration)
Land Use	No land use change is proposed.	LTS	NI/No change
Aesthetics	Minor changes in topography and vegetation will enhance the visual appeal of the existing lagoon marsh habitat. The pedestrian catwalk will be designed to blend into the landscape. Aesthetic impacts were evaluated in the certified EIR and found to be less than significant without mitigation.	LTS	LTS/No change
Population and Housing	The proposed lagoon marsh restoration would not include construction of new housing or draw people to the area and no impacts would result.	NI	NI/No change
Cultural and Tribal Resources	The Program EIR did not identify cultural resources as a potential environmental impact. An updated review of prehistoric and historic resources (Appendix B) revealed no presence of cultural resources of concern at the Stivers project site. The analysis finds no prehistoric or combined prehistoric/historic sites have been recorded within, adjacent or within 0.25 mile to the project site. No former Native American villages, traditional use areas or contemporary use areas have been identified in or adjacent to the project site. No other state or federal historically or architecturally significant structures, landmarks, or points of interest have been recorded or identified within or adjacent to the project site. Based on a review of pertinent records, maps and other documents, and a field inventory, the cultural resources topic expert concluded that the proposed project can proceed as planned as the improvements will not affect any known historic properties or unique archaeological resources. The cultural resources review finds that no new significant (CEQA) impacts related to historic or archaeological resources would occur with project implementation. No subsurface testing for buried archaeological resources appears necessary due to the perceived low sensitivity based on available archaeological data on the location of the project site within a former lagoon. Archaeological monitoring is also not recommended as the immediate project area does not appear to be	NA	LTS

Environmental Factor	Discussion	Program EIR Impact Significance Determination (all program components)	Stivers Project (Marsh Restoration)
	sensitive for either buried prehistoric or historic cultural resources. Out of an abundance of caution, and consistent with standard industry protocols implemented during grading projects, the protection measures recommended in the Archaeological Review (Appendix B) should be implemented.		
Transportation and Circulation	Much of the traffic generated from worker, equipment, and materials hauling trips evaluated in the EIR has already occurred (as many of the EIR projects have been completed). During implementation of the Stivers project, soil hauling would occur on-site (not on the public roadway system) and trip generation associated with worker and materials delivery trips would be similar to (or less than) trip generation analyzed under the adopted EIR (and found to be less than significant).	LTS	LTS (reduced relative to EIR)
Noise	Construction activities would temporarily increase noise and vibration levels in the vicinity of the project site. The primary source of noise and vibration during construction would be generated by off-road equipment activity on the project site. After construction, there would be no long-term sources of noise and vibration. Construction activities would generally be limited to a relatively small amount of off-road equipment operated onsite (e.g., excavator, dozer, and dump trucks). There are no sensitive noise receptors (e.g., residents) located within 1,000 feet of the primary area of construction activities. Construction would be performed in accordance with the Alameda County Noise Ordinance. Therefore, construction is not expected to generate substantial noise or vibration levels in the project vicinity and this impact would be less than significant.	NA	LTS
Air Quality	The project site is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The primary criteria air pollutants and precursors of concern in the SFBAAB are nitrogen oxides, reactive organic gases, coarse particulate matter, and fine particulate matter (PM2.5). Project	NA	LTS

Environmental Factor	Discussion	Program EIR Impact Significance Determination (all program components)	Stivers Project (Marsh Restoration)
	construction would generate emissions of criteria air pollutants and precursors from the exhaust of off-road equipment and on-road vehicles and fugitive dust. However, construction activities would be temporary (less than 6 months) and generally limited to a relatively small amount of off-road equipment operated onsite (e.g., excavator, dozer, and dump trucks). Because soil cut and fill volumes would be balanced onsite, there would be no emissions associated with heavy-duty haul trucks transporting soil long distances offsite. Because soils are generally saturated throughout the project area, construction would not be expected to generate substantial emissions of particulate matter from fugitive dust. After construction, there would be no long-term sources of criteria air pollutant emissions generated by the project. Therefore, the air quality impact related to the generation of criteria pollutant emissions during project construction and operation would be less than significant. Project construction would also generate emissions of diesel particulate matter (DPM) and PM2.5 from the exhaust of off-road diesel construction equipment, which are considered localized air pollutants of concern. After construction, there would be no long-term sources of localized air pollutant emissions generated by the project. Air dispersion models can be used to reliably quantify the health risks to nearby sensitive receptors (e.g., residents) exposed to emissions of localized air pollutants. However, according to the Office of Environmental Health Hazard Assessment (OEHHA), exposure to local air pollutants from projects lasting less than 6 months should not be evaluated due to the uncertainty in assessing cancer risk from very short-term exposures.[4] Furthermore, the BAAQMD does not recommend evaluating health risks to sensitive receptors more than 1,000 feet from a project. Because project construction would last less		

[4] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Guidance Manual for Preparation of Health Risk Assessments. February.

Environmental Factor	Discussion	Program EIR Impact Significance Determination (all program components)	Stivers Project (Marsh Restoration)
	than 6 months and the nearest resident is located more than 1,000 feet away from the central area of construction activities, the project would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.		
Greenhouse Gas Emissions and Energy	Construction activities would generate temporary greenhouse gas (GHG) emissions from the operation of off-road equipment, worker commuter trips, and vendor vehicle trips. After construction, there would be no long-term source of GHG emissions generated by the project. The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary construction emissions are significant. Furthermore, a construction contractor would also have no incentive to waste fuel during construction and, therefore, it is generally assumed that GHG emissions during construction would be minimized to the maximum extent feasible. Therefore, GHG emissions from construction and operation of the project would have a less-than-significant impact on the environment.	NA	LTS
Recreation	The project site is currently used for active recreation. No land use change is proposed, and no population will be added. Project construction may require temporary closure of the gazebo and some pedestrian paths in the vicinity of Stivers Lagoon marsh, but closures would be limited in time and would not exceed the six-month construction period. Lagoon habitat enhancement and increased pedestrian access may result in a slight increase in recreational users at the site resulting in beneficial impacts to recreation.	LTS	LTS/No change
Utilities and Service Systems	The proposed lagoon marsh restoration would not require the construction of new public utilities (e.g., water, sewer). No public utilities would be affected by implementation of the lagoon marsh restoration plan.	LTS	LTS/No change
Public Services	Lagoon restoration would not require the construction of new public service facilities (e.g., parks, schools). No public services would be affected by the construction and operation of the improved deputy station.	LTS	LTS/No change

Environmental Factor	Discussion	Program EIR Impact Significance Determination (all program components)	Stivers Project (Marsh Restoration)
Biological Resources	The proposed lagoon marsh restoration would result in temporary impacts to vegetation and wildlife habitat, including sensitive wetland and riparian habitats, during project construction and in the first few years as native plants become established. Implementation of restoration and monitoring will ensure that vegetation and wildlife habitat on site recovers to pre-project or better conditions. The project would result in a small loss of freshwater marsh and riparian vegetation and an increase in open water habitat, however the project overall would enhance habitat value through restoration and maintain wetland communities on site. Seasonal work restrictions, preconstruction surveys and biological monitoring would minimize impacts to any special status wildlife species or nesting birds that have the potential to occur on site. Rare plant surveys will be completed in September 2022, but habitat suitability is not likely to result in rare plant presence on site. In the unlikely case that rare plants are identified that could be disturbed by project activities, the District will work with the resource agencies, including the California Department of Fish and Wildlife during the permitting process to ensure that impacts to any rare plant species are eliminated or minimized to the extent feasible.	LTS	LTS
Geology and Soils	The project would involve excavation and grading to restore the marsh area and installation of elevated catwalks and trails. All project grading would be designed in accordance with the applicable seismic provisions of the current building code. Project improvements are small, minor structures located outdoors and any impacts related to strong ground shaking or liquefaction would be similar to those analyzed under the certified EIR.	All impacts LTS, except lateral slumping and slope failure, which was found to be SU	LTS. (Recent accepted interpretations of the CEQA Statute and Guidelines indicate that “impacts” of the existing environment on the project are not CEQA impacts. Therefore, all

Environmental Factor	Discussion	Program EIR Impact Significance Determination (all program components)	Stivers Project (Marsh Restoration)
			potential geology and soils impacts related to the project are found to be LTS and/or not apply)
Hydrology and Water Quality	The proposed lagoon marsh restoration would result in temporary impacts to water quality during excavation and grading. Implementation of mitigation measures identified on the EIR and standard Best Management practices and industry standards for erosion control will reduce potential impacts to water quality to a less-than-significant level. Creation of the long pond and new connections to Mission Creek would result in changes to hydrology. These changes were evaluated in the EIR, were found to be beneficial, and no adverse significant impacts are anticipated. Wetland and riparian modifications associated with the proposed project will be evaluated by the resource agencies during the permitting process to ensure that the project will result in a net benefit to hydrology, water quality and habitat.	LTS	No change
Hazards/Hazardous Materials	No known hazardous materials have been identified in the vicinity of the lagoon marsh restoration area. In addition, marsh restoration would not include store or use significant quantities of hazardous materials during operation and impacts would be less-than-significant.	NA	LTS
Mineral Resources	No mineral resources would be affected by the project.	NI	NI
Agricultural and Forest Resources	The proposed lagoon marsh restoration would not affect areas of existing agricultural or forest resources and no impacts would occur.	NI	NI
Wildfire	The project site is not located in, or adjacent to, a forested area prone to wildfire. The project includes lagoon restoration that would improve wetland and open water habitat, reducing on-site fire hazards associated with dry upland vegetation.	NA	LTS

Notes:
LTS= Less than significant; NI= No Impact; SU= Significant and Unavoidable; NA= Not included in EIR

CONCLUSIONS

This analysis concludes that the appropriate CEQA document for the project is an addendum to the certified EIR and no additional CEQA environmental review (beyond what is contained in this document) is required.

Activities included in the project are consistent with the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program EIR (EIR) (August 1993), and any potential environmental impacts associated with the project were adequately analyzed and covered by the analysis in the EIR. The project would be required to comply with the applicable mitigation measures identified in the Program EIR (Table 4). With implementation of the applicable mitigation measures the Project would not result in a substantial increase in the severity of previously identified significant impacts or result in any new significant impacts that were not previously identified in the EIR. In accordance with CEQA Guidelines Sections 15162 and 15164, and as set forth in this CEQA Analysis, the Current Project qualifies for an addendum.

Table 4: Summary of Significant Environmental Impacts and Mitigation Measures of Restoration of the Proposed Stivers Lagoon Marsh

ENVIRONMENTAL IMPACT	MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.6 Water Quality & Public Health:		
3.6.D Short-term adverse impacts due to construction activities within Stivers Lagoon Marsh could include the possible introduction of deleterious substances such as fuel constituents and herbicides, and disruption of the current hydrologic regime.	**3.6.D** Avoid discharge of any and all materials and fluids into the marsh or Mission Creek. An erosion control plan should be prepared by the City prior to the time construction begins.	Less than Significant
3.7 Geology:		
3.7.G Aspects of the Stivers Lagoon Marsh restoration that involve structures (boardwalk and interpretive building) may be impacted significantly by slumping, but mitigation of these impacts is likely to be economically infeasible.	None available.	Significant
3.7.H The long-term impacts of potential liquefaction on the proposed projects are likely to be similar in most ways (and related) to those described above for slumping and slope failure.	**3.7.H** Locate structures away from the lake shore to the greatest extent possible. Design and construct grades using dredge spoil materials to minimize the potential for slumping and slope failure, by specifying suitable moisture treatment and compaction methods, and by avoiding high berms and steep slopes.	Less than Significant
3.8 Vegetation		

ENVIRONMENTAL IMPACT	MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.8 A Short-term adverse impacts to existing riparian vegetation due to construction activities within the Stivers Lagoon Marsh may include the direct removal of isolated species and/or soil and root compaction due to heavy equipment and excavation.	**3.8 A** Construction practices should be utilized that minimize impacts to mature forest species (e.g., construction/demolition staging areas should be located away from trees, minimize removal of mature vegetation). Construction should generally take place during the dry season. Replacement species should be planted in similar habitat within the Stivers Lagoon Marsh area and should be monitored for establishment success for a period for five years by a qualified biologist. A monitoring program should be implemented by the City of Fremont to ensure the success of restored areas.	Less than Significant
3.8.B Short-term adverse impacts to wetlands due to construction activities within Stivers Lagoon Marsh include the placement of fill within the marsh due to weir gate and catwalk installation and removal of native wetland vegetation.	**3.8.B** Construction practices should be utilized that minimize impacts to wetland species. Construction should generally take place during the dry season. The project proposes to restore wetland vegetation by planting rhizomes, cuttings, and natural reestablishment. Preventive measures should be taken, such as use of signing, implementation of a monitoring program, and establishment of contingency plans, to avoid habitat degradation during both construction and operational phases of the proposed project. The City of Fremont should be responsible for implementation of a five-year monitoring program to ensure that wetland restoration plans are successful (*note: original mitigation text from 1993 EIR shown here; the District (not City of Fremont) would assume responsibility for monitoring associated with the Stivers project*). *<u>The following was added in response to comments in the final EIR:</u>* A qualified biologist will determine and mark in the field all trees and other significant biological resources to be avoided during construction of tile proposed and other	Less than Significant

ENVIRONMENTAL IMPACT	MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	improvements. A certified arborist shall be 'consulted all warranted by the need to preserve significant trees.	
3.9 Wildlife		
3.9.A Dredging and construction activities within or adjacent to Lake Elizabeth could accidentally introduce deleterious substances such as silt and fuel constituents into the water potentially degrading aquatic habitat.	**3.9.A** Construction practices should be utilized that minimize the potential for excessive erosion or accidental spills into the lake. Specific measures should include locating construction/demolition staging areas away from the lake's edge and installing silt fences or barriers at key drainage points.	Less than Significant
3.9.B The operation of dredging equipment within Lake Elizabeth construction equipment within and adjacent to Mission Creek would result in a short-term disruption to feeding for a variety of shorebirds and waterbirds. The operation of dredging equipment could also inadvertently result in the mortality of fish and other common aquatic species.	**3.9.B** Dredging of the lake should not be undertaken during the height of the breeding season (i.e., March through June) for resident bird populations in order to not limit food resources within the lake for hatchlings.	Less than Significant
3.9.D Several improvements proposed within Stivers Lagoon Marsh could result in a short term loss of riparian woodland habitat.	**3.9.D** Implementation of these improvements should avoid, when feasible, displacing riparian trees. For any native tree removed, three trees of the same species should be planted following construction. Non-native species should be replaced with native species.	Less than Significant
3.9.F Restoration work along the lake shoreline, along Mission Creek, and within Stivers Lagoons Marsh could temporarily remove wetland vegetation, especially tules, potentially providing habitat for the few tricolored blackbirds currently seen within the project site in recent years.	**3.9.F** During construction of the proposed projects, removal of existing wetland vegetation should be minimized. Areas with significant wetland vegetation, especially tules, adjacent to areas proposed for improvements should be flagged and avoided during construction.	Less than Significant

Source: Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Environmental Impact Report", (ESA, February 1993)

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Appendix A -Draft Biological Resources Assessment, Stiver's Lagoon Marsh Restoration Project, Alameda County

Appendix B – Archeological Review – In Support of Environmental Clearance for Lake Elizabeth/Stivers Lagoon Improvements, City of Fremont Alameda County, California

Appendix A
Draft Biological Resources Assessment
Stiver's Lagoon Marsh Restoration Project, Alameda County

BIOLOGICAL RESOURCES ASSESSMENT

STIVERS LAGOON MARSH RESTORATION PROJECT IN FREMONT, ALAMEDA COUNTY, CALIFORNIA

Prepared for

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June 2022

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Section 1. INTRODUCTION

1.1. PURPOSE OF REPORT

Nomad Ecology (Nomad) prepared this Biological Resources Assessment for the proposed Stivers Lagoon Marsh Restoration Project (project) on behalf of Alameda County Flood Control and Water Conservation District (District). Stivers Lagoon Marsh is located to the southeast of Lake Elizabeth in Fremont's Central Park in Alameda County, California (Figure 1). The geographic coordinates of the study area are 37.54387, -121.95798. The study area for this project is 56 acres.

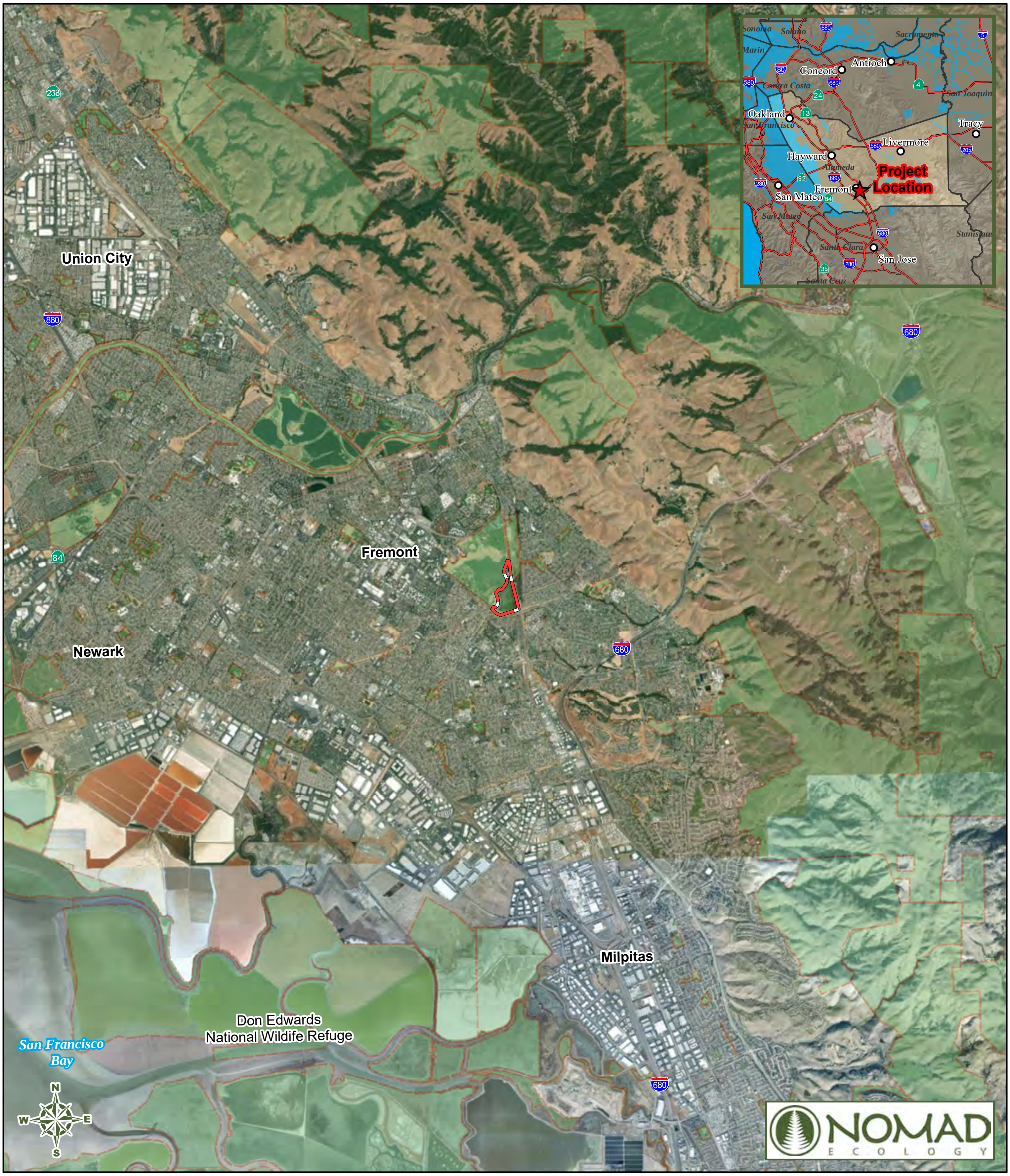
This report provides the methods used in this assessment, an assessment of existing conditions, evaluates habitat suitability for special status plant and wildlife species and sensitive natural communities, analyzes potential project impacts to biological resources, and provides recommendations for impact avoidance and minimization.

1.2. PROJECT DESCRIPTION

The District proposes to restore and enhance the hydrology and habitat value of the existing Stivers Lagoon, which is located adjacent to Lake Elizabeth in Fremont, California. The project would create new, and enhance existing, wetland habitat values. Stivers Lagoon marsh encompasses an area of approximately 40 acres to the southeast of Lake Elizabeth in Fremont's Central Park. Lake Elizabeth is an 88 acre, constructed lake, first developed in 1968 and subsequently expanded in 1986. Stivers Lagoon marsh is a remnant of a formerly larger body of natural open water and marsh which, due in large part to an altered surface and groundwater hydrologic regime, has changed to an emergent wetland that dries out in summertime.

The Stivers Lagoon marsh area provides important habitat and open space recreational value. The quality of Stivers Lagoon marsh has been deteriorating over time as lower groundwater levels and other hydrologic changes in the marsh have reduced habitat for wetland plant species and have facilitated the growth of upland plant species.

Options to restore the marsh to a more natural wetland condition were examined in a restoration feasibility study in the Program EIR (Environmental Science Associates 1993a, 1993b, 1993c). The Stivers Lagoon restoration project evaluated in the Program EIR included several components such as excavating a long pond in the marsh, constructing a berm on the west side of Mission Creek, vegetation management, and installation of a small pedestrian bridge and new catwalk. The project is currently in the design phase.



June 2022

Legend
Study Area
Public Land and Easements

Figure 1

Project Vicinity Map

Stivers Lagoon Marsh Restoration Project

Alameda County Flood Control and Water Conservation District

1:95,040

0 0.75 1.5 Miles

Sources: ESRI Aerial Imagery Basemap, Bay Area Open Space Council

Alameda County, California

Section 2. STUDY METHODS

2.1. DEFINITIONS

The following terms were used to evaluate the sensitivity of onsite biological resources and potential impacts of the proposed project. Terms and definitions are derived from the CEQA Guidelines and regulatory agencies, where applicable. A summary of laws, ordinances, and regulations are included in Appendix A.

Study Area — The study area is approximately 56-acres and includes 3,600-linear feet of Mission Creek channel in the City of Fremont.

The area analyzed for this report extends beyond the immediate limits of the study area to address potential impacts to special status wildlife species that could result from construction of the project

Project Area — The project area includes the area within the limits of work. This will be determined when the project is fully designed and is smaller than the study area.

Direct Impact — Impacts (or primary effects), which are caused by the project and occur at the same time and place [CEQA Guidelines, Title 14 CCR, Section 15358(a)(1)].

Indirect Impact — Impacts (or secondary effects), which are caused by the project and are later in time or farther removed in distance but are still reasonably foreseeable. These may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems [CEQA Guidelines, Title 14 CCR, Section 15358(a)(2)].

Critical Habitat — Defined by the Endangered Species Act (ESA), as amended (Code of Federal Regulations, Title 50, Section 17), as “a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.” Critical habitat designations are published in the Federal Register. The final boundaries of the critical habitat area are also published in the Federal Register for federally listed species by USFWS and NMFS.

DPS — A distinct population segment (DPS) is a vertebrate population or group of populations that are distinct from other populations of the species and significant in relation to the entire species. The ESA provides for listing species, subspecies, or distinct population segments of vertebrate species.

ESU — An evolutionarily significant unit (ESU) is a population or group of populations that is substantially reproductively isolated from other conspecific populations and that represents an important component of the evolutionary legacy of the species. The ESU policy for Pacific salmon defines the criteria for identifying a Pacific salmon population as a distinct population segment (DPS), which can be listed under the ESA.

2.2. Significance Criteria

The significance criteria are based in part on the Environmental Checklist (CEQA Guidelines Appendix G [Title 14 CCR, Section 15000-15387]). These criteria are used to determine the extent to which the proposed project would impact sensitive biological resources. The threshold of significance may vary for each species or habitat and is determined by the lead agency. Using these guidelines, the project would result in a significant impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS).
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc*.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

2.3. Data Resources

Background information for listed and special status plant and wildlife species, and sensitive natural communities was compiled through a review of the following resources:

U.S. Fish and Wildlife Service (USFWS):

- Information for Planning and Consultation (IPaC) Online System Species List Query (USFWS 2022a)
- National Wetland Inventory (USFWS 2022b)

National Oceanographic and Atmospheric Administration Fisheries (NOAA Fisheries):

- Endangered and Threatened Species; Establishment of Species of Concern List, Addition of Species to Species of Concern List, Description of Factors for Identifying Species of Concern, and Revision of Candidate Species List Under the Endangered Species Act (NOAA 2004)
- Endangered and Threatened Species; Revision of Species of Concern List, Candidate Species Definition, and Candidate Species List (NOAA 2006a)
- Species list for the Niles quadrangle (NOAA 2016) (Appendix E)

California Department of Fish and Wildlife (CDFW):

- California Natural Communities List (CDFW 2021)

- California Natural Diversity Database (CNDDB) RareFind 5 Query for the Calaveras Reservoir, Dublin, Hayward, La Costa Valley, Livermore, Milpitas, Mountain View, Newark, and Niles, USGS 7 ½ Minute Quads (CDFW 2022a) (Appendix D)
- Special Animals List (CDFW 2022b)
- Special Vascular Plants, Bryophytes, Lichens List (CDFW 2022c)
- State and Federally Listed Endangered, Threatened and Rare Plants of California (CDFW 2022d)
- State and Federally Listed Endangered and Threatened Animals of California (CDFW 2022e)

Other Sources:

- A Manual of California Vegetation (Sawyer et al. 2009; CNPS 2022b)
- Annotated Checklist of the East Bay Flora (CNPS 2013)
- The California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2022a)
- Consortium of California Herbaria (CCH 2022)
- The Jepson eFlora (JFP 2022)
- The Jepson Manual: Vascular Plants of California (Baldwin et al. 2012)
- Unusual and Significant Plants of Alameda and Contra Costa Counties. Seventh Edition (Lake 2010)
- Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Draft Environmental Impact Report (Environmental Science Associates 1993a)
- Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Final Environmental Impact Report (Environmental Science Associates 1993b)
- Stivers Lagoon Marsh Restoration/Enhancement Plan (Environmental Science Associates 1993c)

Botanical taxonomy and nomenclature conforms to *The Jepson Manual* (Baldwin et al. 2012) with the exception of recent updates posted on the Jepson eFlora (JFP 2022) website. Common names of plant species are derived from the *Calflora Database* (Calflora 2022). Vegetation descriptions conform to the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Manual of California Vegetation* (Sawyer et al. 2009); wetland and deepwater habitat classifications conform to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), where appropriate.

Taxonomy and nomenclature for special status plant species conform to the *Inventory of Rare and Endangered Plants of California* (CNPS 2022a) and *Special Vascular Plants, Bryophytes and Lichens List* (CDFW 2022c). Nomenclature for common and special status wildlife conforms to the *Complete List of Amphibian, Reptile, Bird and Mammal Species in California* (CDFW 2016) with taxonomic nomenclature updates conforming to the *Special Animals List* (CDFW 2022b).

2.4. IDENTIFICATION OF POTENTIALLY OCCURRING SPECIES

The identification of species with potential to occur for this Biological Resources Assessment is based on a background review of data sources described in Section 2.3, Nomad's expertise with the regional wildlife and flora, habitats present within the study area as observed during site visits, as well as review of known records of special status plant and wildlife species within the vicinity of the project area. This background review resulted in the determination of the potentially occurring special status plant and wildlife species out of those known from the region. All special status plant and wildlife species considered as part of this assessment are included in Appendices B and C. The results of this assessment are discussed in Section 4.

2.5. Regulatory Framework

The following section summarizes the regulatory framework related to natural resources such as sensitive natural communities and special status plants and animals.

2.5.1 Sensitive Natural Communities

Sensitive Natural Communities are characterized as plant assemblages that are unique in constituent components, restricted in distribution, supported by distinctive edaphic conditions, considered locally rare, potentially support special status plant or wildlife species, and/or receive regulatory protection from municipal, county, state and/or federal entities. The regulatory framework that protects sensitive natural communities is derived from local, state, and federal laws and regulations including Section 10 of the federal Rivers and Harbors Act, sections 401 and 404 of the federal Clean Water Act, Section 1600 et seq. of the California Fish and Game Code, Section 15065 of the CEQA guidelines, and various other city or county codes. Implementation and enforcement of these regulations are conducted by their respective regulatory entities such as the U.S. Army Corps of Engineers, California Regional Water Quality Control Board, California Department of Fish and Wildlife, lead agency, and/or various cities or counties. Natural Communities with ranks of S1, S2, and S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2021).

2.5.2 Special Status Species

Special status plant and wildlife species are defined as those species listed as threatened or endangered, are proposed or candidates for listing, or are designated as fully protected species under one or more of the following regulatory statutes: Federal Endangered Species Act (ESA), as amended (Code of Federal Regulations, Title 50, Section 17), California Endangered Species Act (CESA) (California Code of Regulations Title 14, Section 670.5), California Fish and Game Code (Sections 1901, 2062, 2067, 3511, 4700, 5050 and 5515) and the Native Plant Protection Act (NPPA) of 1977. Special status species may also include locally rare species defined by CEQA guidelines 15125(c) and 15380, which may include species that are designated as sensitive, declining, rare, locally endemic or as having limited or restricted distribution by various federal, state, and local agencies, organizations, and watchlists.

The California Native Plant Society (CNPS) has developed and maintains an inventory of Rare, Threatened and Endangered plants of California. This information is published in the Inventory of Rare and Endangered Vascular Plants of California (CNPS 2022a). The rarity ranking contained in the CNPS inventory is endorsed by the CDFW and effectively serves as its list of “candidate” plant species. The following identifies the definitions of the CNPS California Rare Plant Ranks:

- Rank 1A: Plants presumed to be extinct in California;
- Rank 1B: Plants that are rare, Threatened, or Endangered in California and elsewhere;
- Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
- Rank 2B: Plants that are rare, Threatened, or Endangered in California, but are more common elsewhere;
- Rank 3: Plants about which more information is needed (a review list);
- Rank 4: Plants of limited distribution (a watch list).

California Rare Plant Rank 1B and 2 species are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code. As part of the CEQA process, such species should be fully considered, as they meet the definition of Threatened or Endangered under the NPPA and Sections 2062 and 2067 of the California Fish and Game Code. California Rare Plant Rank 3 and 4 species are considered to be either plants about which more information is needed or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for state listing, and CNPS and CDFW recommend that these species be evaluated for consideration during the preparation of CEQA documents (CNPS 2001, 2022a), as some of these species may meet NPPA and CESA criteria as Threatened or Endangered.

2.6. Personnel and Field Investigation

Nomad senior wildlife biologists Dana Terry and Bill Webb and Nomad botanists Erin McDermott and Leanne Feely conducted a reconnaissance-level site visit of the study area on April 8, 2022. While completing that task, Nomad personnel documented the biological resources present in the study area. Those efforts included: searching for plants and animals while walking throughout the study area and making observations from stationary observation points.

All proposed impact areas and vegetation communities within the study area were visited and evaluated for their potential to support sensitive biological resources. Protocol-level surveys for special status animals were not conducted as part of this assessment. However, all wildlife species observed or recognized by diagnostic sign (e.g., audible call, tracks, scat, carcasses, burrows) were identified and recorded.

A rare plant survey was conducted concurrently by Nomad botanists Erin McDermott and Leanne Feely on April 8, 2022. Additional rare plant surveys will be conducted in August and September 2022. Erin McDermott conducted an aquatic resources delineation on April 13, 2022.

2.7. Limitations

Based on the timing of this assessment, not all potentially occurring special status plant, fish or wildlife species can be conclusively determined to be absent. However, determinations of presence/absence within the study area were possible for: (1) specific special status plant species that would be identifiable during the April 2022 site visits; and (2) the direct observation or presence of diagnostic sign for wildlife species. Negative findings during site assessments or focused surveys may not indicate absence unless field surveys conform to agency approved protocols.

Based on the timing of the surveys, all plant species growing within the study area may not have been observed due to varying flowering phenologies and life forms, such as bulbs, biennials, and annuals. Annuals may be absent in some years due to annual variations in temperature and rainfall, which influence germination and plant phenology. Colonization of new populations within an area may also occur from year to year. The present study is not floristic in nature. A floristic study not only requires every plant observed to be identified to a level necessary to determine their regulatory status, it also necessitates a sufficient number of site visits spaced throughout the growing season within the blooming periods of all plant species, including common taxa, to ensure a complete inventory is obtained (CNPS 2001, CDFW 2018, USFWS 2000).

Since vegetation types are based on samples from selected seasonal vegetation descriptions, and their associate species may be subject to change if additional data are collected, annual species dominance may change depending on the sample season or year. The phrase “in part” is used to signify that vegetation descriptions may include additional annual species present if surveyed during other seasons or years.

Other potentially dominant species within vegetation communities on site may be present during other times of the year.

The CNDDB tracks user-submitted occurrences of all special status species in California and is used extensively as a reference for regulatory and planning purposes (CDFW 2022a). This database may substantially under-represent actual occurrences of species, particularly for species that are difficult to detect and for areas that are in private land ownership and have not been surveyed. It is also likely to under-represent occurrences of species that are not prominent in regulatory permitting or environmental planning settings.

Several factors constrained the biologists' ability to identify all of the wildlife species that occur within the study area. Songbirds are most easily detected in the early morning or late evening, rather than during other times of the day. Similarly, owls and bats are most easily detected at night. Due to the scope of work, biologists were only on site for a short period of time to assess the general habitat within the study area and could not be present during all the optimal times for wildlife detection. Finally, one reconnaissance visit is not sufficient for identifying all wildlife that may winter, breed, forage, or migrate through the project area.

The proposed activities and work areas evaluated in this report are based on the project area provided by Alameda County Flood Control and Water Conservation District. Significant changes in the project design may warrant further analyses.

Section 3. ENVIRONMENTAL SETTING

3.1. SETTING

3.1.1 REGIONAL SETTING

The study area is located within Township 4 South, Range 1 East of the Mount Diablo Baseline and Meridian as shown on the Niles 7.5-minute USGS topographic quadrangle (Figure 2). The study area is within the Central Coast Subregion of the California Floristic Province (Baldwin et al. 2012) and within the Laguna Creek Watershed (ACFCWCD 2022).

As described in the *Ecological Subregions of California* (USDA 1997), the study area is located in the East Bay Hills-Mt. Diablo subsection of the Central California Coast Section. The *Ecological Subregions of California* are the basis for describing regional variation in California alliance descriptions in *A Manual of California Vegetation* (Sawyer et al. 2009) and determining sensitive natural communities.

East Bay Terraces and Alluvium

The East Bay Terraces consists of an alluvial plain between the East Bay Hills subsection and the San Francisco Bay and is characterized by a hot, sub-humid climate moderated by a strong marine influence (USDA 1997). This is a subsection of gently sloping to nearly level alluvial fans that range from sea-level to up to 600 feet in elevation along the Hayward Fault. Fluvial erosion is the main geomorphic process. The subsection is primarily made up of Late Quaternary alluvium, however there are small areas of Quaternary marine sediments and slight hills of Franciscan formation rocks present within the subsection. Most of the soils are leached free of carbonates with soluble salts accumulating in poorly and somewhat poorly drained soils near the tidal zone (USDA 1997).

The mean annual precipitation for this region ranges from 20 to 30 inches and nearly all of the precipitation is rainfall. The mean annual temperature is generally between 52 and 56 °F, and the mean freeze-free period is from 250 days at higher elevations to 275 days at lower elevations. Hydrologically, runoff is rapid from the hills, but slow from the alluvial plains. All but the larger streams are dry throughout the summer (USDA 1997).

3.1.2 LOCAL SETTING

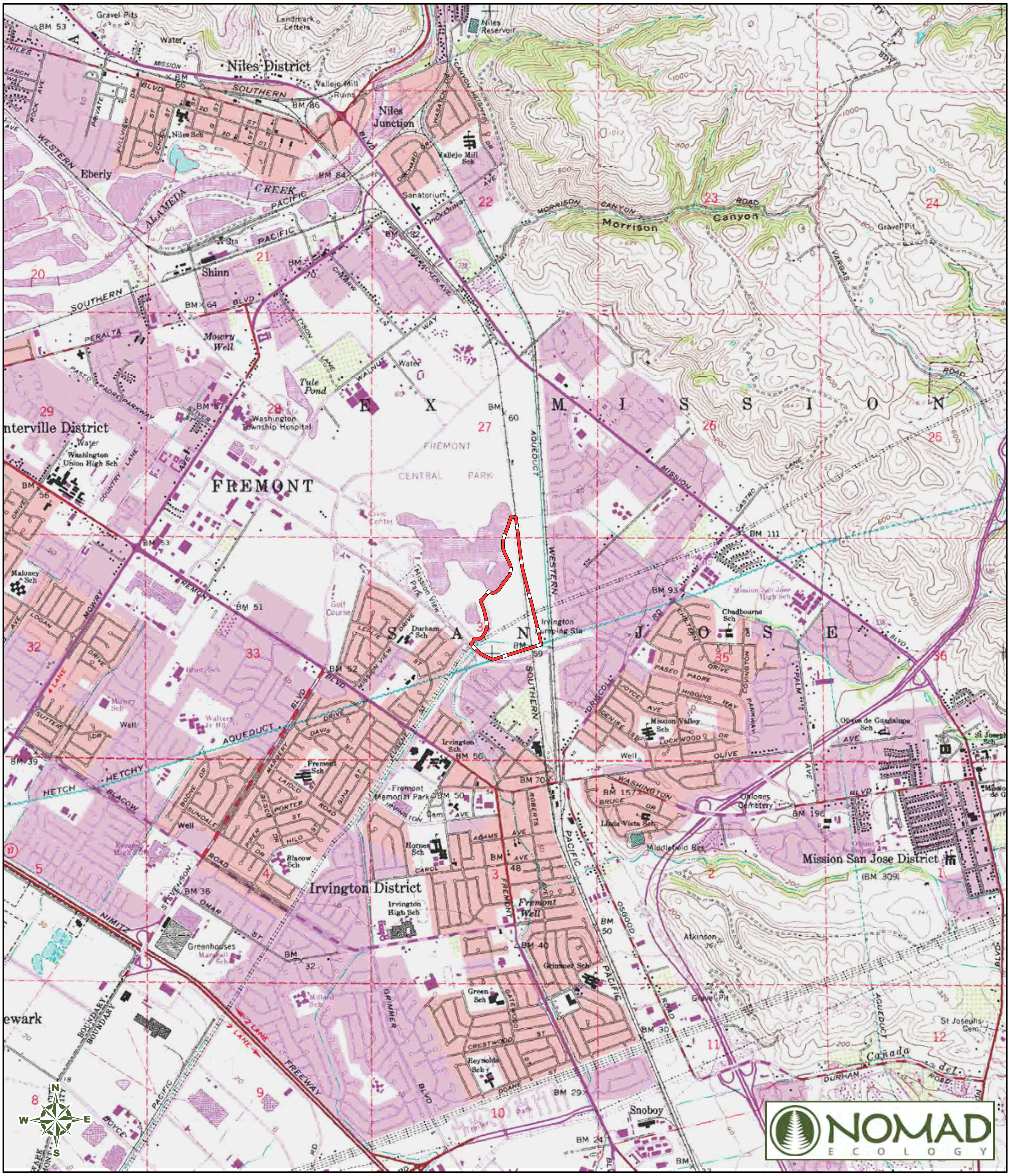
The 56-acre study area is located at Central Park in Fremont, north of Paseo Padre Parkway. The study area is located southeast of Lake Elizabeth, east of the Aqua Adventure Water Park, and west of the Bay Area Rapid Transit tracks (Figure 3). The geographic coordinates of the study area are 37.54387, -121.95798. Photos of the site are included in Appendix F.

Topography

The topography of the study area is very level and is approximately 60 feet in elevation.

Climate

Locally the climate of the study area is characterized as Mediterranean with cool wet, winters and warm to hot, dry summers. Annual average rainfall is approximately 20.81 inches (NOAA 2022).



June 2022

Legend

Study Area

Figure 2

Project Location on USGS Topographic Map

Stivers Lagoon Marsh Restoration Project

Alameda County Flood Control and Water Conservation District

1:36,000

0 1,500 3,000

Feet

Sources: USGS Topographic 7.5 minute Niles Quadrangle

Alameda County, California

June 2022

Legend
Study Area

Figure 3
Aerial View
Stivers Lagoon Marsh Restoration Project
Alameda County Flood Control and Water Conservation District

1:6,000
0 250 500
Feet

Sources: ESRI Aerial Basemap

Alameda County, California

Geology and Soils

Geology underlying the study area is mapped as undivided surficial deposits (Qu) (Graymer 1994). A total of three soil mapping units are located within the study area: Botella loam, 0 to 2% slopes MLRA 14; Willows clay, drained; and Clear Lake clay, 2 to 9% slopes, drained (USDA 2022). The majority of the study area is mapped as Willows clay, including along the entirety of the shoreline of Lake Elizabeth within the site. The southwest corner of the site is mapped as Botella loam and Clear Lake clay. All three of the soil mapping units are considered hydric (Table 1).

The characteristics of the soil mapping unit are described in Table 1 using details from the Soil Survey of Alameda County, Western Part, California (USDA 1981).

Table 1. Soil Mapping Unit Characteristics

Soil Mapping Unit (Symbol)	Drainage Class	Permeability	Runoff	Hydric
Botella Loam, 0 to 2 % slopes, MLRA 14	Well-Drained	Moderately Slow	slow	No
Willows Clay, drained	Poorly-Drained	Very Slow	slow	Yes
Clear Lake Clay, 2 to 9 percent slopes, drained	Poorly-Drained	Slow	Medium	Yes

Hydrology Characteristics

Mission Creek flows from north to south in the study area, leaving the study area in a culvert under Paseo Padre Parkway. The portion of Mission Creek in the study area is in an earthen channel of fairly uniform width and averages approximately 15-feet in width (measuring the width of the ordinary high water mark). A tributary to Mission Creek, called “L-1”, flows from east to west across the study area and joins Mission Creek before Mission Creek flows south under Paseo Padre Parkway. The area to the east of Mission Creek and north of L-1 is characterized primarily by freshwater marsh and riparian woodland, supported by a shallow groundwater table.

The study area is located in the 25-square mile Laguna Creek watershed, which drains the foothills of the Diablo Range south of Niles Canyon and includes Mission Peak to the Southeast. Morrison, Vargas, Mission, Washington, Sabercat, Canada del Aliso, and Agua Caliente creeks drain the expanse of foothills, flow across the flatlands through underground culverts and engineered channels to meet Laguna Creek and finally Mud Slough on the way to San Francisco Bay (ACFCWCD 2022).

Land Use

The study area is surrounded by residential and commercial development on all sides. Bay Area Rapid Transit tracks border the study area to the east, and the Hetch Hetchy Aqueduct right-of-way runs immediately south of the study area. Open hills and the Vargas Plateau area are present approximately 1 mile to the northeast but are separated from the study area by development.

Central Park includes the Stiver’s Lagoon Nature Area and Lake Elizabeth as well as walking paths, playgrounds, sports fields, picnic areas, lawns, and a water park, among other amenities.

3.2. Vegetation Communities and Land Cover Types

Vegetation communities in the study area include non-native grassland, coyote brush scrub, coastal and valley freshwater marsh, and central coast riparian scrub (Table 2). Areas of open water and developed areas are also present. The spatial distribution of vegetation types within the study area are depicted in Figure 4.

Table 2. Vegetation Communities and Land Cover Types in the Study Area

Vegetation Community/Land Cover Type	Area (Acres)
Non-Native Grassland	9.91
Coyote Brush Scrub	2.72
Coastal and Valley Freshwater Marsh	7.88
Central Coast Riparian Scrub	27.58
Total Vegetated Land Cover:	**48.09**
Open Water	0.10
Developed	8.17
Total Unvegetated Land Cover:	**8.27**
Total	**56.36**

This section describes vegetation on-site utilizing *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *Manual of California Vegetation* (MCV; Sawyer et al. 2009, CNPS 2022b). Holland (1986) provides generalized natural community-level descriptions for natural communities present within the study area (Table 3). If applicable, each natural community-level is given more detail by providing a description of the vegetation using MCV types (Sawyer et al. 2009, CNPS 2022b) vegetation classification system based on field observations. MCV vegetation types are listed in the *California Natural Community List* (CDFW 2021). Table 3 relates the Holland MCV vegetation types identified within the study area to the *CNPS Inventory of Rare and Endangered Plants of California* (CNPS 2022a), and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

Table 3. Vegetation Community Classification Systems Comparisons

Terrestrial Communities[1]	California Vegetation[2]	CNPS Inventory[3]	Wetlands & Deepwater Habitats[4]
Non-native Grassland (42200)	*Avena spp. – Bromus spp.*Semi-Natural Alliance (Wild oats and annual brome grasslands) (42.027.00)	Valley and Foothill Grassland	Upland
Northern Coyote Brush Scrub (32100)	*Baccharis pilularis* Shrubland Alliance (Coyote brush scrub) (32.060.00)	Coastal Scrub	Upland
Coastal and Valley Freshwater Marsh (52410)	*Schoenoplectus acutus, californicus* Herbaceous Alliance (Hardstem and California Bulrush Marshes) (52.128.00) S3	Marshes and Swamps	Palustrine Persistent Emergent Wetland
Central Coast Riparian Scrub (63200)	*Salix lasiolepis* Shrubland Alliance (Arroyo Willow Thickets) (61.201.00)	Riparian Scrub	Upland

[1] Terrestrial Natural Communities of California (Holland 1986)
[2] A Manual of California Vegetation (Sawyer et al. 2009) and California Natural Community List (CDFW 2021)
[3] CNPS Inventory of Rare and Endangered Plants of California Habitat Types (CNPS 2001)
[4] Classification of Wetlands & Deepwater Habitats of the U.S. (Cowardin et al. 1979

June 2022

Legend

Study Area

Creek - Ordinary High Water Mark

Vegetation Communities

Coyote Brush Scrub

Freshwater Marsh

Willow Riparian

Riparian (Restoration Site)

Non-Native Grassland

Open Water

Developed

Figure 4

Vegetation Communities & Land Cover Types

Stivers Lagoon Marsh Restoration Project

Alameda County Flood Control and Water Conservation District

1:4,800

0 200 400 Feet

Sources: ESRI Aerial Basemap

Alameda County, California

3.2.1 NON-NATIVE GRASSLAND

As described by Holland (1986) non-native grassland is dominated by a sparse to dense cover of non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands as a result of human disturbance. However, where not completely out-competed by weedy non-native plant species, scattered native wildflower species and native perennial grass species considered remnants of the original vegetation, may also be common. This community occurs on fine-textured, usually clay soils, which are moist or waterlogged during the winter rainy season and very dry during the summer and fall. Germination occurs with the onset of the late fall rains while growth, flowering, and seed-set occur from winter through spring. With a few exceptions, the plants are dead through the summer and fall dry season, persisting as seeds. This community usually occurs below 3,000 feet (914 meters), but reaches 4,000 feet (1,219 meters) in the Tehachapi Mountains and interior San Diego County, and intergrades with coastal prairie along the Central Coast.

In the study area, non-native grassland is present at the southern end of the study area near Paseo Padre Parkway and along the walking path. It is dominated by non-native grasses including slender oats (*Avena barbata*[*]), ripgut brome (*Bromus diandrus**), soft chess (*Bromus hordeaceus**), hare barley *(Hordeum murinum* subsp. *leporinum**), Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum**), brome fescue (*Festuca bromoides**), and Italian ryegrass (*Festuca perennis**). Non-native forbs are also present including dovefoot geranium (*Geranium molle**), cut-leaf geranium (*Geranium dissectum**), bindweed (*Convolvulus arvensis**), yellow starthistle (*Centaurea solstitialis**), bristly ox-tongue (*Helminthotheca echioides**), burclover (*Medicago polymorpha**), hoary mustard (*Hirschfeldia incana**), and spring vetch (*Vicia sativa* subsp. *sativa**). A few native species are present including purple needlegrass (*Stipa pulchra*), creeping wildrye (*Elymus triticoides*), alkali mallow (*Malvella leprosa*), and common rush (*Juncus patens*), however these were not abundant enough to form their own native herbaceous vegetation communities..

Within the study area, non-native grassland vegetation is represented by one MCV alliance: Avena spp. – Bromus spp. Semi-Natural Alliance (CNPS 2022b).

<u>*Avena* spp. – *Bromus* spp. Semi-Natural Alliance (Wild Oats and Annual Brome Grasslands)</u>

As described in the MCV (CNPS 2022b), wild oats (*Avena* spp.*) or bromes (*Bromus* spp*) is dominant or co-dominant in the herbaceous layer with other non-native species. Emergent trees and shrubs may be present at low cover. Herbaceous species are less than 1.2 meters in height and the canopy cover is open to continuous. According to the membership rules, wild oats or bromes must have greater than 50% relative cover in the herbaceous layer. this vegetation type is present in All topographic settings in foothills, waste places, rangelands, openings in woodlands.

3.2.2 NORTHERN COYOTE BRUSH SCRUB

As described by Holland (1986), northern coyote brush scrub is a type of northern coastal scrub based on the dominance of coyote brush (*Baccharis pilularis* subsp. *consanguinea*). This community comprises low shrubs, usually 0.5-2 meters tall, typically dense but with scattered grassy openings. It occurs on windy, exposed sites with shallow, rocky soils and is patchily distributed from southern Oregon to Point Sur in Monterey County.

Within the study area northern coyote brush scrub is located in the northern portion of the study area east of Mission Creek and south of Mission Creek. The quality of this vegetation type suggests that this was

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[*] Denotes a species not native to California.

non-native grassland that has shifted to shrub land due to shrub encroachment, rather than representing intact shrub lands. This vegetation type is dominated by coyote brush. Other species present include poison oak (*Toxicodendron diversilobum*), bush monkeyflower (*Diplacus aurantiacus*), California blackberry (*Rubus ursinus*), and scattered jubata grass (*Cortaderia jubata*). The herbaceous species present in the coyote brush scrub are the same herbaceous species typical of non-native grassland described above and include slender oats*, soft chess*, hare barley*, and brome fescue*.

Within the study area, non-native grassland vegetation is represented by one MCV alliance: *Baccharis pilularis* Alliance.

<u>*Baccharis pilularis* Alliance (Coyote brush scrub)</u>

As described in the MCV, coyote brush is dominant to co-dominant in the shrub canopy with other shrub species such as California sagebrush (*Artemisia californica*), blueblossom (*Ceanothus thyrsiflorus*), California hazelnut (*Corylus cornuta*), bush monkeyflower, California coffeeberry (*Frangula californica*), toyon (Heteromeles arbutifolia), oceanspray (*Holodiscus discolor*), California blackberry, poison oak, and other species. Emergent trees may be present at low cover including coast live oak (*Quercus agrifolia* var. *agrifolia*) or California bay (*Umbellularia californica*). The membership rules in MCV are coyote brush greater than 15% shrub cover over grassy understory.

3.2.3 Coastal and Valley Freshwater Marsh

As described by Holland (1986), coastal and valley freshwater marsh is dominated by perennial, emergent monocots, 1-15 feet (0.40-4.5 meters) tall, adapted to growing in conditions of prolonged inundation (Holland 1986). Freshwater marsh typically occurs on sites that lack a significant current that are permanently flooded by freshwater along the edges of water bodies, dune swales, slough terrace edges, banks, channels and mouth margins of rivers, bottomlands, ditch margins, lagoons, ponds, reservoir margins and along geologic faults. This community is most extensive in the upper portion of the Sacramento-San Joaquin River Delta.

Freshwater marsh was present throughout the central part of the study area and formed dense colonies that filled open water. Species characteristic of freshwater marsh on site include common tule (*Schoenoplectus acutus* var. *occidentalis*), broadleaf peppergrass (*Lepidium latifolium**), bristly ox-tongue*, and dotted smartweed (*Persicaria punctata**). Much of the freshwater marsh on site appears dry and struggling likely due to drought and lowered ground water table.

Within the study area, freshwater marsh vegetation is represented by one MCV alliance: *Schoenoplectus acutus, californicus* Alliance.

<u>*Schoenoplectus acutus, californicus* Alliance (Hardstem and California Bulrush Marshes)</u>

This alliance is described with hardstem and California bulrush being dominant to co-dominant in the herbaceous with other wetland herbaceous species. Emergent trees and shrubs may be present at low cover. Plants are less than 13 feet (4 meters) with an intermittent to continuous herbaceous layer. The membership rule for this alliance is hardstem or California bulrush greater than 50% relative cover in the herbaceous canopy. Habitat for this alliance is brackish to freshwater marshes; along stream shores; around ponds and lakes; in sloughs, swamps, and roadside ditches (Sawyer et al. 2009).

3.2.4 Central Coast Riparian Scrub

As described by Holland (1986), Central Coast riparian scrub is a scrubby streamside thicket, varying from open to impenetrable, dominated by any of several willow species. This early seral community may succeed to any of several riparian woodland or forest types in the absence of severe flooding disturbance. This community occurs on relatively fine-grained sand and gravel bars that are close to river channels and therefore close to ground water. It is distributed along and at the mouths of most perennial and many intermittent streams of the south Coast Ranges, from the Bay Area south to Point Conception.

This community is widespread throughout the study area. Within the study area, central coast riparian scrub is dominated by large, mature arroyo willow stands with scattered red willow (Salix laevigata), coast live oak (*Quercus agrifolia* var. *agrifolia*), California bay (*Umbellularia californica*), and boxelder (*Acer negundo*). Sandbar willow (*Salix exigua*) is present along the creek in scattered locations. The understory is dense and includes California blackberry (*Rubus ursinus*), poison oak, Himalayan blackberry (*Rubus armeniacus**), English ivy (*Hedera helix**), blue elderberry (*Sambucus nigra* subsp. *caerulea*), jubata grass (*Cortaderia jubata**), olive (*Olea europea*), flowering plum (*Prunus cerasifera**), stinging nettle (*Urtica dioica* subsp. *holosericea*), field hedge parsley (*Torilis arvensis**), poison hemlock (*Conium maculatum**), and smilo grass (*Stipa miliacea* var. *miliacea**).

A riparian restoration project is present at the southern end of the study area and includes plantings of native riparian species including Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), elderberry, and California blackberry among others.

Within the study area, central coast riparian scrub vegetation is represented by one MCV alliance: *Salix lasiolepis Shrubland* Alliance.

<u>*Salix lasiolepis Shrubland Alliance (Arroyo Willow Thickets)*</u>

As described, arroyo willow is dominant or co-dominant in the shrub layer or tree canopy with other native shrubs or trees. As a shrubland, emergent trees may be present at low cover. Plants are less than 32 feet (10 meters) in height and the canopy is open to continuous. According to the membership rules for this vegetation type, willow scrub must have greater than 50% relative cover in the shrub or tree canopy (Sawyer et al. 2009). Habitat for this vegetation community throughout California includes stream banks and benches, steep slopes, and stringers along drainages, growing on seasonally or intermittently flooded sites.

3.2.5 OTHER LAND COVER TYPES

Open Water

Open water is characterized as canals, creeks, and ditches that are primarily open water do not support vegetation. Portions of Mission Creek that are open water and do not contain overhanging riparian vegetation were mapped as open water.

Developed Areas

Developed areas comprised concrete or gravel surfaces that either do not support vegetation or include landscaped and ornamental plantings. Developed areas include walking paths, the parking lot, mowed turf, and buildings.

3.3. MOVEMENT CORRIDORS AND WILDLIFE USE

Habitat loss, fragmentation, and degradation resulting from land use changes or habitat conversion can alter the use and viability of wildlife movement corridors (*i.e.* linear habitats that naturally connect and provide passage between two or more otherwise disjunct larger habitats or habitat fragments). In general, studies suggest that habitat corridors provide connectivity for and are used by wildlife, and as such, are an important conservation tool (Beier and Noss 1998). According to Beier and Loe (1992), wildlife habitat corridors should fulfill several functions. They should maintain connectivity for daily movement, travel, mate-seeking, and migration; plant propagation; genetic interchange; population movement in response to environmental change or natural disaster; and recolonization of habitats subject to local extirpation.

The suitability of a habitat as a wildlife movement corridor is related to, among other factors, the habitat corridor's dimensions (length and width), topography, vegetation, exposure to human influence, and the species in question (Beier and Loe 1992). Species utilize movement corridors in several ways. "Passage species" are those species that use corridors as thru-ways between outlying habitats. The habitat requirements for passage species are generally less than those for corridor dwellers. Passage species use corridors for brief durations, such as for seasonal migrations or movement within a home range. As such, movement corridors do not necessarily have to meet any of the habitat requirements necessary for a passage species' everyday survival. Large herbivores, such as deer, and medium-to-large carnivores, such as coyotes, bobcats and mountain lions, are typically passage species. "Corridor dwellers" are those species that have limited dispersal capabilities – a category that includes most plants, insects, reptiles, amphibians, small mammals, and birds – and that use corridors for a greater length of time. As such, wildlife movement corridors must fulfill key habitat components specific to a species' life history requirements in order for them to survive (Beier and Loe 1992). In general, however, the suitability and/or utility of the landscape – specifically, of the landscape as corridor habitat – is best evaluated on a species-level (Beier and Noss 1998).

The study area is a relatively natural area set within a suburban matrix. Isolation of the study area presents significant movement barriers to terrestrial wildlife species, including several special status species despite the existence of suitable habitat for one or more life history stage of some of those species (Appendix C). Generalist terrestrial wildlife species such as northern raccoon (*Procyon lotor*) likely experience fewer movement barriers and navigate the surrounding suburban matrix to utilize the study area.

Section 4. ASSESSMENT AND FINDINGS

Relevant literature, knowledge of regional biota, and observations made during the field investigations were used to evaluate on-site habitat suitability for special status plant and wildlife species known to occur within the vicinity[1] of the study area. When determining the potential for a special status species to occur on site, one of five determination categories was assigned; these determination categories are described below.

- None denotes a complete lack of habitat suitability, local range restrictions, and/or regional extirpations.
- Not Expected denotes situations where suitable habitat or key habitat elements may be present but may be of poor quality or isolated from the nearest extant occurrences. Incompatible habitat suitability refers to elevation, geology, soil chemistry and type, vegetation communities, microhabitats, and degraded/significantly altered habitats. These factors create unsuitable ecological conditions for the consideration of even a low occurrence potential within the study area.
- Absent or Not Observed indicates specified taxa not observed during field investigations which were consequently ruled out. This category also refers to diagnostic vegetative material of shrubby perennial species not observed on site. *This category refers only to plant species*.
- Possible indicates the presence of suitable habitat or key habitat elements that potentially support a specific species or taxa.
- Present indicates the target species was either observed directly or its presence was confirmed by diagnostic sign (*i.e*. tracks, scat, burrows, carcasses, castings, prey remains, *etc*.) during field investigations.

Special status species are discussed further in this section if they were determined to meet the determination criteria for Present or Possible in the study area and it is a species prominent in the current regulatory environment. It should be noted that species occurrence references refer to the CNDDB Element Occurrence Index number (EONDX #) which is a unique number given to each occurrence record for each species.

4.1. SENSITIVE NATURAL COMMUNITIES

The identification of target sensitive natural communities is based on a background review of available databases and literature listed in Section 2.3, Nomad's expertise with the regional flora, and habitats present within the study area. Two sensitive natural communities were present on site: coastal and valley freshwater marsh and central coast riparian scrub.

Within the study area, coastal and valley freshwater marsh vegetation is represented by one MCV alliance: *Schoenoplectus acutus, californicus* Alliance. This alliance is considered a sensitive natural community (CNPS 2022b) per the *California Natural Community List*. Coastal and valley freshwater marsh would also be considered sensitive as it is a wetland type potentially regulated by the Army Corps of Engineers and the California State Water Resources Control Board.

[1] Vicinity is defined as the area within the Niles quad and surrounding 8 quads.

Within the study area, central coast riparian scrub vegetation is represented by one MCV alliance: *Salix lasiolepis Shrubland* Alliance. This alliance is considered a sensitive natural community (CNPS 2022b).

Although not considered a sensitive natural community by CDFW (2022a), the entirety of Mission Creek is a sensitive natural community as it is a stream feature potentially regulated by the Army Corps of Engineers, the California State Water Resources Control Board, and CDFW.

Potential Project-Related Effects

Temporary impacts to Mission Creek, central coast riparian scrub, and freshwater marsh habitat will occur during project construction and in the first few years as native plants become established post-construction. Implementation of restoration and monitoring will ensure that vegetation and wildlife habitat on site recovers to pre-project or better conditions. The project would result in a small loss of freshwater marsh and riparian vegetation and an increase open water habitat, however the project overall would enhance habitat value through restoration and maintain wetland communities on site. Impacts will be minimized by implementing Best Management Practices including minimizing the disturbance areas to the minimum necessary to complete the project, revegetating the site following construction following a restoration plan, and implementing erosion control. All work will follow regulatory permit conditions.

4.2. Special-Status Plants

A total of 52 special status plant species are known to occur in the project vicinity.[2] Based on habitats within the study area, a review of available databases and literature listed in Section 2.3, timing of the site visits, and familiarity with the regional flora, it was determined that two special status plant species have the potential to occur within the study area: Congdon's tarplant (*Centromadia parryi* subsp. *congdonii*; CRPR 1B.1) and small spikerush (*Eleocharis parvula*; CRPR 4.3). Rare plant surveys will be conducted for these species in August and September, 2022 (Table 4).

A rare plant survey was conducted on April 8, 2022 for 4 target species that had the potential to occur in the study area, and these 4 species were not observed. These include alkali milk-vetch (*Astragalus tener* var. *tener;* CRPR 1B.2), San Joaquin spearscale (*Extriplex joaquinana;* CRPR 1B.2), prostrate vernal pool navarretia (*Navarretia prostrata;* CRPR 1B.2), and saline clover (*Trifolium hydrophilum;* CRPR 1B.2) (Table 4).

Other special status plant species were ruled out as potentially occurring on site based on lack of suitable habitat such as coastal scrub, coastal dunes, coastal bluff scrub, alkali playas, coniferous forest, pinyon juniper woodland, serpentine soils, or sandy soils. Species were also ruled out due to the lack of appropriate bedrock substrates, elevation ranges, and distributional limits, or if they would have been identifiable during the April 2022 site visit. No special status plant species were observed during the 2022 site visit.

A complete list of all species considered as part of this assessment, their regulatory status, habitat requirements, local distribution, and potential for occurrence are listed in Appendix B. The CNDDB search results are shown in Appendix D. Special status plant species recorded in the project vicinity from the CNDDB are depicted in Figure 5.

[2] Vicinity is defined as the area within the Niles quad and surrounding 8 quads.

Table 4. Rare Plant Survey Targets Based on Presence of Suitable Habitat

Species Name	Common Name	Listing Status*	Potential for Occurrence	Survey Window
Federal/State Listed Species				
None				
California Native Plant Society Listed Species				
Astragalus tener var. *tener*	alkali milk-vetch	CEQA, 1B.2	Not Observed During Survey in April 2022	April
Centromadia parryi subsp. *congdonii*	Congdon's tarplant	CEQA, 1B.1	Possible	September-October
Eleocharis parvula	small spikerush	CEQA, 4.3	Possible	August
Extriplex joaquinana	San Joaquin spearscale	CEQA, 1B.2	Not Observed During Survey in April 2022	April-May
Navarretia prostrata	prostrate vernal pool navarretia	CEQA, 1B.2	Not Observed During Survey in April 2022	April-May
Trifolium hydrophilum	saline clover	CEQA, 1B.2	Not Observed During Survey in April 2022	April-May

*Note – See Appendix B for a detailed description of the listing codes and abbreviations

4.2.1 Federal and/or State Listed and California Rare Plant Species

Of the 52 special status plant species known from the vicinity, 5 are federally and/or state listed. Of these all 5 were ruled out as having the potential to occur on site based on lack of suitable habitat, elevation ranges, and distributional limits.

4.2.2 California Native Plant Society Listed Plant Species

All of the 52 special status plant species known from the immediate vicinity of the study area are included in the California Native Plant Society Rare Plant Inventory (CNPS 2022a). Based on the field investigations, review of available databases and literature, familiarity with local flora, and on-site habitat suitability, 6 of the California Rare Plant Rank plant species were considered to have the potential to occur within the study area (Table 4). A rare plant survey was conducted on April 8, 2022 which further rules out four species from occurring on site. Two species retain the potential to occur on site (Congdon's tarplant and small spikerush). A brief description of the potentially occurring plant species, their habitat requirements, local occurrences, and assessment of impacts are included below.

Congdon's tarplant (*Centromadia parryi* subsp. *congdonii*)

Status, Distribution and Habitat Requirements

Congdon's tarplant [*Centromadia parryi* (Greene) subsp. *congdonii* (B.L. Rob. & Greenm.) B.G. Baldwin[3]] has a California Rare Plant Rank of 1B.2 indicating it is rare and moderately threatened in

[3] In botanical literature, binomial scientific names are followed immediately by the name of or the abbreviation for the publishing author(s) who validated the name. A scientific name is not strictly complete without the name(s) of the validating author(s) attached. Plant species that appear in this report that have regulatory significance are referred to by their binomial scientific name and author for nomenclatural relevance.

California (CNPS 2022a). This is an annual species of the sunflower family (Asteraceae). The type locality[4] for this species was collected by J.W. Congdon in Salinas, Monterey County, California (Abrams 1955).

Congdon's tarplant is an erect annual herb growing to 4 to 27.5 inches (1 to 7 dm) in height (Baldwin et al. 2012). The distal leaves and peduncle bracts are spine-tipped, the leaves are glabrous to more-or-less coarsely hairy, and the plant is seldom glandular but can have minute, stalked more or less yellow glands interspersed among non-glandular hairs (Baldwin et al. 2012). Both the ray and disk flowers are yellow. Disk flowers have yellow to brown anthers and are subtended by 3-5 linear or awl-like scales (Baldwin et al. 2012). This taxon flowers from May to November (CNPS 2022a).

Congdon's tarplant usually occupies alkaline valley and foothill grasslands (CNPS 2022a) and terraces, swales, floodplains, grassland, and disturbed sites (Baldwin et al. 2012). It is a California endemic that occurs in the central western California geographic region from 0 to 984 feet (300 meters) (CNPS 2022a).

Occurrence Data and Habitat Characteristics

There are no previously known records of Congdon's tarplant within the study area. The nearest recorded CNDDB occurrence (EONDX #84650, from 2010) is from 175 feet east of the study area, in Fremont Central Park (CDFW 2022a). In the CNDDB occurrence notes, in 2015 Schweitzer surveyed this area and could only locate *Centromadia pungens*. Further studies are needed to verify that this element occurrence is *Centromadia parryi* subsp. *congdonii* (CDFW 2022a).

Potential Project-Related Effects

A rare plant survey will be conducted in September 2022 to determine if Congdon's tarplant is present on site. If it is not present, then there will be no project-related effects. If this species is present, impacts will be avoided and/or minimized as detailed in Section 5.2.

Small spikerush (*Eleocharis parvula*)

Status, Distribution and Habitat Requirements

Small spikerush [*Eleocharis parvula* (Roem. &Schult.) Link ex Bluff, Nees & Schauer] has a California Rare Plant Rank of 4.3 indicating that it is uncommon and not very threatened in California (CNPS 2022a). This is an annual or perennial species of the sedge family (Cyperaceae).

Small spikerush is a very diminutive perennial herb growing to 0.75 to 3.5 inches (2 to 9 cm) in height (Baldwin et al. 2012). This species has a weak rhizome growing to 0.06 inch (1.5 millimeters) diameter, with a oblong tuber with tip often with markedly curved. The stem is 0.2 to 0.5 millimeter diam and cylindric. The distal sheath of the leaf is delicate, often disintegrating with a rounded tip. The inflorescence is a spikelet 0.08 to 0.16 inch (2 to 4 millimeters), with 6 to 10 flower bracts. The three-sided fruit is smooth and is between 0.03 to 0.5 inch (0.9 to 1.2 millimeters) long. The tubercle often merges with the fruit or is vestigial with 6 perianth bristles that are generally equal to the fruit to more or less longer than the tubercle (Baldwin et al. 2012) This taxon flowers from June to August (CNPS 2022a).

This taxon occupies habitat such as marshes and swamps (CNPS 2022a), often in coastal areas (Baldwin et al. 2012). It has been recorded in Alameda, Contra Costa, Humboldt, Marin, Napa, Orange, San Luis Obispo, Solano, Sonoma, and Ventura Counties, between 1 to 9,900 feet (1 to 3,020 meters) in elevation (CNPS 2022a).

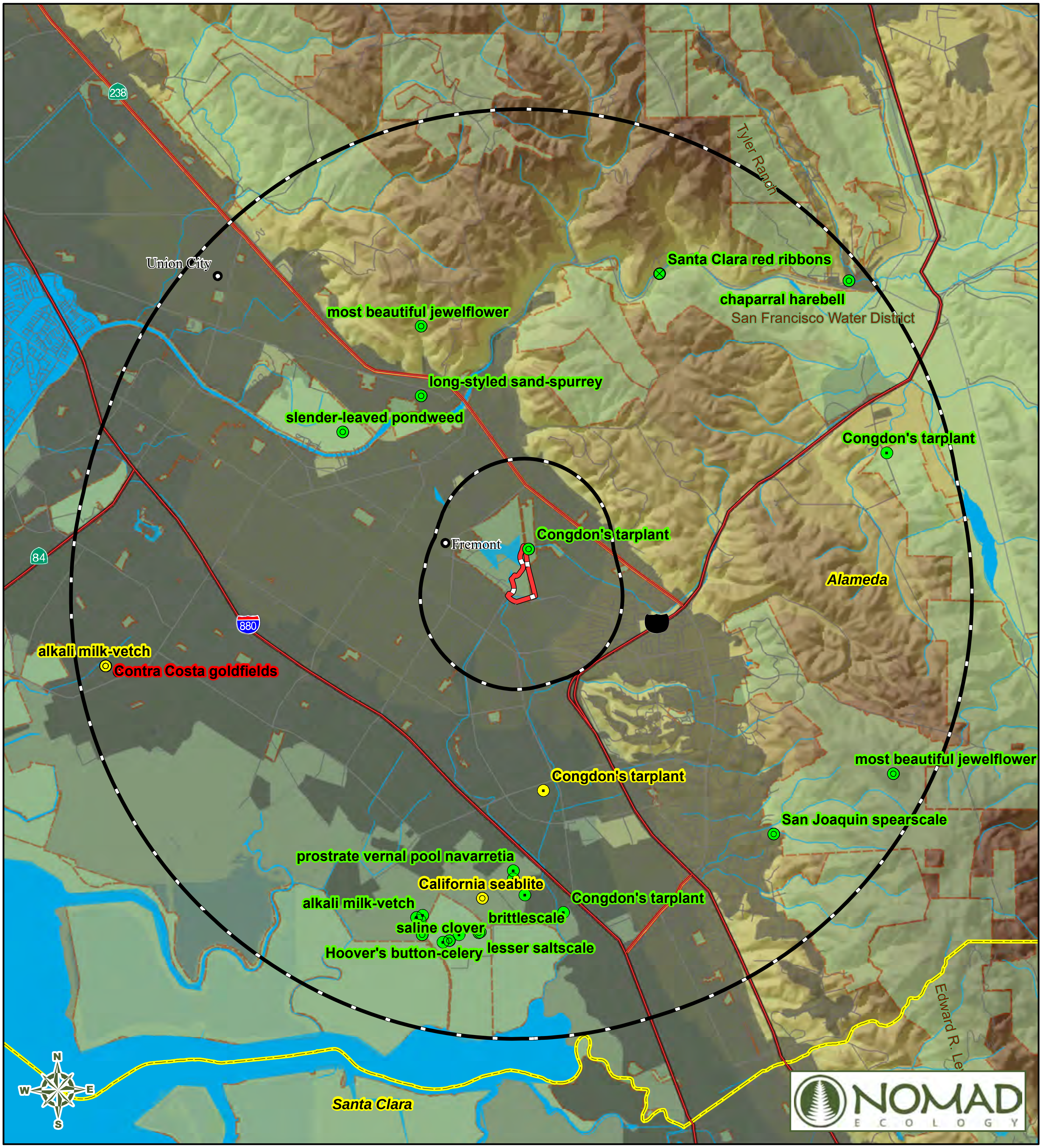
[4] A type locality is the geographical location where the type specimen, which is used to describe a species for the first time, was originally found.

Occurrence Data and Habitat Characteristics

There are no previously known records of small spikerush within the study area. The nearest herbarium record is a 2012 Hillman collection from Island Ponds in Alameda County, approximately 22 miles northwest from the study area.

Potential Project-Related Effects

A rare plant survey will be conducted in August 2022 to determine if small spikerush is present on site. If it is not present, then there will be no project-related effects. If this species is present, impacts will be avoided and/or minimized as detailed in Section 5.2.



June 2022

Legend

Study Area	CNDDB Occurrences Presence	CNDDB Occurrences ACCURACY
County Boundaries	Extirpated	80 meters - 1 mile
Public Land and Easements	Possibly Extirpated	non-specific area
Distance Radii: 1 & 5 Miles	Presumed Extant	specific area

Figure 5

California Natural Diversity Database

Special Status Plants Species

Occurrences within 5 Miles of the Project

Stivers Lagoon Marsh Restoration Project

Alameda County Flood Control and

Water Conservation District

1:95,040

0 0.75 1.5 Miles

Sources: ESRI Aerial Imagery Basemap, California Spatial Information Library, Bay Area Open Space Council, California Department of Fish and Wildlife

Alameda County, California

4.3. SPECIAL STATUS WILDLIFE

Based on the field investigation, review of available databases and literature listed above in Section 2.3, familiarity with local fauna, and on-site habitat suitability, a total of 53 special status wildlife species are known to occur in the vicinity[5] and were considered as part of this assessment. These include federal or state-listed threatened and endangered species and California Department of Fish and Wildlife designated Species of Special Concern (SSC), which are of concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction, as well as species on various agency and non-governmental organization watchlists denoting that there is concern for their conservation. Of these, 12 were determined to have the potential to occur within the study area and could be affected by the project as proposed (Table 5).

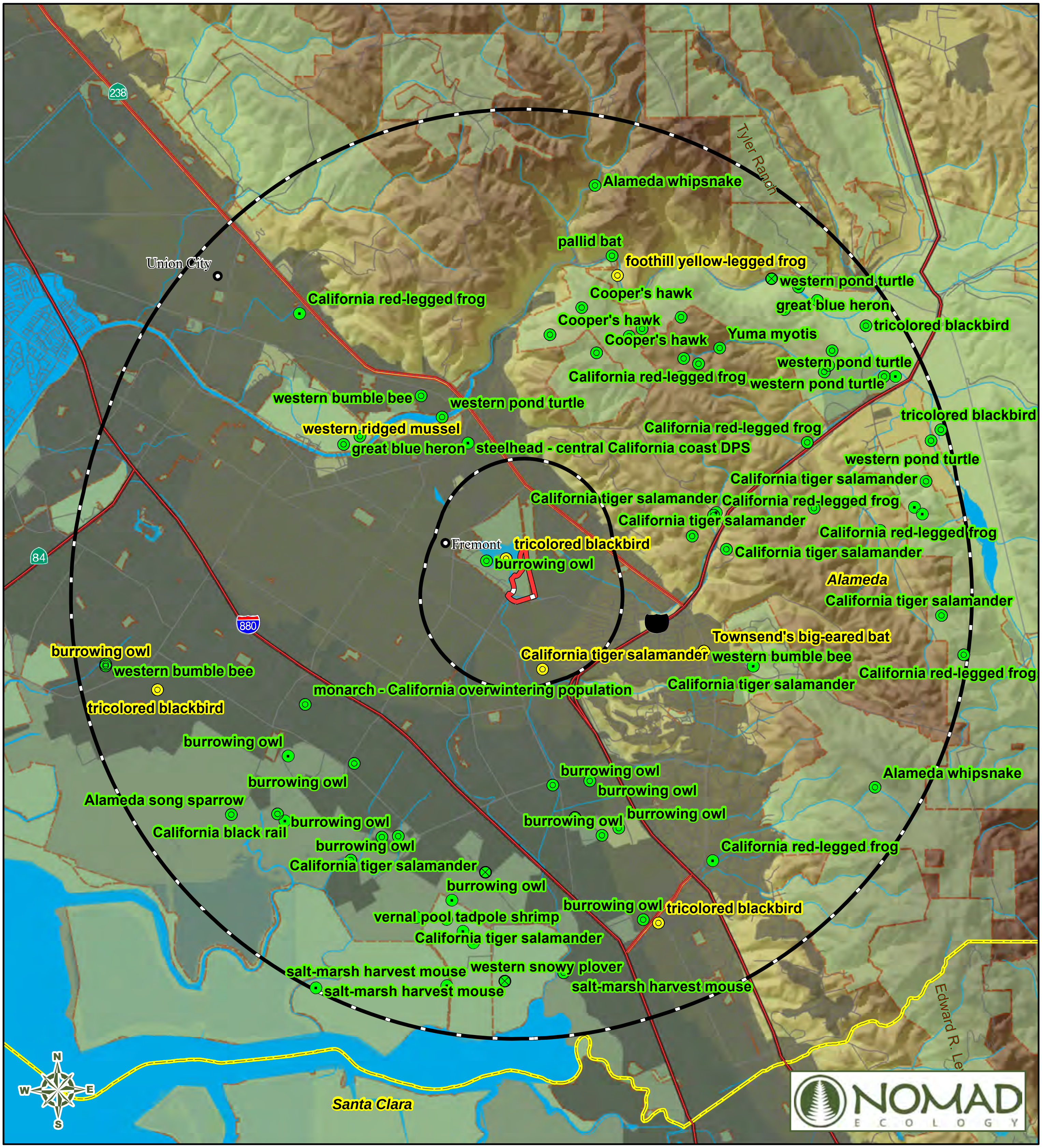
Table 5. Special Status Wildlife Species with Potential to Occur

Species	Listing Status	Potential for Occurrence
Invertebrates		
Bombus caliginosus obscure bumble bee	Federal: None State: Special Animal	Possible
Bombus crotchii Crotch bumble bee	Federal: None State: Special Animal	Possible
Bombus occidentalis western bumble bee	Federal: None State: Special Animal	Possible
Birds		
Accipiter cooperii Cooper's hawk	Federal: none State: Watch List	Possible (nesting)
Accipiter striatus sharp-shinned hawk	Federal: none State: Watch List	Possible (nesting)
Ardea herodias great blue heron	Federal: none State: Special Animal	Possible (nesting)
Egretta thula snowy egret	Federal: none State: Special Animal	Possible (nesting)
Elanus leucurus white-tailed kite	Federal: none State: Fully Protected	Possible (nesting)
Setophaga petechia yellow warbler	Federal: none State: Species of Special Concern	Possible (nesting)
Mammals		
Antrozous pallidus pallid bat	Federal: none State: Species of Special Concern	Possible (roosting)
Lasiurus cinereus hoary bat	Federal: none State: Special Animal	Possible (roosting)

[5] Vicinity is defined as the area within a 5-mile buffer around the study area.

Myotis yumanensis Yuma myotis	Federal: none State: Special Animal	Possible (roosting)

The remaining taxa were ruled out based on the lack of suitable habitat (e.g., salt marshes, serpentine, interior sand dunes, vernal pools, scrub, mud flats, and shoreline habitats), local extirpations, lack of connectivity between areas of suitable and occupied habitat, incompatible land use, and habitat degradation. A complete list of all species considered as part of this assessment, their regulatory status, habitat requirements, local distribution, and potential for occurrence is included in Appendix C. The CNDDB and NOAA Fisheries species query results are included in Appendices D and E. Occurrences of special status wildlife species recorded in CNDDB within the project vicinity are shown in Figure 6. All species with potential to occur within the study area are discussed below.



June 2022

Legend

Study Area*	CNDDB Occurrences Presence	CNDDB Occurrences ACCURACY
County Boundaries	Extirpated	80 meters - 1 mile
Public Land and Easements	Possibly Extirpated	non-specific area
Distance Radii: 1 & 5 Miles	Presumed Extant	specific area

1:95,040

0 0.75 1.5 Miles

Figure 6

California Natural Diversity Database
Special Status Animal Species
Occurrences within 5 Miles of the Project

Stivers Lagoon Marsh Restoration Project
Alameda County Flood Control and
Water Conservation District

Sources: ESRI Aerial Imagery Basemap, California Spatial Information Library, Bay Area Open Space Council, California Department of Fish and Wildlife

Alameda County, California

4.3.1 INVERTEBRATES

Nine special status invertebrate species were considered during this assessment. Six species, including western ridged mussel (*Gonidea angulata*), Lum's micro-blind harvestman (*Microcina lumi*), conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecta lynchi*), monarch butterfly (*Danaus plexippus*), and vernal pool tadpole shrimp (*Lepidurus packardi*) were determined to have no potential to occur and are not discussed further (see Appendix C). Special status invertebrate species with potential to occur within the study area are discussed below.

Special Status Bumble Bees

Three special status bumble bee species have the potential to occur within the study area:

- obscure bumble bee (*Bombus caliginosus*) – Included on CDFW's Special Animals list
- Crotch bumble bee (*Bombus crotchii*) – Included on CDFW's Special Animals list
- western bumble bee (*Bombus occidentalis*) – Included on CDFW's Special Animals list

Status, Distribution and Habitat Requirements

Specific habitat requirements for each of these species are variable and not fully understood, but they are generally known to nest underground, in abandoned rodent burrows, or in decaying wood and trees. These bumble bee species may occur in grasslands, scrub, or open woodlands. The Crotch bumble bee was previously found throughout southern California and the Central Valley, but is now nearly absent from the Central Valley. The western bumble bee was previously found throughout the Coast Ranges and Sierra Nevada, but more recently appears to be largely restricted to high-elevation sites in the Sierras and scattered coastal locations. Widespread use of pesticides in agricultural lands and habitat fragmentation are thought to have led to severe declines of these species (COSEWIC 2014, CDFW 2019).

Occurrence Data and Habitat Suitability

CNDDB records for western bumble bee within 5 miles of the study area are all several decades old. These include three occurrences of western bumble bee, the closest of which was recorded in 1932 (EONDX # 100204) approximately one mile northwest of the study area. There is also an occurrence of crotch bumble bee recorded in 1952 approximately eight miles northeast of the study area near Pleasanton (EONDX# 98556). The nearest occurrence of obscure bumble bee (EONDX #97970) was recorded in 1954 somewhere in San Jose, approximately 10 miles south of the study area (CDFW 2022a)

Occurrences of all bumble bee species are also tracked by Bumble Bee Watch, a collaborative project between several universities and non-profit entities that accept and vet bumble bee sightings submitted by the public. Bumble Bee Watch has recorded recent verified observations of Crotch bumble bee near Fairfield, Solano County (2014), in Berkeley, Alameda County (2015), and in Santa Teresa County Park (2019) and San Jose (2021), Santa Clara County. Verified occurrences of obscure bumble bee have been recorded near Palo Alto (2019) and in San Francisco (2021). Bumble Bee Watch has not recorded any recent verified sightings of western bumble bee anywhere in the greater San Francisco Bay Area (Bumble Bee Watch 2022). This suggests that the Crotch bumble bee and obscure bumble bee are still extant in the region, though the status of the western bumble bee is less certain. Regardless, the study area is within the formerly known range for this species.

Suitable habitat for all three bumble bee species is present within the study area, as they may build nests either underground or in decaying wood anywhere on site.

Potential Project-Related Effects

Excavation and other ground-disturbing activities associated with the project could damage or destroy underground nests of these bumblebee species. Impacts to special status bumblebee species potentially occurring onsite will be avoided through implementation of avoidance and minimization measures, including preconstruction surveys and biological monitoring.

4.3.2 Fish

Four special status fish species, including green sturgeon (*Acipenser medirostris*), delta smelt (*Hypomesus transpacificus*) and California central valley steelhead (*Oncorhynchus mykiss irideus*), and longfin smelt (*Spirinchus thaleichthys*) were initially considered during this assessment. However, downstream passage barriers (Leidy et al. 2005), and lack of saltwater habitat render the study area unsuitable for these special status fish species.

4.3.3 Amphibians

Three special status amphibian species, including California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and foothill yellow-legged frog (*Rana boylii*), were initially considered during this assessment. These three amphibian species were determined to have no potential to occur in the study area (Appendix C).

4.3.4 Reptiles

Two special status reptile species were considered during this assessment, including western pond turtle (*Actinemys marmorata*) and Alameda whipsnake (*Masticophis lateralis euryxanthus*). Neither of these species is expected to occur within the study area (Appendix C).

4.3.5 Birds

Twenty-four special status bird species were considered during this assessment. Eighteen of these species are not expected to occur and are not discussed further (Appendix C). The remaining species are discussed below.

Cooper's Hawk (*Accipiter cooperii*)

Status, Distribution, and Habitat Requirements

The Cooper's hawk is included on CDFW's Watch List, meaning that while they are not formally listed under any law, there is concern for the species' conservation within the state of California. The Cooper's hawk ranges throughout the United States, Mexico, and southern Canada, where this species inhabits dense stands of oak woodlands, riparian deciduous forests, or other forest habitats often near water and suburban areas (Rosenfield et al. 2020, Baicich & Harrison 2005). This woodland raptor hunts in broken woodlands along forest edges and in urbanized areas for medium-sized birds and mammals. The Cooper's hawk typically nests in mature trees with significant canopy cover, but has also been found nesting in suburban areas in a variety of tree species (Rosenfield et al. 2020).

Habitat Suitability and Occurrence Data

Three nesting occurrences of Cooper's hawk exist in the CNDDB within 5 miles of the study area (CDFW 2022). The closest CNDDB record is three miles northeast of the study area near Niles Canyon (EONDX #67687). This species is relatively common in the region and likely under-reported due to their tendency to conceal nests high in trees in heavily wooded areas, making them difficult to detect. The dense riparian woodland within the study area represents suitable nesting and foraging habitat for Cooper's hawks.

Potential Project-Related Effects

See 'Potential Project Related Effects for all Migratory Birds' below.

Sharp-Shinned Hawk (*Accipiter striatus*)

Status, Distribution, and Habitat Requirements

The sharp-shinned hawk is included on CDFW's Watch List, meaning that while they are not formally listed under any law, there is concern for the species' conservation within the state of California. Sharp-shinned hawk breeds in forested regions throughout much of North America, including portions of the San Francisco Bay Area. This species is attracted to rural and suburban areas especially near bird feeders often during winter months (Bildstein et al. 2020). It forages primarily for small birds along woodland edges and openings, hedgerows, brushy pastures, and shorelines.

Habitat Suitability and Occurrence Data

This species prefers to nest on north-facing slopes in dense stands of deciduous, conifer and mixed hardwood trees, including ponderosa pine, black oak, and Jeffrey pines, preferably in riparian areas. Records also exist of sharp-shinned hawk nesting in suburban areas. Suitable nesting habitat is present in the trees within and adjacent to the study area. The nearest CNDDB occurrence of sharp-shinned hawk (EONDX #4937) was recorded in 1987 approximately 5 miles southeast of the study area.

Potential Project-Related Effects

See 'Potential Project Related Effects for all Migratory Birds' below.

Great Blue Heron (*Ardea herodias*) (Rookery Sites)

Status, Distribution, and Habitat Requirements

The great blue heron is included on CDFW's Special Animal List, meaning that while they are not formally listed under any law, there is concern for the species' conservation within the state of California. The great blue heron ranges throughout much of the continental United States. This species utilizes shallow aquatic habitats and nearby upland areas for foraging and meeting other life history requirements.

Habitat Suitability and Occurrence Data

Great blue herons nest in tall trees near open water such as lakes, freshwater marshes, coastal areas, or large streams. This species nests colonially in rookeries ranging in size from a few pairs to several hundred (Vennesland and Butler 2020). Suitable nesting habitat exists within and adjacent to the study area. The study area abuts Lake Elizabeth and contains riparian habitat. The nearest CNDDB record (EONDX #4697) is two miles northwest from the Alameda Creek Quarries in 1990 (CDFW 2022a).

Potential Project-Related Effects

See 'Potential Project Related Effects for all Migratory Birds' below.

Snowy Egret (*Egretta thula*) (Rookery Sites)

Status, Distribution, and Habitat Requirements

The snowy egret is included on CDFW's Special Animal List, meaning that while they are not formally listed under any law, there is concern for the species' conservation within the state of California. On the west coast of North America, Snowy egrets can be found in coastal California and portions of the Great Central Valley near Sacramento. This species favors shallow estuarine sites for feeding and seeks isolated estuarine sites for colonial breeding. Snowy egret nest sites are usually situated in trees and protected beds of dense bulrush close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.

Habitat Suitability and Occurrence Data

Suitable nesting habitat is present in the study area and in nearby Central Park. Lake Elizabeth includes a small island that where snowy egrets have previously been documented nesting (Kelly et al. 2006). The nearest CNDDB occurrence to the study area is approximately 10 miles southwest near Palo Alto (CDFW 2022a).

Potential Project-Related Effects

See 'Potential Project Related Effects for all Migratory Birds' below.

White-tailed Kite (*Elanus leucurus*)

Status, Distribution, and Habitat Requirements

The white-tailed kite is a Fully Protected species under California Fish and Game Code Section 3511, which means it may not be "taken" or possessed at any time. In California, the white-tailed kite is a yearlong resident in coastal and valley lowlands, where it inhabits herbaceous and open stages of most habitat types (CDFW 2014). Nest sites are usually located immediately adjacent to preferred foraging areas and are often in a single, isolated tree (Glover 2009) or near riparian corridors (Niemela 2007).

Habitat Suitability and Occurrence Data

White-tailed kite may nest in trees within the study area, and forage in grasslands throughout. The nearest CNDDB occurrence (EONDX #27029) was recorded five miles west of the study area in 1971, but the species is commonly reported in the area (eBird 2022).

Potential Project-Related Effects

See 'Potential Project Related Effects for all Migratory Birds' below.

Yellow Warbler (*Setophaga petechia*)

Status, Distribution, and Habitat Requirements

The yellow warbler (nesting) is a California Species of Special Concern. There are three recognized groups of subspecies within *D. petechia*. Two of the groups, "golden" and "mangrove," are restricted to the Caribbean, Central and South America. The "yellow" group breeds in most of North America and is further divided into nine subspecies. Yellow warblers of the "yellow" group of subspecies breed from the northern limits of the boreal forest in Alaska and Canada south along the Pacific Coast to northern Baja California; the central Sierra Nevada, northern Nevada the southern Rocky Mountain region; the southern Great Plains, central Arkansas, northern Alabama and Georgia; and along the eastern seaboard to Virginia. There is also a disjunct population in the Sierra Madre Occidental of Mexico (Lowther et. al. 2020). The yellow warbler nests in dense, shrubby thickets dominated by willows along water courses and wet meadows. This species builds nests in a variety of riparian trees, most commonly willows (*Salix* spp.) and cottonwoods (*Populus* spp.). Occasionally yellow warblers breed in mixed-conifer forests with shrubby understories (Shuford and Gardali 2008). Breeding occurs from April to late July and pairs of this species sometimes produce a second brood (Baicich & Harrison 2005, Shuford and Gardali 2008).

Habitat Suitability and Occurrence Data

Suitable nesting habitat for yellow warblers exists within the study area including riparian woodland and shrubby understory vegetation. The nearest CNDDB occurrence (EONDX #44072) was recorded approximately 13 miles northwest of the study area in 2000.

Potential Project-Related Effects
See 'Potential Project Related Effects for all Migratory Birds' below.

Migratory Birds

In addition to the special status bird species discussed above, numerous bird species that have no special status may also occur within the study area. Protection is afforded to these species by the Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) administered by the U.S. Fish and Wildlife Service (Division of Migratory Bird Management), which makes it unlawful, unless expressly authorized by permit pursuant to federal regulations, to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export at any time, or in any manner, any migratory bird, or any part, nest, or egg of any such bird." This includes direct and indirect acts, with the exception of harassment and habitat modification, which are not included unless they result in direct loss of birds, nests or eggs. In addition, the Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108–447; MBTRA), excludes all migratory birds non-native or that have been human introduced to the U.S. or its territories. It defines a native migratory bird as a species present within the U.S. and its territories as a result of natural biological or ecological processes. Birds receive further protection under state law through California Fish and Game Code §3503, prohibiting the take, possession, or needless destruction of the nest or eggs of any bird; §3503.5 prohibiting the take, possession, or needless destruction of any nests, eggs or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys and falcons, among others) or Strigiformes (owls); §3511 prohibiting the take or possession of fully protected birds; and §3513 prohibiting the take or possession of any migratory nongame bird or part thereof as designated in the federal MBTA. Most birds are protected under the MBTA and California Fish and Game Code except for several nonnative species, including the European starling (*Sturnus vulgaris*) and the house sparrow (*Passer domesticus*).

Potential Project Related Effects for all Migratory Birds

For any bird species that are nesting within the study area, construction actions associated with the project could result in short-term impacts such as failure to breed, nest abandonment, reduced fecundity and decreased survivorship from noise and movement of personnel and equipment that exceeds normal background conditions within the study area. Disturbance may alter the bird's behavior in ways that result in injury, mortality and reduced foraging success, such as the temporary loss of habitat due to avoidance of areas that have suitable habitat but intolerable levels of disturbance, and altered activity patterns.

If work activities cannot be timed to avoid the breeding season then pre-construction surveys for nesting bird species will be conducted as detailed in Section 5.2 to minimize impacts to this species. Active nests will be avoided and a non-disturbance buffer zone will be established around them. Therefore, the project will not adversely affect migratory bird species.

4.3.6 MAMMALS

Eleven special status mammal species were considered during this assessment. Three of these species were determined to have potential to occur within the study area, and are discussed below.

Special Status Bats

Bats are widespread within California and may be found in any habitat. They are nocturnal, aerial predators of insects and other arthropods, and often forage over open water, marshes, and other moist, open areas where flying insects tend to congregate. Different bat species have different roosting requirements and roosts can be found in a variety of habitats and locations. Day roosts, used from sunrise to sunset, provide a protected and sheltered location for bats to rest and sleep within a short flight to foraging areas and a site to raise their young (Erickson et al. 2002). During the day, bats may use three types of roosts: crevices, cavities, and foliage. Crevice and cavity roosts may be found in natural and human-made features such as caves, cliffs, rock outcrops, trees, mines, buildings, bridges, and tunnels.

During the breeding season (April through September), crevice and cavity roosting species typically gather in groups of mothers and young (maternity colonies) that may number in the thousands or even tens of thousands of individuals. In contrast, foliage-roosting bats may be solitary or occur in small groups while breeding. Roosts used during the day and as maternity roosts tend to be well-hidden and require precise temperature and humidity conditions.

Night roosts, which are used from approximately sunset to sunrise, are primarily sites where animals congregate to rest and digest their food between foraging bouts (Erickson et al. 2002). Night roosts are often located in more open but protected areas such as overhangs on buildings and recessed areas on the undersides of bridges. Three special status bat species have the potential to occur within the study area based on range, habitat, and recorded occurrences in the region, including:

- pallid bat (*Antrozous pallidus*) – California Species of Special Concern
- hoary bat (*Lasiurus cinereus*) – Included on CDFW's Special Animals List
- Yuma myotis bat (*Myotis yumanensis*) – Included on CDFW's Special Animals List

These bat species may occur in any habitat, although riparian corridors, large trees and snags, and relatively undisturbed parts of human-made structures are generally the most suitable roost locations.

There is one CNDDB occurrence of pallid bat and one occurrence of Yuma myotis bat recorded in the within 5 miles of the study area. The nearest reported occurrence of pallid bat (EONDX #115196) dates to 2017 and was mapped along Alameda Creek four miles to the north of the study area. The closest CNDDB record for Yuma myotis bat (EONDX #68652) occurs 3 miles northeast from 2006. Bats in general are very likely under-reported to the CNDDB relative to their actual abundance in the environment because they are nocturnal, difficult to detect, and difficult to positively identify and assess population levels even when detected. Therefore, bats may be present or even abundant in an area despite a lack of documented occurrences.

Pallid bats and Yuma myotis may roost in crevices or cavities within trees on site, while hoary bats may roost in the foliage.

Potential Project Related Effects to All Bat Species

The removal of any trees in the study area could directly harm roosting bats that may be occupying them. Any construction activities associated with the project also have the potential to cause impacts to roosting bats through noise and physical disturbance by heavy machinery, vehicles, construction activities and increased human presence. This may result in the permanent removal of roost features and displacement of individual bats utilizing them. Impacts to roosting bats potentially occurring onsite will be avoided through implementation of avoidance and minimization measures, including preconstruction surveys and biological monitoring.

Section 5. CONCLUSIONS, AVOIDANCE AND MINIMIZATION MEASURES

5.1. CONCLUSIONS

5.1.1 CRITICAL HABITAT

The project falls outside Critical Habitat for all listed species.

5.1.2 SENSITIVE NATURAL COMMUNITIES

Two sensitive natural communities were present on site: coastal and valley freshwater marsh and central coast riparian scrub. Within the study area, coastal and valley freshwater marsh vegetation is represented by one MCV alliance: *Schoenoplectus acutus, californicus* Alliance. This alliance is considered a sensitive natural community (CNPS 2022b) per the California Natural Community List. Coastal and valley freshwater marsh would also be considered sensitive as it is a wetland type potentially regulated by the Army Corps of Engineers and the California State Water Resources Control Board. this vegetation type is present in the center of the study area.

Within the study area, central coast riparian scrub vegetation is represented by one MCV alliance: Salix lasiolepis Shrubland Alliance. This alliance is considered a sensitive natural community (CNPS 2022b).

Although not considered a sensitive natural community by CDFW (2022a), the entirety of Mission Creek is a sensitive natural community as it is a stream feature potentially regulated by the Army Corps of Engineers, the California State Water Resources Control Board, and CDFW.

Temporary impacts to Mission Creek, central coast riparian scrub, and freshwater marsh habitat will occur during project construction and in the first few years as native plants become established. Implementation of restoration and monitoring will ensure that vegetation and wildlife habitat on site recovers to pre-project or better conditions. The project would result in a small loss of freshwater marsh and riparian vegetation and an increase open water habitat, however the project overall would enhance habitat value through restoration and maintain wetland communities on site. Impacts will be minimized by implementing Best Management Practices including minimizing the disturbance areas to the minimum necessary to complete the project, revegetating the site following construction, and implementing erosion control. All work will follow regulatory permit conditions.

5.1.3 SPECIAL STATUS PLANTS

Based on the field investigations, review of available databases and literature, familiarity with local flora, and on-site habitat suitability, no federal and/or state listed plant species have the potential to occur onsite. Two California Native Plant Society ranked species are considered to have the potential to occur within the study area: Congdon's tarplant (*Centromadia parryi* subsp. *congdonii*; CRPR 1B.1) and small spikerush (*Eleocharis parvula*; CRPR 4.3).

Rare plant surveys will be conducted in August and September to determine if these species occur on site.

5.1.4 SPECIAL STATUS WILDLIFE

Federal/State Listed, Proposed, Candidate, or Fully Protected Fish and Wildlife Species

Based on the field investigations, review of available databases and literature, familiarity with local fauna, and on-site habitat suitability, one federally/state-listed, proposed, Candidate or fully protected fish or wildlife species was determined to have the potential to occur within the study area: white-tailed kite.

Sensitive and Locally Rare Wildlife Species

A total of 11 sensitive or locally rare fish and wildlife species were considered to have the potential to occur within the study area: obscure bumble bee, Crotch bumble bee, western bumble bee, Cooper's hawk, sharp-shinned hawk, great blue heron (rookery sites), snowy egret (rookery sites), yellow warbler, pallid bat, hoary bat, and Yuma myotis bat.

Common Wildlife and Movement Corridors

No significant impacts on wildlife habitat or movement corridors are anticipated given the small scope of the project, which is not expected to significantly alter the existing aquatic habitats or surrounding upland habitats. The project will not introduce barriers to wildlife movement, and the study area will be available for species to move through immediately after project completion. Most wildlife species will be able to leave the project site on their own once work starts and therefore should not be impacted during construction. Preconstruction surveys for nesting birds and common wildlife as detailed below will minimize impacts to migratory birds and common wildlife species.

5.2. AVOIDANCE AND MINIMIZATION RECOMMENDATIONS

The following avoidance and minimization recommendations are based on our assessment of biological resources within the study area. Additional measures may be required by regulatory agencies (USFWS, NOAA Fisheries, CDFW, U.S. Army Corps of Engineers, and Regional Water Quality Control Board) during the permitting process for project impacts to special status species.

5.2.1 RIPARIAN AND WETLAND HABITAT

- Impacts to riparian habitat including removal of trees will be minimized to the extent possible.
- The District will obtain permits from regulatory agencies as needed for impacts to aquatic features, Mission Creek and riparian habitat.
- If trees are removed for project construction, trees will be replanted on site.
- Best Management Practices (BMPs) for erosion and sediment control will be implemented as detailed in Section 5.2.3.

5.2.2 SPECIAL STATUS PLANTS

- A special status plant surveys will be completed in August and September 2022 to determine if the two potentially occurring rare plant species: Congdon's tarplant (*Centromadia parryi* subsp. *congdonii*; CRPR 1B.1) and small spikerush (*Eleocharis parvula*; CRPR 4.3) occur on site.
- Any special status plants identified within the vicinity of the project area (within 50 feet of ground disturbance) will be marked in the field for visibility. A non-disturbance buffer zone will be established around each special status plant population and work in this buffer will be avoided.

- If it is not feasible to avoid disturbance or mortality, impacts will be reduced as feasible to minimize impacts to the special status plant population.
- If feasible, special status plants and/or seeds will be salvaged from areas of disturbance.
- Depending on the nature of the impacts and the species impacted, special status plant habitat will be restored or enhanced on site at a 1:1 ratio in areas that are currently disturbed or in areas that will be temporarily disturbed as a result of project implementation.
- Depending on the nature of the impacts and the species impacted, a five-year restoration mitigation and monitoring program may be developed and implemented to monitor restoration or enhancement of special status plant habitat.
- All work in the vicinity of special status plants shall be monitored by a biologist to ensure sensitive botanical resources are avoided.

5.2.3 SPECIAL STATUS WILDLIFE

The following avoidance and minimization measures outlined below are recommended.

General Special Status Wildlife Measures

- Preconstruction surveys for all special status and common wildlife species should be conducted within the study area by a qualified biologist immediately prior to equipment or material staging, pruning/grubbing, or ground-disturbing activities. The qualified biologist will search the area for special status and common wildlife species. If species are found, individuals will be relocated outside of the project area if the qualified biologist is permitted to do so by all regulatory agencies and determines that relocation is warranted.
- A qualified biologist should conduct an education program covering all the sensitive resources with potential to occur in the project area and the avoidance and minimization measures requiring implementation for all project personnel prior to the start of construction activities.

Migratory Birds

- If tree or vegetation removal, pruning, or grubbing activities are necessary, such activities should be conducted between September 1 and January 31, outside of the nesting season.
- If project construction begins during the nesting season (February 1 – August 31), pre-construction surveys should be conducted by a qualified biologist within the project area and should encompass adjacent habitats up to 300 feet from the project boundary, no more than one week prior to equipment or material staging, pruning/grubbing or ground-disturbing activities. The surveys will entail a variety of search techniques, as described by Martin and Geupel (1993). These include incidental flushing of an adult from the nest, watching parental behavior (e.g., carrying nest material or food), systematically searching nesting substrates, and use of call-broadcasts. If no active nests are found within the survey area, no further action is necessary.
- If active nests, i.e. nests with eggs or young present, are found within the survey area, non-disturbance buffers should be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, the nesting pair's tolerance to disturbance and the type/duration of potential disturbance. No work should occur within the non-disturbance buffers until the young have fledged as determined by a qualified biologist. If buffers are established and it is determined that project activities are resulting in nest disturbance, work in the nearby vicinity

of the nest should cease immediately and CDFW and USFWS Migratory Bird Permit Office should be contacted for further guidance.

Additional Species-Specific Measures

- Prior to the start of construction, a bat habitat assessment should be conducted to identify suitable bat roosting habitat including snags, rotten stumps, and trees with broken limbs, exfoliating bark, cavities, etc. Potential roosting habitat should be avoided to the maximum extent practicable. If no suitable roost sites are identified, no further minimization measures are necessary.
- If suitable roosting habitat is identified and will be removed by the project, a qualified biologist should survey suitable roost sites immediately prior to the removal. If any sign of roosting bats or observation of individual bats is observed, do not remove the roost and contact CDFW. If no sign of roosting bats is observed, tree removal should continue by first removing non-habitat features such as limbs smaller than 3 inches in diameter. The tree should then be left overnight to allow any bats using the tree/snag to find another roost during their nocturnal activity period. A qualified biologist should survey the trees/snags a second time the following morning prior to felling and removal. If suitable roosting habitat will be disturbed by presence and noise of equipment and workers for more than two hours (i.e. near bridges), a qualified biologist will be present to monitor the bat roosting habitat and will stop work if any disturbance to bats is detected and contact CDFW for further guidance.

5.2.4 General Avoidance and Minimization Recommendations

- A qualified biologist should be on site to ensure implementation of, and compliance with, all avoidance measures throughout the length of construction.
- Prior to the start of construction within areas containing sensitive biological resources, the resources should be delineated and conspicuously flagged to prevent impacts. If required, setback or non-disturbance buffer zones around these resources should be established and monitored by a biologist.
- All trash should be placed in secure containers with secure lids and removed from the site daily.
- Trash dumping, firearms, open fires, and pets should be prohibited in the construction area.
- A plan will be prepared that will identify Best Management Practices (BMPs) for erosion and sediment control and non-stormwater and material management to be implemented during construction; this will minimize impacts to sensitive habitats. At a minimum, the following BMPs will be implemented:
    - Any work within wetlands/waters will be conducted during the dry season.
    - All equipment will be properly maintained and free of leaks. Servicing and maintenance areas will be adequately contained to prevent spills from entering the riparian habitat. Spill containment kits will be kept on site at all times during construction operations and/or staging or fueling of equipment.
    - Erosion and sediment control measures for graded areas will include a combination of silt fences, fiber rolls, etc. as appropriate along toes of slopes or along edges of staging areas. No materials that use plastic or synthetic mono-filament netting will be used to avoid wildlife from getting entangled.

- Disturbed areas will be re-vegetated with an appropriate mixture of native seeds. Seeded areas will be blanketed with the appropriate erosion control material that will not entangle or trap wildlife (i.e., tightly-woven, non-mono-filament netting).

Section 6. References

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APPENDIX A LAWS, ORDINANCES & REGULATIONS

Laws, Ordinances & Regulations

FEDERAL REGULATIONS

FEDERAL ENDANGERED SPECIES ACT (FESA)

The Federal Endangered Species Act of 1973, as amended (FESA), was created to "conserve the ecosystems upon which endangered and threatened species depend." The U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration, National Marine Fisheries Service have authority over projects that may result in a "take" of a species listed as threatened or endangered under the FESA. Under the FESA, plant and wildlife species, including all lower taxa including subspecies and varieties, are listed threatened or endangered based on (A) the present or threatened destruction, modification, or curtailment of their habitat or range, (B) overutilization for commercial, recreational, scientific, or educational purposes, (C) disease or predation, (D) the inadequacy of existing regulatory mechanisms, or (E) other natural or manmade factors affecting their continued existence. FESA listing categories include endangered, threatened and candidates for listing. FESA provides protection for species listed as endangered, and prohibits the "take" of such species in areas under federal jurisdiction or in violation of state law. A "take" is defined as any action to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Species listed as threatened do not warrant listing as endangered and are not provided the same protection under Section 9; however, USFWS often applies the same protection as authorized by Section 4(d) of the FESA. Section 4(d) also allows for exceptions to the take rule under special circumstances. If a project would result in a take of a federally listed species, either an incidental take permit, under Section 10(a) of the FESA, or a federal interagency consultation under Section 7 of FESA, is required prior to the take. Current inventories published for species listed under the FESA include the *Endangered and Threatened Wildlife and Plant*s (USFWS 1999), *Endangered and Threatened Wildlife and Plants; Review of Native Species That are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions;* , *Endangered and Threatened Species; Establishment of Species of Concern List, Addition of Species to Species of Concern List, Description of Factors for Identifying Species of Concern, and Revision of Candidate Species List Under the Endangered Species Act* (NOAA 2004).

CLEAN WATER ACT OF 1977

The U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) have jurisdiction over "Waters of the United States, which include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Waters of the United States include marine waters, tidal areas, and stream channels. Under federal regulations, wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" [33 C.F.R. §328.3(b)]. Presently, to be considered a wetland, a site must exhibit three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.

Certain wetlands and waters may not be subject to USACE jurisdiction

under Section 404 of the CWA, pursuant to the "SWANCC" decision, *Solid Waste Agency of Northern Cook County vs. United Stated Army Corps of Engineers* (2001) 531 U.S. 159. Although isolated wetlands may not be subject to USACE jurisdiction under Section 404, they are considered "waters of the State" under California's Porter-Cologne Water Quality Control Act (Cal. Water Code §§ 13020, et seq.) and, as such, are subject to regulation by Regional Water Quality Control Boards (RWQCB). There are nine RWQCBs under the State Water Resources Control Board.

Policies regulating the loss of wetlands generally stress the need to compensate for wetland acreage losses by creating wetlands from non-wetland habitat on at least an acre-for-acre basis. That is, mitigation requiring a no-net-loss of wetland functions and values is typically required. Projects that cause the discharge of dredged or fill materials in Waters of the United States require permitting by the USACE. Actions affecting small areas of jurisdictional Waters may qualify for a Nationwide Permit, provided conditions of the permit are met (such as avoiding impacts to threatened or endangered species or to important cultural sites). Projects that do not meet the Nationwide Permit conditions, or projects that disturb a larger area, require an Individual Permit. The process for obtaining an Individual Permit requires a detailed alternatives analysis and development of a comprehensive mitigation/monitoring plan.

Section 401 of the Clean Water Act is discussed below.

WATERS OF THE UNITED STATES

"Waters of the United States", which includes "wetlands" and "other waters", are defined by 33 CFR §328.3 as follows. *The Navigable Waters Protection Rule: Definition of ''Waters of the United States*" (USACE and EPA 2020) clarifies which features are regulated by USACE.

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- All interstate waters including interstate wetlands.
- All "other waters" such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    - which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - which are used or could be used for industrial purpose by industries in interstate commerce.
- All impoundments of waters otherwise defined as waters of the United States under the definition.
- Tributaries (intermittent and perennial) of waters identified above.
- The territorial seas.
- Wetlands adjacent to waters (other than wetlands) identified above.

The Corps generally does not consider the following waters to be "waters of the United States." However, the Corps reserves the right on a case-by-case basis to determine that a particular water body within these categories of waters is a water of the United States. The Environmental Protection Agency also has the right to determine on a case-by-case basis if any of these waters are "waters of the United States."

- Non-tidal drainage and irrigation ditches excavated on dry land.
- Artificially irrigated areas which would revert to upland if the irrigation ceased.

- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- Water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States [see 33 CFR 328.3(a)].

<u>Wetlands</u>
Corps jurisdictional "wetlands", as defined by 33 CFR §328.3(b), are those areas which are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. *The Navigable Waters Protection Rule: Definition of Waters of the United States* (USACE and EPA 2020) clarifies that only "adjacent wetlands" are jurisdictional.

<u>Ordinary High Water Mark</u>
The Corps' jurisdiction over "other waters" extends to the limit of the Ordinary High Water Mark or the upward extent of any adjacent wetland. The Ordinary high water mark, as defined by 33 CFR §328.3(e), is the visible line on the shore/bank established by the fluctuations of water and indicated by physical characteristics such as:

- A clear, natural line impressed on the bank;
- shelving;
- changes in the character of soil;
- destruction of terrestrial vegetation;
- the presence of litter and debris; or
- other appropriate means that consider the characteristics of the surrounding areas.

RIVERS AND HARBORS ACT

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers, to construct any structure in or over any "navigable water of the United States." Structures or work outside the limits defined as navigable waters requires a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States. It includes without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (*e.g.* riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent obstacle or obstruction.

Navigable waters are generally defined as waters of the United States that are subject to the ebb and flow of the tide, shoreward to the mean high water mark, and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce, as defined in 32 CFR §322.2(a).

MIGRATORY BIRD TREATY ACT (MBTA)

The Migratory Bird Treaty Act (16 U.S.C. 703-712), administered by the U.S. Fish and Wildlife Service, implements four treaties between the United States and Canada, Mexico, Japan and Russia, respectively, to manage and conserve migratory birds that cross national borders. The Migratory Bird Treaty Act makes it unlawful in any manner, unless expressly authorized by permit pursuant to federal regulations, to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export at any time, or in any manner, any migratory bird, or any part, nest, or egg of any such bird. The definition of “take” is defined as any act to “pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture or collect.” This includes most actions, direct and indirect, that could result in “take” or possession, whether it is temporary or permanent, of any protected species (APLIC and USFWS 2005d). Although harassment and habitat modification do not constitute a take in themselves under the Migratory Bird Treaty Act or Fish and Game Code, such actions that result in direct loss of birds, nests or eggs including nest abandonment or failure are considered take under such regulations. A list of migratory birds protected under the Migratory Bird Treaty Act, available in Section 10.13 of Title 50 of the Code of Federal Regulation, excludes nonnative species that have not been introduced into the U.S. or its territories, and species that belong to the families not listed in any of the four treaties underlying the Migratory Bird Treaty Act, such as wrentit (*Chamaea fasciata*), European starling (*Sturnus vulgaris*), California quail (*Callipepla californica*), Ring-necked Pheasant (*Phasianus colchicus*) and Chukar (*Alectoris chukar*), among other species less common in California.

On December 8, 2004 the U.S. Congress passed the Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108–447; MBTRA), which excludes all migratory birds nonnative or have been human introduced to the U.S. or its territories. It defines a native migratory bird as a species present within the U.S. and its territories as a result of natural biological or ecological processes. The USFWS published a list of the bird species excluded from the Migratory Bird Treaty Act on March 15, 2005 (70 FR 12710), which included two species commonly observed in the U.S., the rock pigeon (*Columba livia*) and domestic goose (*Anser anser* ‘*domesticus’*).

BALD AND GOLDEN EAGLE PROTECTION ACT

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; June 8, 1940) as amended, provides protection for the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession and commerce of such birds, their nests, eggs or feathers unless expressly authorized by permit pursuant to federal regulations. The Act also provides criminal and civil penalties for violations of the Act and defines take as any action to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.

STATE REGULATIONS

CALIFORNIA ENDANGERED SPECIES ACT (CESA)

The California Endangered Species Act of 1984, administered by the California Department of Fish and Wildlife (CDFW), recognizes that certain species of fish, wildlife and plants are in danger of, or threatened with, extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors. The Legislature recognized that these species of fish, wildlife and plants are of ecological, educational, historical, recreational, aesthetic, economic and scientific value to the people of the state, and the conservation, protection and enhancement of these species and their habitat is of statewide concern. The CESA built on the California Native Plant Protection Act (NPPA) (discussed below) and increased regulatory protection for plant species to parallel the CESA. Listing categories under the CESA include endangered, threatened, rare or candidate for listing (Cal. Fish and Game Code §§ 2062, 2067 and 2068).

CESA requires state agencies to consult with the CDFW when preparing California Environmental Quality Act (CEQA) documents to ensure that the state lead agency actions do not jeopardize the existence of listed species. It directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species.

CESA prohibits the taking of state-listed endangered or threatened plant and wildlife species. CDFW exercises authority over mitigation projects involving state-listed species, including those resulting from CEQA mitigation requirements. CDFW may authorize a taking through an incidental take permit, if the impacts of the take are minimized and fully mitigated. Mitigation often takes the form of an approved habitat management plan or management agreement that avoids or compensates for possible jeopardy. CDFW requires preparation of mitigation plans in accordance with published guidelines.

California Fish and Game Code

The California Fish and Game Code provides protection for California's plant and wildlife species and precludes taking of species listed as fully protected by the CDFW. Section 86 defines take as any action to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. Unless expressly authorized under Chapter 1.5, Article 3, Section 2081, which outlines exceptions for taking of endangered and threatened species, endangered, threatened and fully protected species shall not be taken for any purpose. Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird; §3503.5 prohibits the take, possession, or needless destruction of any nests, eggs or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys and falcons, among others)or Strigiformes (owls); §3511 prohibits the take or possession of fully protected birds; and §3513 prohibits the take or possession of any migratory nongame bird or part thereof as designated in the Migratory Bird Treaty Act. Section 4700 provides protection for fully protected mammals unless expressly authorized under §2081.7. Fully protected mammals include Morrow Bay kangaroo rat, bighorn sheep, except Nelson bighorn sheep (*Ovis canadensis nelsoni*), northern elephant seal, Guadalupe fur seal, ring-tailed cat, Pacific right whale, salt-marsh harvest mouse, southern sea otter and wolverine. Section 5050 provides protection for fully protected amphibians and reptiles unless expressly authorized under §2081.7. Fully protected amphibians and reptiles include blunt-nosed leopard lizard, San Francisco garter snake, Santa Cruz long-toed salamander, limestone salamander and black toad. Section 5515 provides protection for fully protected fish unless expressly authorized under §2081.7. Fully protected fish include Colorado River squawfish, thicktail chub, Mohave chub, Lost River sucker, Modoc sucker, shortnose sucker, humpback sucker, Owens River pupfish, unarmored threespine stickleback and rough sculpin.

Porter-Cologne Water Quality Control Act and Section 401 of the Clean Water Act

The Regional Water Quality Control Board administers both the Porter-Cologne Water Quality Control Act and Section 401 of the Clean Water Act. The Porter-Cologne Water Quality Control Act requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB (Cal. Water Code Section 13260). Waters of the State are "any surface water or groundwater, including saline waters, within the boundaries of the state" [Cal. Water Code Section 13050(e)].

Pursuant to Section 401 of the Clean Water Act, the RWQCBs consider waters of the State to include (without limitation) rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked bay lands, seasonal wetlands, and riparian woodlands. The RWQCBs have also claimed jurisdiction and exercised discretionary authority over "isolated waters", as discussed above.

NATIVE PLANT PROTECTION ACT (NPPA)

The Native Plant Protection Act of 1977, which is implemented by the CDFW, was created to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the CDFW the authority to designate native plants as endangered or rare and to regulate, through permits, activities such as collecting, transporting, or selling plants protected by the NPPA. The NPPA also provides the definitions of native, threatened and endangered plants in Section 1901 of the California Fish and Game Code.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The California Environmental Quality Act of 1970 requires public agencies to evaluate the environmental implications of their actions, and to prevent environmental effects by avoiding or reducing significant impacts of their decisions, where feasible. CEQA was intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects. In enacting CEQA, the Legislature expressed a policy that public agencies should not approve projects as proposed if there are such feasible alternatives or mitigation measures. Among its goals, CEQA was intended "to preserve for future generations representations of all plant and animal communities" (Cal. Pub. Res. Code §21001c). Through this process impacts and mitigation to state and federally listed plant species are discussed.-

The California Native Plant Society (CNPS) has developed and maintains an inventory of rare, Threatened and Endangered plants of California. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. The inventory presents a ranking system for rare plants within the state known as California Rare Plant Ranks. The CNPS inventory is endorsed by the CDFW and effectively serves as its list of "candidate" plant species. The following identifies the definitions of the California Rare Plant Ranks:

- Rank 1A: Plants presumed to be extinct in California;
- Rank 1B: Plants that are rare, Threatened, or Endangered in California and elsewhere;
- Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
- Rank 2B: Plants that are rare, Threatened, or Endangered in California, but are more common elsewhere;
- Rank 3: Plants about which more information is needed (a review list): and
- Rank 4: Plants of limited distribution (a watch list).

Rank 1B and 2 species are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code. As part of the CEQA process, such species should be fully considered, as they meet the definition of Threatened or Endangered under the NPPA and Sections 2062 and 2067 of the California Fish and Game Code. Rank 3 and 4 species are considered to be either plants about which more information is needed or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for state listing, and CNPS and CDFW recommend that these species be evaluated for consideration during the preparation of CEQA documents (CNPS 2001), as some of these species may meet NPPA and CESA criteria as Threatened or Endangered.

In addition, CEQA requires that impacts to "resources that are rare or unique to that region" be evaluated [CEQA Guidelines 15125(c)]. This includes botanical resources that are, but not limited to, peripheral populations and disjunct subpopulations. These are informal terms that refer to those species that might be declining or be in need of concentrated conservation actions to prevent decline, but have no legal protection of their own. Also, CEQA Guidelines Section 15380 states "a species not included in any listing…shall nevertheless be considered to be rare or Endangered if the species is likely to become Endangered within the foreseeable future throughout all or a significant portion of its range and may be considered Threatened as that term is used in the ESA."

APPENDIX B SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Federal/State Endangered or Threatened and California Rare Species					
Chloropyron palmatum palmate-bracted bird's-beak	FE CE 1B.1	Occurs in chenopod scrub, and valley and foothill grassland on alkaline substrates between 5-155 meters elevation. Known from ALA, COL, FRE, GLE, MAD, and YOL counties. Presumed extirpated from SJQ county.	May-October annual herb (hemiparasitic)	Although suitable vegetation associations are present in the survey area, this species does not occur in coastal habitats. Nearest CNDDB occurrence (EONDX #3037) is a specific area at Springtown Wetlands Preserve, approximately 16 miles from the study area.	Not Expected
Chorizanthe robusta var. *robusta* robust spineflower	FE CEQA 1B.1	Occurs in chaparral, cismontane woodland, coastal dunes, and coastal scrub, sometimes on gravelly or sandy substrates between 3-300 meters elevation. Known from , SCR and SFO counties. Presumed extirpated from ALA, SMT, and SCL counties.	April-September annual herb	Although suitable vegetation associations are present in the survey area the necessary sandy substrate is absent. Nearest CNDDB occurrence (EONDX #41067) is a non-specific record from 1882, from the vicinity of San Jose, approximately 10 miles from the study area and possibly extirpated.	Not Expected
Holocarpha macradenia Santa Cruz tarplant	FT CE 1B.1	Occurs in coastal prairie, coastal scrub, and valley and foothill grassland often on clay, or sandy soils between 10-220 meters elevation. Known from MNT and SCR counties. Presumed extirpated from ALA, CCA and MRN counties.	June-October annual herb	Although suitable vegetation associations are present in the survey area, the preferred clay substrate is absent and this species. This species is also presumed extirpated from ALA county. Nearest CNDDB occurrence (EONDX #48966) is a non-specific historic location east of San Lorenzo, mapped by CNDDB approximately 11 miles northwest of the study area.	Not Expected

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Lasthenia conjugens Contra Costa goldfields	FE CEQA 1B.1	Occurs in cismontane woodland, alkaline playas, valley and foothill grassland, and vernal pools from 0-470 meters elevation. Occurs on mesic sites. Known from ALA, CCA, MNT, NAP, and SOL counties. Presumed extirpated from MEN, SBA, and SCL counties.	March-June annual herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #30917) is a specific area at Sky Sailing Airport, approximately 3 miles south of the study area.	Not Observed Would have been detectable during rare plant surveys.
Suaeda californica California seablite	FE CEQA 1B.1	Occurs in marshes and swamps between 0-15 meters elevation. Known from SLO, and VEN counties. Presumed extirpated from ALA, CCA, SFO, and SCL counties.	July-October perennial evergreen shrub	Although suitable vegetation associations are present in the survey area, this species has been presumed extirpated from the ALA county for some time. Nearest CNDDB occurrence (EONDX #49214) is a non-specific historic location north of Mud Slough, Fremont, mapped by CNDDB approximately 2.4 miles south of the study area.	Not Observed Vegetative material of this species would have been detectable during rare plant surveys.
California Native Plant Society Listed and Locally Rare Species					
Acanthomintha lanceolata Santa Clara thorn-mint	None CEQA 4.2	Occurs in chaparral, cismontane woodland, and coastal scrub on rocky substrates between 80-1200 meters elevation. Known from ALA, FRE, MER, MNT, SBT, SCL, SJQ, and STA counties.	March-June annual herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this taxon. Nearest herbarium record is a 1993 Ertter collection from Sunol Regional Wilderness, approximately 7.5 miles from the study area.	Not Expected
Amsinckia lunaris bent-flowered fiddleneck	None CEQA 1B.2	Occurs in coastal bluff scrub, cismontane woodland and valley and foothill grassland from 3-500 meters elevation. Many collections are old. Known from ALA, CCA, COL, LAK, MRN, NAP, SCR, SMT and SON counties. May be present in SIS and SHA counties.	March-June annual herb	Although suitable vegetation associations are present in the survey area this species is not known from habitats near the coast. Nearest CNDDB occurrence (EONDX #109711) is a non-specific record from 1933, from the vicinity of Redwood City, approximately 14 miles from the study area.	Not Expected

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Androsace elongata subsp. *acuta* California androsace	None CEQA 4.2	Occurs in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland between 150-1305 meters elevation. Known from ALA, CCA, COL, FRE, GLE, KRN, LAX, MER, MNT, RIV, SBD, SBT, SCL, SDG, SIS, SJQ, SLO, SMT, STA, and TEH counties.	March-June annual herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this taxon. Nearest herbarium record is a Thomas collection from the vicinity of Stanford University, hills south of Junipero Serra Blvd., approximately 15 miles from the study area.	Not Expected
Astragalus tener var. *tener* alkali milk-vetch	None CEQA 1B.2	Occurs on alkaline substrates in playas, valley and foothill grassland on adobe clay, and vernal pools from 1-60 meters elevation. Known from ALA, MER, NAP, SOL and YOL counties. Presumed extirpated from CCA, MNT, SBT, SCL, SFO, SJQ, SON, and STA counties.	March-June annual herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #6950) is a specific area in Albrae, approximately 3.6 miles from the study area.	Not Observed Would have been detectable during rare plant surveys.
Atriplex coronata var. *coronata* crownscale	None CEQA 4.2	Occurs on alkaline, often clay, substrates in chenopod scrub, valley and foothill grassland, and vernal pools at elevations of 1-590 meters. Known from ALA, CCA, FRE, GLE, KNG, KRN, MER, MNT, SLO, SOL, TUL, and STA counties. May occur in SJQ county.	March-October annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline substrate is absent and this species is not distributed along the coast. Nearest herbarium record is an Ertter collection from 1991 from the Springtown wetlands of North Livermore, approximately 16.5 miles from the study area.	Not Expected
Atriplex depressa brittlescale	None CEQA 1B.2	Occurs on alkaline and clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools from 1 to 320 meters elevation. Known from ALA, CCA, COL, FRE, GLE, KRN, MER, SOL, STA, TUL and YOL counties.	April-October annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline substrate is absent and this species is not distributed along the coast. Nearest CNDDB occurrence (EONDX #51025) is a specific point 0.5 air mile South Southwest of Heartman Road intersection with North Livermore Avenue, approximately 15 miles from the study area.	Not Expected

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Atriplex minuscula lesser saltscale	None CEQA 1B.1	Occurs in chenopod scrub, playas, and valley and foothill grassland on alkaline, sandy substrates between 15-200 meters elevation. Known from ALA, BUT, FRE, KNG, KRN, MAD, MER, and TUL counties. Presumed extirpated from STA county.	May-October annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline substrate is absent and this species is not distributed along the coast. Nearest CNDDB occurrence (EONDX #83621) is a non-specific area around the Don Edwards National Wildlife Refuge, approximately 15 miles from the study area.	Not Expected
Balsamorhiza macrolepis big-scale balsamroot	None CEQA 1B.2	Occurs in chaparral, cismontane woodland, and valley and foothill grassland sometimes on Serpentinite substrates between 45-1555 meters elevation. Known from ALA, AMA, BUT, COL, ELD, LAK, MPA, NAP, PLA, SCL, SHA, SOL, SON, TEH, and TUO counties.	March-June perennial herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this species. Nearest CNDDB occurrence (EONDX #64823) is a non-specific record from 1997 at Fairmont Ridge, approximately 14 miles from the study area.	Not Expected
Calochortus umbellatus Oakland star-tulip	None CEQA 4.2	Occurs in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland, often on serpentine, between 100 and 700 meters. Known from ALA, CCA, MRN, SCL, and SMT counties.	March-May perennial bulbiferous herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this species and serpentine substrates this species prefers are absent. Nearest herbarium record is a 1935 Sharsmith collection from the southeast end of Mount Day Ridge, approximately 17 miles from the study area.	Not Expected
Campanula exigua chaparral harebell	None CEQA 1B.2	Occurs in chaparral between 275-1250 meters elevation. Known from ALA, CCA, FRE, MER, SBT, SCL, and STA counties.	May-June annual herb	No suitable chaparral vegetation associations are present.	None

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Centromadia parryi subsp. *congdonii* Congdon's tarplant	None CEQA 1B.1	Occurs in alkaline valley and foothill grassland from 1-230 meters elevation. Known from ALA, CCA, MNT, SCL, SLO, and SMT counties. Presumed extirpated from SCR and SOL counties.	May-October (November) annual herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #84650) is a specific point in Fremont Central Park 175 feet from the study area. In 2015, Schweitzer surveyed this occurrence area and could only locate *C. pungens*; further surveys needed to confirm that *C. parryi* subsp. *congdonii* occurs at this site.	Possible
Chloropyron maritimum subsp. *palustre* Point Reyes salty bird's-beak	None CEQA 1B.2	Occurs in marshes and swamps between 0-10 meters elevation. Known from HUM, MRN, SCL, SFO, SLO, and SON counties. Presumed extirpated from ALA and SMT counties.	June-October annual herb (hemiparasitic)	Although suitable vegetation associations are present in the survey area, the necessary host plants for this hemiparasite are absent or limited on site. Nearest CNDDB occurrence (EONDX #17542) is a non-specific area mapped by CNDDB as a best guess form two 1905 collections by Smith, approximately 6.3 miles from the study area. Presumed extirpated at this occurrence.	Not Expected
Clarkia concinna subsp. *automixa* Santa Clara red ribbons	None CEQA 4.3	Occurs in chaparral, and cismontane woodland between 90-1500 meters elevation. Known from ALA, SCL, and SCR, SMT counties.	(April)May-June (July) annual herb	No suitable chaparral or cismontane woodland vegetation associations are present.	None
Delphinium californicum subsp. *interius* Hospital Canyon larkspur	None CEQA 1B.2	Occurs in chaparral, cismontane woodland, and coastal scrub between 195-1095 meters elevation. Known from ALA, CCA, MER, MNT, SBT, SCL, SJQ, and STA counties.	April-June perennial herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this species. It also does not occur along the coast. Nearest CNDDB occurrence (EONDX #51437) is a non-specific area around Arroyo Mocho, approximately 14 miles from the study area	Not Expected
Eleocharis parvula small spikerush	None CEQA 4.3	Occurs in marshes and swamps between 1-3020 meters elevation. Known from ALA, CCA, HUM, MRN, NAP, ORA, SLO, SOL, SON, and VEN counties.	(April)June-August (September) perennial herb	Suitable vegetation associations are present in the survey area. Nearest herbarium record is a 2012 Hillman collection from Island Ponds approximately 22 miles from the study area.	Possible

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Eriogonum umbellatum var. *bahiiforme* bay buckwheat	None CEQA 4.2	Occurs in cismontane woodland and lower montane coniferous forest on rocky, often on Serpentinite substrates between 700-2200 meters elevation. Known from ALA, CCA, COL, GLE, MEN, MNT, NAP, SBA, SBT, SCL, SON, and TEH counties.	July-September perennial herb	No suitable cismontane woodland or lower montane coniferous forest vegetation associations are present.	None
Eriophyllum jepsonii Jepson's woolly sunflower	None CEQA 4.3	Occurs in chaparral, cismontane woodland, and coastal scrub sometimes on serpentine substrates between 200-1,025 meters elevation. Known from ALA, CCA, ELD, SBT, SCL, SLO, and STA counties.	April-June perennial herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this species. Nearest herbarium record is an 1891 Jepson collection from the Mocho and Arroyo Valley, south of Livermore, approximately 14 miles from the study area.	Not Expected
Eryngium aristulatum var. *hooveri* Hoover's button-celery	None CEQA 1B.1	Occurs in vernal pools between 3-45 meters elevation. Known from ALA, SBT, SLO, and SMT counties. Possibly extirpated from SCL county.	(June)July (August) annual/perennial herb	No suitable vernal pool vegetation associations are present.	None
Eryngium jepsonii Jepson's coyote-thistle	None CEQA 1B.2	Occurs in valley and foothill grassland, and vernal pools on clay soils between 3-300 meters elevation. Known from ALA, CCA, NAP, SMT, SOL, and YOL counties.	April-August perennial herb	Although suitable vegetation associations are present in the survey area, this species requires heavy clay soil substrate which is absent. Nearest CNDDB occurrence (EONDX # 103662) is a non-specific record from 2010 mapped in the San Leandro approximately 16 miles from the study area.	Not Expected
Extriplex joaquinana San Joaquin spearscale	None CEQA 1B.2	Occurs in alkaline soils in chenopod scrub, meadows and seeps, playas, and valley and foothill grasslands from 1 to 835 meters elevation. Known from ALA, CCA, COL, FRE, GLE, MER, MNT, NAP, SBT, SOL and YOL counties. Presumed extirpated from SCL, SJQ and TUL counties.	April-October annual herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX # 49795) is a non-specific record from 1896 mapped in the vicinity of Warm Springs, approximately 3 miles from the study area.	Not Observed Would have been detectable during rare plant surveys

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Fritillaria agrestis stinkbells	None CEQA 4.2	Occurs on clay and sometimes serpentine substrates in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill woodland at elevations of 10 to 1,555 meters. Known from ALA, CCA, FRE, MRN, MEN, MER, MNT, MPA, PLA, SAC, SBA, SBT, SCL, SLO, STA, TUO, VEN, and YUB counties. Presumed extirpated in SMT county.	March-June perennial bulbiferous herb	Although suitable vegetation associations are present in the survey area the necessary heavy clay substrate is absent and this species does not occur along coastal flatlands in ALA county. Nearest herbarium record is a 2009 Guise collection from Morgan Territory Road in Livermore, approximately 18 miles from the study area.	Not Expected
Fritillaria liliacea fragrant fritillary	None CEQA 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland near the coast, on clay or serpentinite from 3-410 meters elevation. Known from ALA, CCA, MNT, MRN, SBT, SCL, SFO, SMT, SOL and SON counties.	February-April perennial bulbiferous herb	Although suitable vegetation associations are present in the survey area the necessary heavy clay substrate is absent and this species does not occur along coastal flatlands in ALA county. Nearest CNDDB occurrence (EONDX #18428) is a historic record at Alum Rock Spring approximately 12 miles from the study area.	Not Expected
Helianthella castanea Diablo helianthella	None CEQA 1B.2	Occurs in broadleaved upland forest, chaparral cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland from 60-1,300 meters elevation. Known from ALA, CCA, and SMT counties. Presumed extirpated from MRN and SFO counties.	March-June perennial herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this species. Nearest CNDDB occurrence (EONDX #80506) is a non-specific area at Garin Woods, mapped by CNDDB approximately 7 miles northwest of the study area.	Not Expected
Hoita strobilina Loma Prieta hoita	None CEQA 1B.1	Occurs usually on serpentinitic and mesic sites in chaparral, cismontane woodland, and riparian woodland from 30-860 meters elevation. Known from CCA, SCL, and SCR counties. Presumed extirpated from ALA county.	May-July (August-October) perennial herb	Although suitable vegetation associations are present in the survey area, the mesic microhabitats and serpentine substrates this species prefers are absent. Nearest CNDDB occurrence (EONDX #50139) is a non-specific record from 1865 approximately 13 miles northwest of the study area.	Not Expected
Isocoma menziesii var. *diabolica* Satan's goldenbush	None CEQA 4.2	Occurs in cismontane woodland between 15-400 meters elevation. Known from MNT, SBT, and SCL counties.	August-October perennial shrub	No suitable cismontane woodland vegetation associations are present.	None

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Lasthenia ferrisiae Ferris' goldfields	None CEQA 4.2	Occurs in vernal pools between 20-700 meters elevation. Known from ALA, BUT, CCA, COL, FRE, KNG, KRN, MER, MNT, SAC, SJQ, SLO, SOL, STA, TUL, and YOL counties.	February-May annual herb	No suitable vernal pool vegetation associations are present.	None
Leptosiphon acicularis bristly leptosiphon	None CEQA 4.2	Occurs in chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland between 55-1500 meters elevation. Known from ALA, BUT, COL, HUM, KRN, LAK, MEN, MRN, NAP, PLA, SBT, SCL, SCR, SMT, SOL, SON, and YUB counties.	April-July annual herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this taxon. Nearest herbarium record is a 1894 Burnham collection from San Mateo, approximately 20 miles from the study area.	Not Expected
Leptosiphon ambiguus serpentine leptosiphon	None CEQA 4.2	Occurs in cismontane woodland, coastal scrub, and valley and foothill grassland usually on Serpentinite substrates between 120-1130 meters elevation. Known from ALA, BUT, CCA, ELD, FRE, MER, MNT, SBT, SCL, SCR, SJQ, SMT, and STA counties.	March-June annual herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this species and serpentine substrates this species prefers are absent. The nearest herbarium record is a 1993 Ertter Collection from Sunol Regional Wilderness, approximately 7.5 miles from the study area.	Not Expected
Leptosiphon grandiflorus large-flowered leptosiphon	None CEQA 4.2	Occurs in cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub, and valley and foothill grassland usually on sandy substrates between 5-1220 meters elevation. Known from ALA, CCA, HUM, KRN, LAK, MEN, MER, MNO, MNT, MRN, SBT, SCL, SCR, SDG, SFO, SLO, SMT, SON, and STA counties. Presumed extirpated from SBA county.	April-August annual herb	Although suitable vegetation associations are present in the survey area the preferred sandy substrates are absent. Nearest herbarium record is a 1904 Heller collection from along Mt. Hamilton Road 14 miles from San Jose, approximately 20 miles from the study area.	Not Expected

SPECIES NAME COMMON NAME	FEDERAL, STATE, CNPS LISTING & HCP/NCCP COVERAGE[1]	HABITAT PREFERENCES, DISTRIBUTION INFORMATION, & ADDITIONAL NOTES*	FLOWERING PHENOLOGY/ LIFE FORM	HABITAT SUITABILITY & LOCAL DISTRIBUTION	POTENTIAL FOR OCCURRENCE
Lessingia hololeuca woolly-headed lessingia	None CEQA 3	Occurs in broadleafed upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland on clay, serpentine soils between 15-305 meters elevation. Known from ALA, FRE, MEN, MNT, MRN, NAP, SCL, SCR, SDG, SMT, SOL, SON, TEH, TUO, and YOL counties.	June-October annual herb	Although suitable vegetation associations are present in the survey area the preferred serpentine substrate is absent. Nearest herbarium record is a 1940 Holdenried collection from Calaveras Dam, approximately 8.5 miles from the study area.	Not Expected
Malacothamnus arcuatus arcuate bush-mallow	None CEQA 1B.2	Occurs in chaparral, and cismontane woodland between 15-355 meters elevation. Known from SCL, SCR, and SMT counties.	April-September perennial deciduous shrub	No suitable chaparral or cismontane woodland vegetation associations are present.	None
Malacothamnus hallii Hall's bush-mallow	None CEQA 1B.2	Occurs in chaparral, coastal scrub between 10-760 meters elevation. Known from CCA, MER, SCL, and STA counties.	(April)May-September (October) perennial deciduous shrub	Although suitable vegetation associations are present in the survey area this species is not known from the coast and it has never been recorded from ALA county. Nearest CNDDB occurrence (EONDX #30509) is a non-specific record from 1976 located approximately 13 miles from the study area in the vicinity of San Jose.	Not Expected
Mielichhoferia elongata elongate copper moss	None CEQA 4.3	Occurs in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, subalpine coniferous forest usually on Acidic, sometimes on Carbonate, Metamorphic, often on roadsides, usually vernally mesic substrates between 0-1960 meters elevation. Known from BUT, FRE, HUM, LAK, MNT, MPA, MRN, NEV, PLA, PLU, SCL, SCR, SIE, SIS, SLO, SMT, TRI, TUL, and TUO counties.	moss	Although suitable vegetation associations are present in the survey area the preferred substrates are absent. This species has also never been recorded in ALA county. Nearest herbarium record is a 2011 Kellman collection from Love Creek Road, in Santa Cruz County approximately 50 miles from the study area.	Not Expected
Monolopia gracilens woodland woollythreads	None CEQA 1B.2	Occurs in broadleafed upland forest, chaparral, cismontane woodland, north coast coniferous forest, and valley and foothill grassland on Serpentinite substrates between 100-1200 meters elevation. Known from ALA, CCA, MNT, SBT, SCL, SCR, SLO, and SMT counties.	(February)March-July annual herb	Although suitable vegetation associations are present in the survey area, the serpentine substrates this species prefers are absent. Nearest CNDDB occurrence (EONDX #80201) is a non-specific record from the Oakland Hills approximately 13 miles northwest of the study area.	Not Expected

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Navarretia prostrata prostrate vernal pool navarretia	None CEQA 1B.2	Occurs in coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools between 3-1210 meters elevation. Known from ALA, FRE, LAX, MER, MNT, ORA, RIV, SBT, SDG, and SLO counties. Possibly extirpated from SBD county.	April-July annual herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #47979) is a specific record from 2001 from Pacific Commons Preserve approximately 3 miles south of the study area.	Not Observed Would have been detectable during rare plant surveys
Piperia michaelii Michael's rein orchid	None CEQA 4.2	Occurs in chaparral, cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal scrub, and lower montane coniferous forest between 3-915 meters elevation. Known from ALA, CCA, LAK, MER, MNT, MRN, SBT, SCR, SLO, SMT, and TUO counties. Possibly extirpated from VEN county.	April-August perennial herb	Although suitable vegetation associations are present in the survey area this species prefers chaparral and oak woodlands locally which are absent. Nearest herbarium record is a 2002 Corelli collection from along Jasper Ridge Biological Preserve, approximately 17 miles from the study area.	Not Expected
Plagiobothrys glaber hairless popcornflower	None CEQA 1A	Occurs in marshes and swamps, meadows and seeps between 15-180 meters elevation. Presumed extirpated from ALA, MRN, SBT, and SCL counties.	March-May annual herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #29871) is a non-specific area at Hall's Station, near Alvarado, mapped by CNDDB approximately 5.3 miles northwest of the study area.	Not Observed Would have been detectable during rare plant surveys
Polemonium carneum Oregon polemonium	None CEQA 2B.2	Occurs in coastal prairie, coastal scrub, and lower montane coniferous forest between 0-1830 meters elevation. Known from ALA, DNT, HUM, MRN, SFO, SIS, SMT, and SON counties.	April-September perennial herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #73955) is a non-specific record from 1932 approximately 6 miles north of the study area, mapped by CNDDB as a best guess near the headwaters of Stonybrook Creek.	Not Observed Vegetative material of this species would have been detectable during rare plant surveys.

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Puccinellia simplex California alkali grass	None CEQA 1B.2	Occurs in alkaline and vernally mesic soils, sinks, flats and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland and vernal pools from 2 to 930 meters elevation. Known from ALA, BUT, CCA, COL, FRE, GLE, KRN, LAK, LAX, MAD, MER, NAP, SBD, SCL, SCR, SLO, SOL, STA, TUL, and YOL counties. Presumed extirpated from KNG county.	March-May annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline substrate is absent. Nearest CNDDB occurrence (EONDX #100203) is a non-specific record from 2003 from Don Edwards San Francisco Bay National Wildlife refuge approximately 4 miles south-southwest of the study area.	Not Expected
Ranunculus lobbii Lobb's aquatic buttercup	None CEQA 4.2	Occurs in mesic soils in cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools from 15-470 meters elevation. Known from ALA, CCA, MEN, MRN, NAP, SOL and SON counties. Possibly extirpated from SMT and SCR counties.	February-May annual herb (aquatic)	Suitable vegetation associations are present in the survey area. Nearest herbarium record is a 1972 Heckard collection from Canada Road, southwest of Upper Crystal Springs Reservoir, approximately 20 miles from the study area.	Not Observed Would have been detectable during rare plant surveys
Senecio aphanactis chaparral ragwort	None CEQA 2B.2	Occurs in coastal scrub, chaparral, and cismontane woodland on alkaline soils from 15-800 meters elevation. Known from ALA, CCA, FRE, LAX, MER, MNT, ORA, RIV, SBA, SCL, SCT, SCZ, SDG, SLO, SOL, SRO, and VEN counties.	January-April (May) annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline habitat is absent. Nearest CNDDB occurrence (EONDX #87555) is a non-specific record from 1892 mapped by CNDDB in the general vicinity of Coyote Hills approximately 6 miles west of the study area.	Not Expected
Sidalcea malachroides maple-leaved checkerbloom	None CEQA 4.2	Occurs in broadleafed upland forest, coastal prairie, coastal scrub, north coast coniferous forest, riparian woodland between 0-730 meters elevation. Known from DNT, HUM, MEN, MNT, SCL, SCR, and SON counties.	(March)April-August perennial herb	Although suitable vegetation associations are present in the survey area this species has never been documented in Alameda County. Nearest herbarium record is a 1893 collection from Berkeley, approximately 27 miles from the study area, possibly cultivated.	Not Expected

Species Name Common Name	Federal, State, CNPS Listing & HCP/NCCP Coverage[1]	Habitat Preferences, Distribution Information, & Additional Notes*	Flowering Phenology/ Life Form	Habitat Suitability & Local Distribution	Potential for Occurrence
Spergularia macrotheca var. *longistyla* long-styled sand-spurrey	None CEQA 1B.2	Occurs in marshes and swamps, meadows and seeps between 0-255 meters elevation. Known from ALA, CCA, NAP, and SOL counties.	February-May perennial herb	Suitable vegetation associations are present in the survey area. Nearest CNDDB occurrence (EONDX #109246) is a non-specific record from 1934 approximately 1 mile northwest of the study area mapped by CNDDB as a best guess around Niles.	Not Observed Would have been detectable during rare plant surveys
Streptanthus albidus subsp. *peramoenus* most beautiful jewelflower	None CEQA 1B.2	Occurs in chaparral, cismontane woodland, and valley and foothill grassland between 95-1000 meters elevation. Known from ALA, CCA, MNT, SCL, and SLO counties. Treated as *Streptanthus glandulosus* subsp. *albidus in* TJM 2.	(March)April-September (October) annual herb	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this taxon. Nearest CNDDB occurrence (EONDX #12061) is a non-specific area north of Niles, mapped by CNDDB approximately 1.8 miles north-northwest of the study area.	Not Expected
Stuckenia filiformis subsp. *alpina* northern slender pondweed	None CEQA 2B.2	Occurs in assorted shallow freshwater marshes and swamps from 300-2,150 meters elevation. Known from ALA, BUT, CCA, ELD, LAS, MER, MPA, MOD, MNO, PLA, SMT, SHA, SIS, SOL, SON, and SIE counties. Presumed extirpated from SCL County. To be expected in the San Joaquin Valley, San Francisco Bay area, and the Central high Sierra Nevada.	May-July perennial rhizomatous herb (aquatic)	Although suitable vegetation associations are present in the survey area, the study area is below the elevational distribution for this taxon. Nearest CNDDB occurrence (EONDX #74338) is a non-specific area around Alameda Creek, mapped by CNDDB approximately 1.5 miles northwest of the study area.	Not Expected
Trifolium hydrophilum saline clover	None CEQA 1B.2	Occurs in marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools at elevations from 0 – 300 meters. Known from ALA, CCA, LAK, MNT, NAP, SAC, SBT, SCL, SCR, SJQ, SLO, SMT, SOL, and YOL counties. May occur in Colusa county.	April-June annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline habitat is absent. Nearest CNDDB occurrence (EONDX #84680) is a specific record from 2003 approximately 4 miles south-southwest of the study area at Don Edwards National Wildlife Refuge.	Not Expected
Tropidocarpum capparideum caper-fruited tropidocarpum	None CEQA 1B.1	Occurs in valley and foothill grassland, often on alkaline hills from 1-455 meters elevation. Known from MNT, and SLO counties. Presumed extirpated from ALA, CCA, and SJQ counties. Rediscovered in 2000 on Ft. Hunter Liggett.	March-April annual herb	Although suitable vegetation associations are present in the survey area the preferred alkaline habitat is absent. Nearest CNDDB occurrence (EONDX #31866) is a non-specific area east of Livermore, mapped by CNDDB approximately 12 miles northeast of the study area.	Not Expected

[1]Explanation of State and Federal Listing Codes

Federal listing codes:

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPE	Federally proposed for listing as Endangered
FPT	Federally proposed for listing as Threatened
FPD	Federally proposed for delisting
FC	Federal candidate species (former Category 1 candidates)
SC	Species of Concern – No longer maintained by USFWS
SLC	Species of local concern or conservation importance – No longer maintained by USFWS

California listing codes:

SE	State listed as Endangered
ST	State listed as Threatened
SR	State listed as Rare
SCE	State candidate for listing as Endangered
SCT	State candidate for listing as Threatened

California Native Plant Society codes:

1A	Presumed extinct in California
1B	Rare or Endangered in California and elsewhere
2	Rare or Endangered in California, more common elsewhere
3	Plants for which we need more information - Review list
4	Plants of limited distribution - Watch list

California Native Plant Society Threat Codes:

.1	Seriously Endangered in California (over 80% of occurrences Threatened / high degree and immediacy of threat)
.2	Fairly Endangered in California (20-80% occurrences Threatened)
.3	Not very Endangered in California (<20% of occurrences Threatened or no current threats known)

Notes: CNPS List 1A and some List 3 plant species lacking any threat information receive no threat code extension. CNPS R-E-D Codes have been discontinued

Survey Recommendation Determinations Based On

- Observed phenology at the time of reconnaissance
- Seasonal weather patters
- Collection dates of herbarium specimens
- Blooming times given by the CNPS Inventory

EONDX is the CNDDB Element Occurrence Index number which corresponds to unique records in the California Natural Diversity Database.

Abbreviations

AMA Amador
BUT Butte
CAL Calaveras
CCA Contra Costa
CNDDB CA Natural Diversity Database
CNPS CA Native Plant Society
COL Colusa
DNT Del Norte
ELD El Dorado
FRE Fresno
GLE Glenn
HUM Humboldt
KRN Kern
LAK Lake
LAS Lassen
LAX Los Angeles
LCP Local Coastal Plan
MAD Madera
MOD Modoc
MEN Mendocino
MER Merced
MNT Monterey
MPA Mariposa
MRN Marin
NAP Napa
NEV Nevada
ORA Orange
PLA Placer
PLU Plumas
RIV Riverside
SAC Sacramento
SBA Santa Barbara
SBD San Bernardino
SBT San Benito
SCL Santa Clara
SCR Santa Cruz
SCT Santa Catalina Island
SCZ Santa Cruz Island
SDG San Diego
SFO San Francisco
SHA Shasta
SIE Sierra
SIS Siskiyou
SJQ San Joaquin
SMI San Miguel Island
SMT San Mateo
SNI San Nicolas Island
SOL Solano
SON Sonoma
SRO Santa Rosa Island
TEH Tehama
TJM The Jepson Manual
TJMII The Jepson Manual, 2nd. Ed.
TRI Trinity
TUL Tulare
VEN Ventura
YOL Yolo
YUB Yuba

APPENDIX C SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Scientific Name Common Name	Listing Status[1]	Habitat Requirements & Additional Notes	Habitat Suitability & Local Distribution	Potential for Occurrence
Federal/State Listed, Proposed, Candidate and/or Fully Protected Species				
Invertebrates:				
Branchinecta conservatio Conservancy fairy shrimp	Fed: FE, CH CA: None	Endemic to relatively large, turbid vernal pools and playas in the Central Valley from 16 to 5,577 feet in elevation (59 FR 48136). Disjunct populations reported from Vina Plains in Tehama and Butte counties; greater Jepson Prairie in Solano County; Sacramento NWR in Sacramento County; Tule Ranch portion of Yolo Basin Wildlife Area in Yolo County; Grasslands Ecological Area, Flying M Ranch, Ichord Ranch, and Virginia Smith Trust lands in Merced County, single location in Stanislaus County; and two locations in the Los Padres National Forest in Ventura County (59 FR 48136). Designated critical habitat encompasses 8 units totaling 161,786 acres in Butte, Colusa, Mariposa, Merced, Solano, Stanislaus, Tehama, and Ventura counties (71 FR 7118).	No suitable habitat present within the study area. Study area lack large, turbid vernal pools or playa pools. The project is not located within critical habitat.	None
Branchinecta lynchi vernal pool fairy shrimp	Fed: FT, CH CA: None	Inhabits clear to tea-colored freshwater vernal pools in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands (59 FR 48136, Eriksen and Belk 1999). There are 32 known populations in the Central Valley from Shasta to Tulare counties, and along the Central and South Coast Ranges from Solano to San Benito counties (USFWS 1994). Often occur in low densities and rarely co-occur with other branchiopod species (Eng et al. 1990, Simovich et al. 1992). Designated critical habitat encompasses 35 units totaling 597,821 acres in Jackson County in Oregon, and Alameda, Amador, Butte, Contra Costa, Fresno, Kings, Madera, Mariposa, Merced, Monterey, Napa, Placer, Sacramento, San Benito, San Joaquin, Alameda, Amador, Butte, Contra Costa, Fresno, Kings, Madera, Mariposa, Merced, Monterey, Napa, Placer, Sacramento, San Benito, San Joaquin counties in California (71 FR 7118).	No suitable habitat is present within the study area. The study area lacks vernal pools or depression pools. The project is not located within critical habitat.	None

Danaus plexippus pop. 1 monarch butterfly – California overwintering population	Fed: FC CA: None	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Host plant is the milkweed (*Asclepius* spp.). Lifespan reaches >9 months. Fall migration occurs from August-October. Overwintering roosts in California commonly occur on Eucalyptus trees.	Eucalyptus trees typically used by overwintering monarch populations are present within the study area, however it is only a few individual trees, and not a large eucalyptus grove where overwintering populations tend to occur. Overwintering populations are generally within 5 miles of the coast, and the project area is over 6 miles east of the San Francisco Bay. The nearest CNDDB occurrence (EONDX #3595) of a monarch overwintering population was recorded in Ardenwood Park in 2014 approximately 5 miles northwest of the site.	Not Expected
Lepidurus packardi vernal pool tadpole shrimp	Fed: FE, CH CA: SA	A large, distinctive crustacean with an oval carapace and single, long pair of cercopods (59 FR 48136). Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water; such pools are commonly found in grass bottomed swales of unplowed grasslands and are occasionally mud-bottomed and highly turbid (59 FR 48136). Designated critical habitat encompasses 18 units totaling 228,785 acres in Alameda, Amador, Butte, Colusa, Fresno, Kings, Madera, Mariposa, Merced, Sacramento, Shasta, Solano, Stanislaus, Tehama, Tulare, Yolo, and Yuba counties (71 FR 7118).	No suitable habitat present within the study area. Site lacks vernal pools, playas, lakes, or grassy swales. The project is not located within critical habitat.	None
FISH:				
Acipenser medirostris green sturgeon (southern DPS)	Fed: FT, CH CA: SSC	The green sturgeon, southern DPS, is an anadromous fish that is found in marine waters from the Bering Sea to Ensenada, Mexico. The southern DPS includes all spawning populations south of the Eel River (exclusive), principally including the Sacramento River population (71 FR 17757). Locally, green sturgeon inhabit Suisun, San Pablo, and San Francisco bays, and coastal bays and estuaries from Monterey Bay north to Puget Sound. Spawning occurs in the Sacramento River between March and June; it may extend slightly longer, into July, in the Klamath River. Critical habitat includes coastal California waters from Monterey Bay, California, North to Cape Flattery, Washington; San Francisco Bay; Sacramento River and lower Feather River; Eastern reaches of the Sacramento-San Joaquin Delta; specified bays and estuaries in California, Oregon and Washington (74 FR 52300).	No suitable habitat present within the study area. Site lacks connectivity to suitable aquatic habitat.	None
Hypomesus transpacificus delta smelt	Fed: FT, CH CA: ST AFS-T	Inhabits brackish water in the Sacramento-San Joaquin Delta. Delta smelt are found from Suisan Bay upstream, and have been documented as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River and downstream as far as San Pablo Bay. Breed in freshwater habitat during winter and spring.	No suitable habitat present within the study area. Site lacks connectivity to suitable aquatic habitat.	None

Oncorhynchus mykiss irideus Steelhead California Central Valley DPS	Fed: FT, CH CA: AFS-T	An anadromous fish that spend several years in the ocean; returning to freshwater rivers to spawn and rear. Listing includes all naturally spawned anadromous steelhead populations below natural and manmade impassable barriers in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries, as well as two artificial propagation programs: the Coleman NFH, and Feather River Hatchery steelhead hatchery programs. Designated critical habitat encompasses 2,308 miles streams, 254 square miles estuary habitat in Tehama, Butte, Glenn, Shasta, Yolo, Sacramento, Solano, Yuba, Sutter, Placer, Calaveras, San Joaquin, Stanislaus, Tuolumne, Merced, Alameda, Contra Costa counties (70 FR 52488). The North Diablo Range watershed and South San Francisco Bay entire unit were excluded from the designation based on their potential economic impact (70 FR 52488). Primary constituent elements include: (1) freshwater spawning sites, (2) freshwater rearing sites, (3) freshwater migration corridors free of obstructions, (4) estuarine areas free of obstructions, and (5) nearshore marine areas free of obstructions (70 FR 52488).	No suitable habitat present within the study area. Site lacks connectivity to suitable aquatic habitat.	None
Spirinchus thaleichthys longfin smelt	Fed: FC CA: ST, SSC	Found in open waters of estuaries, mostly in the middle or bottom of the water column. Prefers salinities of 15-30 parts per thousand (ppt.), but can be found in completely freshwater to almost pure seawater. An anadromous fish that inhabits coastal bays, estuaries and waters near the coastline from Prince William Sound in Alaska to the Sacramento-San Joaquin Delta. Spawning occurs in freshwater streams from December – February.	No suitable habitat present within the study area. Site lacks connectivity to suitable aquatic habitat.	None
AMPHIBIANS:				
Ambystoma californiense California tiger salamander Central California DPS	Fed: FT, CH CA: ST	A large terrestrial salamander that inhabits seasonal/semi-permanent water sources (3-4 months in duration) and adjacent upland habitat with small fossorial mammal activity in lowland grasslands, oak savannah and mixed woodlands. Range includes the Central Valley and Central Coast ranges from Colusa County south to San Luis Obispo and Kern counties from sea level to 3,460 feet (1,054 meters) in elevation with two disjunct populations within Sonoma County and Santa Barbara County. Species have been documented traveling distances up to 1 mile (Austin and Shaffer 1992). Designated critical habitat encompasses 199,109 acres in 20 counties and is grouped into 4 regions: Central Valley, Southern San Joaquin, East Bay and Central Coast (70 FR 49380). The East Bay Region includes Alameda County, south to Santa Benito and Santa Clara counties, and west to the eastern portions of San Joaquin and Merced counties (70 FR 49380). Primary constituent elements include: (1) standing bodies of fresh water that support inundation during winter rains and hold water for a minimum of 12 weeks in a year of average rainfall; (2) upland habitats adjacent and accessible to breeding ponds that contain small mammal burrows or other underground habitat; and (3) accessible upland dispersal habitat between occupied locations that allow for movement between such sites (70 FR 49380).	Suitable upland and dispersal habitat is present on site. The surrounding suburban matrix presents movement barriers. The nearest occurrence is a record of 30 juveniles found 0.85 miles south in 2003 (EONDX #50225). At least 20 occurrences exist within 5 miles, mostly between three and five miles to the south near the San Francisco Bay and to the east in the Sunol region. No aquatic breeding habitat is present within study area.	None

Rana draytonii California red-legged frog	Fed: FT, CH CA: SSC	A medium-sized frog that inhabits lowlands & foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation up to 4,921 feet (1,500 meters) in elevation (Jennings and Hayes 1994, Bulger et al. 2003, Stebbins 2003). Range extends from Redding to Baja California, Mexico with hybridization occurring with the California red-legged frog from the Oregon border to Marin County. Breeding occurs between November and April in standing or slow-moving water with emergent vegetation, such as cattails (*Typha* spp.), tules (*Scirpus* spp.) or overhanging willows (*Salix* spp.) (Hayes and Jennings 1988). Larvae undergo metamorphosis 3 ½ to 7 months following hatching (Jennings and Hayes 1984, 1994). Designated critical habitat encompasses 1,636,609 acres in 20 counties and is grouped into 4 regions: Central Valley, Southern San Joaquin, East Bay and Central Coast (75 FR 12816). The East Bay Region includes Contra Costa County, Alameda County, south to Santa Benito and Santa Clara counties, and west to the eastern portions of San Joaquin and Merced counties (75 FR 12816). Primary constituent elements include: (1) aquatic breeding habitat; (2) non-breeding aquatic and riparian habitat; (3) Upland habitats associated with riparian and aquatic habitat; and (4) dispersal habitat that comprising accessible upland or riparian habitat within and between occupied or previously occupied sites that are located within 1 mile of each other, and that support movement between such sites (75 FR 12816).	Suitable upland dispersal habitat is present on site. The surrounding suburban matrix presents movement barriers. The nearest CNDDB occurrence (EONDX #117342) was recorded approximately two miles east of the study area in 2014. No aquatic breeding or non-breeding habitat is present within study area.	None
<u>REPTILES:</u>				
Masticophis lateralis euryxanthus Alameda whipsnake	Fed: FT, CH CA: ST	The Alameda whipsnake is a subspecies of the California whipsnake, *Masticophis lateralis,* which inhabits the foothills and mixed deciduous and pine forests of the Sierra Nevada and Coast Range mountains from Siskiyou County in northern California to the flatland desert in Cañon de Los Reyes in southern Baja California (Stebbins 2003). The Alameda whipsnake inhabits the inner Coast Ranges in western and central Contra Costa and Alameda counties (Jennings 1983, McGinnis 1992, Swaim 1994). Habitat fragmentation has restricted its range into five recognized subpopulations: Tilden-Briones population, Oakland-Las Trampas population, Hayward-Pleasanton Ridge population, Mount Diablo-Black Hills population, and Sunol-Cedar Mountain population. Designated critical habitat encompasses 154,834 acres in Alameda, Contra Costa and Santa Clara counties (71 FR 58176). Primary constituent elements include: (1) scrub/shrub communities with a mosaic of open and closed canopy; (2) woodland or annual grassland plant communities contiguous to lands containing PCE 1; and (3) lands containing rock outcrops, talus, and small mammal burrows within or adjacent to PCE 1 and or PCE 2 (71 FR 58176).	Suitable habitat is present in non-native grassland and coast live oak woodland, within and adjacent to the study area. The surrounding suburban matrix present movement barriers. The study area is three miles south of critical habitat. The nearest CNDDB occurrence (EONDX #40918) was recorded four miles southeast near Mission Peak.	None

BIRDS:				
Agelaius tricolor tricolored blackbird (nesting colony)	Fed: none CA: ST ABC, BCC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Nest in emergent vegetation within aquatic and riparian habitats. Breeds from mid-March through early August; double-brooded (Baicich and Harrison 2005, Shuford and Gardali 2008).	The study area overlaps CNDDB occurrence (EONDX #18716) that describes more than 10,000 nesting pairs in 1966, though significant urbanization has occurred in the area since then. The species is still occasionally observed at Lake Elizabeth (eBird 2022), but is unlikely to form a breeding colony.	Not Expected
Aquila chrysaetos golden eagle (nesting, wintering)	Fed: none CA: FP	A large diurnal raptor that nests on cliffs and in large trees in open areas. Forages in open terrain including grasslands, deserts, savannahs and early successional stages of forest and shrub habitats (Katzner et al. 2020). A year-round resident in the greater Bay Area. Breeding begins in February to late May; single-brooded (Baicich and Harrison 2005)	Although large trees are present within and adjacent to the study area, golden eagles are unlikely to nest on site due to the continuous human presence in Central Park and nearby residential areas. The nearest CNDDB occurrence (EONDX #16764) was recorded in 1993 approximately five miles south in Mission Peak Regional Park.	None
Charadrius alexandrinus nivosus western snowy plover (nesting)	Fed: FT, CH CA: SSC ABC, BCC	Inhabits beaches, mud flats, estuaries, salt evaporation ponds and inland river channels with banks for foraging. Breeds on sandy beaches, dunes, levees, river banks and dry salt evaporation beds along the California coastline typically in areas with minimal human disturbance. San Francisco Bay is within USFWS Recovery Unit 3 (USFWS 2007). Breeding begins in March; double-brooded (Baicich & Harrison 2005). Federal listing applies only to the Pacific coastal population that nests within 50 miles of the Pacific Ocean on the mainland coast, peninsulas, offshore islands, bays, estuaries, or rivers of the U.S. and Baja, CA; "Species of Special Concern" designation refers to both the coastal & interior populations (CDFW 2022b, USFWS 2007). Critical habitat was revised on June 19, 2012 and encompasses 4 units and 6,077 acres in Washington, 9 units and 2,112 acres in Oregon, and 47 units and 16,337 acres in California. Counties in California with designated critical habitat include: Del Norte, Humboldt, Mendocino, Marin, Napa, Alameda, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange and San Diego Counties (77 FR 36728).	Study area lacks suitable habitat types and is outside of species' known range. Study area is not located within designated critical habitat.	None
Coccyzus americanus occidentalis western yellow-billed cuckoo	Fed: FT CA: SE	The western yellow-billed cuckoo inhabits low elevation, well-developed riparian habitat typically consisting of cottonwoods (*Populus* spp.) and willows (*Salix* spp.) with a dense understory. Cottonwood trees often provide important foraging habitat where they feed largely in insects. Home range size within nesting habitat along the Sacramento River have been reported to occupy 25-99 acres per breeding pair. Breeding season begins in late May in the north and are typically single-brooded.	Study area contains potentially suitable habitat in the form of riparian areas with cottonwood trees. The nearest CNDDD occurrence exists 10 miles south (EONDX # 96979) from 1899.	None

Elanus leucurus white-tailed kite	Fed: None CA: FP	Inhabits grasslands, agriculture fields, oak woodlands, savannah and riparian habitats in rural and urban areas. Feeds primarily on California voles. Year-round resident of Central and Coastal California. Breeding begins in February; sometimes double-brooded (Baicich and Harrison 2005).	May nest in trees within the study area, and forage in grasslands throughout. The nearest CNDDB occurrence (EONDX #27029) was recorded five miles west of the study area in 1971, but the species is commonly reported in the area (eBird 2022).	Possible
Falco peregrinus anatum American peregrine falcon (nesting)	Fed: Delisted CA: Delisted FP BCC	Typically a year-round resident in California and most common along the coast. Nests on cliffs, but frequently uses human-made structures such as bridges and buildings. Nests are generally located close to water bodies with abundant avian prey. Breeding begins in March; single-brooded (Baicich and Harrison 2005).	No suitable cliff nesting habitat is present within the study area. The nearest occurrence (EONDX #42974) approximately five miles east from 1993.	None
Laterallus jamaicensis coturniculus California black rail	Fed: None CA: ST, FP, ABC, BCC	Smallest of the rails; inhabits tidal marshes, freshwater wetlands and marshes. Wintering habitat similar to breeding habitat. A year-round resident of the San Francisco Bay Area. Breeding begins in March; sometimes double-brooded (Baicich and Harrison 2005).	No coastal or tidally influenced marshland habitat present within the study area.	None
Rallus obsoletus California Ridgway's rail	Fed: FE CA: SE, FP	Restricted to the San Francisco Bay Area. Inhabits coastal wetlands dominated by pickleweed (*Salicornia* spp.) and cordgrass (*Spartina* spp.). Wintering habitat similar to breeding habitat. Breeding begins in March; single-brooded (Baicich and Harrison 2005).	No coastal or shoreline wetlands present within study area.	None
Riparia riparia bank swallow	Fed: None CA: ST	Nests in colonies in vertical banks with friable soils. Breeds from April to August. Most of California's nesting colonies occur along the upper Sacramento River. Breeding begins in April; double-brooded (Baicich & Harrison 2005).	No suitable nesting habitat within the study area. The nearest CNDDB record (EONDX #25195) was recorded five miles west at Coyote Hills Regional Park in 1983.	None
Rynchops niger black skimmer (nesting colony)	Fed: None CA: SSC	Black skimmers nest on levees and islands in salt ponds and marshes of San Francisco Bay. Breeding for this species in San Francisco Bay has been documented only from 1994. Breeding begins early-May. Single brooded (Baicich & Harrison 2005).	No suitable breeding habitat present within study area.	None
Sternula antillarum browni California least tern (nesting colony)	Fed: FE CA: SE, FP, ABC	Breeds in colonies on bare soil, sand and mudflats along the California coast and the San Francisco Bay Area. Winters south to Mexico. Breeding begins in May; single-brooded (Baicich and Harrison 2005).	No suitable colonial breeding habitat present within study area. Occurrences are restricted to the shorelines of Suisun Bay and San Francisco Bay (CDFW 2020).	None
MAMMALS:				
Reithrodontomys raviventris salt-marsh harvest mouse	Fed: FE CA: SE, FP	A small endemic, pickleweed (*Salicornia* spp.) obligate species of tidal marshes of the San Francisco Bay Area. Requires adjacent upland tidal zones for escape cover during floods. Two recognized subspecies, *R. r. halicoetes* that inhabits San Pablo and Suisun bays and *R. r. raviventris* that inhabits the South San Francisco Bay including Corte Madera and Richmond marshes.	No tidal marshes present within the study area.	None

Vulpes macrotis mutica San Joaquin kit fox	Fed: FE CA: ST	The smallest North American canid, the kit fox inhabits valley bottom and foothills from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties on the west, and near La Grange, Stanislaus County on the east side of the Central Valley and some of the larger scattered islands of natural land on the Valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced Counties. Species occupies habitats with open or low vegetation with loose soils. In the northern portion of their range, they occupy grazed grasslands and to a lesser extent valley oak woodlands. Kit fox are also found in grazed grasslands including areas adjacent to tilled or fallow fields, and suburban settings (USFWS 1998). Requires loose-textured sandy soils for burrowing, and a suitable prey base.	Suitable habitat is present in the non-native grassland and coast live oak woodland habitat within the study area. Study area is outside of the species' known range. The nearest CNDDB occurrence (EONDX #68130 was recorded in 1975 approximately 13 miles northeast near San Ramon.	None
SENSITIVE AND LOCALLY RARE SPECIES				
INVERTEBRATES:				
Bombus caliginosus obscure bumble bee	Fed: None CA: SA	Occurs along the Pacific Coast from southern California to southern British Columbia, with scattered records from the east side of California's Central Valley.	May occur in grassland habitat throughout the study area. The nearest CNDDB occurrence (EONDX #107112) is from 1954 and was recorded approximately 10 miles south. There are recent verified observations of this species near Palo Alto and in San Francisco (Bumble Bee Watch 2022)	Possible
Bombus crotchii Crotch bumble bee	Fed: None CA: SA	There is limited life history information available for this species, but it is known to nest primarily underground like most other bumblebee species. It is known from open grassland and scrub habitats. Previously found throughout southern California and the Central Valley but is now nearly absent from the Central Valley (CDFW 2019).	May occur in grassland throughout the study area. The nearest CNDDB occurrence (EONDX #98556) was recorded in 1952 approximately 8 miles northeast of the study area near Pleasanton.	Possible

Bombus occidentalis western bumble bee	Fed: None CA: SA	The western bumblebee occurs along the West Coast, and elevations of known sites range from sea level to over 2,000 meters. Most reports of western bumblebee nests are from underground cavities such as old squirrel or other animal nests and in open west-southwest slopes bordered by trees, although a few nests have been reported from above-ground locations such as in logs among railroad ties. Availability of nests sites for western bumblebee may depend on rodent abundance. Nest tunnels have been reported to be up to 2.1 m long for this species and the nests may be lined with grass or bird feathers. Bumble bees require plants that bloom and provide adequate nectar and pollen throughout the colony's life cycle, which is from early February to late November. Rangewide, example food plants include Ceanothus, Centaurea, Chrysothamnus, Cirsium, Geranium, Grindellia, Lupinus, Melilotus, Monardella, Rubus, Solidago, and Trifolium. (Hatfield et al. 2015). Occupies a diverse range of habitats, including mixed woodlands, farmlands, urban areas, montane meadows and into the western edge of the prairie grasslands. Like many bumble bees, it typically nests underground in abandoned rodent burrows or within hollows in decaying wood (COSEWIC 2014).	May occur in grassland habitat throughout the study area. The nearest CNDDB occurrence (EONDX #100204) is a historical collection from 1932 and is located approximately 1.0 mile northwest of the study area. There are no recent verified observations of this species in Alameda County (Bumblebee Watch 2022).	Possible
Gonidea angulata western ridged mussel	Fed: None CA: SA	The western ridged mussel is yellowish-brown to black in color and has an outer shell consisting of two valves reaching up to five inches in length. Once found in coastal basins in from San Diego County to British Columbia and as far east as Idaho, the mussel is now only found in California in rivers north of San Francisco Bay, with the Russian River being the southernmost observation point of the species. Like other freshwater mussels, the western ridged mussel requires abundant, connected aquatic habitats with stable substrates, perennial inundation, and protection from scour and disposition. Specifically, it inhabits rivers with wide floodplains, low slope, large components of sand and gravel substrate, and large boulders (Xerces Society 2020).	Study area does not contain suitable habitat.	None
Microcina lumi Lum's micro-blind harvestman	Fed: None CA: SA	One of seven members of the Bay Area endemic genus *Microcina*, the microblind harvestman. Like other member of its genus, it is known in only a few locations and is associated with serpentine grasslands. It is about 1 mm long, lives under rocks, and is most active in the rainy months of winter.	No suitable serpentine grassland present within site.	None
AMPHIBIANS:				
Rana boylii foothill yellow-legged frog	Fed: None CA: SSC	A medium-sized frog that inhabits rocky, cascading streams in woodland, chaparral, and coniferous forests from the Oregon border to San Luis Obispo County and the western foothills of the Sierra Nevada below 6000 feet.	No cascading stream habitat with gravel to boulder substrate within the study area.	None

REPTILES:				
Emys marmorata western pond turtle	Fed: None CA: SSC	A moderate sized freshwater turtle that inhabits permanent or nearly permanent bodies of water and low gradient slow moving streams below 6,000 feet elevation. Range extends from Washington to the northern Bay Area counties along the Pacific slope drainages. Two recognized subspecies the northwestern pond turtle (*E. m. marmorata*) which ranges north of the American River and the southwestern pond turtle (*E. m. pallida*) which ranges from the coastal areas south of San Francisco. Subspecies interbreed within the gradation zone that defines the two subspecies.	Suitable habitat present within the study area, but the surrounding suburban matrix provides substantial movement barriers causing isolation from known populations. Although the species has never been documented from Lake Elizabeth or the surrounding area, suitable aquatic habitat is present within the lake. Two miles northwest rests the closest CNDDB occurrence (EONDX #70461) from 2007 in Alameda Creek.	Not Expected
BIRDS:				
Accipiter cooperii Cooper's hawk (nesting)	Fed: None CA: WL	Inhabits dense stands of oak woodlands, riparian deciduous forests, or other forest habitats often near water & suburban areas. Hunts in broken woodlands & along forest edges. Breeding begins in April (Baicich & Harrison 2005).	Suitable nesting habitat is present in the trees within and adjacent to the study area. Cooper's hawks may also forage on site. The closest of three CNDDB records within five miles is three miles northeast of the study area near Niles Canyon (EONDX #67687).	Possible
Accipiter striatus sharp-shinned hawk (nesting)	Fed: None CA: WL	This species prefers north-facing slopes in dense stands of deciduous, conifer and mixed hardwood trees, including ponderosa pine, black oak, and Jeffrey pines, preferably in riparian areas; also known to nest in suburban areas.	Suitable nesting habitat is present in the trees within and adjacent to the study area. The nearest CNDDB occurrence of sharp-shinned hawk (EONDX #4937) was recorded in 1987 approximately 5 miles southeast of the study area.	Possible
Ardea herodias great blue heron (rookery)	Fed: None State: SA	Nests in tall trees near open water such as lakes, freshwater marshes, coastal areas, or large streams. Nests colonially in rookeries ranging in size from a few pairs to several hundred (Vennesland and Butler 2020).	Suitable nesting habitat exists within and adjacent to the study area. Study area abuts Lake Elizabeth and contains riparian habitat. The nearest CNDDB record (EONDX #4697) is two miles northwest from the Alameda Creek Quarries in 1990.	Possible
Athene cunicularia burrowing owl (burrow sites & some wintering sites)	Fed: None CA: SSC, BCC	Valley bottoms and foothills with low vegetation and fossorial mammal activity. Listing includes wintering observations with/without a burrow in San Francisco, Ventura, Sonoma, Marin, Napa and Santa Cruz counties. Breeding begins in March; single-brooded (Baicich and Harrison 2005).	Suitable habitat is present in the open grassland areas of the study area. The nearest occurrence (EONDX #18716) is from 2014 and located in the adjacent Central Park. There are 13 CNDDB records with five miles of the study site. No suitable burrowing owl burrows were observed during the site visit.	Not Expected

Buteo regalis ferruginous hawk (wintering)	Fed: none CA: WL BCC	Breeds in the northern states and Canada; winters south from California and Texas to Mexico. Wintering habitat consists of open grasslands, deserts and cultivated fields. Breeding begins in April; single-brooded (Baicich and Harrison 2005).	Suitable wintering/foraging habitat is present in grassland habitat in the study area. Species does not breed in California. The nearest occurrence (EONDX #66097) is 15 miles northeast of the study site near Livermore in 1998.	Not Expected
Circus hudsonius northern harrier (nesting)	Fed: None CA: SSC	Inhabits both freshwater and saltwater marshes and adjacent upland grasslands. Nests on the ground in tall grasses in grasslands and meadows. Breeding begins in March; single-brooded (Baicich and Harrison 2005).	There is suitable grassland for nesting present with the study area, but no nearby marsh habitat. May forage in grasslands within and adjacent to the study area. The nearest reported CNDDB occurrence is from 1992 and located approximately five miles west in Coyote Hills Regional Park (EONDX #27021).	Not Expected
Coturnicops noveboracensis yellow rail	Fed: BCC CA: SSC	Highly secretive, breeds in northeastern California in wet meadows and sedge marshes. Winters in tidal marshes in the greater San Francisco Bay Area.	No tidal marsh habitat present in study area.	None
Egretta thula snowy egret (rookery sites)	Fed: none CA: SA	Nests colonially, with nest sites situated in trees and protected beds of dense bulrush. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Suitable colonial nesting habitat present in the study area and nearby Central Park. The nearest CNDDB occurrence is approximately 10 miles southwest near Palo Alto.	Possible
Eremophila alpestris actia California horned lark	Fed: none CA: WL	Common, abundant resident in a variety of open habitats, usually where large trees and shrubs are absent, ranging from low-elevation grasslands and deserts to dwarf shrub habitats above tree line. Found throughout much of the state. Less common in mountainous areas of the north coast and in conifer and chaparral habitats. Breeding begins in late-February; double to triple-brooded (Baicich and Harrison 2005).	Suitable nesting habitat present in grassland within the study area. The nearest reported CNDDB occurrence is approximately 14 miles northeast of the study area (EONDX #15659) and was recorded in 1992.	Not Expected
Falco mexicanus prairie falcon (nesting)	Fed: none CA: WL BCC	Nests on cliffs and at times in old raven or eagle stick nests on cliff, bluff, or rock outcrop. Inhabits perennial grasslands, savannahs, rangeland, some agricultural fields, & desert scrub communities. Breeding begins in April; single-brooded (Baicich and Harrison 2005).	No cliff habitat suitable for nesting is present within the study area. Individuals may forage within or transit through the study area at any time.	None
Geothlypis trichas sinuosa saltmarsh common yellowthroat	Fed: None CA: SSC, BCC	Year-round resident of the San Francisco Bay Area. Inhabits dense vegetation in wetlands, marshes, estuaries, prairies and riparian areas of San Francisco and San Pablo bays, and along the coastal areas of Marin, San Francisco, and San Mateo counties (Shuford and Gardali 2008). Breeds from mid-March to late July; double-brooded (Baicich and Harrison 2005, Shuford and Gardali 2008).	No suitable tidal marshland habitat is present within the project areas. The project is outside of the species' known range.	None
Melospiza melodia pusillula Alameda song sparrow	Fed: None CA:SSC, BCC	One of four subspecies in the San Francisco Bay Area. Endemic to the southern San Francisco Bay tidal marshlands. Breeding begins in April; often triple-brooded (Baicich & Harrison 2005).	No suitable tidal marshland habitat is present within the project areas. The project is outside of the species' known range.	None

Setophaga petechia yellow warbler (nesting)	Fed: none CA: SSC, BCC	Nests in dense, shrubby thickets dominated by willows along water courses and wet meadows. They build nests in a variety of riparian trees, most commonly willows (*Salix* spp.) and cottonwoods (*Populus* spp.).	Suitable nesting habitat is present in riparian habitat within the study area. The nearest CNDDB occurrence (EONDX #44072) was recorded approximately 13 miles northwest of the study area in 2000.	Possible
<u>MAMMALS:</u>				
Sorex vagrans halicoetes salt-marsh wandering shrew	Fed: None CA: SSC	Species is restricted to salt marshes in San Francisco Bay. Feeds mainly on invertebrates and some plant material within a low, dense cover of pickleweed (*Salicornia* spp.). Most young are born March to May. Maximum lifespan is about 16 months.	No suitable tidal marshland habitat is present within the project areas. The project is outside of the species' known range.	None
Eumops perotis californicus western mastiff bat	Fed: none CA: SSC	The largest bat in North America, it ranges across the southwestern United States to central Mexico. Primarily cliff-dwelling, roosting under rock slabs with large vertical clearances, the species may also roost in crevices and buildings. Most commonly encountered in open areas and forages in dry desert washes, flood plains, chaparral, oak woodland, ponderosa pine forest, grassland, and agricultural areas.	Preferred cliff-roosting habitat not present within study area. The nearest CNDDB occurrence (EONDX# 66515), is a museum specimen collected in 1899 at an unknown location 10 miles northwest of the study area marked only as "Hayward".	None
Antrozous pallidus pallid bat	Fed: None CA: SSC, WBWG-H	Inhabits rocky terrain in open areas in lowlands, foothills and mountainous areas near water throughout California below 2,000 meters. Roost in caves, rock crevices, mines, hollow trees, buildings and bridges in arid regions in low numbers (<200). Active from March-November; migrates in some areas, but may hibernate locally.	Suitable roosting habitat present in trees within and adjacent to the study area. The nearest reported occurrence (EONDX #115196) dates back to 2017 and was mapped four miles to the north along Alameda Creek.	Possible
Corynorhinus townsendi Townsend's big-eared bat	Fed: None CA: SSC, WBWG-H	An obligate cave rooster and moth specialist. Inhabits caves and mines, but may also use bridges, buildings, rock crevices and tree hollows in coastal lowlands, cultivated valleys and nearby hills characterized by mixed vegetation throughout California below 3,300 meters. Exhibits high site fidelity and is highly sensitive to disturbance. Forages along edge habitats near water; may travel long distances during foraging bouts.	The study area lacks any caves, structures, or very large trees with basal hollows suitable for roosting. Individuals may forage within the study area. The nearest reported occurrence (EONDX #93501) is a non-specific point one miles southeast of the study area dating back to 1943.	None
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	Fed: None CA: SA	Inhabits open grass hilltops and open spaces in chaparral and blue oak/foothill pine woodlands; needs fine, deep, well-drained soils for burrowing. Past collections of the species have been made in the vicinity of Mount Diablo, the Berkeley Hills, Strawberry Canyon, Orinda Park Pool, Calaveras Reservoir, and Siesta Valley. More recent – and as-yet unconfirmed – kangaroo rat occurrences have been reported in the Sunol Valley Regional Wilderness well within the species recognized range. Populations in the vicinity of the Berkeley Hills are considered extirpated due to predation by domestic cats.	Suitable habitat is present within the study area though the suburban nature of the surrounding area and the proximity to domestic cats reduces the quality of potential habitat in the study area. The nearest CNDDB occurrence (EONDX #35554) was recorded in 1940 approximately seven miles southeast of the study area near Calaveras Reservoir.	None

Lasiurus cinereus hoary bat	Fed: None CA: SA, WBWG-M	Ubiquitous throughout California. A solitary foliage rooster that prefers evergreens, but will use deciduous trees in forested habitats, particularly in edge habitat (WBWG 2022). May forage in small to large groups. Feeds primarily on moths, but will eat a variety of other insects. Migrates great distances.	May roost in mature trees within the study area. The nearest reported occurrence (EONDX #68776) is a non-specific location nine miles northwest of the study area in Hayward from 1920.	Possible
Myotis yumanensis Yuma myotis bat	Fed: None CA: SA WBWG-L	A riparian obligate species. Ubiquitous throughout California. Inhabits riparian areas near permanent water sources. Roosts in a variety of habitats including bridges, buildings, caves, mines, cliff crevices and trees. Forages above water and in riparian areas.	Suitable roosting habitat is present in the trees within and adjacent to the study area. The closest CNDDB record (EONDX #68652) occurs 3 miles northeast from 2006.	Possible
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	Fed: None CA: SSC	Inhabits chaparral, coastal scrub, oak woodland, and riparian woodland in the San Francisco Bay Area. They exhibit high site fidelity and may live in the same nest community for generations. Nest structures are key indicator of their presence and are easily identified by their large, conical appearance. Species is typically not associated with urban areas due to lack of suitable native woodland plants used for foraging, and increased predation pressure from feral and domestic cats.	Suitable habitat is present in oak woodlands within and adjacent to the study area. The surrounding suburban matrix presents dispersal barriers. The nearest CNDDB occurrence was recorded in 2006 (EONDX #70797), approximately four miles northeast of the study area.	None
Taxidea taxus American badger	Fed: None CA: SSC	A large mustelid that inhabits open areas with friable soils within woodland, grassland, savannah and desert habitats. A fossorial mammal that preys predominately on ground squirrels (*Ammospermophilus* and *Spermophilus* spp.) and pocket gophers (*Thomomys* spp.). Mating occurs in late summer; young are born in March and April (Jameson and Peeters 2004).	There is suitable habitat in the oak woodland and grassland found within the study area. The surrounding suburban matrix presents dispersal barriers. The nearest reported occurrence was recorded in 1987 approximately 15 miles east of the study area (EONDX #56579).	None

[1] **Explanation of Species Status Codes**

<u>Federal Status Codes</u>:

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPE	Federally proposed for listing as Endangered
FPT	Federally proposed for listing as Threatened
FPD	Federally proposed for delisting
FC	Federal candidate species (former Category 1 candidates)
SC	Species of Concern (NOAA Fisheries regulated species only)
CH	Critical Habitat (Proposed or Final) is designated
SSC	Species of Special Concern designated by the Marine Mammal Commission
BCC	U.S. Fish and Wildlife Service Birds of Conservation Concern

<u>California Status Codes</u>:

SE	State listed as Endangered
ST	State listed as Threatened
SCE	State candidate for listing as Endangered
SCT	State candidate for listing as Threatened
SCD	State candidate for delisting
SSC	California Species of Special Concern
FP	Fully Protected
WL	CDFW Watch List
SA	Included on CDFW's Special Animals List

<u>Other Status Codes</u>:

AFS American Fisheries Society identifies marine, estuarine and diadromous fish species that are at risk of extinction in North America. The AFS has designated the following four classifications in order of conservation importance E – Endangered, T – Threatened, V – Vulnerable, and CD – Conservation Dependent.

WBWG Western Bat Working Group: H – High Priority indicates species that are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats; M – Medium Priority indicates a lack of information to assess the species' status; L – Low Priority indicates relatively stable populations based on available data. The WBWG also uses intermediary designations including MH – Medium-High and LM – Low-Medium priorities.

APPENDIX D CALIFORNIA NATURAL DIVERSITY DATABASE SPECIES LIST

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Niles (3712158) OR Hayward (3712261) OR Dublin (3712168) OR Livermore (3712167) OR Newark (3712251) OR La Costa Valley (3712157) OR Mountain View (3712241) OR Milpitas (3712148) OR Calaveras Reservoir (3712147))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex minuscula lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G2	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Campanula exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S1	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eryngium aristulatum var. hooveri Hoover's button-celery	PDAPI0Z043	None	None	G5T1	S1	1B.1
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S1	FP
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Malacothamnus arcuatus arcuate bush-mallow	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2T3	S2S3	SSC
Microcina lumi Lum's micro-blind harvestman	ILARA47050	None	None	G1	S1	
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S1	FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Rynchops niger black skimmer	ABNNM14010	None	None	G5	S2	SSC
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Stuckenia filiformis ssp. alpina northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Suaeda californica California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
Sycamore Alluvial Woodland Sycamore Alluvial Woodland	CTT62100CA	None	None	G1	S1.1	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tropidocarpum capparideum caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Sink Scrub Valley Sink Scrub	CTT36210CA	None	None	G1	S1.1	
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 92

APPENDIX E NOAA FISHERIES SPECIES LIST

Quad Name **Niles**
Quad Number **37121-E8**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -	**X**
Chinook Salmon EFH -	**X**
Groundfish EFH -	
Coastal Pelagics EFH -	
Highly Migratory Species EFH -	

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

APPENDIX F SITE PHOTOGRAPHS

Photo 1. Mission Creek at the northern end of the study area where it enters the site. Non-native grassland ispresent on the banks and riparian scrub is visible in the distance. The paved walking trail/access road is visible to the left of the photo. Facing south. April 25, 2022.

Photo 2. View of Mission Creek on site with Central Coast riparian scrub adjacent. April 25, 2022.

Photo 3. Flapgate and box culvert that connects Lake Elizabeth to Mission Creek with riparian scrub. Facing northeast. April 25, 2022.

Photo 4. View of Mission Creek with freshwater marsh visible on the other side of the creek and riparian scrub in the distance. Facing southeast. April 25, 2022.

Photo 5. View of Mission Creek with the parking lot visible. Facing north. April 25, 2022.

Photo 6. View of Mission Creek as it flows south off the site under Paseo Padre Parkway in a box culvert. Facing southwest. April 25, 2022.

Photo 7. View of Mission Creek off site as it exits box culvert under Paseo Padre Parkway in a box heading southwest. Facing southwest. April 25, 2022.

Photo 8. View of the freshwater marsh vegetation in the marsh with riparian scrub in the distance. Facing southeast. April 25, 2022.

Photo 9. View looking of non-native grassland in sthe study area between Central Coast riparian scrub. April 25, 2022.

Photo 10. View of non-native grassland at the southern end of the study area. Facing east. April 25, 2022.

Appendix B
Archeological Review
In Support of Environmental Clearance
for Lake Elizabeth/Stivers Lagoon Improvements
City of Fremont Alameda County, California

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May 27, 2022

Jim Browne, R.P.F.
Acting Environmental Services Supervisor Manager
Alameda County Public Works Agency
399 Elmhurst Street
Hayward, CA 94544

RE: Archaeological Review - In Support of Environmental Clearance for
Lake Elizabeth/Stivers Lagoon Improvements,
City of Fremont, Alameda County, California

Dear Mr. Browne,

Please let this letter serve as Basin Research Associates' (BASIN) archaeological review for proposed improvements for the proposed Stivers Lagoon Improvements, City of Fremont, Alameda County in order to assist the Alameda County Flood Control and Water Conservation District (District) meet the environmental clearance requirements. The proposed improvements were included in a previously certified Program Environmental Impact Report (PEIR) for the Lake Elizabeth/Stivers Lagoon Marsh Design & Improvement completed in 1993 (SCH# 1993105082).

The report provides the results of: (1) an archival records search by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC); (2) a review of pertinent literature, maps and archival records on file at BASIN for the general project area; (3) a request to the Native American Heritage Commission (NAHC) for a review of the Sacred Lands File (SLF); (4) a field inventory of the project site, and, (5) a summary of findings with management recommendations.

PROJECT LOCATION AND DESCRIPTION [Figs. 1-3].

The proposed project site is located within the southern part of Fremont Central Park, adjacent to the west shore and south of Lake Elizabeth, east of the Aqua Adventure Water Park, west of the Union Pacific Railroad tracks and north of Paseo Padre Parkway, City of Fremont, Alameda County (Township 4 South, Range 1 West, Section 34; USGS Niles, Calif. 1980). The project is bounded on the north and west by the Mission Creek engineered channel or the former *Arroyo de la Laguna* (Sowers 1999; see USGS 1906) and on the south by the Hetch Hetchy right of way located just north of Paseo Padre Parkway.

BASIN has reviewed the previously certified PEIR for the Lake Elizabeth/Stivers Lagoon Marsh Design & Improvement completed in 1993. The EIR proposed various improvements to restore and enhance the hydrology and habitat value of the existing Stivers Lagoon located adjacent to Lake Elizabeth, and evaluated the Stivers project for potential environmental impacts in accordance with the requirements of the California Environmental Quality Act (CEQA).

Stivers Lagoon is a freshwater marsh on the east side of the Hayward fault. It formed as a sag pond[1] (US DOT FTA/SF BART 2008:4.7-19; Jones and Stokes 2000) with its approximate 200 acre area fed primarily by Mission Creek (Jones & Stokes 2000:2-1). The lagoon was noted for both its freshwater marsh as well as areas of deep open water with its extent and depth varying on both a seasonal and annual basis. Levees were constructed around the marsh in the mid-1900s to limit flooding and reduce soil saturation with a flood control channel excavated through the marsh in the mid-1930s. The lagoon now covers approximately 40 acres and is fed by both the realigned Mission Creek (channelized) and Morrison Creek. Alterations to the surface and groundwater hydrologic regime have changed the lagoon to an emergent wetland that dries out in summertime.

Lake Elizabeth was created by excavating a portion of the original area of Stivers Lagoon in 1968 (Jones & Stokes 2000:2-1) with construction in the 1970s (Sowers 1999), and expansion in 1986 to 82-acres. Duck Island in the southeast portion of the lake is man-made and a bird sanctuary. The original alignment of Mission Creek was near the location of the island (see Jones & Stokes 2000 for details).

Various improvements to the lagoon and Lake Elizabeth have been completed since the mid-1990s by either the City of Fremont or the District. This project is a continuation of the improvements and proposes to create new, and enhance existing, wetland habitat values. Improvements include:

> ***Excavation of a Long Pond in Marsh*** – a "long pond" is proposed to be excavated in the northwest portion of the marsh to improve the diversity of wetland habitat, raise groundwater elevations, and provide habitat for open water animal species. Several smaller ponds will be enhanced around the kiosk to promote a diversity of habitat types and improve public recreation and education opportunities.
>
> ***Construct a Berm on the West Side of Mission Creek*** - a terrace and berm are proposed along the west side of Mission Creek to allow expansion of riparian vegetation and to increase wetland habitat. The terrace would be about 20 to 30 feet wide and 1,000 feet long with elevations ranging from 48 feet NGVD near Mission Creek and sloping upward to 55 feet NGVD at the path. The terrace would be separated and buffered from the parking lot by a linear, topographically varied berm with a pedestrian path between the terrace and the berm. The terrace would be excavated to a depth of approximately 48 feet (NGVD) at the edge of the Creek and sloped up to 50 feet at the path. New plants would be bare-root or small containerized stock and planted according to accepted practices.

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1. A sag or trough is a depressed persistent, low area; a sag pond is a body of water collected in the lowest parts of a depression (Wikipedia 2022).

Vegetation Management - (1) improve conditions for native plant species already present by habitat enhancement; (2) plant native plant species in areas where project actions will change the topography; and (3) eliminate invasive, weedy plant species.

Construct Pedestrian Bridge and Catwalk - improve access to existing viewpoints, and provide access to proposed restoration areas by installing pedestrian bridge across Mission Creek and approximately 200 feet of new wooden catwalk to connect with the north end of the existing catwalk and create a circular path. The proposed path would cross through the freshwater marsh habitat near the kiosk, riparian habitat along Mission Creek, and open water habitat of proposed “long pond” on the south end. Public access would also require the repair and maintenance of approximately 1,150 feet of existing trail through mixed riparian habitat and 300 feet of existing trail through mixed riparian habitat parallel to the railroad tracks, and construction of approximately 600 feet of new catwalk/path across the marsh/riparian woodland to meet the north end of the existing catwalk. A wildlife viewing blind is also proposed.

Habitat Modification - Excavation and grading are proposed to improve water circulation, restore upland areas to wetland, and create additional open water area. Changes in wetland morphology will promote higher groundwater levels and seasonal ponding. Open water ponds within the tule stands will add structural diversity and enhance habitat for open water animal species. These actions require:

Breaching of the low levee along the east side of Mission Creek.

Excavating a shallow channel and open water area "long pond" just northwest of the boardwalk.

Excavating the upland area southeast of the siltation pond to elevations which will create wetlands.

Excavating several deep open water areas within the newly created wetlands.

Creating additional wetland areas adjacent to the kiosk.

Creating a terrace along the west side of the Mission Creek channel

AREA OF POTENTIAL EFFECTS

The Area of Potential Effects (APE) is the project site within which the proposed improvements will be undertaken [see Fig. 3]. The majority of the APE, with the exception of a narrow strip along the former Southern Pacific Railroad track alignment on the east side of the project and southern end of APE, is within the former extent of the lagoon (Sowers 1999). The purpose of this report is to review the current site conditions and determine whether the proposed Stivers project could result in new significant environmental impacts that were not considered/mitigated in the previously certified 1993 PEIR.

REGULATORY CONTEXT

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events or sites of traditional and/or cultural importance to various groups. The analysis of cultural resources can provide valuable information on the cultural heritage of both local and regional populations.

Cultural resources may be determined significant or potentially significant in terms of national, state, or local criteria either individually or in combination. Resource evaluation criteria are determined by the compliance requirements of a specific project.

STATE OF CALIFORNIA

This report has been prepared to meet applicable California Environmental Quality Act (CEQA) and the District's requirements for cultural resources which require the identification and evaluation of cultural resources that could be affected by the project.

CEQA, as codified in PRC Section 21000 et seq. and implemented by the CEQA Guidelines (14 California Code of Regulations Section 15000 et seq.), is the principal statute governing environmental review of projects in California. CEQA defines a historical resource as a property listed in, or eligible for listing in, the California Register of Historical Resources (CRHR); included in a qualifying local register; or determined by a lead agency to be historically significant. In order to be considered a historical resource, a property must be old enough to allow an understanding of the historic importance of the resource and obtain a scholarly perspective on the events or individuals associated with the resource, which is generally at least 50 years. Section 21084.1 of the PRC and Section 15064.5 of the CEQA Guidelines define a historical resource for purposes of CEQA as the following:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register (PRC Section 5024.1).
2. A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g). Such resources will be presumed to be historically or culturally significant. Public agencies must treat such resources as significant, unless the preponderance of evidence demonstrates that they are not historically or culturally significant.
3. Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the California Register (PRC Section 5024.1).
4. The fact that a resource is not listed in or determined to be eligible for listing in the California Register, not included in a local register of historical resources (pursuant to PRC Section 5020.1[k]), or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1[g]) does not preclude a lead agency from determining that the resource may be a historical resource, as defined in PRC Sections 5020.1(j) or 5024.1.

CEQA also requires lead agencies to consider whether projects will affect unique archaeological resources. PRC Section 21083.2(g) states that "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality, such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA requires lead agencies to determine if a project would have a significant effect on historical resources or unique archaeological resources. If a resource is neither a unique archaeological resource nor a historical resource, the CEQA Guidelines note that the effects of a project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.5[c][4]). In addition, projects that comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties benefit from a regulatory presumption under CEQA that they would have a less-than-significant impact on a historical resource (14 California Code of Regulations 15126.4[b][1]). Projects that do not comply with the Secretary's standards may or may not cause a substantial adverse change in the significance of a historical resource and may be subject to further analysis to assess whether they would result in material impairment of a historical resource's significance.

Under CEQA, a substantial adverse change in the significance of a historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter the physical characteristics that convey the property's historical significance and qualify it for inclusion in the California Register of Historical Resources, the National Register of Historic Places (NRHP), or in a local register or survey that meets the requirements of PRC Sections 5020.1(k) and 5024.1(g).

California Register of Historical Resources (CRHP)

The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and indicating which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The CRHR criteria are based on the NRHP criteria (PRC Section 5024.1[b]). Certain resources are determined by CEQA to be automatically included in the CRHR, including California properties that were formally eligible for or listed in the NRHP. To be eligible for the CRHR as a historical resource, a resource must be significant at the local, state, and/or federal level under one or more of the following evaluative criteria, as defined in PRC Section 5024.1(c):

1. The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. The resource is associated with the lives of persons important in our past.
3. The resource embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
4. The resource has yielded, or may be likely to yield, information important in prehistory or history.

As with the NRHP, a significant historical resource must possess integrity in addition to meeting the significance criteria to be considered eligible for listing in the CRHR. Consideration of integrity for evaluation of CRHR eligibility follows the definitions and criteria from National Park Service *National Register Bulletin 15*.

California Native American Historic Resources Protection Act

The California Native American Historic Resources Protection Act of 2002 imposes civil penalties, including imprisonment and fines of up to $50,000 per violation, for persons who unlawfully and maliciously excavate, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the CRHR.

Assembly Bill 52

Tribal cultural resources were originally identified as a distinct CEQA environmental category with the adoption of AB 52 in September 2014. For all projects that are subject to CEQA that received a notice of preparation, notice of negative declaration, or mitigated negative declaration on or after July 1, 2015, AB 52 requires the lead agency for a proposed project to consult with the geographically affiliated California Native American tribes.

The legislation creates a broad, new category for environmental resources, "tribal cultural resources," which must be considered under CEQA. AB 52 requires a lead agency to not only consider the resource's scientific and historical value but also whether it is culturally important to a California Native American tribe.

AB 52 defines tribal cultural resources as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are included in or determined to be eligible for inclusion in the CRHR; included in a local register of historical resources, as defined in PRC Section 5020.1(k); or, determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the criteria of PRC Section 5024.1(c) (CEQA Section 21074). A cultural landscape that meets the definition of a tribal cultural resource is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. A historical resource described in PRC Section 21084.1; a unique archaeological resource, as defined in subdivision (g) of PRC Section 21083.2; or a "non-unique archaeological resource," as defined in subdivision (h) of PRC Section

21083.2 may also be a tribal cultural resource if it conforms to the definition of a tribal cultural resource.

AB 52 also sets up an expanded consultation process. Lead agencies are required to provide notice of the proposed projects to any tribe that is traditionally and culturally affiliated with the geographic area that requested to be informed by the lead agency, following PRC Section 21018.3.1(b). If, within 30 days, a tribe requests consultation, the consultation process must begin before the lead agency can release a draft environmental document. Consultation with the tribe may include discussion of the type of review necessary, the significance of tribal cultural resources, the significance of a project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe. The consultation process will be deemed concluded when either (a) the parties agree to mitigation measures or (b) any party concludes, after a good-faith effort, that an agreement cannot be reached. Any mitigation measures agreed to by the tribe and lead agency must be recommended for inclusion in the environmental document. If a tribe does not request consultation, or otherwise assist in identifying mitigation measures during the consultation process, a lead agency may still consider mitigation measures if the agency determines that a project will cause a substantial adverse change to a tribal cultural resource.

As the 1993 PEIR was approved and certified prior to July 1, 2015, the Lake Elizabeth/Stivers Lagoon Improvements restoration program is not required to comply with the provisions of AB 52.

Public Resources Code Section 5097.98

Section 5097.98 of the PRC stipulates that whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and recommend to the owner or the person responsible for the excavation work means for treating or disposing of, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 24 hours of their notification by the NAHC. The recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

RESEARCH PROTOCOLS AND RESULTS

A prehistoric and historic site record and literature search was completed for 0.25 mile of the APE/project by the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park (CHRIS/NWIC File No. 21-1343 by Murrazo dated 2/23/2022). Reference material from the Bancroft Library, University of California, Berkeley and Basin Research Associates, San Leandro was also reviewed. Specialized listings for cultural resources consulted include:

> National Register of Historic Places listings for Alameda County, California (USNPS 2022a-c);

OHP [Office of Historic Preservation] Built Environment Resources Directory [BERD] for Alameda County (CAL/OHP 2022a);

Listed California Historical Resources (CAL/OHP 2022b) with the most recent updates of the National Register of Historic Places; California Historical Landmarks; and, California Points of Historical Interest as well as other evaluations of properties reviewed by the State of California Office of Historic Preservation;

Archeological Determinations of Eligibility for Alameda County (CAL/OHP 2022c);

California History Plan (CAL/OHP 1973);

California Inventory of Historic Resources (CAL/OHP 1976);

Five Views: An Ethnic Sites Survey for California (CAL/OHP 1988); and,

Various other reports, lists and maps (see References Cited and Consulted).
as well as various City of Fremont General Plan related reports, historic contexts, lists and maps (see REFERENCES CITED AND CONSULTED).

INDIVIDUALS, AGENCIES AND GROUPS

The Native American Heritage Commission (NAHC) was contacted for an updated review of the Sacred Lands Files (Busby 2022). The NAHC has not responded in regard to the SLF as of May 23, 2022.

No other agencies, departments or local historical societies were contacted regarding landmarks, potential historic sites or structures due to the detailed information on file with BASIN for the improvement area.

RECORDS SEARCH RESULTS

Fifteen (15) reports on file at the CHRIS/NWIC include the project site and/or adjacent areas. Five (5) additional studies are within 0.25 mile of the project site (see Table 1).

TABLE 1
STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
In or Adjacent						
S-010200	David Chavez, Sally B. Woodbridge, and Jan M. Hupman	1988	Cultural Resources Evaluation for the Fremont-South Bay Corridor Study: Alternatives Analysis, Alameda and Santa Clara Counties, California	Archaeological, Architectural/ historical, Field study	Numerous resources outside project area	None
S-012988	David Chavez, Jan M. Hupman, and Sally B. Woodbridge	1991	Cultural Resources Investigations of the BART Warm Springs Extension, Alameda County, California	Archaeological, Architectural/ historical, Field study	Two resources outside project area	None
S-012988a	David Chavez and Jan M. Hupman	1990	Cultural Resources Investigations: Warm Springs Extension Project, Bay Area Rapid Transit, Alameda County, California	Archaeological, Field study	Two resources outside project area	None
S-022820	Wendy J. Nelson, Tammara Norton, Larry Chiea, and Eugenia Mitsanis	2000	Cultural Resources Survey for the Level (3) Communications Long Haul Fiber Optics Project, Segment WS07: Oakland to San Jose	Archaeological, Architectural/ historical, Field study	Five resources outside project area	None

TABLE 1, con't

STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
In or Adjacent, con't						
S-026045	Richard Carrico, Theodore Cooley, and William Eckhardt	2000	Cultural Resources Reconnaissance Survey and Inventory Report for the Metromedia Fiberoptic Cable Project, San Francisco Bay Area and Los Angeles Basin Networks	Archaeological, Field study	Numerous resources outside project area	None
S-027290	Barbara Siskin and Madeline Lanz	2002	Inventory and Evaluation Report of Cultural Resources for BART Warm Springs Extension, Alameda County, California	Archaeological, Architectural/ historical, Field study	P-01-002190 (CA-ALA-582H) and P-01-010622 within 0.25 mile; numerous resources outside project area	P-01-010620
S-027290a	Barbara Siskin and Madeline Bowen	2004	Draft Inventory and Evaluation Report of Cultural Resources and Finding of Effect for BART Warm Springs Extension, Alameda County, California	Archaeological, Evaluation, Field study	P-01-002190 (CA-ALA-582H) and P-01-010622 within 0.25 mile; numerous resources outside project area	P-01-010620
S-027290b	Susan K. Stratton	2008	FTA040430A: Section 106 Consultation (Rnd. 06) on the BART Warm Springs Extension Project, City of Fremont, Alameda County, California	OHP Correspondence		
S-027654	William Self Associates, Inc.	2002	Cultural Resource Assessment Report, Fremont Grade Separation Project, Alameda County, California	Archaeological, Field study	One resource outside project area	None
S-033061	Nancy Sikes, Cindy Arrington, Bryon Bass, Chris Corey, Kevin Hunt, Steve O'Neil, Catherine Pruett, Tony Sawyer, Michael Tuma, Leslie Wagner, and Alex Wesson	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Archaeological, Architectural/ historical, Field study, Monitoring	Numerous resources outside project area	None
S-033061a	SWCA Environmental Consultants	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Archaeological, Monitoring		
S-033061b	Nancy E. Sikes	2007	Final Report of Monitoring and Findings for the Qwest Network Construction Project (letter report)	Archaeological, Monitoring		
S-039227	Colin I. Busby	2012	Archaeological Monitoring Summary Report - SFPUC BDPL 5, East Bay Segment, Alameda County	Archaeological, Field study, Monitoring	Negative	None
S-039227a	Basin Research Associates, Inc.	2010	Archaeological Monitoring Plan (AMP), East Bay (Irvington Portal to Newark Valve House), San Francisco Public Utilities Commission (SFPUC) Water System Improvement Program (WSIP), Bay Division Pipeline Reliability Upgrade Project, Bay Division Pipeline No. 5 (BDPL No. 5)	Archaeological, Management/ planning	Negative	None

TABLE 1, con’t

STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
In or Adjacent, con’t						
S-039227b	Colin I. Busby	2011	Eastbay - Unexpected Discovery of Post-1900 Historic Period Artifacts, July 11, 2011, STA 77+70 to STA 77+82, BDPL 5, Alameda County	Archaeological, Field study	Two unrecorded historic period trash scatters	None
S-040929	Basin Research Associates, Inc.	2013	Archaeological Data Recovery Report (SMA-83) (ADRR) and Final Archaeological Resources Report (FARR), San Francisco Public Utilities Commission, Water System Improvement Program, Bay Division Pipeline Reliability Upgrade Project, East Bay and Peninsula Bay Division Pipeline No. 5, Alameda and San Mateo Counties, California	Archaeological, Excavation, Field study, Monitoring	Numerous resources outside project area	None
Within 0.25 Mile						
S-002283	Mara Melandry	1980	Archaeological Survey Report, 5.6 acre excess parcel located between Western Pacific and Southern Pacific railroad tracks in City of Fremont, Alameda County, 04-Ala-238 PM 1.6, 04402-154302	Archaeological, Field study	Negative	None
S-002762	Mara Melandry	1981	Archaeological Survey Report, Excess Parcels on Rescinded Route 238 in Fremont and Alameda County, Excess Parcels 24657, 27118, 27149, 31038, 31039, 31040, 31971, 32591, 32592, 32730, 32731, 32838, 32840, 32841, 32842, 32843, 32844, 32845, 32846, 39241, 39251, 39253, 39279, 39280, 39281, and 39282; 04402-911038, 04452-154302	Archaeological, Field study	Negative	None
S-007732	Robert Cartier	1985	Cultural Resource Evaluation of the Lake Elizabeth Park Expansion Project in the City of Fremont, County of Alameda	Archaeological, Field study	Negative	None
S-020036	Lori Harrington and Carrie D. Wills	1997	Cultural Resources Assessment Report, Alameda County Water District Pipeline and Desalination Plant Project, Fremont, Alameda County, California	Archaeological, Field study	Negative	None
S-030215	Beth A. Gordon	2005	Historic Resource Report, SNFCCA2123A /Paseo Padre and Briscot, Lemos Lane and Marabu Way, Fremont, Alameda County, California.	Archaeological, Field study	Negative	None

Recorded and/or Reported Resources

No prehistoric or combined prehistoric/historic sites have been recorded or reported in or adjacent or within 0.25 mile to the proposed project.

One built environment resource, P-01-010620, the Hetch Hetchy [system]: Bay/Peninsula Pipelines Nos. 1 and 2, built between 1922 and 1934 to transport water from the Irvington Portal (Fremont) to the Crystal Springs Reservoir (San Mateo County) is adjacent to the southeastern corner of the project (Lanz 2002/form).

Two built environment resources have been recorded within 0.25 mile of the project, P-01-002190, the former alignment of the Western Pacific Railroad and P-01-010622, the Irvington Pumping

Station Complex, part of the Hetch Hetchy system (see Table 2). Both resources are no longer extant.

TABLE 2
CULTURAL RESOURCES IN THE VICINITYOF THE PROJECT

Resource	Type	Recorded by	Eligibility NRHP/CRHR	Comment
In/adjacent				
P-01-010620	Historic; Structure; Hetch Hetchy, Bay Pipeline Nos. 1 and 2	1995 (JRP); 2002 (Madeline R. Lanz); 2009 (J. Dougherty, J.P. Glover)	Eligible for listing in NRHP under criteria a, b, and c	Portion of recorded segment (ROW) is adjacent to project site
Within 0.25 Mile				
P-01-002190 CA-ALA-528H	Historic; Structure; Western Pacific Railroad	1994 (Woodward-Clyde Consultants) (5 locations); 1997 (Celia McCarthy); 1998 (Elizabeth McKee); 1999 (William Kostura); 2002 (Sara Palmer, Judith Marvin); 2002 (Madeline Lanz) (2 locations); 2002 (C. McMorris, A. Blosser); 2005 (B. Larson) (3 locations); 2006 (Christopher Canzonieri); 2009 (T. Martin, K. Frank); 2014 (Dean M. Duryea, Jr.)	6 – not eligible for listing (DPR for segment)	Recorded segment in the vicinity of the project (Voided P-01-0106210) includes segment of alignment and a trestle north of Paseo Padre Parkway. Alignment is east of the BART tracks, ca. 500 feet east of path along west side of Stivers Lagoon. ***Resource is no longer present. It was removed as part of BART construction.***
P-01-010622	Historic, Building; Irvington Pumping Station	2002 (Madeline R. Lanz)	Not eligible (DPR)	Resource location is east of the BART tracks, ca. 400 feet east of path along west side of Stivers Lagoon. ***Resource is no longer present. It was demolished as part of BART construction.***

LISTED HISTORIC PROPERTIES

P-01-010620, the Hetch Hetchy Aqueduct Bay/Division Bay Peninsula Pipelines Nos. 1 and 2, is adjacent to the southeastern corner and southern boundary of the project site. This segment has been evaluated as eligible for inclusion in the National Register of Historic Places (NRHP) under criteria a, b and c for "strong associations with the construction of the Hetch Hetchy dam and reservoir and development of a reliable water source that fueled the growth of the City and County of San Francisco." and "strong associations with Michael M. O'Shaughnessy, the City of San Francisco engineer responsible for the Hetch Hetchy Aqueduct" (Donaldson SHPO, January 30, 2006). By extension, this *Consensus Determination* by Federal Transit Administration (FTA) and the California Office of Historic Preservation is applicable to the California Register of Historical Resources (CRHR).[2] The proposed project will not have any effect/impact on the resource and/or values for which the resource has been evaluated as eligible for the NRHP/CRHR.

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2. Lanz (2002/form) states that the segment of Bay/Division Pipeline Nos. 1 and 2 (P-01-010620) "located immediately north of Paseo Padre Parkway and just south of the Irvington Pumping Station [P-01-010622] appears to meet CRHR criteria 1, 2, and 3.

No other state or federal historically or architecturally significant structures, landmarks, or points of interest have been recorded or identified within or adjacent to the APE.

Stiver's Lagoon[3] [*sic*] has been listed as a City of Fremont Primary Historic Resource (PHR #2), a natural feature in the Central Planning area and is described as "Silt Pond and Nature Area next to Lake Elizabeth" (Basin Research Associates et al. 1998:Table 2 after Fremont 1982:#E52 and Fremont 1991/1996:Appendix I).[4] The feature is mapped within a small area south of Lake Elizabeth[5] (e.g., Fremont 1982; Mission Peak Heritage Foundation (MPHF) 1976).

Channelized Mission Creek forms the northern and western boundary of the APE (Sowers 1999). The creek, known earlier as the *Arroyo de la Laguna* (e.g., USGS 1906) "Mission Creek (Laguna Creek)," has been designated a City of Fremont Central Planning Area Primary Historic Resource (PHR #1) (see Basin Research Associates et al. 1998:Table 2 after Fremont 1991/1996).

ARCHAEOLOGICAL SENSITIVITY

The project is regionally mapped as within an area of "extreme" sensitivity for archaeological resources (Quaternary Research Group 1976). This determination was based on the number of recorded archaeological sites in the general area in the early 1970s and the observation that prehistoric archaeological resources are often linked with flowing water sources in southern Alameda County.

The sensitivity map of this area of Alameda County has not been updated for over 45 years. Construction associated with the San Francisco Public Utilities Commission Water Improvement System Project (SFPUC WSIP) within the Hetch Hetchy pipeline alignment to the south; the construction of the Warm Springs BART extension adjacent to the western boundary; removal of various historic structures including the Western Pacific Railroad alignment (to the west) and the Irvington Pumping Station (to the southeast); the construction of Paseo Padre and other infrastructure improvements over the past 40 years has not resulted in the discovery of significant subsurface prehistoric or historic archaeological resources within and adjacent to the project site. In addition, archaeological monitoring during the SFPUC WSIP Hetch Hetchy pipeline upgrades adjacent to the southern boundary did not observe any buried cultural materials. Furthermore, Stivers Lagoon was a freshwater marsh with areas of deeper water prior to the installation of flood control improvement at the turn of the 20th century and would not have been a favorable location as a prehistoric habitation site.

The site-specific archaeological sensitivity of the project site should be considered low based on

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3. See Fisher et al. (n.d.) *The Natural History of Stivers Lagoon* for a brief biographical background of Simeon Stivers (1826 – 1898), namesake of Stivers/Stiver's Lagoon.

4. The 1991/1996 resources are not mapped. The current Fremont General Plan (Fremont 2011) and related reports (Fremont 2008; Lamphier-Gregory 2011 [DEIR] do not include lists of local natural, historic and/or cultural resources).

5. Note the configuration of Lake Elizabeth differs markedly from the contemporary configuration.

the available archaeological data[6] and former environmental situation.

SUMMARY BACKGROUND REVIEW

PREHISTORIC

Cultural resources are traces of human occupation and activity. In northern California, human occupation extends back in time for at least 9,000-11,500 years with Native American occupation and use of the Bay Area extending over 5,000-8,000 years and possibly longer. Evidence for early occupation along the bayshores has been hidden by rising sea levels from about 15,000 to 7,000 years ago, or was buried under sediments caused by bay marshland infilling along estuary margins from about 7,000 years onward. The locations of the shoreline, marshlands, and creeks within the project area have changed over the past 6,000 years due to either natural factors or urban development including flood control. In general, the prehistoric archaeological sites associated with the bay and inland areas are located close to water (e.g., creeks, marshes, and the shoreline). The project area is within the flood plain of Mission Creek and a former "lagoon" or "Tule Pond" now known as Lake Elizabeth (Allardt 1874; Thompson and West 1878:45).

The project area was within an environmentally advantageous area for Native Americans during the prehistoric period prior to white contact. Prehistoric use of the general area was heavily influenced by the presence of various seasonal creeks, the San Francisco Bay marshlands around the bay margin, and the foothills to the east of the project. Local creeks would have provided a year-round source of water and riparian resources. In addition, travel would have been relatively easy between the bay shoreline and interior. The foothills would have provided access to acorns, seed, game, tool stone, etc. while San Francisco Bay and its margins along with the many perennial and seasonal creeks and sloughs would have been sources of shellfish, fish, waterfowl, and riparian vegetation.

Prehistoric site types in the general project area include habitation sites ranging from villages to temporary campsites, stone tool and other manufacturing areas, quarries for tool stone procurement, cemeteries usually associated with large villages, isolated burial sites, rock art locations, bedrock mortars or other milling feature sites and trails. Archaeological sites in the general area appear to have been selected for relative accessibility, protection from seasonal flooding, and proximity to a diversified resource base. The majority of the prehistoric shellmounds and associated sites in the area are situated at the ecotone (boundary) between the salt marsh and alluvial plain ecozones.

Archaeological information suggests a slow steady increase in the prehistoric population over time with an increasing focus on permanent settlements with large populations in later periods. This change from hunter-collectors to an increased sedentary lifestyle is due both to more efficient resource procurement as well as a focus on staple food exploitation, the increased ability to store

6. For example, none of the prehistoric mound sites or “Indian Villages” within Washington Township have been identified/mapped within or in the vicinity of the proposed project (e.g., Whitney 1973; Nelson ca. 1912; CCWTRC 1950-65; Shinn with Guedon 1991/1992).

food at village locations, and the development of increasing complex social and political systems including long-distance trade networks.

Several chronological schemes based on stratigraphic differences and the presence of various cultural traits have been developed to explain the archaeological record. A three-part cultural chronological sequence, the Central California Taxonomic System (CCTS) was developed by archaeologists to explain local and regional cultural change in prehistoric central California from about 4,500 years ago to the time of European contact (Beardsley 1948, 1954). This classification scheme, consisting of three horizons - Early, Transitional and Late, has been revised although the prior nomenclature (Early, Middle, Late Horizon) is still in common use (see Fredrickson 1994). Moratto (1984) suggests the Early Horizon dated to ca. 4,500 to 3,500/3,000 years ago with the Middle Horizon dating to circa 3,500 to 1,500 years ago and the Late Horizon dating to circa 1,500 to 250 years ago. Hylkema has presented a four-period chronological framework for the Northern Santa Clara Valley/Southern San Francisco Bay region (see Allen 1999) using the Bennyhoff and Hughes (1987) taxonomy as revised (see Fredrickson (1994) (Table 1).

General overviews and perspectives on the regional prehistory including chronological sequences can be found in C. King (1978), Moratto (1984), Elsasser (1978, 1986), Allen et al. (1999), Jones and Klar (2007), Milliken et al. (2007) and Byrd et al. (2017).

TABLE 1
Comparison of California Cultural Period with Temporal Phases of Central California
(Allen 1999)

Cultural Periods (Fredrickson 1994)	**Dating Scheme B1** (Bennyhoff and Hughes 1987)	
	Year	**Time Period**
EMERGENT PERIOD		Historic Period
	AD 1800	
		Late Period Phase 2-B
	AD 1700	
		Late Period Phase 2-A
	AD 1500	
		Late Period Phase 1-C
	AD 1300	
		Late Period Phase 1-B
	AD 1100	
		Late Period Phase 1-A
UPPER ARCHAIC PERIOD	AD 900	
		Middle/Late Period Transition
	AD 700	
		Middle Period Terminal Phase
	AD 500	
		Middle Period Late Phase
	AD 300	
		Middle Period Intermediate Phase
	AD 100	
		Middle Period Early Phase
	200 BC	
		Early/Middle Period Transition

TABLE 1, con't

Comparison of California Cultural Period with Temporal Phases of Central California (Allen 1999)

Cultural Periods (Fredrickson 1994)	**Dating Scheme B1** (Bennyhoff and Hughes 1987)	
	Year	**Time Period**
MIDDLE ARCHAIC PERIOD	500 BC	
		Early Period
	3000 BC	
LOWER ARCHAIC PERIOD		
	6000 BC	
PALEOINDIAN PERIOD		
	8000 BC	

ETHNOGRAPHIC

The proposed project is within the *Chochenyo* territory of the former Costanoan Indians who now prefer to be known as Ohlone. The term "Costanoan" is derived from the Spanish word *Costanos* "coast people" or "coastal dweller." *Chochenyo*, one of the northernmost Ohlone language groups, was apparently spoken in the East Bay between Richmond and Mission San Jose, possibly as far east as the Livermore Valley. Based on evidence from mission records and archaeological research, *Chochenyo* territory was home to approximately 2000 Native Americans (Kroeber 1925; Levy 1978; Hart 1987).

The nearest tribelet appears to been the *Oroyson* [or *Oroiso-n*], whose settlement was located near Mission San Jose at the base of Mission Peak. The next closest tribelet, the *Tuibun*, is situated to the north, centered on Alameda Creek (Kroeber 1925; Levy 1978; Cultural Systems Research, Inc. 1982 in Bard et al. 1989; Milliken 1995:229, Map 5).

A severe population loss appears to have occurred between the Spanish exploring parties lead by Anza-Font in 1776 and the Danti 1795 expedition. The disruption of the aboriginal lifeway was due to factors such as introduced diseases, a declining birth rate, and the impact of the mission system. The Costanoan were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Esselen, Yokuts, and Miwok. Later, due to the secularization of the Missions by Mexico in 1834, most of the aboriginal population gradually moved to ranchos to work as manual laborers (Cook 1957:141; Levy 1978:486).

For a more extensive review of the Costanoan see Kroeber (1925), Harrington (1942), Levy (1978), Bean (1994), Milliken (1995, 2006, 2008) and Milliken et al. (2009).

HISPANIC PERIOD

The Spanish philosophy of government in northwestern New Spain was directed at the founding of presidios, missions, and secular towns with the land held by the Crown (1769-1821), while the later Mexican policy stressed individual ownership of the land. After the secularization of the missions by Mexico in 1833, vast tracts of the mission lands were granted to individual citizens (Hart 1987).

The period of initial historic exploration of the project area started in 1769. Between 1769 and 1776 a number of Spanish expeditions went through Costanoan territory, including those led by Portola, Fages, Fages and Crespi, Anza, Rivera, and Moraga. Even though the routes of the early explorers cannot be determined with total accuracy, a number appear to have been within the general vicinity. These include the expedition led by Ortega, which reached Alameda Creek in 1769; Pedro Fages in 1772, Anza and Font in 1776,[7] and the later Spanish expedition of Hermenegildo Sal accompanied by Fray Antonio Danti who went to the top of Coyote Hills in 1795 (Beck and Haase 1974:17-22; Cook 1957, 1960; Levy 1978:486).

Mission San Jose, established in 1797, was located about 2.1 miles southeast of the project. As one of seven missions in Ohlone territory, Mission San Jose had the greatest impact on the aboriginal population in the study area (Bennyhoff 1977; Hart 1987; Milliken 1995). During the Hispanic Period, settlement concentrated around Mission San Jose and the Vallejo Mills near present day Niles (Hendry and Bowman 1940:623-628). Reportedly in 1850 ". . . several thousand" Native Americans lived within a few miles of Mission San Jose (Baker 1914). Galvan (1967/68:11) notes there were at least seven Native American rancherias near the Mission. After secularization of the missions during the 1830s, and the American takeover of California during the 1840s, the assets of Mission San Jose, including land and livestock, dwindled. In 1858, 11.5 ha (28 1/3 acres) at the old mission were patented to the Roman Catholic Church (Cultural Systems Research, Inc. 1982 in Bard et al. 1989:5-11) which is the current location of the church in Fremont.

The project area was within lands formerly held by Mission San Jose, known as *Ex-Mission San Jose* lands. This grant was made to Andres Pico, E.L. Beard and John M. Horner for payment of Mission debts, but the land claim was rejected by the courts

No Hispanic era dwellings, structures or roads are present either within or near the proposed project site (Hendry and Bowman 1940:645-650 with Beck and Haase 1974:#30).

AMERICAN PERIOD

In the mid-19th century, the majority of the rancho and pueblo lands and some of the ungranted land in California were subdivided as the result of population growth, the American takeover, and the confirmation of property titles. Growth can be attributed to the Gold Rush (1848), followed by the completion of the transcontinental railroad (1869) and local railroads. Still later, the

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7. Known "Juan Bautista de Anza National Historic Trail [1776]" and mapped just north of the creek along the foothills (USNPS 1995).

development of the refrigerator railroad car (ca. 1880s) used for the transport of agricultural produce to distant markets, had a major impact on population growth. The agricultural land use pattern within the study area and environs, begun in the Hispanic Period and reinforced in the American Period, has rapidly replaced by urban and suburban development since post-World War II (Hart 1987).

The settlement of what would become Washington Township began with the founding of Mission San Jose in 1797. Alameda County was carved from parts of Santa Clara and Contra Costa counties in 1853 (Hoover et al. 1966). In 1857, population clusters in the general vicinity of the proposed project were located at Mission San Jose, Centerville, Union City and a number of landings along the coast. At this time, roads in the general study area consisted of Mission Boulevard, Washington Boulevard and "Stockton Road" (e.g., Interstate 680). By 1873 Washington Corners, known as Irvington by 1900, was in existence south of the project at the intersection of Washington Street (Boulevard) and San Jose Road (present-day Fremont Boulevard), west of the Western Pacific Railroad. The City of Fremont, incorporated in 1956 and now includes the former communities of Irvington, Centerville, Niles/Vallejo Mills, Mission San Jose and Warm Springs (Whitney 1873; Allardt 1874; Nusbaumer and Boardman 1900; Hart 1987; Jones & Stokes 2002). The City is now a major residential area with associated office, commercial and industrial facilities with a population of approximately 215,000 residents.

Historic Map Review

The project site includes a natural feature, Stiver Lagoon, Stiver's Lagoon, Pond, etc., that has been mapped with varying cartographic configurations over the past 150 years. Most of the project site ca. 1850 was occupied by a fresh water marsh known as "Stiver Lagoon" which included the location of present-day Lake Elizabeth which was constructed in the 1970s and subsequently expanded in 1986. The project site is bounded on the west side by channelized Laguna Creek, the former *Arroyo de la Laguna* (USGS 1906, surveyed 1904).

> The 1826 Beechey map of trails to Mission San Jose appears to show a pond/lagoon and Laguna Creek.
>
> Whitney's 1873 *Map of the Region Adjacent to the Bay of San Francisco* shows a "Tule Swamp" as well as rail alignment, while Allardt's 1874 *Official Map of Alameda County, California* shows a "Tule Pond," the northwestern part of which is crossed by the Western Pacific Railroad.
>
> The Thompson and West 1878 *Official Historical Atlas Map of Alameda County, California* shows Mission Creek flowing into a "Lagoon" with tules at its mid-to-southern end along with the "Western Pacific R.R." through part of the Lagoon. This map also shows the alignment of "Laguna Creek" flowing south from the Lagoon.
>
> Whitney, Allardt and Thompson and West all show the focus of occupation activity in the project area south of the project site at "Washington" and/or "Washington Corners," west of the railroad tracks along the road from Centerville to Mission San Jose.
>
> The 1880 Oakland Daily & Weekly Tribune *Map of Alameda County* shows "Tule Pond" as well as the "Western Pacific R.R." through the project area.

The 1906 USGS Pleasanton topographic map shows a small "Tule Pond" northwest of "The Lagoon" surrounded by a marshy corona until reaching the "Arroyo de la Laguna" at its southern end. This map also shows the S.P.R.R. (San Jose Branch).

The 1914 Weber's *Map of Alameda County, California* includes "The Lagoon" and "Sierra & S.F. Power Co" transmission line diagonally at about mid-point through the project (e.g., USGS 1980).

The 1943 USGS Pleasanton topographic map shows "The Lagoon" alignment of Laguna Creek at its southern end. At the time, most of the project is shown as marshy. In contrast to previous maps, the 1961 USGS Livermore topographic map shows the pond/lagoon as a named feature - "Stivers Lagoon." In addition the Hetch Hetchy aqueduct is shown south of the transmission line through the southern portion of the project site. The 1973 and 1980 USGS Niles topographic maps are similar. The configuration of Lake Elizabeth is shown along with the present-day swim lagoon to its south, west of the project site. Both maps show the current Paseo Padre Parkway as well as a trail/parking area along/adjacent the west side of the project site.

FIELD SURVEY [Figs. 3-21]

Mr. Christopher Canzonieri (MA, RPA), completed a field inventory of the project site on March 18, 2022 (South, Figs. 3, 4-16) and April 1, 2002 (North, Figs. 3, 17-21). Access to the project area was from the south side along a paved road that runs north-south parallel to the railroad tracks. Field transects varying from 2-5 meters (south) and 3-5 meters (North) were selectively placed in accessible areas due to areas of dense vegetation (Note: Several recently cut trails for civil survey were present). Surface visibility throughout the entire survey area was poor with less than 5%. Trees and shrubs ring the project site and flood control channels encircle most of the project area. Two 115kV transmission lines (230Kv corridor) owned by PG&E pass through the south third of the project site (4 towers present) and terminate at a PG&E substation on Paseo Padre Parkway near Grimmer Boulevard. The remnants of a former pedestrian deck of recent age (redwood with PVC piping under the floor boards) are present near the southwest corner. A modern building with an address of 40690 Paseo Padre Parkway is present within the northern portion of the project site. It is associated with the Warm Springs BART extension and may be part of the underground track ventilation system under Lake Elizabeth. A civil survey team was on-site during the field review and indicated that the pedestrian deck will be replaced.

No prehistoric or significant historic cultural materials were noted during the field survey. The PG&E transmission line will be retained and not impacted by the proposed improvements.

FINDINGS

The intent of this cultural resources review was to identify historic properties (prehistoric and historic resources) within or immediately adjacent to the Stivers Lagoon project site which may be listed, determined or potentially eligible for inclusion on the CRHR and which could be affected by the proposed improvements. The following findings apply based on the results of the archaeological research.

- No prehistoric or combined prehistoric/historic sites have been recorded within, adjacent or within 0.25 mile to the project site.
- Fifteen (15) reports on file at the CHRIS/NWIC include the project site and/or adjacent areas. Five (5) additional studies are within 0.25 mile of the project site. All are negative for cultural resources within the project site.
- P-01-010620, a built environment resource known as the Hetch Hetchy Aqueduct Bay/Division Bay Peninsula Pipelines Nos. 1 and 2, is adjacent to the southern boundary of the project. The segment has been evaluated as eligible for inclusion in the National Register of Historic Places (NRHP) under criteria a, b, and c and by extension is eligible for the California Register of Historical Resources (CRHR). The proposed project improvements will not have any effect/impact on the resource and/or values for which the resource has been evaluated as eligible for the NRHP/CRHR.
- No former Native American villages, traditional use areas or contemporary use areas have been identified in or adjacent to the project site.
- No known Hispanic era dwellings or other structures, features, etc. have been identified in or adjacent to the project site.
- A historic map review indicates that no significant American era features/sites are located in or adjacent to the project site.
- No prehistoric or historic archaeological materials were observed during the field inventory conducted within the project site.
- With the exception of P-01-010620, the Hetch Hetchy Aqueduct Bay/Division Bay Peninsula Pipelines Nos. 1 and 2, no CRHR and/or NRHP listed, determined or pending archaeological sites, significant local, state or federal historic properties, landmarks, etc. have been identified in or adjacent to the project site.
- Stiver's Lagoon is listed as a City of Fremont Primary Historic Resource (PHR #2), a natural feature within the Central Planning area (Fremont 1991/1996).
- Channelized Mission Creek, form the west and north boundaries of the project site. "Mission Creek (Laguna Creek)" has been designated a City of Fremont Primary Historic Resource (PHR #1), a natural feature (Fremont 1991/1996).
- The project site has been regionally mapped as within an area of "extreme" sensitivity for archaeological resources in the mid-1970s. This designation has not been reviewed and/or updated based on over 40+ years of archaeological research and is primarily based on the presence of flowing water and associated topographic features.

  Infrastructure improvements over the past 40 years for the SFPUC, BART, and other parties have not resulted in the discovery of significant subsurface prehistoric or historic archaeological resources within and adjacent to the project site. In addition, archaeological monitoring during the SFPUC WSIP Hetch Hetchy pipeline upgrades adjacent to the southern project boundary did not observe any buried cultural materials. Furthermore, Stivers Lagoon was a freshwater marsh with areas of deeper water prior to the installation of flood control improvement at the turn of the 20th century and would not have been a favorable location as a prehistoric habitation site. The revised (site-specific) archaeological sensitivity of the project site should be considered low based on the available archaeological data and former environmental situation.

In summary, the results of this cultural resources review finds that no new significant (CEQA) impacts related to historic or archaeological resources would occur under implementation of the proposed project.

MANAGEMENT RECOMMENDATIONS

It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents, and a field inventory that the proposed project can proceed as planned as the improvements will not affect any known historic properties or unique archaeological resources.

No subsurface testing for buried archaeological resources appears necessary due to the perceived low sensitivity based on available archaeological data on the location of the project site within a former lagoon. Archaeological monitoring is also not recommended as the immediate project area does not appear to be sensitive for either buried prehistoric or historic cultural resources. Out of an abundance of caution, and consistent with standard industry protocols implemented during grading projects, the following protection measures should be considered for implementation.

(a) The project proponent shall note on any plans that require ground disturbing excavation that there is a potential (though as discussed above, the potential is considered low) for exposing buried prehistoric or historic cultural resources including prehistoric Native American burials.[8]

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8. Significant prehistoric cultural resources may include:

   a. Human bone - either isolated or intact burials.
   b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
   c. Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
   d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
   e. Isolated artifacts

   Historic cultural materials may include finds from the late 19th through early 20th centuries including:

   a. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
   b. Trash pits, privies, wells and associated artifacts.
   c. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
   d. Human remains.

   In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or clusters of artifacts and samples

(b) It is recommended that prior to the start of ground disturbing construction the project proponent implement a Worker Awareness Training (WAT) program for cultural resources. Training should be required for all personnel participating in ground disturbing construction to alert them to the archaeological sensitivity of the project area and provide protocols to follow in the event of a discovery of archaeological materials. A Professional Archaeologist should develop and distribute for job site posting an "ALERT SHEET" summarizing potential finds that could be exposed and the protocols to be followed as well as points of contact to alert in the event of a discovery. Training will be scheduled at the discretion of the contractor in consultation with the project proponent.

(c) The project proponent shall retain a Professional Archaeologist on an “on-call” basis during ground disturbing construction for other areas of the project site to review, identify and evaluate cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under the California Environmental Quality Act (CEQA).

(d) If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource under CEQA, he/she shall notify the project proponent and other appropriate parties of the evaluation and recommend mitigation measures to mitigate to a less-than significant impact in accordance with California Public Resources Code Section 15064.5. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options. The completion of a formal *Archaeological Monitoring Plan* (AMP) and/or *Archaeological Treatment Plan* (ATP) that may include data recovery may be recommended by the Professional Archaeologist if significant archaeological deposits are exposed during ground disturbing construction. Development and implementation of the AMP and ATP and treatment of significant cultural resources will be determined by the project proponent in consultation with any regulatory agencies.

(e) The treatment of human remains and any associated or unassociated funerary objects discovered during any soil-disturbing activity within the project site shall comply with applicable State laws pursuant to California Public Resources Code Sections 5097.94, 5097.98, and 5097.99. This shall include immediate notification of the appropriate county Coroner/Medical Examiner and the project proponent.

(f) A *Monitoring Closure Report* shall be filed with the project proponent at the conclusion of ground disturbing construction if archaeological and Native American monitoring of excavation was undertaken.

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include remains of structures, trash pits, and privies.

CLOSING REMARKS

If I can provide any additional information or be of further service please don't hesitate to contact me.

Sincerely,
BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA
Principal

CIB/d

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Abbreviations

n.d.	no date	v.d.	various dates	N.P.	no publisher noted
n.p.	no place of publisher noted				

CHRIS/NWIC, Sonoma State University, Rohnert Park is used for material on file at the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park.

ATTACHMENTS

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CORRESPONDENCE

LETTER	Request to Native American Heritage Commission

CHRIS/NWIC SEARCH

SEARCH 1	File No. 21-1343 (No Confidential Information)

Figure 1: General Project Location (ESRI World Street Map)

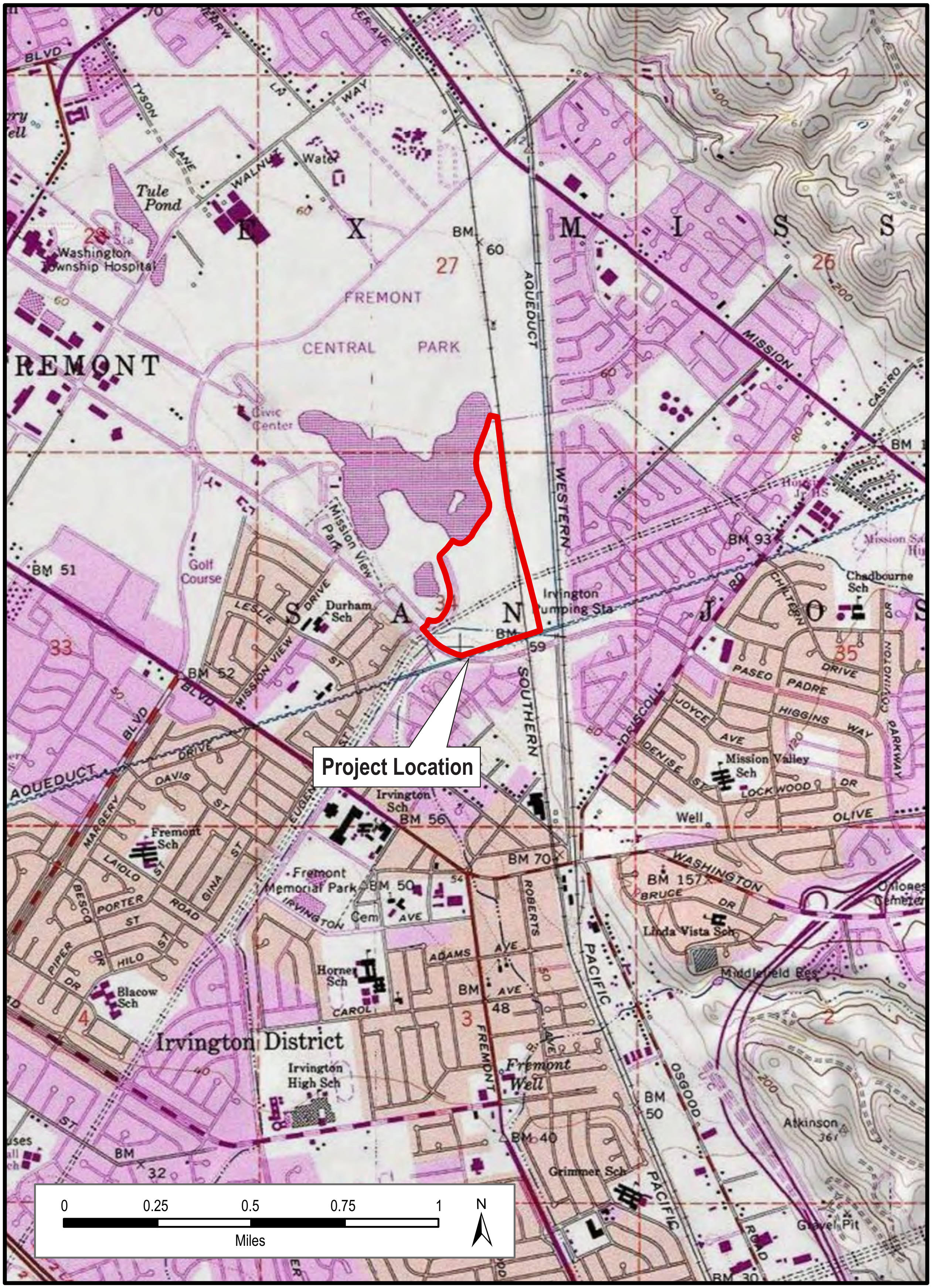

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Figure 18: View north towards BART facility (probable ventilation structure – 40690 Paseo Padre Parkway)

Figure 19: View south from the north end of the project area

Figure 20: Mission Creek at the north end of the project area – view south

Figure 21: View south along Lake Elizabeth from the north end of the project area

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION

1556 Harbor Boulevard, STE 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Lake Elizabeth/Stivers Lagoon Improvements, City of Fremont, Alameda County

County: Alameda County

USGS Quadrangle Name: USGS Niles, Calif. 1980

Address: None vacant land (Fremont Central Park, west of Union Pacific RR tracks and north of Paseo Padre Parkway, City of Fremont

Township: 4 South **Range**: 1 West, Section 34

Company/Firm/Agency: Basin Research Associates

Contact Person: Colin I. Busby, PhD, RPA

Street Address: 1933 Davis Street, STE 214

City/Zip: San Leandro, CA 94577

Phone: (510) 430-8441 x101

Email: Please send response to basinres1@gmail.com

Project Description: The Alameda County Flood Control and Water Conservation District (District) needs to complete the requirements for a California Environmental Quality Act (CEQA) addendum for the improvements to restore and enhance the hydrology and habitat value of the existing Stivers Lagoon located adjacent to Lake Elizabeth in Fremont. The general project would create new, and enhance existing, wetland habitat values. Various improvements to the lagoon and Lake Elizabeth have been completed since the mid-1990s by either the City of Fremont or the District under the Program Environmental Impact Report (EIR) filed in 1993.

The Stivers Lagoon marsh covers an area of approximately 40 acres to the southeast of Lake Elizabeth in Fremont's Central Park. The lake, covering 88 acres, was first developed in 1968 and subsequently expanded in 1986. The lagoon marsh is a remnant of a formerly larger body of natural open water and marsh which, due in large part to an altered surface and groundwater hydrologic regime, has changed to an emergent wetland that dries out in summertime.

Proposed improvements include: (1) excavation of Long Pond in the marsh; (2) construction of a berm on the west side of Mission Creek; (3) vegetation management; (4) construct a pedestrian bridge and catwalk to improve access to viewpoints and restoration areas; and, (5) habitat modifications to restore wetlands and create additional open water area.

No recorded resources are present within and adjacent to the project site which was formerly partially a freshwater marsh.

Date: 2/16/2022

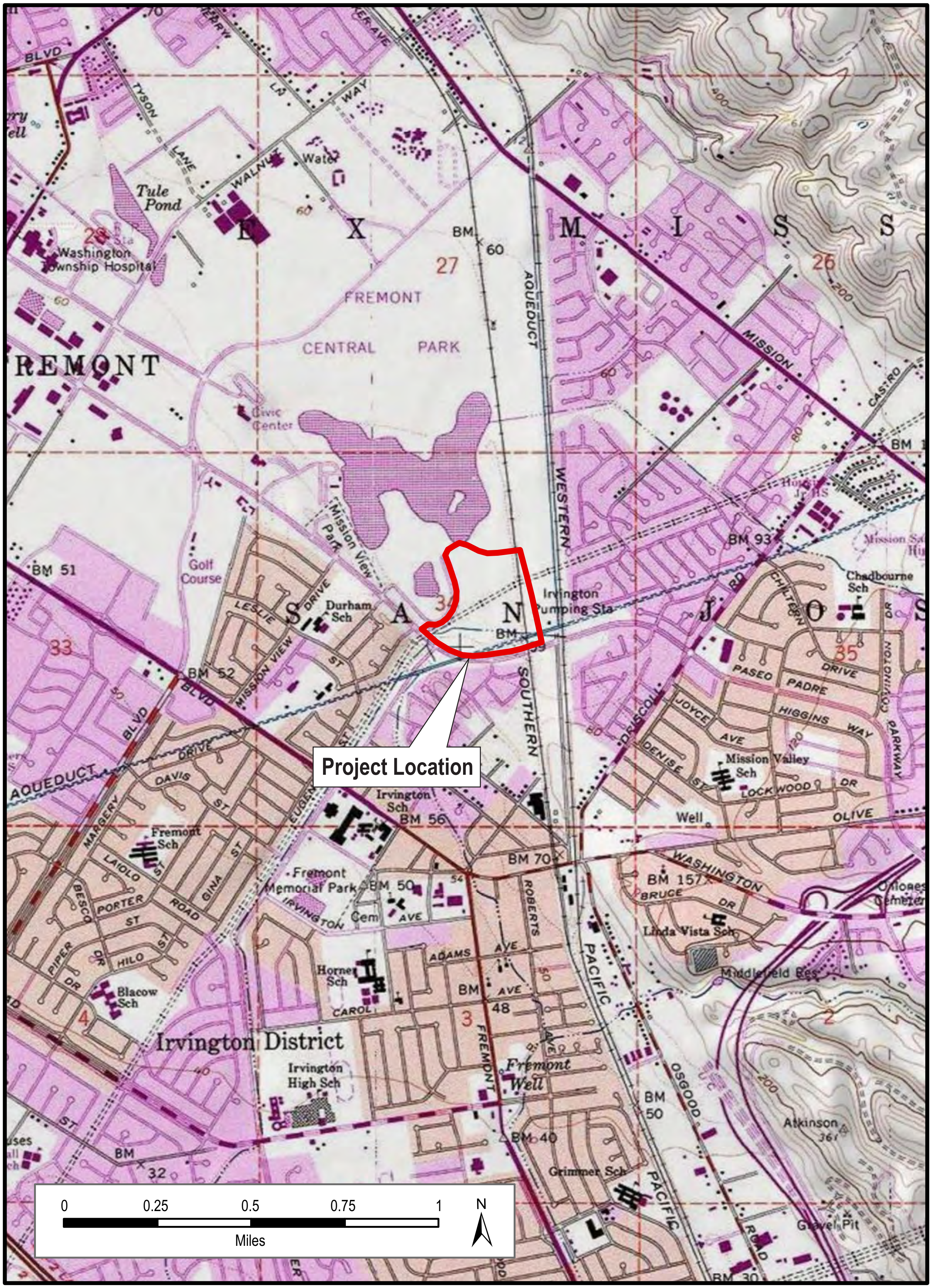

Figure 1: Project Location - T4S R1W Section 34 (USGS Niles, Calif. 1980)

CALIFORNIA
HISTORICAL
RESOURCES
INFORMATION
SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
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MARIN
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SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
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YOLO

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1400 Valley House Drive, Suite 210
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://nwic.sonoma.edu

2/23/2022

NWIC File No.: 21-1343

Donna M. Garaventa
Basin Research Associates
1933 Davis Street, Suite 214
San Leandro, CA 94577

Re: Stivers Lagoon

The Northwest Information Center received your record search request for the project area referenced above, located on the Niles USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a ¼ mile radius:

Resources within project area:	P-01-010620
Resources within ¼ mile radius:	P-01-002190; P-01-010620; P-01-010622
Reports within project area:	S-010200; S-012988; S-022820; S-026045; S-027290; S-027654; S-033061; S-039227; S-040929
Reports within ¼ mile radius:	S-002283; S-002762; S-007732; S-020036; S-030215

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☐ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☒ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed

GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed
Soil Survey Maps:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Justin Murazzo
Researcher

Jeff Haltiner
PWA

DRAFT

LAKE ELIZABETH / STIVERS LAGOON MARSH DESIGN AND IMPROVEMENT PROGRAM

Environmental Impact Report

February 1993

SCH # 91113077
EIR-92-56

Prepared for:
City of Fremont

ESA

DRAFT

LAKE ELIZABETH / STIVERS LAGOON MARSH DESIGN AND IMPROVEMENT PROGRAM

Environmental Impact Report

February 1993

SCH # 91113077
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Prepared for:
City of Fremont

Environmental Science Associates, Inc.

301 Brannan St.
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San Francisco, California
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Also offices in

Los Angeles

Sacramento

900639

ESA

LAKE ELIZABETH / STIVERS LAGOON DESIGN AND IMPROVEMENT PROGRAM ENVIRONMENTAL IMPACT REPORT

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LAKE ELIZABETH / STIVERS LAGOON DESIGN AND IMPROVEMENT PROGRAM
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SUMMARY

INTRODUCTION

The City of Fremont has proposed several recreation, habitat and shoreline restoration projects that comprise the Lake Elizabeth/Stivers Lagoon Design and Improvement Program. The City of Fremont determined that the approval and construction of components of the proposed Program would require the preparation of an Environmental Impact Report (EIR).

The 82-acre Lake Elizabeth is included within the 174 acres of lands owned and leased to the City of Fremont by the Alameda County Flood Control and Water Conservation District under a license agreement for use as a park and recreational facility. In addition, the City of Fremont owns about 266 acres of surrounding lands. The 440-acre Central Park is located within the City of Fremont in Alameda County. Figure 2.1, Chapter 2.0, depicts the Fremont Central Park within the greater San Francisco Bay Area. Central Park is bordered by Paseo Padre Parkway, Stevenson Boulevard and the Union Pacific Railroad.

Lake Elizabeth was created by excavation of part of Stivers Lagoon Marsh in 1968. Stivers Lagoon Marsh is one of a number of freshwater marshes along the east side of the Hayward Fault formed as a sag pond as a result of geologic tectonic movements along the fault. The marsh is fed by Mission Creek and several small tributary creeks.

Lake Elizabeth and adjacent park lands provide flood storage for Mission Creek located to the east of the lake, provide for extensive recreation opportunities, and provide some wildlife habitat. Recreational activities include boating, fishing, nature study, jogging, swimming, walking and sport facilities (see Figure 2.2, Chapter 2.0).

PROJECT OBJECTIVES

The City's primary objective in proposing the projects and the Program is to improve the quality of the recreation opportunities for Central Park users. Specific objectives supporting this goal include:

1) Increasing the recreational use capacity of the park.

2) Improving the aesthetic appearance and structural integrity of the lake shoreline and associated facilities.

3) Improving lake water quality.

4) Preserving the lake's essential function as flood control storage.

5) Enhancing overall habitat quality.

6) Reducing future siltation and its effects on water depth.

Current high demand for and increased use of recreational facilities at Central Park, if it led to overuse of those facilities, would decrease the quality of recreation available and to degrade the water quality of Lake Elizabeth for recreation users, aquatic and terrestrial wildlife. In addition, lower groundwater levels in Stivers Lagoon Marsh have reduced habitat for wetland plant species and have facilitated the growth of upland plant species. Without increased soil saturation and/or surface inundation, the marsh will continue to deteriorate and convert to an upland habitat of lesser wildlife habitat and recreational use value.

PROPOSED PROJECTS

The following summarizes the specific projects proposed within Central Park to improve recreational opportunities and wildlife habitat. These projects are discussed in detail in Chapter 2.0.

Dredging Lake Elizabeth

The primary objectives of the dredging project are to restore and enhance the recreational opportunities and aquatic habitat at Lake Elizabeth. The dredging project involves removal of accumulated silt from the lake bottom and the disposal of the dredge spoils within a 21-acre area north of Lake Elizabeth. Approximately 145,200 cubic yards (90 acre-feet of volume) of sediments would be dredged. For the 145,200 cubic yards of dredged material, approximately 7 ponds would be required, with a total area of 3.5 to 7 acres for all ponds. Dried sediments would be disposed of on-site in shaped mounds which would cover approximately 9 acres within this 21-acre area. More specifically, the dried dredged material would be formed into 20-foot mounds (10:1 side slopes) to provide topographic relief and minimize the displacement of lake area flood storage capacity.

Turf Development North Of Lake Elizabeth

The City of Fremont proposes to develop the 21 acre area north of Lake Elizabeth to accommodate open turf, picnic, frisbee, ball games, and related recreational uses. The area would contain picnic tables, play equipment, barbecue equipment, a restroom, and possibly a small parking lot; the majority of the area would be covered with turf and would be irrigated with groundwater.

Similar to Lake Elizabeth and Stivers Lagoon Marsh, this area is currently used for water "storage" during significant flood events. The placement of dried sediments on 9 acres would remove 34 acre-feet of 100-year flood storage, leaving a remaining net storage of 951 acre-feet. Even with the removal of this flood storage, the area north of the lake would still provide more than the minimum 931 acre-feet of storage required under the City's lease agreement with ACFCWCD.

Shoreline Rehabilitation Of Lake Elizabeth

Approximately 8,000 feet of the 10,000 foot lake shoreline is proposed to be protected using a combination of structural and vegetative elements. There are five different shoreline treatment alternatives proposed as discussed below. Shoreline rehabilitation treatments would vary depending upon site-specific erosion problems, aesthetic and habitat considerations, recreational uses, and cost.

The preferred project proposes a sloped vegetated rock rip-rap treatment to reduce erosion primarily along the eastern shoreline and the northwest side of the existing island. The existing north shore grouted rock rip-rap would be aesthetically improved by installing planters every 10 to 20 feet. Transitional areas would be stabilized by rock rip-rap. A vertical retaining wall would be installed near the boathouse.

Boathouse Demolition/Removal

This project involves the demolition and removal of the existing boathouse building located on poorly compacted fill and construction of a replacement facility not located adjacent to the lake. This EIR does not include the environmental analysis of the construction of a replacement facility.

Sailboard Beach On Lake Elizabeth

This project is intended to provide easier sailboard access to and egress from Lake Elizabeth. The proposed 100-foot wide gravel sailboard beach would be located along the western lake shore, north of the boat launching ramp. The sailboard beach would be made up of a two foot deep layer of gravel lain on a 10:1 slope underlain by filter fabric. The filter fabric would lie on top of the native clay soil, and would be anchored by sand trenches to the shore and the lake bottom.

Dock Extension

This project would involve construction of a new dock, approximately 120 feet long and covering about 1,200 square feet, south of the existing boathouse dock, presently 500 feet long. The purpose of this project is to facilitate docking in the presence of a southerly wind and to create additional docking space.

Restoration Of Stivers Lagoon Marsh

The primary objectives of the restoration would be to preserve and enhance the habitat of the marsh; to maintain it as a conservation area with environmental education uses; to improve habitat values and return the area to a more fully functioning fresh water marsh; and to incorporate the marsh into the overall water management system for the Lake Elizabeth area.

Several specific improvements are proposed for the marsh to meet these objectives, including excavation to create more open water areas, revegetation, and altered operation of the weir in Mission Creek where it crosses under Paseo Padre Parkway.

Project Construction Schedule

The shoreline rehabilitation, sailboard beach, and dock extension projects are scheduled for completion in 1993. The boathouse removal project would be completed when a new boathouse is completed. Development of the area north of the lake, dredging of the lake, and the Stivers Lagoon Marsh restoration work are not yet funded and/or have not been scheduled.

ENVIRONMENTAL EFFECTS

This EIR examines the environmental impacts of the proposed projects that comprise the Lake Elizabeth/Stivers Lagoon Design and Improvement Program and alternatives under ten general topics. The EIR evaluates the impacts that would result from the Program project that are intended primarily to increase the recreational capacity of the park, improve the water quality of Lake Elizabeth and the aesthetic appearance of the shoreline, and improve wildlife habitat while maintaining Lake Elizabeth's flood control storage functions.

The proposed Program would increase the depth of the 82-acre lake and provide an increase in recreational opportunities in and around the lake shoreline as well as recreational facilities north of the lake in an 9-acre area proposed as a disposal site for the dredge spoil taken from Lake Elizabeth.

Table S-1 presents a summary of all the potentially significant impacts and mitigation measures associated with the proposed Lake Elizabeth/Stivers Lagoon Design and Improvement Program. Table S-1 also presents the significance of each impact following the implementation of the recommended mitigation measures. A narrative overview of the potentially significant environmental effects of the proposed Program is presented below.

RECREATION AND OTHER LAND USES

Recreational use of the existing paved trail and path encircling Lake Elizabeth would be temporarily disrupted during the construction of the shoreline treatments and sailboard beach, boathouse renovation and dredging of Lake Elizabeth. Constructing shoreline improvements along the eastern shore of the lake would likely require closure of the path in that area for approximately three months. The demolition and construction of the boathouse during the high use period would severely limit recreational opportunities at the boathouse until construction activities are completed. To a lesser extent construction of the Stivers Lagoon Marsh enhancement project could also conflict with existing recreational activities.

AESTHETICS

No significant impacts were identified.

PUBLIC SERVICES AND UTILITIES

No significant impacts were identified.

TRAFFIC AND PARKING

No significant impacts were identified.

HYDROLOGY

Accidental disruption or breach of the clay layer that comprises the original lake bottom substrate could result in significant water loss and require additional groundwater pumping to maintain lake levels.

Increased erosion could result during construction of the shoreline protection treatments and during the placement of equipment for the lake dredging operation. The increased erosion would be short-term and caused by foot traffic, equipment and materials movement.

WATER QUALITY AND PUBLIC HEALTH

The Lake Elizabeth dredging operation would temporarily increase the turbidity of the lake and have a short-term adverse effect on the lake's water quality. Dredge sediments could also contain unexpectedly high levels of chemical contaminants that have the potential to pose a threat to public health in the proposed disposal area that is also proposed for future recreational uses.

The proposed turf recreation area north of Lake Elizabeth would lead to long-term use of fertilizers, herbicides and pesticides for maintenance of the turf and recreation area. If improperly handled or applied such chemicals have the potential to pose a threat to public health and degrade the water quality in Lake Elizabeth.

GEOLOGY AND SEISMICITY

Strong seismic ground shaking would subject the shoreline rehabilitation projects to large, dynamic earth forces. The lake shoreline is susceptible to ground failure in the form of lateral slumping and slope failure during an earthquake. This could result in the movement of shore protection structures toward and possibly into the lake.

Dredging of the lake would exacerbate the potential for slumping and slope failure by removing existing lake sediments that contribute to slope stability along the shoreline slopes. The proposed dock extension could be affected by nearby slumping or slope failure and in turn could displace the piling that maintain the position of the floating docks.

The proposed boathouse demolition/removal would significantly reduce the existing potential for slope failure in the area currently experiencing slope movement. The existing potential for slope movement poses a significant hazard of sudden failure during an earthquake.

Slumping and slope failure could occur within the dredge materials placed in this area as fill. Initially the dredge spoil fill materials could be very susceptible to liquefaction due to their high water content.

Significant impacts from slumping may affect the Stivers Lagoon Marsh restoration boardwalk and interpretive building.

The long-term impacts of liquefaction on the proposed projects of the Program are likely to be similar to those described above for slumping and slope failure.

VEGETATION

Construction activities associated within the Stivers Lagoon Marsh would result in the removal and/or short-term adverse impacts to native wetland vegetation. The short-term adverse impacts would result from the movement of heavy equipment, excavation, placement of fill within the marsh for the weir and catwalk installation as well as disruption of the current hydrologic regime. The construction activities may result in the possible accidental introduction of deleterious substances such as fuel into the marsh complex. In addition, construction associated with the movement of heavy equipment, excavation and fill placement may result in the direct removal of isolated species within existing riparian habitats through soil compaction and root removal or damage.

WILDLIFE

Dredging and construction activities within or adjacent to Stivers Lagoon Marsh, Mission Creek, Lake Elizabeth and other waterways or ponds could accidentally introduce deleterious substances such as fuel constituents or silt into the water and potentially degrade the aquatic habitat. In addition, improvements proposed within the Stivers Lagoon Marsh could result in a short-term loss of riparian woodland habitat.

The operation of dredging equipment within Lake Elizabeth and construction equipment within and adjacent to Mission Creek could result in short-term disruption to feeding for a variety of shorebirds and waterbirds. In addition, dredging equipment could also inadvertently result in the mortality of fish and other aquatic species.

Shoreline rehabilitation projects, in areas that support patches of emergent vegetation, would result in short-term disturbance to the freshwater marsh habitat for shorebirds and other wildlife dependent on emergent vegetation for nesting, feeding and/or roosting.

Displacement of historically known burrowing owl foraging and breeding habitat in the 21-acre ruderal grassland could occur from the development of the dredge disposal/turf recreation area north of Lake Elizabeth.

Construction and restoration work along the lake shoreline, within and adjacent to Mission Creek and within the proposed Stivers Lagoon Marsh could temporarily remove wetland vegetation, especially tules that potentially provide habitat for the tricolored blackbirds observed within the project site in recent years.

NOISE AND ENERGY

No significant impacts were identified.

IMPACT OVERVIEW

Significant Adverse Effects That Cannot Be Avoided

Implementation of the Program would result in short-term significant unavoidable construction impacts. These impacts include increased turbidity and decreased levels of dissolved oxygen in the water column during dredging. Water quality in the long-term is expected to improved as a result of the proposed project.

Displacement of existing wetland vegetation during construction of shoreline improvements and excavation in Stivers Lagoon Marsh would also result in temporary but potentially significant impacts. This vegetation loss could correspondingly reduce wildlife use of these and nearby areas in the short-term. In the long-term habitat values for wildlife would significantly increase.

In addition, deposition of dredge spoils on the northern Lake Elizabeth shore would displace habitat and create disturbance in an area that could otherwise be potentially used by the burrowing owl for nesting. This loss would be considered significant.

Cumulative Impacts

The shoreline rehabilitation, sailboard bench, and dock extension are scheduled for completion in 1993. These projects in the Program represent related projects that, if constructed within the same time frame, would have cumulative impacts. The short-term construction of several projects would increase the disturbance of wildlife and the disruption of recreational activities, including temporary closure of the path along the eastern lake shore. Elevated noise levels would be compounded relative to only one project taking place at one time. However, this is a trade-off against otherwise experiencing the extended impact that would result from sequential construction of each project. The magnitude of impacts resulting from constructing these three projects simultaneously, could be less than for each project because construction equipment and activities could be coordinated.

In addition to these "internal" cumulative impacts, the construction of the Fremont Golf Course and the BART Warm Springs Extension within the same time frame as the Program projects could compound the identified impacts. However, both projects are currently in environmental review and are not likely to be constructed until after 1993. Since the golf course project overlaps the Program projects (the siltation basin along Mission Creek would be located within the golf course) the two projects would compound some impacts, including loss of non-native grassland and potential habitat for the burrowing owl. In addition short-term construction impacts would be more pronounced if both the golf course and Stivers Lagoon Marsh enhancement occurred simultaneously.

The BART Warm Springs project would entail significant construction disturbance in vicinity of the north shore and that portion of the shoreline improvement project focusing on the northeasterly edge of the lake. However, the potential for significant cumulative impacts resulting from the two projects is considered low.

Growth Inducement

The proposed Lake Elizabeth/Stivers Lagoon Design and Improvement Program project would not in itself induce economic or population growth in the local area or the region. The project would not create additional housing and would not remove any existing obstacles to population growth.

ALTERNATIVES

The following discussion introduces alternatives to each of the proposed projects outlined in Chapter 2.0 "Project Description." Section 4.0, "Alternatives," presents each alternative in detail and compares the potentially significant environmental effects of the alternatives with the potentially significant environmental effects of the preferred alternatives, or proposed projects.

DREDGING LAKE ELIZABETH - SEDIMENT REMOVAL

Alternative 1: Non-Uniform Dredging

This alternative is similar to the preferred alternative (i.e., Uniform Dredging) in terms of dredging the entire lake to a bottom elevation of 44.3 feet. However, it would in addition dredge a deeper area near the outlet weir between the south side of the island and the shoreline in the southeast corner of the lake. This deeper area would function as a "sediment trap," minimizing long-term sedimentation in the remaining portions of the lake.

Alternative 2: New Siltation Pond

This alternative proposes that, in addition the dredging in the lake as proposed, a new siltation basin be created on an approximately 54 acre, City-owned parcel along Mission Creek between the SPRR and WPRR tracks immediately east of Central Park. This new basin would remove sediment from creek waters before they enter the lake.

Alternative 3: No Project

Under this alternative, no dredging would be performed at Lake Elizabeth.

DREDGING LAKE ELIZABETH - DREDGING TECHNIQUES

Alternative 1: Mechanical Dredging

Mechanical dredging using a clamshell mounted crane aboard a portable barge would be an alternative dredging technique to hydraulic dredging.

4.2.1.3 DREDGING OF LAKE ELIZABETH - DEWATERING TECHNIQUES

Alternative 1: Single Pond

Under this alternative, all dredged material would be pumped into a single 21-acre pond in the area of the lake and allowed to dry over a period of up to six months.

DREDGING LAKE ELIZABETH - SEDIMENT DISPOSAL

Alternative 1: Off-Site Disposal

Under this alternative, the dredged material would have to be dewatered on-site and then disposed of off-site in an appropriate landfill.

Alternative 2: On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks

Option 2-A - On-Site Disposal On City-Owned Property Between
the SPRR and WPRR Tracks/On-Site Disposal North of Lake

Under this alternative, a portion of the dried dredged material would be disposed of between the SPRR and WPRR tracks, in an approximate 54-acre City-owned parcel that could receive some dredged materials following dewatering in the proposed site north of the lake. The remainder of the dried material would be disposed of on-site, as discussed for the Preferred Alternative.

Option 2-B - On-Site Disposal On City-Owned Property Between
the SPRR and WPRR Tracks/Off-Site Disposal

Under this alternative, the 54-acre City-owned parcel between the railroad tracks could receive some dredged materials following dewatering in the proposed site north of the lake (see Alternative 2-A). The remaining material would be disposed off-site as described in Alternative 1 for sediment disposal.

Alternative 3: Disposal/Fill of Shallow Portions of Lake Elizabeth

Option 3-A - Disposal/Fill of Shallow Portions of Lake Elizabeth/On-Site Disposal North of Lake

Under this alternative, the northeastern lobe of the lake would be filled and converted to a shallow wetland that would complement the existing marsh that has developed in the small pond northeast of the lake. Dewatering of all dredged material would occur within the area north of the lake and a portion of the dried material would be disposed of here also.

Option 3-B - Disposal/Fill of Shallow Portions of Lake Elizabeth/Off-Site Disposal

Under this alternative, a portion of the dried material would be disposed of in the northeastern lobe of the lake, as described for Option 3-A. The remaining material would be disposed off-site, as described under Alternative 1, described above. Dewatering of the dredged material would occur within the area north of the lake.

4.2.2 SHORELINE REHABILITATION

Alternative 1: Island Creation

This alternative would replace the proposed Treatment 1: Vegetated Rock Rap-Rap along the eastern shoreline with construction of one or more off-shore islands similar to the existing island in the southeast corner of the lake. These islands would be constructed out of dredged material, and would be expected to significantly reduce wave action against the eastern lake shore.

Alternative 2: Increased Erosion Control Along Northeastern Shoreline

The northeast shoreline of the lake experiences the greatest erosion potential. This alternative proposes the use of Treatment 2, vertical retaining wall, along the northeast shoreline instead of Treatment 1, vegetated rock rip-rap. Treatment 2 would provide greater erosion control than the preferred treatment in this area.

Alternative 3: No Project

Under the no project alternative, none of the proposed rehabilitation treatments would be proposed.

TURF AREA DEVELOPMENT

The area north of Lake Elizabeth is the only remaining undeveloped area of Central Park where turf development would be feasible. Thus, no other location for turf development is proposed.

<u>Alternative 1: No Project</u>

Option 1-A - No Project/On-Site Disposal

Under the no project alternative with on-site disposal, approximately 9 acres of the area north of the lake would temporarily be used for the dewatering of dredged material. Following dewatering, dredged materials would be placed in 20-foot mounds within an approximately 9 acre area north of the lake. No future improvements (i.e., turf development) to these mounds would take place.

Option 1-B - No Project/Off-Site Disposal

Under the no project alternative with off-site disposal, approximately 9 acres of the area north of the lake would temporarily be used for the dewatering of dredged material. Following dewatering, dredged material (between 145,200 and 125,200 cubic yards) would be hauled and disposed of off-site in an appropriate landfill. presumably the nearby Tri-Cities landfill. Earthen levees used to contain dredged material for drying would also be removed, and the area would be left to revert to ruderal grassland once again.

BOATHOUSE DEMOLITION/REMOVAL

The scope of this EIR provides for the analysis of the potential impacts associated with the demolition and removal of the boathouse. Restoration of the boat house in this location is not a feasible alternative given the seismic constraints of the existing site. A no project alternative is also not a feasible option given that the existing building poses a significant safety hazard and unacceptable long-term risk. The relocation of the boat house to a different location within Central Park will be discussed in a separate report prepared by the City.

SAILBOARD BEACH

Alternative 1: New Location - North Shore

Under this alternative, the sailboard beach would be located along the northeastern shore of the lake. Similar to the preferred alternative, the sailboard beach would be 100 feet in extent and include design features such as the underlain fabric and anchoring mechanisms same as the preferred alternative.

Alternative 2: Sand Beach

Option 2-A - Sand Beach on West Shore

Similar to the preferred alternative, this alternative for the sailboard beach would be located along the western lake shore north of the existing boathouse, and would be 100 feet in extent. Under this alternative, however, the 2-foot layer of gravel would be replaced by a 2-foot layer of sand. Other design features such as the underlain fabric and anchoring mechanisms would remain the same as the preferred alternative.

Option 2-B - Sand Beach on North Shore

Similar to Alternative 1, this alternative for the sailboard beach would be located along the northern lake shore and would be 100 feet in extent. Under this alternative, the 2-foot layer of gravel would be replaced by a 2-foot layer of sand. Other design features such as the underlain fabric and anchoring mechanisms would remain the same as the preferred alternative (and Alternative 1).

Alternative 3: No Project

Under this alternative a new sailboard beach would not be constructed. Sailboard users would continue to access the lake as they do now.

DOCK EXTENSION

Alternative 1: No Project

Under the no project alternative, a new dock would not be constructed adjacent to the existing dock on the west side of the lake.

STIVERS LAGOON MARSH RESTORATION

Alternative 1: No New Access

Under this alternative, no new public access would be developed within the marsh. Public access would be restricted to existing trails.

Alternative 2: Additional New Access

Under this alternative, an additional public access route would be added to the two additional public access routes described in the preferred alternative for a total of three new routes.

Alternative 3: No Project

Under this alternative, a significant opportunity to restore and enhance an important freshwater marsh habitat would be lost. Stivers Lagoon Marsh, a remnant of what was once a more extensive freshwater marsh area, has been degrading in recent years due to siltation, lowering of groundwater levels, and invasion of non-native, upland plant species. Implementation of a no project alternative would continue this degradation process.

MITIGATION MONITORING AND REPORTING PROGRAM

In January 1989, California enacted AB 3180 (Cortese Bill) which amended Section 21081.6 of the California Resources Code. This legislation requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." The specific "reporting or monitoring" program required by AB 3180 is not required by CEQA Guidelines to be included in the EIR. Throughout the EIR, however, mitigation measures have been clearly identified and presented in language that will facilitate establishment of a monitoring program. The City will adopt these measures as conditions for approval of the Program projects, and will prepare a Mitigation Monitoring and Reporting Program to verify compliance.

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.1	Recreation and Other Land Uses			
3.1.A	Dredging of Lake Elizabeth, implementation of the proposed shoreline rehabilitation treatments, demolition of the boathouse, and construction of the sailboard beach would each temporarily adversely affect the use of the paved trail or path encircling Lake Elizabeth used for walking and jogging. It is likely that the path along the eastern lake shore would be closed for approximately three months during shoreline improvement construction in that area.	3.1.A	Prior to construction, mitigation measures should be designed to avoid or minimize disruption. Such measures could include: a movable ramp to prevent the dredging pipe from obstructing pedestrian use of the path, signage to identify construction areas, well-defined boundaries of construction and material storage areas, and scheduling construction during off-peak seasons and hours (i.e. no weekends, holidays).	Less than Significant
3.1.B	Potentially significant impact could result from demolition of the boathouse. If demolition occurs before construction of a new boathouse during a high-use period, recreational activities would be severely limited.	3.1.B	The City should approve and fund the construction of a new boathouse prior to approval of the demolition of the existing boathouse. Operation of a boathouse should be ensured during peak-season.	Less than Significant
3.1.C	The proposed siltation basins proposed along Mission Creek could conflict with the future layout of the proposed golf course.	3.1.C	The proposed siltation basins along Mission Creek should be incorporated into the proposed golf course design. Specifically the siltation ponds could also be used as a water hazard in the golf course.	Less than Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.2	Aesthetics			
	No significant impacts identified.			
3.3	Public Services and Utilities			
3.3.A	Use of the new sailboard beach would require staff to implement a weekly water quality monitoring program.	3.3.A	Implement a weekly bacterial water quality monitoring program prior to construction of the proposed sailboard beach.	Short-term Significant
3.4	Traffic and Parking			
	Although more sailboard users could be attracted to the lake if a new beach were constructed, no significant impacts were identified.		None required.	Less than Significant
3.5	Hydrology			
3.5.A	A significant breach in the clay layer that makes up the original lake bottom during dredging could result in significant water loss and require additional groundwater pumping to maintain lake levels.	3.5.A	Dredging will only be performed to the original lake bottom elevation and would remove primarily accumulated silt through hydrolic suction dredging. Prior to dredging, soil cores should be drilled at the lake to determine the thickness of the underlying clay lines.	Less than Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.5.B	During construction and placement of shore protection materials, there would be some short-term erosion by foot traffic, equipment and runoff. Short-term erosion could also occur due to equipment traffic during lake dredging operation.	3.5.B	A standard construction-site erosion control plan should be required. Silt fences and temporary ground cover will reduce erosion by wind and runoff. Equipment should be operated on the lake path, with minimum traffic along the shore line. (cont.) Shoreline construction activities should be limited to the dry season (May through September) to minimize erosion by storm runoff. Temporary measures such as mulching, jute or plastic netting, etc., may be required until vegetation becomes established. Wakes from motorized boats should be minimized by continuing enforcement of the existing 5 mph limit at the lake.	Less than Significant
3.6	Water Quality and Public Health			
3.6.A	Dredging and dredge disposal would temporarily increase turbidity of the lake water.	3.6.A	Water in the dredge spoils placed in the sediment disposal area north of Lake Elizabeth shall be retained behind weirs or dikes in one or more settling basins to allow the water to clarify before being allowed to flow back into the lake. The City shall engage a qualified engineer to design and construct such a containment system prior to commencement of sediment dredging.	Less than Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.6.B	Dredged sediments could contain unexpectedly high levels of chemical contaminants which could pose a threat to public health since the sediment disposal area is slated for development as a recreation area.	3.6.B	Prior to commencement of dredging, the City should sample and analyze lake sediments for heavy metals, semi-volatile organic compounds and chlorinated pesticides. If any constituents are determined to be at a level that may pose a potential public health risk, an alternative disposal method should be developed in consultation with the Regional Water Quality Control Board.	Less than Significant
3.6.C	Development of the turf recreation area north of Lake Elizabeth would lead to long-term use of fertilizers, herbicides, and pesticides for turf maintenance. Such chemicals, if handled or applied improperly, could pose threats to public health or degrade water quality in Lake Elizabeth.	3.6.C	The City shall ensure that the turf area is planted with species adapted to the local climate (and compatible with the area's proposed recreational use). The City shall monitor chemical application to ensure that state regulations regarding chemical application rates, application methods, and worker safety training are followed.	Less than Significant
3.6.D	Short-term adverse impacts due to construction activities within Stivers Lagoon Marsh could include the possible introduction of deleterious substances such as fuel constituents and herbicides, and disruption of the current hydrologic regime.	3.6.D	Avoid discharge of any and all materials and fluids into the marsh or Mission Creek. An erosion control plan should be prepared by the City prior to the time construction begins.	Less than Significant
3.7	Geology and Seismicity			

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.7.A	In the event of strong seismic groundshaking, the rehabilitated shoreline could subject structures to large, dynamic earth forces.	3.7.A	All improvements would be designed and constructed in accordance with the applicable seismic provisions of the current building code.	Less than Significant
3.7.B	Areas around the lake margins are susceptible to ground failure in the forms of lateral slumping and slope failure during an earthquake. This would result in movement of the ground (and any improvements supported on it) toward and possible into the lake.	3.7.B	To the extent feasible, shore protection structures and slopes should be designed and constructed to resist the effects of lateral slumping an slope failure.	Less than Significant
3.7.C	Dredging of the lake would somewhat exacerbate the potential for slumping and slope failure by removing existing soil along the toe of the shoreline slopes that presently contributes to slope stability.	3.7.C	To the extent feasible, design and implement dredging to minimize the negative effect on shoreline stability. Coordinate dredging with shoreline rehabilitation work.	Less than Significant
3.7.D	The proposed dock extension could be affected by nearby slumping or slope failure, which could displace the piling which maintains in position (but does not support) the floating docks.	3.7.D	To the extent feasible, design and construct the dock to resist the effects of lateral slumping and slope failure.	Less than Significant
3.7.E	The sailboard beach could be damaged if large-scale lateral slumping occurred.	3.7.E	None available.	Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.7.F	Development of the area north of Lake Elizabeth could be affected by slumping and slope failure into the lake, and by such movements within dredge materials placed as fill.	3.7.F	Locate structures away from the lake shore to the greatest extent possible. Design and construct grades using dredge spoil materials to minimize the potential for slumping and slope failure, by specifying suitable moisture treatment and compaction methods, and by avoiding high berms and steep slopes.	Less than Significant
3.7.G	Aspects of the Stivers Lagoon Marsh restoration that involve structures (boardwalk and interpretive building) may be impacted significantly by slumping, but mitigation of these impacts is likely to be economically infeasible.	3.7.G	None available.	Significant
3.7.H	The long-term impacts of potential liquefaction on the proposed projects are likely to be similar in most ways (and related) to those described above for slumping and slope failure.	3.7.H	See mitigation measure 3.7.F.	Less than Significant
3.7.I	For development of the area north of Lake Elizabeth, the dredge spoil fill materials could initially be very highly susceptible to liquefaction, because of their high water content.	3.7.I	See mitigation measure 3.7.F.	Less than Significant

	ENVIRONMENTAL IMPACT		MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.8	Vegetation			
3.8.A	Short-term adverse impacts to existing riparian vegetation due to construction activities within the Stivers Lagoon Marsh may include the direct removal of isolated species and/or soil and root compaction due to heavy equipment and excavation.	3.8.A	Construction practices should be utilized that minimize impacts to mature forest species (e.g., construction/demolition staging areas should be located away from trees, minimize removal of mature vegetation). Construction should generally take place during the dry season. Replacement species should be planted in similar habitat within the Stivers Lagoon Marsh area and should be monitored for establishment success for a period for five years by a qualified biologist. A monitoring program should be implemented by the City of Fremont to ensure the success of restored areas.	Less than Significant
3.8.B	Short-term adverse impacts to wetlands due to construction activities within Stivers Lagoon Marsh include the placement of fill within the marsh due to weir gate and catwalk installation and removal of native wetland vegetation.	3.8.B	Construction practices should be utilized that minimize impacts to wetland species. Construction should generally take place during the dry season. The project proposes to restore wetland vegetation by planting rhisomes, cuttings, and natural re-establishment.	Less than Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

ENVIRONMENTAL IMPACT	MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
	Preventive measures should be taken, such as use of signing, implementation of a monitoring program, and establishment of contingency plans, to avoid habitat degradation during both construction and operational phases of the proposed project. The City of Fremont should be responsible for implementation of a five-year monitoring program to ensure that wetland restoration plans are successful.	
3.9 Wildlife		
3.9.A Dredging and construction activities within or adjacent to Lake Elizabeth could accidentally introduce deleterious substances such as silt and fuel constituents into the water potentially degrading aquatic habitat.	3.9.A Construction practices should be utilized that minimize the potential for excessive erosion or accidental spills into the lake. Specific measures should include locating construction/demolition staging areas away from the lake's edge and installing silt fences or barriers at key drainage points.	Less than Significant
3.9.B The operation of dredging equipment within Lake Elizabeth construction equipment within and adjacent to Mission Creek would result in a short-term disruption to feeding for a variety of shorebirds and waterbirds. The operation of dredging equipment could also inadvertently result in the mortality of fish and other common aquatic species.	3.9.B Dredging of the lake should not be undertaken during the height of the breeding season (i.e., March through June) for resident bird populations in order to not limit food resources within the lake for hatchlings.	Less than Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

ENVIRONMENTAL IMPACT	MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.9.C The components of proposed shoreline rehabilitation for Lake Elizabeth in areas supporting patches emergent vegetation would result in a short-term disturbance to freshwater marsh habitat for shorebirds and other birds dependent on emergent vegetation for nesting and/or roosting.	3.9.C The removal of existing emergent vegetation during shoreline reconfiguration should be minimized to the extent feasible. No shoreline reconfiguration in these areas should occur during the nesting season of resident birds (i.e. March through June).	Less than Significant
3.9.D Several improvements proposed within Stivers Lagoon Marsh could result in a short-term loss of riparian woodland habitat.	3.9.D Implementation of these improvements should avoid, when feasible, displacing riparian trees. For any native tree removed, three trees of the same species should be planted following construction. Non-native species should be replaced with native species.	Less than Significant
3.9.E Development of all or a portion of the 21-acre ruderal grassland habitat north of Lake Elizabeth for temporary use as dewatering ponds followed by development of additional turf area for the park and construction of the new siltation basin between the railroad tracks could displace historically known burrowing owl foraging and breeding habitat. However, no owl use has been observed in recent years on this site. While this is not considered significant with respect to the area north of the Lake, it is considered a potentially significant cumulative impact in light of other proposed land use changes in the site vicinity.	3.9.E Conduct a pre-construction survey to determine whether any nesting owls are present. If present, no construction should be conducted until after the nesting season has ended (generally by July 31st). The City should also participate in the creation of an off-site preserve that could serve as protected habitat for potential burrowing owls. A mitigation plan should be submitted to CDFG, approved prior to initiation of grading activities within burrowing owl habitat, and established as a condition of project approval.	Less than Significant

TABLE S.1: SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT(Continued)

ENVIRONMENTAL IMPACT	MITIGATION	LEVEL OF SIGNIFICANCE AFTER MITIGATION
3.9.F Restoration work along the lake shoreline, along Mission Creek, and within Stivers Lagoons Marsh could temporarily remove wetland vegetation, especially tules, potentially providing habitat for the few tricolored blackbirds currently seen within the project site in recent years.	3.9.F During construction of the proposed projects, removal of existing wetland vegetation should be minimized. Areas with significant wetland vegetation, especially tules, adjacent to areas proposed for improvements should be flagged and avoided during construction.	Less than Significant

1.0 INTRODUCTION

1.1 ENVIRONMENTAL REVIEW

The City of Fremont proposes to make several improvements to Central Park in Fremont (each project is described in detail in Chapter 2.0 of this report). The City of Fremont prepared an Initial Study on their proposed Lake Elizabeth/Stivers Lagoon Design and Improvement Program project to identify environmental issues that could require further assessment. The City determined that approval of the proposed Central Park projects would require the preparation of an environmental impact report (EIR). An EIR is prepared when a public agency finds "substantial evidence that the project may have a significant effect on the environment."

The California Environmental Quality Act (CEQA) requires that before a decision can be made to implement a project with potentially significant environmental effects, an EIR must be prepared that fully describes the environmental effects of the project. The EIR is a public information document for use by responsible governmental agencies and the public to identify and evaluate the significance of potential environmental consequences of a proposed project, to recommend mitigation measures to lessen or eliminate adverse impacts, and to examine feasible alternatives to a project. The information contained in the EIR is reviewed and considered by the governing agency prior to the ultimate decision to approve, disapprove, or modify the proposed project.

CEQA requires that the lead agency (in this case the City of Fremont) shall neither approve nor implement a project as proposed unless the significant environmental effects of that project have been reduced to an acceptable level, essentially "eliminating, avoiding, or substantially lessening" the expected impact. If the lead agency approves the project despite residual significant adverse impacts that cannot be mitigated, the agency must state the reasons for its action in writing. This statement, referred to as a "Statement of Overriding Considerations," must be included in the record of project approval.

The Initial Study on the proposed Lake Elizabeth/Stivers Lagoon Design and Improvement Program project (see Appendix A) was included with the Notice of Preparation (NOP) and sent by the City on November 20, 1991 to governmental agencies and organizations interested in the project. The NOP requested those agencies with regulatory authority over any aspect of the project to describe that authority and to identify the relevant environmental issues that should be addressed in the EIR.

The Draft EIR is now available for public review during which time written comments on the contents of the DEIR may be submitted to Robert Schneider, Associate Civil Engineer with the City of Fremont Public Works Department. Responses to all comments received on the Draft EIR submitted within the specified review period will be prepared and included in the Final EIR. The Fremont City Council will then review and certify the final EIR based on its fulfillment of CEQA requirements. After certifying the Final EIR, the City will decide whether or not to approve the project, if so, will adopt a reporting and monitoring program for mitigation measures identified in this report in accordance with the requirements of Public Resources Code 21081.

1.2 ORGANIZATION OF THE EIR

This environmental impact report is organized so as to allow the reader to quickly and logically review the results of the analysis, review the recommended mitigation measures, and identify the residual environmental impacts after mitigation, if any. The EIR begins with a Summary of significant environmental effects, as presented in Table S-1: Summary of Significant Environmental Impacts and Mitigation Measures. This table lists each identified significant environmental impact, proposed mitigation measures, and the level of significance following mitigation.

Following the Summary of Significant Environmental Effects, Chapter 2.0, "Project Description," introduces the project area, outlines Program objectives, provides background and historical conditions of the project area, summarizes existing conditions of the project area, describes the proposed set of projects, approximates schedule for project construction, describes other project/activities potentially affecting the project area, and outlines regulatory considerations.

Chapter 3.0 contains a detailed discussion of the setting (existing conditions), the environmental impacts which could result as a consequence of the proposed project, and the mitigation measures which would lessen or eliminate the significance of the impacts identified. Those readers who wish to read about the potential consequences of the proposed project in great detail are directed to Chapter 3.0 of the EIR. The criteria used to assess the significance of the expected environmental effects are clearly identified, and the significance of the impact is reported.

The EIR identifies several alternatives to the proposed set of projects in Chapter 4.0. These alternatives include the No Project alternative, required by CEQA for all EIR's. The significant environmental effects expected to result from each of the alternative projects are compared with those of the proposed project.

Chapter 5.0 discusses significant environment effects that cannot be avoided, as well as cumulative project effects and the potential for growth inducement. Chapter 6.0 lists report authors and persons and organizations consulted.

2.0 PROJECT DESCRIPTION

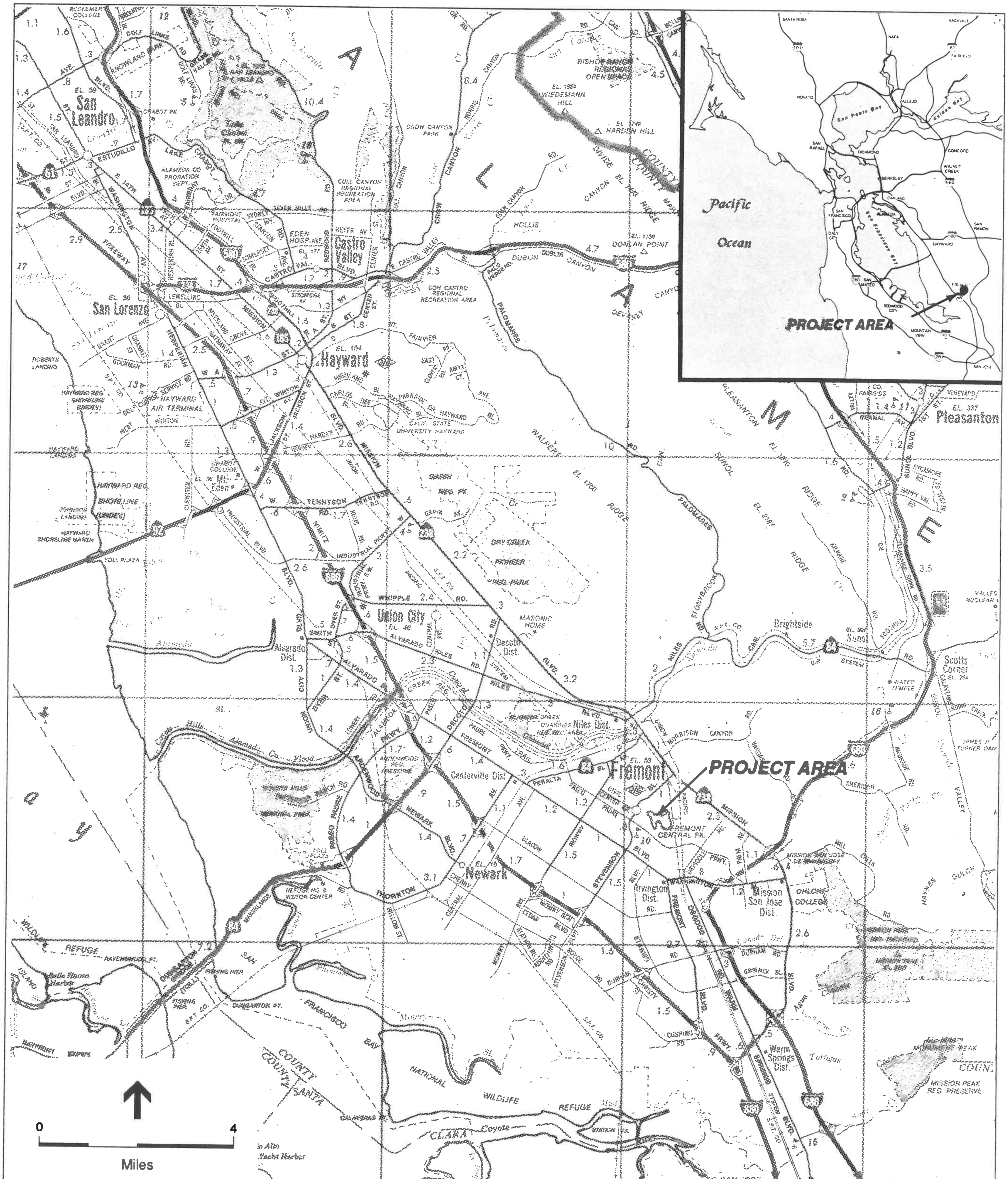
2.1 INTRODUCTION

Lake Elizabeth is located within Central Park in the City Fremont in Alameda County (see Figure 2.1). The approximately 82-acre lake and some surrounding lands comprising about 174 acres are owned by the Alameda County Flood Control and Water Conservation District (ACFCWCD), and leased by the District to the City of Fremont under a license agreement for use as a park and recreational facility. The City owns an additional 266 acres of surrounding lands. Lake Elizabeth and adjacent parklands provide flood storage for Mission Creek located to the east of the lake, provide for extensive recreation opportunities, and provide some wildlife habitat. Popular activities within or around the lake include boating, fishing, sailboarding, jogging, and walking. Picnic areas, a swimming lagoon, and sports facilities are provided for the public within Central Park (see Figure 2.2).

2.2 PROGRAM/PROJECT OBJECTIVES

The City's primary objective in proposing the Program projects is to improve the quality of the recreational experience for all Central Park users. Specific objectives supporting this goal include:

1) Increasing the recreational use capacity of the park.
2) Improving the aesthetic appearance and structural integrity of the lake shoreline and associated facilities.
3) Improving lake water quality.
4) Preserving the lake's essential function as flood control storage.
5) Enhancing overall habitat quality.
6) Reducing future siltation and its effects on water depth.



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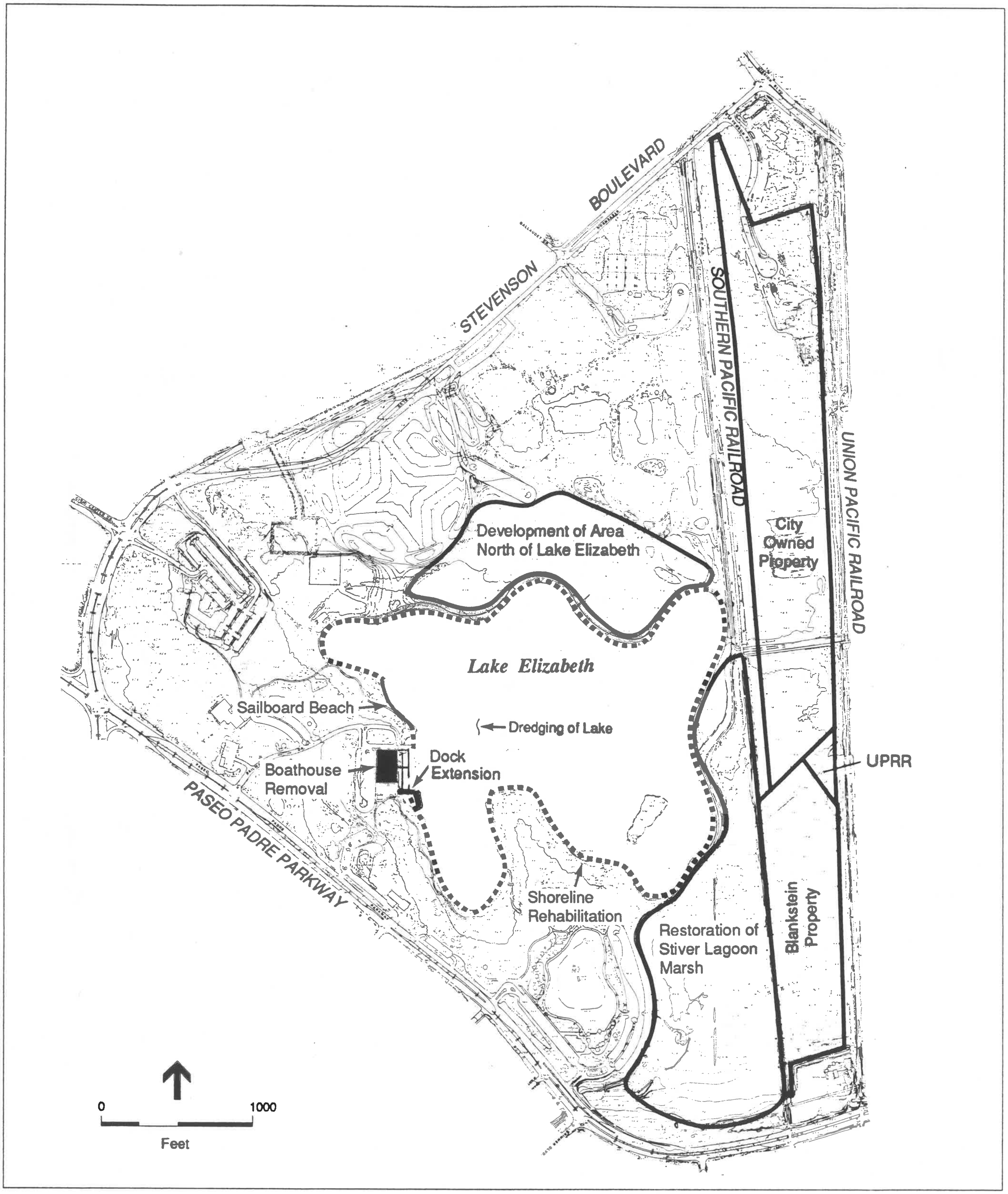
SOURCE: Environmental Science Associates, Inc.

Lake Elizabeth EIR / 90-639

Figure 2.1
Project Location



SOURCE: Environmetal Science Associates, Inc., City of Fremont

Figure 2.2
Project Site and Location
of Proposed Improvements

2.3 BACKGROUND AND HISTORICAL CONDITIONS

Lake Elizabeth was created by excavation of part of Stivers Lagoon Marsh in 1968. It was expanded in 1986. One island exists in the southern part of the lake and is covered by dense vegetative growth.

Stivers Lagoon Marsh is one of a number of freshwater marshes along the east side of the Hayward Fault. The marsh was formed as a sag pond as a result of crustal movement along the fault. This movement created a shallow depression of about 200 acres. The marsh is fed by Mission Creek and several small tributary creeks. Mission Creek flows northwest in upstream reaches, then turns southwest at the marsh crossing the fault and flows toward San Francisco Bay.

The marsh historically included both areas of deep open water and freshwater marsh. Hydrologically, it functioned more as a lake, with Mission Creek and another tributary discharging into the broad, open area with a well-defined outlet channel downstream. As a result, the water depth and inundated areas would have varied both seasonally and annually. The groundwater table was likely much higher than it is today with the soils saturated throughout the dry season in many years.

The deep open water areas and freshwater marsh were used by the Native Americans, and subsequently by Spanish and American settlers. Mission San Jose was founded 2.5 miles from the marsh in 1797. Mission San Jose was a productive mission growing several vegetables and grains and supporting several thousand cattle, horses, and sheep. In the mid-1800's through the early 1900's, the land surrounding the marsh was farmed. A levee was constructed to limit the extent of flooding and reduce soil saturation. As the area around the marsh developed, the ranches containing the marsh land remained intact. In the mid-1930's, channelization of portions of Mission Creek and the excavation of the channel through the marsh for flood control indirectly dried the marsh soils, particularly during summer months. This process has allowed encroachment of upland plants and trees into the former marsh plain.

2.4 EXISTING CONDITIONS

The Central Park project area today is a 440-acre urban park, which encompasses the approximate 82-acre Lake Elizabeth and approximate 40-acre Stivers Lagoon Marsh (see Figure 2.2). Central Park is currently reserved for open space and recreational uses and receives an estimated 1.15 million visits per year. If current trends are allowed to continue, however, the quality of recreational and open space activities within Central Park would be diminished. Lake water levels are critically low in summer months and do not adequately support water sports such as sailing. Associated with lower than optimum water-levels is decreased water quality for recreationalists (e.g. sailboarders) as well as aquatic and terrestrial wildlife.

In addition, lower groundwater levels in Stivers Lagoon Marsh have reduced habitat for wetland plant species and have facilitated the growth of upland plant species. Without increased saturation, the marsh will continue to convert to an upland habitat of lesser wildlife habitat and recreational use value.

The current earthen shoreline of the lake in some locations is experiencing severe erosion, which increases turbidity and decreases water quality, destabilizes shoreline vegetation, and in certain areas, threatens the stability of the pedestrian path encircling the lake. The following are specific projects proposed within Central Park to improve recreational opportunities and wildlife habitat. Appendix B contains a working paper addressing project feasibility and alternatives for the proposed projects. Appendix C contains the Stivers Lagoon Restoration/Enhancement Plan; the potential environmental effects of this plan are analyzed in this EIR.

2.5 PROPOSED PROJECTS

The City of Fremont proposes to complete a series of projects at Lake Elizabeth within Central Park to restore recreational and open space values. Specific descriptions of each project are provided below:

2.5.1 DREDGING LAKE ELIZABETH

The primary objectives of the dredging project are to restore and enhance the recreational opportunities and aquatic habitat at Lake Elizabeth. Dredging of the lake would enhance existing recreational opportunities; allow for the continued use of sailboats; improve the accessibility of rescue control boats; and improve the water quality of the lake.

Sediment Removal

The dredging project involves removal of accumulated silt from the lake bottom. Lake Elizabeth is owned by the Alameda County Flood Control and Water Conservation District and leased to the City of Fremont. The lake was originally constructed in 1968 at 63 acres and has not been dredged since that time. It was expanded by 19 acres in 1986 along the north shoreline. The preferred alternative proposes to restore the lake to its original depth; as such, approximately 145,200 cubic yards (90 acre-feet of volume) of sediments would be dredged. The lake's average water depth is currently about three feet, with approximately one foot of accumulated silt. The dredging plan proposes to remove sediment evenly across the lake, with the exception of leaving the northwestern and northeastern lobes of the lake undisturbed. The lake sediments would be removed using hydraulic dredging equipment under the preferred alternative. Hydraulic dredging, also referred to as suction dredging, involves pumping of solids from the lake bottom within a suspension of water-earth slurry. Hydraulic dredging excavates at most 18 percent solids by volume, and requires extensive dewatering of the dredged material.

Sediment Disposal

Sediments dredged from Lake Elizabeth could be disposed of entirely or partially on-site. Any off-site sediment disposal would be disposed of in accordance with all state and local regulations. The preferred alternative, because of cost consideration, is on-site disposal within approximately 9 acres of the 21-acre undeveloped area north of the Lake (see Figure 2.2). The material would be pumped directly from the lake bottom through a flexible pipeline into a pond for dewatering. Initial dewatering would then occur by settling, with decant water drained back into the lake. To restrict the amount of acreage necessary for dewatering, the dredged material would be pumped sequentially into a series of 0.5 acre to 1 acre ponds. By the time the last pond is filled, material in the first pond would be sufficiently dewatered for on-site disposal. For the 145,200 cubic yards of dredged material, approximately 7 ponds would be required, with a total area of 3.5 to 7 acres.

Similar to Lake Elizabeth and Stivers Lagoon Marsh, this area is currently used for water "storage" during significant flood events. The placement of dredge material in the 9 acres would remove 34 acre-feet of 100-year flood storage, leaving a remaining net storage of 951 acre-feet. Even with the removal of this flood storage, the area north of the lake would still provide the minimum 931 acre-feet of storage required by the City's lease agreement with ACFCWCD.

Following dewatering of the dredged material, the area north of the lake is proposed for development as a turf area at an increased elevation (see Section 2.5.2 below).

2.5.2 TURF DEVELOPMENT NORTH OF LAKE ELIZABETH

The City of Fremont proposes to develop the 21 acre area north of Lake Elizabeth, including the approximate 9 acres of dried dredged material, into open turf for picnic, frisbee, ball games, and related recreational uses. The area would contain picnic tables, barbeque equipment, a restroom, and possibly a small parking lot; the majority of the area would be covered with turf and would be irrigated with groundwater. The dried dredged material would be formed into 20-foot mounds (10:1 side slopes).

The additional open turf and picnic area in Central Park is necessary to meet rising demand by recreational users. Picnic sites at all parks in Fremont are in heavy demand. Four reservable picnic sites in Central Park are frequently booked far in advance by prospective users, while other "first-come, first-served" picnic areas throughout Fremont are typically occupied early, especially on weekends and during holiday periods.

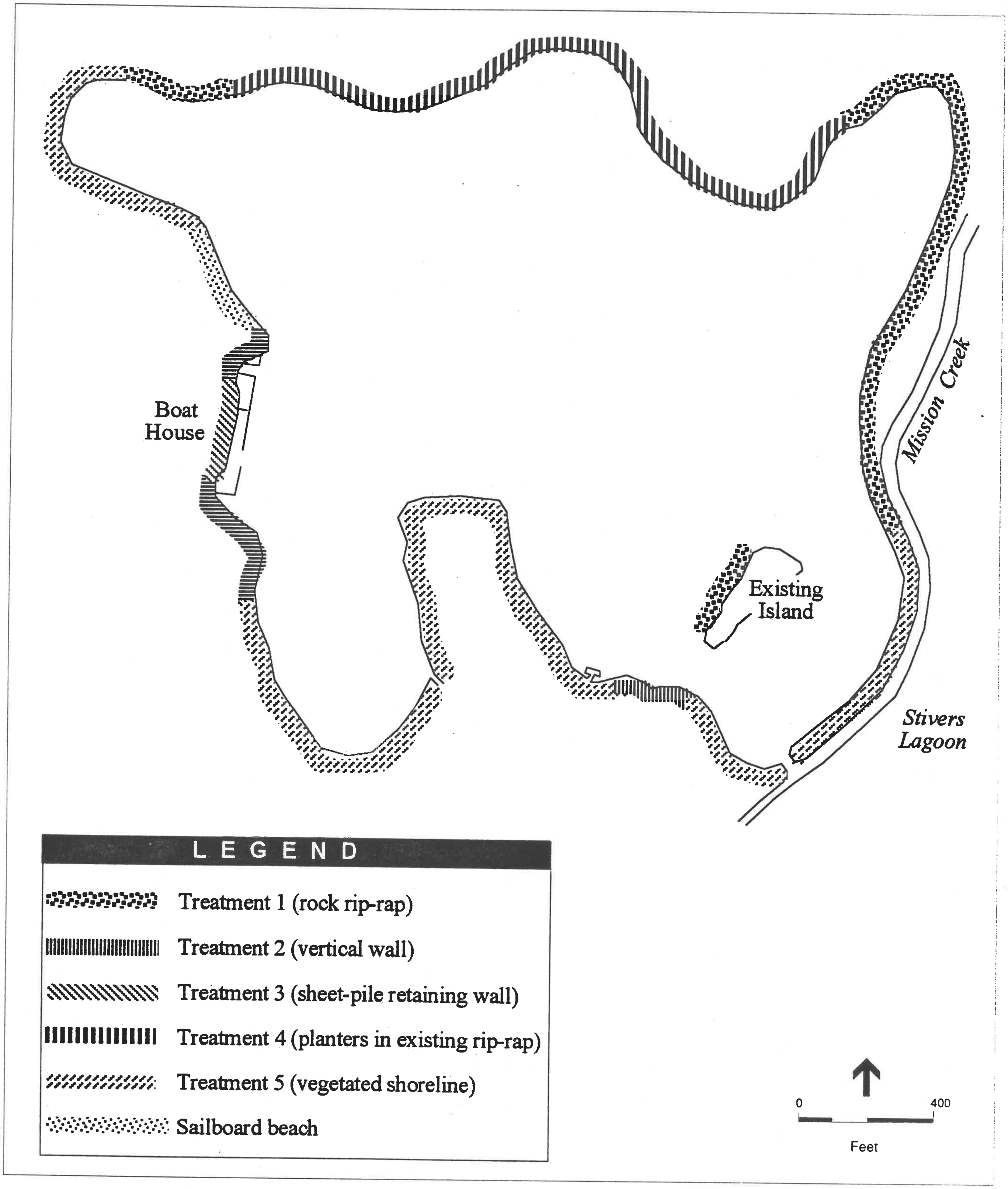
2.5.3 SHORELINE REHABILITATION OF LAKE ELIZABETH

Approximately 2,000 feet of the north shoreline was protected with concreted-rock rip-rap in conjunction with the 1986 lake expansion. The remaining 8,000 feet of shoreline is proposed to be protected using a combination of structural and vegetative elements as discussed below. Shoreline rehabilitation treatments would vary depending upon site-specific erosion problems, aesthetic and habitat considerations, recreational uses, and cost.

Figure 2.3 illustrates the proposed location for each erosion control treatment along the shoreline for the preferred alternative. There are five different treatment alternatives proposed. The preferred project proposes a sloped vegetated rock rip-rap treatment to reduce erosion primarily along the eastern shoreline and the northwest side of the existing island. The existing north shore grouted rock rip-rap would be aesthetically improved by installing planters every 10 to 20 feet. Transitional areas would be stabilized by rock rip-rap. A vertical retaining wall would be installed near the boathouse.

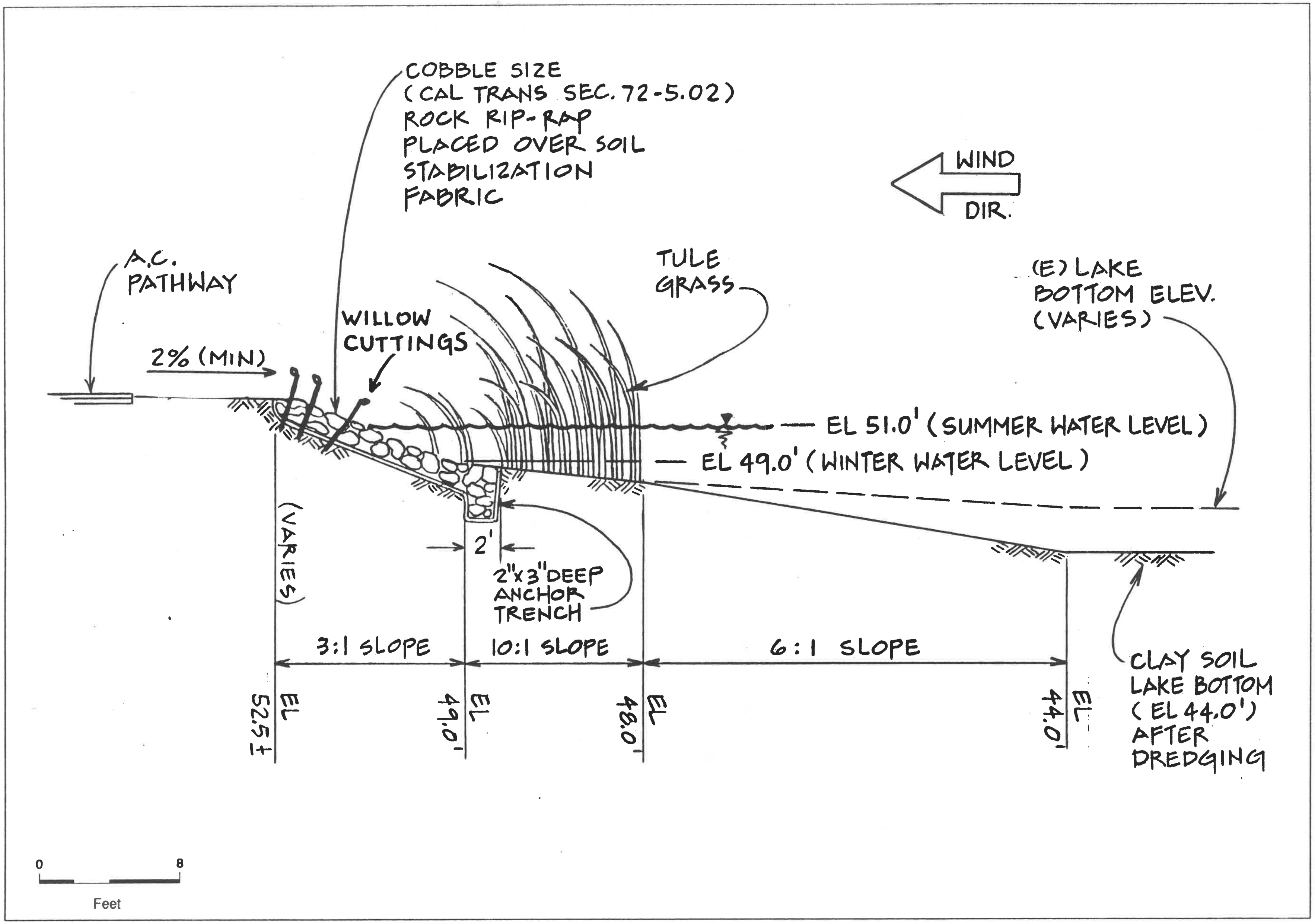
Treatment 1 - Vegetated Rock Rip-Rap

This treatment involves a combination of rock rip-rap and vegetation as shown in Figure 2.4. The lake bank/island bank would be graded to a 3:1 slope, and covered with geotextile fabric and cobble-sized rock rip-rap. The geotextile fabric would protect against erosion of fine-grained



SOURCE: Philip Williams and Associates, Ltd., 1992 and Environmental Science Associates, Inc., 1992.

Figure 2.3
Application of Shoreline Treatment Alternatives to Lake Elizabeth



SOURCE: Rutherford & Chekene; Philip William and Associates, 1992.
and Environmental Science Associates, Inc., 1992.

Figure 2.4
Treatment 1:
Rip-Rap Protected Vegetated Shore

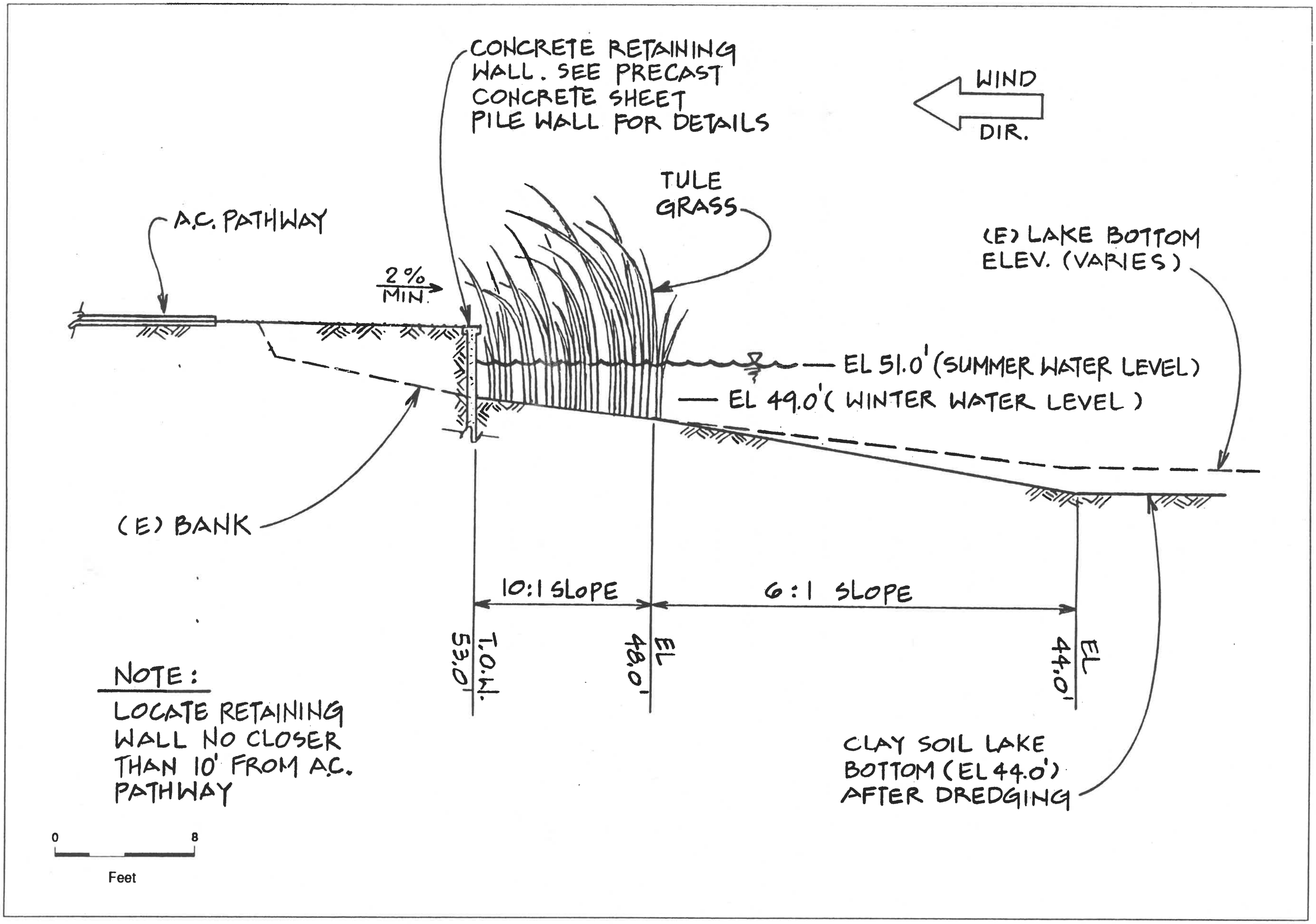
material from behind the rip-rap. In addition, it would prevent the rock from sinking into the underlying clay soils. Willow cuttings would be established between the rocks to provide habitat value and additional slope stability and improve shoreline aesthetics. The rip-rap would extend into the lake to an elevation of about 48 feet to ensure protection under both winter and summer water levels. Bulrush (*Scirpus* sp.), a freshwater marsh plant, would be established in a 10 to 15 foot band of shallow water immediately offshore to provide additional protection and wildlife habitat.

Treatment 1 would be used in active erosion areas along the eastern shore, at the transition area on the north shore, and along the windward side of the existing island (see Figure 2.3). The suitability of the bank for the establishment of willows is currently undetermined since willows may not be suited to the salinity or to fluctuating lake levels.

Placement of fill in the lake, probably silt from the lake itself, under this alternative would convert a small amount of wetland habitat from unvegetated earth to a rock slope. However, grading of the lake bank/island bank would result in a net increase in the total amount of wetland habitat. Specifically, grading of the shoreline/island to a 3:1 slope would increase the area of the lake and associated wetland habitat by approximately 7,350 square feet (i.e., an approximate additional 3-foot wide swath of open water/mud flat for an approximate total distance of 2,450 feet, including the windward side of the island). The rip-rap would displace approximately 2,450 square feet of wetland habitat (i.e., an approximate 1-foot wide swath of open water/mud flat for an approximate total distance of 2,450 feet). Preliminary calculations indicate that Treatment 1 improvements would create approximately 4,900 square feet of additional wetland habitat.

Treatment 2 - Vertical Concrete Wall

Alternative 2 uses a concrete vertical retaining wall to protect the shore from wave action (see Figure 2.5). This wall could alternatively consist of concrete sheet pile, steel-soldier pile, or wood pile. The toe of the wall would extend below the lake bottom to an elevation of about 40 feet, and the top of the wall would be approximately level with the lake shore pathway. Immediately offshore, the slope of the lake bottom would be graded to 10:1 to provide a shelf of shallow water in which bulrush and other wetland vegetation would become established. The wetland vegetation would obscure the face of the concrete wall, and provide a more natural transition from the lake to the shore. This shallow shelf is also a necessary safety feature to help prevent accidental drowning. This alternative provides strong protection from erosion, and results in a sharp transition between the lake and the shore. It would be most appropriate in areas



SOURCE: Rutherford & Chekene; Philip William and Associates, 1992.
and Environmental Science Associates, Inc., 1992.

Figure 2.5
Treatment 2:
Vertical Retaining Wall with Vegetation

of high erosion potential, and as such as, is proposed north and south of the boathouse. It would replace the section of wall in front of the boathouse, which is currently failing.

Treatment 3 - Concrete Sheet Pile Retaining Wall

This alternative would be most appropriate for replacing sections of failing vertical walls in front of the boathouse (see Figure 2.3). Six-inch concrete sheet piles would be driven into the clay soil (see Figure 2.6). Fill material, one to two feet wide, would be placed between the wall and the concrete sheet pile for approximately 800 feet along the shoreline. This would amount to approximately 800 to 1,000 square feet of fill in the lake.

Treatment 4 - Concrete Planters Within Existing Grouted Rip-Rap

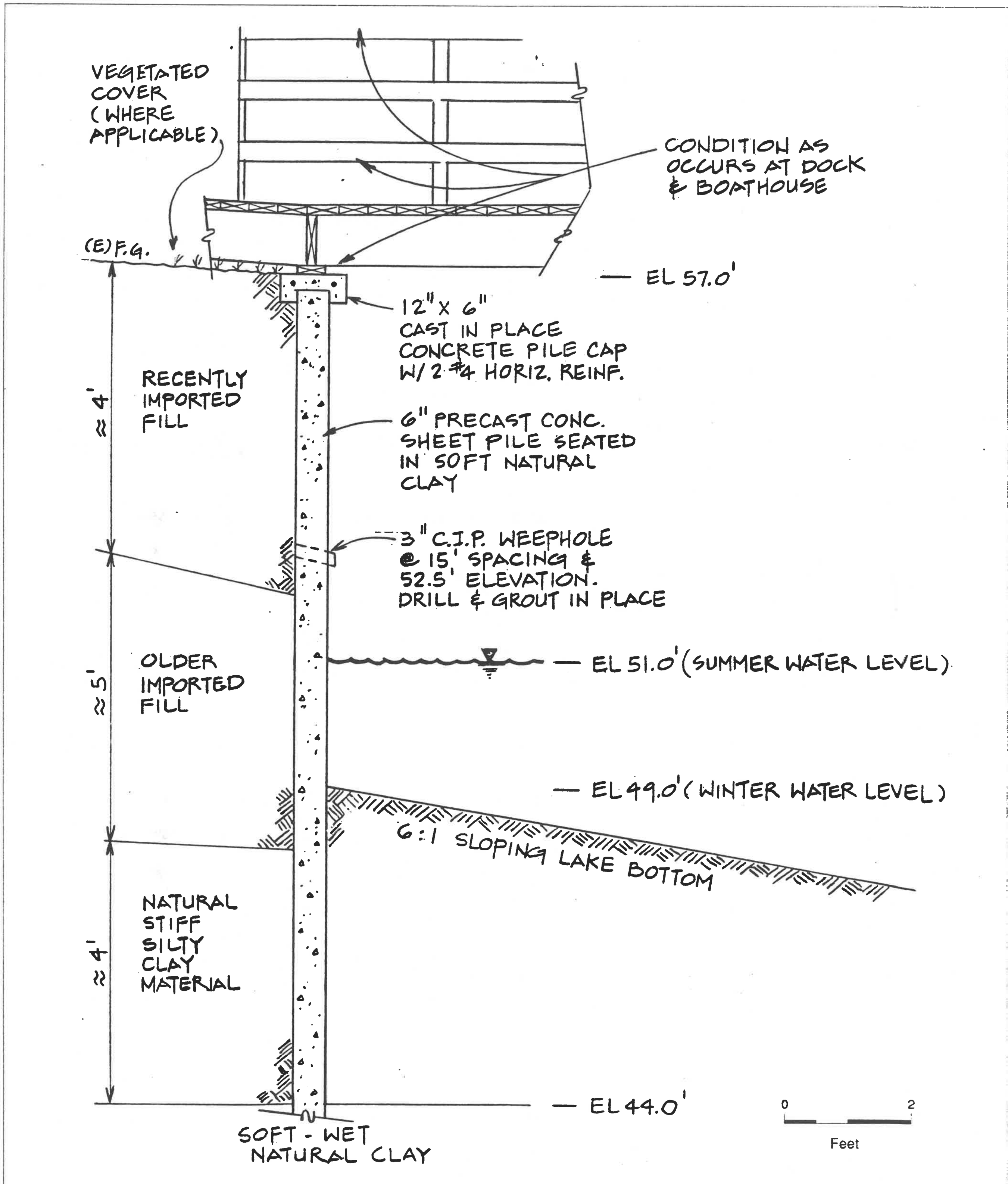
This alternative would be used to improve the appearance and habitat value of the existing grouted rip-rap on the north shore. Three-foot diameter planters would be installed in holes in the grouted rip-rap. Grout would be placed between the planter and edge of the hole. These planters would be used to establish shade trees at a distance no closer than five feet from the summer high water edge (see Figure 2.7).

Treatment 5 - Vegetated Shoreline

This alternative would establish adequate stands of bulrush and/or other wetland vegetation in locations along the east, west, and southern shoreline in presently barren areas (see Figure 2.8). The lake bottom slope immediately offshore would be altered to create a slope of 10:1 or less to provide a shallow shelf for plant growth. The shelf would be a minimum width of 10 feet. The shore bank would be planted with grass and other vegetation to prevent erosion by runoff and foot traffic.

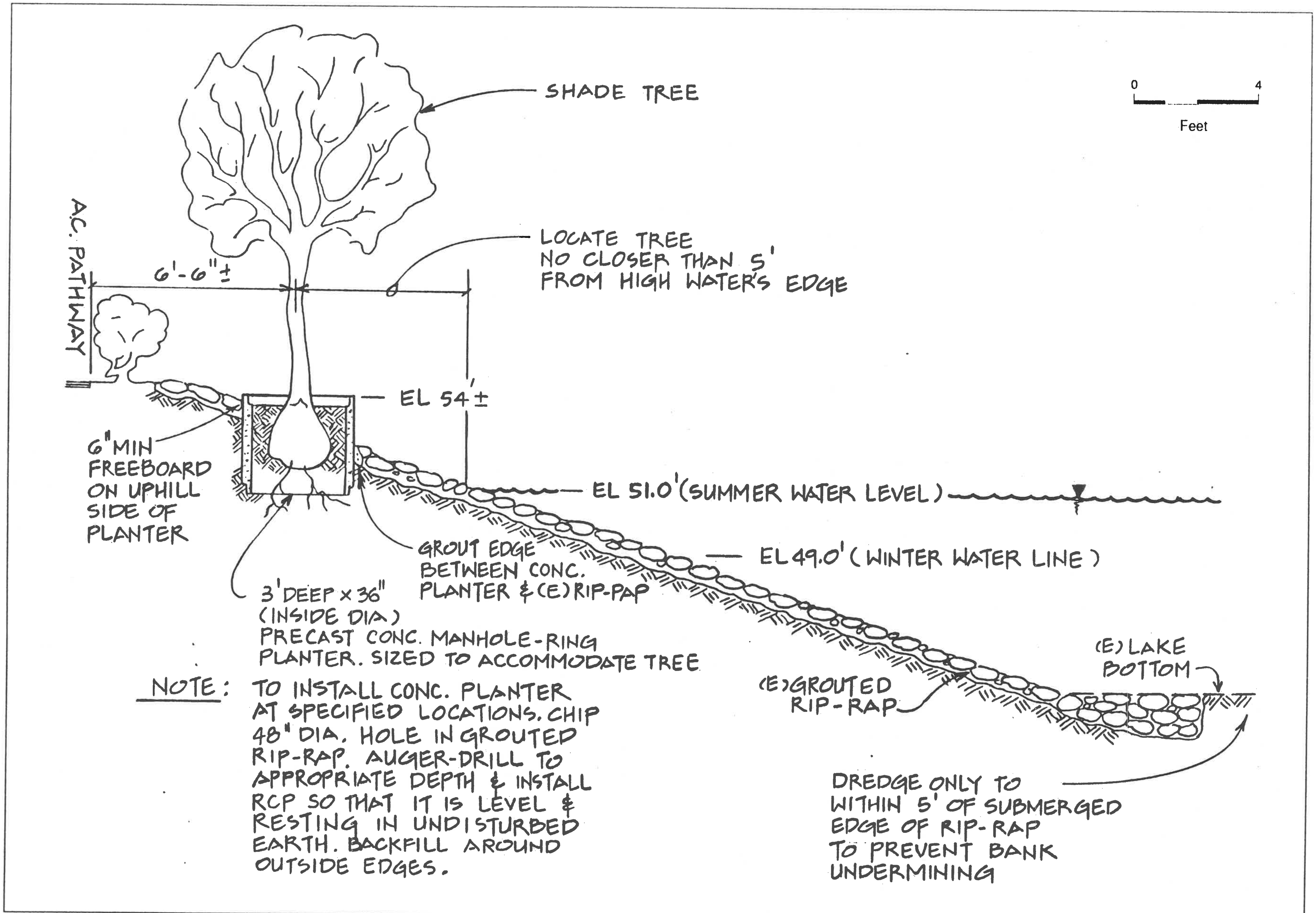
2.5.4 BOATHOUSE DEMOLITION/REMOVAL

This project involves the demolition and removal of the existing building, which is located on poorly compacted fill (see Figure 2.2). The objective of the project is to remove the existing, structurally unsound building to ensure public safety. The building would be demolished following construction of a replacement facility, which would not be located adjacent to the lake. This EIR does not include the environmental analysis of the construction of a replacement facility, which will be completed prior to approval of the replacement project.



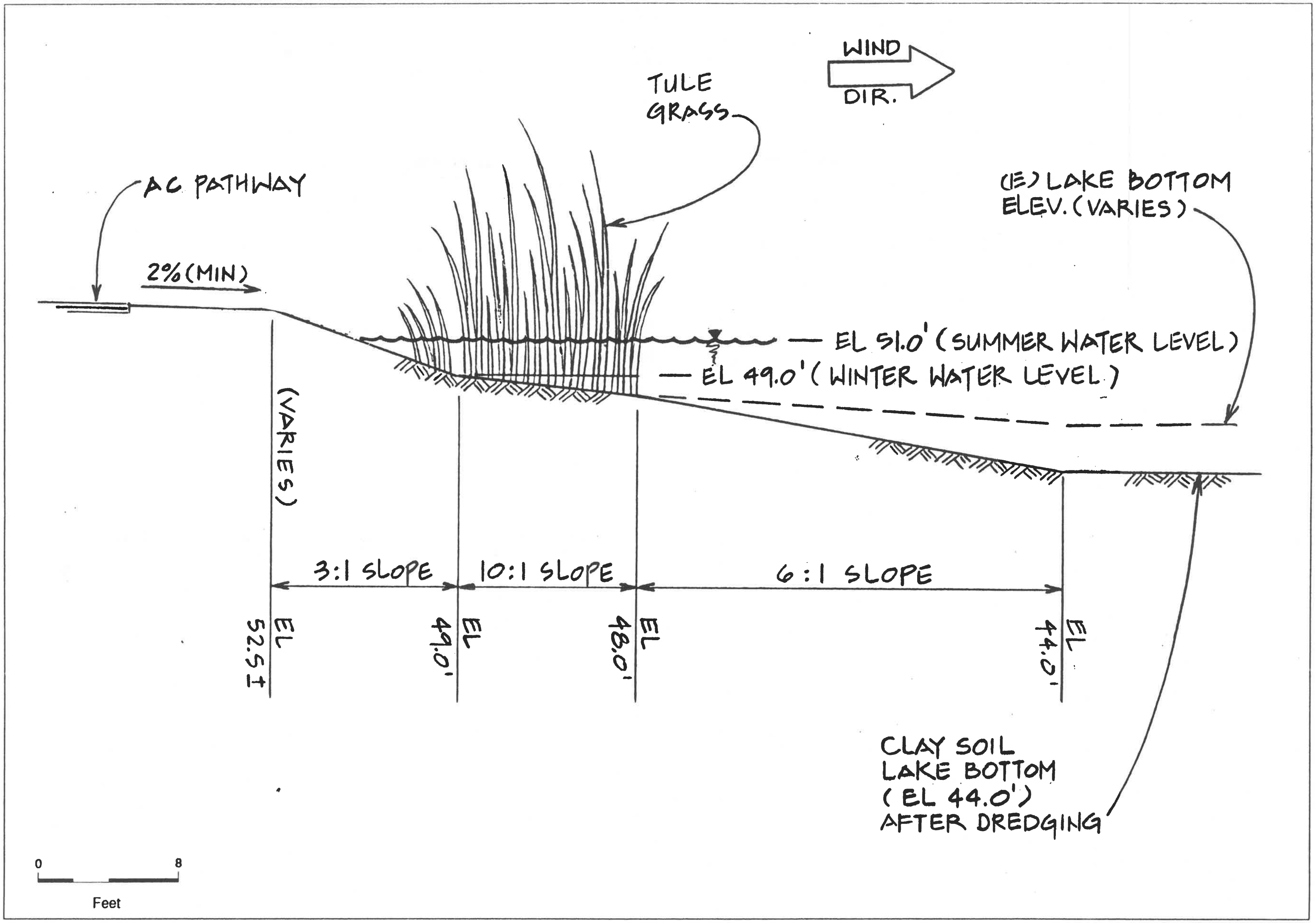
SOURCE: Philip Williams and Associates, Ltd., 1992 and
Environmental Science Associates, Inc., 1992.

Figure 2.6
Treatment 3:
Precast Concrete Sheet Pile Retaining Wall



SOURCE: Rutherford & Chekene; Philip William and Associates, 1992.
and Environmental Science Associates, Inc., 1992.

Figure 2.7
Treatment 4:
Concrete Planter with Rip-Rap



SOURCE: Rutherford & Chekene; Philip William and Associates, 1992. and Environmental Science Associates, Inc., 1992.

Figure 2.8
Treatment 5:
Vegetated Shore

2.5.5 SAILBOARD BEACH ON LAKE ELIZABETH

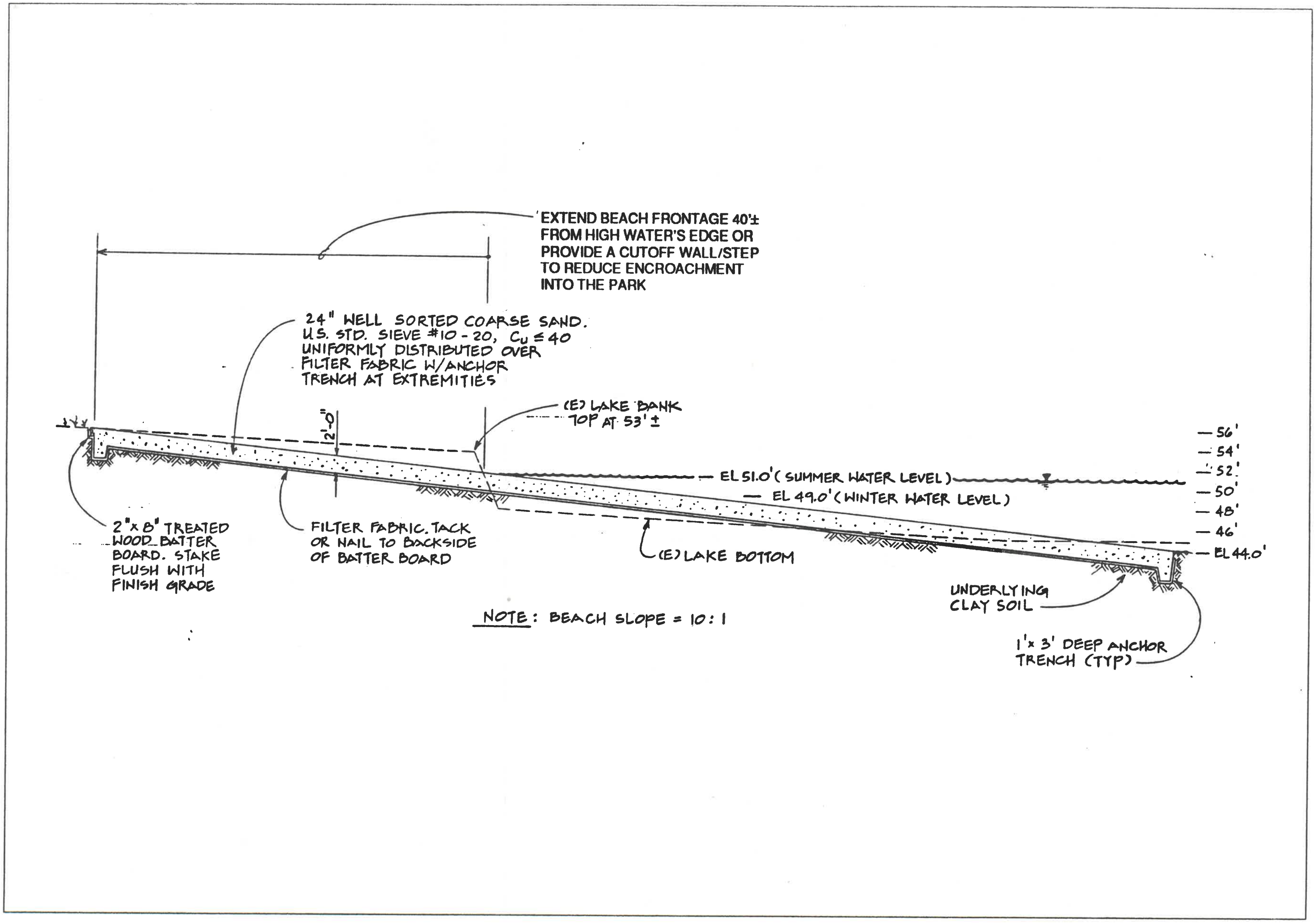
This project is intended to provide easier sailboard access to and egress from Lake Elizabeth. Currently, it is difficult for many sailboarders to mount or dismount their equipment via the floating dock, especially under windy conditions. The proposed 100-foot wide sailboard beach would be located along the western lake shore, north of the boat launching ramp. As a result of wave action and lake level fluctuation (as much as 3 feet over the year), a more resistant gravel beach that requires less frequent replacement is the preferred alternative. The sailboard beach would be made up of a two foot deep layer of gravel underlain by filter fabric (see Figure 2.9). The beach slope would be relatively shallow at 10:1. The filter fabric would lie on top of the native clay soil, and would be anchored by sand trenches to the shore and the lake bottom.

2.5.6 DOCK EXTENSION

This project would involve construction of a new dock, approximately 120 feet long and covering about 1,200 square feet, south of the existing boathouse dock (see Figure 2.2). Part of the dock would parallel the existing dock, while the remainder would parallel the shoreline. The new dock would likely be constructed of hollow concrete boxes backfilled with foam so as to create floatation. The purpose of this project is to facilitate docking in the presence of a southerly wind and to create additional docking space.

2.5.7 RESTORATION OF STIVERS LAGOON MARSH

The Stivers Lagoon Marsh area adjacent to Lake Elizabeth, while still providing important habitat values, shows signs of declining wetland character due to changes in its hydrologic regime. The hydrologic regime of the marsh is affected by direct overflows into the marsh during high creek flow and by the level of the underlying groundwater table. Groundwater level variations are in turn controlled by the precipitation regime, creek flows and local groundwater pumping. Groundwater is the primary water source for the marsh. Pumped groundwater is the source of water supply in the summer for the lake as well. During the rainy season, high groundwater levels produce saturated soil conditions and shallow ponding throughout the marsh. This promotes wetland plant species and limits competition by upland vegetation. The creation of a defined Mission Creek channel throughout the marsh (approximately 1930's) and the reduction in marsh size with the creation of Lake Elizabeth (1968) have lowered water table elevation, especially during the dry season.



SOURCE: Rutherford & Chekene; Philip William and Associates, 1992. and Environmental Science Associates, Inc., 1992.

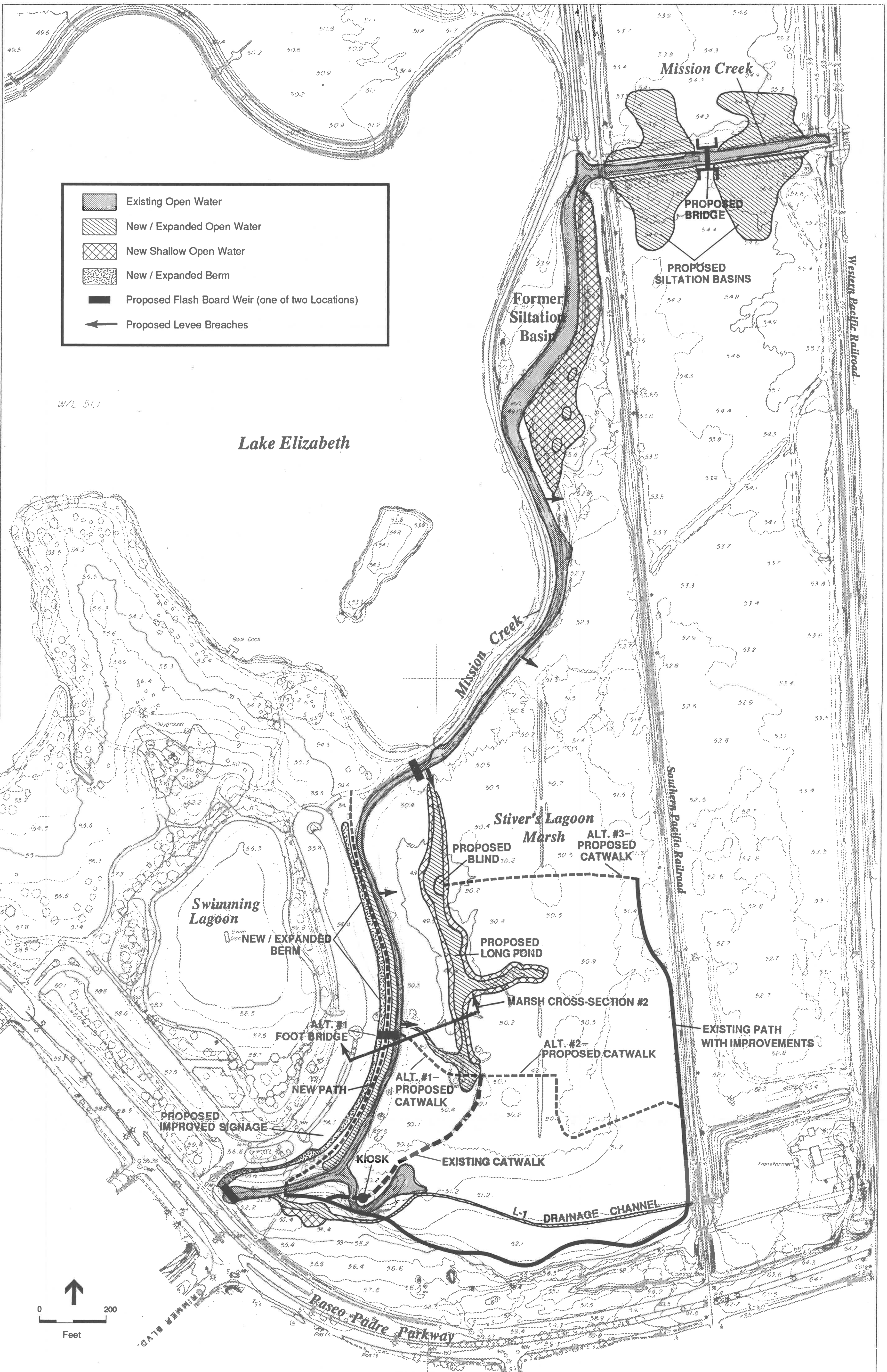
Figure 2.9
Sailboard Beach

Options for restoring the approximately 40 acre area to a more natural wetland condition were examined as part of a restoration feasibility study, which is appended to the EIR (Appendix C). The primary objectives of the restoration would be to preserve and enhance the habitat of the marsh; to maintain it as a conservation area with environmental education uses; to improve habitat values and return the area to a more fully functioning fresh water marsh; and to incorporate the marsh into the overall water management system for the Lake Elizabeth area.

Figure 2.10 illustrates the proposed improvement plan for Stivers Lagoon Marsh. Several of the plan components would create wetland habitat or enhance existing wetland habitat values. The placement of a flashboard weir or a weir gate in Mission Creek at the downstream end would pond water temporarily from April to September. Additionally, groundwater would be pumped to maintain a water level in the marsh of 49.5 feet to 50 feet NGVD . This would raise summer groundwater levels by about four feet and resaturate the sediment of the marsh, promoting the recovery of wetland vegetation.

The excavation of a shelf from the east bank of the existing siltation pond to an elevation that allows for marsh development would increase wetland habitat. The excavation of a bench along the west side of Mission Creek would allow for riparian vegetation development and increase wetland habitat. The excavation of a deep, long pond beginning at the existing pond would improve the diversity of wetland habitat. The control of Fuller's teasel (*Dipsacus fullorum*) and bristly ox-tongue (*Picris echioides*) by mowing and mulching would reduce the invasion of unwanted species and indirectly provide more habitat for obligate wetland vegetation. The transplanting of rhizome sections in the new pond would diversify wildlife habitat and could restore nesting habitat for the tricolored blackbird, a species that historically used the Stivers Lagoon Marsh area.

The enlargement and enhancement of the ponds around the kiosk would promote a diversity of habitat types that would improve public recreation and education opportunities. To improve access to existing viewpoints, and provide access to proposed restoration areas, the project proposes the construction of a small pedestrian bridge across Mission Creek and approximately 200 feet of new wooden catwalk to connect with the north end of the existing catwalk and create a circular path. This proposed path would cross through the freshwater marsh habitat near the kiosk, riparian habitat along Mission Creek, and open water habitat of proposed long pond on the south end. Improved access would allow for human exposure to a variety of habitat types without inviting human activity into the central part of the marsh that could decrease value for wildlife. The improvement of public access as proposed would also require the repair and



SOURCE: Environmental Science Associates, Inc.

Figure 2.10
Proposed Stiver's Lagoon Marsh
Enhancement / Restoration Plan

maintenance of approximately 1,150 feet of existing trail through mixed riparian habitat and 300 feet of existing trail through mixed riparian habitat parallel to the railroad tracks, and construction of approximately 600 feet of new catwalk/path across the marsh/riparian woodland to meet the north end of the existing catwalk.

2.6 PROJECT CONSTRUCTION

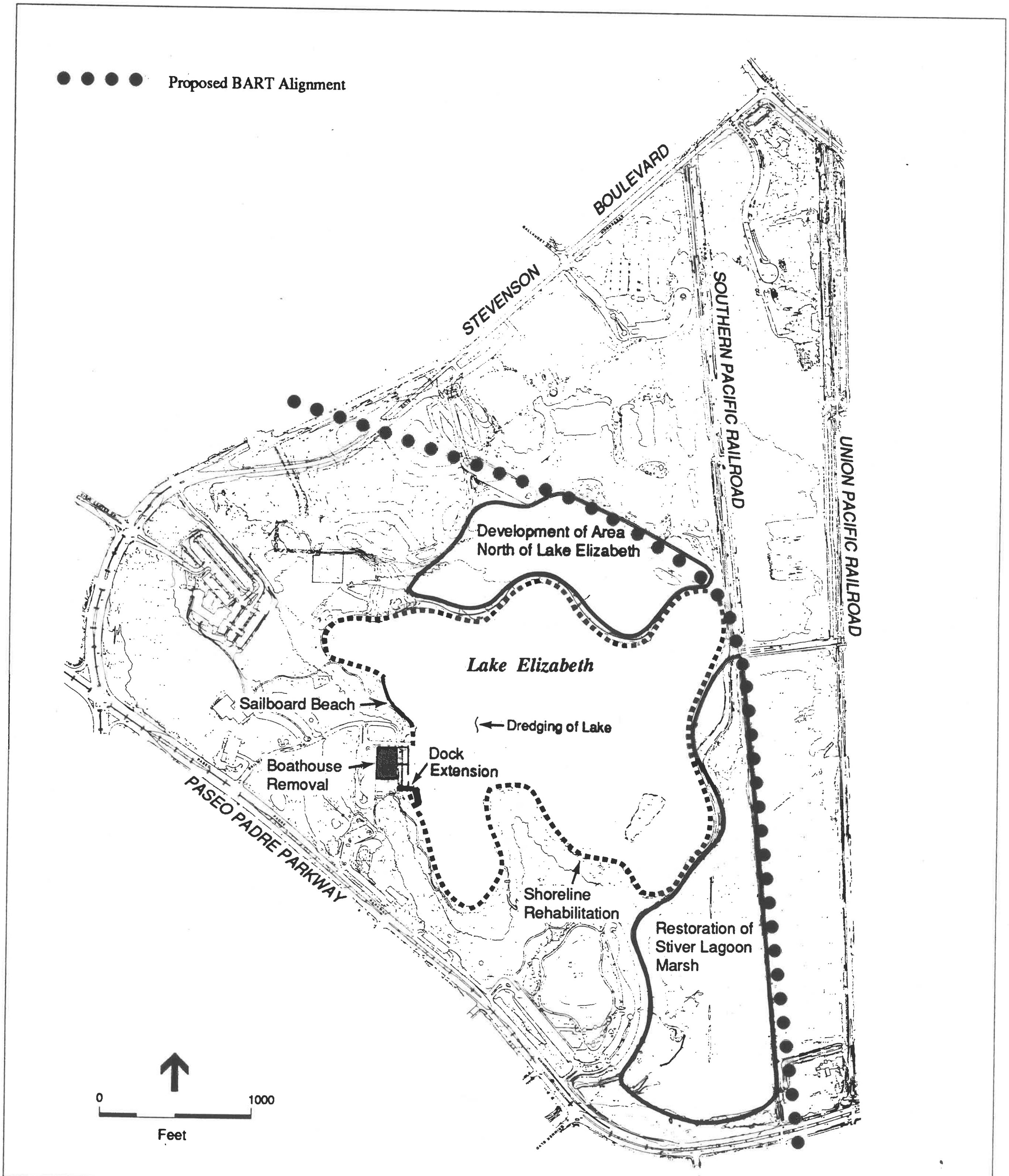
The shoreline rehabilitation, sailboard beach, and dock extension projects are scheduled for completion in 1993. The boathouse removal project would be completed when a new boathouse is completed. Development of the area north of the lake, dredging of the lake, and the Stivers Lagoon Marsh restoration work are not yet funded and/or have not been scheduled.

2.7 OTHER PROJECTS/ACTIVITIES POTENTIALLY AFFECTING THE PROJECT AREA

BART WARM SPRINGS EXTENSION PROJECT

The San Francisco Bay Area Rapid Transit District is proposing a 7.8-mile extension of the existing Fremont BART line (DKS Associates, 1991). The preferred BART alignment would proceed south/north to the east of Central Park as an aboveground structure on the City-owned parcel between the Southern Pacific and Union Pacific railroad tracks (see Figure 2.11). The City has expressed a strong preference that the BART structure be underground. In either event, the alignment would cross over the ACFCWD Flood Control Channel (Mission Creek) and then head northeast and skirt the northeast shoreline of Lake Elizabeth. It would proceed in a northwesterly direction, skirting the northeast side of the softball fields, southwest of the soccer fields, and proceeding beyond Central Park.

Revegetation plans are proposed as part of the BART project in the parcel adjacent to the proposed Stivers Lagoon Marsh restoration plans. These plans should be coordinated to ensure that revegetation efforts in the adjacent area promote and does not degrade existing and proposed vegetation communities and wildlife habitat in Stivers Lagoon Marsh. In addition, construction of proposed shoreline rehabilitation treatments on the eastern shoreline of Lake Elizabeth should be coordinated with construction of proposed BART extension in this area.



SOURCE: Environmental Science Associates, Inc.

Figure 2.11
Proposed BART Alignment in Project Vicinity

FREMONT GOLF COURSE AND PEDESTRIAN ACCESS PROJECT

The City of Fremont is considering approval of a golf course and support facilities within the currently undeveloped parcel along the eastern edge of Central Park between the railroad tracks (CH2M Hill, 1991). Golf facilities could include either an 18-hole golf course or 9-hole golf course, a family golf center, and support facilities such as club house, parking lot and restaurant. The following project components would need to be coordinated between the proposed Central Park projects discussed in this EIR and the proposed Golf Course and Facilities project.

- Design of water features on the golf course so as to minimize use by non-migratory waterfowl such as the Canadian goose that is already considered to be a pest species at Lake Elizabeth.
- Development of a Creek Restoration Plan for Mission Creek that ensures adequate flows in Mission Creek to support proposed restoration plans for Stivers Lagoon Marsh.
- Design of the siltation pond to also function as a water feature/detention pond for the golf course.
- Selection of pesticides, herbicides, fungicides, rodenticides, and/or fertilizers for the golf course that minimize potential adverse impacts to surface water and groundwater quality, and indirectly potential adverse impacts to plant and animal species in adjacent Central Park, especially Stivers Lagoon Marsh.

2.8 REGULATORY CONSIDERATIONS

A number of regulatory agencies have jurisdiction in the study area and as a result have permit and approval authority over any development and construction-related activities that may potentially occur as a result of implementation of the proposed projects within Central Park. A brief discussion of each key agency's role and relationship to past and potential future activities in the study area is described below. This discussion is repeated and/or elaborated on where appropriate in Section III under the pertinent environmental category and in Appendix D.

U.S. ARMY CORPS OF ENGINEERS (CORPS)

Under two separate statutory authorities, the U.S. Army Corps of Engineers is charged with issuing permits for placement of structures and other potential obstructions to navigation in navigable waters (Section 10, Rivers and Harbors Act), and discharge of dredged or fill material into "waters of the United States," a broadly defined classification which includes most streams, rivers, and wetlands (Section 404, Clean Water Act).

In tidal areas, waters that fall within the Corps' jurisdiction include those areas that are: subject to the ebb and flow of the tide up to the plane of Mean High Water (MHW); are no longer tidal but still fall below MHW; or are wetlands adjacent to regulated waters. In nontidal areas, jurisdiction extends to the Ordinary High Water Mark (OHWM), a line that, in the absence of hydrologic data, is evident from lake shoreline or stream or riverbank indicators (bank shelving, debris lines, etc.). This latter definition includes intermittent as well as perennial streams.

Wetlands subject to Corps regulation may be either adjacent to navigable tidal or nontidal waters and their tributaries, or isolated from them. To determine whether areas that appear to be wetlands are subject to Corps' jurisdiction (i.e., are "jurisdictional" wetlands), a wetlands delineation must be performed. Three criteria are applied in this determination: (1) evidence of inundation or saturation by surface or groundwater for at least two weeks during an average rainfall year (hydrology), (2) a prevalence of wetland vegetation (hydrophytes) if the site is undisturbed, and (3) typical wetland (hydric) soils, that is, soils formed under saturated, anaerobic conditions. Since streams, including those with riparian habitat, rarely meet all three criteria for delineation as a wetland, those portions of a stream or river that lie below the line of "ordinary high water", or "bankful stage", are generally regarded by the Corps as falling within their jurisdiction as either navigable waters, tributaries to navigable waters, or "other waters" of the United States.

Within the study area, potential areas of jurisdictional wetland include Stivers Lagoon Marsh, Mission Creek, Lake Elizabeth, ponding areas north of the lake, and the smaller, man-made pond northeast of Lake Elizabeth. Wetland acreages for the remaining areas and estimates of wetland disturbance in the short-term and long-term are discussed in Chapter 3.0, "Environmental Setting, Impacts and Mitigations," in Section 3.9 "Vegetation and Wetlands".

Regional Water Quality Control Board

Section 401 of the Clean Water Act requires an applicant for a permit to discharge dredged or fill material into waters of the United States to first obtain a certificate from the appropriate State agency that the fill is consistent with State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for individual permits is delegated by the State Water Resources Control Board to the Regional Water Quality Control Boards. A request for certification or waiver is submitted to the Regional Board at the same time that an application is filed with the Corps. The Board has 60 days to review the application and act.

All categories of Nationwide permits under Section 404 must also have certification from the State Board. For less than one acre, the Board usually issues a waiver, provided that the applicant enters into a Stream Alteration Agreement with the California Department of Fish and Game. Between one and two acres of fill, a waiver may also be granted, but at the Board's discretion, the project may receive 60-day review, probable mitigation requirements, a public hearing, and approval of the water quality certification by the State Water Resources Control Board as an agenda item. For greater than two acres, a project would receive 60-day review, probable mitigation requirements, a public hearing, and approval of the water quality certification by the State Water Resources Control Board as an agenda item.

California Department of Fish and Game

Stream Alteration Agreement

The California Department of Fish and Game (CDFG) has the authority to oversee work in streams pursuant to Fish and Game Code Sections 1601 (public projects) and 1603 (private projects). A landowner or agency proposing to substantially divert the natural flow of a stream, substantially alter its bed or bank, or use any material from the streambed, must first enter into a "Streambed Alteration Agreement" with CDFG. The CDFG, while being able to impose reasonable conditions on the agreement, may not decline to enter into an agreement. Within the study area, any disruption to the banks of Mission Creek (e.g. bridge construction for public access improvements) would require the acquisition of a Stream Alteration Agreement.

Special Status Species Protection

Special status plant and animal species include those species that are listed by the federal or state governments as endangered, threatened, rare, or candidate for listing; listed by federal or state governments as species of special concern; or listed by the California Native Plant Society (CNPS) as rare or endangered. The California Endangered Species Act (CESA) mandates the designation and protection of State-protected special status species in California. The United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) share responsibility for management and protection of special status species in California. Under separate state and federal legislation, each agency conducts a detailed review of any project that could affect a special status plant or animal species. If a species listed as endangered or threatened may be affected, the lead agency must initiate a formal consultation with the USFWS and/or CDFG, as applicable under federal or state law. A formal consultation process must be initiated with the CDFG for projects the CEQA lead agency has determined may or will have an adverse effect on state-listed species. As is the case under USFWS policy, state candidate species are not subject to the same consultation requirements as formally listed endangered or threatened species. However, CESA encourages informal consultation for candidate species which may become officially listed prior to completion of the CEQA process for a given project.

The study area, including Lake Elizabeth, the ruderal grassland north of the lake, and Stivers Lagoon Marsh provide potential habitat for seven State Species of Special Concern, including six bird species and one reptile species. In some cases, the proposed projects could result in short-term adverse impacts with long-term habitat improvements. In other cases, the proposed projects could result in adverse short-term and long-term potential impacts. No species currently listed as threatened or endangered by the State would be affected by the Program projects.

California Fully Protected Species are bird species which, although not listed as endangered or threatened, are protected by law in California. Under Section 3511 of the California Fish and Game Code, it is illegal to take, harass, or possess these species, their nests, or their eggs. These species, as well as certain other bird species, are afforded further protection under Sections 3503 (protection of nests and eggs), 3503.5 (protection of raptor eggs), and 3513 (protection of migratory birds) of the California Fish and Game Code. Bird species covered by these regulations and known to be present or potentially present in the study area include burrowing owl, Cooper's hawk, Black-shouldered kite, Northern harrier, Ferruginous hawk, and sharp-shinned hawk.

U.S. Fish and Wildlife Service

As stated above, special status plant and animal species include those species that are listed by the federal or state governments as endangered, threatened, rare, or candidate for listing; listed by federal or state governments as species of special concern; or listed by the California Native Plant Society (CNPS) as rare or endangered. The federal Endangered Species Acts(ESA) mandates the designation and protection of federally-protected special status species. The United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) share responsibility for management and protection of special status species in California. Under separate state and federal legislation, each agency conducts a detailed review of any project that could affect a special status plant or animal species. If a federally-listed endangered or threatened plant or animal species may be affected, the lead agency must initiate a formal consultation with the USFWS as applicable under federal law.

The Federal Endangered Species Act (16 USC 1531 et seq.) Section 9 prohibits the "taking" of listed species, including their habitat. If incidental taking might occur from a project, that is, if individuals of a listed species would be inadvertently harmed, harassed, or collected, or would suffer significant habitat modification, consultation with the USFWS is required. Section 7, which applies to federally funded or permitted projects or projects on federal lands, and Section 10(a), which applies to nonfederal projects and development on private land, require formal consultation where a project may affect a species currently listed as threatened or endangered. The USFWS recommends that candidate species and species proposed for listing also be considered in informal consultation during a project's environmental review. This is recommended because, in the event that a species were to be listed during the design or construction phases of a project (i. e., before occupancy), new studies and restrictions might be imposed.

The Stivers Lagoon Marsh within the study area is expected to provide marginal habitat for three federal candidate plant species. The proposed enhancement activities proposed as part of the Stivers Lagoon Restoration Plan are expected to increase habitat value for these species. The study area, including Lake Elizabeth, the ruderal grassland north of the lake, and Stivers Lagoon Marsh provide potential habitat for three federal candidate bird species, one federal candidate reptile species, and one federal candidate insect species. In some cases, the proposed projects could result in short-term adverse impacts with long-term habitat improvements. In other cases, the proposed projects could result in adverse short-term and long-term potential impacts. No species currently listed as threatened or endangered by the federal government would be affected by the project.

Alameda County Flood Control and Water Conservation District (ACFCWD)

Lake Elizabeth is owned by ACFCWCD and is leased to the City of Fremont under a license agreement for recreational uses as part of Central Park. The lake and adjacent parklands function as flood control storage for Mission Creek The City's current leasing agreement with Alameda County Flood Control stipulates that the City maintain 931 acre-feet of storage within the lake watershed, enough storage to conservatively accommodate flows in 100-year flood conditions (Engineering Science, Inc., *Maintenance Recommendations and Lake Management Plan,* 1991).

Changes to the existing storage capacity of the lake and adjacent parklands ,as proposed by the project, would require approval by the ACFCWCD.

NOTES - Project Description

CH2M Hill, *Draft Fremont Golf Course and Pedestrian Access EIR*, August 1991.

DKS Associates, *Draft BART Warm Springs Extension EIR*, July 1991.

3.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

3.1 RECREATION AND OTHER LAND USES

SETTING

Land Uses in the Project Site Vicinity

Central Park is a 440-acre urban park in central Fremont bounded by Stevenson Boulevard on the north and west, Paseo Padre Parkway on the west and south, the Blankstein/Brooks agricultural parcel to the southeast, and the Southern Pacific Transportation Company (SPTCo) and Union Pacific Railroad (UPRR) right-of-ways on the east. Central Park is shown in Figure 2, (Chapter 2.0) and in Figure 3.1.1 a recent aerial photo of the site. Land uses in the vicinity of Central Park generally include residential to the south and west; a planned golf course and residential development to the east; and offices, multiple-family residences, and vacant land to the north.

Regional transportation facilities in the project area include Interstate 680 and Interstate 880 to the east and west, respectively, and the San Francisco Bay Area Rapid Transit (BART) Fremont Station to the northwest. BART is proposing to extend its rail line south through the eastern portion of Central Park and on to near the Alameda County/Santa Clara County boundary.

General Plan Designations in the Project Site Vicinity

General Plan designations for the lands surrounding Central Park include Public Facility (School for the Deaf and Handicapped), and Residential land uses ranging from 11 to 70 dwelling units per acre north of the proposed project site; Commercial (Central Business District) uses west of the Civic Center; Commercial (Office) and Residential uses ranging from 5 to 35 units per acre south of the park; and Residential uses east of the UPRR right-of-way.

Land Uses at the Project Site

The project site currently contains civic center, open space, recreation, and flood control uses. Central Park is known as Fremont's one "city-park" and was designed to serve the whole city as

SOURCE: Pacific Aerial Surveys

Lake Elizabeth EIR / 90-639 ■

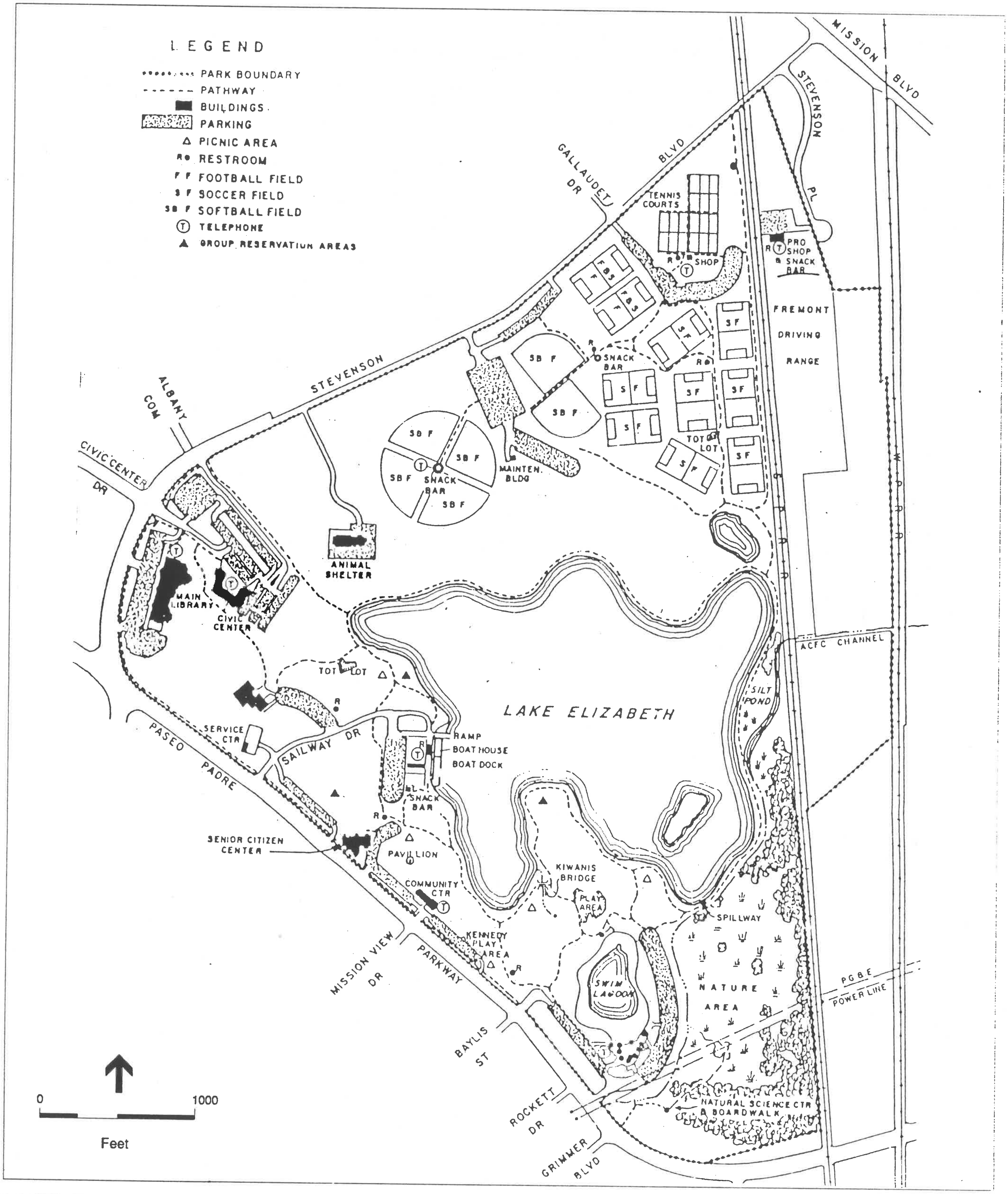
Figure 3.1.1
1990 Aerial Photography
of Project Area

well as the surrounding neighborhoods. In addition to serving as a public park facility, Central Park also contains a civic center complex that represents the administrative and public service center of the city. Fremont's Civic Center is located in the western corner of Central Park near the intersection of Stevenson Boulevard and Paseo Padre Parkway. The Civic Center includes the Alameda County Main Library, the Fremont City Hall, and the Police Building. Also located in the northern part of the park is the Tri-City Animal Shelter.

Several other recreational and community facilities are located within Central Park. These include a senior citizen center; community center; boat house; a 7.5-acre swim lagoon, changing rooms, restrooms, and snack bar; band pavilion; 18 tennis courts and pro shop; six softball fields, snack bar; 10 soccer fields and snack bar; golf driving range, pro shop, and cafe; approximately 200 picnic tables (50 in reserve group areas); four children's playgrounds; almost five miles of walking/jogging trails; ten parking lots with over 2,000 spaces; nature area, boardwalk, and nature center; fishing pier; and several ancillary buildings including eight restrooms, a park service center, maintenance building, well and pump buildings, and a boat storage area (see Figure 3.1.2).

The City of Fremont is currently planning four other community facilities for Central Park, including a new police building, a swim/gymnasium complex, a golf course, and a cultural arts center. The police building would be located generally between the Civic Center, the animal shelter, and Stevenson Boulevard. The swim/gymnasium is proposed for a site just east of the police station, adjacent to the softball complex. An EIR has been prepared and certified for the golf course, to be located between the two railroad right-of-ways east of Central Park. The proposed cultural arts center is planned for a location south of the Civic Center and Main Library buildings. The *Fremont General Plan* also identifies several other facilities that are proposed for Central Park, including other City administration buildings. A BART extension is proposed to pass through the northwestern corner of Central Park (the Draft EIR was prepared in July 1991).

The first lands for the park were purchased in 1959, and acquisition was completed by the early 1970's. Land comprising Central Park is owned by the City of Fremont (approximately 266 acres) and Alameda County Flood Control and Water Conservation District (approximately 174 acres). Lake Elizabeth, located within Central Park, is owned by the Alameda County Flood Control and Water Conservation District, which uses the lake as a storm water retention basin during the rainy season. Under a renewable cooperative license agreement, the City of Fremont



SOURCE: City of Fremont, 1990 and Environmental Science Associates, Inc., 1992.

Figure 3.1.2
Community Facilities and On-Site Improvements within Central Park

is permitted to operate the District's flood control facility as a park and recreation facility for general public use. The City manages the lake year-round for sailing, boating, sailboarding, fishing, and wildlife habitat (City of Fremont and Alameda County Flood Control and Water Conservation District, 1971). However, the District retains the primary right to operate the property, including Lake Elizabeth and Mission Creek, as a flood control facility. The District must also approve any grading, structures or improvements on the site; their approval is based on the proposed facilities' non-interference with flood control, drainage and water conservation activity.

Other real estate interests directly affecting Central Park include the SPTCo rail right-of-way, which separates Central Park from the east Central Park sub-area. Pacific Gas and Electric Company has a utility easement which crosses the Stivers Lagoon nature area at the southern end of the park. Federal funding assistance was obtained by the City and the Flood Control District to assist in purchasing some of the lands included in the park. The funds were granted with the provision that the lands be utilized for appropriate public purposes (San Francisco Bay Area Rapid Transit, 1991).

General Plan Designations at the Project Site

Current Fremont General Plan designations for Central Park are as Institutional Open Space and as Public Facility. Small parcels between the railroad right-of-ways are classified as Commercial (Office) and as Open Space. Specific General Plan objectives related to Central Park open space lands require that development considers the "long-term role and function of the park within the city, competing needs and uses for the park, the importance of preserving its natural areas, and the need for areas of active and passive use" (City of Fremont, 1991). The General Plan designates a Public Facilities district for the Civic Center portion of Central Park; this part of the park would not be affected by the project. Implementation of the proposed project would be in substantial compliance with the Fremont General Plan.

Zoning at the Project Site

The park is zoned as Open Space (O-S). According to the Fremont zoning ordinance (Article 17.1), the Open Space District's purposes are to "encourage the clustering of dwelling units in order to preserve and enhance the use of open space lands as a limited and valuable resource; to permit limited but reasonable use of open space lands while protecting the public health, safety and welfare from the dangers of seismic hazards and unstable soils; to ensure the continued availability of land in agricultural production and in its natural or near natural state; to preserve the topography of the city that shapes it and gives it its identity; to coordinate with and carry out regional, county, and city open space plans." Public parks are specifically identified as a permitted use in the O-S Zoning District.

<u>Applicable General Plan Goals, Objectives and Policies</u>

The *Fremont General Plan* identifies a series of goals, objectives, and policies related to parks, recreation, and open space that are intended to guide development of the community. Specific goals, objectives, and policies that apply to the proposed project include:

GOAL OS 2: Recognition, protection, and enhancement of significant natural areas and wildlife habitats in the city, including Bay tidal, seasonal, and freshwater wetlands, and open meadows and fields.

- The proposed project includes the restoration and enhancement of Stivers Lagoon Marsh as a component.

OBJECTIVE OS 2.2: Protection and enhancement of wetlands within the city.

- The proposed project includes the restoration and enhancement of Stivers Lagoon Marsh as a component. An increase in wetland acreage as a result of the proposed project is expected.

POLICY OS 2.2.1: The City shall take an active role in protecting wetlands. There shall be no net loss of wetlands as a result of development in Fremont.

- The proposed project includes the restoration and enhancement of Stivers Lagoon Marsh as a component. An increase in wetland acreage as a result of the proposed project is expected.

OBJECTIVE OS 2.3: Conservation of natural areas within the city.

- The project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

POLICY OS 2.3.1: Publicly owned unique natural areas remaining in the flatland area of the city shall be managed to protect and enhance wildlife habitats to the degree feasible.

- The project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.* Preservation of Central Park is specifically cited as a priority.

OBJECTIVE OS 3.3: Central Park managed for its long term environmental health and vitality.

POLICY OS 3.3.1: Central Park development shall be in accordance with a long range Program that considers the long-term role and function of the park within the city, competing needs and uses for the park, the importance of preserving its natural areas, and the need for areas of active and passive use. Privately owned and operated buildings shall not be permitted in Central Park west of the Southern Pacific railroad tracks.

- The proposed projects help to implement the "long range Program" and long term role and function of the Park through enhancement of the lake area, as called for in the *Fremont General Plan.*

Recreation

The City of Fremont manages over 1,000 acres of park, recreation, and open space lands. There are currently about 6 acres of such lands for every 1,000 residents, not including 1,100 acres of land owned by the City but managed by the East Bay Regional Park District (EBRPD).

The *Fremont General Plan* identifies the City's adopted standards for regional, city, community, and neighborhood parks. Table 3.1.1 summarizes Fremont's adopted park standards, and compares them with existing conditions. The City currently exceeds its standards for Regional and Neighborhood parks, but falls short of its goals for City and Community parks. (Regional parks serve an area within a 30-minute drive of the park, City parks serve all of Fremont, Community parks draw visitors from within 1.5 miles, and Neighborhood parks are intended to serve the immediate surrounding community within 0.5 to 0.75 miles of the park.)

TABLE 3.1.1: FREMONT PARKS AND STANDARDS

Park Type	Number of Parks	Standards Acres/1000 pop.	Existing Parks (1990) Acres/1000 pop.
Regional	5	12.4	27.0
City	1	6.4	2.7
Community	9	1.2	0.9
Neighborhood	21	0.7	0.9

SOURCE: City of Fremont

As previously mentioned, Central Park is Fremont's primary park, designed to serve the entire city. It has turf areas, several lighted softball fields, a community center, and supports boating, trails, playground equipment, and wildlife habitat. The project site is currently reserved for open space and recreational uses. Central Park is a heavily used community recreational facility. According to statistics cited in the *BART Warm Springs Extension Draft Environmental Impact Report* (July 1991), the estimated level of recreational use in Central Park is about 1.15 million visits per year (San Francisco Bay Area Rapid Transit, 1991). See Table 3.1.2 for estimated recreational use statistics for Central Park.

TABLE 3.1.2: ESTIMATED ANNUAL RECREATIONAL VISITS TO FREMONT CENTRAL PARK BY TYPE OF ACTIVITY

Type of Activity	Estimated Visits
Walking and Jogging	325,000
Softball	133,000
Tennis	20,000
Youth Soccer	44,000
Golf Center	92,000
Private Boat Launches	12,000
Boat Rentals	26,000
Swim Lagoon	53,000
Reserve Picnic Areas	20,000
Non-Reserved Picnics	90,000
Special Events	10,000
Senior Center	35,000
Other Activities[a]	290,000
Total	**1,150,000**

a Other activities include fishing, bicycling, children's playgrounds, nature study, special summer camps, fun runs, school parties, etc.

SOURCE: BART Warm Springs Extension Draft Environmental Impact Report, July 1991.

According to park staff, picnic areas in particular have become increasingly crowded with higher use by large groups increasing due to new corporations moving into Fremont. The reserved picnic areas were completely booked this past summer (Felber, 1992a).

Recreation and visitor-serving activities at Central Park are managed and provided by the City of Fremont's Leisure Services Department, while maintenance of the park is provided by the City's Department of Public Works (existing park maintenance services and potential project impacts on these services are discussed in Section 3.3, Public Services and Utilities). Because of recent City budget cut backs, recreational activities and services provided by the Leisure Services Department have recently been curtailed. Reductions in budget and staffing at the park have resulted in limiting or discontinuing recreational services and activities previously provided for by Leisure Services Department staff (Felber, 1992a).

Central Park staff consists of ranger staff, concessions center staff, and sports division staff. Prior to any budget cuts, the ranger staff at the park consisted of four full-time park rangers, approximately 18 seasonal park rangers (or assistant rangers), one supervising ranger, and one clerical staff (Felber, 1992b). Ranger staff hours were from 7:00 a.m. to midnight during the week and from 6:00 a.m. to midnight during the weekend. All staff worked five days per week. During an initial round of budget cuts, park closing hours were changed from midnight to 10:00 p.m. Currently, there are three full-time rangers, approximately 12 assistant rangers (who work an average of two to three days per week), and no clerical staff (Felber, 1992b). Concession center staff, which includes lifeguards, boat rental staff, and snack bar staff, was not reduced by budget cuts because these services are some of the stronger revenue-generating services in the park. Concession center services are managed by two senior recreation leaders. During the peak season, the total staff is approximately 45 people, while off-season staff totals about 15 people (Felber, 1992b). Sports division staff operate the tennis center and softball-soccer complex. Each of these activity centers is managed by one senior recreation leader (Felber, 1992b).

Several activities in Central Park have been affected by budget cuts and ranger staff reductions. Because staff hours have been reduced, all Leisure Services staff leave at "sunset" (currently 6:00 p.m.). No staff are in the park and no "drop in" visitor supervision currently occurs between 6:00 p.m. and park closing time at 10:00 p.m. Sports areas do have supervision for scheduled uses. Guided nature hikes through the Stivers Lagoon nature area have been discontinued, though teachers continue to use the area for self-guided class field trips (Felber, 1992b). Boat rentals and private boat launching, which used to occur during the week (except during December and January, when rentals were not available due to low demand), are now only available and/or allowed on the weekends from the first full week of October through the last full week of April (Hayes, 1992). No weekday boating is allowed on Lake Elizabeth during this period (Felber, 1992a). Sailboarding is no longer allowed on Lake Elizabeth throughout the year due to inadequate bacterial water quality monitoring (Felber, 1992b). Prior to staff hour reductions, weekly water samples were collected and delivered to a laboratory for testing by ranger staff in conjunction with a water quality monitoring program conducted by the ACFCWCD (Hayes, 1992). City staff participation in this program has been discontinued, resulting in bi-weekly rather than weekly water quality monitoring. This frequency of bacterial water quality monitoring does not allow adequate information to enforce human contact standards, and has required the discontinuation of sailboarding at the lake (Felber, 1992b).

IMPACTS AND MITIGATION MEASURES

Significance Criteria

Impacts to land use and planning usually involve incompatibility of a proposed land use with existing land uses, conflict with existing environmental and land use plans, goals and policies for the community or the subject property, and other land uses restrictions which may apply to the site.

If a proposed project involves development of land uses that are incompatible with those currently on or surrounding the site, an impact to land use could result. For example, an elementary school located proximate to an adult movie house may be deemed by the public and by planning authorities to be incompatible land uses. While it is unlikely that grossly incompatible land uses (such as the example above) would be found in a comprehensively planned and zoned jurisdiction, some "allowed" land uses adjacent to one another are occasionally proposed. CEQA identifies incompatible land uses as those which "disrupt or divide the physical arrangement of an established community" (see Appendix G, Significant Effects of the CEQA Guidelines).

Certain land use restrictions are sometimes placed on a property intended to prohibit uses that, at some time, represented activities or uses incompatible with the objectives of that parcel's property owner, franchise holders, and/or neighboring land uses. Restrictive covenants, franchise agreements, easements, and right-of-ways are examples of this type of restriction. If the proposed project would be contrary to any such land use restrictions, it would result in a land use impact.

Land Uses in the Project Site Vicinity

Development of the proposed project would not significantly alter or adversely affect existing or proposed land uses in the project site vicinity. Each of the seven project components would enhance the existing recreational and wildlife uses of the site. Project development would not alter the basic existing use of the project site as a park and recreation facility, and, therefore, would not alter the relationship of project site land uses to surrounding land uses. No mitigation is required.

General Plan Designations in the Project Site Vicinity

Project development as proposed would not alter or adversely affect uses on surrounding land that are consistent with existing General Plan land use designations. No mitigation is required.

Land Uses at the Project Site

The seven proposed project components (dredging of Lake Elizabeth, rehabilitation of the lake's shoreline, extension of the boat dock, demolition and removal of the boathouse, development of a sailboard beach, development of an approximately 20-acre turf area for recreational and picnic use on the north side of the lake, and restoration of Stivers Lagoon marsh) each maintain, enhance, or extend the existing recreational facilities in Central Park. Project development as proposed would not conflict with existing on-site flood control land uses as adequate flood control capacity would remain following project development. However, to ensure City compliance with the existing license agreement, the City would coordinate final project design regarding dredging, turf area development, shoreline restoration treatments, sailboard beach development, and marsh restoration with the ACFCWCD.

> Mitigation Identified by the Report: The City shall submit final design plans for the dredging, turf area, shoreline restoration, sailboard beach, and Stivers Lagoon marsh restoration components of the project to ACFCWCD for review and approval.

General Plan Designations at the Project Site

Project development as proposed would be consistent with uses allowed under the existing on-site land use designation of Institutional Open Space (for areas affected by the proposed project). No mitigation is required.

Zoning at the Project Site

Project development would comply with the on-site Open Space zoning district uses and requirements. No mitigation is required.

Applicable General Plan Goals, Objectives and Policies

As discussed in the Setting portion of this section, the proposed project would be consistent with applicable goals, objectives and policies of the *Fremont General Plan*. No mitigation is required.

Recreation

Each of the seven project components would have potentially significant short-term construction-related impacts on existing recreational activities occurring in Central Park. These impacts could be mitigated to a less-than-significant level.

Land dredging (hydraulic dredging is the preferred method), construction of the proposed shoreline rehabilitation treatments, demolition of the boathouse, and construction of the sailboard beach would each temporarily adversely affect the use of the paved trail or path encircling Lake Elizabeth used for walking and jogging, the primary user activities at the park (see Table 3.1.1). A large (2-3 foot diameter), flexible pipe would likely be used to transport dredge materials from the lake bottom to a disposal area north of the lake for decanting and drying prior to their use in building the proposed turf area. This pipe would cross the pedestrian path and could obstruct pedestrian through-traffic. Construction of the various proposed shoreline treatments could cause equipment and materials to block the path in the vicinity of construction activity. In particular, construction of shoreline improvements along the eastern lake shore would likely require closure of the lake path in that area for approximately three months. Similarly, construction of the proposed sailboard beach and demolition of the existing boathouse could cause equipment, materials, debris, and vehicles to disrupt use of the path as well as use of the boathouse area for launching craft.

Development of the 21-acre area north of the lake as a picnic and recreational area, resulting in expansion of recreational facilities in high demand, represents a beneficial long-term impact of project development on recreation at Central Park. The dredge spoil mounds would provide topographic relief in an otherwise flat area but would require integration into the design for recreation facilities to be constructed in this area. Another long-term benefit of the project would be improved trail access in the Stivers Lagoon area.

Potentially significant adverse impacts to recreation activities could result from development of the sailboarding beach and demolition of the boathouse. Since sailboarding is currently prohibited year-round due to inadequate water quality monitoring, use of the new sailboard beach would require staff to cut other services in order to implement the weekly monitoring program necessary to allow sailboard activity. If boathouse demolition occurs before construction of a new boathouse during a high-use period, recreational activities at Lake Elizabeth would be significantly limited as compared to current availability. Finally, the siltation basins proposed along Mission Creek east of the lake could conflict with the future layout of the proposed golf course. These potentially significant impacts could be reduced to a less-than-significant level through implementation of all mitigation measures listed below.

> Mitigation Identified by this Report: Prior to project construction, appropriate construction mitigation measures designed to avoid or minimize disruption of recreational use of Central Park should be developed by the City of Fremont Leisure Services Department and incorporated into construction contract specifications. Mitigation measures could include the construction and use of a movable ramp to prevent the dredging pipe from obstructing pedestrian use of the lake path, the use of signage to identify construction areas, the designation and physical identification of the boundaries of construction areas and material storage areas, and scheduling construction activities during off-peak seasons and hours.
>
> To avoid overtaxing existing staff and resources and developing a project component that is unusable, the City would not construct the proposed sailboard beach prior to implementing a weekly bacterial water quality monitoring program for Lake Elizabeth.
>
> To avoid disrupting recreational activities in Central Park, the City should fund and approve the construction of a new boathouse prior to approval of the demolition of the existing boathouse. Operation of a boathouse during the peak-season should be ensured through either timing demolition during non-use (December and January) or low-use (October through April) periods, constructing a new permanent boathouse prior to demolition, constructing a temporary boathouse facility prior to demolition, or an appropriate combination of the listed measures.
>
> The proposed siltation basins along Mission Creek should be incorporated into the proposed golf course design. Specifically the siltation ponds could also be used as a water hazard in the golf course.
>
> Level of Significance after Mitigation: Less than significant.

NOTES - Land Use and Recreation

City of Fremont, Fremont General Plan, Preliminary Draft II, March 1991.

City of Fremont, *Fremont Zoning Ordinance*, May, 1992.

City of Fremont and Alameda County Flood Control and Water Conservation District, *Real Property License Agreement*, originally executed June 25, 1968, as amended January 7, 1971.

Judy Felber, Supervising Park Ranger, Central Park, City of Fremont Leisure Services Department, telephone conversation, October 26, 1992a.

Judy Felber, Supervising Park Ranger, Central Park, City of Fremont Leisure Services Department, telephone conversation, October 27, 1992b.

Patrick Hayes, Environmental Services Supervisor, City of Fremont Leisure Services Department, telephone conversation, October 27, 1992.

San Francisco Bay Area Rapid Transit, *BART Warm Springs Extension Draft Environmental Impact Report* , July 1991.

3.2 AESTHETICS

SETTING

Existing Visual Character of the Site

The existing visual character of the project site is determined by the attributes (color, form, texture) of specific site features and by the patterns that the features have assumed as a result of natural processes and human uses. The assessment of the visual attributes and patterns of the project site's features in this report is organized according to the following general descriptive categories: spatial organization and definition, land form, surface waters, land uses, vegetation, and cultural features. Because the project site is an open area of the bay plain, atmospheric and lighting effects do not contribute substantially to the existing visual character of the site, as they can to the visual character of ridgeline and valley sites.

Spatial Organization and Definition

The project site consists of low-lying, flat to very gently sloping lands located in the San Francisco Bay within approximately three miles of the Bay shoreline. The site does not have visually distinctive or well-defined boundaries. The eastern boundary of Fremont's Central Park is formed by the roadbed of the Southern Pacific Transportation Company (SPTCo) right-of-way, while the Union Pacific Railroad (UPRR) right-of-way defines the boundary of the East Park subarea. Stevenson Boulevard and Paseo Padre Parkway form the visual boundaries of Central Park to the north and northwest and to the south and southwest, respectively. The park is generally open in character, except for the civic center area in the westernmost portion of the park. The open character of the park is primarily due to the visual dominance of Lake Elizabeth, the large artificial lagoon in the park's center that serves as both a flood control and a recreational facility. The park offers wide views towards the hills to the east and in particular towards Mission Peak, the most prominent local landmark. Such views play an important role in establishing the park's visual character. Lake Elizabeth physically divides the park into subareas to the north, south, east and west. The project site is traversed by several large-scale linear features, all of which are man-made (the lake trail and other roadways and paths, the straightened channels of Mission and Laguna Creeks, and the PG&E high-voltage transmission line).

Land Form

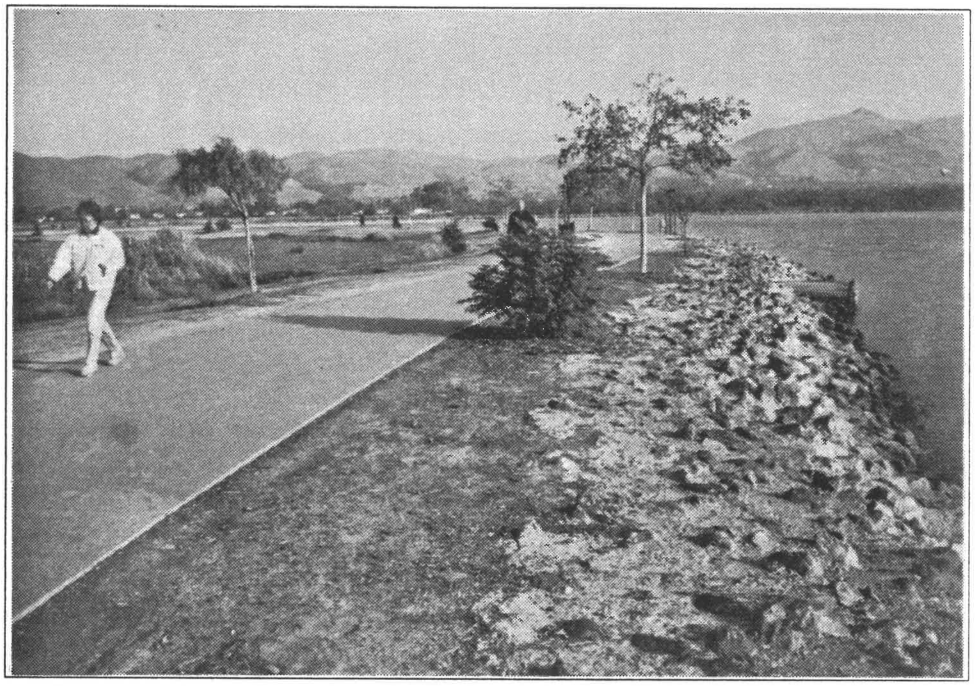
The land form of the project site is the result of geologic and hydrologic processes and of recreational and flood control use of the site for approximately 24 years. The northerly and southeasterly portions of the site remain within the 100-year floodplain. Elevations on the project site range between approximately 60 and 70 feet NGVD (National Geodetic Vertical Datum) and generally increase fr. m south to north. The project site does not contain any visually distinctive relief features, except the bermed railbeds of the two railroad right-of-ways and the island in the southeastern portion of Lake Elizabeth.

Surface Waters

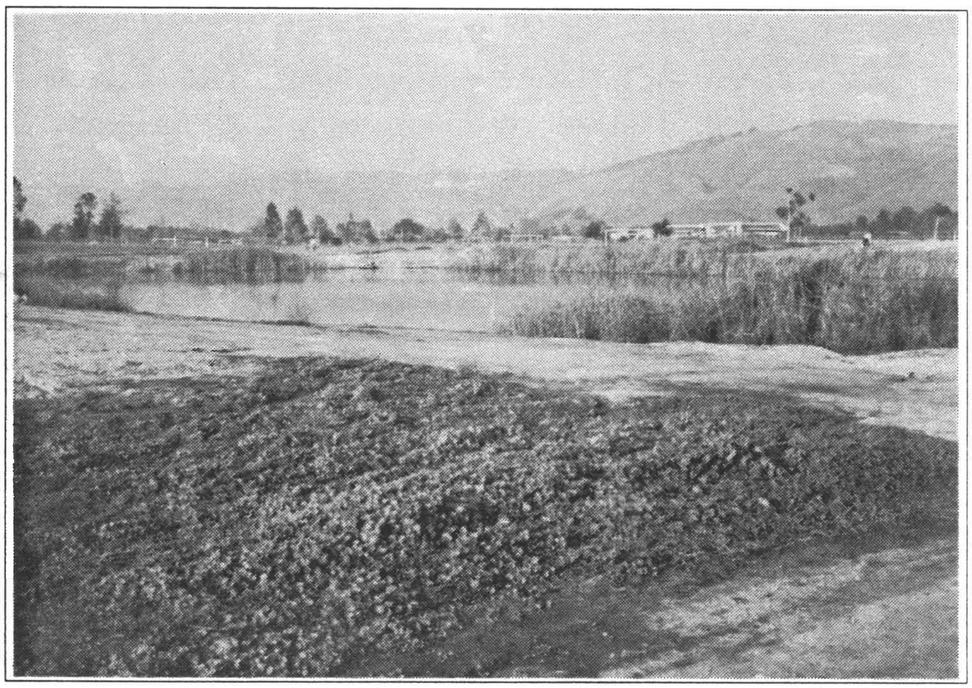
Surface water features are an important component of the existing visual character of the site. Surface water features include Lake Elizabeth, New Marsh, Mission Creek, and Laguna Creek. The lake is ringed by a wide, paved trail used for walking, jogging, and biking (see Figure 3.2.1). There is relatively little vegetation between the trail and the lake, providing trail users with constant, unobstructed views across the water. The park's most long-established recreational areas are concentrated on the west side of the lake, where views are dominated by the lake and by the presence of the ridgeline and Mission Peak to the east. North of the lake, along Stevenson Boulevard, a large area has recently been developed as a sports complex. The large open area between the sports complex and the lake that is not yet developed is the proposed site for project dredge spoils disposal and subsequent development of a passive recreational-use turf area. At the east end of this undeveloped area is a small pond known as New Marsh that was built approximately ten years ago as a detention basin for park runoff. The pond's banks are bare, but its edges are fringed with clumps of cattails and rushes (see Figure 3.2.1) (San Francisco Bay Area Rapid Transit, 1991).

Land Uses

Central Park is described in Section 3.1, with major features depicted on Figure 3.1.1. The first 12 acres of land for Central Park were acquired in 1959. In 1961, 15 additional acres were donated to the city by several private parties to create a site for a government center within the bounds of Central Park. Over the next ten years, the remaining land to complete Central Park was acquired. In 1968, Lake Elizabeth was built and opened for sail boating.



View of Lake Trail and Shoreline Treatment
from North Side of Lake Elizabeth Looking East Toward Mission Peak



View of New Marsh Looking North

SOURCE: Environmental Science Associates, Inc.

Figure 3.2.1
Photographs of the Project Site

The area surrounding the project site is designated Institutional Open Space by the Fremont General Plan Central Planning Area Land Use map. Lake Elizabeth is designated as a Park. The Land Use map indicates the existence of several historic resources in the area to the west of the lake (City of Fremont, 1991).

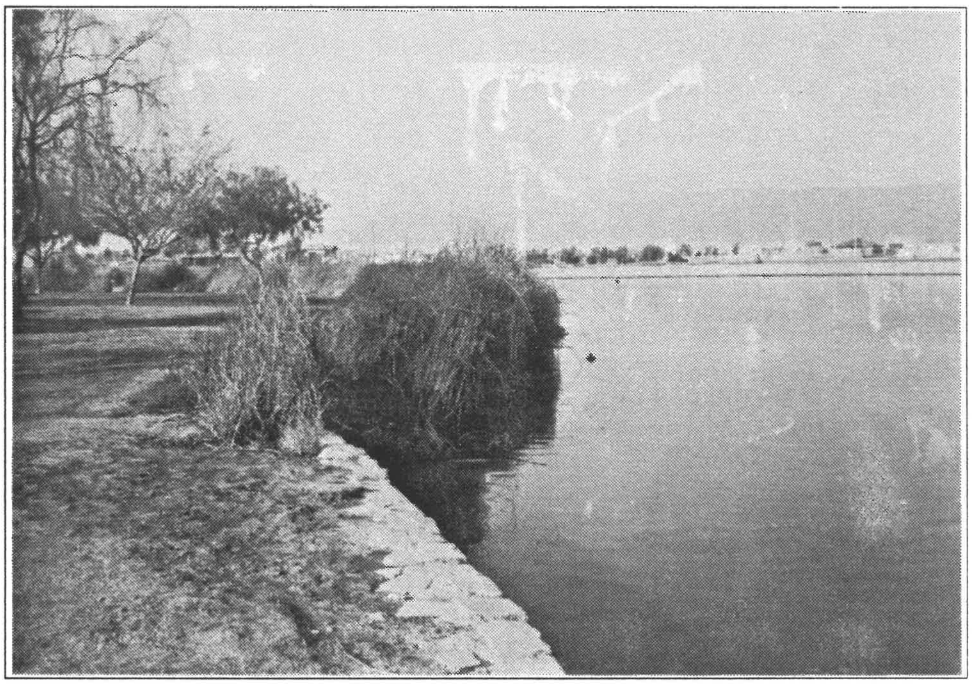
As mentioned previously, Lake Elizabeth's location in Central Park divides the park into subareas. These subareas exhibit different primary land uses. The western corner of the park contains predominantly civic center uses (i.e., library, city hall); the area north of the lake contains sports-related facilities (i.e., softball fields, soccer fields, tennis complex); the southern/southwestern area of the park contains predominantly general recreation (i.e., boathouse, picnic areas); and the southern-most and southeastern park area contains Stivers Lagoon marsh.

The City's civic center has a concentration of large structures, including the glass and concrete City Hall building sited on a visually prominent knoll and a large library building that dominates views at the intersection of Paseo Padre Parkway and Stevenson Boulevard (San Francisco Bay Area Rapid Transit, 1991).

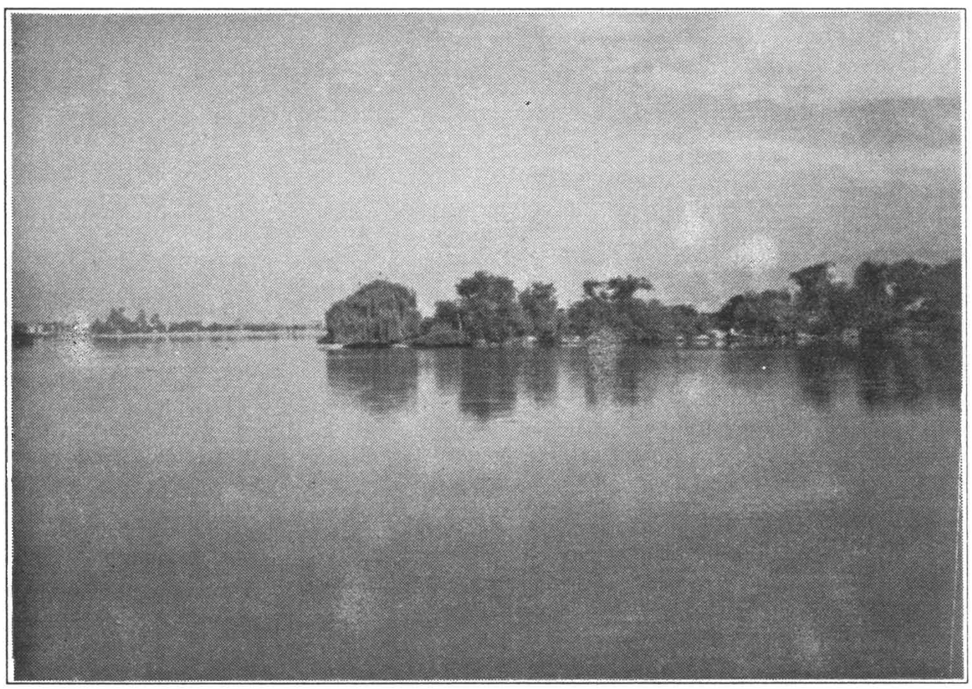
Visible features of the northern sports area include the fencing and tall floodlight standards in the softball complex on the lake's north side, walls and roofs of the condominium complexes, and the School for the Deaf and Multihandicapped along Stevenson Boulevard north of the park (see Figure 3.2.2).

The park's oldest developed recreation area contains the boat-house and boat dock, pavilion, a number of tot lots and picnic areas, and mature trees surrounding existing structures and lining the western and southern lakeshore. The area is more visually dense than the rest of the park with the exception of the civic center area.

The easternmost portion of the park is crossed by the SPTCo and UPRR tracks which are slightly above-grade on berms that visually contrast with their surroundings. Both railroad tracks are paralleled by utility lines carried on wood poles approximately 25 feet in height. The 700 to 1,000-foot wide corridor lying between the two railroad lines is flat and undeveloped and is now covered with low, weedy vegetation. This corridor is bisected by a deep, concrete-sided flood control channel that flows into the park from the east (Mission Creek). An unpaved maintenance road lies alongside the channel. The area between the two railroad tracks just east of Stivers.



View from Western Shoreline of Lake Elizabeth
Looking North Toward Softball Complex and Animal Shelter



View from Shoreline South of the Boathouse
Looking East Toward Point on Southern Lakeshore

SOURCE: Environmental Science Associates, Inc.

Figure 3.2.2
Photographs of the Project Site

Lagoon Marsh is the 19-acre Blankstein/Brooks parcel presently designated by the City for agricultural use. This area and the marsh are crossed by a set of two electric transmission lines carried on 60-foot high lattice steel towers.

Central Park is heavily used by people from all parts of the community, making it a focal point of community life. Views of the park have become an important part of the City's identity. Stevenson Boulevard and Paseo Padre Parkway, the two major streets bordering the park have been designated as scenic routes. In community planning forums, Fremont citizens have expressed a strong desire to preserve the park's open character, its natural features, restrict any additional structures to the Civic Center area and the zone east of the SPTCo tracks, and limit development of additional facilities for active recreation. Specific areas affected by the proposed project are not highly visible from off-site locations.

Vegetation

The project site contains natural vegetation in the marsh area as well as landscaped vegetation in other areas of the park. Until recently, most of the park was flat agricultural land, with relatively little natural vegetation. The few areas with significant natural plant communities include the areas of willows and other riparian vegetation at the east side of the lake and in the nature area at the park's southeast corner. The park is still being developed and landscaped, and most of the trees and shrubs that have been planted still maturing. Visually important stands of native trees include the grove of willows located at the northernmost point of the southern Lake Elizabeth shoreline and the riparian vegetation in the Mission Creek corridor (see Figure 3.2.2). Wetland vegetation on the project site is visible in the Stiver Lagoon Marsh.

Cultural Features

The project site contains structures associated with its civic center, recreational and sports uses mentioned above. These are community-wide facilities and offer a central focal point for social and cultural activities.

Views of the Project Site

Off-site views of Central Park are available from Stevenson Boulevard and Paseo Padre Parkway, from elevated areas within Fremont and in the hills to the northeast and southeast. Specific site features, such as existing shoreline treatment and turf and picnic area design, are not discernible from most off-site viewpoints. On-site views are available from most areas within the park, including upper stories of buildings located in the Civic Center.

The hills and Mission Peak are the major elements of the background view from the southern and western areas of the park. The foreground and middleground views from the sports complex are dominated by the tall steel poles supporting the floodlight arrays, the high fencing surrounding the softball fields, and the parking areas. Foreground views from the southern park areas include willows lining the shore of Lake Elizabeth. The lake itself is the primary middleground element from most points in the park. The one area within the park that lacks background elements is Stivers Lagoon Marsh. In this area of the park, viewpoints are limited to the existing boardwalk, and views are comprised of foreground vegetation with no distant background elements. Only at the end of the boardwalk is an open, panoramic view of the lake and hills available.

<u>Light and Glare</u>

Night-lighting of parking lots and playing fields is the primary source of light at the project site. After dark, when the floodlights in the softball area are on, they become the most dominant element in views of the project site.

Sources of glare on-site are limited to the glazing of existing buildings in the civic center area and the lake itself, especially during winter months when the sun is low in the sky.

<u>Applicable Plans and Policies</u>

The following goals, objectives and policies contained in the City of Fremont's *General Plan* and *Development Policies* address issues related to the preservation of and development with in park and open space areas within the city. Project consistency with these adopted goals, objectives and policies is discussed below.

Fremont General Plan

<u>*City-wide Policies*</u>

Recreation, Open Space and Historical Resources

Objective 3. To provide for the preservation of open spaces, and to encourage the advantageous use of existing natural features and historical resources, open spaces and structural facilities, as a part of the recreation program.

- By enhancing the aesthetic resources and recreational use of Central Park and Lake Elizabeth and by restoring Stivers Lagoon Marsh, the project as proposed would use on-site structures and natural resources to the advantage of future recreational use of the park.

Objective 4. To foster the preservation or enhancement of recreation areas as significant elements of the landscape.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

Principal 5. Park and recreation facilities should be developed in a manner providing unimpeded visual and physical access.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.* All structures would comply with state and federal access requirements to best serve all park users.

Standard 5. Scenic resources which enhance the total leisure resources system shall be retained as development of the City occurs by establishment of land use relationships and circulation patterns which recognize, honor and retain such scenic resources.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

<u>*Community Design and Appearance*</u>

Objectives 3. To preserve and develop a character and identity for the City which will separate it from and positively distinguish it from other rapidly growing cities.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

Objective 4. To create a visually strong Central District to provide a focus for the City.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

Objective 5. To achieve as high a standard aesthetically as is economically feasible for both public and private developments.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

Objective 6. To protect the City's historical heritage.

- The proposed project would preserve the historic use and visual character of Central Park, and would enhance recreational use of Lake Elizabeth and the aesthetic resource that the lake represents.

Principles 1. Scenic resources should be retained as irreplaceable values of the City through land use relationships and circulation patterns which respect such resources.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

Conservation Element

Objective 2: Major physical attributes of the City should be preserved in the interest of providing a varied and stimulating urban environment.

Open Space Element

Goal 1. The retention of the natural differences of hills, flatland and bay in the development of these regions.

- The proposed project would not significantly alter the on-site topography. The area north of the lake would be mounded to accommodate placement of the dredged silt but this would not be considered significant in an areawide context.

Goal 2. The creation of a desirable visual image which would give identity to Fremont within the context of the Metropolitan Bay Region.

- The proposed project would help to maintain and enhance Central Park, considered a Unique Natural Area in the *Fremont General Plan.*

Goal 3. The preservation and enhancement of historic elements to give the future City continuity with the past.

- The proposed project would preserve the historic use and visual character of Central Park, and would enhance recreational use of Lake Elizabeth and the aesthetic resource that the lake represents.

Objective 7. To identify and maintain wide vistas and view corridors which establish the relationship of the hills to the urbanized areas.

- The proposed project would maintain existing vistas and view corridors containing views of the hills and Mission Peak.

City of Fremont Development Policies (City of Fremont, 1984)

Objective 1. To enrich the social, aesthetic, and recreational qualities of the community's residential neighborhoods.

- By enhancing the aesthetic and recreational resources of Fremont's only "city park," the project would further enrich those neighborhood served by Central Park.

Objective 2. To provide open areas within the City's overall patterns of urban development.

IMPACTS AND MITIGATION MEASURES

Significance Criteria

The California Environmental Quality Act (CEQA) Guidelines state that significant effects on the environment include substantial, or potentially substantial, adverse changes in objects having aesthetic significance (CEQA Guidelines, Section 15382). Under the CEQA Guidelines, a project will normally have a significant effect on the environment if it will have a "substantial, demonstrable negative aesthetic effect" (CEQA Guidelines, Appendix G, "Significant Effects," (a)). Additional and more specific guidance is provided in Appendix I of the CEQA Guidelines, the "Environmental Checklist Form," which contains two criteria for determining significant aesthetic effects:

- obstruction of a scenic vista or public view; and
- creation of an aesthetically offensive site open to public view (CEQA Guidelines, Appendix I, "Environmental Checklist Form: 18. Aesthetics").

Another criterion included in the CEQA Guidelines is impairment of scenic quality, which, according to the CEQA Guidelines, is part of the resource base (CEQA Guidelines, Section 15126(a)).

Analysis of aesthetic impacts according to the CEQA Guidelines requires identification of important public views of the project site and evaluation of two types of potential adverse effects:

- the effects of the proposed project on the availability of the important public views; and
- the effects of the proposed project on the scenic quality of the project site or on objects of aesthetic significance (the site itself, parts or features of the site).

The first type of adverse effect consists of obstruction of important public views. Views from or of the project site may be physically blocked, reduced in area, or re-configured by elements of a proposed project. The second type of adverse effect consists of impairment of important public views. Impairment of important public views can result from the introduction into an existing view of a visual feature that is "aesthetically offensive" in itself, or from the degradation of an existing view of a visual feature that has aesthetic significance, or from the introduction into an existing view of objects or activities (or patterns of objects or activities) which exhibit a high degree of visual contrast with the existing objects and activities (or patterns of objects or activities) on the site. Types of physical changes that may result in the impairment of important public views include new land uses, new structures, grading and excavation, changes in the scale, form, color and textures of natural and cultural visual features existing on the site, and light and glare effects. The introduction of new structures or new land uses at the project site may result in the obstruction of important public views.

Project changes that would significantly impair or obstruct existing public views could constitute a significant unavoidable impact if no mitigation would adequately reduce or avoid the impact. Project impairment or obstruction of existing scenic views that could be feasibly mitigated or avoided would be considered potentially significant but potentially mitigatable below a level of significance. Project effects which may change existing views, but not significantly, would be considered adverse but not significant. An impact would not be considered significant if it did not:

- obstruct a scenic vista or important public view;
- impair an existing view by introducing an aesthetically offensive visual feature; or,
- impair an existing view by introducing a physical change having high, negative visual contrast with the existing and surrounding setting.

Visual Character of the Site with the Proposed Project

The proposed project would not alter the existing visual character of the project site. Changes to physical features within Central Park would not be evident in off-site views. As discussed below, changes in the physical visual environment would not significantly alter the visual character of the project site and vicinity, and would in most cases enhance and improve the visual resources within Central Park, creating a beneficial project impact. Construction-related impacts to visual resources (especially related to on-site storage of construction materials, storage and use of construction equipment, and use of dredge spoils drying ponds) and potential impacts of inappropriate turf area design would constitute potentially adverse but not significant impacts and no mitigation would be required. However, mitigation measures have been identified that would further reduce potential adverse impacts.

The proposed dredging of Lake Elizabeth would not have a long-term adverse effect on the visual resources at the park as dredge spoils would be incorporated into a proposed turf area north of the lake. The proposed shoreline treatments would improve the aesthetic resources of Lake Elizabeth by enabling a vegetated shoreline area (in all cases except for the sailboard beach) to soften the visual elements of the lakeshore interface and by improving maintenance of the shoreline through erosion prevention. The proposed dock extension would extend the area of an existing visual element and would not adversely affect views across the lake toward the dock area. The demolition and removal of the boathouse would open up views from the area behind the boathouse across the lake toward the Fremont hills. The boathouse does not represent an architectural resource, and will be replaced by a new boathouse located further from the shoreline. The sailboard beach and the Stivers Lagoon Marsh restoration would both provide additional visual amenities by adding diversity in shoreline treatment and vegetation and wildlife habitat that would naturally integrate with the visual character of the site. The proposed turf area would change the area to the north of the lake from a weedy, grass area that is disked regularly for fire control to a landscaped area with turf, trees, picnic areas and a restroom structure.

The above-mentioned physical changes to the visual environment of Central Park would not result in a significant adverse aesthetic impact.

Mitigation Identified by This Report: None required.

Views with the Proposed Project

The changes in the physical visual environment of the project site resulting from the proposed project would not substantially obstruct or impair scenic views from long-range, medium-range, or short-range viewpoints and would not result in significant adverse effects to the environment. The proposed project would result in less-than-significant adverse effects on short-range views within the project site during short-term construction activities.

Mitigation Identified by This Report: None required.

Light and Glare

Light and glare on the project site would not increase as a result of the project.

Mitigation Identified By This Report: None Required.

NOTES - Aesthetics

City of Fremont, *Fremont Development Policies*, 1984.

City of Fremont, *Fremont General Plan, Preliminary Draft II*, March 1991.

San Francisco Bay Area Rapid Transit, *BART Warm Springs Extension Draft Environmental Impact Report*, July 1991.

3.3 PUBLIC SERVICES AND UTILITIES

SETTING

Police Services

The City of Fremont Police Department provides public safety services for the project area. Fremont is divided into six "sectors" for purposes of police response, each sector averaging approximately 16 square miles in area. The Fremont Police Department's objective is to achieve a five-minute response time for Priority 1 calls; Priority 1 calls involve life threatening situations. Priority 2 calls involve "serious" but not life threatening situations, and Priority 3 calls involve all other (non-emergency) requests. Presently, the Police Department is averaging about an eight-minute response time (and increasing) for Priority 1 calls; the Department's failure to achieve its response time target is due primarily to understaffing. Other factors contributing to the increased response time include Fremont's increased population, budget cuts, traffic gridlock, and an increase in felonies and other serious crime (Jackson, 1992a).

The Fremont Police Department operates one station, located adjacent to the proposed project at the Civic Center in central Fremont. The City is currently proceeding with plans to construct a new police station adjacent to the existing facility, on a site approximately 800 feet northeast of the existing site. The police department currently has a total staff of 262, including 181 sworn police officers.

Maintenance of Public Facilities

Park Maintenance

Maintenance of park furniture, turf areas (including formal playing fields), and landscaping in Central Park is provided by the Park Maintenance Division of the City of Fremont Department of Public Works. The Park Maintenance Division is also responsible for maintaining the correct water level in Lake Elizabeth, as determined by the City's Leisure Services Department (Matsumoto, 1992). There are two pumps in the southern portion of the park near Paseo Padre Parkway that are used to adjust the water level of the lake, one groundwater well in the southern portion of the park that is used to fill the lake, and two groundwater wells in the northern portion of the park that are used to irrigate the athletic fields and other turf areas. According to Park Maintenance staff, the athletic field turf requires approximately one million gallons of water per acre per year, while other turf areas required slightly less water (Matsumoto, 1992). With the current frequency of irrigation, especially of the sports complex fields which require irrigation four to five days per week, the ability of the Parks Maintenance Division to irrigate Central Park (both in terms of staff and water sources) is close to capacity (Matsumoto, 1992).

Road Maintenance

The Street Maintenance Division of the City of Fremont Department of Public Works maintains the parking lots, roadways, and paved paths in Central Park. Maintenance responsibilities include repair of all paved surfaces (parking lots, roads and paved paths) and sweeping parking lots and roads within the park (the Park Maintenance Division is responsible for sweeping paved paths) (Barron, 1992). Recently re-surfaced parking lots and roads (such as the swim lagoon parking lot, which was completed last year) have been over-designed and will require less future maintenance. The Streets Maintenance Division uses the Metropolitan Transportation Commission's computerized pavement design maintenance system to project the need for pavement repair, rather than inspection alone (Barron, 1992).

Flood Control

The Alameda County Flood Control and Water Conservation District (ACFCWCD) operates and maintains a storm drain system in the Fremont area consisting of a series of drainage ponds, basins, and culverts (San Francisco Bay Area Rapid Transit, 1991). Mission Creek, Lake Elizabeth and Laguna Creek form the storm drainage/flood control system in the project site vicinity. Mission Creek drains westward between Lake Elizabeth and Stivers Lagoon Marsh. Because the Mission Creek stream channel downstream of Paseo Padre Parkway is inadequate to convey large flood flows, this drainage system has been designed to back up and spill into Lake Elizabeth during peak flows; water is detained in the lake until it can be released as flood levels drop (San Francisco Bay Area Rapid Transit, 1991). As mentioned in Section 3.1, Land Use and Recreation, Lake Elizabeth is owned by the ACFCWCD, and is leased to the City of Fremont under a license agreement whereby the first use of the lake is for flood control but the City may also operate and maintain it as a park and recreational facility. The current leasing agreement stipulates that the City maintain 931 acre-feet of flood storage within the lake watershed at the 100-year flood level of 55.6 feet.

Electric Utilities

San Francisco's Hetch Hetchy system, which delivers water and power from the upper Tuolumne River in Yosemite National Park, passes through the project area in an east-west direction just north of Paseo Padre Parkway. An 80-foot Hetch Hetchy right-of-way contains the aqueduct and a 115-kV power line supported on 90-foot towers. A pumping station is located adjacent to the aqueduct and between the Southern Pacific Transportation Company (SPTC) and Union Pacific Railroad (UPRR) right-of-ways along the southern edge of Central Park. Both the aqueduct and the transmission line are due for reconstruction; a new pipeline is scheduled to be built within the next twenty years, and the power lines will be upgraded to 230 kV in two to fifteen years.

Communications

Three communication lines are buried within the railroad right-of-ways east of Lake Elizabeth. Pacific Bell has a main telephone line west of and parallel to the SPTC railroad tracks; US Sprint has six 2-inch conduits containing fiber optic cables east of and parallel to the SPTC tracks; and MCI owns a fiber optic cable contained in a 4-inch conduit east of the UPRR tracks.

Storm Sewers

The Union Sanitary District operates the sewer system in the project vicinity, which consists of a network of mainly PVC, clay and asbestos pipes. The system operates via gravity flow. Minor feeder lines of between 10 and 12 inches in diameter cross the SPTCo and UPRR tracks at Paseo Padre Parkway. No improvements in the project vicinity are planned to occur within the next four years (San Francisco Bay Area Rapid Transit, 1991).

IMPACTS AND MITIGATION MEASURES

Police Services

The proposed project is unlikely to directly result in impacts to police services. However, if the project were to result in increased use of Central Park, the Fremont Police Department would expect a corresponding increase in service calls to the area (Jackson, 1992b). Much of this increase would be related to traffic and parking.

Not only does the level of use affect service calls, but the specific type of recreational use could affect the volume of calls. For instance, improvements to water-dependent recreation are likely to result in increased calls to the area if they result in increased use. Improvements to access in Stivers Lagoon Marsh through the construction of additional trails would likely result in increased recreational use, with a potential subsequent increase in criminal activity. However, a greater user population could also deter criminal activity in somewhat sequestered locations by decreasing the likelihood that perpetration of a crime would take place unnoticed (Jackson, 1992b).

Maintenance of Public Facilities

Park Maintenance

Once construction of each project component is completed, the Park Maintenance Division will resume maintenance of each project area (individual contractors would be responsible for construction sites until the completion of each project component). Impacts to park maintenance services during construction could be potentially significant but would be reduced through standard construction mitigation measures to a less-than-significant level. Construction activities could damage or destroy existing turf areas and could create additional park maintenance work due to fallen debris from vehicles and equipment or other obstacles to efficient park maintenance.

Though some project components would result in beneficial impacts to park maintenance services (e.g., the shoreline rehabilitation would reduce or prevent erosion), other components could result in adverse and potentially significant adverse effects to park maintenance that could be reduced to less-than-significant levels. The proposed dock extension could increase dock maintenance requirements due to potential algae growth on the submerged portions of the floating dock. This impact would be adverse but not significant. The addition of approximately 20 acres of new turf area to the north of the lake would cause a potentially significant adverse impact on park maintenance services by increasing irrigation demand for the park both in terms of water sources (an additional 9 million gallons per year) and staff. However, this increase can be accommodated with existing structure, thus, this impact is not considered significant (see Section 3.5, Hydrology).

The design of the new turf area could create inefficient park maintenance requirements due to poor landscape and pavement design (Matsumoto, 1992).

> Mitigation Identified by this Report: To avoid adverse construction-related impacts to park maintenance services, the City should require that individual construction contractors for each project component implement a construction mitigation plan to be designed by the

City. Construction mitigation plans would ensure maintenance and repair of any adversely affected park areas. These plans could include daily removal of any fallen debris in the park due to construction activities, sod-replacement or re-seeding and maintenance of any turf areas damaged or destroyed during construction, and erosion control measures.

Mitigation Identified by this Report: The City should submit final landscape and pavement plans to the Park Maintenance Division for review. Plans should avoid sharp corners in pavement design and should space trees to allow use of large mower.

Level of Significance after Mitigation: Less than significant.

Road Maintenance

Impacts to road maintenance from project construction and project operation would not be significant. Any increase in use of roadways, parking lots, or paved paths during construction or during recreational use of the project after all components are built would not significantly hasten the need for repair of paved surfaces. Mitigation proposed under Park Maintenance related to construction impacts would require daily removal of debris from paved areas. No additional mitigation is required.

Flood Control

The proposed project, though it would remove some of the existing Lake Elizabeth flood storage capacity, would not reduce flood storage capacity below the required 931 acre-foot minimum water storage capacity at the 100-year flood level of 55.6 feet. No mitigation is required.

Electric Utilities

The project would not result in a significant adverse effect on existing transmission and generation systems, nor would it result in a significant long-term increase in demand for electricity. No mitigation is required.

Communications

The project would not affect the UPRR or SPTCo right-of-ways, and would therefore have no effect on communications facilities in the project site area.

Storm Sewers

The project as proposed would not result in a significant adverse impact to the existing storm sewer network. No mitigation is required.

NOTES - Public Services and Utilities

John Barron, Street Maintenance Superintendent, Street Maintenance Division, City of Fremont Department of Public Works, telephone conversation, October 23, 1992.

Keith Jackson, Captain, City of Fremont Police Department, telephone conversation, September 21, 1992a.

Keith Jackson, Captain, City of Fremont Police Department, telephone conversation, October 29, 1992b.

Fred Matsumoto, Park Supervisor, Park Maintenance Division, City of Fremont Department of Public Works, telephone conversation, October 26, 1992.

San Francisco Bay Area Rapid Transit, *BART Warm Springs Extension Draft Environmental Impact Report*, July 1991.

3.4 TRAFFIC AND PARKING

SETTING

Road Network

Access to Central Park and Lake Elizabeth is provided by Interstate 880 (I-880), State Route (SR) 238 (Mission Boulevard), Stevenson Boulevard, and Paseo Padre Parkway (see Figure 2.2). I-880 runs between I-80 in Oakland and the I-880 / SR 17 interchange in south Santa Clara County. I-880 carries about 142,000 vehicles per day (vpd) and about 15,500 peak-hour vehicles near the Stevenson Boulevard interchange. SR 238 runs from I-880 near San Lorenzo to I-680 in Fremont. SR 238 (Mission Boulevard) carries about 34,500 vpd and about 4,750 peak-hour vehicles south of Central Park (Caltrans, 1991).

Stevenson Boulevard borders Central Park and runs between Mission Boulevard and Paseo Padre Parkway (see Figure 2.2). Stevenson Boulevard is an east-west arterial which alternates between two and four lanes. Stevenson Boulevard is two lanes bordering Central Park, widening to four and six lanes at the Civic Center near Paseo Padre Parkway and west. Near the Stevenson Boulevard / Mission Boulevard intersection, Stevenson Boulevard carries about 13,400 vpd (City of Fremont, August 1991). West of Paseo Padre Parkway, Stevenson Boulevard carries about 21,500 vpd (City of Fremont, 1989). Paseo Padre Parkway is a major four-lane, divided street along Central Park, on a northwest-to-southeast alignment. North of Central Park, Paseo Padre Parkway widens to six lanes and carries about 26,000 vpd (City of Fremont, 1989). Sailway Drive, running east from Paseo Padre Parkway, is the direct access to Lake Elizabeth, the boathouse, and picnic facilities in Central Park. Sailway Drive is a two-lane road.

Traffic Operations

The analysis of traffic operations generally focuses on intersections rather than roadway segments, as the capacity of intersections controls the capacity of the roadway. Intersection Level of Service (LOS) is a function of traffic volume, intersection capacity, and delays. The LOS scale ranges from LOS A (little or no delay) to LOS F (significant delay); LOS D ($v/c = 0.85$) is considered the target for City of Fremont signalized intersections. Table 3.4.1 provides a description of LOS for signalized intersections. Table 3.4.2 provides descriptions of level of service for unsignalized intersections with minor street control.

TABLE 3.4.1: LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Typical Operating Characteristics	Volume/Capacity (v/c) Ratio/a/
A	Level of Service A describes a condition where the approach to an intersection appear quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	0.00-0.60
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.	0.61-0.70
C	Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71-0.80
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81-0.90
E	Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting upstream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91-1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.	1.01+

/a/ Capacity is defined as Level of Service E.

SOURCE: Environmental Science Associates, Inc. from *Transportation Research Circular No.212,* Transportation Research Board, 1980.

TABLE 3.4.2: LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS, WITH CONTROL ON MINOR STREET ONLY

Level of Service	Typical Operating Characteristics	Reserve Capacity in Passenger-Car Equivalents Per Hour
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. The traffic operation can generally be described as excellent.	400 or greater
B	Level of Service B describes a condition where one or more critical movement approach to an intersection is occasionally fully used and short delays may be encountered. The traffic operation can generally be described as very good.	300 to 399
C	Level of Service C describes a condition where one or more critical movement approach to an intersection is often fully used and queuing may occur. The traffic operation can generally be described as good with average traffic delays.	200 to 299
D	Level of Service D describes a condition of increasing restriction and fewer gaps in the major street traffic flow, causing substantial delays and queues of vehicles on critical movement approaches to the intersection during short times within the peak period. The expected delay for minor street traffic is long; however, traffic operation can generally be described as fair.	100 to 199
E	Level of Service E describes the condition at which capacity of particular critical movement(s) is reached. It represents the most vehicles that any particular critical movement can accommodate; however, overall intersection operations may continue to operate at acceptable levels of service. At capacity there may be long queues of vehicles waiting up-stream of the critical movement, these vehicles may experience very long delays and potentially interfere with major street traffic flows. The traffic operation can generally be described as poor.	0 to 99
F	Level of Service F represents a jammed condition. Insufficient gaps restrict the movement of vehicles out of one or more critical movement to the intersection. Extremely long delays occur, and drivers may select less than usual gaps, potentially affecting other traffic movements on the intersection. In such cases, safety may be a problem. This condition usually warrants improvement to the intersection.	less than 0

SOURCE: Environmental Science Associates, Inc. from *Highway Capacity Manual,* Special Report 209, Transportation Research Board, 1985.

The signalized intersection at Stevenson Boulevard / Mission Boulevard has LOS C (v/c = 0.78 (a.m.) and v/c = 0.80 (p.m.)) operations during the weekday a.m. and p.m. peak hours (City of Fremont, 1991). The unsignalized intersection at Stevenson Boulevard / Stevenson Place operates with westbound left turns experiencing LOS A for the weekday a.m. and p.m. peak hours; northbound left turns experience LOS D during the a.m. peak hour and LOS E during the p.m. peak hour (City of Fremont, 1991). The signalized intersection at Stevenson Boulevard / Gallaudet Drive has LOS A (v/c = 0.34) operations during the weekday a.m. peak hour and LOS B (v/c = 0.61) operations during the p.m. peak hour. The signalized intersection at Paseo Padre Parkway / Stevenson Boulevard has LOS A (v/c = 0.54) operations during the weekday a.m. peak hour and LOS B (v/c = 0.70) operations during the p.m. peak hour (Folks, 1992).

Parking

There are 18 parking lots within Central Park, which provide about 2,180 parking spaces (see Figure 3.1.2, in Section 3.1, "Recreation & Other Land Uses"). Sailway Drive is the main entry to Lake Elizabeth and picnic facilities, providing access to three parking lots which contain approximately 280 spaces. A driveway opposite Gallaudet Drive provides access to about 260 spaces in the tennis center parking lot. A driveway from Stevenson Boulevard accesses about 460 spaces, which serve the softball and soccer fields in the north portion of the park. Civic Center and the new Library parking lots provide about 500 parking spaces for public use. The remaining 680 parking spaces are located near the Senior Center and Community Center, and in the southern portion of Central Park.

On about 20 weekend days per year, all parking spaces in Central Park are occupied during peak daytime hours. During another 20 weekend days per year (typically between Memorial Day and August 15), parking spaces on the west side of the park which serve picnic areas, Lake Elizabeth, the boathouse, dock and ramp, and the Senior Center, become fully occupied during daylight hours. During these 20 days, parking lots in the northern park area (serving tennis and softball fields) are generally less than 50 percent occupied. During another 20 weekend days per year (typically August 15 to November 1), parking spaces on the north side of the park which serve softball and soccer fields and tennis courts become fully occupied during daylight hours. During these 20 days, parking lots in the western park area (serving lake recreation and picnicking) are generally about 75 percent occupied. During the remaining 50 weekend days, parking occupancy in Central Park is 10 to 20 percent. During the weekday peak parking demand (usually lunchtime during the spring or after dinner during daylight savings time), some lots will become fully occupied; average occupancy in areas such as parking lots along Sailway Drive is about 75 percent. (Hayes, 1992a,b,c).

Paseo Padre Parkway allows on-street parking adjacent to Central Park on weekends and holidays. There is no on-street parking permitted along Stevenson Boulevard adjacent to the park. Overflow parking on the north side of the park is accommodated by about 170 parking spaces at the California School for the Blind or California School for the Deaf at the northwest corner of the Stevenson Boulevard / Gallaudet Drive intersection. Because many students and most staff are not at the schools during weekends, occupancy is low and many spaces are available for Central Park overflow parking.

Access and Circulation

There are 17 entry points to Central Park (Hayes, 1992b). Sailway Drive is the major access to the picnic and Lake Elizabeth recreational facilities, ending at a traffic circle adjacent to Lake Elizabeth. The traffic circle and adjacent grassed area are designed for boat unloading and loading. Parking is restricted to 20 minutes, which is actively enforced by park rangers.

On weekend days when parking reaches capacity, there is a field operating scheme implemented by five park rangers, developed to facilitate safety and emergency vehicle access to Lake Elizabeth and boating facilities. The scheme consists of closing Sailway Drive when parking is full; rangers allow vehicles with boats to enter the boat drop-off area. Another aspect of the scheme involves routing of traffic to encourage one-direction flow around the three parking areas along Sailway Drive. Traffic routing under the scheme is awkward because visitors wishing to park close to picnic sites or to launch a boat are diverted through the parking lot adjacent to the boathouse before gaining access to the traffic circle and boat launch area and additional parking further from picnic sites (Hayes, 1992a).

BART Warm Springs Extension

BART proposes to construct a Warm Springs Extension to the Fremont line. Three alternate alignments in the Central Park area were evaluated in a Draft EIR, published by the BART District in July 1991. Two of the alternatives had design options that would place the BART tracks either overhead or in a subway. The BART District has proposed Design Option 2A (overhead configuration on an alignment that would cross over a portion of Central Park) as the preferred project alignment. The City of Fremont requested that the extension be constructed in a subway instead of overhead. It is BART's policy to not place tracks underground unless required by engineering constraints; therefore, the City would be required to pay the added cost for the underground construction. The City filed a lawsuit against BART for the District's refusal to select the subway design option and the issue has not been resolved (Kugler, 1992).

IMPACTS AND MITIGATION MEASURES

Travel

Demand

Not all of the proposed projects at Lake Elizabeth, within Central Park, would be expected to generate travel demand after construction. Dredging Lake Elizabeth (with on-site dredge disposal), shoreline rehabilitation of Lake Elizabeth, boathouse demolition/removal, and restoration of Stivers Lagoon Marsh would not be expected to generate additional non-construction-related vehicle trips.

Sailboard beach development and development of the area north of Lake Elizabeth for open turf, picnic, and related recreational uses would create additional recreational capacity, and would be expected to generate additional trips to Central Park. Future additional traffic for the area north of the Lake is estimated on the basis of about 200 additional people who would be accommodated at 30 additional picnic tables and at the recreational space proposed (Schneider, 1992). Based on average vehicle occupancy for surveyed Bay Area picnic facilities, the additional recreation opportunities provided by the project would generate about 60 new vehicle trips during weekend daylight hours, of which eight vehicle trips would be during the peak hour (Caltrans, 1979). Additional traffic associated with sailboard beach development is unknown but expected to be minor.

Operations

Table 3.4.3 provides existing and future LOS for study intersections. As indicated above in the Setting Section, the signalized intersection at Stevenson Boulevard / Mission Boulevard currently has LOS C operations during the weekday a.m. and p.m. peak hours. Under 2010 General Plan buildout traffic volumes provided by the City, LOS D operations are expected during the weekday a.m. and p.m. peak hours at the Stevenson Boulevard / Mission Boulevard intersection

TABLE 3.4.3: A.M. AND P.M. PEAK HOUR LEVELS OF SERVICE (LOS) WITH VOLUME-TO CAPACITY RATIOS (V/C) FOR SIGNALIZED INTERSECTIONS - EXISTING AND FUTURE CONDITIONS /a/

		A.M. Peak Hour						P M. Peak Hour					
		Existing		Future (2010)		Future (2010) w/Improvements		Existing		Future (2010)		Future (2010) w/Improvements	
Intersection	Movement	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Stevenson Blvd./ Mission Blvd.	Overall Intersection	0.78	C	0.83	D	0.83	D	0.80	C	0.84	D	0.86	D
Stevenson Blvd./ Stevenson Place	NB Left Turn /b/	/c/	D	/c/		/c/		/c/	E	/c/		/c/	
	NB Right Turn	/c/	A	/c/		/c/		/c/	B	/c/		/c/	
	NB Combined	/c/	C	/c/		/c/		/c/	E	/c/		/c/	
	WB Left Turn /b/	/c/	A	/c/		/c/		/c/	A	/c/		/c/	
Stevenson Blvd./ Gallaudet Drive	Overall Intersection	0.34	A	0.40	A	0.40	A	0.61	B	0.64	B	0.66	B
Paseo Padre Pkwy./ Stevenson Blvd.	Overall Intersection	0.54	A	/d/	/d/	0.68	B	0.70	B	/d/	/d/	0.82	D

/a/ LOS descriptions and relationships to V/C ratios at signalized intersections are shown in Table 1; LOS descriptions for unsignalized intersections are shown in Table 2.
/b/ NB = northbound; WB = westbound.
/c/ Analysis of operating conditions at unsignalized intersections does not yield a V/C ratio.
/d/ Not available.

SOURCE: City of Fremont, Environmental Impact Report for Central Park Municipal Golf Course, and personal communication, Tom Folks, City Traffic Engineer

NOTE: Intersection analysis based on weekday traffic count data. Holiday traffic characteristics would likely vary.

(City of Fremont, 1991). The unsignalized intersection at Stevenson Boulevard / Stevenson Place operates with westbound left turns experiencing LOS A for the a.m. and p.m. peak hours; northbound left turns experience LOS D during the a.m. peak hour and LOS E during the p.m. peak hour. In 2010, westbound left turns would degrade to LOS B during the p.m. peak hour, while northbound left turns would degrade to LOS F under the existing roadway geometry, or remain at LOS D during the a.m. peak hour and LOS E during the p.m. peak hour with construction of a raised median on Stevenson Boulevard (after completion of the Central Park Municipal Golf Course) so that only right turn moves will be allowed from Stevenson Place (City of Fremont, 1991). The signalized intersection at Stevenson Boulevard / Gallaudet Drive currently has LOS A operations during the weekday a.m. peak hour and LOS B operations during the p.m. peak hour, and would continue the same LOS operations in 2010 with planned improvements (City of Fremont, 1991).

Under the City's Traffic Impact Fee Program, the following improvements were assumed in calculation of future LOS:

Widening of Stevenson Boulevard from Mission Boulevard to Paseo Padre Parkway.

Providing a second northbound left-turn lane at the Mission Boulevard / Stevenson Boulevard intersection.

Providing second left-turn lanes at each approach to the Paseo Padre Parkway / Stevenson Boulevard intersection

These projects are assumed to be completed by 2010.

The project would not be expected to change LOS operations during the weekday a.m. or p.m. peak hours at these intersections, since Central Park traffic occurs primarily on weekend days, and not during weekday a.m. or p.m. peak hours. About 60 weekend daytime trips and eight weekend peak-hour trips would be expected to travel on roadways adjacent to Central Park.

Mitigation Identified by this Report:

None required.

Parking

As a result of project improvements to Central Park, about 60 additional vehicles would be expected to "demand" parking at Central Park during weekend days. Most would be expected to require parking near the turf area located directly north of Lake Elizabeth. During the Memorial Day through August 15 period, when the western parking lots are at capacity because of high demand for picnic facilities, northern parking lots are about half-full. There would be sufficient capacity during this period to accommodate vehicles that would be generated by the project. During the August 15 - November 1 period when northern lots are at capacity because of fall soccer and softball leagues, parking demand created by the project which would desire parking near the turf area would exceed the parking supply closest to this area. Depending on arrival patterns exhibited by these users and by people using the ball fields, people seeking parking places would be displaced to the western parking lots, Civic Center parking lots, or overflow parking at the California School for the Blind or California School for the Deaf at the northwest corner of Stevenson Boulevard / Gallaudet Drive. It would be expected that displaced vehicles would be accommodated in parking spaces in these areas. Some park users would, however, be forced to walk farther to their destination during the two and on-half month peak recreation use period.

During the 20 weekend days where parking is at capacity in the entire park, project parking demand would be displaced to off-site lots (California School for the Blind or California School for the Deaf) or on-street parking (Paseo Padre Parkway or in adjacent neighborhoods). Construction of additional parking spaces are not proposed as part of the project. Except for an unusual peak event on the northern portion of the park (e.g., soccer or softball tournament or other special event), or on the 20 weekend day per year when parking is completely occupied in Central Park, the project would not be expected to displace existing parking demand from finding parking spaces. Project-related parking demand may be required to park farther away than desired, or may cause existing demand to park farther away than desired. The City could monitor parking occupancy so that if demand exceeds supply in the entire park more than 30 weekend days per year (an increase of 50 percent in full occupancy days), plans could be made to increase parking.

Mitigation Identified by this Report:

None required.

Access and Circulation

Project improvements would not be expected to affect current park access and circulation patterns. On weekend days where parking reaches capacity, there is a field operating scheme implemented by five park rangers. This operating scheme was developed to facilitate safety and emergency vehicle access to Lake Elizabeth and boating facilities (Hayes, 1992a). It would be expected that the operating scheme could be in operation more than the current 20 weekend days per year, or than it would need to be expanded to parking accesses north of Lake Elizabeth to facilitate safety and emergency vehicle access to the turf area. Additionally, an expanded scheme could require more than the current five rangers to implement the plan.

Because Central Park is well-attended and rangers are on-duty to enforce regulations during peak visitation periods, vehicle speeds are low. Because most persons visiting Central Park are able to obtain parking adjacent to desired activity locations, there are low pedestrian volumes entering the park from outlying areas. The largest amount of pedestrian traffic coming into Central Park on overflow weekend days is located near the Paseo Padre Parkway / Sailway Drive intersection. There are very few pedestrian - vehicle accidents reported to the City Police Department. In this same area, there is on average one vehicle - vehicle accident per month. The large majority of these accidents are non-injury. (Hamley, 1992) The addition of both pedestrians and vehicles in the park would be expected to increase the potential for vehicle - vehicle and pedestrian - vehicle conflicts, but the incidence of accidents between vehicles or vehicles and pedestrians within and around Central Park would not be expected to increase.

Mitigation Identified by this Report:

None required.

BART Warm Springs Extension

The project would not affect BART Warm Springs Extension plans. The BART Warm Springs Extension would be expected to affect project transportation and circulation to the extent that the extension could remove uses that generate travel or parking demand, if the aerial structure is built. If the subway alignment is built, no effects would result.

Mitigation Identified by this Report:

None required.

Construction

Construction of project components would be expected to occur during separate periods. The shoreline rehabilitation, sailboard beach, and dock extension are scheduled for completion in

1993. Funding for the boathouse removal, development of the turf area north of Lake Elizabeth, dredging of the lake, and the Stivers Lagoon Marsh restoration has not been committed or scheduled.

During construction of the project components, transportation impacts would result from worker and truck movements to and from the site. Worker trips would occur primarily before the a.m. and p.m. peak periods, with other trips occurring during the lunch period. It is assumed that construction workers would drive alone to work, rather than carpool or use transit. Project construction would affect parking in the Central Park vicinity due to displacement of parking spaces caused by worker parking and construction staging, and would not be expected on weekend days. Thus, weekend parking displacement as a result of construction worker parking would not occur as a result of construction activities. Parking displacement resulting from construction staging would be temporary, and would be confined to the area adjacent to the improvement location.

Truck trips would occur throughout the work day. Access to the site would be from Paseo Padre Parkway or Stevenson Boulevard. Haul routes would most likely be I-680 to Washington Boulevard ramps (see Figure 2.2). Truck movements would occur between 7:00 a.m. and 3:30 p.m. Truck traffic from 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. would coincide with commute traffic, and would worsen traffic operations on some segments of haul routes. Thus, between 3:00 p.m. and 3:30 p.m. construction trucks would be adding trips to existing p.m. peak period congestion. The impact of construction traffic would be to lessen the available road capacities within the park and other access roadways because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles.. Construction trucks would not be expected to queue on Paseo Padre Parkway or Stevenson Boulevard. This would be a temporary adverse but insignificant impact.

During construction, the area surrounding a given construction site would be closed to bicycle, pedestrian, and vehicle circulation. For example, during the dredging of Lake Elizabeth, the area north of the lake would be closed and a portion of it covered with dredge spoils. During the shoreline rehabilitation, the specific shoreline areas under construction, pedestrian paths and adjacent staging areas likely would be closed to park visitors.

<u>Mitigation Identified by this Report</u>:

None required.

Mitigations Identified by this Report for Less Than Significant Impacts (optional):

No significant impacts (as defined by CEQA) would occur as a result of the proposed project. No mitigation measures therefore are required. Recommended measures that could enhance the project, however, include:

- Monitor parking occupancy so that if demand exceeds supply in the entire park more than 30 weekend days per year (an increase of 50 percent in full occupancy days), plans could be made to increase parking by constructing additional parking spaces in the northern section of Central Park.
- Monitor implementation of the field operating scheme which is used when parking occupancy is saturated on the west portion of Central Park. If emergency vehicles have problems accessing the northern section of the park, expand the operating scheme to facilitate emergency vehicle access to problem areas. As use of the operating scheme increases, assess the need for additional rangers to implement the scheme. If additional rangers are needed, provide additional ranger support.
- Restrict construction truck traffic to between 9:00 a.m. and 3:00 p.m. Truck traffic from 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. would coincide with commute traffic, and would worsen traffic operations on some segments of haul routes.

NOTES - Traffic and Parking

Caltrans, 1990 Traffic Volumes on California State Highways, 1991.

Caltrans, District 4, Twelfth Progress Report on Trip Ends Generation Research Counts, December 1979.

City of Fremont, Environmental Impact Report for Central Park Municipal Golf Course, State Clearinghouse No. 90030021, August 1991.

City of Fremont, Traffic Count Graphs, Stevenson Boulevard west of Paseo Padre Parkway, September 12, 1989; Paseo Padre Parkway north of Stevenson Boulevard, October 4, 1989.

Folks, Tom, Traffic Engineer, City of Fremont, Traffic Operations Characterization at Paseo Padre Parkway / Stevenson Boulevard intersection, telephone conversation, April 10, 1992.

Hamley, Bret, Traffic Investigator, City of Fremont Police Department, telephone conversation, April 8, 1992.

Hayes, Patrick, Supervisor, City of Fremont Leisure Services, telephone conversation, February 20, 1992a.

Hayes, Patrick, Supervisor, City of Fremont Leisure Services, telephone conversation, March 17, 1992b.

Hayes, Patrick, Supervisor, City of Fremont Leisure Services, telephone conversation, April 13, 1992c.

Kugler, Joan, Planning Project Manager, South and West Bay Extensions, BART District, telephone conversation, November 3, 1992.

Schneider, Robert, Engineer, City of Fremont Department of Public Works, telephone conversation, March 10, 1992.

3.5 HYDROLOGY

SETTING

A detailed description of the hydrology of the project area is contained in the Working Paper and Stivers Lagoon Restoration Plan (Appendix B and C, respectively). The following sections provide an overview of the most important elements of the existing Lake Elizabeth and Stivers Lagoon hydrology.

Lake Bathymetry and Water Level Management

Lake Elizabeth occupies an area of approximately 82 acres, and has a bottom elevation of 44 to 46 feet NGVD./1/ Figure 1 in Appendix B shows the existing lake bathymetry and topography. The lake was constructed in 1968 with a nearly uniform bottom elevation of 44 feet NGVD. The northern part of the lake was expanded in 1986. A small island occupies the southeast lobe of the lake. The lake was excavated in a thin clay layer, and is underlain by a regional sand and gravel aquifer. The underlying clay layer inhibits loss of water by percolation from the lake.

The lake is connected to Mission Creek by a set of flashboard weirs on the southeast shore. The lake level is managed by removing flashboards in the winter, and adding flashboards in the summer. Summer lake levels are maintained at about 51 feet by pumping groundwater into the lake (via the swim lagoon) from a well located near the southwestern corner of the park. In the winter, the lake must be maintained at a lower level to meet flood storage requirements. Prior to 1991, the winter water level was maintained at 48.4 feet (no flashboards in the lake inlet). Based on recommendations developed by Engineering-Science, the winter water level in 1991 was raised to 49.9 feet (three six-inch flashboards in the inlet) (Engineering-Science, 1991).

The lake is an integral part of the Mission Creek Flood Control system. The creek channel downstream of Paseo Padre Boulevard is inadequate to convey large flood flows. During peak flows, water backs up in the channel and spills into the lake to be stored until it can be released as flood levels drop. This stored floodwater includes suspended sediment which settles out in the quiescent lake conditions.

By comparing existing bathymetry with the original lake bottom elevation of 44 feet NGVD, it can be seen that 1 - 2 feet of sediment has been deposited in many parts of the lake since 1968. Figure 2 in Appendix B maps sediment deposition patterns in the lake. In general, the greatest deposition occurs near the inlet weirs in the southeast. The lowest deposition occurs in the recently expanded northern part of the lake. The average deposition rate over the 24 year life of the lake is about 0.5 inches per year. However, it is likely that the majority of the sediment load is associated with large, infrequent flood events such as those that occurred in 1983 and 1986. During the past 24 years, about 200,000 cubic yards of sediment have been deposited on the lake bottom.

Flood Hazards

The lake is owned by the Alameda County Flood Control and Water Conservation District (ACFCWCD), and is leased to the City of Fremont under a license agreement for use as a park and recreational facility. The lake and adjacent parklands function as a flood control storage facility for Mission Creek during periods of high flow. The City's current leasing agreement with Alameda County Flood Control stipulates that the City maintain 931 acre-feet of storage within the lake watershed at the 100-year flood level of 55.6 feet.

The ACFCWCD recently commissioned a detailed analysis of the hydrology and hydraulics of the lake and Mission Creek during flood events (Engineering Science, 1991). Because of its flat channel gradient and silted condition, the conveyance of Mission Creek adjacent to the lake is relatively low. The study found that four hydraulic regimes characterize drainage conditions during flood events:

- Flows below 50 cfs: flow is contained within the channel banks. Flow may enter the lake through the inlet, depending upon the setting of the flashboards.
- Flows greater than 50 cfs, but less than 1000 cfs: flow begins to go over the eastern bank into Stivers Lagoon.
- Flows greater than the 15-year flood (about 1000 cfs) but less than 1200 cfs: flow overtops the western creek bank (at elevation 53 feet) into the lake.
- Flows greater than 1200 cfs: the water surface in the lake equals that in the channel, and the lake watershed becomes an uncontrolled reservoir.

The predicted 15-year flood elevation is about 53 feet, and the predicted 100 year elevation is 55.6 feet. The levee/trail separating the lake from Mission Creek has a top elevation of 53 feet. Stivers Lagoon elevations ranges between 50 and 53 feet.

The study also concluded that the lake could contain the 100 year flood when the lake level was maintained at 49.9 feet NGVD (with 865 acre-feet of 100-year storage). The focus of the study was not on lake storage, however, and there is some uncertainty regarding the applicability of the models used to simulate the Lake Elizabeth-Mission Creek system. As a result ACFCWCD recommends that the 931 acre-foot 100-year storage requirement from the City's original leasing agreement be maintained.

Using digitized topographic maps, 100-year flood storage volumes of 985 acre-feet with the lake at 48.4 feet, and 865 acre-feet with the lake at 49.9 feet were computed. Thus, the existing 100-year lake storage is greater than required with the lake at 48.4 feet, but is less than required if the lake level is held at 49.9 feet.

In addition to the lake area currently included in the license agreement, the areas between the SPRR and WPRR provide additional storage during flood events. These areas are currently not included in the agreement between the City and County. Using the digitized map, an estimated 100-year storage volume of about 30 acre-feet exists on City-owned land between the tracks, and 49 acre-feet on private land. Most of the storage on the City-owned parcel occurs above an elevation of 54 feet, and would only be flooded during large storms (greater than the 15-year event).

Shoreline Conditions

Figure 3 depicts the existing shore conditions and protection measures used at Lake Elizabeth. Existing shoreline protection includes dumped rip-rap, grouted rock rip-rap, and vertical retaining walls. The dumped rip-rap consists of broken sidewalk concrete, and is place haphazardly on the shoreline as a remedy to erosion problems. The rip-rapped banks are generally fronted by naturally-occurring wetlands vegetation (e.g. tules, cattails).

The shoreline is actively eroding at a number of locations, primarily due to wave action. Bank erosion is most severe along the eastern shore, where in places the shore has cut back to within a few feet of the pedestrian pathway. This shore is directly exposed to the predominant winds in the area and is subject to the strongest wave action. The island appears to offer significant protection from the wind along the southeastern shoreline; erosion on the shore on the leeward side of the island is much less severe than on exposed shores.

Bank erosion is also a problem on the bare-earth shores at the ends of the grouted rock rip-rap section. The transition from grouted rock rip-rap to unprotected shore occurs abruptly and little vegetation has become established in these transition zones.

Parts of the vertical wall adjacent to the boathouse are slumping forward, and could fail in the near future. In other areas, the vertical wall is generally intact, with the exception of erosion behind low points in the wall.

No failures or structural problems were observed in the north shore grouted rock rip-rap. However, a small section of the grouted rock rip-rap immediately north of the boatramp is failing. In this area, the layer of grout was too thin and has not bound sufficiently. While the grouted rock rip-rap has provided adequate shoreline protection, it is unaesthetic and provides little habitat value.

Marsh Hydrology

Stivers Lagoon Marsh is one of a number of freshwater marshes along the east side of the Hayward Fault. The marsh was formed as a sag pond which results from crustal movement along the fault creating a shallow depression occupying several hundred acres. It is fed by Mission Creek and several small tributary creeks. Mission Creek flows northwesterly in upstream reaches, turns at the marsh crossing the fault and flows southwesterly towards San Francisco Bay. The marsh historically included both areas of deep open water and freshwater marsh which were used by the Native Americans, and subsequently by Spanish and American settlers. At the time of the earliest maps, it occupied an area of about 200 acres. However, even by the mid-1800's to early 1900's when the first maps were prepared, some modifications were evident. In the 1904 map a levee had been constructed around the marsh to limit its area extent. Thus, the natural marsh might have been significantly larger.

Although there are no early detailed topographic maps of the marsh, it apparently included areas deep enough for boating and swimming (as indicated by historical accounts), as well as shallower zones. Its designation as a "lagoon" and the name of the outflow channel as "Arroyo de la Laguna" (Creek from the Lake), also suggests that there were deeper open water areas. There was probably not a well-defined channel through the marsh itself. Hydrologically, it functioned more as a seasonal lake, with Mission Creek and another tributary discharging into the broad, open area. There was a well-defined outlet and channel downstream. As a result, the water depth and inundated areas would have varied significantly both seasonally and annually. In addition, the ground water table would have likely been much higher than it is today. Soils were probably saturated through the dry season in many years.

In the mid-1800's and early 1900's, the land surrounding the wetland were farmed. A levee was constructed to limit the extent of flooding and reduce soil saturation. As the area around the marsh developed, the ranch including the marsh land was held intact. However, there was increased emphasis on local and regional flood control needs. In the mid-1930's this resulted in the channelization of portions of Mission Creek and the excavation of the channel through the marsh. This latter work was probably most damaging to the marsh, as it provided a mechanism to lower the water table and dry the wetland. In 1968, the creation of Lake Elizabeth resulted in a decrease in marsh size to 40 acres with a new Mission Creek Channel located immediately adjacent along the north and west sides. The small marsh size and proximity of the drainage channel has resulted in a more rapid drying of marsh soils, particularly during summer months. This process has allowed encroachment of upland plants and trees into the former marsh plain.

Mission Creek, the main water source for the marsh, drains a watershed of approximately 11 square miles. Elevations range from sea level at San Francisco Bay to 2500 ft. NGVD* at Mission Peak. Annual precipitation ranges from 14 inches at the Bay to 20 inches in the upper watershed. The morphology of Mission Creek channel is influenced both by movement along the Hayward Fault, and by human-induced changes during the past 150 years. Upstream of the marsh the creek flows in a northwesterly direction. As it reaches the marsh/Lake Elizabeth area, it turns 90-degrees, and flows southwesterly crossing the fault zone and eventually discharging to San Francisco Bay. The present channel location in relation to the marsh/lake system was established in 1968 when Lake Elizabeth was excavated from the larger marsh. The channel was excavated along the perimeter of the lake and parking lot. It exits the site via three culverts (one 42-inch RCP and two 5-foot by 8-foot RC Box culverts) under Paseo Padre. Design drawings for the 1968 Lake Elizabeth project indicated that the channel was to be parabolic in shape, with a 12-foot bottom width and an invert of 49.0 feet NGVD. Because of the terrain, the longitudinal profile of the channel is virtually flat throughout this entire reach.

During the 1968 channel and lake construction, a siltation basin was also excavated in the former marsh. The basin size was 2.5 acres, with a bottom elevation of 46.0 feet. The intent of this was to trap sediments before they entered the lake during large flood events.

During construction of both the channel and the silt pond, the excavated spoils were apparently sidecast into the marsh, creating an irregular levee about two feet high between the channel and the marsh and creating an upland area southeast of the silt pond.

Aerial photographs from 1973, 1983, and 1990 clearly document the effects of sedimentation during the past 24 years on the channel and siltation basin. In 1973 (after construction), the siltation basin is approximately one -third filled. By 1983, the entire basin had filled, with vegetation establishment occurring over about half the deposited sediment. By 1990, vegetation covered the entire basin. Approximately 25,000 cubic yards (cy) of sediment accumulated in the basin during the period 1968 to 1990. The Mission Creek channel has also experienced some encroachment, although the extent is more difficult to quantify.

Stivers Lagoon marsh currently includes about 40 acres. It is bounded on the north and west by Mission Creek, on the east by the SPRR railroad tracks and on the south by Paseo Padre Parkway and the Hetch Hetchy pipeline. The present topography is shown in Figure 1 in Appendix B. The marsh plain slopes gently from east to west with elevations ranging from 52 feet NGVD adjacent to the SPRR tracks to about 50 feet NGVD adjacent to Mission Creek. In addition to Mission Creek, a smaller channel (referred to as the L-1 line by ACFCWCD) flows from east to west along the southern project border. It joins Mission Creek just west of the Interpretative Center. This channel conveys runoff from a small area east and south of Paseo Padre.

Two other shallow depressions are evident in the west-central portion of the marsh near the boardwalk. These depressions are about one foot lower than the rest of the marsh plain. A remnant drainage channel is also evident down the center of the marsh. This was apparently excavated to provide drainage during the 1968 channel construction. The marsh slopes slightly from east to west, with a low levee separating the marsh from Mission Creek. The marsh is bounded on the east side by the railroad tracks and has a maximum width of approximately 800 feet.

The hydrologic regime of the marsh is affected by direct overflows into the marsh during high creek flow and by the level of the underlying groundwater table. Groundwater level variations are in turn controlled by the precipitation regime, creek flows and local groundwater pumping. Adjacent to the marsh, estimated flood flows in Mission Creek are predicted to be about 3,000 cubic feet per second (cfs) for a 15-year event (storm with a recurrence of once in fifteen years on the average) and 6,000 cfs for a 100-year event. Since the channel capacity is relatively small, flows greater than about 50 cfs overtop the shallow levee and enter the marsh. On the average, several flows per year are likely sufficient to allow some direct flow into the marsh.

From a hydrologic perspective, groundwater levels are also crucial to the marsh functioning. During the rainy season (and, prior to human alteration, throughout much of the year), high groundwater levels produce saturated soil conditions and shallow ponding throughout the marsh. This promoted wetland plant species and limited competition by upland vegetation. The creation of a defined Mission Creek channel through the marsh (approximately mid-1930's) and the reduction in marsh size (1968) have lowered water table elevations, especially during the dry season.

Pumping of the water supply well to provide inflow for Swim Lagoon and Lake may also be resulting in a gradual lowering of the local water table, but this is less clear. The water supply well (150 feet deep) is sufficiently close to the marsh that the "cone of depression" of the groundwater table resulting from the pumping of 407 acre-feet of water per year could affect the marsh. However, intervening clay lenses between the near-surface marsh soils and the well intake depth (150 feet) may prevent a direct impact.

As discussed in the restoration plan, shallow groundwater levels were monitored in the marsh in 1991 and 1992. The conditions at the end of the dry season (and in the midst of the ongoing five year drought) are of primary concern. They indicate that water levels are about five feet below the ground surface and even below the creek channel. (This would suggest that groundwater pumping may lower the water table even below the drainage resulting from the creek channel.) These extremely dry conditions are likely responsible for the gradual encroachment of upland vegetation into the marsh which has been occurring during the past 25 years. The water table responds rapidly to precipitation events and flow in Mission Creek. The water table rose nearly five feet following the first precipitation events in October of 1991. Present conditions do, however, allow the marsh soils to drain at a moderate rate following a precipitation event.

It is important to recognize that the flows in Mission Creek convey sediment as well as water. This very evident in Lake Elizabeth, where overflows from Mission Creek have deposited an average of 1.5 feet of sediment (about 200,000 cy) during the past 25 years. This same process of deposition is occurring in Stivers Lagoon Marsh although at a much slower rate. The design of this entire area (lake, marsh and channel) to function as a flood detention basin also results in its functioning as a sedimentation basin. This is, of course, evident in the changes to the 2.5 acre siltation basin, which filled in during the first ten to fifteen years following its construction. It is less evident in the marsh itself. However, each time overflow from Mission Creek ponds on the marsh surface, fine-grained sediments are allowed to settle out. In addition, the die-off of vegetation produces organic material which also contributes to a raising of the ground surface. Over time, these processes raise the marsh plain surface, gradually producing dryer soils.

Essentially the marsh is in a transitional state, gradually becoming a meadow. The topography of the marsh at any time in geologic history represents a balance between the tectonic processes along the Hayward Fault which creates the sag pond conditions, and fluvial deposition, which tends to eliminate the pond. These represent natural processes, since the creek flows have always contained sediment. However, in most California creeks, the sediment load has been much higher over the past one or two centuries as a result of human activities (grazing, farming and urbanization). In addition, the culverts under Paseo Padre are not of sufficient capacity and have forced the storage of water upstream and may have hastened this process. It is likely that one to several inches of sediment have been deposited on the marsh plain in the past 25 years. While not producing dramatic changes in the marsh form, this process will gradually eliminate the marsh over the next century or two. While this seems long in human time frame, it is short from a geologic perspective.

Irrigation and Groundwater Withdrawal

The City of Fremont currently uses groundwater to maintain summer lake levels and irrigate park turf areas. Groundwater is pumped from three wells located (1) near the swim lagoon (to fill the swim lagoon and lake), (2) in the eastern end of the park (for irrigation of the Sports Complex), and (3) near the animal shelter north of the lake (for irrigation and pumping into the lake) (Matsumoto, 1992). All three of these wells pump from the regional sand and gravel aquifer underlying the park. In addition, two pumps located near the Boathouse and at the mouth of the artificial brook are used to withdraw irrigation water directly from the lake.

It is estimated that the City pumps 407 acre-ft per year from groundwater to maintain the lake water level. For most turf areas and sports fields the City annually uses about 1 million gallons per acre for irrigation (Matsumoto, 1992). The bulk of this water usage occurs during the summer dry season (May through September).

IMPACTS AND MITIGATION MEASURES

Various elements of the proposed projects including dredging, shoreline rehabilitation and Stivers Lagoon marsh restoration may impact the local and regional hydrology of the site on either a short-term (construction period) or longer term basis. This section addresses impacts specifically related to surface or groundwater occurrence and flow, while Section 3.6 addresses water quality impacts.

Lake Bathymetry and Water Level Management

Dredging of the lake would result in a uniform lake bottom elevation of about 44.3 feet (original depth). The thickness of the clay layer that makes up the original lake bottom is unknown. If this layer were significantly breached during dredging lake water could drain into the underlying sand and gravel aquifer. This would result in increased water loss from the lake, and require additional groundwater pumping to maintain lake levels. This would result in a potentially significant impact.

> Mitigation Identified by this Report: Dredging will only be performed to the original lake bottom elevation and would remove primarily accumulated silt. Disturbance to the clay bottom would be minimal, especially if hydraulic suction dredging is used. Prior to dredging, soil cores should be drilled near the lake to determine the thickness of the underlying clay layer.
>
> Level of Significance after mitigation: Less than significant.

Flood Hazards

Lake dredging would result in about 145,200 cubic yards of material that would be deposited in the low undeveloped area along the north shore. Placement of dredge spoils in 20-foot high shaped and landscaped berms with 10:1 side slopes would result in the long-term loss of 34 acre-feet of flood storage within the lake basin. This would leave 951 acre-feet of storage available below the elevation at which actual flood damage begins to occur (55.6 feet). While the available storage still exceeds the 931 acre-feet required by Alameda County to meet FEMA requirements for protection against the 100-year event, the loss of 3.5 percent of the flood storage would result in slightly higher water levels during extreme floods (greater than the 100-year event).

During the dredging operation, the dredge-spoil drying ponds would cause a short-term decrease in available flood control storage.

> Mitigation Identified by this Report: No mitigation is necessary to meet Alameda County's flood control storage requirements. If necessary in the future, storage needed to meet requirements can be provided by including the areas between the SPRR and WPRR tracks in the City's licensing agreement. City owned land in this area provides 30 acre-feet of 100-year flood storage; adjacent private land currently provides an additional 49 acre-feet of storage. Depending on future ownership and land use, this storage could also be maintained. Dredging should occur in the dry season to minimize the effects of flood storage occupied by the drying ponds.
>
> Level of Significance after mitigation: Less than significant.

Shoreline Erosion

The proposed shore protection measures and construction of the sailboard beach would decrease shoreline erosion, and would have no long-term adverse hydrological impacts.

During construction and placement of shore protection materials, there would be some short-term erosion by foot traffic, equipment and runoff. Short-term erosion could also occur due to equipment traffic during lake dredging operation.

> Mitigation Identified by this Report: A standard construction-site erosion control plan should be required. Silt fences and temporary ground cover will reduce erosion by wind and runoff. Equipment should be operated on the lake path, with minimum traffic along the shore line. Construction activities should be limited to the dry season (May through September) to minimize erosion by storm runoff. Temporary measures such as mulching, jute or plastic netting, etc., may be required until vegetation becomes established. Wakes from motorized boats should be minimized by specifying a maximum boat speed of 5 mph.
>
> Level of Significance after mitigation: Less than significant.

Stivers Lagoon Marsh

The proposed weir at Paseo Padre would pond any dry season flows in Mission Creek increasing groundwater seepage and recharge. Dry season flows downstream of Paseo Padre will be reduced by this amount. Maintaining wetter conditions in the marsh during the dry season will likely also require additional groundwater pumping and releases from Lake Elizabeth. The amount of addition pumping will be determined on an experimental basis in conjunction with monitoring of the shallow groundwater table in the marsh. Our preliminary estimate is that about an additional 20 to 40 acre-feet of groundwater may be required to maintain the marsh. This would represent about a five to ten percent increase in the pumped groundwater (currently about 407 acre-feet) required for the Stivers Lagoon and Lake. This additional groundwater pumping would not represent a significant adverse impact to either the local aquifer or to the groundwater salinity control project to the west (since the aquifers are separated by the Hayward Fault which creates a barrier to groundwater movement). Impact less than significant; no mitigation necessary.

> <u>Mitigation Identified by this Report for Less Than Significant Impacts (optional)</u>: Material dredged from the lake bottom would be used to create about 21 acres of turfed area north of the lake. Assuming the area is irrigated at a rate of 1 million gallons per acre, irrigation of this area will require an additional 28 acre-feet of groundwater per year (or 9 million gallons/year). This represents a 7 percent increase over the current groundwater usage of 407 acre-feet/year. The water would probably be pumped from the well near the animal shelter (Matsumoto, 1992). This additional groundwater pumping will not represent a significant adverse impact to either the local aquifer or the groundwater salinity control project to the west (since the aquifers are separated by the Hayward Fault which creates a barrier to groundwater movement). Impact less than significant; no mitigation necessary.

NOTES - Hydrology

Engineering Science, Inc. 1991. Maintenance Recommendations and Lake Management Plan. Lake Elizabeth, Fremont, CA. Prepared for Alameda County Flood Control and Water Conservation District.

Matsumoto, Fred, Park Supervisor, Park Maintenance Division, City of Fremont Department of Public Works, telephone conversation, October 27, 1992.

/1/ NGVD refers to National Geodetic Vertical Datum. It is the standard USGS elevation datum and corresponds closely with mean sea level(MSL).

3.6 WATER QUALITY AND PUBLIC HEALTH

SETTING

This section discusses three key issues that relate to public health: water quality in Lake Elizabeth, sediment quality in Lake Elizabeth as it would affect dredging and dredged sediment disposal, and use of chemicals and associated runoff problems in the proposed turf area.

Water Quality

With the passage of the *Porter-Cologne Water Quality Control Act* in 1969, the California Legislature established statewide policy to conserve and control the state's water resources and to promote and maintain water quality for the use and enjoyment of its citizens. To carry out this policy, the legislature established the State Water Resources Control Board and nine Regional Water Quality Control Boards as the agencies with primary responsibilities for the control of water quality. Their responsibilities include setting guidelines for surface water management and establishing objectives for water resource development and water quality control. The Bay area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB).

Water quality objectives established by the State and RWQCB mandate that aquatic communities in inland surface waters shall not be degraded by waste products, that contaminants shall not be discharged at levels that would be harmful to human health, and that concentrations of toxic pollutants in the water column, sediments, or biota shall not adversely affect beneficial uses. To that end, numerical water quality objectives have been established for protection of freshwater aquatic life and for protection of human health. Specific water concentration limits to protect biota and human health have been published for several dozen contaminants, primarily for the chemicals in the categories of pesticides, heavy metals, and organic solvents (California State Water Resources Control Board, 1991). The City of Fremont and the Alameda County Health Care Services Agency have jointly established local water quality objectives for bacterial contamination.

Water in Lake Elizabeth has been sampled and tested periodically for the Alameda County Flood Control and Water Conservation District since 1985. Analytical tests included bacterial counts, plant nutrients, dissolved oxygen, turbidity, chlorophyll, pH, specific conductivity, biochemical oxygen demand, oil & grease, and dissolved metals.

Data show that Lake Elizabeth is a well-aerated body of water, with adequate circulation, moderate levels of nutrients, and a neutral or slightly basic pH. Concentrations of metals and other potential contaminants in the water were determined to be well below levels of concern. For example, barium, cadmium, chromium, lead, mercury, selenium, and silver were not found in the water, while arsenic was detected at a concentration below drinking water standards. None of the measured parameters exceeded established State water quality objectives for the protection of aquatic life or for the protection of human health. From a public health perspective, available chemical and physical data indicate that water quality in Lake Elizabeth is good, adequate for fishing, non-contact water recreation, and wildlife habitat (Engineering-Science, Inc., 1987; 1989; 1990). There have been no reported problems with fertilizer or pesticide runoff from Central Park (CH2M Hill, 1991).

Data indicate that the only recurring problem of significance at Lake Elizabeth is its bacterial content. Bacterial concentrations, especially of coliform bacteria, exceeded recommended criteria for water contact recreation and were high enough to cause a potential public health concern. The water quality monitoring reports indicated that numbers of bacteria correlated with numbers of waterfowl, and that bacterial concentrations were within the range that could be expected for a lake with a substantial waterfowl population. Monitoring over several years confirmed that waterfowl are the primary source of the bacterial contamination in Lake Elizabeth (Engineering-Science, Inc., 1987; 1989; 1990).

In 1988, the City of Fremont, in consultation with the Alameda County Health Care Services Agency, established bacteria count criteria for Lake closure of 300 cfu/100 ml, calculated as the geometric mean of at least five water samples, and 500 cfu/100 ml, on the basis of a single sample maximum./1/ Data from 1988 through 1990 showed that bacteria counts in Lake Elizabeth ranged typically at 200-300 cfu/100 ml during the winter months, but that the criteria were exceeded during winter months often enough to warrant Lake closure for water contact activities. Highest values measured were approximately 1000 cfu/100 ml, and those high readings correlated with high waterfowl numbers. Application of the bacterial count criteria by the City and County established a pattern whereby Lake Elizabeth is closed to windsurfing and other water contact sports seasonally from about September to about April each year (Engineering-Science, Inc., 1990).

Sediment Quality and Dredged Material Disposal

Approximately 145,000 cubic yards of sediment would be dredged from the bottom of Lake Elizabeth to remove silt that has built up over the years. The lake sediments would be removed using hydraulic dredging equipment. The dredge spoil is planned to build up the proposed 20-acre turf development area north of the lake.

Disposal of dredged sediment spoil from San Francisco Bay is regulated jointly by the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the RWQCB, but those public agencies would not be directly involved with dry land disposal of Lake Elizabeth sediments. For San Francisco Bay dredging, the agencies are concerned primarily with the toxic effects of disposal of dredge spoils in open water, and have promulgated regulations controlling such activities (US Army Corps, 1987). Their regulatory approach consists of bioassays that address conditions in the aquatic environment and the potential for contaminants to bioaccumulate in tissue (Wright and Saunders, 1990). Because aquatic disposal of dredged sediment is not proposed at Lake Elizabeth, the toxicity guidelines for open water disposal would not be directly relevant at the project site.

Land disposal of sediments dredged from Lake Elizabeth would fall under the jurisdiction of the Alameda County Health Care Services Agency, which would enforce hazardous waste disposal limitations codified in Title 22 of the California Code of Regulations (CCR). The City of Fremont Environmental Protection Division, the lead agency for small remediation projects in Fremont, also would be involved in any decision-making processes. Under Title 22, Section 66261.10 of the CCR, a hazardous material is defined as a substance or combination of substances, which because of quantity, concentration, or physical, chemical or infectious characteristics, may either:

(1) cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or

(2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed./2/

Hazardous wastes are defined in the same manner. Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been discarded, contaminated, or are being stored prior to proper disposal. According to Title 22 of the California Code of

Regulations, hazardous materials and hazardous wastes are classified according to four properties: toxic, ignitable, corrosive, and reactive./3/ (The latter three hazardous properties typically would not apply to sediments taken from a freshwater lake.) Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of common toxic substances include heavy metals and pesticides.

For a number of hazardous constituents, specific concentration limits have been established, above which a waste is considered hazardous. These concentrations are codified in Title 22 of the CCR as the Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC). Dredged sediments would qualify as a hazardous waste if concentrations of chemical constituents in the spoils exceeded TTLC or STLC standards listed in Title 22. Special disposal requirements would apply to hazardous spoils; these would be analogous to remediation (cleanup) requirements for hazardous wastes found at an excavation site.

Limited data are available on the quality of sediments in Lake Elizabeth. One composite sample was collected recently in 1991 and analyzed for a handful of nonhazardous constituents. Test results are presented in Table 3.6.1. The parameters analyzed were nonhazardous constituents (all except pH and particle size distribution are plant nutrients) and therefore provided no information on sediment contamination. Particle size distribution measurements indicated that 2.1 % of the sediment is comprised of material smaller than 75 micrometers (Sequoia Analytical Laboratory, 1991; Granicher, 1992).

In 1986, sediment samples were tested for heavy metals and polychlorinated biphenyls (PCBs). These constituents are toxic, bioaccumulative substances that have designated values for TTLCs and STLCs in Title 22 of the CCR (i.e. hazardous threshold limit concentrations). Analytical test results are shown in Table 3.6.2. On the basis of these data, concentrations of all the heavy metals and PCBs measured in Lake Elizabeth sediments are well below values that are considered hazardous.

TABLE 3.6.1: LAKE ELIZABETH SEDIMENT TEST RESULTS, OCTOBER 1991

Analyte	Test Result	Detection Limit
pH	8.9	N.A./a/
Sulfur, mg/kg	460	3.3
Nitrate, mg/kg	N.D./b/	1.0
Ammonia, mg/kg	1.9	1.0
Phosphate, mg/kg	N.D./b/	10
Potassium, mg/kg	1,200	1.0
Particle Size, micrometers (m)		
greater than 75 m	97.9 %	N.A.
less than 75 m	2.1 %	N.A.

NOTES:
/a/ N.A.= not applicable.
/b/ N.D.= not detectable.

SOURCES: Sequoia Analytical Laboratory, 1991.
Granicher, 1992.
Environmental Science Associates, 1992.

Use of Chemicals in Turf Area

A 20-acre site directly north of Lake Elizabeth is planned to be developed as an open turf recreation area for picnics, ball games, and similar outdoor activities. Plans call for using dredged sediment from the Lake to raise the ground surface elevation of an approximately 9-acre portion of the recreation area. Grassy turf would be expected to be maintained with applications of fertilizers and pesticides.

TABLE 3.6.2: LAKE ELIZABETH SEDIMENT TEST RESULTS, MAY 1986

Analyte	Dry Wt. mg/kg/a/	Wet Wt. mg/kg/a/	TTLC, mg/kg/a/
Antimony	< 0.93	< 0.93	500
Arsenic	20	7.2	500
Barium	< 40	< 40	10,000
Beryllium	6.8	2.4	75
Cadmium	1.9	0.7	100
Chromium	150	54	500
Copper	45	16.2	2500
Lead	47	16.9	1,000
Mercury	< 0.1	< 0.1	20
Nickel	85	30.6	2,000
Selenium	< 0.93	< 0.93	100
Silver	< 4.7	< 4.7	500
Thallium	19	6.8	700
Zinc	120	43	5,000
	ug/L		STLC
Total PCBs/b/	< 0.5/c/	---	5,000/c/

NOTES:
/a/ Units are milligrams per kilogram of sediment.
/b/ PCBs are polychlorinated biphenyls.
/c/ Units are micrograms per liter of extract solution.

SOURCE: Engineering-Science, Inc., 1987.

The use of pesticides is regulated at federal, state, and local levels of government to protect the health and safety of the public. The *Federal Insecticide, Fungicide and Rodenticide Act* of 1972 (FIFRA), administered by the Environmental Protection Agency (EPA), is responsible for ensuring that the benefits of pesticide use outweigh the risks. A pesticide, as defined by FIFRA, includes any substance or mixture of substances intended for preventing, destroying repelling or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant. Under FIFRA, all pesticides must be registered before they can be sold or distributed in interstate or intrastate commerce. Test data provided by the manufacturer is evaluated by the EPA. Required studies include testing to show whether a pesticide has the potential to cause adverse effects in humans, fish, wildlife, and endangered species. Potential human risks studies include acute reactions, such as toxic poisoning and skin irritation, and long-term effects like cancer, birth defects, or reproductive system disorders (U.S. Environmental Protection Agency, 1987).

Each pesticide is assigned a classification as either a general use chemical or restricted use chemical during the registration process. "General use" chemicals may be purchased and applied by any person. "Restricted use" chemicals may be purchased and applied only by certified applicators; that is, only those persons having received special training and testing in their use, handling, safety and application of the particular material. The list of restricted chemicals is constantly changing as new chemicals come on the market and as new information is developed on chemicals already on the market. FIFRA also requires registration of pesticide production establishments and annual reporting of production, as well as certification of applicators of restricted use chemicals.

At the state level, California has regulated the use of pesticides under the California Food and Agriculture Code since 1967. California has some of the most restrictive pesticide regulations in the country. The *Pesticide Contamination Prevention Act of 1985* required the California Department of Food and Agriculture to obtain product chemical and environmental data for all active ingredients of agricultural use pesticides under EPA Guidelines. Since 1991, the *Act* has been administered by the Department of Pesticide Regulation within the new California Environmental Protection Agency.

Under state law, each local County Agricultural Commissioner regulates the use and purchase of pesticides by applicators licensed by the state. The Alameda County Agricultural Commissioner enforces all laws and regulations concerning restricted pesticides, licensed pest control operators, pesticide dealers, pesticide advisors, growers and others in Alameda County. In quantities typically used in turf areas, restricted pesticides can be applied only by persons holding a California "Qualified Applicators License," who are typically private contractors with permits to store and apply them. The Agricultural Commissioner evaluates requests for restricted material permits, supervises application, inspects equipment and safety devices and oversees proper disposal of pesticide containers. Licensed applicators must report all applications of pesticides to the County on a monthly basis. Records of pesticide use submitted by dealers, agricultural pest control advisors, pest control operators, growers and others, and are maintained by the local Commissioner (Westin, 1991).

The City of Fremont regulates use and storage of chemicals through the Environmental Protection Division of the Building and Safety Department; City Ordinance 1632, Chapter 12, Title 3 authorizes the issuance of permits for the storage of certain chemicals in amounts exceeding established thresholds (CH2M Hill, 1991).

IMPACTS AND MITIGATION MEASURES

Water Quality

The proposed dredging of Lake Elizabeth and shoreline improvement projects would increase turbidity of the lake water temporarily. Recent particle size analysis of bottom sediments found that 2.1% of the material to be dredged is comprised of silts and clays that could be suspended in the water column when sediments are disturbed (Table Y), thereby causing the water to become turbid (Sequoia Analytical Laboratory, 1991; Hem, 1985: Granicher, 1992). Dredging would be such a disturbance. Dredged sediments contain a substantial amount of water; if dredge spoils are disposed in the turf build-up area north of the lake, water could flow back into the lake and aggravate the turbid effects.

Sediment dredging can be done with care to minimize excess disturbance, but no mitigation measure would completely eliminate turbidity caused by dredging. Hydraulic dredging would generate less turbidity at the dredge site than dredging by other methods (e.g., clamshell dredging), but would draw more turbid water from the lake that would flow back from the disposal area nearby. The alteration of Lake Elizabeth water quality would be a significant but temporary impact. Natural processes of sedimentation would mitigate the increase in turbidity within a period of days and return water quality to its pre-dredging clarity. The long-term effect of dredging might actually improve clarity in the lake, but the beneficial impact would probably not be evident to persons using the park. The significance of the short-term impact could be further reduced by the following mitigation measure.

> Mitigation Identified by this Report: Water in the dredge spoils placed in the sediment disposal area north of Lake Elizabeth shall be retained behind weirs or dikes in one or more settling basins to allow the water to clarify before being allowed to flow back into the lake. The City shall engage a qualified engineer to design and construct such a containment system prior to commencement of sediment dredging. In the long term, the project would improve water quality in the lake by removal of the more recently accumulated and organic bottom sediments. In addition, deepening of the lake would increase the lake's dilution capacity by ten to twenty percent.

Level of Significance after Mitigation: Short-term significant.

Sediment Quality and Dredged Material Disposal

Toxic contaminants, if any should be present in the dredged sediments, could pose a threat to public health. As described in the Setting, available sediment quality data provide no evidence of chemical contamination that could cause an impact on public health. Nevertheless, the sediment disposal area north of Lake Elizabeth is slated for development as a recreation area and could receive intensive public use. Threats to public health in the sediment disposal area could be a significant and long-term impact should hazardous constituents be present in dredge spoils, and would apply to both alternative sediment disposal locations. The impact would be mitigated to a level less than significant by the following mitigation measure:

Mitigation Identified by this Report: Prior to commencement of dredging in Lake Elizabeth, the City should sample and analyze the sediment in areas slated to be dredged. A single, four-part composite is recommended. The composite sediment sample shall be analyzed for the following chemical constituents, which include the most common contaminants that are both toxic and bioaccumulative:

- Heavy metals by EPA Method 6010
- Semivolatile organic compounds by EPA Method 8270
- Chlorinated pesticides by EPA Method 8080

The City should engage a Registered Environmental Assessor qualified to interpret sediment test data to assess the analytical results and verify that the dredged sediment would be suitable for disposal in the park. Test results shall be included in the administrative file and should also be submitted to the Alameda County Health Care Services Agency and the Alameda County Flood Control and Water Conservation District.

Level of Significance after Mitigation: Less than significant.

Use of Chemicals in Turf Area

Development of the turf recreation area north of Lake Elizabeth would lead to long-term use of fertilizers, herbicides, and pesticides for turf maintenance. Such chemicals, if handled or applied improperly, could pose threats to public health or degrade water quality in Lake Elizabeth.

Typically, fertilizers would be applied once or twice per year to turf areas. Fertilizers contain nitrogen, phosphate, potassium, and trace minerals. These chemicals would promote algal growth in Lake Elizabeth if they were allowed to reach the Lake. Chemical herbicides with toxic properties typically are used for weed control, and must be applied by contractors licensed by the State of California to store, handle, and apply specific chemicals.

If improperly applied, turf maintenance chemicals could pose health threats to turf area users, become airborne, or migrate into groundwater or Lake Elizabeth, where they could affect animals or plants not targeted for control (CH2M Hill, 1991).

A related problem would be contaminated runoff from the automobile parking lot planned to serve the turf area. Runoff containing roadway contaminants (such as heavy metals) could find its way into Lake Elizabeth or into shallow groundwater.

Chemical use in the turf area could result in a long-term significant impact on public health and on water quality in Lake Elizabeth. Chemical impacts would be mitigated to a level below significant by proper landscape design and by standard procedures for handling hazardous chemicals as set forth in the State, County, and City regulations described in the Setting.

> <u>Mitigation Identified by this Report</u>: The City shall consult with a qualified botanist or landscape architect to ensure that the turf area is planted with species adapted to the local climate (and compatible with the area's proposed recreational use). Such plantings would be more resistant to pests and drought, and less likely to require intensive application of chemicals.
>
> The City shall monitor chemical application to ensure that state regulations regarding chemical application rates, application methods, and worker safety training are followed. On an annual basis, the City shall contact the County Agricultural Commissioner to verify that the proper chemical applicator's reports have been filed.
>
> <u>Mitigation Required by State Law</u>: The City shall engage a person holding a qualified applicator's license to apply restricted chemicals to the turf area. A copy of the applicator's license shall be placed in the public works administrative file.
>
> <u>Level of Significance after Mitigation</u>: Less than significant.

NOTES -- Water Quality and Public Health

California State Water Resources Control Board, *California Inland Surface Waters Plan: Water Quality Control Plan for Inland Surface Waters of California*, April 1991.

CH2M Hill, *Environmental Impact Report for Central Park Municipal Golf Course*, Draft, EIR 89-104, prepared for City of Fremont in association with WRT, August 1991.

Engineering-Science, Inc., *Water Quality Monitoring, Lake Elizabeth, January 1989 through December 1989, Final Report* (incorporating bimonthly reports), prepared for Alameda County Flood Control and Water Conservation District, April 1990.

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Wright, Thomas D. and Lloyd H Saunders, "U.S. Army Corps of Engineers Dredged Material Testing Procedures," *The Environmental Professional,* Volume 12, pp. 13-17, 1990.

U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and San Francisco Bay Regional Water Quality Control Board, *Interim Testing Procedures for Evaluating Dredged Material Suitability for Disposal in San Francisco Bay*, December 1987.

U.S. Environmental Protection Agency, A Consumer's Guide to Safer Pesticide Use, September, 1987.

Westin, Robert, Alameda County Agricultural Commissioners Office, telephone conversation, July 26, 1991.

/1/ The unit of measurement for bacteria is countable "colony forming units" (cfu) or simply "counts" of the bacterium *E. coli* per 100 milliliters of Lake water.

/2/ California Code of Regulations, Title 22, Division 4.5, "Environmental Health Standards for the Management of Hazardous Wastes," Chapter 11, Article 2, Section 66261.10, "Criteria for Identifying the Characteristics of Hazardous Waste."

/3/ California Code of Regulations, Title 22, Division 4.5 "Environmental Health Standards for the Management of Hazardous Wastes," Chapter 11, Article 3, Characteristics of Hazardous Wastes.

3.7 GEOLOGY AND SEISMICITY

SETTING

Regional Geology

The San Francisco Bay area is within California's Coast Range Geomorphic Province, and its geology is dominated by the San Andreas Fault System. This broad system of faults forms the boundary between two major crustal plates: the Pacific plate and the North American plate. The relative northwestward movement of the Pacific plate relative to the North American plate produces seismic activity within the zone. Seismic activity is primarily associated with several major active faults within the system, including the San Andreas, Hayward, and Calaveras faults, along with other shorter fault segments.

Fremont's Central Park and Lake Elizabeth are located in the Diablo antiform block, an easterly portion of the Coast Ranges that is bounded by the Great Valley on the east and, in the San Francisco Bay area, by the Hayward fault on the west. Northeast-southwest compression acting over the last several million years has produced steep folds and faults within the block. Typical of such faults are the active Hayward fault that passes through Central Park and dominates its geologic setting, and the active Calaveras fault some seven miles to the east.

Local Geology

The Central Park area is underlain by sediments that have been deposited by Alameda Creek, on its way to emptying into San Francisco Bay. These sediments, referred to as the Niles cone, consist of sand, gravel, silt, and clay, with the finer materials interpreted as floodplain deposits. Logs of exploration borings and trenches reveal that sediments in the Central Park area are primarily fine-grained with a few gravel lenses. Bedrock is expected to be at least several hundred feet deep in the area.

Two traces of the Hayward fault have been mapped through Central Park. The westerly trace is believed to be the active one, while the easterly trace has not been found south of the Civic Center. The Hayward fault acts as a groundwater barrier, causing subsurface water to build up on the uphill (east) side of the fault. Stiver's Lagoon, modified into Lake Elizabeth, is such an accumulation of groundwater that fills a depression, formed as a result of the fault and referred to as a "sag pond". Tule Pond (Tyson's Lagoon), north of Stevenson Boulevard and along the fault, is another similarly formed body of water that has also been modified.

Recent soft sediments and marsh deposits have accumulated in the "sag ponds". Together with the high groundwater conditions caused by the barrier action of the fault, these soft ground conditions are susceptible to settlement, slope movement, and, during an earthquake, strong ground shaking and ground failure in the form of lateral spreading and localized liquefaction.

The mapped fault traces are shown on Figure 3.7.1.

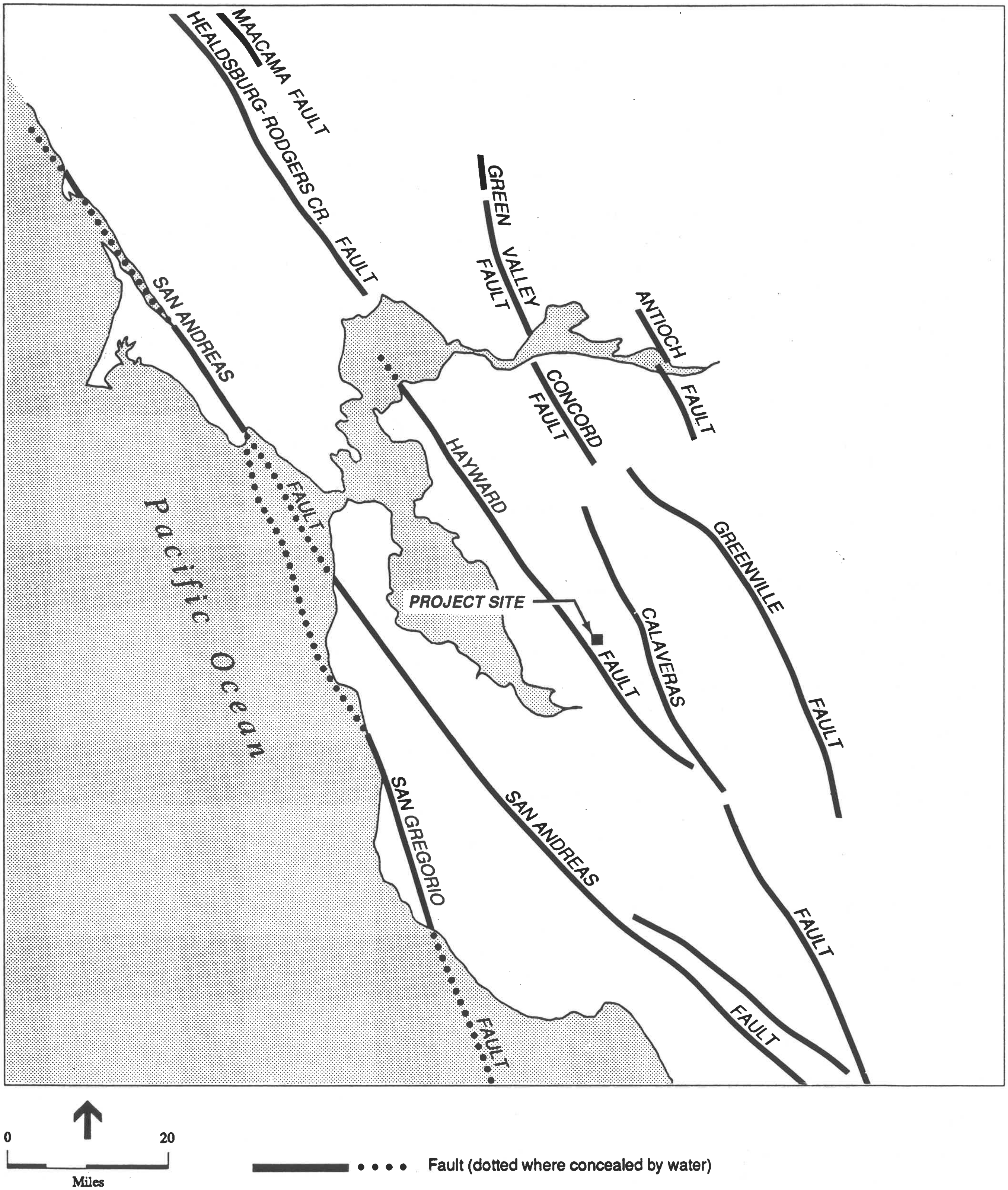
<u>Seismicity</u>

Because of its location along the crustal plate boundary, the San Francisco Bay area is a region of high seismic activity. This seismic activity is associated with numerous faults which have experienced recent movement.

The Hayward fault system is among the active faults that have produced major earthquakes in the past and are expected to produce similar events in the future. The entire Hayward fault system, including the related Calaveras and Rodgers Creek faults, has a total length of about 374 km. It has produced about 590 significant earthquakes in the last 190 years. Two earthquakes of about magnitude 7 occurred in 1836 and 1868, both on the Hayward fault. Events of magnitude 6 occurred in 1897, 1979, and 1984 on the Calaveras fault, but it has historically not produced larger events.

The Working Group (U.S.G.S. Circular 1053, 1990) divided the Hayward fault into two segments: the northern and southern segments. The southern segment passes through Central Park. The overall slip rate for both segments is estimated at 9 ± 2 mm/year. Surficial creep has been measured at 5-6 mm/year. For an earthquake of about magnitude 7, the slip per event is estimated at 1.5 ± 0.5 m. In 1990, the Working Group estimated the probabilities for exceeding a magnitude 7 earthquake in the next 30 years on these segments at 28% and 23%, respectively.

Although the Central Park area will be affected by earthquakes occurring on other faults throughout the Bay Area, the preceding discussion points to the conclusion that the most severe effects would be due to an event occurring along the Hayward fault in the immediate vicinity. This is an event that should be anticipated to occur within the life of any improvements planned in Central Park.



SOURCE: Environmental Science Associates, Inc.

Figure 3.7.1
Regional Fault Map

The effects of such an earthquake will likely include the following:

- Ground rupture and offset along active fault traces.
- Very strong groundshaking throughout the area, amplified in areas of soft soil conditions.
- Ground failure in the form of lateral slumping and slope failure in some areas, particularly along the margins of the lake.
- Settlement and ground deformation due to localized liquefaction, particularly in areas of high groundwater and soft, marshy soil conditions.

Fault creep is occurring along the active west trace of the Hayward fault. This creep has deformed and damaged improvements such as buildings, paving, curbs, and utilities that cross the creeping trace. This is a continuing effect on existing facilities, but since the proposed projects are not located across the west trace, this process is not expected to affect them.

IMPACTS AND MITIGATION MEASURES

Fault Rupture

Parts of the site may be subject to ground rupture along fault traces during an earthquake. This hazard is expected to be most severe along the active west trace of the Hayward fault (where on-going creep has been documented), but a lower hazard could also be present along subsidiary faults not yet identified. Rupture along the active west trace would not affect the proposed projects.

For the Shoreline Rehabilitation, fault rupture would result in localized damage requiring repair or replacement of the shore protection. This is considered a significant impact, but no mitigation is feasible to lessen the impact because the shoreline protection cannot be relocated to avoid fault rupture areas (if they were identified), and no method of construction is available to prevent damage due to fault rupture. For these improvements, fault rupture does not pose a life safety hazard, such as would exist for buildings intended for human occupancy. Therefore, the requirements of the Alquist-Priolo Act (CDMG, 1990) for investigation of this hazard within the Special Studies Zone currently defined for the Hayward fault would not be applicable to this project.

Mitigation Identified by this Report: None required.

For the other proposed projects, the effects of fault rupture should be less than significant and require no mitigation, since these projects involve either none or only minor surficial construction. Alquist-Priolo Act requirements are similarly not applicable.

Mitigation Identified by this Report: None required.

Groundshaking

Very strong groundshaking would be experienced in all of the project areas during a major earthquake. Localized areas of amplified ground motion would occur where particularly soft soils are present.

For the Shoreline Rehabilitation, strong seismic groundshaking will subject any shore protection structures to large, dynamic earth forces. This impact is significant but can be mitigated by proper design and construction methods, to lessen the impact to an acceptable level.

Mitigation Required by the City: All improvements would be designed and constructed in accordance with the applicable seismic provisions of the current building code (highest seismic zone).

The dock extension project would not be strongly impacted by groundshaking, since the proposed dock is of the floating type and therefore would be largely isolated from earthquake ground motion. The remaining projects do not involve significant structures affected by groundshaking.

Mitigation Identified by this Report: None required.

Lateral Slumping and Slope Failure

Areas around the lake margins are susceptible to ground failure in the forms of lateral slumping and slope failure during an earthquake. This would result in movement of the ground (and any improvements supported on it) toward and possibly into the lake. The amount and extent of this movement depends on the local soil and groundwater conditions, as well as on the intensity and duration of groundshaking.

This impact significantly affects the proposed shoreline rehabilitation project, which would be damaged or destroyed in some areas by such movement. This impact can be mitigated to a minor degree by the design of the shore protection, but a significant impact is unavoidable. Shore protection in the form of engineered structures or strengthened slopes would reduce the existing potential for slope failure.

Mitigation Identified by this Report: To the extent feasible, shore protection structures and slopes should be designed and constructed to resist the effects of lateral slumping and slope failure.

Level of Significance after Mitigation: Significant.

Dredging of the lake would somewhat exacerbate the potential for slumping and slope failure by removing existing soil along the toe of the shoreline slopes that presently contributes to slope stability. This impact can be mitigated to a level below insignificance by proper design and implementation of dredging along the shoreline, and the related provision of shoreline protection measures.

Mitigation Identified by this Report: To the extent feasible, design and implement dredging to minimize the negative effect on shoreline stability. Coordinate dredging with construction of Shoreline Rehabilitation work.

Level of Significance after Mitigation: Less than significant.

The Dock Extension could be affected by nearby slumping or slope failure, which could displace the piling which maintains in position (but does not support) the floating docks. This impact would be significant, but no feasible mitigation is available other than the proper design and construction of the adjacent shore protection.

Mitigation Identified by this Report: To the extent feasible, design and construct shore protection structures and slopes to resist the effects of lateral slumping and slope failure.

Level of Significance after Mitigation: Significant.

The Boathouse Demolition/Removal would significantly reduce the existing potential for slope failure in this area, which is currently experiencing slope movement and poses a significant hazard of sudden failure during an earthquake. The existing retaining wall along the shore at the boathouse is also failing, and should be removed and replaced with suitable shore protection. Following removal of the boathouse and retaining wall, the area should be regraded to create a stable slope condition. This action would mitigate the existing condition to a level consistent with other parts of the shoreline.

Mitigation Identified by this Report: To the extent feasible, design and construct regrading, slopes and shore protection structures in the vicinity of the existing boathouse to resist the effects of lateral slumping and slope failure.

Level of Significance after Mitigation: Less than significant.

The Sailboard Beach, with its required gentle slope, should not be severely affected by slope movement. It could be damaged if large-scale lateral slumping occurred, but no feasible means of mitigating this impact are available.

Mitigation Identified by this Report: None available.

Development of the area north of Lake Elizabeth could be affected by slumping and slope failure into the lake, and by such movements within dredge materials placed as fill. For the first effect, the significant impact can be mitigated by locating significant improvements away from the shore. Slope failures within the new fill will be more likely to occur soon after the dredge spoils are placed, while the water content of the materials is high. With subsequent dewatering, drying and regrading, this risk would lessen and can be mitigated to a level below insignificance by grading design that properly accounts for the dredge spoil's material characteristics. Steep slopes or high berms should, for example, be avoided.

Mitigation Identified by this Report: Locate structures away from the lake shore to the greatest extent possible. Design and construct grades using dredge spoil materials to minimize the potential for slumping and slope failure, by specifying suitable moisture treatment and compaction methods, and by avoiding high berms and steep slopes.

Level of Significance after Mitigation: Less than Significant.

Liquefaction-induced Settlement or Ground Failure

The long-term impacts of potential liquefaction on the proposed projects are likely to be similar in most ways (and related) to those described above for slumping and slope failure, and are likely to be of substantially lower magnitude. This is expected to be true for the Dredging, Shoreline Rehabilitation, Dock Extension, Boathouse Demolition/Removal, Sailboard Beach, and Stiver's Lagoon Restoration projects, where the mitigation measures described above are deemed applicable.

Mitigation Identified by this Report: Same as for lateral slumping and slope failure for projects, as noted above.

Level of Significance after Mitigation: Less than Significant.

For development of the area north of Lake Elizabeth, the dredge spoil fill materials could initially be very highly susceptible to liquefaction, because of their high water content. This susceptibility will diminish rapidly with dewatering and regrading. Additional drying and regrading may be required to place this material in a state with a low liquefaction potential. With proper reworking, this impact can be mitigated to a level below insignificance, since only light structures are planned for this area.

Mitigation Identified by this Report: Same as for lateral slumping and slope failure for development of area north of Lake Elizabeth.

Level of Significance after Mitigation: Less than significant.

NOTES - Geology and Seismicity

CDMG (California Division of Mines and Geology), *Fault-Rupture Hazard Zones in California, Alquist-Priolo Special Studies Zones Act of 1972 with Index to Special Studies Zones Maps,* Special Publication 42, Revised 1990.

U.S.G.S. (United States Geological Survey), *Probabilities of Large Earthquakes in the San Francisco Bay Region, California,* Circular 1053, 1990).

3.8 VEGETATION AND WETLANDS

SETTING

ESA biologists conducted a site reconnaissance on September 20, 1991 to gather information on vegetative communities and wildlife habitats located within Central Park. This report was prepared using information gained from field reconnaissance, records from the California Natural Diversity Data Base (1991), a review of biological literature (Smith and Berg, 1988; Holland, 1986), previous biological reports of the project area (DKS Associates, et. al., 1991), review of recent and historic aerial photographs of the project area (1:2,400), consultation with the California Department of Fish and Game (Palmisano, 1991), and consultation with the U.S. Fish and Wildlife Service (Nagano, 1991).

Regional

The present City of Fremont is located on the southeast side of San Francisco Bay on the alluvial fan at the base of Mission Peak. Fremont is situated at the toe of the western slope of the Diablo Range of the inner Coast Ranges of central California. The maximum annual temperature is 68^{o} and the minimum annual temperature is 47^{o}. The mean annual rainfall is approximately 18 inches and falls mainly between October and April (U.S. Department of Agriculture, 1981). The rate of precipitation is exceeded by the rate of potential evaporation. The region has a Mediterranean climate with cool, wet winters and warm, dry summers. The western slopes of the hills are grassland with riparian trees and scrub in the drainages. At lower elevations in the few non-urban areas the grassland borders wide, flat plains covered with salt marsh or converted to salt evaporation ponds.

Local

Lake Elizabeth is a man-made lake (approximately 80 acres in extent) excavated from a portion of Stivers Lagoon, a naturally occurring sag pond and freshwater marsh. This pond formed directly east of the Hayward fault and may be the result of the western flow of water out of aquifers east of the fault which have been dammed and broken by the faulting. Mission Creek and an unnamed drainage from the western side of Mission Pass combine to form ACFC Line L which flows between Lake Elizabeth and Stivers Lagoon and floods into both these bodies during peak storm runoff. Line L-1 enters the site at the southeast corner approximately 100 feet from where the Hetch Hetchy aquaduct enters. This small creek passes through the trees and joins Line L in the vicinity of Stivers Lagoon kiosk.

Historic alterations in the land use and topography of the middle elevations (50 to 400 feet MSL) of the watershed of these two creeks have occurred. Mission San Jose was founded 2 miles from here in 1797. San Jose was a richly productive Mission and in 1808 there were 1821 neophytes living here (Hittell, 1898). When secularized in 1834, the Mission owned 10,000 head of cattle, 4000 horses, and 12,000 sheep (Hildrup, 1909). United States Geologic Survey (USGS) Niles 7.5 minute quadrangle map shows several small water impoundments and topography which indicates that the stream courses had been diverted from their original beds. It is believed that the major stream course changes near and within Stivers Lagoon occurred during the construction of the Hetch Hetchy aquaduct which was completed in 1934 (Wing, 1951).

Lake Elizabeth was constructed between May 1968 and April 1969 and holds water in part because it is excavated out of a naturally occurring clay layer on the surface of the alluvial fan. Below this relatively impermeable clay layer is the gravel of an aquifer; if the clay layer is breached this could result in draining the water from the lake to the aquifer (Engle, 1991). Evidence of locally elevated groundwater (ranging in depth from 5 to 20 feet below the surface) in the vicinity of Lake Elizabeth and Tule Pond is cited to support the belief that these bodies do recharge the aquifer (DKS Associates, et. al.,1991). The banks of the lake are clad with concrete and riprap to prevent erosion from wind-driven waves. The smaller swim lake was built at the same time, the surface of the water is at an elevation 56 to 57 feet MSL, and it is concrete lined (USGS, 1985). Water is pumped from City wells in order to fill the swim lake, keep the water level between 49 and 51 feet MSL in Lake Elizabeth and to irrigate the turf which covers the picnic area of Central Park (approximately the southwest 1/5 of the park) between the lake and Paseo Padre Parkway and the baseball diamonds on the north side. There is an island, approximately 150 feet wide by 350 feet long, in the southeastern portion of the lake.

Water Supply and Quality

The wells pump an estimated 970 gallons per minute for a total of 407 Acre Feet per year (Hayes, 1991a). No water intentionally enters Lake Elizabeth from the Creek except during flood periods (as a flood control measure) because of their higher bacterial count relative to the lake. This high fecal coliform count is correlated with the number of birds (gulls, coots, ducks and geese) present (Engineering Science, 1990). The City well serving the lake is approximately 150 feet deep (Bliss, 1991) and pumps water which is of good quality. The well draws from an aquifer of the Niles subarea of the South Bay Water Basin and is located to the east of the Hayward Fault and thus not in the zone where salt water intrusion has occurred. The basin is artificially recharged with water coming down Alameda Creek and with imported water. The water contains some Manganese and Boron compounds (Hayes, 1991b). The study cited above (Engineering Science, 1990) also found specific conductance of the water in the Creek to range between 400 and 1700 and in the Lake between 1100 and 1800 umhos at 25^{o} C. The Creek tends to have greater turbidity and bacterial counts but lower amounts of dissolved solids (salinity) than the Lake. Both lake and creek would be classified as oligohaline ["distantly salty"] brackish which spans salinity ranges of 0.5 to 5 parts per thousand (specific conductance from 800 to 8000 umhos at 25^{o} C) (Cowardin, et. al., 1979). Because of high evaporation rates both the Lake and sediments in the marsh may continue to become more saline over time.

Importance of Stivers Lagoon Marsh Complex

The importance of Stivers Lagoon marsh, Mission Creek and Lake Elizabeth, Central Park and the Fremont Civic Center as a biological, educational and recreational nexus for the community may be at times overlooked. The city has only been incorporated for approximately 30 years and for 15 to 20 of the past years Stivers Lagoon Marsh has been used for public education. In 1991, one-thousand Fremont students visited the kiosk and marsh. Park Rangers with the Fremont Recreation and Leisure Services conduct 30 students plus one teacher and at least 2 other adults through the marsh and forest. The Service is offered to all schools in Fremont from March through June and there are on the average 4 to 6 tours per week. These visits last from 45 minutes to one hour. Occasionally teachers request a pre-tour lesson on some specific aspect of biology such as food chains. There has been good community support for this program as evidenced that the fact that the same two rangers have been teaching the program for 12 and 13 years.

Usually much of the teaching is done by way of games. An example is a game where the students are given tools such as chop sticks or pliers and are told to pretend that they are birds and the tools are their beaks. Other sensory games are used to get students to think about how animals function to find their young once they are separated (Skaling, 1991). Scouting groups use the Lagoon and Lake and during the summer a program worked with 60 Junior Rangers in a Recreation and Leisure Services class.

Natural Communities

The following describes the existing natural communities in the project area (see Figure 3.8-1).

Open Water

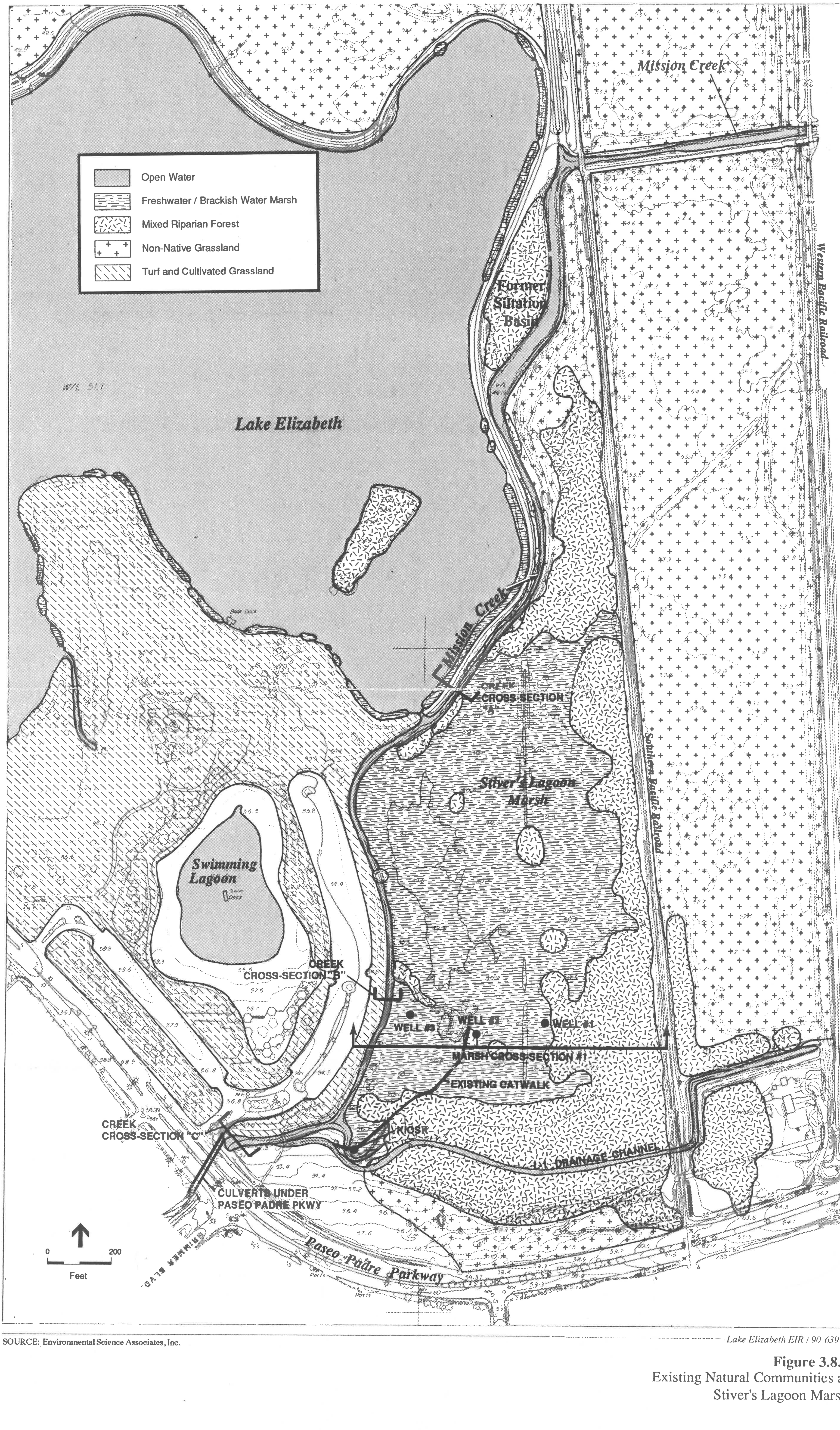
The waters of Lake Elizabeth supports a rich mixture of one celled algae such as diatoms and probably a number of plants such as duckweed, *Lemna sp.*, and pondweed, *Ruppia maritima*. Some cattails, *Typha sp*, and tules, *Scirpus acutus*, grow along the bank at the water's edge. These plants have rhizomes and roots which tend to bind the sediment of the bank together and slow the process of erosion.

Freshwater/Brackish Marsh

All marshes are considered "rare" enough to be included in the California Natural Diversity Database (CNDDB) which is kept by the California Department of Fish and Game (CDFG) to record occurrences of plants, animals and habitats considered special in some way to the biologists who are charged with the responsibility for these resources.

Stivers Lagoon Marsh consists largely of Coastal and Valley Freshwater Marsh plant species and exists in a relatively (physically) undisturbed condition. The dominant species is the native tule or hardstem bulrush, *Scirpus acutus*, which grows in an almost pure stand on the areas of lowest (49.5 feet NGVD) elevation. Most of the other dominant plants in the marsh are also native species. In depressions where water ponds for longer periods a pink flowered knotweed, *Polygonum coccineum*, grows and on the higher mounds are clumps of arroyo and polished willow, *Salix lasiolepis*, and *S. laevigata*, Douglas baccharis, *Baccharis douglasii*, and western goldenrod, *Solidago occidentalis*.

The higher ground (50.5 to 51 feet NGVD) has become dryer is recent years, probably from a general lowering of the groundwater due to the drought and flood control measures. The black color of the hydric sediments (clays, silts and organic material) which make up the soil of this wetland has not been covered with the lighter colored silts from surface flooding. A fine white crust on the black soil is evident in some high areas due to salt deposits. Sediments have not been depositing on the surface, therefore, drier marsh conditions apparently result from decreased surface groundwater availability rather than increased elevation. As the sediments have dried



SOURCE: Environmental Science Associates, Inc.

Figure 3.8.1
Existing Natural Communities at Stiver's Lagoon Marsh

non-native species such as fuller's teasel, *Dipsacus fullorum*, and bristly ox tongue, *Picris echioides*, have successfully invaded the upper marsh areas and are dominant in some areas.

The channel in which Mission Creek flows between the Lake and marsh has been created by excavation but probably functions as a more natural habitat than its previously straight channeled condition. There is a small, shallow channel running from north to south through the marsh which was excavated during construction of the lake. A catwalk extends northeast from the kiosk into the marsh. A second channel was excavated (before 1983) which connects Mission Creek and a small pond created at the end of this catwalk. The pond bottom is currently covered with cocklebur, *Xanthium strumarium* var. *canadense*, a cosmopolitan weed of moist areas. The channel that connects the pond to Line L or Mission Creek is currently filled with silt and lined with willows.

Mixed Riparian Forest

Although located in coastal California and not in the Central Valley, the riparian area at the southeast corner of Stivers Lagoon marsh is most similar in species composition to Great Valley Mixed Riparian Forest (Holland, 1986). Because of the long history of land use, some of the species may have been introduced from other areas of California. The tree canopy consists of arroyo and polished willow, Fremont cottonwood, *Populus fremonti*, and California black walnut, *Juglans hindsiana*. The understory is California blackberry, *Rubus ursinus*, and poison oak, *Toxicodendron diversilobum*. Sandbar willows, *S. hindsiana*, are found at the open edge of this riparian forest with an understory of wooley sedge, *Carex lanuginosa*, baltic rush, *Juncus balticus*, pink smartweed, and lippia, *Lippia nodiflora*. The individual plants of this community are reported to be young, having grown within the last 20 years (Hayes, 1991a) but aerial photos (Pacific Aerial Survey, 1963, 1973, 1983, 1990) demonstrate that "hydric" or at least dark colored soils developed in the area of Stivers Lagoon more than 30 years ago.

Grassland

There are large areas of turfgrass planted around Lake Elizabeth that are used by the community residents as a picnic and recreational area. The ballfields are also planted with cultivated grass species.

There are areas of non-native grass consisting of wild oats, *Avena* sp., ripgut brome, *Bromus diandrus*, soft chess, *B. mollis*, and Mediterranean and hare barley, *Hordeum hystrix* and *H.*

leporinum. Also in these ruderal fields are the "weedy" forbs such as mustard, *Brassica* sp., fennel, *Foeniculum vulgare*, poison hemlock, *Conium maculatum*, and yellow starthistle, *Centaurea solstitialis*,. In some of the marginal areas that occur near the kiosk have a sparse covering of salt-tolerant species such as salt bush, *Atriplex patula* ssp. *hastata*, salt grass, *Distichlis spicata*, and alkali mallow, *Sida hederacea*.

Wetlands

Wetland Protection Regulatory Framework

Wetlands are defined by the Federal Register (1982) and the Environmental Protection Agency as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Three criteria, as established by the Corps of Engineers Wetlands Delineation Manual (1987) (wetland vegetation [hydrophytes], wetland [hydric] soils, and hydrology) are considered when determining whether an area may qualify as a wetland potentially under Corps jurisdiction.

Section 404 of the Federal Clean Water Act regulates discharge of fill material into "waters of the United States," which include wetlands. The U.S. Army Corps of Engineers (Corps) must issue a permit for any project which proposes filling of wetlands between one and ten acres. For filling of less than one acre, provided the conditions of the Nationwide Permits are met, no formal notification may be required and a Nationwide Permit may be granted. In addition to Corps regulatory authority over "Waters of the United States," the California Department of Fish and Game has authority to oversee work in streams pursuant to Fish and Game Code 1601-1603. A landowner or agency proposing to significantly alter the natural flow of a stream, significantly change its bed or bank, including bridging, or to use any material from the streambed, must enter into a "Streambed Alteration Agreement" with the CDFG (Fish and Game Code Sections 1601-1603). Refer to Appendix D for additional wetland protection regulatory framework.

Wetland Delineation Survey Methodology

Huffman and Associates, Inc. conducted a preliminary wetland delineation of the area extending from the outside edge of the fitness trail (on the north side Lake Elizabeth) north to Stevenson Boulevard on June 18, 1991 (Huffman and Associates, Inc., 1991). This delineation utilized both the 1987 "Corps of Engineers Wetlands Delineation Manual" and the 1989 "Federal Manual for

Identifying and Delineating Jurisdictional Wetlands" to determine the extent of wetlands within this area. A total of ten soil pits were dug with a backhoe and detailed observations pertaining to hydric soils, hydrology, and hydrophytic vegetation were noted. Refer to Appendix E for the full wetlands delineation performed by Huffman and Associates (1991).

Wetlands Delineation Survey Results

The results of this assessment reveal that, subject to confirmation by the Corps, a total of approximately 0.01 acres of wetland were identified in the grassy area north of Lake Elizabeth that may be subject to Corps jurisdiction. Potential wetlands identified include three small areas serving as sedimentation ponds for runoff water which collects before it empties into drainpipes at the edge of the fitness trail and then into Lake Elizabeth. Lakeshore alternatives 1 through 5 will result in an undetermined amount of fill (e.g., rip-rap, concrete sheet piling, dock extension) within Lake Elizabeth. In addition, placement of a weir or other structures within the Stivers Lagoon area will contribute to the filling of wetlands potentially under the jurisdiction of the Corps.

Because it is unclear at this time the extent to which potential jurisdictional wetlands may be filled, the City of Fremont will more precisely determine the amount of fill required/expected and coordinate with the Corps regarding specific permit requirements pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. If it is determined that less than one acre of wetlands potentially under the jurisdiction of the Corps will be filled due to implementation of the proposed projects no formal notification to the Corps is required.

Special Status Plant Species

Special status species include those listed by the Federal or State governments as endangered, threatened, rare, or candidate for listing, designated by the Federal government as a sensitive species, designated as a special concern or fully protected species by the state of California, or listed by the California Native Plant Society (CNPS) as rare or endangered. These species have varying degrees of legal protection under both Federal and California Endangered Species Acts (FESA and CESA), and recognition under the California Environmental Quality Act (CEQA). The United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) share responsibility for management and protection of biological resources in the proposed project area. Under separate State and Federal legislation, each agency conducts a detailed review of any project that could affect a special status plant or animal species. If a listed species may be affected, the lead agency must initiate a formal consultation with the USFWS and/or CDFG under CEQA, as applicable under Federal or State law. Refer to Appendix D for additional special status species regulatory framework.

Based on analysis of previous studies conducted within the project area concerning special status plant species' presence; consultation with the CNDDB (CNDDB, 1991), the USFWS, the CDFG; pertinent scientific literature about the sensitive species of concern; and review of CNPS literature a list of special status plant species known to occur within the general region of the project area and potentially occurring within the project area itself was compiled.

For each of the sensitive plant species, habitat requirements were assessed and compared to the habitats present within Central Park. Factors such as on-site habitat quality and known geographic distribution of individual species were also considered in evaluating the likelihood of sensitive species occurrence.

Special Status Plant Species Descriptions

The following provides a brief summary description of the special status plant species potentially occurring on the project site, including distributional, morphological (form and structure), and habitual information on each.

Point Reyes bird's beak, *Cordylanthus maritimus* ssp. *palustris*, a Federal Candidate (2), is a diffusely branched annual herb in the figwort family (Scrophulariaceae). It produces two-lipped flowers in a spike from May to October. The upper lip forms a beak with a yellowish tip, while the lower composes a purplish pouch. This species, once common to north-central Coastal Salt and Brackish Marshes, is now restricted to only a few locations from Point Reyes to West Berkeley and south. Marginal habitat for this species within the project area includes the degraded marsh area located east of Lake Elizabeth. If implemented, the marsh enhancement program for this area would increase habitat value for this species.

Hoover's button-celery, *Eryngium aristulatum* var. *hooveri*, a Federal Candidate (2), is a member of the carrot family (Umbelliferae). This species is a stout or slender, erect to prostrate perennial that produces small greenish flowers form May through August. Hoover's button-celery typically grows in or near marsh lands and summer flats of vernal pools. Because of the degraded nature of the pool and marsh areas within the park, these areas provide only marginal habitat for this species. If implemented, the marsh enhancement program should increase habitat value for this species within the park.

Delta tule-pea, *Lathyrus jepsonii* ssp. *jepsonii*, while not currently listed as endangered or threatened under the Federal Endangered Species Act (FESA), is under review by the U.S. Fish and Wildlife Service as a Candidate 2 for listing by the Federal government. It is also listed by the California Native Plant Society as a List 1B species. This member of the pea family (Fabaceae) is a climbing, herbaceous, glabrous perennial ranging from 1 to 3 meters in height. The vinelike stems have broadly winged margins along the internode stem sections which give the stem a flattened appearance. From May through June, this species produces racemes with 10-20 crimson to rose-purple flowers, each flower measuring 2 centimeters in length. This species grows in or near marsh lands in large colonies on drier ground, usually between sea level and 5 feet in elevation. Central Park is believed to be outside the range of this plant. If implemented, the marsh enhancement program should increase habitat value for this species within the park.

Contra Costa goldfields, *Lasthenia conjugens*, commonly inhabits vernal pools, alkali sinks, and surrounding grasslands of Solano, Contra Costa, Napa, and Santa Clara counties. A Federal candidate (2), the Contra Costa goldfield is a slender erect annual that ranges from 1-4 decimeters in height. During its March through June flowering period, this species produces yellow flowers in terminal heads. Members of this species have been found inhabiting vernal pools between sea level and 700 feet in elevation. Suitable habitat for this species may include low areas within the grassland community that seasonally pond water. Although a survey for this species would normally be recommended this area is subject to regular discing and disturbance which would discourage the establishment of individuals of this species.

IMPACT AND MITIGATION MEASURES

Significance Criteria

The California Environmental Quality Act (CEQA) Guidelines (Appendix G) specifies that a project will normally have a significant impact on the environment if it will physically impact communities or species protected by adopted environmental plans and goals of the community where it is located. Additionally, the Guidelines (Appendix G) provide examples of impacts that normally are considered significant, including those that would:

- "substantially affect a rare or endangered species of animal or plant or the habitat of the species";

- "interfere substantially with the movement of any resident or migratory fish or wildlife species";

- "substantially diminish habitat for fish, wildlife or plants".

The Guidelines (Section 15380) further define "rare or endangered species" as those species officially listed as threatened, endangered, or rare under Federal or California law. In addition, the Guidelines provide that plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if:

- its survival and reproduction in the wild are in immediate jeopardy,

- if the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens, or

- if it is likely to become endangered in the foreseeable future and maybe categorized as "threatened" under Federal law.

However, recent case law (Sierra Club vs. City of Gilroy, 1990 222 Cal. App. 3d.30, 47) may be interpreted as providing discretion to the lead agency as to whether a species is to be considered "rare or endangered" despite meeting one or more of these criteria.

Given these standards, a project would be considered to have a significant adverse impact on biological resources if it would result in substantial disruption to, or destruction of, any special status species, their habitat, or breeding grounds. Special status species include those plants and animals that are state and/or federally listed as endangered or threatened; or are category 1 or 2 candidates for Federal listing; or are considered species of special concern or fully protected species as designated by the California Department of Fish and Game; or are on lists 1A, 1B, or 2 published by the California Native Plant Society.

A project would also be considered to have a significant impact if it would result in a substantial loss of important plant or animal species; would cause a change in species composition, abundance or diversity beyond that of normal variability; or would directly result in the loss or measurable degradation of a significant Natural Community; or would indirectly result in the measurable degradation of sensitive habitats (e.g., wetlands, riparian corridors, serpentine grasslands) due to development by the introduction of erosion or runoff materials.

Impacts to a particular biological feature would also be considered significant if the resource is either identified by the City of Fremont General Plan (such as streamsides and habitats of rare or endangered species).

Impacts were generally considered insignificant if the habitats and species affected are common and widespread in the region and the State. Examples include upland areas supporting Non-Native Grassland.

<u>Natural Communities</u>

Open Water: Impacts to Open Water due to implementation of the proposed projects include significant adverse short-term impacts due to the potential introduction of deleterious substances and degradation of water quality. Because impacts incurred will differ with each project, each alternative is discussed separately below.

Dredging of Lake Elizabeth

Dredging in Lake Elizabeth would result in the removal of diatoms and plants such as duckweed and pondweed from the water column, and cattails and tules from the bank at the water's edge. Additionally, this action would temporarily decrease water quality of the lake due to the suspension of solids and deleterious materials (e.g., silt, fuel constituents) in the water column resulting in a decrease in visibility and available oxygen. The combination of reduced algal and plant species for food and decreased water quality would result in a decrease of habitat and quality for common aquatic animal species. The impacts of lake dredging would be temporary but significant. Habitat quality of the lake is expected to return relatively rapidly to pre-dredged conditions.

> <u>Mitigation Identified by this Report:</u> Construction practices should be utilized that minimize impacts to the lake (e.g., staging areas should be located away from the lake's edge). Avoid discharge (to the extent possible) of any and all project related materials and fluids into the lake by installing silt fences or barriers in the area of disturbance to prevent degradation of water quality and associated algal, aquatic plant, and wildlife habitat.
>
> <u>Level of Significance after Mitigation</u>: Less than significant.

Dock Extension

Construction of a new dock (approximately 120 feet long and covering 1,200 square feet) could degrade water quality due to an increase of suspended solids and the possible introduction of deleterious substances into the water column along the lake's western shore. Because of the relatively small scale of this project component, impacts of this nature would not be considered significant.

Mitigation Identified by this Report: None required.

Boathouse Demolition/Removal:

The removal of the existing boathouse adjacent to the lake could result in indirect impacts to the lake's water quality due to the accidental introduction of deleterious substances such as silt, fuel constituents, and undefined solids during demolition activities. Impacts of this nature would be considered potentially significant.

Mitigation Identified in this Report: Construction practices should be utilized that minimize impacts to the lake (e.g., staging areas should be located away from the lake's edge). Avoid discharge (to the extent possible) of any and all project related materials and fluids into the lake by installing silt fences or barriers in the area of disturbance to prevent degradation of water quality and associated algal, aquatic plant, and wildlife habitat. Construction should generally take place during the dry season.

Level of Significance after Mitigation: Less than significant.

Sailboard Beach on Lake Elizabeth

The creation of a sand or gravel sailboard beach along the western portion of the lake would result in the direct removal of a few non-native trees and turf planted as landscaping. Impacts during the construction phases of this project would be similar to those discussed previously (with regards to a potential short-term decrease in water quality) except that no wetland vegetation would be removed. The removal of non-native landscaping plants in conjunction with the potential short-term decrease in water quality would be considered an adverse, but not significant, impact.

Freshwater/Brackishwater Marsh

Impacts to Freshwater/Brackishwater Marsh vegetation due to implementation of the proposed projects include short-term adverse impacts due to direct removal of wetland vegetation and long-term beneficial impacts due to an increase of potential wetland plant colonization sites and habitat quality. Because impacts incurred will differ with each project, each alternative is discussed separately below.

Shoreline Rehabilitation

Alternative 1 - Vegetated Rock Rip-Rap: The creation of a graded 3:1 slope and placement of rock rip-rap and soil stabilization fabric would result in the temporary removal of approximately 2,450 square feet of aquatic vegetation (primarily cattails and tules) from the eastern shoreline and from the northwestern shore of the lake's island. Revegetation would be accomplished by establishing willow cuttings between the rocks and bulrush in a 10 to 15 foot band of shallow water immediately offshore. Revegetation would ultimately result in the long-term net increase of approximately 4,900 square feet of wetland habitat (total wetland vegetative habitat post construction would be approximately 7,350 square feet), resulting in a long-term beneficial impact.

Alternative 2 - Vertical Concrete Wall: The placement of a vertical concrete wall in areas of high erosion potential would result in an undetermined amount of fill in the lake, the direct removal of aquatic vegetation such as tules and cattails, and a temporary decrease in water quality of the lake in the immediate vicinity of the construction by increasing suspended solids resulting in decreased visibility and available oxygen and nutrients in the water column. The slope of the lake bottom would be graded to 10:1 offshore to provide a shelf of shallow water in which bulrush and other wetland vegetation could become established, thus resulting in an increase of vegetative structural complexity and habitat where vegetation establishment is successful.

Alternative 3 - Concrete Sheet Pile Retaining Wall: The driving of thick concrete sheet piles into the sediment along the lakes edge and placement of one to two feet of fill between the wall and the concrete sheet pile for an approximate distance of 800 feet in the vicinity of the boathouse would result in the fill of approximately 1,000 square feet (0.023 acres) of the lake on its western shore. Based on the significance criteria presented at the beginning of this section, impacts of this nature would be considered significant.

Alternative 4 - Concrete Planters Within Existing Grouted Rip-Rap: This alternative would increase wetland vegetative structural complexity and habitat value by installing three-foot diameter planters used to establish trees (e.g., willow species) within the existing grouted rip-rap along the northern shore of the lake resulting in a long-term beneficial impact. Potential adverse impacts due to implementation of this alternative could include the accidental introduction of deleterious substances (e.g., silt, rip-rap, fuel constituents) into the water column in the vicinity of the construction.

Alternative 5 - Vegetated Shoreline: The alteration of the lake bottom to create a slope of 10:1 or less would result in the short-term elimination of aquatic vegetation and degradation of water quality due to an increase of suspended solids and the possible introduction of deleterious substances into the water column. Although adverse short-term impacts may occur the shelf, which would be a minimum width of ten feet, would increase habitat suitable for the establishment of wetland vegetation along the southern and a portion of the northwestern shores resulting in a long-term beneficial impact.

Alternatives 1 Through 5: Each of the lakeshore alternatives would result in a temporary decrease in water quality of the lake in the immediate vicinity of the construction by increasing suspended solids and other deleterious substances (e.g., fuel constituents) resulting in decreased visibility and available oxygen and nutrients in the water column. Based on the significance criteria presented at the beginning of this section impacts of this nature would be considered significant.

Mitigation Identified in this Report: Construction practices should be utilized that minimize impacts to the lake (e.g., staging areas should be located away from the lake's edge). Avoid discharge (to the extent possible) of any and all project related materials and fluids into the lake by installing silt fences in the area of disturbance to prevent degradation of water quality and associated algal, aquatic plant, and wildlife habitat. Construction should generally take place during the dry season.

The City of Fremont should be responsible for implementation of a five-year monitoring program to ensure that lake water quality returns or supersedes present lake standards. Yearly reports on the status of Water quality should be submitted to the City of Fremont and the RWQCB. If upon completion of the five year monitoring period lake water quality is determined to have deteriorated (as compared to present standards) by the monitor and the RWQCB, the City should be responsible for any additional measures necessary to improve lake water quality to its pre-dredged/construction quality.

Level of Significance after Mitigation: Less than significant.

Restoration of Stivers Lagoon Marsh

The Stivers Lagoon Marsh area adjacent to Lake Elizabeth, while still providing important habitat values, shows signs of declining wetland character (e.g., the proliferation of ruderal wetland species such as Fuller's teasel and cocklebur) due to changes in its hydrologic regime. A number of improvements have been proposed to enhance the wetland character and quality of this marsh which include the following:

- Definition of Mission Creek channel throughout the marsh,
- Placement of a flashboard weir or a weir gate in Mission Creek at the downstream end,
- Pumping ground water to maintain a marsh water level of 49.5 to 50 feet NGVD,
- Excavation of a shelf from the east bank of the existing siltation pond, excavation of a bench along the west side of Mission Creek,
- Excavation of a deep, long pond,
- Control the fuller's teasel (Dipsacus fullorum) and bristly ox-tongue (Picris echioides) by mowing and mulching with black plastic sheets.
- As a last resort, use the herbicide Rodeo which is an aquatic formulation of glyphosate (53%) with no surfactant to eliminate ruderal wetland plant species.
- Transplanting of rhizome sections to the new pond and the two low areas,
- Planting of riparian species along the creek on the new bench,
- Enlargement and enhancement of the ponds around the kiosk,
- Continuation of the existing catwalk,
- Creation of a second catwalk through the center of a large willow cluster, and
- Creation of a path parallel to the proposed berm.

Because each of the above proposed improvements would result in both short-term adverse and long-term beneficial impacts, the impact discussions have been grouped and separated into these categories below.

Short-Term Impacts: Short-term adverse impacts due to construction activities within Stivers Lagoon Marsh Complex include the direct removal of ruderal and native wetland vegetation due to heavy equipment, excavation, and rise in the water level, the placement of fill within the marsh due to weir gate and catwalk installation, the possible introduction of deleterious substances such as fuel constituents and herbicides into the marsh complex, and disruption of the current hydrologic regime. Impacts of this nature would be considered significant.

Long-Term Impacts: Long-term beneficial impacts of the proposed Stivers Lagoon Marsh Enhancement Plan with regards to vegetative resources include elevation of the water table, increased water circulation, an increase in native wetland plant cover, enhancement of special status plant species habitat, and elimination of ruderal wetland species (e.g., Fuller's teasel, bristly ox-tongue, and cocklebur). While the expansion of the catwalk and path system within the marsh has been designed to increase public access while minimizing marsh disturbance by steering visitors away from sensitive areas and unauthorized paths, increased human disturbance within this complex may discourage some wildlife species from utilizing this habitat and the catwalk will create shade which may cause some existing vegetation to die (refer to Section 3.9 Wildlife for further details concerning this impact).

> Mitigation Proposed in Plan: The project proposes to restore wetland vegetation along portions of Lake Elizabeth by planting of rhisomes, cuttings, or natural re-establishment. Additionally, the Stivers Lagoon Marsh Enhancement Plan, if implemented, would result in the long-term increase acreage and quality of Freshwater/Brackishwater Marsh vegetation within Central Park. Implementation of this plan would help to reduce project related impacts to marsh vegetation due to the proposed projects (see Appendix C).
>
> A monitoring program should be implemented by the City of Fremont to ensure the success of restored marsh areas (both within Stivers Lagoon and along the lake's edge). This plan should monitor the establishment of marsh vegetation, habitat quality and quantity for a period of five years and should be conducted by a qualified biologist. Yearly reports on the status of marsh areas should be submitted to the City of Fremont and the CDFG. If upon completion of the five year monitoring period establishment of marsh vegetation is deemed unsuccessful by the monitoring biologist and the CDFG, the City should be responsible for additional restoration and subsequent monitoring.
>
> Level of Significance after Mitigation: Less than significant.

Mixed Riparian Forest

Short-term impacts to Mixed Riparian Forest due to construction activities within the Stivers Lagoon Marsh Complex may include the direct removal of isolated species and/or soil and root compaction due to heavy equipment, excavation, and the placement of fill within the marsh due to weir gate and catwalk installation. Long-term beneficial impacts due to the implementation of this plan include increased water circulation and elimination of ruderal wetland species (e.g., Fuller's teasel, bristly ox-tongue, and cocklebur). Some willows may be lost as a result of high ground water. Short-term impacts discussed above would be considered significant, while in the long-term, implementation of this plan would result in a beneficial impact.

Mitigation Identified in this Report: Construction practices should be utilized that minimize impacts to mature forest species (e.g., construction/demolition staging areas should be located away from trees, minimize removal of mature vegetation). Construction should generally take place during the dry season.

Mitigation for the direct removal of mature forest species should include a 3:1 in-kind replacement of all understory species (e.g., for each understory plant removed, three plants of the same species should be planted for mitigation) and 5:1 for all removed canopy species (Note: this does not include replacement of non-native forest species). Replacement species should be planted in similar habitat within the Stivers Lagoon Marsh area and should be monitored for establishment success for a period of five years by a qualified biologist. Yearly reports on the status of replacement species should be submitted to the City of Fremont and the CDFG. If upon completion of the five year monitoring period establishment of replacement individuals is deemed unsuccessful by the monitoring biologist and the CDFG, the City should be responsible for additional replacement revegetation and subsequent monitoring.

Level of Significance after Mitigation: Less than significant.

Grasslands

Deposition of dredged lake sediments and subsequent development of a turf area north of Lake Elizabeth would result in the displacement of non-native grassland habitat. Because of the highly disturbed nature of this area due to regular discing, this habitat provides little habitat for special status plant species. Impacts to wildlife as a result of this action include the direct destruction of common small mammals and burrows and a reduction of potentially suitable foraging habitat for geese, herons, wading birds, and raptors in the area (Refer to Section 3.9 Wildlife for complete impacts to wildlife species). Similarly, the creation of siltation ponds in the grassy area north of Mission Creek and northeast of Lake Elizabeth would eliminate grassland habitat currently supporting non-native plant species. Because these actions would impact only common plant species, deposition of lake sediments and the creation of sedimentation ponds north of Mission Creek is considered a less than significant impact.

Mitigation Identified by this Report: None required.

Wetlands

Deposition of Dredged Lake Materials

Deposition of dredged lake sediments and subsequent development of a turf area north of Lake Elizabeth would result in the fill of approximately 0.01 acres of wetland potentially under the jurisdiction of the Corps. Because of the highly disturbed nature of this area due to regular discing this habitat provides little habitat for wetland and other plant species of concern. Because this action will impact only common plant species in conjunction with the small size and degraded nature of potential wetlands to be filled, deposition of lake sediments in this area is considered an adverse but not significant impact.

> Mitigation Identified by the Report: None required.

Restoration of Stivers Lagoon Marsh

Short-term adverse impacts to wetlands due to construction activities within Stivers Lagoon Marsh Complex include the placement of fill within the marsh due to weir gate and catwalk installation, the possible introduction of deleterious substances such as fuel constituents and herbicides into the marsh complex, disruption of the current hydrologic regime, direct removal of ruderal and native wetland vegetation due to heavy equipment, excavation, and rise in water level. Impacts of this nature would be considered significant.

Long-term beneficial impacts associated with this plan with regards to wetlands include elevation of the water table, increased water circulation, an increase in native wetland plant cover, enhancement of special status plant species habitat, and elimination of ruderal wetland species (e.g., Fuller's teasel, bristly ox-tongue, and cocklebur).

> Mitigation Identified in this Report: Because implementation of the Stivers Lagoon Marsh Enhancement Plan will require work within Mission Creek, the City of Fremont should enter into a "Streambed Alteration Agreement" (SAA) with the CDFG pursuant to Fish and Game Code 1601-1603. This agreement is necessary to allow alteration (generally within 50 feet of the top of bank of a stream or creek) and/or bridging of creeks. The CDFG will only grant a SAA once all other permits (e.g. Corps) and certifications are obtained. Construction would not be permitted by the CDFG until a SAA is executed.
>
> Post construction, re-vegetate all disturbed areas along Mission Creek with appropriate California native species (See Appendix C - Stivers Lagoon Marsh Enhancement Plan

for further details). CDFG recommends replacement of removed or damaged riparian vegetation with members of the same species (if California native), or with appropriate California native species (When removed vegetation is non-native).

Avoid discharge of any and all construction or project related materials and fluids into Lake Elizabeth, Mission Creek, and associated wetlands to prevent damage to vegetation, water quality, and associated wildlife. A sediment erosion plan should be prepared by the project sponsor prior to the time that any project related activities proceed, focusing on measures to eliminate migration of sediment-laden runoff into waters and wetlands during all phases of project development and use.

Construction practices should be utilized that minimize impacts to wetland species (e.g., construction/demolition staging areas should be located away from wetlands). Construction should generally take place during the dry season.

Other preventative measures should be taken, such as use of signing, implementation of a monitoring program, and establishment of contingency plans, to avoid habitat degradation during both construction and operational phases of the proposed project.

The City of Fremont should be responsible for implementation of a five-year monitoring program to ensure that wetland restoration plans (i.e., Stivers Lagoon Marsh Enhancement Plan and Lake Elizabeth Shoreline Alternatives 1 through 5) are successful. Yearly reports on the status of wetlands quality should be submitted to the City of Fremont and the Corps. If upon completion of the five-year monitoring period restored wetland quality is determined to have deteriorated (as compared to present standards) by the monitor and the Corps, the City should be responsible for any additional measures necessary to improve wetland quality to that existing in the pre-dredged/construction period.

Because it is unclear at this time the extent to which potential jurisdictional wetlands may be filled, the City of Fremont will more precisely determine the amount of fill required/expected and coordinate with the Corps regarding specific permit requirements pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. If it is determined that less than one acre of wetlands potentially under the jurisdiction of the Corps will be filled due to implementation of the proposed projects no formal notification to the Corps is required.

<u>Level of Significance after Mitigation</u>: Less than significant.

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3.9 WILDLIFE

SETTING

Regional

The project site lies within the City of Fremont, which is located on the southeast side of San Francisco Bay at the toe of the western slope of the Diablo Range in Central California. Wildlife habitat within the City of Fremont is scarce, especially in the lowland areas. However, areas of natural vegetation supplying wildlife habitat do remain in isolated locations. Along the western slopes of the hills in the project vicinity are areas of grassland habitat with riparian trees and scrub in the drainages. At lower elevations in the few non-urban areas the grassland borders wide, flat plains with isolated freshwater marsh and closer to the Bay, salt marsh or salt marsh converted to salt evaporation ponds. Several streams and creeks begin in the hills, flow through the flat plains, and eventually empty into the Bay or salt marshes surrounding the Bay. Most of these streams and creeks have been channelized, which has resulted in a loss or degradation of riparian vegetation and a corresponding reduction in wildlife habitat value.

Local

The project site is primarily within the confines of Central Park, located on an alluvial fan at the base of Mission Peak in Central Fremont. The areas of proposed park improvements include the open water and immediate shoreline of Lake Elizabeth, a 20-acre undeveloped grassland area north of the lake, Stivers Lagoon Marsh to the southeast of the lake, an approximate three-quarter mile stretch of Mission Creek from the Union Pacific Railroad tracks to Paseo Padre Parkway, and a grassland area on either side of Mission Creek between the Southern Pacific railroad and the Union Pacific railroad. Central Park offers one of the few remaining open space areas offering quality wildlife habitat in the City of Fremont. The park is the southern extension of a wildlife corridor that extends north to Tule Pond, an approximate 6-acre waterbody located north of Walnut Avenue and east of the Fremont BART Station containing emergent vegetation and serving as a flood control basin for local urban runoff.

The undeveloped portions of Lake Elizabeth and Central Park support the following natural wildlife habitats: Open Water/Open Channels, Freshwater Marsh, Riparian Woodland, Non-native Grassland, Seasonal Wetlands, and Non-native Grassland. These habitats are discussed in more detail below.

Lake Elizabeth is a man-made lake (approximately 80 acres in extent) excavated from a portion of Stivers Lagoon, a naturally occurring sag pond and freshwater marsh that historically received water from Mission Creek and several smaller tributary creeks. Lake Elizabeth was constructed between May 1968 and April 1969 and holds water because it is excavated out of a naturally occurring clay layer on the surface of the alluvial fan. Below this relatively impermeable clay layer is the gravel of an aquifer; if the clay layer is breached this could result in the increased loss of water from the lake to the underlying aquifer (Engle, 1991). In several areas, the banks of the lake are clad with concrete and riprap to prevent erosion from wind-driven waves. The lake provides open water habitat and its edges provide limited freshwater marsh habitat where rip-rap and/or soil erosion are not present and natural vegetation remains (e.g. cattails). There is an island in the southeast portion of the lake approximately 150 feet wide by 350 feet long, supporting riparian woodland habitat.

A small pond (New Marsh) at the north end of Lake Elizabeth was constructed approximately five years ago and serves as a retention basin for park runoff. The pond provides open water habitat. The pond edges support patches of hardstem bulrush and cattails, providing a limited amount of freshwater marsh habitat.

To the southeast of Lake Elizabeth is Stivers Lagoon Marsh, approximately 40 acres in size. Stivers Lagoon is a relictual portion of a much larger body of open water which slowly dried and changed to an emergent wetland that is quite dry in the summertime. Stivers Lagoon Marsh is one of a number of freshwater marshes along the east side of the Hayward Fault; although degraded, it still provides valuable freshwater marsh habitat. While residential development as well as other urban development occur within close proximity to the natural wildlife habitats within Central Park, Stivers Lagoon Marsh is buffered on the east by undeveloped grassland, further increasing its isolation and wildlife habitat quality.

Both Mission Creek and an unnamed drainage from the western side of Mission Pass combine and are channelized to form Line L which flows between Lake Elizabeth and Stivers Lagoon and floods into both these bodies during peak storm runoff. Line L-1 enters the site at the southeast corner of the marsh (see Figure 3.8-1, Section 3.8). This small creek passes through the trees and joins Line L in the vicinity of Stivers Lagoon kiosk. Mission Creek provides open channel habitat and riparian woodland habitat along its banks.

The majority of the undeveloped areas of Central Park surrounding the lake are maintained turf, which provides non-native grassland habitat of limited value. The approximate 20-acre area of undeveloped grassland north of the Lake provides somewhat greater habitat value. Within this area are low areas providing seasonal wetland habitat.

Vegetation species found in each of these plant communities is presented in the Vegetation Section of this report. A sampling of common wildlife species known or expected to occur in the habitats discussed above are listed below.

Open Water/Open Channels

Birds observed diving in the open water of Lake Elizabeth are the pied-billed grebe, *Podilymbus podiceps,* western grebe, *Aechmophorus occidentalis*, double-crested cormorant, *Phalacrocorax auritus,* and belted kingfisher, *Ceryle alcyon*. Ducks feeding and resting on the water are cinnamon teal, *Anas cyanoptera*, bufflehead, *Bucephala albeola*, mallard, *Anas platyrhynchos*, and ruddy duck, *Oxyura jamaicensis*. Wading around the edges and feeding in the water are great blue heron, *Ardea herodias*, green-backed heron, *Butorides striatus*, great egret, *Casmerodius albus*, snowy egret, *Egretta thula*, and the black-crowned night heron, *Nycticorax nycticorax*. Barn swallow, violet-green swallow, and northern rough-winged swallows were observed recently foraging over the emergent vegetation and open waters of the lake and adjacent grassland (DKS Associates, 1991).

Both greater white-fronted goose, *Anser albifrons*, and Canada goose, *Branta canadensis*, utilize Lake Elizabeth and graze on the turf grass of Central Park in groups of up to 400 animals (Palimisano, 1991) The large numbers cause these species to be regarded as a park pest animal and attempts to manage the populations are being made. American coot, *Fulica americana*, moorhen, *Gallinula chloropus*, and sora, *Porzana carolina*, are present and dependent on the water of the lake. Cliff and barn swallows, *Hirundo pyrrhonota* and *H. rustica*, are dependent on the lake and open water and banks of Mission Creek for foraging territory and a source of mud for nest building. Shorebirds such as greater yellow-legs, *Tringa melanoleuca*, least sandpipers, *Calidris minutilla*, and dowitchers, *Limnodromus griseus* and *scolopaceus*, have been observed using the edges of the lake. Marsh wrens, *Cistothorus palustris*, and red-winged blackbird, *Agelaius phoeniceus*, nest and call from the tules and cattails at the water's-edge and yellow warbler, *Dendroica petechia*, and common yellowthroat, *Geothlypis trichas*, utilize the willows on the island and near the water (DKS Associates, 1991)

Channel catfish, *Ictalurus punctatus*, black bass, *Micropterus salmoides*, crappie, *Pomoxis sp*, carp, *Cyrinus carpio*, and occasional trout, *Salmo sp*, occur in Lake Elizabeth. (DKS Associates,

1991) Mosquitofish, *Gambusia affinis*, and crayfish, *Pacifastacus sp*, are found in Mission Creek, and small catfish, *Ictalurus sp*, may occasionally use the creek when water levels are high. The creek water is too warm for the trout to use this area (CH2MHill, 1991)

Freshwater Marsh

Bird species known or expected to use the freshwater wetlands of Stivers Lagoon Marsh for foraging, resting and in some cases, nesting include great egret, great blue heron, green-backed heron, probably the black-crowned night heron, marsh wren, common yellowthroat, American bittern, *Botaurus lentiginosus*, Virginia rail, *Rallus limicola*, and the red-winged blackbird. The common shorebirds, such as sandpipers, yellow-legs and dowitchers, black-necked stilt, *Himantopus mexicanus*, and killdeer, *Charadrius vociferus*, while not nesting in the area, would use the marsh for foraging and resting.

Common amphibians likely using both the freshwater wetlands and the grassy areas at higher elevations are the California newt, *Taricha torosa*, California slender salamander, *Batrachoseps attenuatus*, and western toad, *Bufo borea*. Two reptiles reported to have been present in the Stivers Lagoon area in the past are the rubber boa, *Charina bottae*, and garter snake, *Thamnophis couchi* [unknown subspecies] (Rusmisel, 1992).

Common mammals reported to have been observed using Stivers Lagoon marsh and Lake Elizabeth are raccoon, *Procyon lotor*, gray fox, *Urocyon cinereoargenteus*, red fox, *Vulpes fulva*, mule deer, *Odocoileus hemionus* , *columbianus*, muskrat, *Ondatra zibethica*, Virginia opossum, *Didelphis virginiana*, striped skunk, *Mephitis mephitis*, long-tailed weasel, *Mustela frenata* (Hayes, 1991) and a number of rodents including California vole, *Microtus californicus*, house mouse, *Mus musculus*, Norway rat, *Rattus norvegicus*, deer mouse, *Peromyscus maniculatus*, western harvest mouse, *Reithrodontomys megalotis*, and Botta pocket gopher, *Thomomys botta.*

The shorelines of both Lake Elizabeth and New Marsh support patches of emergent vegetation, providing habitat for birds including American coot, great egret, green-backed heron, great blue heron, and red-winged blackbird observed during recent surveys (DKS Associates, 1991).

Riparian Woodland

Mission Creek near Lake Elizabeth supports limited and somewhat degraded riparian woodland habitat as well as freshwater marsh habitat within the open channel. In contrast, Mission Creek between the Southern Pacific railroad and Union Pacific railroad is highly disturbed and, for the most part, while some wetland plants persist, is primarily vegetated with non-native herbaceous species. The general lack of riparian woodland habitat elsewhere along Mission Creek makes the riparian woodland habitat near Lake Elizabeth, even in its degraded state, of value as wildlife habitat.

High quality riparian woodland habitat in the Bay Area supports a wide variety of wildlife that are year-long residents. In addition, the forests provide essential cover, resting, and foraging areas for migratory birds that may be found here for only days or weeks at a time. Birds using the riparian trees for foraging, nesting and roosting include the violet-green swallow, *Tachycineta thalassina*, tree swallow, *T. bicolor*, northern rough-winged swallow, *Stelgidopteryx serripennis*, Anna's hummingbird, *Calypte anna*, northern flicker, *Calaptes auratus*, Nuttall's and downy woodpeckers, *Dendrocopos nuttallii* and *D. pubescens*, scrub jay, *Aphelocoma coerulescens*, bushtit, *Psaltriparus minimus*, and Swainson's thrush, *Catharus ustulatus*. Warblers, towhees, sparrow species, house finch, and goldfinches are some of the most common bird species observed regularly in the riparian forest.

Black-shouldered kite, *Elanus caeruleus*, and red-shouldered hawk, *Buteo jamaicensis*, are raptors who hunt from the riparian zone trees. Moist forest and riparian areas may provide habitat for the Alameda striped racer, *Masticophis lateralis euryxanthus*, the Pacific ringneck snake, *Diadophis punctatus amabilis*, and the arboreal salamander, *Aneides lugubris*.

Seasonal Wetland

Temporarily flooded grassland areas supporting seasonal wetland habitat such as occurs north of Lake Elizabeth provide foraging areas for waterfowl and shorebirds such as mallards, American coots, long-billed dowitchers, and black-necked stilts (DKS Associates, 1991).

Non-native Grassland

The turfgrass planted around Lake Elizabeth is used for grazing by both greater white-fronted goose, Canada goose and American coots. The non-native ruderal grassland in the area north of the lake, and on the east side of the railroad tracks is used by many insectivorous birds such as the northern shrike, *Lanius excubitor*, the black phoebe, *Sayornis nigricans* , and the Say's phoebe, *S. saya*. Common raptors such as red-shouldered hawk, red-tailed hawk, *Buteo jamaicensis*, and the American kestral, *Falco sparverius*, have been observed hunting in the grassland (ESA, 1991). This grassland is also grazed by the two goose species. Great blue heron have been reported hunting in the grassland; prey of the great blue includes Botta pocket gophers, fish, frogs and insects (Bent, 1963)

A number of rodents including California vole, house mouse, Norway rat, deer mouse, western harvest mouse, *Reithrodontomys megalotis*, and Botta pocket gopher are expected to used this grassland along with the common local reptiles and amphibians such as the western fence lizard, *Sceloporus occidentalis*, northern and southern alligator lizards, *Gerrhonotus coeruleus* and *G. multicarinatus*, and western toad.

North of Central Park directly south of the Fremont BART Station between Walnut Avenue and Stevenson Boulevard an active fox den was located (DKS Associates, 1991). Both red fox and grey foxes forage in the ruderal grassland in Central Park and may be occupying the den at different times (DKS Associates. 1991).

Special Status Species

Special status animal species include those listed by the Federal or State governments as endangered, threatened, rare, or candidates for listing, designated by the federal government as a sensitive species, or designated as a special concern or fully protected species by the state of California. The previous EIR section, "Vegetation and Wetlands" and Appendix D provides additional special status species regulatory framework. Most of the special status animal species within the Fremont vicinity are found in either serpentine or salt marsh habitats, neither of which occur within the project site. The Alameda whipsnake is found in chaparral or interior scrub, a habitat type that also does not occur within the project site. Special status species that are known or have the potential to occur within the project site require open water, freshwater marsh, riparian woodland, seasonal wetland, and/or grassland habitat for all or a portion of their life cycle. The following is a list of special status species known or expected to occur in the project areas.

This species list is based on the analysis of previous studies conducted within the project area concerning special status animal species' presence; consultation with the CNDDB (CNDDB,1991), the USFWS, the CDFG; and review of pertinent scientific literature.

Burrowing owl

The burrowing owl, *Athene cunicularia*, is a state Species of Special Concern, and is protected under the Migratory Bird Act. The burrowing owl is rare or absent in much of northern California. The South Bay area, which includes the City of Fremont, is considered to be one of this species remaining strongholds in northern California. Yet they are currently threatened in this area by loss of habitat to agricultural and urban development. Habitat requirements of the burrowing owls include: existing burrow (usually vacated ground squirrel burrows), elevated perches or low vegetation free of visual obstruction, and a high percentage of bare ground or ground with very low vegetation (CH2MHill, 1991). An area with a healthy ground squirrel population usually indicates potential burrowing owl habitat; the two species coexist in the same area harmoniously. The diet of the burrowing owl consists of large insects, small mammals and birds, and crayfish. Recent studies of burrowing owls found that their territory size varied from two to four acres, and that their re-use of a particular area, even the same burrow, was common from year to year. Relocation efforts have found that adults often return to their original site of capture, and if the site is developed, have been known to take up residence at an adjacent site when possible (CH2MHill, 1991). The ruderal grassland north of Lake Elizabeth supported breeding burrowing owls in 1989 and 1990. Burrowing owls were sighted in February-March of 1991 between the railroad tracks on either side of Mission Creek. As part of its weed control program, the City regularly tills the undeveloped grassland areas around the lake. While Park Rangers survey the park prior to each tilling and stake out active owl burrows, other ground squirrel burrows for future use are destroyed affecting nesting opportunities in future years. In general, urbanization of grasslands and subsequent destruction of ground squirrel colonies have been the major factors contributing to the demise of burrowing owls.

Tricolored blackbird

These birds are resident in California and occur most commonly in the Sacramento and San Joaquin Valley in freshwater marshes. The tricolored blackbird is currently a federal candidate (C2) species and was recently proposed for state listing as an endangered species (Kleinfelter, 1992). They prefer nesting sites in areas with heavy growth of cattails and bulrushes, and forage in grassland and agricultural fields. Nest building typically begins in early to mid-April with breeding activities continuing into early July. Tricolored blackbirds nest in colonies that at one time numbered as high as 200,000 individuals in vegetation over water. They feed their young 90 percent insects, clams, and snails. The adults feed on grain and weed seeds; thus, grasslands can provide an important habitat in addition to the marsh habitat (Ehrlich, 1988). In the1960's, before Lake Elizabeth was constructed, there were 10,000 pairs of tricolored blackbirds, *Agelaius tricolor*, reported nesting in the Stivers Lagoon marsh (Cogswell, 1991) These birds have suffered a precipitous population decline in California as a result of loss of habitat and efforts to get rid of them in the 1920's by poisoning them (Beedy, 1991). Approximately 10 to 12 individuals have been seen in recent years at Lake Elizabeth (Hayes, 1991). Tricolored blackbirds are particularly sensitive to disturbances during the nesting season by mammalian and avian predators. Poisoning, human disturbance, trace elements and pesticides are also potential causes of tricolored blackbird nest failures (Beedy and Hayworth, 1987)

Cooper's hawk

Accipter cooperii, a California Species of Concern (CSC), is a raptor who hunts from the riparian zone trees. Cooper's hawks have declined throughout California as a breeding bird, primarily as a result of habitat destruction in lowland riparian areas. Breeding occurs March through August with peak activity May through July (CDFG, 1990). Cooper's hawks have been observed foraging in the ruderal grassland and agricultural fields in the project vicinity and could forage in the ruderal grassland north of Lake Elizabeth (DKS Associates, 1991). They are also reported to use the riparian woodland of Stivers Lagoon.

Black-shouldered Kite

The kite, *Elanus caeruleus,* is listed by CDFG as a Species of Special Concern (CSC). Black-shouldered kites require partially open habitat for foraging, and trees for nesting and roosting (CDFG, 1990). The ruderal grassland north of Lake Elizabeth could provide foraging habitat, and the riparian woodland of Stivers Lagoon Marsh, nesting and roosting habitat. Kites have been observed in the project vicinity (DKS Associates, 1991).

Northern Harrier

Circus cyaneus, a CSC species, is found in marshes and grasslands throughout the year in California and have been observed foraging in the ruderal grasslands and agricultural fields in the project vicinity.(DKS Associates, 1991). The harrier has the potential to forage in the ruderal grassland north of the lake and between the railroads within the project site. It nests on the ground on shrubby vegetation, usually at the marsh edge. Destruction of wetland habitat, native grassland, and moist meadow, and burning and plowing of nesting areas during early stages of breeding cycle (April through July) are the major reasons for the decline of this species (CDFG, 1990).

Ferruginous Hawk

Buteo regalis, a candidate (C2) for federal listing as endangered on its wintering grounds and CSC species, is a winter resident of the grasslands and agricultural areas of southwest California. It searches for prey from low flights over open treeless areas, and roosts in open areas in a lone tree or utility pole (CDFG, 1990). The ferruginous hawk could forage in the ruderal grassland habitat north of the lake and/or between the railroad tracks.

Long-billed curlew

A federal candidate species, *Numenius americanus,* forages in ruderal grassland and agricultural fields during migration and in the winter time (CDFG, 1991). It was observed foraging in the ruderal grassland north of Lake Elizabeth in March of 1991 (DKS Associates, 1991). In addition, as many as 50 long-billed curlew are reported to use the picnic and sports turf areas, in Central Park, in the winter season. Concern for long-billed curlew populations are due to a continuing decline in the number of potential breeding areas in the dry prairies and meadows of western North America.

Sharp-shinned hawk

The sharp-shinned hawk, *Accipter striatus*, is a fairly common migrant and winter resident throughout California. The hawk often forages in openings at edges of woodland, hedgerows, brushy pasture, and shoreline, especially where migrating birds are found (CDFG, 1990). The sharp-shinned hawk could forage at the edges of Stivers Lagoon Marsh and riparian woodland. This hawk is a CSC species.

California tiger salamander

The California tiger salamander, *Ambystoma tigrinum californiese*, is currently a federal candidate (C2) for listing as endangered as a result of habitat loss. The salamander was once common in grasslands of California in the vicinity of temporary rain pools, ponds, streams, and lakes. During the short breeding season, primarily from December to February, these nocturnal creatures emerge for only a few weeks per year from their underground retreats in the adjacent grassland to lay their eggs in small clusters attached to vegetation in shallow water (CDFG, 1988). The salamander was commonly caught in Lake Elizabeth and the grassy areas which surrounded it as late as the 1950s prior to urbanization of the shoreline with paths and riprap, and increased human activity (Rusmisel, 1992).

San Francisco forktail damselfly

A federal candidate (C2) for listing as endangered, the San Francisco forktail damselfly's, *Ischnuara gemina*, preferred habitat consists of small seepages, shallow ponds, and sluggish streams in the San Francisco Bay Area. Wetland areas should be shallow and contain shorelines that are open, sunlit, and composed of low vegetation. Adults benefit from the presence of nearby areas of undisturbed grasslands and fields; these areas provide night roosting and important feeding areas for females and young males. This species of damselfly is threatened due to the loss of freshwater streams and marshes. Activities such as channeling streams, cleaning flood control channels, and installing underground culverts alter water flow, remove aquatic vegetation needed for egg laying and shelter, and reduce prey abundance. A recent survey for the San Francisco forktail damselfly along Mission Creek in the project area found no evidence of their presence (Haffernick, 1992).

IMPACTS AND MITIGATION MEASURES

Significance Criteria

The significance criteria for plant and wetland resources presented in detail in Section 3.9, "Vegetation and Wetlands" also applies to the determination of a significant impacts on wildlife resources within and adjacent to the project site. In summary, under CEQA, a project would be considered to a significant impact on wildlife species and their habitat if the impact would result in a substantial loss of important animal species; would cause a change in species composition, abundance or diversity beyond that of normal variability; or would indirectly result in the measurable degradation of sensitive habitats. Impacts are generally considered insignificant if the habitats and species affected are common and widespread in the region and the State.

Impacts to General Wildlife Habitat

<u>Short-term Decrease in Water Quality</u>

Dredging in Lake Elizabeth and placement of the weir in Mission Creek near Paseo Padre Parkway would result in a short-term increase in turbidity and an associated short-term decrease in water quality that would temporarily degrade aquatic habitat for common fish species within Lake Elizabeth and Mission Creek in isolated locations. Decant discharge back into the lake from the dredged spoils as they dry in the dewatering ponds adjacent to the north side of the lake would also increase turbidity, although to a lesser extent. Dredging in the lake, however, would in the long-term improve water quality with increased depth of the lake and greater water circulation, resulting in improved aquatic habitat. Placement of the weir would improve the quality of the surrounding marsh habitat. Thus, the overall impact of disturbance to common aquatic species in Lake Elizabeth and Mission Creek would be adverse, but not significant.

The various proposed shoreline rehabilitation approaches for Lake Elizabeth would also result in a short-term increase in turbidity in Lake Elizabeth through the placement of a vertical concrete wall, concrete sheet pile retaining wall, development of a gravel sailboard beach, construction of a new dock immediately south of the existing boathouse, and alterations to the lake bottom to create a slope of 10:1. Excavation along the banks of Mission Creek to promote the long-term development of new marsh would result in a short-term increase in turbidity and an associated short-term decrease in water quality that would degrade aquatic habitat for common fish and invertebrate species within Mission Creek in isolated locations. Similar to proposed activities within the lake and creek, short duration activities along the lake and Mission Creek would result in a short-term increase in turbidity and short-term decrease in water quality that would degrade aquatic habitat for common fish and invertebrate species and other aquatic organisms within Lake Elizabeth and Mission Creek. However, turbidity would be localized and short-term and would result in an unavoidable adverse, but not significant, impact.

Dredging and construction activities within or adjacent to Stivers Lagoon Marsh, Mission Creek and other waterways or ponds could accidentally introduce deleterious substances such as silt and fuel constituents into the water potentially degrading aquatic habitat. This impact would be potentially significant, but could be mitigated to levels below significance.

> <u>Mitigation Identified by this Report</u>: Construction practices should be utilized that minimize the potential for excessive erosion or accidental spills into the lake. Specific

measures should include locating construction/demolition staging areas away from the lake's edge and installing silt fences or barriers at key drainage points. If possible, dredging of the lake (estimated to require 2 to 3 months) should not be undertaken during the height of the breeding season (i.e., March through June) for resident bird populations in order to not limit food resources within the lake for hatchlings.

Level of Significance after Mitigation: Less than significant.

Short-term Disturbance/Hazards to Wildlife

The operation of dredging equipment within Lake Elizabeth construction equipment within and adjacent to Mission Creek would result in a short-term disruption to feeding for a variety of shorebirds and waterbirds. The operation of dredging equipment could also inadvertently result in the mortality of fish and other common aquatic species These disturbances would result in a short-term, significant impact.

Mitigation Identified by this Report: Dredging of the lake should not be undertaken during the height of the breeding season (i.e., March through June) for resident bird populations in order to not limit food resources within the lake for hatchlings.

Level of Significance after Mitigation: Less than significant.

Water Flow Alterations/Seasonal Change in Aquatic Habitat

Operation of the flashboard weir would increase the depth of water in Mission Creek upstream from Paseo Padre Parkway between the months of April and September, increasing the quality of the summer aquatic habitat upstream of Paseo Padre Parkway within the project area, but potentially degrading aquatic habitat downstream with the reduction of available summer flows. The existing quality of summer aquatic habitat within Mission Creek south of Paseo Padre Parkway is minimal given the lack of riparian canopy to shade the creek, and the extent of urban development on both sides. Removal of summer flow denstream of Paseo Padre Parkway is not expected to result in a significant impact to downstream resources since summer flows and aquatic/riparian habitat is presently minimal. Thus, operation of the flashboard weir is expected to result in a long-term, beneficial impact to aquatic habitat.

Mitigation Identified by this Report: None required.

Removal of Freshwater Marsh Habitat

Several improvements proposed within Stivers Lagoon Marsh would result in a short-term impact to freshwater marsh habitat. These include: excavation of the narrow shelf along Mission Creek in the vicinity of the kiosk, excavation of the proposed long pond, enlargement and enhancement of the ponds around the kiosk, and establishment of additional catwalks within the marsh. In the long-term, re-establishment of freshwater marsh vegetation following creation of the narrow shelf would improve and expand the existing freshwater marsh habitat. In addition, the improvements would diversify the type of wetland habitat present by allowing for some re-establishment of freshwater marsh habitat while also developing open water habitat. While the improvements would result in some short-term loss of freshwater marsh habitat and short-term disruption of wildlife use, the project would in the long-term diversification of wetland habitats available for wildlife use. The overall result of the proposed Stivers Lagoon Enhancement Plan improvements would resulting in a long-term, beneficial impact.

Mitigation Identified by this Report: None required.

Short-Term Disturbance to Nesting Birds

The proposed shoreline rehabilitation includes alteration of the lake bottom to create a slope of 10:1 and in some areas, placement of a vertical concrete wall close to the shoreline. Where occurring in areas supporting emergent vegetation (i.e., along the eastern and southern shoreline as well as a small stretch in the northwest corner of the lake - see Figure 3.8.1), these actions would result in a short-term disturbance to freshwater marsh habitat for shorebirds and other birds dependent on emergent vegetation for nesting and/or roosting. Completion of these improvements, however, would reduce erosion of the shoreline in these locations, and through revegetation, would expand and diversify the amount of freshwater marsh habitat available along the shoreline of the lake. Thus, overall the shoreline improvements would result in short-term, adverse impact with long-term benefit to wildlife habitat. Proposed shoreline improvements in other areas without emergent vegetation such as concrete planters within the existing grouted rip-rap along the north side of the lake, a concrete sheet pile retaining wall in the vicinity of the existing boathouse, and development of a gravel sailboard beach would neither impact or improve freshwater marsh habitat because none presently exists and none is proposed to be created.

Mitigation Identified by this Report: The removal of existing emergent vegetation during shoreline reconfiguration should be minimized to the extent feasible. No shoreline reconfiguration in these areas should occur during the nesting season of resident birds (i.e.. March through June).

Level of Significance after Mitigation: Less than significant.

Disturbance to Wildlife

Implementation of the Stivers Lagoon Marsh plan components would temporarily disturb common bird and mammal activities in the freshwater marsh habitat, and could result in the mortality of smaller, less mobile animals such as invertebrates, amphibians, and reptiles. These impacts would be short-term and would result in an unavoidable, adverse but not significant impact. Once constructed the enhancement plan could result in some increased disturbance to wildlife in the marsh due to the additional trails and increased human activity. However, the trail improvements identified as part of the Stivers Lagoon Marsh enhancement plan have been designed to limit human intrusion into the more densely vegetated areas protecting the most sensitive wildlife uses (i.e. nesting).

Mitigation Identified by this Report: None required.

Level of Significance after Mitigation: Less than significant.

Removal of Riparian Woodland Habitat

Several improvements proposed within Stivers Lagoon Marsh could result in a short-term loss of riparian woodland habitat. These include: excavation of the narrow shelf along Mission Creek in the vicinity of the kiosk, excavation of the proposed long pond, enlargement and enhancement of the ponds around the kiosk, and establishment of additional catwalks within the marsh. Removal of riparian woodland habitat within Stivers Lagoon Marsh would be a significant, but mitigable to a short-term adverse impact.

Implementation of the Stivers Lagoon Marsh plan components would temporarily disturb common bird and mammal activities in the riparian woodland, could temporarily remove some riparian woodland vegetation, and could result in the mortality of smaller, less mobile animals such as amphibians and reptiles. However, the proposed improvements to the marsh as a whole would improve the diversity of habitat conditions for wildlife. Overall, then, short-term disruptions and possible mortalities would be considered an adverse, but not significant impact.

> Mitigation Identified by this Report: Implementation of these improvements should avoid, when feasible, displacing riparian trees For any native tree removed, three trees of the same species should be planted following construction. Non-native species should be replaced with native species.

> Level of Significance after Mitigation: Less than significant.

Loss of Seasonal Wetland

Deposition of approximately 90 acre-feet of dredged lake sediments and subsequent development of a turf area in the 21-acre site north of Lake Elizabeth would fill a negligible area (0.01 acres) of seasonal wetland. While this habitat loss results in an adverse impact, the amount of habitat removed is minimal and the occurrence of other foraging habitat in the project vicinity (i.e., Lake Elizabeth and Stivers Lagoon Marsh) is high. Thus, this impact would be less than significant.

> Mitigation Identified by this Report: None required.

Loss of Non-native Grassland

The dredged lake sediments would be piped into and disposed within a series of dewatering ponds covering approximately 9 acres of the 21 acre ruderal grassland area. These ponds would displace the habitat of common small mammals such as ground squirrels and pocket gophers and simultaneously remove foraging habitat for several common raptors and other shorebirds relying on small mammal populations as a food source. Similarly, development of two siltation ponds on either side of Mission Creek in ruderal grassland habitat would destroy small mammal habitat and remove foraging habitat for several common raptors and other shorebirds relying on small mammal populations as a food source. The siltation ponds would also remove potential foraging habitat for geese and red and grey fox. While the removal of this habitat would be adverse, it would not constitute a significant impact because none of these animal species are considered special status species (see the following section for a discussion of special status species). This impact would be adverse, but not significant.

> Mitigation Identified by this Report: None required.

> Level of Significance after Mitigation: Less than significant.

Impacts to Special Status Species

Burrowing owl

Development of approximately 9 acres of the 21-acre ruderal grassland habitat north of Lake Elizabeth for temporary use as dewatering ponds followed by development of additional turf area for the park could displace known burrowing owl foraging and breeding habitat if development of this area was not carefully sited to avoid or minimize such impacts. This is a potentially significant impact. Displacement of burrowing owls or loss of their potential habitat would be a significant impact that could be reduced to a less than significant level with implementation of the following mitigation measures.

> Mitigation Identified by the Report: A pre-construction survey should be conducted at the appropriate season by a qualified biologist to determine whether any nesting owls are present. If present, no construction should take place until after the nesting season is complete (generally by July 31). The City should also participate in the creation of an off-site preserve that could serve as protected habitat for relocated owls inhabiting the project area at the time of project implementation. A mitigation plan should be submitted to CDFG, approved prior to initiation of grading activities within potential burrowing owl habitat, and established as a condition of project approval. Such a plan should include and expand upon the following plan elements:

On-site Habitat Protection Incorporated into Project Design

- development and implementation of a pre-construction monitoring program during the owl's breeding season (March through July) to obtain information on active, on-site burrows;
- identification and flagging of any active owl burrows at both project locations based on results of the monitoring program;
- establishment of a minimum buffer area around the active burrows (a minimum 200-foot radius around each active and historic burrow would provide each breeding pair approximately 3 acres of foraging habitat, which corresponds to known average territory size of 2 to 4 acres) to promote normal foraging and nesting activities;
- placement of permanent fencing around the perimeter of the buffer area to prevent encroachment by park users, as well as placement of signage every 100 feet along the fence indicating the purpose of the preserve and the environmental sensitivity of the area;

Off-site Relocation of Resident Burrowing Owls/Compensation for Habitat Loss

- development and implementation of a pre-construction monitoring program during the owl's breeding season (March through July) to obtain information on active on-site burrows;

- collection of the latest data detailing the habitat requirements of the burrowing owl and special considerations for relocation. This information could be collected by City staff with guidance from CDFG, or with the assistance of a qualified wildlife biologist. familiar with the burrowing owl's habitat requirements and recent mitigation efforts; and

- identification and acquisition of an off-site, relocation site within the City of Fremont in consultation with CDFG. Upon examination of other relocation efforts, it may be preferable to select a site with an existing burrowing owl population; trial and error has shown that a higher number of relocated owls remain at the relocation site than return to their original site when established owl populations are present (Palimisano, 1992). Criteria for selection of the site should include consideration of: adequate size for nesting and foraging behavior; adequate number of burrow opportunities for subsequent generations of owls; adequate food supply and foraging conditions; and adequate long-term site protection from development, or indirect impacts from adjacent site development;

Level of Significance after Mitigation: Less than significant.

Tricolored blackbird

Some habitat for the tricolored blackbird exists along Mission Creek south of the railroad tracks and north of Paseo Padre Parkway on the fringe of Stivers Lagoon Marsh and possibly some isolated areas of habitat along the east and southern shorelines of Lake Elizabeth. Proposed restoration work along the lake shoreline, along Mission Creek, and within the adjacent marsh could temporarily remove wetland vegetation, especially tules, potentially providing habitat for the few tricolored blackbirds currently seen within the project site in recent years. (Although no nesting has been observed). However, proposed restoration of the lake shoreline, expansion of the freshwater marsh habitat along Mission Creek, and development of long pond in the marsh with enhanced wetland vegetation would greatly enhance the existing habitat of tricolored blackbirds. Long-term impacts to the tricolored blackbird are expected to be beneficial.

Mitigation Identified by this Report: During construction of the proposed projects, removal of existing wetland vegetation should be minimized. Areas with significant wetland vegetation, especially tules, adjacent to areas proposed for improvements should be flagged and avoided during construction.

Level of Significance after Mitigation: Less than significant.

Removal of the ruderal grassland area on the north side of the lake would remove potential foraging habitat for adult tricolored blackbirds. While tricolored blackbird populations are minimal in the project area now, proposed restoration plans in Stivers Lagoon Marsh would greatly improve marsh habitat conditions, necessitating the availability of grassland areas for adult foraging. Currently in the project vicinity, the area north of the lake and the area between the railroad tracks east of the marsh provide ruderal grassland habitat. The remaining areas in the vicinity are urbanized with structural development or turf grass. Removal of 21 acres of the ruderal grassland north of the lake would result in an adverse but not significant impact given the abundance of ruderal grassland habitat between the railroad tracks.

Mitigation Identified by this Report: None required.

Cooper's hawk, Black-shouldered kite, Northern harrier, Ferruginous hawk, Sharp-shinned hawk, and Long-billed curlew

Removal of the ruderal grassland area on the north side of the lake would remove foraging habitat that could be occasionally used by these special status bird species. However, the quality of this habitat is low given its relatively small area, the presence of surrounding developed land uses and the regular maintenance of the area. Currently in the project vicinity, the area north of the lake and the area between the railroad tracks east of the marsh provide ruderal grassland habitat. The remaining areas in the vicinity are urbanized with structural development or turf grass. Removal of the ruderal grassland north of the lake would result in an adverse but not significant impact.

Mitigation Identified by this Report: None required.

California tiger salamander:

No habitat for the California tiger salamander currently exists along the shoreline of Lake Elizabeth. While the proposed restoration of the shoreline would increase the abundance of freshwater marsh vegetation, the upland/turf area adjacent to the shoreline would remain too highly urbanized for reestablishment of the salamander in this area. Development of long pond within the marsh would introduce a pond suitable for salamander use, but no grassland areas would be adjacent to this long pond to provide the necessary upland habitat for estivation. Thus, the proposed improvements within Central Park would have neither an adverse or beneficial impact on the California tiger salamander.

Mitigation Identified by this Report: None required.

NOTES - Wildlife

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3.10 NOISE AND ENERGY

SETTING

Noise

Existing Noise Sources and Levels

Noise levels vary considerably over Fremont Central Park. Background noise levels are relatively high near the major arterials that border the Park to the north, west and south. The traffic on Stevenson Boulevard and Paseo Padre Parkway generates noise levels of about 65 to 67 dBA, Ldn at a distance of 100 feet from the roadway centerlines (City of Fremont)./1,2/ Background noise levels drop off with increasing distance from these roads. Intermittent train passbys on the Southern Pacific Railroad and Union Pacific Railroad lines that extend through the eastern portion of the Park represent short-term noise events that cause high noise levels that intrude over the more steady background levels.

The Southern Pacific line supports about two rail operations per day while the Union Pacific line averages about 12 or 13 operations per day (Mendoza, 1992; McCloskey, 1992).

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both time and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, hospitals, parks and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. For this project, park users, as well as residential land uses along Stevenson Boulevard, the Fremont Civic Center, the main library, the senior citizen's center, and the State of California Schools for the Blind and Deaf and the Glanker Physically Handicapped School would be sensitive receptors.

Noise Regulations, Plans, and Policies

The City of Fremont *General Plan* includes compatibility guidelines for matching various land uses with suitable noise environments. These guidelines are shown in Table 3.10.1. A noise level of 50-70 dBA, Ldn, is considered "normally acceptable for playgrounds and neighborhood parks (City of Fremont, 1992).

TABLE 3.10.1: LAND USE COMPATIBILITY GUIDELINES FOR COMMUNITY EXTERIOR NOISE

Land Use Category	Community Noise Exposure by Category (dBA,L_{dn}) I	II	III	IV
Residential	50-60	-	60-75	75+
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	60-70	70-80	80+
Sports Arenas, Outdoor Spectator Sports	-	50-75	-	75+
Playgrounds, Neighborhood Parks	50-70	60-70	70-75	72+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	60-70	70-80	80+
Office Buildings, Businesses, Commercial, and Professional	50-65	65-75	75+	-

Definitions of Categories:

Noise Range I - Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Noise Range II - Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.
Noise Range III - Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Range IV - Clearly Unacceptable: New construction or development should generally not be undertaken.

SOURCE: Fremont General Plan, 1991, Noise Section of the Health and Safety Chapter.

Energy

Recreation-related motor vehicle traffic is the predominant source of energy consumption at Central Park. PG&E provides electricity and natural gas to the project site via the Fremont substation.

The Fremont *General Plan* contains no goals directly related to energy consumption or construction (City of Fremont, 1992).

IMPACTS AND MITIGATION MEASURES

Noise

Noise impacts for a project are typically determined with reference to the character of noise generated, the absolute increase in noise levels due to the project, and the consistency of the change in the ambient noise environment with local noise/land use compatibility guidelines. According to Appendix G of the CEQA *Guidelines,* a project will normally have a significant effect on the environment if it will conflict with adopted environmental plans and goals of the community or if it will increase substantially the ambient noise levels of the adjoining areas. Goal 8 of the Health and Safety Section of the City of Fremont *General Plan* seeks to establish an acceptable noise level throughout the community, with an objective of a noise environment that meets the established standards for the City of Fremont.

Construction

Construction-related noise impacts would not be significant given the short duration of the individual elements of the project and the fact that individual construction projects would be at a considerable distance from one another. Also, sensitive receptors would be located at considerable distances from construction sites. Those who use that portion of the Park near Lake Elizabeth could be annoyed by occasional high noise levels generated by construction.

The closest sensitive receptor to Lake Elizabeth, where most of the construction would occur, is the senior citizens center which is approximately 800 feet from the existing boathouse (which would be demolished and removed). At 800 feet, noise levels from construction would not be expected to exceed 65 dBA, Leq and would not be substantially higher than existing background noise levels from traffic on Paseo Padre Parkway.

While not significant, construction-related noise would be an adverse, temporary effect of the project.

Mitigation Identified by this Report: Construction activity should be limited to between the hours of 8:00 a.m. and 5:00 p.m. on weekdays to avoid the most noise-sensitive times of day and to reduce the annoyance to park users given that the Park is used most heavily on weekends. The months from December through April have the least park use, and the noisiest phases of construction and dredging could be done during these months.

The City could require the construction contractor to muffle and shield all intake and exhaust ports on power construction equipment, and shroud or shield all impact tools. Where such equipment is available and feasible, the City could require the sponsor to use electric, rather than gas or diesel, construction equipment. Electric equipment is generally quieter than gasoline or diesel-powered equipment.

Level of Significance after Mitigation: Less than significant.

Operation (Long-Term Effects)

The improvements to the Park would result in a slight increase in motor vehicle traffic generated by the Park (about 60 new vehicle trips during weekend daylight hours). Thus, noise levels along roads that support Park-bound traffic would increase along with the increase in traffic volumes. The increase in noise from additional traffic would not be noticeable.

Development of a turf recreational area north of the Lake would increase noise levels in that particular area. The nearest sensitive receptor to the area would be the Schools for the Blind and Deaf and the Glanker Physically Handicapped School, approximately 2000 feet to the north, too distant to be affected by the proposed recreational area.

Mitigation Identified by this Report: None required.

Energy

According to Appendix G of the CEQA *Guidelines*, a project will normally have a significant effect on the environment if it will conflict with adopted environmental plans and goals of the community or will encourage activities which result in the use of large amounts of fuel or energy or use energy in a wasteful manner.

Energy would be consumed during construction relative to the various project elements. Pumping of groundwater to irrigate the proposed recreation area north of the Lake would consume diesel fuel. Dredging of sediment from the lake would also consume diesel fuel and also the trucks moving the sediment.

The net result of improvements at the Park would be a modest increase in Park use and therefore, an increase in motor vehicle traffic (consumption of gasoline). The project would not result in an increase in natural gas or electricity consumption.

While construction and operation would increase energy use, it would not result in the use of large amounts of fuel or energy or use energy in a wasteful manner. The project would not have a significant impact on energy consumption.

> Mitigation Identified in this Report Park facilities should be designed to facilitate pedestrian and bicycle modes of transportation to the greatest extent possible to encourage park users to use alternative modes of transportation to the park (other than drive alone).
>
> Level of Significance after Mitigation: Less than significant.

NOTES - Noise and Energy

City of Fremont, *Fremont General Plan*, 1991.

Al Mendoza, Union Pacific Railroad, Corridor Manager, telephone conversation, March 4, 1992.

Dick McCloskey, Operations, Southern Pacific Railroad, telephone conversation, March 30, 1992.

/1/ A decibel (dB) is a logarithmic unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in decibels. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels.

/2/ L_{dn}, the day-night average noise level, is a calculated noise descriptor based on average hourly noise levels (L_{eq}) over a 24-hour period. Noise between 10:00 p.m. and 7:00 a.m. is weighted by adding 10 dBA to take into account the greater annoyance of nighttime noise. For urban outdoor noise environments, the L_{dn} usually is approximately equal to the corresponding CNEL value (Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Environmental Protection Agency, March 1974).

4.0 ALTERNATIVES

4.1 INTRODUCTION

An Environmental Impact Report (EIR) must describe a range of alternatives to the proposed project, or to its location, that could feasibly attain the project's basic objectives. The EIR must also evaluate the comparative merits of each alternative (CEQA Guidelines 151126[d]), Section 21100[d]). The discussion must focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level below significance, even if such alternatives would be more costly or to some degree would impede the project's objectives (CEQA Guidelines 15126[d][3]).

The following discussion provides alternatives to each of the proposed projects outlined in Chapter 2.0 "Project Description". Following the presentation of the alternatives is a discussion comparing the potential environmental effects of the alternative with the potential environmental effects of the preferred alternative, or proposed project. In most cases, the preferred alternative is the *environmentally* preferred alternative because selection of the preferred alternative emphasized the conservation and enhancement of existing plant and animal habitat and recreational opportunities within Central Park.

4.2 ALTERNATIVES TO THE PROPOSED PROJECTS

4.2.1 DREDGING LAKE ELIZABETH

4.2.1.1 DREDGING LAKE ELIZABETH - SEDIMENT REMOVAL

Alternative 1: Non-Uniform Dredging

This alternative is similar to the preferred alternative (i.e., Uniform Dredging) in terms of restoring Lake Elizabeth to its original depth (i.e. 4 feet in the winter and approximately 7 feet in the summer, or dredging the entire lake to a bottom elevation of 44.3 feet). This alternative, however, would in addition dredge a deeper area near the outlet weir between the south side of the island and the shoreline in the southeast corner of the lake. This deeper area would be dredged to a bottom elevation of 38 feet with water depths as high as 10 feet in the winter. The purpose of the deeper pond is to provide additional sediment storage in the area of maximum deposition. The frequency of future dredging would decrease, and the volume of material excavated during each dredging event would increase. The initial dredging of this deeper area would generate an additional 34,000 cubic yards of material for dewatering and disposal, resulting in a total volume of 179,000 cubic yards instead of the 145,200 cubic yards of material under the preferred alternative.

Alternative 2: New Siltation Pond

The creation of a new siltation basin on an approximately 75 acre, City-owned parcel along Mission Creek between the SPRR and WPRR tracks immediately east of Central Park would remove sediment before the creek enters the lake basin. The design of the basin could be one and the same as the water detention basin proposed in a similar location as part of a proposed golf course project for the site. The preliminary concept depicts a basin size of approximately 4 acres. However, this could vary depending on the golf course design. The basin could be designed to be either an "in-channel" basin, or an "off-line" basin (separated from the channel by weirs). The basin would have to be dredged of accumulated sediment every 1 to 3 years to continue functioning in this capacity. Because of space limitations in siting the proposed golf course, locating a site for drying dredged material would be difficult. One possible location is along the Southern Pacific railroad tracks. Initial excavation of the pond would result in 30,000 cubic yards of material. If disposed of on-site, dewatered material could be used to elevate tees and greens, as well as provide topographic relief for general landscaping. The siltation basin would not reduce the need for dredging now and would be in addition to either sediment removal alternative for the lake (i.e., the Preferred Alternative or Alternative 1).

Alternative 3: No Project

Under this alternative, no dredging would be performed at Lake Elizabeth (and subsequently there is no need for a discussion of dredging technique, dredged material dewatering, and sediment disposal. As a result, water depth in the winter would continue to range from 2 to 4 feet, with shallow areas (less than 3 feet) in the southeast portion of the lake near the inlet weir. At the summer water level at an elevation of 51.4 feet, water depths would remain at 5 to 7 feet. This shallow water depth would continue to hamper certain recreational activities, particularly boating, and would be less beneficial to lake water quality.

4.2.1.2 DREDGING LAKE ELIZABETH - DREDGING TECHNIQUES

Alternative 1: Mechanical Dredging

Mechanical dredging using a clamshell mounted crane aboard a portable barge would be an alternative dredging technique to hydraulic dredging. The dredged material is hauled to the shoreline by the clamshell, and has a solids content of about 90 percent. This method therefore requires significantly less dewatering than does hydraulic dredging.

4.2.1.3 DREDGING OF LAKE ELIZABETH - DEWATERING TECHNIQUES

Alternative 1: Single Pond

Under this alternative, all dredged material would be pumped into a single pond and allowed to dry over a period of up to six months. For optimal drying, the thickness of spoils remaining after decanting should be no greater than 3 feet. To decant and dry 145,000 cubic yards of dredged material, a 21-acre dewatering pond would be required. This is approximately equal to the total area (i.e., 21-acres) of the preferred on-site dewatering and dredged material disposal site immediately north of the lake.

4.2.1.4 DREDGING LAKE ELIZABETH - SEDIMENT DISPOSAL

There are several options for disposal of material from the dredging of Lake Elizabeth. Only the on-site disposal within the area north of lake alternative (i.e., the preferred alternative) and the off-site disposal alternative could accommodate all 145,200 cubic yards of material. Other alternatives combine other on- site disposal options with either on-site disposal within the area north of lake alternative or off-site disposal, as discussed below.

Alternative 1: Off-Site Disposal

Off-site disposal would be more expensive than on-site disposal, but would have no effect on lake storage. A potential disposal site is the Tri-Cities landfill, located 4.5 miles south of Lake Elizabeth off Durham Road. The landfill accepts material deemed non-toxic and non-hazardous in accordance with Title 22 of the California Administrative Code. The dredged material would have to be dewatered prior to shipment off-site. Dewatering activities would take place in the area north of the lake under the preferred or alternative dewatering scenario discussed above, Section 4.2.3. Assuming a truck capacity of 10 cubic yards, approximately 15,000 one-way truck trips to the landfill would be required.

Alternative 2: On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks

Option 2-A - On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks/On-Site Disposal North of Lake

Between the SPRR and WPRR tracks, there is an approximate 75-acre City-owned parcel that could receive some dredged materials following dewatering in the proposed site north of the lake. The parcel is currently under consideration for development as a golf course, and is as well proposed for the development of aerial supports for the preferred above-ground alignment of a proposed BART extension line (Kugler 1992).

Construction of either of these projects prior to deposition of the dewatered dredged materials could reduce or eliminate the use of this area. If coordinated with golf course development, dewatered dredged material could be used to elevate tees and greens. Elevating tees and greens 5 feet above existing ground elevation would use approximately 3,100 cubic yards of material and leave approximately 142,000 cubic yards (or 8.4 acres assuming the same specifications as the preferred alternative) for disposal north of the lake. Elevating tees and greens 10 feet would use approximately 6,200 cubic yards of material and leave approximately 139,000 cubic yards (or 8.2 acres assuming the same specifications as the preferred alternative) for disposal north of the lake. An additional unknown amount of material could be used for general landscaping within the course. However, if the golf course is constructed first; disposal of lake dredge material would not be possible.

The completion of the BART project alone would be less of a constraint to use of this area for dredge material disposal given that the footprint of each support structure for the aerial platform would be widely dispersed and still allow for the placement of fill in between the support structures.

Option 2-B - On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks/Off-Site Disposal

Under this alternative, the 75-acre City-owned parcel between the railroad tracks proposed for development as a golf course could receive some dredged materials following dewatering in the proposed site north of the lake(see Alternative 2-A). The remaining 142,100 to 139,00 cubic yards of material (or less if an additional amount is used for general landscaping within the course), would be disposed off-site as described in Alternative 1 for sediment disposal.

Alternative 3: Disposal/Fill of Shallow Portions of Lake Elizabeth

Option 3-A - Disposal/Fill of Shallow Portions of Lake Elizabeth/On-Site Disposal North of Lake

The northeastern lobe of the lake, approximately 6 acres, is currently shallow and receives limited use by boats. This area of the lake could be filled and converted to a shallow wetland that would complement the existing marsh that has developed in the siltation pond. By raising the average bottom elevation of the Lake by 1.9 feet, about 20,000 cubic yards of dredged material could be disposed of in this location. This would raise the average bottom elevation of the Lake to approximately 47.9 feet, resulting in an average water depth of 0.5 feet in the winter (at a 48.4 foot water level) and 3.5 feet in the summer. This alternative would protect the northeast shoreline and eliminate the need for about 900 feet of structural shoreline treatment; however, the deposited materials would still be subject to wave erosion and could migrate into other portions of the lake following placement. The disposal of 20,000 cubic yards of material in this manner would leave approximately 125,200 cubic yards of material (or 7.6 acres assuming the same specifications as the preferred alternative) for disposal north of the lake. Dewatering of the dredged material would occur within the area north of the lake.

Option 3-B - Disposal/Fill of Shallow Portions of Lake Elizabeth/Off-Site Disposal

Under this alternative, 20,000 cubic yards of material would be disposed of in the northwestern lob of the lake, as described for Option 3-A. The remaining 125,200 cubic yards of material would be disposed off-site, as described under Alternative 1, described above. Dewatering of the dredged material would occur within the area north of the lake.

4.2.2 SHORELINE REHABILITATION

As discussed in detail in Chapter 2.0 "Project Description", there are five proposed treatments for the rehabilitation of the shoreline of Lake Elizabeth. The preferred alternative attempts to combine these five treatments to address site-specific concerns (e.g. erosion) as well as upgrade to the greatest extent possible aesthetic quality, recreational uses, and habitat value.

Alternative 1: Island Creation

The existing island in the southeast corner of the lake provides considerable protection to southern portions of the eastern lake shore. This alternative would replace the proposed Treatment 1: Vegetated Rock Rap-Rap along the eastern shoreline with construction of additional off-shore islands. These islands would be constructed out of dredged material, and are expected to significantly reduce wave action against the lake shore. This alternative, while attractive from a shore erosion and dredge material disposal standpoint, poses significant potential problems discussed in Section 4.3.

Alternative 2: Increased Erosion Control Along Northeastern Shoreline

The northeast shoreline of the lake experiences the greatest erosion potential. This alternative proposes the use of Treatment 2: Vertical Retaining Wall along the northeast shoreline instead of Treatment 1: Vegetated Rock Rip-Rap. Treatment 2 would provide greater erosion control than the preferred treatment in this area.

Alternative 3: No Project

Under the no project alternative, none of the proposed rehabilitation treatments would be constructed. The existing problems of erosion along the shoreline, especially along the northeastern shoreline, would continue unchecked, and is expected to remove habitat for wetland vegetation along the lake perimeter and eventually threaten the stability and safety of the pedestrian path that surrounds the lake.

4.2.3 TURF AREA DEVELOPMENT

The area north of Lake Elizabeth is the only remaining undeveloped area of Central Park where turf development would be feasible. Thus, no other location for turf development is proposed.

Alternative 1: No Project

Option 1-A - No Project/On-Site Disposal

Under the no project alternative with on-site disposal, approximately 9 acres of the area north of the lake would temporarily be used for the dewatering of dredged material. Following dewatering, dredged materials (between 145,200 and 125,200 cubic yards) would be placed in

20-foot mounds in approximately 7.6 to 8.6 acres of the area north of the lake. No improvements (i.e. turf development) to these mounds would take place.

Option 1-B - No Project/Off-Site Disposal

Under the no project alternative with off-site disposal, approximately 9 acres of the area north of the lake would temporarily be used for the dewatering of dredged material. Following dewatering, dredged material (between 145,200 and 125,200 cubic yards) would be hauled and disposed of off-site in an appropriate landfill. Earthen levees used to contain dredged material for drying would also be removed, and the area would be left to revert to ruderal grassland once again. In addition, the existing problems of overcrowding and over use of remaining park areas would continue.

4.2.4 BOATHOUSE DEMOLITION/REMOVAL

The scope of this EIR provides for the analysis of the potential impacts associated with the demolition and removal of the boathouse. Restoration of the boat house in this location is not a feasible alternative given the seismic constraints of the existing site. A no project alternative is also not a feasible option given that the existing building poses a significant safety hazard and unacceptable long-term risk. The relocation of the boat house to a different location within Central Park will be discussed in a separate report prepared by the City.

4.2.5 SAILBOARD BEACH

Alternative 1: New Location - North Shore

Under this alternative, the sailboard beach would be located along the northeastern shore of the lake. Similar to the preferred alternative, the sailboard beach would be 100 feet in extent and include design features such as the underlain fabric and anchoring mechanisms same as the preferred alternative.

Alternative 2: Sand Beach

Option 2-A - Sand Beach on West Shore

Similar to the preferred alternative, this alternative for the sailboard beach would be located along the western lake shore north of the existing boathouse, and would be 100 feet in linear extent. Under this alternative, however, the 2-foot layer of gravel would be replaced by a 2-foot layer of sand. Other design features such as the underlain fabric and anchoring mechanisms would remain the same as the preferred alternative.

Option 2-B - Sand Beach on North Shore

Similar to Alternative 1, this alternative for the sailboard beach would be located along the northern lake shore and would be 100 feet in linear extent. Under this alternative, the 2-foot layer of gravel would be replaced by a 2-foot layer of sand. Other design features such as the underlain fabric and anchoring mechanisms would remain the same as the preferred alternative (and Alternative 2).

<u>Alternative 3: No Project</u>

Under this alternative, no sailboard access beach would be constructed. An additional reach of 100-feet of shoreline erosion protection would be constructed to stabilize this reach of waterfront. The present conditions of sailboard access to the lake would continue.

4.2.6 DOCK EXTENSION

<u>Alternative 1: No Project</u>

Under the no project alternative, a new dock would not be constructed adjacent to the existing dock on the west side of the lake.

4.2.7 STIVER'S LAGOON MARSH RESTORATION

<u>Alternative 1: No New Access</u>

Under this alternative, no new public access would be developed within the marsh. Public access would be restricted to existing trails.

<u>Alternative 2: Additional New Access</u>

Under this alternative, an additional public access route would be added to the two additional public access routes described in the preferred alternative for a total of three new routes. The new route would require the repair and maintenance of approximately 1,450 feet of existing trail through mixed riparian habitat, and 1,100 feet of existing trail through mixed riparian habitat along the railroad tracks. This alternative proposes to construct a new catwalk west across 600 feet of tule marsh that terminates at a blind on the edge of the proposed long pond.

Alternative 3: No Project

Under the no project alternatives, no improvements to Stiver's Marsh Lagoon would be proposed. The marsh would continue to offer physically degraded habitat value and limited recreational opportunities. Under this alternative, the marsh would continue to convert to an upland plant community under the existing, altered hydrologic regime.

4.3 COMPARISON OF SIGNIFICANT ENVIRONMENTAL IMPACTS

4.3.1 DREDGING LAKE ELIZABETH

4.3.1.1 DREDGING LAKE ELIZABETH - SEDIMENT REMOVAL

Alternative 1: Non-Uniform Dredging

Recreation and Other Land Uses

Short-term significant impacts to recreational use of the paved trail encircling Lake Elizabeth under Alternative 1 would be comparable to the Preferred Alternative. Under both alternatives, significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.1.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Hydrology

A significant breach in the clay layer that makes up the original lake bottom during dredging could result in significant water loss and require additional groundwater pumping to maintain lake levels under both the Preferred Alternative and Alternative 1. Under both alternatives, potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.5. This would include soil corings to ensure that any dredging program does not result in breaching of a clay layer.

Water Quality and Public Health

Dredging would temporarily increase turbidity of the lake water comparably under both the Preferred Alternative and Alternative 1. Under both alternatives, potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.5.

Geology and Seismicity

Dredging of the lake would somewhat exacerbate the potential for slumping and soil failure comparably under the Preferred Alternative and Alternative 1. Under both alternatives, potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.7.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Wildlife

Dredging of the lake could accidentally introduce deleterious substances such as excessive silt or fuel constituents into the water potentially degrading aquatic habitat. The potential for this significant impact to occur would be comparable under both the Preferred Alternative and Alternative 1, but could be mitigated to levels below significance of the mitigation measures presented in Section 3.9. The operation of dredging equipment within Lake Elizabeth and adjacent to Mission Creek would result in a short-term disruption to feeding and a reduction in food source for a variety of shorebirds and waterbirds. This disturbance would result in a short-term, significant unavoidable adverse impact under both the Preferred Alternative and Alternative 1.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Alternative 2: New Siltation Pond

Recreation and Other Land Uses

Construction of the siltation basin under Alternative 2 could conflict with future design of the proposed golf course within this same area. However, mitigation measures discussed in Section 3.1 would reduce this potential significant conflict to a level below significance.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Hydrology

A significant breach in the clay layers that makes up the original lake bottom during dredging could result in significant water loss and require additional groundwater pumping to maintain lake levels under both the Preferred Alternative and Alternative 2. Under both Alternatives, potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.5. This would include soil corings to ensure that any dredging program does not result in breaching of a clay layer.

Water Quality and Public Health

Dredging would temporarily increase turbidity of the lake water comparably under both the Preferred Alternative and Alternative 2. Under both alternatives, potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.5.

Geology and Seismicity

Dredging of the lake would somewhat exacerbate the potential for slumping and soil failure comparably under the Preferred Alternative and Alternative 2, but could be mitigated to levels below significance with the mitigation measures presented in Section 3.7.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Wildlife

Dredging of the lake could accidentally introduce deleterious substances such as silt and fuel constituents into the water potentially degrading aquatic habitat. The potential for this significant impact is foreseeable under both the Preferred Alternative and Alternative 2, but could be mitigated to levels below significance with the mitigation measures presented in Section 3.9. The operation of dredging equipment within Lake Elizabeth and adjacent to Mission Creek would result in a short-term disruption to feeding and a reduction in food source for a variety of shorebirds and waterbirds. This disturbance would result in a short-term, significant adverse impact under both the Preferred alternative and Alternative 2, and could be mitigated to levels below significance with the mitigation measures presented in Section 3.9.

In addition, development of the siltation pond in the ruderal grassland habitat on either side of Mission Creek in the city-owned adjacent parcel as proposed under Alternative 2 would remove additional burrowing owl foraging and/or nesting habitat. Such impacts would be significant, but could be reduced to levels below significance with implementation of the mitigation measures described in Section 3.9.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

<u>Alternative 3: No Project</u>

Recreation and Other Land Uses

Under the No Project Alternative, recreational opportunities in the long-term especially sailboarding, boating, and bird watching would be significantly reduced with the continuing siltation of Lake Elizabeth. This decrease in recreational quality within Central Park would be a significant long-term impact. Only dredging the lake would mitigate this long-term significant impact.

Aesthetics

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Hydrology

Under the No Project Alternative, there would be no potential for breaching of the clay layer and subsequent water loss in Lake Elizabeth

Water Quality and Public Health

Under the No Project Alternative, there would be no temporary increase in turbidity from disturbance to the sediment on the lake's bottom; however, the water quality in the lake would gradually continue to degrade with the continuation of unchecked siltation and shallower water depth. Under this alternative, dredge sediments would remain untouched and would not pose a potentially threat to public health with exposure on land.

Geology and Seismicity

Under the No Project Alternative, no activities are proposed that would remove existing soil along the toe of the lake's shoreline and exacerbate the potential for slumping and slope failure. Under the No Project Alternative, no dredged material would be produced that would be susceptible to liquefaction.

Vegetation

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Wildlife

Under the No Project Alternative, no deleterious substances such as silt or fuel constituents would be accidentally introduced to the lake. Neither would there be a short-term disruption to feeding opportunities for shorebirds and waterbirds.

Noise and Energy

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

4.3.1.2 <u>DREDGING LAKE ELIZABETH - DREDGING TECHNIQUES</u>

<u>Alternative 1: Mechanical Dredging</u>

See discussion for Alternative 1, Section 4.2.1.1, Non-Uniform Dredging. This alternative would generate additional material for dewatering and disposal, compared to the Preferred alternative.

4.3.1.3 <u>DREDGING OF LAKE ELIZABETH - DEWATERING TECHNIQUES</u>

<u>Alternative 1: Single Pond</u>

Recreation and Other Land uses

Short-term significant impacts to recreational use of the paved trail encircling Lake Elizabeth would be comparable for Alternative 1 as for the Preferred Alternative. Under both Alternatives, significant impacts but could be mitigated to levels below significance with the mitigation measures presented in Section 3.1.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 1, or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 1, or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 1, or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 1, or the Preferred Alternative.

Geology and Seismicity

The earthened retaining wall required to contain dredge materials for dewatering under both the Preferred Alternative and Alternative 1 could be affected by slumping or slope failure if not properly designed for support under normal and exceptional conditions (i.e., seismic activity). This potentially significant impact would be mitigable to levels below significant with the mitigation measures presented in Section 3.7.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 1, or the Preferred Alternative.

Wildlife

Construction of the single pond for dewatering of dredged materials from the lake under Alternative 1 would remove 21 acres of potential burrowing owl foraging and nesting habitat instead of the 9 acres proposed for removal under the Preferred Alternative. Alternative 1 would eliminate the potential to mitigate for losses to burrowing owl habitat on-site as described in Section 3.9. This significant impact, however, could still be mitigate and to levels below significance with off-site mitigation, as described in Section 3.9.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or on the Preferred Alternative.

4.3.1.4 DREDGING LAKE ELIZABETH - SEDIMENT DISPOSAL

Alternative 1: Off-Site Disposal

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Public Services Utilities

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Traffic and Parking

Off-site disposal, as proposed under Alternative 1, would require a significant number of truck trips (nearly 30,000 round trips, assuming a 10 cubic yard truck capacity) to deport material off-site to any appropriate landfill. These added trips could potentially result in a significant impact to circulation along local roads, particularly Stevenson Boulevard. The Preferred Alternative would not result in any significant traffic impacts.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Water Quality and Public Health

Dredge sediments could contain unexpectedly high levels of chemical contaminants, which could pose a threat to public health. Under Alternative 1, these sediments would be disposed of off-site in accordance with State law. Under the Preferred Alternative, the sediments would be disposed of north of the lake if their content is determined to pose no threat to public health. In either case, if any sediments are determined to pose a potential hazard to the public, they will be properly removed and disposed of.

Geology and Seismicity

Unlike the Preferred Alternative, under Alternative 1 no dredged material subject to potential liquefaction would remain within the project area.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Wildlife

Under Alternative 1, all the dewatered dredged material would be transported off-site for disposal. In this event, the area north of the lake would be restored to its original contours and would overtime continue to provide potential forage and nesting habitat for the burrowing owl. In comparison, the Preferred Alternative would permanently remove 9 acres of owl habitat and would require on-site or off-site mitigation to reduce potential significant impacts to the burrowing owl to levels below significance.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Alternative 2: On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks

Option 2-A - On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks/On-Site Disposal North of Lake

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Traffic and Parking

There is no direct access to the site across the railroad tracks. The trucks would have to use Stevenson Boulevard and Stevenson Court to get to the site. As under Alternative 1, the nearly 30,000 round trips required to haul the material would result in a significant impact to these two roadways. Another impact of this traffic would be to lessen the capacity of these roadways because of the slower movements and larger turning radii of the construction trucks. This would further aggravate the impact on local traffic.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Water Quality and Public Health

Under both the Preferred Alternative and Alternative 2-A, all or a portion of the dredged material would be disposed of on-site. These materials could contain toxic contaminants that pose a threat to public health. However, mitigation measures presented in Section 3.6 would reduce this potentially significant impact to levels below significance.

Geology and Seismicity

Both Alternative 2-A and the Preferred Alternative would provide for dredged materials on-site, which could be subject to potential liquefaction. However, significant impacts from liquefaction could be reduced to levels below significance with implementation of the mitigation measures in Section 3.7.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Wildlife

Potential burrowing owl foraging and nesting habitat exists both in the area north of the lake and on the City-owned parcel between the railroad tracks. Dredge material disposal in both these locations as proposed under Alternative 2-A would remove potential burrowing owl habitat. Similarly, the Preferred Alternative would remove potential burrowing owl habitat in a comparable amount.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Option 2-B - On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks/Off-Site Disposal

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 2-B/2-C or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2-B/2-C or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 2-B/2-C or the Preferred Alternative.

Traffic and Parking

Partial off-site disposal, as proposed under Alternative 2-B/2-C, would require several truck trips to deport material off-site. These added trips could result in a significant impact to local circulation. The Preferred Alternative would not result in any significant traffic impacts.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 2-B/2-C or the Preferred Alternative.

Water Quality and Public Health

Dredge sediments could contain unexpectedly high levels of chemical contaminants, which could pose a threat to public health. Under Alternative 2-B/2-C, these sediments would partially be disposed of off-site in accordance with State law. Under the Preferred Alternative, all the sediments would be disposed of north of the lake. In either case, if the sediments are determined to pose a hazard to the public, they will be properly removed.

Geology and Seismicity

Under Alternative 2-B/2-C, a portion of the dredged material would remain on-site in the City-owned property between the railroad tracks and could be subject to potential liquefaction. This potential significant impact, however, could be mitigated to levels below significant with the measures presented in Section 3.7.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 2-B/2-C or the Preferred Alternative.

Wildlife

Burrowing owl foraging and nesting habitat exits both in the area north of the lake and on the City-owned parcel between the railroad tracks. Dredge material disposal in both these locations as proposed under Alternative 2-B/2-C would remove potential burrowing owl habitat, but not as much as under Alternative 2-B/2-C since some material would be hauled off-site. Similarly, the Preferred Alternative would remove a comparable amount of potential burrowing owl habitat.

Option 2-C - On-Site Disposal North of Lake/Off-Site Disposal

See discussion for Alternative 2-B, above.

Alternative 3: Disposal/Fill of Shallow Portions of Lake Elizabeth

Option 3-A - Disposal/Fill of Shallow Portions of Lake Elizabeth/On-Site Disposal North of Lake

Recreation and Other Land Uses

Short-term significant impacts to recreational use of the paved trail encircling Lake Elizabeth under Alternative 3A/3B would be comparable to the Preferred Alternative. Under both alternatives, significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.1.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 3-A/3-B or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 3-A/3-B or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 3-A/3-B or the Preferred Alternative.

Hydrology

A significant breach in the clay layers that makes up the original lake bottom during dredging could result in significant water loss and require additional groundwater pumping to maintain lake levels under both the Preferred Alternative and Alternative 3-A/3-B. Under both Alternatives, potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.5.

Water Quality and Public Health

Dredging would temporarily increase turbidity of the lake water comparably under both the Preferred Alternative and Alternative 3-A/3-B. Under both Alternatives potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.5.

Geology and Seismicity

Dredging of the lake would exacerbate the potential for slumping and soil failure similarly to that under the Preferred Alternative and Alternative 3-A/3-B. Under both Alternatives potential significant impacts could be mitigated to levels below significance with the mitigation measures presented in Section 3.7.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 3-A/3-B or the Preferred Alternative.

Wildlife

Dredging of the lake could accidentally introduce deleterious substances such as excessive silt or fuel constituents into the water, potentially degrading aquatic habitat. The potential for this significant impact would be comparable under both the Preferred Alternative and Alternative 3-A/3-B, but could be mitigated to levels below significance of the mitigation measures presented in Section 3.9. The operation of dredging equipment within Lake Elizabeth and adjacent to Mission Creek would result in a short-term disruption to feeding and a reduction in food source for a variety of shorebirds and waterbirds. This disturbance would result in a short-term, significant unavoidable adverse impact under both the Preferred Alternative and Alternative 3-A/3-B.

Option 3-B - Disposal/Fill of Shallow Portions of Lake Elizabeth/Off-Site Disposal

See discussion for Alternative 3-A.

4.3.2 SHORELINE REHABILITATION

Alternative 1: Island Creation

Recreation and Other Land Uses

Unlike the Preferred Alternative development of the islands off-shore under Alternative 1 would not temporarily effect recreational use of the lake-side path on the east shore of Lake Elizabeth. Under both Alternatives, mitigation measures would reduce any significant impacts (See Section 3.1).

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 3-A/3-B or the Preferred Alternative.

Public Services and Utilities

Development under Alternative 1 could increase the need for park surveillance on the east side of the island. This would be a significant unavoidable impact.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Hydrology

Short-term compaction and erosion by foot traffic, equipment, and run-off during the construction of shoreline restoration around the lake would be comparable for both Alternative 1 and the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Geology and Seismicity

Under both Alternative 1 and the Preferred Alternative, all proposed shoreline rehabilitation measures and proposed shoreline rehabilitation measures and proposed islands would be susceptible to ground failure. However, the mitigation measures presented in Section 3.7 would reduce these potential impacts to a level below significance.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Wildlife

Under both Alternative 1 and the Preferred Alternative, shoreline rehabilitation would result in a short-term disturbance to freshwater marsh habitat for shorebirds and other birds dependent on emergent vegetation. However, the mitigation measures in Section 3.9 would reduce these potentially significant impacts to a level below significance. An additional potential impact would result under Alternative 1 in that island creation would attract more waterbirds, which would exacerbate water quality concerns (i.e. water pollution from the birds). This would be a significant unavoidable impact.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Alternative 2: Increased Erosion Control Along Northeastern Shoreline

Recreation and Other Land Uses

Similar to the Preferred Alternative, there would be a short-term significant impact to recreationists using the shoreline path under Alternative 2 with rehabilitation of the lake shoreline. Potential significant impacts could be reduced to a level below significance with the mitigation measures presented in Section 3.1 for both alternatives.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Development under Alternative 2 could increase the need for park surveillance on the east side of the island. This would be a significant unavoidable impact.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Hydrology

Short-term compaction and erosion by foot traffic, equipment, and run-off during the construction of shoreline restoration around the lake would be comparable for both Alternative 2 and the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Geology and Seismicity

Under both Alternative 2 and the Preferred Alternative, all proposed shoreline rehabilitation measures and proposed shoreline rehabilitation measures would be susceptible to ground failure.

However, the mitigation measures presented in Section 3.7 would reduce these potential impacts to a level below significance.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Wildlife

Under both Alternative 2 and the Preferred Alternative, shoreline rehabilitation would result in a short-term disturbance to freshwater marsh habitat for shorebirds and other birds dependent on emergent vegetation. However, the mitigation measures in Section 3.9 would reduce these potentially significant impacts to a level below significance.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Alternative 3: No Project

Recreation and Other Land Uses

Under the Project Alternative, there would be no short-term impacts to recreational use along the shoreline path.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 3 or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 3 or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 3 or the Preferred Alternative.

Hydrology

Under the No Project Alternative, there would be no potential for a short-term source of increased erosion as possible under the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 3 or the Preferred Alternative.

Geology and Seismicity

Under both the Preferred Alternative and No Project Alternative, the shoreline would be subject to slumping and slope failure. The mitigation measures in Section 3.7 for the Preferred Alternative, however, would reduce these potential impacts to levels below significance.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 3 or the Preferred Alternative.

Wildlife

Under the No Project Alternative, shoreline vegetation would not be subject to short-term impacts.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 3 or the Preferred Alternative.

4.3.3 TURF AREA DEVELOPMENT

Alternative 1: No Project

Option 1-A - No Project/On-Site Disposal

Under this alternative the area north of the lake would be temporarily disturbed during the dewatering process for dredged material. Impacts to potential burrowing owl habitat would be similar to that for the proposed project, except that the impact would be temporary for this alternative. As this area is little used by the public for recreation in its current condition, no significant impacts to recreation users would result in the long-term. Not developing this area for more intensive recreation use would result in overcrowding of remaining park areas and a general decline in the quality of the recreational experience for park users.

Option 1-B - No Project/Off-Site Disposal

The impacts of this option would be identical to that described in Option 1-A above.

4.3.4 SAILBOARD BEACH

Alternative 1: New Location - North Shore

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Public Services and Utilities

Under both the Preferred Alternative and Alternative 1, use of the proposed sailboard beach would require park staff to implement a weekly water quality monitoring program. Given that under existing fiscal conditions no staff is available to implement such a program, this impact would result in a short-term, unavoidable significant impact for both Alternative 1 and the Preferred Alternative.

Development of the sailboard beach on the north shore could, unlike the Preferred Alternative, require additional staff superveillance, which under the existing fiscal conditions, would result in a significant, unavoidable impact.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Geology and Seismicity

The proposed sailboard beach could be damaged comparably under the Preferred Alternative and Alternative 1 if large-scale slumping occurred.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Wildlife

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

<u>Alternative 2: Sand Beach</u>

Option 2-A - Sand Beach on West Shore

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Public Services and Utilities

Under both the Preferred Alternative and Alternative 2-A, use of the proposed sailboard beach would require park staff to implement a weekly water quality monitoring program. Given that under existing fiscal conditions no staff is available to implement such a program, this impact would result in a short-term, unavoidable significant impact for both Alternative 2-A and the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Geology and Seismicity

The proposed sailboard beach could be damaged comparably under the Preferred Alternative and Alternative 2-A if large-scale slumping occurred.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Wildlife

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 2-A or the Preferred Alternative.

Option 2-B - Sand Beach on North Shore

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Public Services and Utilities

Under both the Preferred Alternative and Alternative 2-B, use of the proposed sailboard beach would require park staff to implement a weekly water quality monitoring program. Given that under existing fiscal conditions no staff is available to implement such a program, this impact would result in a short-term, unavoidable significant impact for both Alternative 2-B and the Preferred Alternative.

Development of the sailboard beach on the north shore could, unlike the Preferred Alternative, require additional staff superveillance, which under the existing fiscal conditions, would result in a significant, unavoidable impact.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Geology and Seismicity

The proposed sailboard beach could be damaged comparably under the Preferred Alternative and Alternative 2-B if large-scale slumping occurred.

Vegetation

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Wildlife

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 2-B or the Preferred Alternative.

4.3.5 DOCK EXTENSION

Alternative 1: No Project

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Geology and Seismicity

Under the No Project Alternative, there would be no dock extension that could affect slumping or slope failure.

Vegetation

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Wildlife

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

Noise and Energy

No significant or potentially significant impacts were identified for either the No Project Alternative or the Preferred Alternative.

4.3.6 STIVER'S LAGOON MARSH RESTORATION

<u>Alternative 1: No New Access</u>

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Geology and Seismicity

Under Alternative 1, no additional boardwalks would be constructed in Stivers Lagoon Marsh, which could be impacted significantly by slumping.

Vegetation

Under Alternative 1, there would be less direct removal of isolated species and/or soil and root compaction due to heavy equipment. Likewise under Alternative 1 there would be less short-term significant impacts to native wetland vegetation. However, short-term impacts to both these plant communities could be mitigated to levels below significance with the measures presented in Section 3.8 for both alternatives.

Wildlife

Under Alternative 1, there would be less direct removal of riparian woodland habitat and native wetland habitat that possibly supports the rare tricolor blackbird than under the Preferred

Alternative. However, short-term impacts to both these habitats could be mitigated to levels below significance with the measures presented in Section 3.9 for both alternatives.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 1 or the Preferred Alternative.

Alternative 2: Additional New Access

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Public Services and Utilities

The additional access proposed under Alternative 2 could require additional park staff for security. Currently, there is no additional park staff available for increased security; thus, development of this alternative would result in a significant, unavoidable impact.

Traffic and Parking

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Geology and Seismicity

Under Alternative 2, there would be an increased potential for slumping with the development of an additional boardwalk that extends far into the marsh. Potential significant impacts to this new access from slumping could not be reduced to levels below significance and would result in a potentially significant, unavoidable impact.

Vegetation

Under Alternative 2, there would be more direct removal of isolated species and/or soil and root compaction due to heavy equipment. Likewise under Alternative 2, there would be more short-term significant impacts to native wetland vegetation. However, short-term impacts to both these plant communities from both Alternative 2 and the Preferred Alternative could be mitigated to levels below significance with the measures presented in Section 3.8.

Wildlife

Under Alternative 2, there would be more direct removal of riparian woodland habitat and native wetland habitat that possibly supports the rare tricolor blackbird than under the Preferred Alternative. However, short-term impacts to both these habitats could be mitigated to levels below significance with the measures presented in Section 3.9 for both alternatives.

Noise and Energy

No significant or potentially significant impacts were identified for either Alternative 2 or the Preferred Alternative.

Alternative 3: No Project

Recreation and Other Land Uses

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

Aesthetics

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

Public Services and Utilities

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

Traffic and Parking

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

Hydrology

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

Water Quality and Public Health

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

Geology and Seismicity

Under the No Project Alternative, no additional boardwalks would be constructed in Stivers Lagoon Marsh, which could be impacted significantly by slumping.

Vegetation

Under the No Project Alternative, there would be no short-term significant impacts to native wetland vegetation or riparian woodland. However, without the proposed enhancement measures under the Preferred Alternative, the marsh would continue to "dry out" and lose biological diversity.

Freshwater marsh habitats are a limited resource in the Bay Area and throughout California. They provide for the critical needs (e.g. nesting, breeding) of a number of plant and animal species, disproportionate in importance to the amount of land area they cover. Opportunities for protection and enhancement of these habitats are also limited and are strongly encouraged by state and federal resource policies to be undertaken whenever possible. Restoration of the Stivers Lagoon Marsh represents a significant opportunity that should not be lost.

Wildlife

Under the No Project Alternative, there would be no short-term removal of riparian woodland habitat and native wetland habitat that supports many wildlife species, possibly including the rare tricolor blackbird. However, without the proposed enhancement measures under the Preferred Alternative, the marsh would continue to "dry out," and lose both its diversity of wildlife habitat and ability to support sensitive species.

Noise and Energy

No significant or potentially significant impacts were identified for either the No Project or the Preferred Alternative.

NOTES - Alternatives

Kugler, Joan, Planning Project Manager, BART, Telephone conversation, November 3, 1992.

5.0 IMPACT OVERVIEW

5.1 INTRODUCTION

The State CEQA Guidelines adopted by the State Resources Agency to implement the policies established by the passage of the California Environmental Policy Act (CEQA) require that various summary statements addressing specific topics be discussed within all environmental impact reports. This mandated impact overview is presented in this section and is as follows: significant adverse effects that cannot be avoided if the project is implemented; effects found not to be significant; cumulative impacts; and growth-inducing impacts of the proposed action.

5.2 SIGNIFICANT ADVERSE EFFECTS THAT CANNOT BE AVOIDED

Implementation of the Program projects outlined in this report would result in few significant, unavoidable adverse impacts. All such impacts would be short-term and associated with construction activities. These impacts would include increased turbidity and decreased levels of dissolved oxygen in the water column during dredging. Although temporary, this impact would likely be pronounced because of the shallowness of the lake. In the long-term, however, these water quality measures would be improved due to the greater depth of the lake following dredging, and the plan to construct a new siltation pond east of the lake along Mission Creek.

Another temporary but potentially significant impact would be the displacement of existing wetland vegetation during construction of shoreline improvements and excavation in the degraded Stivers Lagoon marsh. This vegetation loss could correspondingly diminish wildlife use of these and nearby areas in the short-term. Wetland vegetation would rapidly re-establish in these affected areas, and with the planned grading and hydrologic improvements, would be expected to increase in terms of aerial extent, density, and vigor. Consequently, in the long-term habitat values for wildlife would be significantly increased.

Finally, the deposition of lake dredge spoils on the northern shore of the lake would displace habitat and create disturbance in an area that could otherwise be potentially used by the burrowing owl for nesting. While other grassland areas are presently available in the general vicinity to fulfill this need, the effective loss of this area for at least one nesting season could be considered significant.

5.3 <u>CUMULATIVE IMPACTS</u>

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts. Section 15130 of the CEQA *Guidelines* requires consideration in an EIR of potential environmental impacts that are individually limited but cumulatively significant. These impacts can result from the proposed Project alone or together with other projects. "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably forseeable probable future projects."

The Program projects themselves represent related projects, that if constructed within the same timeframe, would have cumulative impacts. For example, the lake dredging, shoreline rehabilitation, and boat house removal projects are all planned for construction in 1993. Consequently, the short-term impacts of construction including increased turbidity in the lake, disturbance of wildlife, disruption of recreational activities, and elevated noise levels would be compounded relative to that resulting from only one project taking place at a time. Of course, this somewhat increased intensity of impact is a trade-off against otherwise experiencing the extended impact that would result from sequential construction of each project. The Stivers Lagoon marsh enhancement project, boat dock extension, and sailboard beach projects have not been scheduled and presumably would be constructed sometime following 1993. However, the aerial extent (and hence magnitude) of impact from these three projects, even if they were to be constructed simultaneously, would be less than for the initial projects because construction would occur in more confined portions of Central Park.

In addition to these "internal" cumulative impacts, two other major projects proposed in the area could compound the impacts identified for the Program if they were to be constructed within the same general timeframe. These two projects are the Fremont Golf Course and the BART Warm Springs Extension and are not likely to begin construction until after 1993. No firm schedule for construction of either project has been established but it is likely that the golf course project would be implemented prior to the BART extension project.

The golf course project as presently proposed would develop a 9 or 18 hole course and associated facilities on an approximately 54-acre linear property lying between the Southern Pacific and Union Pacific railroad tracks east of Lake Elizabeth. The golf course project site overlaps with the Program projects to the extent that the siltation basin proposed along Mission Creek would be located within the golf course. From a siting standpoint, the two projects could be compatible in that the siltation pond could double as a water hazard and detention pond for the golf course. Nevertheless, implementation of the Program and detention basin projects together with the golf course project would compound some impacts, including the loss of non-native grassland and potential habitat for the burrowing owl.

With respect to construction, short-term impacts of wetland displacement, wildlife disturbance, and disruption of recreation activities would be more pronounced should both the golf course and the Stivers Lagoon enhancement projects be developed simultaneously. However, as noted above, this scenario would probably be preferable to the area being subject to a longer period of construction, as would be the case if the projects were constructed in sequence.

The BART Warm Springs project would also entail significant construction disturbance in localized areas of Central Park. Program projects potentially most affected by the BART project would include the development of the north shore and that portion of the shoreline improvement project focusing along the northeasterly edge of the lake. Because of the scope of the BART project and the many jurisdictions involved in the project planning and approval process, it is likely that construction of the extension would not take place until well after the Program projects were completed. Consequently, the potential for significant cumulative impacts resulting from the two projects is considered low.

5.4 GROWTH INDUCEMENT

The proposed Lake Elizabeth/Stivers Lagoon Design and Implementation Program would not in itself induce economic or population growth, either in the local area or in the region. The project would not create any additional permanent housing in the area, introduce new or expanded utility or public services that would attract new residents or commerce, or improve access to otherwise isolated parts of the region. The proposed project would not remove any existing obstacles to population growth.

6.0 REPORT AUTHORS, PERSONS AND ORGANIZATIONS CONSULTED

6.1 REPORT AUTHORS

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6.2 PERSONS AND ORGANIZATIONS CONTACTED

Barron, John, Street Maintenance Superintendent, Street Maintenance Division, City of Fremont Department of Public Works, telephone conversation, October 23, 1992.

Bliss, George, Engineer, Engineering Department, City of Fremont, Fremont, California, Telephone conservation, November 4, 1991.

Engle, Jim, Engineer, Alameda County Water District, Telephone Conversation, November 5, 1991.

Felber, Judy, Supervising Park Ranger, Central Park, City of Fremont Leisure Services Department, telephone conversation, October 26, 1992a.

Felber, Judy, Supervising Park Ranger, Central Park, City of Fremont Leisure Services Department, telephone conversation, October 27, 1992b.

Folks, Tom, Traffic Engineer, City of Fremont, Traffic Operations Characterization at Paseo Padre Parkway / Stevenson Boulevard intersection, telephone conversation, April 10, 1992.

Granicher, Tod, Project Manager, Sequoia Analytical Laboratory, personal communication, March 19, 1992.

Hamley, Bret, Traffic Investigator, City of Fremont Police Department, telephone conversation, April 8, 1992.

Hayes, Patrick, Environmental Services Supervisor, Leisure Services Department, City of Fremont, Personal communication, September 17, 1991.

Hayes, Patrick, Environmental Services Supervisor, City of Fremont Leisure Services Department, telephone conversation, October 27, 1992.

Hayes, Patrick, Recreation and Leisure Services, City of Fremont , Telephone conversation, November 5, 1991a.

Hayes, Patrick, Recreation and Leisure Services, City of Fremont, Personal communication, September 17, 1991b.

Hayes, Patrick, Supervisor, City of Fremont Leisure Services, telephone conversation, February 20, 1992a.

Hayes, Patrick, Supervisor, City of Fremont Leisure Services, telephone conversation, March 17, 1992b.

Hayes, Patrick, Supervisor, City of Fremont Leisure Services, telephone conversation, April 13, 1992c.

Hoch, Alice Resident and Member of Ohlone Chapter of National Audubon Society, City of Fremont, Personal communication, March 3, 1992.

Jackson, Keith, Captain, City of Fremont Police Department, telephone conversation, September 21, 1992a.

Jackson, Keith, Captain, City of Fremont Police Department, telephone conversation, October 29, 1992b.

Kleinfelter, Eric, Assistant Zoologist, Natural Heritage Division, California Department of Fish and Game, Sacramento, Personal communication, Marsh 12, 1992.

Kugler, Joan, Planning Project Manager, South and West Bay Extensions, BART District, telephone conversation, November 3, 1992.

Matsumoto, Fred, Park Supervisor, Park Maintenance Division, City of Fremont Department of Public Works, telephone conversation, October 26, 1992.

Matsumoto, Fred, Park Supervisor, Park Maintenance Division, City of Fremont Department of Public Works, telephone conversation, October 27, 1992.

McCloskey, Dick, Operations, Southern Pacific Railroad, telephone conversation, March 30, 1992.

Mendoza, Al, Union Pacific Railroad, Corridor Manager, telephone conversation, March 4, 1992.

Nagano, Chris, Entomologist, U.S. Fish and Wildlife Service, Telephone conversation September 23, 1991.

Palmisano, Terry, Biologist, California Department of Fish and Game, Personal communication, November 5, 1991.

Palmisano, Terry, Biologist, California Department of Fish and Game, personal communication, February 11, 1992.

Palmisano, Terry, Biologist, California Department of Fish and Game, Telephone conversation September 23, 1991.

Rusmisel, John, Environmental Specialist, Alameda County Mosquito Abatement District, Personal communication, March 12, 1992.

Schneider, Robert, Engineer, City of Fremont Department of Public Works, telephone conversation, March 10, 1992.

Skaling, Laurie, Park Ranger, Recreation and Leisure Services, City of Fremont, Telephone conversation, November 5, 1991.

Westin, Robert, Alameda County Agricultural Commissioners Office, telephone conversation, July 26, 1991.

Appendices

APPENDIX A

ـ.ـIFORNIA PETE WILSON, *Governor*

ERNOR'S OFFICE OF PLANNING AND RESEARCH
ˍ0 TENTH STREET
SACRAMENTO, CA 95814

DATE: Nov 25, 1991

TO: **Reviewing Agency**

RE: CITY OF FREEMONT's NOP for
LAKE ELIZABETH MASTER PLAN
SCH # 91113077

Attached for your comment is the CITY OF FREEMONT's Notice of Preparation of a draft Environmental Impact Report (EIR) for the LAKE ELIZABETH MASTER PLAN.

Responsible agencies must transmit their concerns and comments on the scope and content of the EIR, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

ROBERT SCHNEIDER
CITY OF FREEMONT
P.O. BOX 5006
FREEMONT, CA 94537

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Daralynn Cox at (916) 445-0613.

Sincerely,

David C. Nunenkamp
Deputy Director, Permit Assistance

Attachments

cc: Lead Agency

NOP Distribution List

SCH# 911153

S = sent by lead agency
X = sent by SCH

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- [ ] Mike Falkenstein
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707/576-2220 (8-590)

- [x] SAN FRANCISCO BAY REGION (2)
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Oakland, CA 94612
415/464-1255 (8-561)

- [ ] CENTRAL COAST REGION (3)
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San Luis Obispo, CA 93401-5414
805/549-3147 (8-629)

- [ ] LOS ANGELES REGION (4)
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- [ ] CENTRAL VALLEY REGION (5)
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916/361-5600
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Fresno, CA 93726
209/445-5116 (8-421)
  - ○ Redding Branch Office
415 Knollcrest Drive
Redding, CA 96002
916/224-4845 (ATS 441)

- [ ] LAHONTAN REGION (6)
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South Lake Tahoe, CA 96150
916/544-3481
  - ○ Victorville Branch Office
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359
619/241-6583

- [ ] COLORADO RIVER BASIN REGION (7)
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Palm Desert, CA 92260
619/346-7491

- [ ] SANTA ANA REGION (8)
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Riverside, CA 92507
714/782-4130 (8-632)

- [ ] SAN DIEGO REGION (9)
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San Diego, CA 92124-1331
619/265-5114 (8-636)

- [ ] OTHER: ____________

- [ ] OTHER: ____________

10/22/91

City of Fremont

Public Works Department
39700 Civic Center Drive
P.O. Box 5006
Fremont, California 94537

NOTICE OF PREPARATION

TO: Alameda County Flood Control
and Water Conservation District
399 Elmhurst Street
Hayward, California 94544

FROM: City of Fremont
Post Office Box 5006
Fremont, California 94537

SUBJECT: **Notice of Preparation of a Draft Environmental Impact Report**

The City of Fremont will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location and the probable environmental effects are contained in the attached materials. A copy of the Initial Study is attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Robert A. Schneider at the address shown above. We will need the name for a contact person in your agency.

Project Title: **Lake Elizabeth Master Plan EIR**

Project Applicant, if any: **City of Fremont**

DATE: 11/20/91

Signature: Robert A. Schneider
Robert A. Schneider

Title: Associate Civil Engineer
Telephone: (510) 745-2875

Reference: California Administrative Code, Title 14, Sections 15082(a), 15103, 15375.

EIR DISTRIBUTION LIST for N.O.P.

EIR #______________________ DATE______________

DRAFT FINAL

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- ____ ASST. CITY MANAGER - CGB
- ____ CITY ATTORNEY
- ____ CHIEF BLDG. OFFICIAL
- ____ CITY COUNCIL
- ____ CITY MANAGER
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- ____ FIRE CHIEF
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- ____ PUBLIC WORKS DIRECTOR
- ____ SR. PLANNER - CURRENT PLNG.
- ✓ SR. PLANNER - LONG RANGE PLNG.

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- ✓ ALA.CTY.FLOOD CONTROL
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- ____ FREMONT/NEWARK COMM.COLLEGE
- ____ FREMONT UNIFIED SCHOOL DIST.
- ____ LEAGUE OF WOMEN VOTERS
- ____ MISSION CHAMBER OF COMMERCE
- ____ PACIFIC BELL
- ____ PACIFIC GAS & ELECTRIC
- ____ TRI-CITY ECOLOGY
- ____ UNION SANITARY DISTRICT
- ____ U.S. POST OFFICE (CENTERVILLE)
- ____ U.S. POST OFFICE (IRVINGTON)
- ____ U.S. POST OFFICE (MISSION)

- ____ APPLICANT
- ____ APPLICANT'S ARCHITECT
- ____ APPLICANT'S ENGINEER
- ____ PROPERTY OWNER

FEDERAL

- ____ ALA.CTY.RES.CONSERVATION DIST.
- ✓ ARMY CORPS OF ENGINEERS
- ✓ ENVIRONMENTAL PROTECTION AGENCY
- ✓ FISH & WILDLIFE SERVICE
- ____ HOUSING & URBAN DEVELOPMENT
- ____ S.F. BAY NATL. WILDLIFE REFUGE

AREA

- ✓ ASSN.BAY AREA GOVT.(ABAG)
- ____ ALA.CTY. PLANNING DEPT.
- ✓ BAY AREA AIR QUALITY CONTROL(BAAQCD)
- ✓ BAY AREA RAPID TRANSIT DIST.(BARTD)
- ____ BAY CONSERVATION & DEVELOPMENT(BCDC)
- ✓ EAST BAY REGIONAL PARK DIST.
- ____ LOCAL AGENCY FORMATION COMM.(LAFCO)
- ✓ METROPOLITAN TRANS.COMM.(MTC)

ADJACENT COMMUNITIES

- ____ HAYWARD, CITY OF
- ✓ MILPITAS, CITY OF
- ✓ NEWARK, CITY OF
- ____ SAN JOSE, CITY OF
- ____ SANTA CLARA COUNTY PLANNING
- ✓ UNION CITY, CITY OF

STATE

- ✓ CALIF. CLEARING HOUSE
- ✓ CALIF. WATER QUALITY CONTROL BOARD
- ____ CALTRANS, DEPT. OF TRANS.
- ✓ DEPT. OF CONSERVATION
- ✓ DEPT. OF FISH & GAME
- ____ DEPT. OF PUBLIC HEALTH-SANIT.ENGR.
- ____ DEPT. OF PUBLIC HEALTH-TOXIC SUB.
- ✓ DEPT OF PARK AND RECREATION
  P.O. BOX 2390
  SACRAMENTO, CA. 95811

OTHER

TOTAL COPIES NEEDED______________

PLNG. 4
9-90

INITIAL STUDY ENVIRONMENTAL CHECKLIST

1. Name, Address, and Phone Number of Proponent:

   City of Fremont, Public Works Department
   39700 Civic Center Drive, P.O. Box 5006
   Fremont, California 94537
   Attention: Robert A. Schneider

2. Agency Requiring Checklist:

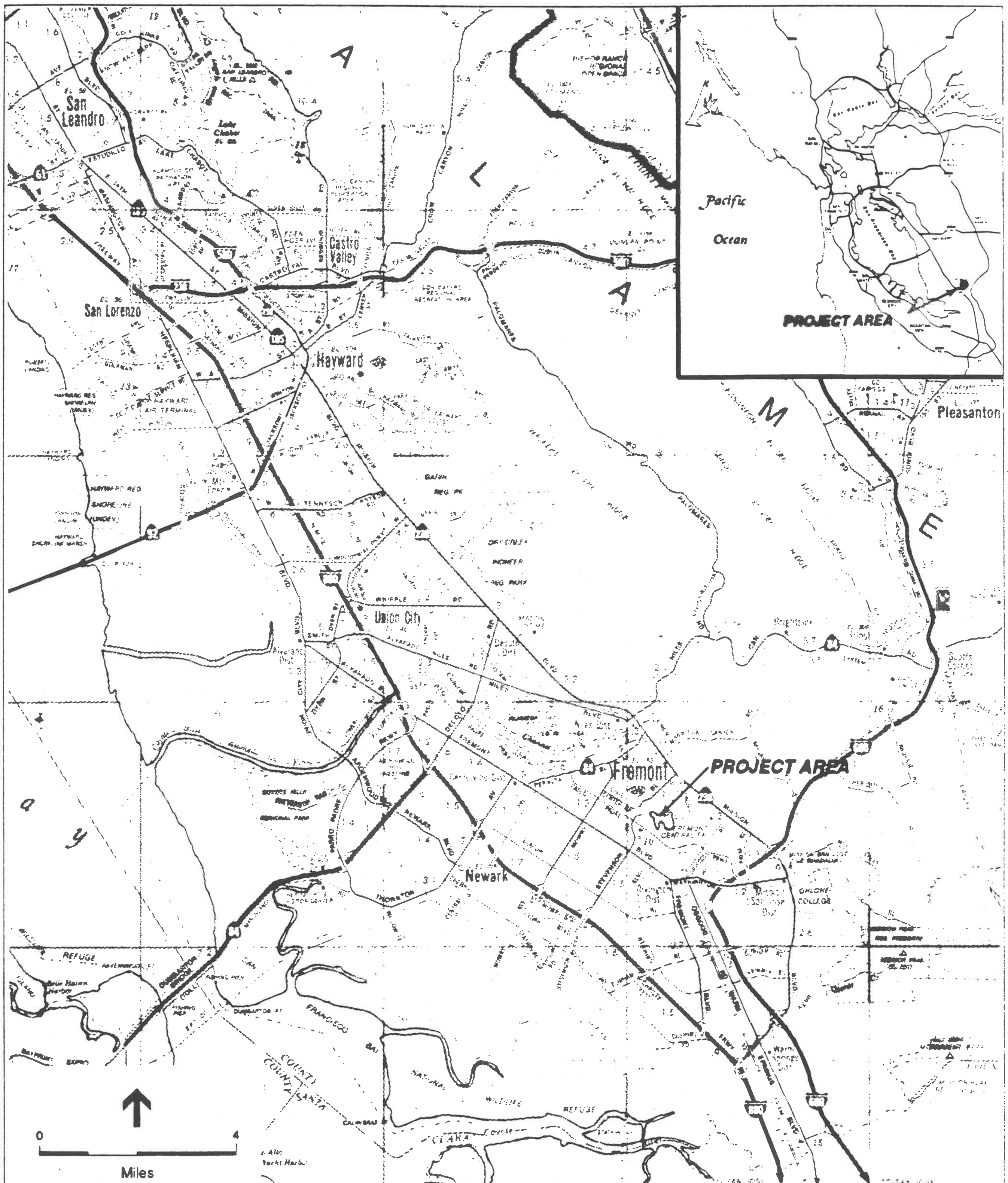
   City of Fremont, Public Works Department
   39700 Civic Center Drive, P.O. Box 5006
   Fremont, California 94537
   Attention: Robert A. Schneider

3. Name of Proposal, if Applicable:

   Lake Elizabeth Master Plan

I. PROJECT DESCRIPTION

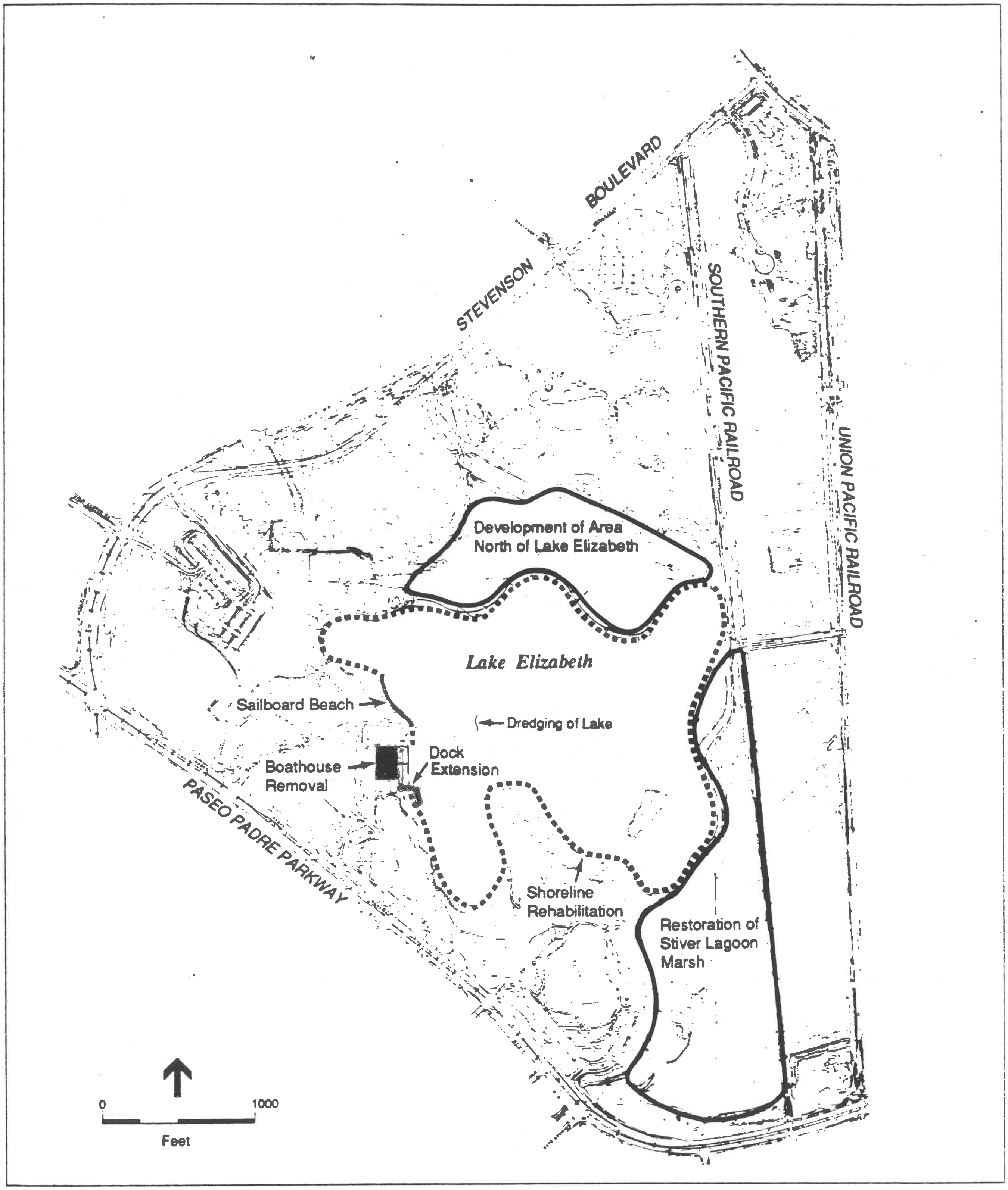
The City of Fremont proposes to complete a series of projects at Lake Elizabeth within Central Park, including dredging and shoreline rehabilitation of Lake Elizabeth, extension of an existing dock, demolition and removal of an existing boathouse, construction of a small sailboard beach, development of a turf recreation area north of the lake, and the restoration of Stivers Lagoon Marsh. The dredging project is scheduled for 1992-93; the shoreline rehabilitation, sailboard beach, and dock extension projects would follow the dredging and are scheduled for completion in 1993. The boathouse removal project would be completed when a new boathouse is completed or an alternative temporary facility is secured. Development of the area north of the Lake, and the Stivers Lagoon Marsh restoration work are not yet funded and have not been scheduled. The general location of these projects is depicted on Figure 1 and the project site is shown on Figure 2.



Map copyrighted 1990 by the California Automobile Associations.
Reproduced by permission.
SOURCE: Environmental Science Associates, Inc.

Lake Elizabeth / 90-639A

Figure 1
Project Location



SOURCE: Environmetal Science Associates, Inc., City of Fremont

Lake Elizabeth / 90-639A

Figure 2
Project Site

Specific descriptions of each project are provided below:

Dredging Lake Elizabeth

The dredging project involves removal of accumulated silt from the lake bottom. Lake Elizabeth is owned by the Alameda County Flood Control and Water Conservation District and leased to the City of Fremont. The lake was originally constructed in 1968 and has not been dredged since that time. It was expanded in 1986 along the north shoreline. The volume of silt to be dredged is estimated to be approximately 130,000 cubic yards. This estimate assumes that an average of 1.3 feet of silt over the entire 80 acres of lake is removed, with a 30 percent shrinkage factor. The lake's average depth was about 4.0 to 4.5 feet on January 30, 1984, the last time depths were measured. Lake depths would be less in the summer. Some areas of the lake bottom, may require less dredging than others; the volume of silt to be dredged would be determined following a thorough evaluation of lake depths to be performed in the future.

The primary objectives of this project involve restoring and enhancing the recreational opportunities at Lake Elizabeth, allowing for the continued use of larger, greater draft boats, and improving the quality of lake water.

Sediments dredged from Lake Elizabeth would be disposed of in accordance with all state and local regulations. A portion of the sediments could be placed in the area north of the Lake to be developed as a turf area (see below).

Shoreline Rehabilitation of Lake Elizabeth

Approximately 2,000 feet of the north shoreline was constructed with concreted-rock slope protection in conjunction with the 1986 lake expansion. The remaining 8,000 feet of shoreline is proposed to be improved similarly or, alternativly, with a combination of structural and vegetative elements.

Dock Extension

This project would involve construction of a new dock, approximately 120 feet long and covering about 1,200 square feet, south of the existing docks. Part of the dock would parallel existing docks, while the remainder would angle toward the shoreline. The new dock would likely be constructed of hollow concrete boxes backfilled with foam so as to facilitate floatation. The purpose of this project is to facilitate docking in the presence of a southerly wind and to create additional docking space.

Boathouse Demolition / Removal

This project involves the demolition and removal of the existing building, which lies near the eastern trace of the Hayward fault and is in potential danger of falling into the lake in the event of a major earthquake. The objective of the project is to remove the existing, structurally unsound building to ensure public safety. The building would be demolished only following construction of a replacement facility or the acquisition of a temporary facility.

Sailboard Beach on Lake Elizabeth

This project is intended to provide easier sailboard access to and egress from Lake Elizabeth. Currently, it is difficult for many sailboarders to mount or dismount their equipment via the floating dock, especially under windy conditions. The beach would likely be located north of the boat launching ramp, on the west side of the lake, but its location could be adjusted based on the particular constraints of the site.

The beach is proposed to encompass approximately 100 to 200 linear feet of shoreline. The beach could be composed of sand, beach pebbles, or some type of shallow-sloped resilient substrate fabric.

Development of the area north of Lake Elizabeth

The City of Fremont proposes to develop an approximately 20 acre area north of Lake Elizabeth (also referred to as the East Meadow) for open turf, picnic, frisbee, ball games, and related recreational uses. The area would contain picnic tables, barbeque equipment, a restroom, and parking. The area would be raised in elevation approximately three feet, possibly using dredge material from the lake, and planted with turf.

The additional open turf and picnic area in Central Park is necessary to meet rising demand by recreational users. Picnic sites at all parks in Fremont are in heavy demand. Four reservable picnic sites in Central Park are frequently booked far in advance by prospective users, while other "first-come, first-served" turf recreation areas throughout Fremont are typically occupied early, especially on weekends and during holiday periods.

Restoration of Stivers Lagoon Marsh

The Stivers Lagoon Marsh area adjacent to Lake Elizabeth, while still exhibiting important habitat values, shows signs of declining wetland character. The primary causes for this loss of marsh are isolation from natural sources of water when Lake Elizabeth was built 23 years ago (drainage patterns were altered); vegetative eutrophication, and siltation. Options for restoring the approximately 40 acre area to a more natural wetland condition are currently being examined as part of a restoration feasibility study, which would be incorporated into the EIR. The primary objectives of the restoration would be to preserve and enhance the habitat of the marsh; to maintain it as a conservation area with some environmental education uses; to improve habitat values and return the area to a more fully functioning fresh water marsh; and to incorporate the marsh into the overall water management system for the Lake Elizabeth area.

Specific restoration techniques could include the removal of non-native invading vegetation and the replenishment of native marshland vegetation, extending the existing boardwalk (to allow for a loop system), planting additional riparian vegetation along Mission Creek, expanding the siltation basin on the east end of the marsh to provide more open water, and constructing a new siltation basin on the golf course southeast of the marsh. Any continuation of the boardwalk would be constructed to allow for 100-year flooding (such as a floating boardwalk). Renovation of the existing interpretive building at the south end of the boardwalk may also be considered as part of the Master Plan.

II. ENVIRONMENTAL IMPACTS

	Yes	Maybe	No
1. **EARTH. Will the proposal result in:**			
a. Unstable earth conditions or in changes in geologic substructures?	___	___	X
b. Disruptions, displacements, compaction or overcovering of the soil?	___	X	___
c. Change in topography or ground surface relief features?	X	___	___
d. Destruction, covering or modification of any unique geologic or physical features?	___	___	X
e. Any increase in wind or water erosion of soils, either on or off the site?	___	X	___
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	X	___	___
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure or similar hazards?	___	X	___
2. **AIR. Will the proposal result in:**			
a. Substantial air emissions or deterioration of ambient air quality?	___	X	___
b. The creation of objectionable odors?	___	X	___
c. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?	___	___	X

	Yes	Maybe	No
3. WATER. Will the proposal result in:			
a. Changes in currents, or the course or direction of water movements, in either marine or fresh waters?	X		
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?	X		
c. Alterations to the course or flow of flood waters?	X		
d. Change in the amount of surface water in any water body?	X		
e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?		X	
f. Alteration of the direction or rate of flow of ground waters?		X	
g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?		X	
h. Substantial reduction in the amount of water otherwise available for public water supplies?			X
i. Exposure of people or property to water-related hazards such as flooding or tidal waves?			X
4. PLANT LIFE. Will the proposal result in:			
a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?	X		
b. Reduction of the numbers of any unique, rare or endangered species of plants?			X
c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?		X	
d. Reduction in acreage of any agricultural crop?			X

	Yes	Maybe	No
5. **ANIMAL LIFE. Will the proposal result in:**			
a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects)?	X		
b. Reduction of the numbers of any unique, rare or endangered species of animals?		X	
c. Introduction of new species of animals into an area, or a barrier to the migration or movement of animals?	X		
d. Deterioration to existing fish or wildlife habitat?	X		
6. **NOISE. Will the proposal result in:**			
a. Increases in existing noise levels?	X		
b. Exposure of people to severe noise levels?		X	
7. **LIGHT AND GLARE. Will the proposal produce** new light or glare?			X
8. **LAND USE. Will the proposal result in a substantial alteration of the present or planned land use of an area?**			X
9. **NATURAL RESOURCES. Will the proposal result in:**			
a. Increase in the rate of use of any natural resource?			X
b. Substantial depletion of any non-renewable natural resource?			X
10. **RISK OF UPSET. Will the proposal involve:**			
a. Risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions?		X	
b. Possible interference with an emergency response plan or an emergency evacuation plan?			X

	Yes	Maybe	No
11. **<u>POPULATION</u>. Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?**	___	___	X
12. **<u>HOUSING</u>. Will the proposal affect existing housing, or create a demand for additional housing?**	___	___	X
13. **<u>TRANSPORTATION/CIRCULATION</u>. Will the proposal result in:**			
a. Generation of substantial additional vehicular movement?	___	X	___
b. Effects on existing parking facilities, or demand for new parking?	___	X	___
c. Substantial impact upon existing transportation systems?	___	___	X
d. Alterations to present patterns of circulation or movement of people and/or goods?	___	___	X
e. Alterations to waterborne, rail or air traffic?	___	___	X
f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	___	X	___
14. **<u>PUBLIC SERVICES</u>. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:**			
a. Fire protection?	___	___	X
b. Police protection?	___	X	___
c. Schools?	___	___	X
d. Parks or other recreational facilities?	X	___	___

	Yes	Maybe	No
e. Maintenance of new public facilities, including roads?	X		
f. Other governmental services?	X		
15. ENERGY. Will the proposal result in:			
a. Use of substantial amounts of fuel or energy?		X	
b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?			X
16. UTILITIES. Will the proposal result in a need for new systems, or substantial alterations to the following utilities:			
a. Power or natural gas?			X
b. Communications systems?		X	
c. Water?			X
d. Sewer or septic tanks?			X
e. Storm water drainage?	X		
f. Solid waste and disposal?			X
17. HUMAN HEALTH. Will the proposal result in:			
a. Creation of any health hazard or potential health hazard (excluding mental health)?			X
b. Exposure of people to potential health hazards?			X
18. AESTHETICS. Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?		X	

	Yes	Maybe	No
19. RECREATION. Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	X		
20. CULTURAL RESOURCES			
a. Will the proposal result in the alteration of or the destruction of a prehistoric or historic archaeological site?		X	
b. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?			X
c. Does the proposal have the potential to cause physical change which would affect unique ethnic cultural values?		X	
d. Will the proposal restrict existing religious or sacred uses within the potential impact area?			X
21. MANDATORY FINDINGS OF SIGNIFICANCE.			
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	X		
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)			X

	Yes	Maybe	No
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	X		
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X

III. DISCUSSION OF ENVIRONMENTAL EVALUATION

On attached sheets.

IV. DETERMINATION

On the basis of this initial evaluation:

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

____ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION WILL BE PREPARED.

_X_ I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT IS REQUIRED.

Dated: ____________________

____
(Signature)

____
(Print Name)

____
(Title)

C. DISCUSSION OF NOTICE OF PREPARATION CHECKLIST RESPONSES

The following discussion provides an explanation to responses made in the Notice of Preparation Checklist. The explanations are intended to provide documentation of the factual basis for each Checklist response made for the Lake Elizibeth / Stivers Lagoon March Master Plan EIR. The explanations are numbered to correspond to the appropriate Checklist item.

1. Earth

a. The proposed project would not result in unstable earth conditions, nor would result in changes to geologic substructures. However, Central Park lies along the eastern trace of the Hayward Fault and is subject to unstable earth conditions.

b. Disruption or displacement of soil could occur in the Stivers Lagoon Marsh area as a result of restoration activities, and along portions of the lake shoreline. Overcovering of soil could occur in the area north of Lake Elizabeth if dredging materials from the lake are placed there.

c. Restoration work on Stivers Lagoon Marsh and the deposit of dredging material from the lake in the area north of Lake Elizabeth would alter the topography and surface features in the immediate vicinity.

d. No unique geologic or physical features exist at the project site.

e. Marsh restoration could temporarily increase siltation and erosion due to construction activities and increased water flow in the Stivers Lagoon Marsh. Other potential projects are expected to reduce erosion, especially around Lake Elizabeth.

f. The restoration of Stivers Lagoon Marsh would have a beneficial long-term effect on erosion due to flooding by providing additional flood control capacity. Shoreline rehabilitation and construction of the sailboard beach would also help to reduce shoreline erosion. Construction activities near the lake and marsh could create short-term erosion and siltation effects.

g. Development of the turf recreation area north of Lake Elizabeth could draw additional visitors to a seismically active area, Central Park. However, no building construction is planned for this project, and no additional facilities would be installed; the exposure of people to geologic hazards would be minimal.

2. Air

a. Construction activities could cause short-term increases in air emissions and deterioration of ambient air quality.

b. Dredge materials could contain organic sulfur compounds which might temporarily release objectionable odors when exposed to the air.

c. The project would not result in climatic changes.

3. **Water**

a-c. The Stivers Lagoon Marsh restoration could involve redirection of water into the Marsh area as a result of channeling activities. Drainage patterns could be altered by this work. Water absorption rates could be affected by the increased volume of water stored in the Marsh following completion of the restoration. Flood water may be redirected into the Marsh as part of the restoration.

d. Increased capacity in Lake Elizabeth due to dredging and restoration of the marsh would increase the amount of surface water in these areas.

e. Dredging activities could temporarily alter the turbidity and surface water quality of Lake Elizabeth.

f-g. Stivers Lagoon Marsh may be an aquifer recharge area; restoring water to the marsh may result in increased groundwater flows to area aquifers, creating a beneficial effect. The Marsh restoration could result in an increased quantity of groundwater. Irrigation for proposed turf areas would come from existing wells. The increased pumping for this additional irrigation could cause some minor lowering of the water table adjacent to the well.

h. Lake Elizabeth is not a source of public drinking water. The project would not affect public water supplies.

i. Development of the project would not result in exposure of people or property to flood hazards. Deposition of dredged material would not significantly change flood hazards.

4. **Plant Life**

a. Shoreline rehabilitation in Lake Elizabeth with riprap could displace existing tules, cattails and willows found along the shoreline. The Stivers Lagoon Marsh restoration would have a potentially beneficial effect on plant life in the marsh habitat, potentially increasing the amount and diversity of native plant life in Stivers Lagoon Marsh.

b. No unique, rare, or endangered plant species would be affected.

c. The restoration could result in the reintroduction of native plant species into the marsh; however, shoreline rehabilitation could act as a barrier to some species.

d. The project would not affect any agricultural crop; no crops are grown at the site.

5. **Animal Life**

a,c. The Marsh restoration could have a beneficial effect by preserving and potentially increasing the diversity of animal species in that habitat, especially avian and aquatic species. At the same time, existing shoreline animals living in the tules and cattails, such as crayfish and rats, could be affected by the shoreline rehabilitation.

b. Depositing dredging materials on the open space area north of Lake Elizabeth could affect burrowing owl habitat. Owls have been observed in this area in the past but have not been noted recently.

d. Construction activities could create short-term deterioration of fish and wildlife habitats in Lake Elizabeth and in Stivers Lagoon Marsh by increasing turbidity and generating intermittent noise.

6. **Noise**

a. Temporary increases in existing ambient noise levels are anticipated during construction, but may be insignificant.

b. Construction may result in exposure of park visitors and employees to sporadic but severe noise levels, but this is unlikely.

7. **Light and Glare**

The project would not produce any new light or glare.

8. **Land Use**

The project would not result in a substantial alteration of the present or planned land use within the study area (Central Park).

9. **Natural Resources**

a-b. The project would not result in an increase in the rate of use of any natural resource, nor would it substantially deplete any non-renewable natural resource.

10. **Risk of Upset**

a. The project could result in a potential accidental release of oil or gasoline from equipment during project construction.

b. The project would not interfere with emergency response plans or emergency evacuation plans covering the Central Park area.

11. **Population**

The project would not alter the location, distribution, density, or growth rate of the human population in the Fremont area.

12. **Housing**

The project would not affect existing housing or create a demand for additional housing.

13. **Transportation/Circulation**

a. The project could generate additional vehicular movement.

b. The project could create additional parking demand as it would likely result in additional public use of Central Park (see c. below).

c. The project would increase visitation to the park but would not be expected to have a substantial effect on existing transportation systems.

d. The project would not substantially alter present patterns of circulation or movement of people and goods.

e. The Bay Area Rapid Transportation District proposes an extension of the Fremont line, which could be routed above, below, or around the project site. While this would not directly affect the project, construction timetables would be coordinated to the extent possible.

f. Project construction could temporarily increase traffic hazards along the Paseo Padre Parkway or other roads near the project site area. Construction activity around the lake could also increase safety hazards to pedestrians on lakeside pathways.

14. Public Services

a. The project would not have a significant effect on fire services, and could substantially reduce the threat of wildfire in the dry riparian habitat of Stivers Lagoon Marsh. The project could improve access for fire supression personnel.

b. The project could attract more visitors to the park, leading to a potential increase in the demand for police services and park rangers.

c. The project would not have a significant effect on schools.

d. The project occurs in a heavily used public park and could temporarily affect recreational facilities and activities there during construction.

e. The project would involve changes to existing public facilities in Central Park, and would create a need for additional maintenance in the park.

f. The project would take place on leased Alameda County Flood Control and Water Conservation District land; the marsh restoration activities would favorably alter the flood retention capacity of the Stivers Lagoon Marsh.

15. Energy

a. Short-term construction uses of energy (fuel) could be significant.

b. The project would not result in substantial usage of or demand for energy.

16. Utilities

a. The project would not result in substantial additional demand for power or natural gas. A high voltage transmission line crosses the site, but would not be affected by the project.

b. Fiber optics cables east of the lake along the Southern Pacific Railroad right-of-way could be affected by the project.

c. The project would not result in substantial additional demand for treated water.

d. The project would not create substantial additional sewer service or septic tanks.

e. The existing storm sewers would be extended to provide drainage for the development of the area north of Lake Elizabeth.

f. The project would not result in a substantial impact to solid waste and disposal services.

17. Human Health

a-b. Based on the current project description, the project would not create any health hazard or potential health hazard, nor would it expose people to potential health hazards.

18. Aesthetics

Visual impacts could result from the shoreline protection measures, dredging work, or other construction activities.

19. Recreation

The project would increase long-term recreation opportunities at Central Park, but could have adverse short-term effects on recreation resulting from construction activities.

20. Cultural Resources

a,c. No significant cultural resources are known to occur in or around the lake, which is man-made. Project construction could have an adverse effect on presently unknown historic or prehistoric resources in the project area, or could cause physical changes affecting unique ethnic cultural values.

b. The project would not affect any known prehistoric or historic building, structure or object.

d. The project would not restrict any known religious or sacred uses within the potential impact area.

21. Mandatory Findings of Significance

a. The project could adversely affect geologic and soil conditions in the area. Construction and dredging activities could have potential short-term significant effects. The project could also have negative aesthetic effects. The project would potentially affect water, plant life and animal life resources; some effects would be beneficial, some potentially adverse. The project could have impacts on transportation / circulation, public service and utilities and cultural resources.

b. The project would acheive long-term environmental goals with potential short-term environmental impacts.

c. The proposed project would change flood protection capacity in the Lake Elizabeth area, and would increase the overall quality of recreational facilities in Central Park, creating a potentially beneficial cumulative effect. The project would have transportation impacts and air quality impacts resulting from construction activities and increased traffic to the area. The project would also result in short-term negative effects on aesthetics.

d. The project would have beneficial environmental effects on human beings by providing improved educational and recreation opportunities.

APPENDIX B

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WORKING PAPER: LAKE ELIZABETH DREDGING SHORELINE REHABILITATION AND SAILBOARD BEACH

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Environmental Hydrology Engineering Hydraulics Sediment Hydraulics Water Resources

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I. INTRODUCTION

A. ORGANIZATION OF THE WORKING PAPER

This report describes and evaluates various alternatives for improvements to Lake Elizabeth, including lake dredging, shoreline rehabilitation, and development of a sailboard beach. In Section II, we describe existing conditions at the lake, including lake bathymetry, storage requirements for flood control, and shoreline conditions. In Section III, opportunities and constraints pertinent to lake improvements are discussed. Alternatives for dredging, shoreline rehabilitation, and development of a sailboard beach are then summarized and evaluated in Section IV. Section V presents details on dredging techniques, disposal options, and costs.

B. OBJECTIVES OF THE PROJECTS

Three projects are evaluated in this working paper: (1) dredging Lake Elizabeth, (2) shoreline rehabilitation, and (3) development of a sailboard beach. The general objectives of these projects are the improvement of recreational, water quality, habitat, and aesthetic aspects of Lake Elizabeth.

The objective of dredging in the Lake is to provide greater depth for recreational boating and improved water quality. Since its construction in 1968, an average of 1 to 2 feet of sediment has been deposited on the bottom of Lake Elizabeth. As a result, water depths in the Lake during the winter are as low as 2 feet in some areas. Proposed dredging alternatives will increase lake water depths to 5 feet or greater throughout most of the lake. This is generally recognized as the minimum depth required to maintain desirable conditions in urban lakes.

The shore of Lake Elizabeth is subject to erosion from wave action. The objectives of shoreline rehabilitation are therefore to stabilize the shore, while at the same time enhancing existing uses and improving the aesthetic and habitat characteristics of the lake edge.

Sailboarding is currently a popular activity at the Lake in the summer. Sailboarding was once popular in the winter, with typical usage of 10 boards per day. However, water quality concerns have forced sailboarding to be prohibited throughout the winter. At present, all launches are made from a dock, which is difficult for novice sailboarders. A beach is proposed to provide safer and more convenient access to the lake.

II. EXISTING CONDITIONS

A. INTRODUCTION

Lake Elizabeth is located within Central Park in Fremont, and was created by excavation of part of Stivers Lagoon marsh in 1968. The lake is owned by the Alameda County Flood Control and Water Conservation District (ACFC), and is leased to the City of Fremont under a license agreement for use as a park and recreational facility. The lake and adjacent parklands function as a flood control storage facility for Mission Creek, and are used extensively for recreation and wildlife habitat. Popular activities around the lake include boating, jogging, walking, and fishing. Picnic areas, a swimming lagoon, and sports facilities are provided for the public within the adjacent park area.

The lake is connected to Mission Creek by a set of flashboard weirs on the Southeast shore. The lake level is managed by removing flashboards in the winter, and adding flashboards in the summer. To maintain summer water levels, groundwater is pumped into the lake (via the swim lagoon) from a well located near the southwestern corner of the park.

B. BATHYMETRY

Lake Elizabeth occupies an area of approximately 82 acres, and has a bottom elevation of 44 to 46 feet NGVD. Figure 1 shows the existing lake bathymetry and topography. The lake was constructed in 1968 with a nearly uniform bottom elevation of 44 feet NGVD. The northern part of the lake was expanded in 1985. A small island occupies the southeast lobe of the lake.

By comparing existing bathymetry with the original lake bottom elevation of 44 feet NGVD, it can be seen that 1-2 feet of sediment has been deposited in many parts of the lake since 1968. Figure 2 maps sediment deposition patterns in the lake. In general, the greatest deposition occurs near the inlet weirs in the southeast. The lowest deposition occurs in the recently expanded northern part of the lake. The average deposition rate over the 24 year life of the lake is about 0.5 inches per year. However, it is likely that the majority of the sediment load is associated with large, infrequent flood events such as those that occurred in 1983 and 1986.

C. HYDROLOGIC REGIME

Water levels in the lake are managed differently during the summer and winter. In the summer, lake levels are maintained at about 51 feet to maximize water quality and recreational opportunities. In the winter, the lake must be maintained at a lower level to meet flood storage requirements. Prior to 1991, the winter water level was maintained at 48.4 feet (no flashboards in the lake inlet). Based on recommendations developed by Engineering-Science (1991), the winter water level in 1991 was raised to 49.9 feet (three six-inch flashboards in the inlet).

Engineering-Science (1991) recently performed a detailed analysis of the hydrology and hydraulics of the lake and Mission Creek during flood events for the Alameda County Flood Control and Water Conservation District. Because of its low grade and silted condition, the conveyance of Mission Creek adjacent to the lake is relatively low. Engineering-Science found that four hydraulic regimes characterize drainage conditions during flood events:

1. Flows below 50 cfs: flow is contained within the channel banks. Flow may enter the lake through the inlet, depending upon the setting of the flashboards.

2. Flows greater than 50 cfs, but less than 1000 cfs: flow begins to go over the eastern bank into Stivers Lagoon.

3. Flows greater than the 15 year flood (about 1000 cfs) but less than 1200 cfs: flow overtops the western creek bank (at elevation 53 feet) into the lake.

4. Flows greater than 1200 cfs: the water surface in the lake equals that in the channel, and the lake watershed becomes an uncontrolled reservoir.

The predicted 15-year flood elevation is about 53 feet, and the predicted 100-yr elevation is 55.6 feet.

D. STORAGE REQUIREMENTS

The City's current leasing agreement with Alameda County Flood Control stipulates that the City maintain 931 acre-feet of storage within the lake watershed at the 100-year flood level of 55.6 feet. Engineering-Science (1991) modeled the performance of the lake under 100-year flood conditions, and found that the lake could contain the 100-year flood when the lake level was maintained at 49.9 feet NGVD (with 859 acre-feet of 100-year storage). The focus of the Engineering-Science study was not on lake storage, and there is some uncertainty regarding the applicability of the models used to simulate the Lake Elizabeth-Mission Creek system. As a result, Alameda County has decided to continue to use the 931 acre-foot 100-year storage requirement from the City's original leasing agreement. This storage requirement is probably conservative, and could be reduced pending future analyses of Mission Creek hydrology and hydraulics by Alameda County.

NBS/Lowry Engineers and Planners (1986) calculated a 100-year flood storage capacity of 1023 acre-feet within the lake watershed, based on a winter lake elevation of 48.4 feet. For the current study, PWA digitized the lake topography and bathymetry into an AutoCAD system. Using the digitized map, we computed a 100-year flood storage volume of 985 acre-ft with the lake at 48.4 feet, and a volume of 859 acre-ft with the lake at 49.9 feet. Thus, the existing 100-year lake storage is greater than required with the lake at 48.4 feet, but is less than required if the lake level is held at 49.9 feet.

In addition to the lake area currently included in the license agreement, the areas between the SPRR and WPRR provide additional storage during flood events. These areas are currently not included in the agreement between the City and County. Using the digitized map, we estimate a 100-year storage volume of about 24 acre-feet on city-owned land between the tracks, and 48 acre-feet on private land. Most of the storage on the city owned parcel occurs above an elevation of 54 feet, and is therefore important only for large storms (greater than the 15-year event). This area is currently designated for development of a public golf course in the near future.

E. SHORELINE CONDITIONS

Figure 3 maps the existing shore conditions and protection measures used at Lake Elizabeth. Existing shoreline protection includes dumped rip-rap, grouted rock rip-rap, and vertical retaining walls. The dumped rip-rap consists of broken sidewalk concrete, and is placed haphazardly on the shore as a remedy to erosion problems. The rip-rapped banks are generally fronted by naturally-occurring wetlands vegetation (e.g. tules, cattails).

A 3-foot high vertical wall is used on the shore immediately North and South of the boathouse. This wall is constructed of stacked broken concrete.

The expanded North shore of the lake is protected by grouted rock rip-rap applied at a 3:1 slope. The rip-rap here consists of broken concrete, and is strongly grouted with cement.

The shore is actively eroding at a number of locations, primarily due to wave action. Areas of active erosion are identified on Figure 3. Shore erosion is most severe along the eastern shore, where in places the shore has cut back to within a few feet of the pathway. As indicated by the wind rose shown on Figure 3, this shore is directly exposed to the predominant winds in the area, and is subject to the strongest wave action. The island appears to offer significant protection from the wind; erosion on the shore on the leeward side of the island is much less severe than on exposed shores.

Shore erosion is also a problem on the bare-earth shores at the ends of the grouted rock rip-rap section. The transition from grouted rock rip-rap to unprotected shore occurs abruptly, and little vegetation has become established in these transition zones.

Parts of the vertical wall adjacent to the boathouse are slumping forward, and could fail in the near future. In other areas, the vertical wall is generally intact, with the exception of erosion behind low points in the wall.

No failures or structural problems were observed in the north shore grouted rock rip-rap. However, a small section of grouted rock rip-rap immediately north of the boatramp is failing. In this case the layer of grout was too thin, and does not bind well. While the grouted rock rip-rap has provided adequate shoreline protection, it is unaesthetic and provides little habitat value.

III. OPPORTUNITIES AND CONSTRAINTS

A. DREDGING LAKE ELIZABETH

Dredging Lake Elizabeth will provide the opportunity to increase water depths, resulting in enhanced recreation and boating. Increased water depth would improve water quality by providing more volume for dilution and inhibiting the growth of aquatic vegetation. Removal of organic muck from the lake bottom would also improve water quality since this material can cause problems when resuspended.

The primary constraint for dredging is cost, which is directly related to the availability of on-site disposal. On-site disposal is limited by the storage requirements that the City must meet as part of its license agreement with the Flood Control District. Thus, any disposal of dredge material or raising of the lake water level must not result in a loss of flood storage below Alameda County's requirements for the lake. This is important not only for the 100-year flood event, but also for smaller flood events above the 15-year event.

The most likely area for dredge disposal is the undeveloped area immediately north of the lakeshore. Dredge disposal in this location between 50 and 56 feet NGVD will result in loss of flood storage.

The City could gain storage by including the area between the SPRR and WPRR tracks in the licensing agreement, and purchasing additional private land between the railroad tracks. About 72 acre-feet of storage are available on city- and privately-owned land in this area. Use of this area for dredge disposal is constrained by planned construction of a golf course between the railroad tracks.

The lake was excavated in a clay layer which overlies a gravel and sand aquifer. This clay layer is believed to be relatively thin. Thus, dredging below the original 44 foot bottom elevation could break through this clay layer and cause the lake to drain out into the underlying aquifer.

B. SHORELINE REHABILITATION

Shoreline rehabilitation provides the opportunity to reduce shore erosion and improve the aesthetics of the lake area. Shore treatments that use vegetation can also provide significant habitat for wildlife.

The primary constraints for any shoreline treatment include adequate protection from erosion, cost, and potential habitat loss. These constraints are particularly important in areas subject to heavy winds and wave action, such as along the unprotected eastern shore.

The large range of water levels maintained at the lake poses significant design problems to many shore treatments. Water levels range from as low as 48.4 feet in the winter to 51.4 feet in the summer. Many types of vegetation will not thrive in water depths that vary by as much as 3 feet. Structural controls must be designed so that the base of the protected shore is not exposed at low winter water levels, and adequate freeboard is maintained above the high summer water levels.

Each shoreline treatment must also be appropriate for the type of recreational uses and habitat occurring nearby. Different areas of the lake have different access, safety, aesthetic, and habitat requirements. Near the boathouse where boating and recreation are intensive, a sharp interface between the lake and the shore may be appropriate. In more natural areas of the park such as along the eastern shore a vegetated shoreline would be preferred.

The current configuration of the grouted rock rip-rap shore, while highly functional, provides the opportunity for improved aesthetics. Planting trees or other vegetation could significantly increase the visual appeal of this shore treatment.

Children do use the lake frequently; as a result, any design should include safety considerations. It is generally recommended that lake shore water depths be less than 2 feet to reduce the risk of accidental drowning (J. Harlan Glenn and Associates).

C. SAILBOARD BEACH

The sailboard beach will improve access to the lake for sailboarders. An important constraint is the ability of the design to withstand erosion by wind and wave action. A sand beach is preferable for beach users, but a gravel beach would be more resistant to erosion.

The primary function of the beach is to provide access to the lake. This requires that the beach have a fairly shallow slope (on the order of 10:1). The beach should also extend into the lake to a depth suitable for launching sailboards (so that sailboarders do not have to walk on lake bottom silt).

The large range of water levels in the lake poses problems both in designing against erosion, and in designing for adequate sailboard launching depths.

IV. PROJECT ALTERNATIVES

A. DREDGING LAKE ELIZABETH

Dredging of the lake will improve recreational opportunities and water quality, especially in the winter when water levels are held low to meet storage requirements. In the following, alternative dredging plans are presented, along with maps of proposed lake bathymetry.

1. Alternative 1: No Project

Under this alternative, no dredging would be performed at Lake Elizabeth. As a result, water depths in the winter would continue to range from 2 to 4 feet, with shallow areas (less than 3 feet) in the Southeast portion of the lake near the inlet weir. At the summer water level of 51.4 feet, water depths would remain at 5 to 7 feet.

This alternative would have no up front costs. However, the lake would probably have to be closed to boating in the winter, due to shallow depths. There would also be no opportunity for improving water quality by deepening the lake. More importantly, sediment is continually being deposited in the lake, and dredging is inevitable at some point in the future to maintain recreational and flood control benefits.

Future dredging will require land for dewatering and disposing of dredge spoils. If hydraulic (suction) dredging is used, a dewatering pond of at least 3.5 to 7 acres will be required. This would most likely be located in the low undeveloped area along the North shore. This area is also an important location for on-site dredge disposal. Approximately 10 acres of land should be left available for future dredge disposal and dewatering.

2. Alternative 2: Uniform Dredging

Under this alternative, the entire lake bottom would be dredged to an elevation of 44.3, with the exception of the northwestern and northeastern lobes. This would remove most of the deposited material, and restore the lake bottom to its original designed configuration. Figure 4 shows the proposed lake bathymetry.

At a winter lake level of 48.4 feet, this alternative would result in water depths greater than 4 feet in most parts of the lake. In the summer, depths would be approximately 7 feet. This would improve water quality and boating opportunities.

This alternative would result in 145,200 cubic yards of dredge material for disposal. If this material is disposed of in the low undeveloped area along the north shore in 20-foot mounds (10:1 side slopes), 34 acre-feet of 100-year flood storage would be lost. This leaves a net remaining storage of 951 acre-feet (with the lake level of 48.4 feet), which is above the 931 acre-feet of storage required by the County. Figure 5 shows the effect of this dredge disposal on the stage-storage curve for the lake.

Some or all of the storage lost due to spoil disposal can be recovered by including areas between the SPRR and WPRR tracks in the City's agreement with Alameda County. With existing city land, this results in a gain of 24 acre-ft of 100-yr flood storage. Adjoining private land currently provides an additional 48 acre-ft of storage. Because this land is not owned by a public agency, the long-term availability of flood storage is uncertain.

3. <u>Alternative 3: Non-Uniform Dredging</u>

This alternative, shown in Figure 6, is similar to alternative 2, but also includes a deep area near the outlet weir. This area would be dredged to a bottom elevation of 38 feet, and would have water depths as high as 10 feet in the winter. This deep pond is designed to provide additional sediment storage in the area of maximum deposition. The frequency of future dredging would decrease, and the volume of material excavated during each dredging event would increase. As a result, overall costs would decrease, since the costs per cubic yard are lower for larger excavation volumes.

One possible drawback to this design is the uncertainty regarding the seepage of the lake water into the underlying aquifers. Although boring log data are limited in the area, it appears that the lake is underlain by a thin clay layer overlying a sand and gravel aquifer. If the deeper basin extended beyond the clay layer, seepage losses may increase.

The dredging of the deep area would result in an additional 34,000 cubic yards of material. The total volume for disposal would then be 179,000 cubic yards.

4. <u>Preferred Project</u>

The dredging alternative that best meets the City's needs is Alternative 2, Uniform Dredging. This alternative results in a deeper lake with improved opportunities for recreation and water quality.

The preferred dredging technique is suction dredging used in combination with a series of drying ponds, as described in Section V.1. This method is less expensive than mechanical dredging, and would cause less damage to the original lake bottom. Drying spoils in a series of ponds will accelerate drying and require less area.

The preferred dredge disposal location is in the undeveloped area north of the Lake. Dredge spoils will be placed in 20-foot high mounds with 10:1 side slopes. These mounds will be landscaped and used to develop recreation areas. Disposal in this manner will meet the County's flood control storage criteria, and will be considerably cheaper than off-site disposal.

The total cost for the preferred Lake Dredging project is $694,000, including dredging and on-site disposal.

B. SHORELINE REHABILITATION

Shoreline rehabilitation alternatives are designed to address site-specific erosion problems, aesthetic considerations, recreational uses, and habitat value. Treatment alternatives for each reach of shoreline are described below.

1. Treatment 1: Vegetated Rock Rip-Rap

This treatment involves a combination of rock rip-rap and vegetation, and is shown in detail on Figure 7. The lake bank would be graded to a 3:1 slope, and covered with geotextile fabric and cobble-sized rock rip-rap. The geotextile fabric would protect against erosion of fine-grained material from behind the rip-rap. In addition, it provides some support, preventing the rock from sinking into the underlying clay soils. Willow cuttings would be planted between the rocks to provide additional slope stability, some habitat value, and improved shoreline aesthetics. The rip-rap would extend into the lake to an elevation of about 48 feet to ensure protection under both winter and summer water levels. Tule grass (Scirpus) (currently growing around the lake) would become established in a 10 to 15 foot band of shallow water immediately offshore to provide additional protection and habitat.

Treatment 1 could be used in active erosion areas along the eastern shore and at transitions from the existing grouted rock rip-rap. Potential concerns with rip-rap include possible use by rats and other rodents. The suitability of the bank for the establishment of willows is also uncertain, and will depend on the salinity of lake water as well as the tolerance of the vegetation to fluctuating lake levels.

Costs for this shoreline treatment include a \$87/cy installation cost for cobble rock, and \$1.50/square yard for soil stabilization fabric. This translates to an estimated unit cost for this treatment of about \$68 per linear foot of shore.

2. Treatment 2: Vertical Retaining Wall

Treatment 2 uses a vertical retaining wall to protect the shore from wave action, and is detailed in Figure 8. This wall could alternatively consist of concrete sheet pile, steel-soldier pile, or wood pile. The toe of the wall would meet the lake bottom at an elevation of about 48 feet, and the top of the wall would be approximately level with the lake shore pathway. Immediately offshore the slope of the lake bottom would be graded to 10:1, to provide a shelf of shallow water in which tule grass and other wetlands vegetation would become established. The wetlands vegetation would cover the face of the concrete wall, and provide a more natural transition from the lake to the shore. This shallow shelf is also necessary as a safety feature to help prevent accidental drowning.

This alternative provides strong protection from erosion, and results in a sharp transition between the lake and the shore. It also involves higher construction costs, and would be most appropriate in areas of high erosion potential, such as the exposed eastern shore, or along the more developed portions of the lake.

Several alternative materials could be used to construct the wall. The most permanent alternatives would be a concrete sheet pile wall, or a steel-soldier pile wall. However, these materials are relatively expensive, and are visually less attractive than wood. A wood-pile wall would be less permanent, with an expected life of approximately 30 years.

Assuming a 4 foot wall height, unit costs for this treatment range from $96 per linear foot for concrete sheet pile to $74 per linear foot for wood pile.

3. <u>Treatment 3: Concrete Sheet Pile Retaining Wall</u>

This treatment would be most appropriate for replacing sections of failing vertical walls in the vicinity of the boathouse. As shown in Figure 9, 6 inch concrete sheet pile would be driven into the native clay. Existing and imported fill would be placed behind the wall. Assuming an 8 foot wall height, this alternative is estimated to cost about $208 per linear foot.

4. <u>Treatment 4: Concrete Planters Within Existing Grouted rock rip-rap</u>

This alternative, illustrated in Figure 10, would be used to improve the visual appeal of the existing grouted rock rip-rap on the North shore, and to provide some habitat value. Three-foot diameter planters would be installed in holes excavated through the grouted rock rip-rap. Grout would then be placed between the planter and the edge of the hole. These planters would be used to establish shade trees at a distance no closer than 5 feet from the summer high water edge. The specific type of planting collar and tree should be determined by a qualified vegetation specialist.

The cost for each planter will include costs of drilling a hole into the existing rip-rap, planter collars, and the planted tree. The estimated total cost for installing each planter and tree is estimated as $126 per tree.

5. <u>Treatment 5: Vegetated Shoreline</u>

In many areas of the lake the existing vegetation is adequate for erosion control. This is particularly true along the Southern shore and in portions of the Northwest shore. Figure 11 details the conditions required for establishment of adequate stands of tule grass or other wetland vegetation. The lake bottom slope immediately offshore should be 10:1 or less, to provide a shallow shelf for plant growth. A minimum shelf width of 10 feet is recommended. Tules and other wetlands vegetation will generally not grow in water depths greater than 3 feet, and establish most densely in depths of 0 to 1 foot. The shore bank should be protected with grass or other vegetation, to prevent erosion by runoff and foot traffic.

In most areas, this treatment will simply involve leaving the shore as is, and will have minimal costs.

6. Treatment 6: Islands

The existing island provides considerable protection to portions of the eastern lake shore. Thus, one potential method for protecting the exposed eastern shore of the lake would be to construct off-shore islands. These islands would be constructed out of dredged material, and would significantly reduce wave action against the lake shore. Figure 12 shows one possible configuration for these islands.

This treatment alternative, while attractive from a shore erosion standpoint, does pose several problems. The City is currently attempting to control the population of domestic ducks and waterfowl at the lake. Islands provide ideal breeding habitat for these birds, and would require considerable wildlife management. In addition, islands in this portion of the lake would reduce the area available for boating and sailboarding, as well as conceal portions of the lake from the view of park rangers.

7. Preferred Project

Figure 13 and Table 1 summarize the preferred shoreline rehabilitation configuration for Lake Elizabeth. A sloped vegetated rock rip-rap treatment is used to reduce erosion along the eastern shoreline. The visual appeal of the existing north shore grouted rock rip-rap is improved by installing planters every 10 to 20 feet. Transition areas are stabilized by rock rip-rap, and a vertical retaining wall is installed near the boathouse. The remainder of the lake is left as vegetated shoreline. The total cost for this configuration is estimated as $292,000.

C. SAILBOARD BEACH

The sailboard beach would be located along the western lake shore north of the existing boathouse, and would be about 100 feet in width. Alternative designs include the use of either sand or gravel as beach material. While sand is a preferred substrate, gravel is more resistant to erosion.

1. Alternative 1: Sand Beach

Figure 14 shows a typical cross-section for this design alternative. The sailboard beach would be made up of a 2 foot deep layer of coarse sand underlain by filter fabric. The beach slope would be relatively shallow at 10:1, and would extend to a water depth of 5 to 7 feet in the summer. The filter fabric would lie on top of the native clay soil, and would be anchored by sand trenches to the shore and the lake bottom.

Coarse sand is estimated to cost $26.24 per cubic yard installed. Soil stabilization fabric is estimated to cost $0.85 per square yard.

2. Alternative 2: Gravel Beach

This design would be more resistant to erosion than a sand beach, but would be less appealing to beach users. The design would be similar to that shown in Figure 14, except that a 2 foot layer of gravel would replace the sand.

Gravel is estimated to cost $19.71 per cubic yard installed. The gravel beach would also require soil stabilization fabric at $0.85 per square yard.

3. Preferred Project

As a result of wave action and a lake level that fluctuates by as much as 3 feet within a year, shoreline erosion is a continuing problem at Lake Elizabeth. The preferred Sailboard Beach project is therefore a gravel beach (Alternative 2). This is more resistant to erosion, and would require less frequent replacement. Gravel has been successfully used at other sailboard beaches in the area (Lake Del Valle in Livermore, for example). The total cost for the preferred alternative is $17,140.

D. NEW SILTATION BASIN

This project would involve the creation of a new siltation basin along Mission Creek between the SPRR and WPRR tracks. This pond would remove sediment before the creek enters the lake basin, and could be integrated into the proposed golf course design. The area of the pond would be approximately 2.3 acres, with an average depth of 8 feet. The elevation of the pond bottom would be at 44 feet NGVD.

The actual shape and layout of the pond will depend upon the design of the golf course. Figure 15 shows one possible configuration for the basin. At least one section of the pond would have to be sufficiently narrow for a bridge across Mission Creek.

The pond will have to be dredged of accumulated sediment every 1 to 3 years to continue functioning properly. Alameda County Flood Control recommends annual dredging. Because of space limitations on the golf course, locating a site for drying dredged material will be difficult, and will depend ultimately on the golf course layout. One possible location is along the SPRR tracks.

Initial excavation of the pond will result in 30,000 cubic yards of material. If disposed of on-site, this material can be used to elevate tees and greens, as well as provide topography for general landscaping. Table 3 summarizes construction costs for the basin. Total costs range from $140,000 for on-site dredge disposal to $450,000 for off-site disposal.

V. DREDGING TECHNIQUES AND DISPOSAL OPTIONS

A. DREDGING TECHNIQUES

Two alternative dredging techniques could be used at Lake Elizabeth: Hydraulic Dredging and Mechanical Dredging.

1. Hydraulic Dredging

Hydraulic dredging, also referred to as suction dredging, involves pumping solids from the lake bottom within a suspension of water-earth slurry. Hydraulic dredging excavates at most 18% solids by volume, and requires extensive dewatering of the dredged material. The material is pumped directly from the lake bottom through a flexible pipeline into a pond for dewatering. Initial dewatering then occurs by settling and decanting free water back into the lake.

One method for dewatering is to pump material sequentially into a series of ½ to 1 acre ponds. By the time the last pond is filled, material in the first pond is sufficiently dewatered for on-site disposal. For 145,200 cubic yards of material, approximately 7 ponds would be required, with a total area of 3.5 to 7 acres.

A second method is to pump all dredged material into a single pond, and allow drying to occur over a period of up to 6 months. The size of the dewatering pond will depend upon the volume of material excavated. During pumping, the excavated material will increase in bulk by about 40 percent. As a result of decanting, the pumped material shrinks by about 50 percent. For optimal drying, the thickness of spoils remaining after decanting should be no greater than 3 feet. To decant and dry 145,000 cubic yards of dredging (dredging alternative 2), a 21 acre dewatering pond would be required. This is approximately equal to the total area of the low undeveloped area immediately North of the lake.

Estimated costs for this dredging technique include $70,000 for equipment mobilization, and $4.30 per cubic yard for excavation.

2. Mechanical Dredging

The primary mechanical dredging system considered here uses a clamshell mounted crane aboard a portable barge. This system would afford better control than other mechanical systems, and would cause less damage to the shoreline. The dredged material is hauled to the shoreline by the clamshell, and has a solids content of 90 percent. This method therefore requires significantly less dewatering than does hydraulic dredging.

Estimated costs for this method are generally higher than hydraulic dredging, and include $110,000 for mobilization and $6 per cubic yard for excavation.

Other mechanical dredging techniques exist, but are generally unsuitable for Lake Elizabeth. A shore-mounted dragline system would have insufficient control to obtain desired lake bottom slopes, and would cause damage to the existing lakeshore. Temporary dewatering and clamshell dredging of the lake would improve equipment access, but would cause significant short-term disruption of the lake habitat and recreational activities.

3. Recommended Dredging Technique

Due to the relatively soft, silty nature of the deposited sediment, hydraulic dredging would be an efficient and less costly method for dredging Lake Elizabeth. Hydraulic dredging could be used to pump out the loose sediment while leaving the original clay lake bottom relatively intact. However, this technique would require a dewatering an area of 3.5 to 21 acres, depending upon the dewatering method used.

Mechanical clamshell dredging would be more costly, and could disrupt the thin clay layer that currently separates the lake from the underlying sand and gravel aquifer. However, this method requires no dewatering, and spoils can be trucked directly to the appropriate disposal site.

Timing of dredging is also an important consideration. Dredging will cause significant short-term disruption of normal lake activities. The best time for dredging would be in the late winter, since there is less boating and recreation on the lake at this time. In addition, the entire subsequent dry season can be used to dewater dredge spoils (if hydraulic dredging is used).

B. DISPOSAL OPTIONS

A number of on- and off-site disposal options exist for the dredged material. These are discussed in below, and are summarized in Table 3 in terms of potential disposal volumes and effects on lake storage volume.

1. On-Site Disposal North of the Lake

Along the north shore of the lake is a low-lying undeveloped area of about 21 acres, with elevations of 50 to 52 feet. This area is relatively flat, and dredge spoils could be placed, shaped, and planted to provide for recreational development and topographic variation. This area is also the most likely site for the hydraulic-dredging dewatering pond.

This area provides important storage for 15-year and higher flood events. Thus, dredge disposal here will result in loss of flood storage volume. 145,200 cubic yards of disposed dredge material (dredging alternative 2) will result in the loss of 34 acre-feet of flood storage if piled in 20-foot mounds with 10:1 side slopes. These mounds would occupy an area of about 9 acres. Note that because this area is low, it provides storage for lower magnitude floods such as the 15-year event, as well as for major floods. Thus, it is important that any strategy for recovering flood storage include storage at low elevations as well as at the 100-year flood elevation.

2. On-Site Disposal On City-Owned Property Between the SPRR and WPRR Tracks

This area is relatively high, at 54 to 56 feet in elevation. Thus, material piled here would have less effect on 100-year flood storage. A 9-hole golf course is currently planned for this area, and dredged material could be used to elevate tees and greens above the 100-year flood elevation. Elevating tees and greens 5 feet above existing ground would use approximately 3,100 cubic yards of material. Elevating tees and greens 10 feet would use 6,200 cubic yards. Additional material could be used for general landscaping within the course.

One obstacle to this alternative is the timing of the golf course construction and the dredging project. If the golf course is constructed first (as is likely), disposal of lake dredge material would not be possible here. If a new siltation basin is incorporated into the design of the golf course, this area could be used for disposal of 30,000 cy of dredge spoils excavated from the basin. As discussed above, up to 6,200 cy of this material can be used to elevate tees and greens. If used in landscaping, the remaining 23,800 cy would occupy 3 acres in 5 foot mounds, or 1.5 acres in 10 foot mounds.

The Warm Springs extension of the Bay Area Rapid Transit (BART) system is proposed to be constructed through this area. BART has not yet determined if they will purchase or obtain easements for the land required for right-of-way. Both aerial alignments and subsurface tunnels are being considered. BART will have little effect on existing flood storage, but the alignment of the proposed BART line could limit opportunities for dredge disposal in the area between the railroad tracks.

3. Disposal/Fill of Shallow Portions of the Lake

The northwestern lobe of the lake is currently shallow, and receives limited use by boats. This 6 acre area could be filled and converted to a shallow wetland that would complement the existing New Marsh. By raising the average bottom elevation by 1.9 feet, about 20,000 cubic yards (12 acre-feet) of material could be disposed of here. This would raise the average bottom to about 47.9 feet, resulting in average water depths of 0.5 feet in the winter (at a 48.4 foot water level) and 3.5 feet in the summer. This would have the added benefit of protecting the Northeast shoreline from erosion, eliminating the need for about 900 feet of structural shoreline treatment. The deposited spoils would still be subject to wave erosion.

This disposal option would have no effect on lake storage, since all fill would occur below the lake water surface.

4. Off-Site Disposal

Off-site disposal would be more expensive than on-site disposal, but would have no effect on lake storage. A potential disposal site is the East Bay Disposal Company, located 4.5 miles south of Lake Elizabeth off Durham Road. The landfill accepts soil material deemed non-toxic and non-hazardous in accordance with Title 22 of the California Administrative Code. The material must be free of excess water before disposal.

Off-site disposal costs include $1.96 per cubic yard for hauling, and $8.40 per cubic yard for disposal. The total cost for this disposal alternative is $10.36 per cubic yard. This alternative also has impacts due to the transportation of the material by trucks.

5. Recommendations

A critical variable in selecting a disposal site is the County's storage requirement. If dredge material is spoiled in 20-foot mounds north of the lake, 34 acre-feet of storage will be lost, leaving a net remaining storage volume of 951 acre-feet with the lake level at 48.4 feet. This is well above the storage requirement of 931 acre-feet currently stipulated in the City's leasing agreement. Disposal of dredge material here would also increase opportunities for developing this area for recreational uses.

Because it is likely the golf course project may begin before lake dredging, use of lake dredge material for tees and greens may not be feasible. However, if a new siltation basin is incorporated into the golf course design (see section IV.D), material from the basin can be used here.

C. COSTS

Table 4 summarizes estimated dredging costs for different dredging techniques and disposal alternatives. Costs are based on dredging 145,000 cubic yards of material (dredging alternative 2). For on-site disposal, costs range from $694,000 for hydraulic dredging to $980,000 for clamshell dredging. For off-site disposal, costs range from $2,200,000 to $2,500,000.

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TABLE 1:

SUMMARY OF COSTS FOR PREFERRED SHORELINE TREATMENTS

CONFIGURATION 1

Treatment	Quantity	Unit	Unit Cost	Total Cost
1. Vegetated Rip-Rap	3080	lf	$68	$209,440
2. Sheet-Pile Wall	300	lf	$208	$62,400
3. Planters in Existing Grouted Rip-Rap (every 15 feet)	160	ea.	$126	$20,160
TOTAL				$292,000

14\795tabl1.wq1\07-08-92\a1_b41

TABLE 2:

SUMMARY OF COSTS FOR CONSTRUCTION OF A NEW SILT BASIN

Item	Quantity	Unit	Unit Cost	Total Cost
Mobilization	1	ea	$20,000	$20,000
Excavation	30000	cy	$4.0	$120,000
Disposal				
On-site	30000	cy	$0	$0
Off-site	30000	cy	$10.4	$310,800
TOTALS				
On-site Disposal				$140,000
Off-site Disposal				$450,800

14\795tabl2.wq1\07-08-92\aL.b41

TABLE 3

SUMMARY OF LAKE ELIZABETH STAGE-STORAGE RELATIONSHIPS

ALTERNATIVE	STORAGE (ACRE-FT) AT EACH ELEVATION						
	48.4	50	52	53	54	55	55.6
Existing Lake at 48.4 feet	0	134	360	510	676	862	985
Disposal North of Lake							
5 foot piles	0	134	342	474	622	790	902
10 foot piles	0	134	351	492	649	826	943
15 foot piles	0	134	354	498	658	838	957
20-foot mounds, 10:1 slopes	0	134	352	494	652	832	951
Area between SPRR and WPRR							
City Property	0	0	0	0	2	15	24
Private Land	0	0	0	0	15	36	48
TOTAL	0	0	0	0	17	51	72

17/7[illegible]

TABLE 4:

SUMMARY OF COSTS FOR ALTERNATIVE DREDGING TECHNIQUES

1. HYDRAULIC DREDGING

Item		Quantity	Unit	Unit Cost	Total Cost
Mobilization		1	ea	$70,000	$70,000
Excavation		145000	cy	$4.3	$623,500
Disposal					
	On-site	145200	cy	$0	$0
	Off-site	145200	cy	$10.4	$1,504,272
TOTALS					
	On-site Disposal				$693,500
	Off-site Disposal				$2,197,772

2. CLAMSHELL DREDGING

Item		Quantity	Unit	Unit Cost	Total Cost
Mobilization		1	ea	$110,000	$110,000
Excavation		145000	cy	$6.0	$870,000
Disposal					
	On-site	145200	cy	$0	$0
	Off-site	145200	cy	$10.4	$1,504,272
TOTALS					
	On-site Disposal				$980,000
	Off-site Disposal				$2,484,272

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igure 1. Existing Bathymetry of Lake Elizabeth

Contour Interval = 1'

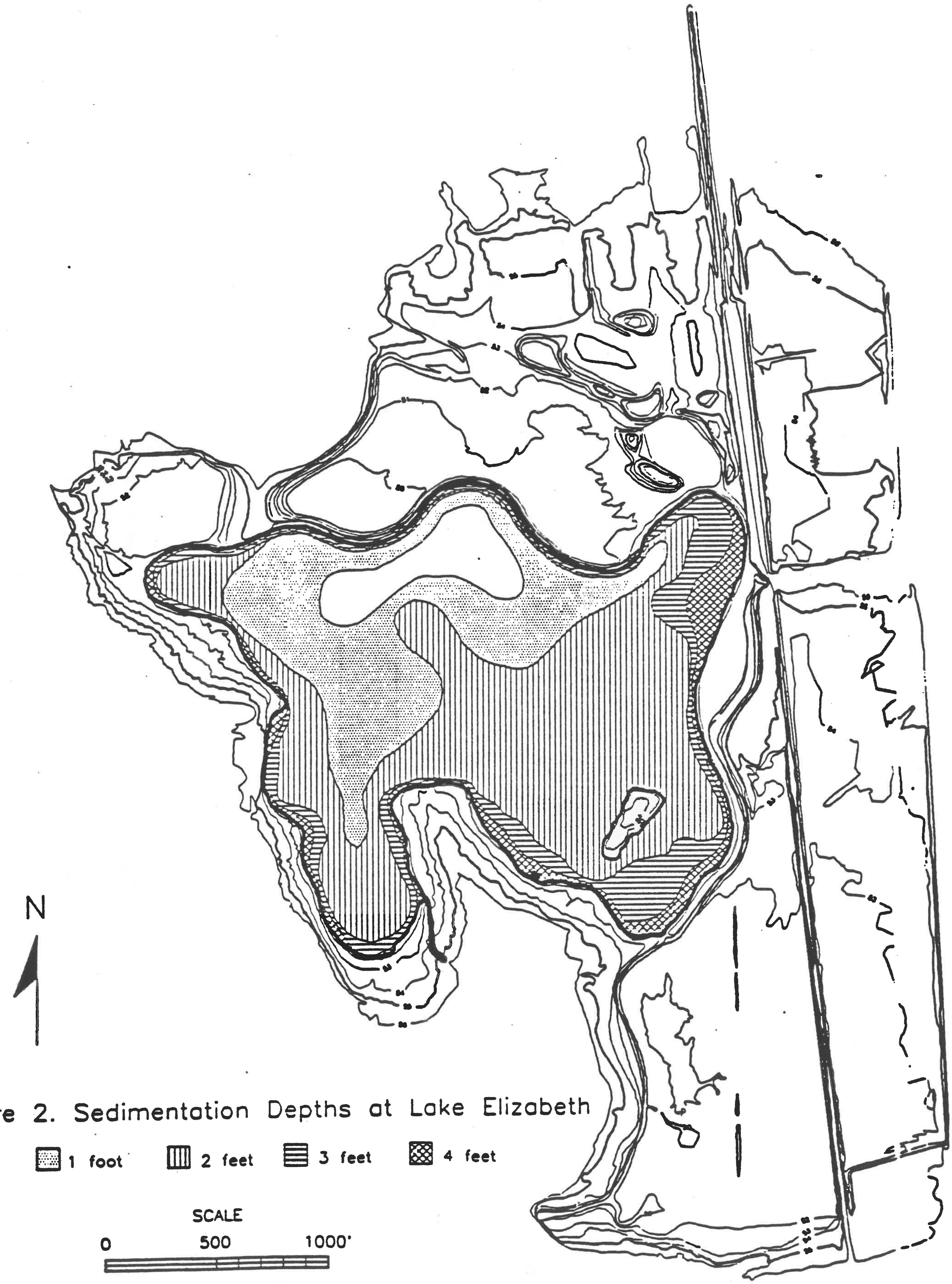
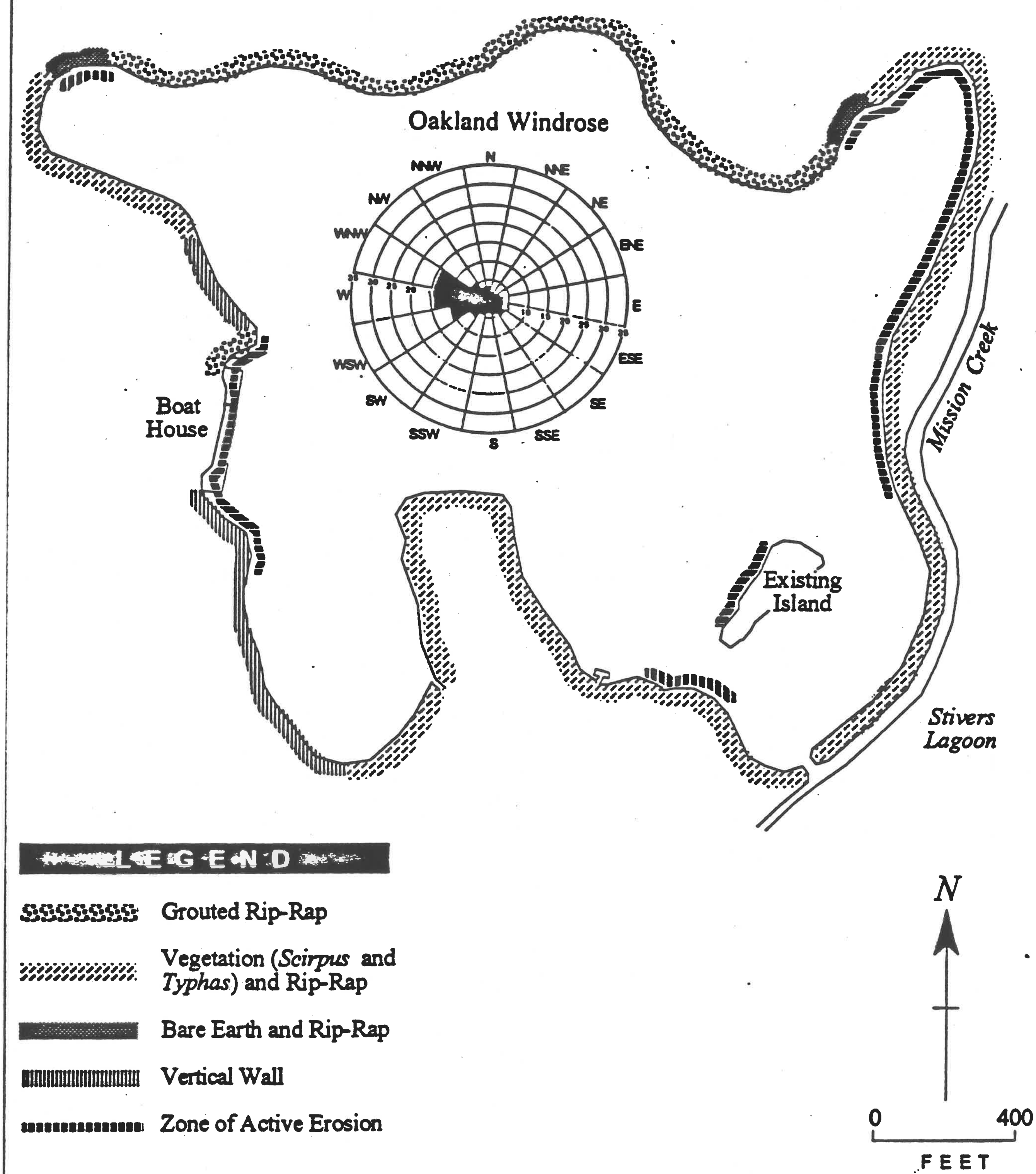


Figure 2. Sedimentation Depths at Lake Elizabeth



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Consultants in Hydrology

Lake Elizabeth

Existing Shoreline Treatments

Figure 3

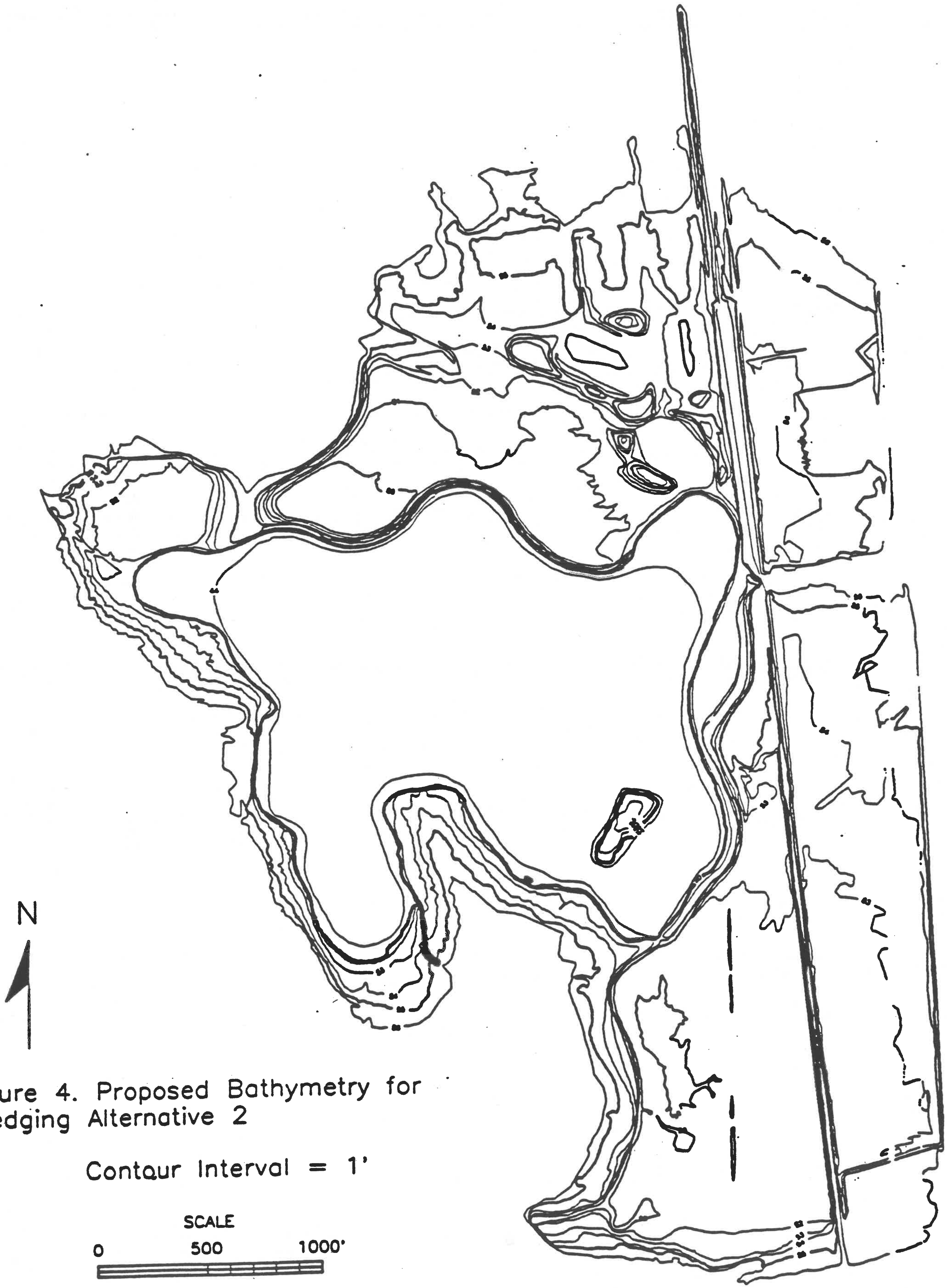
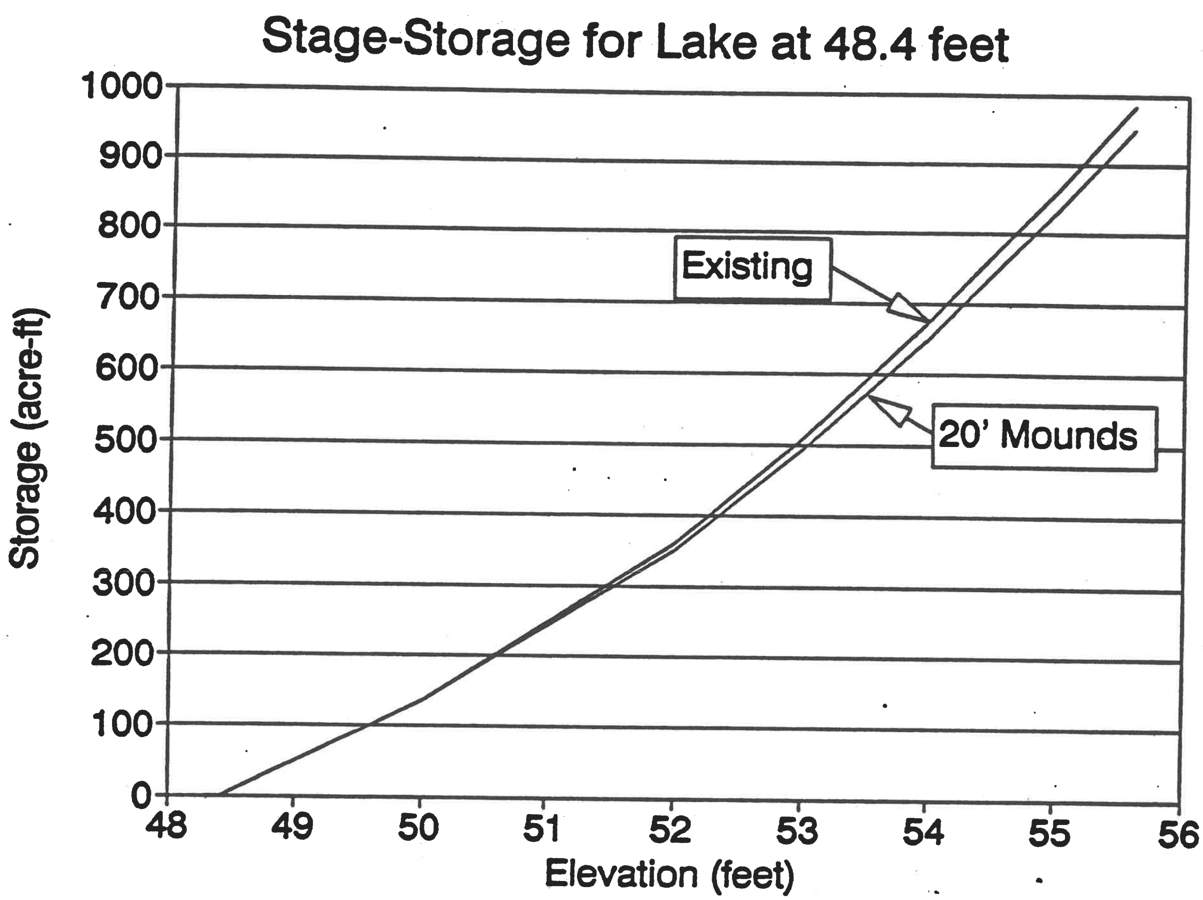


Figure 4. Proposed Bathymetry for Dredging Alternative 2

Contour Interval = 1'



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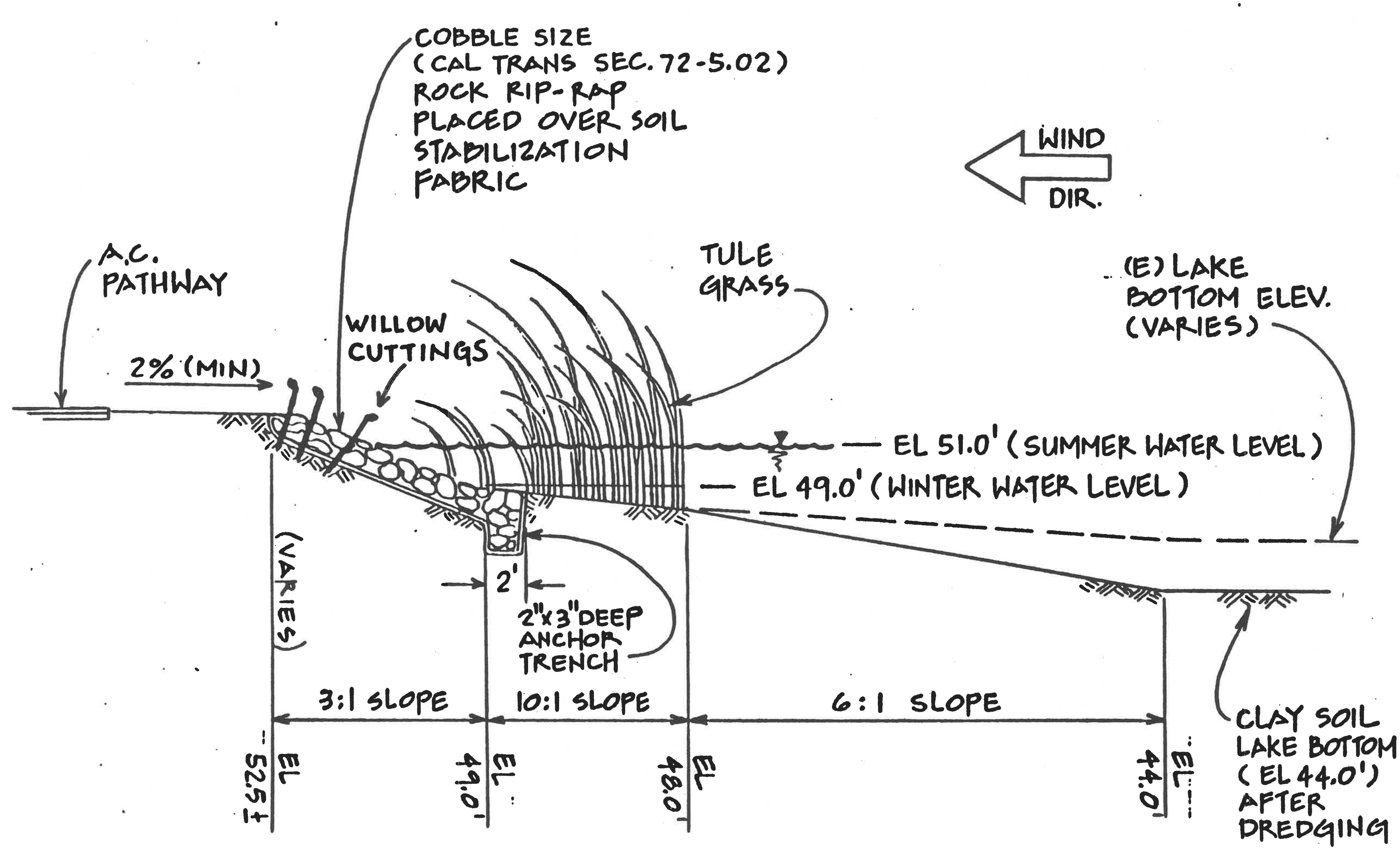
Stage-Storage Curves for Dredge Disposal Options

Figure 5

Figure 6. Proposed Bathymetry for Dredging Alternative 3

Contour Interval = 1'



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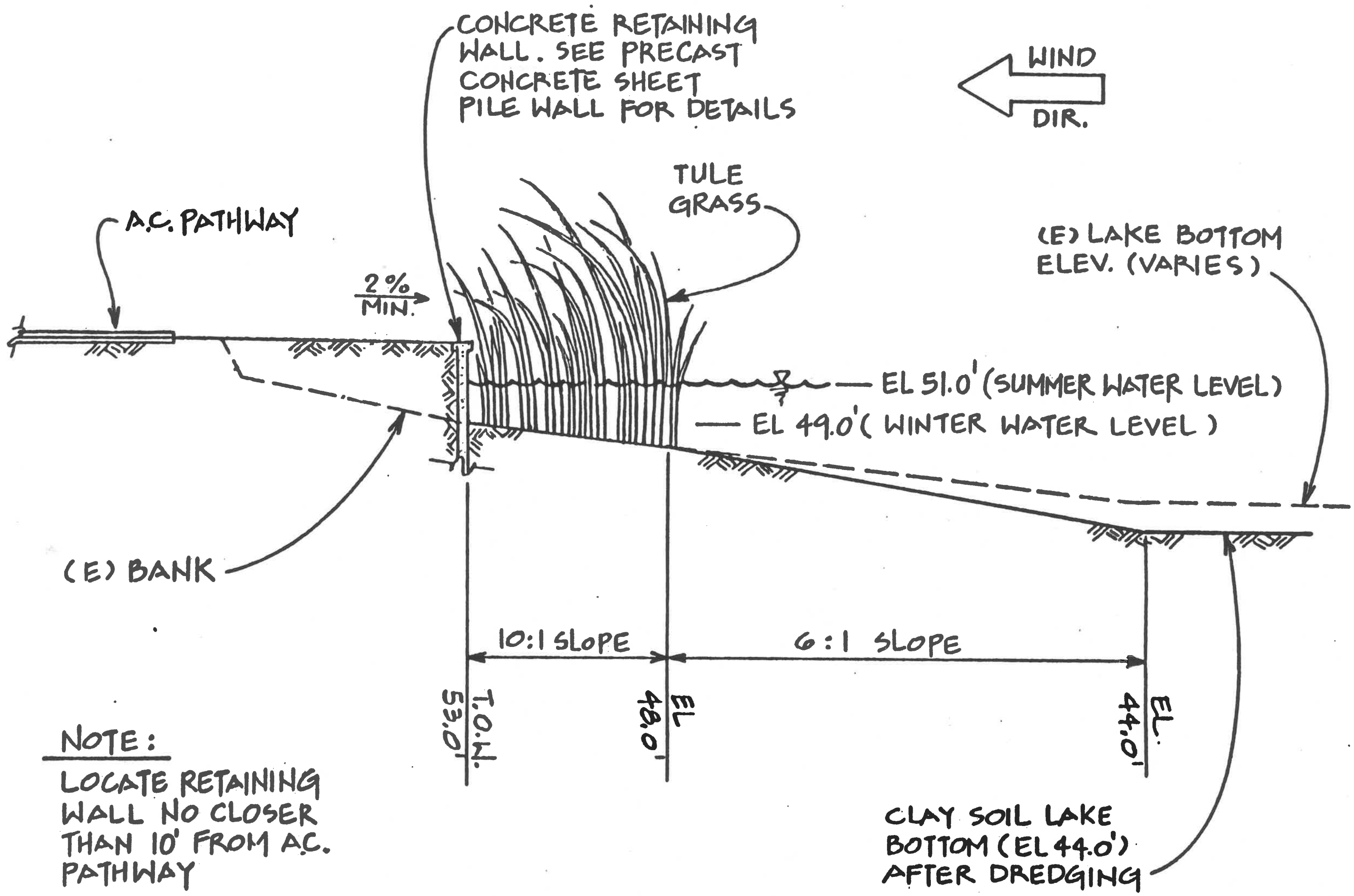
Treatment 1:
Rip-Rap Protected Vegetated Shore

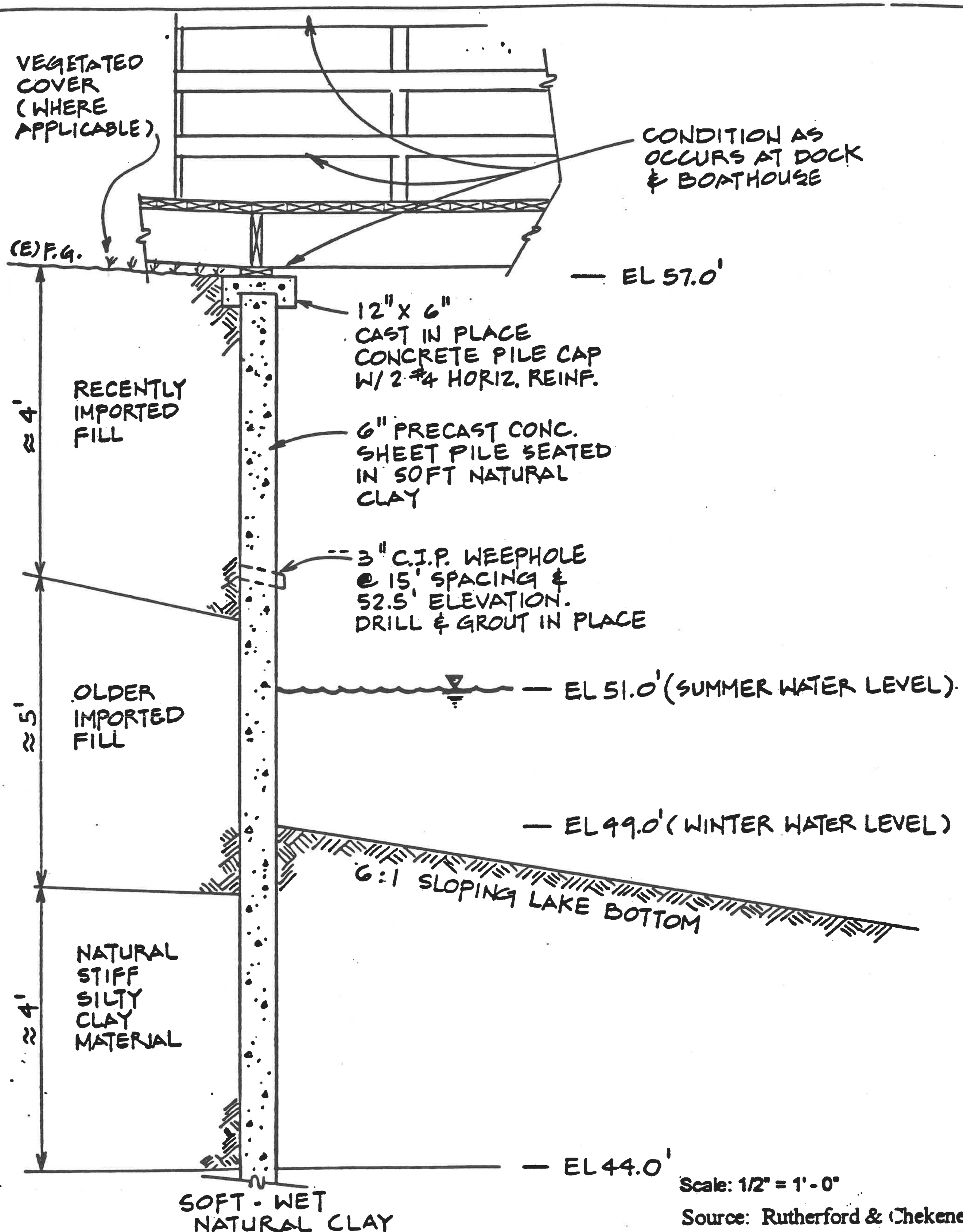
Scale: 1/8" = 1' - 0"

Source: Rutherford & Chekene

Figure
7



Philip Williams & Associates, Ltd. Consultants in Hydrology	Treatment 2: Vertical Retaining Wall with Vegetation	Scale: 1/8" = 1' - 0" Source: Rutherford & Chekene	Figure 8



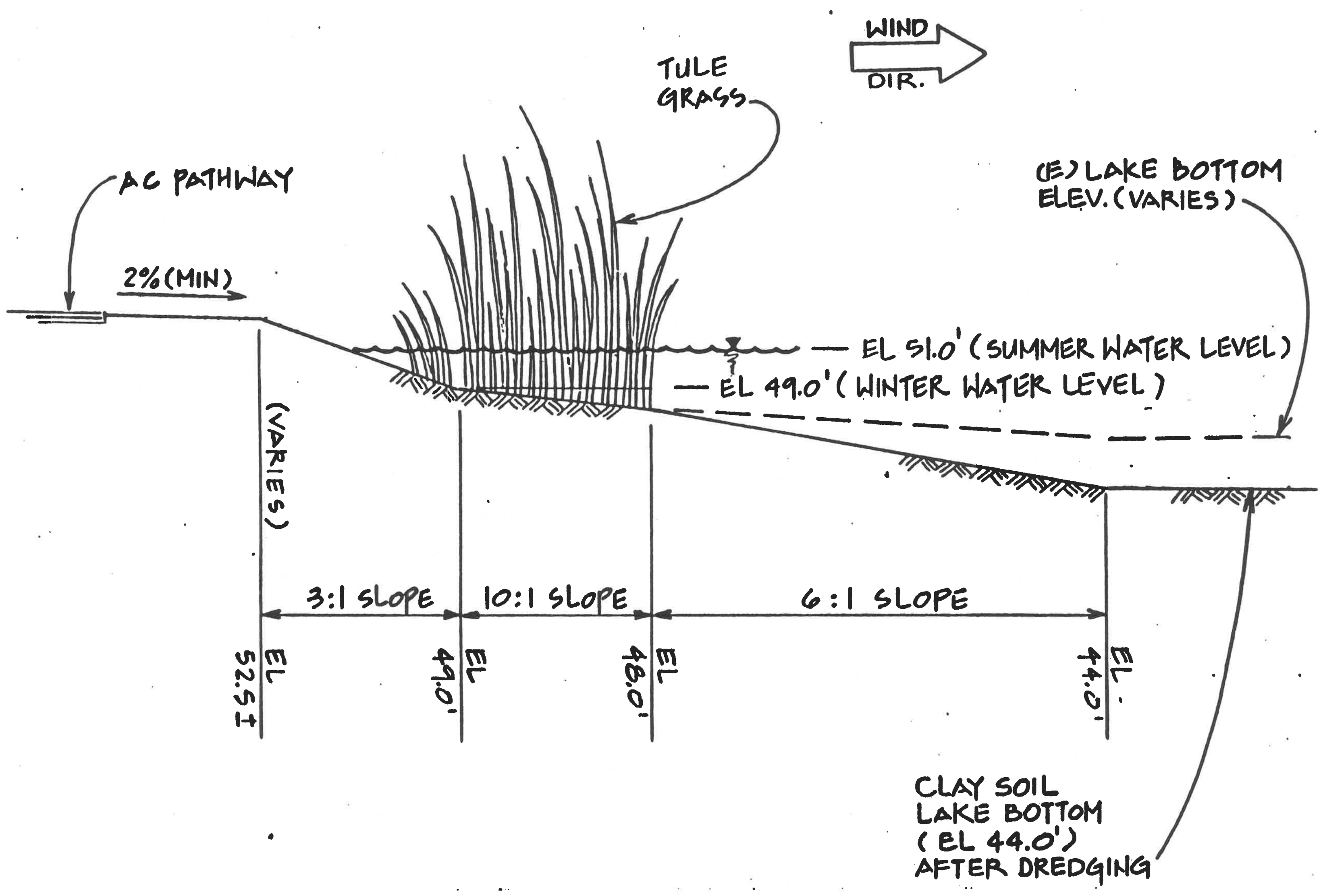
Scale: 1/2" = 1' - 0"

Source: Rutherford & Chekene

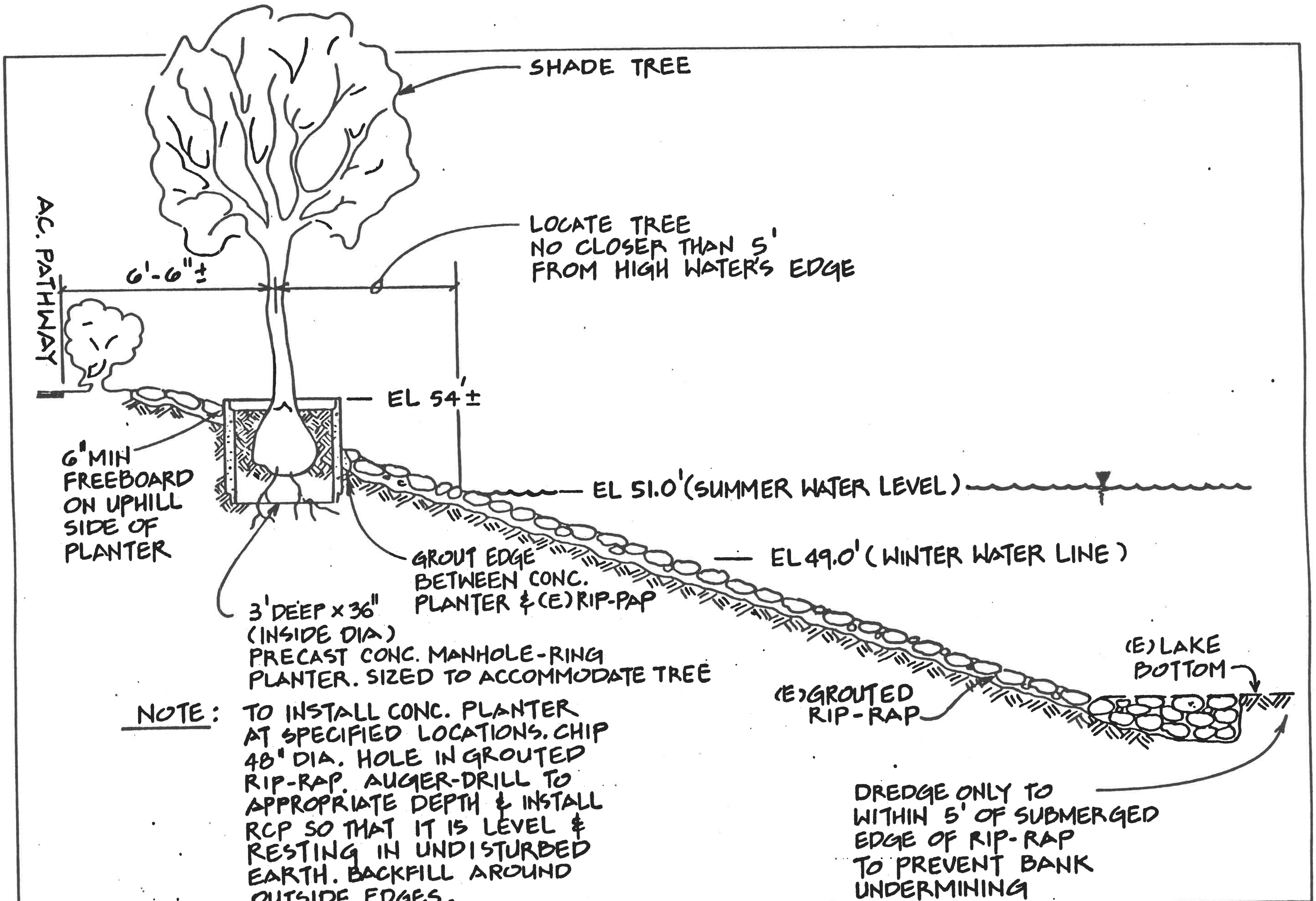
Philip Williams & Associates, Ltd
Consultants in Hydrology

Treatment 3:
Precast Concrete Sheet Pile Retaining Wall

Figure 9



Philip Williams & Associates, Ltd. Consultants in Hydrology	Treatment 5: Vegetated Shore	Scale: 1/8" = 1'-0" Source: Rutherford & Chekene	Figure 11



Philip Williams & Associates, Ltd. Consultants in Hydrology	Treatment 4: Concrete Planter with Rip-Rap Bank	Scale: 1/4" = 1' - 0" Source: Rutherford & Chekene	Figure 10

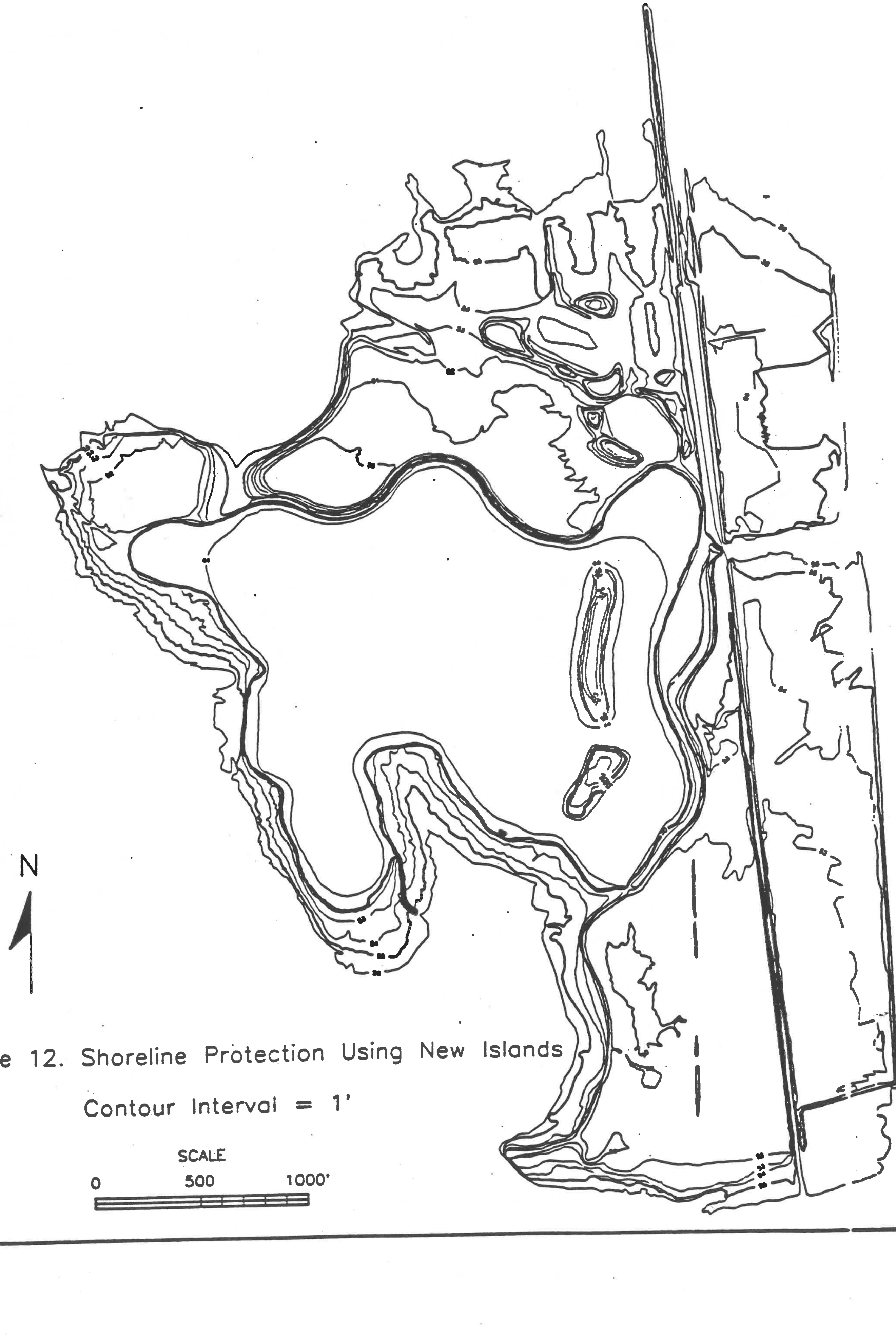
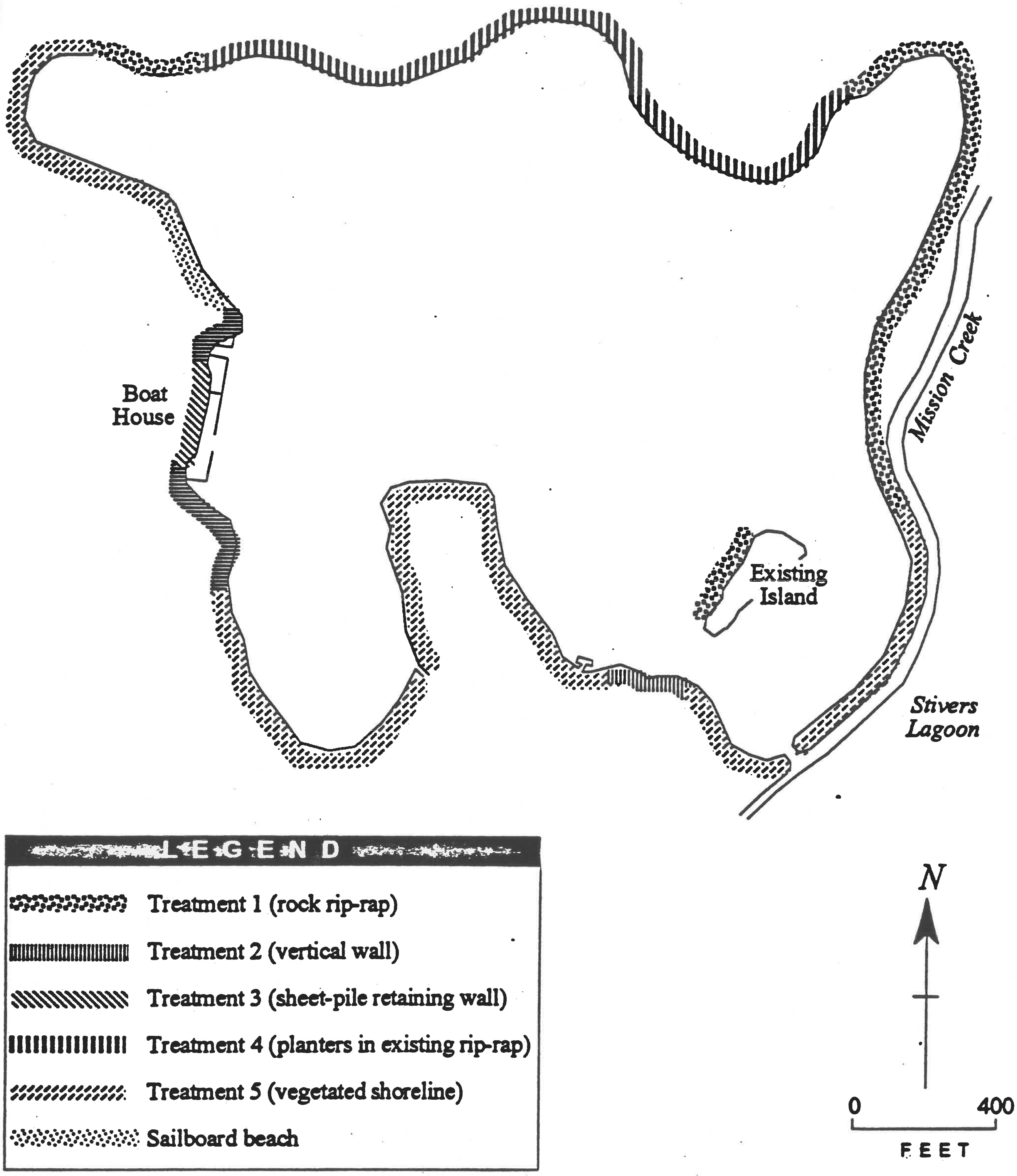


Figure 12. Shoreline Protection Using New Islands

Contour Interval = 1'



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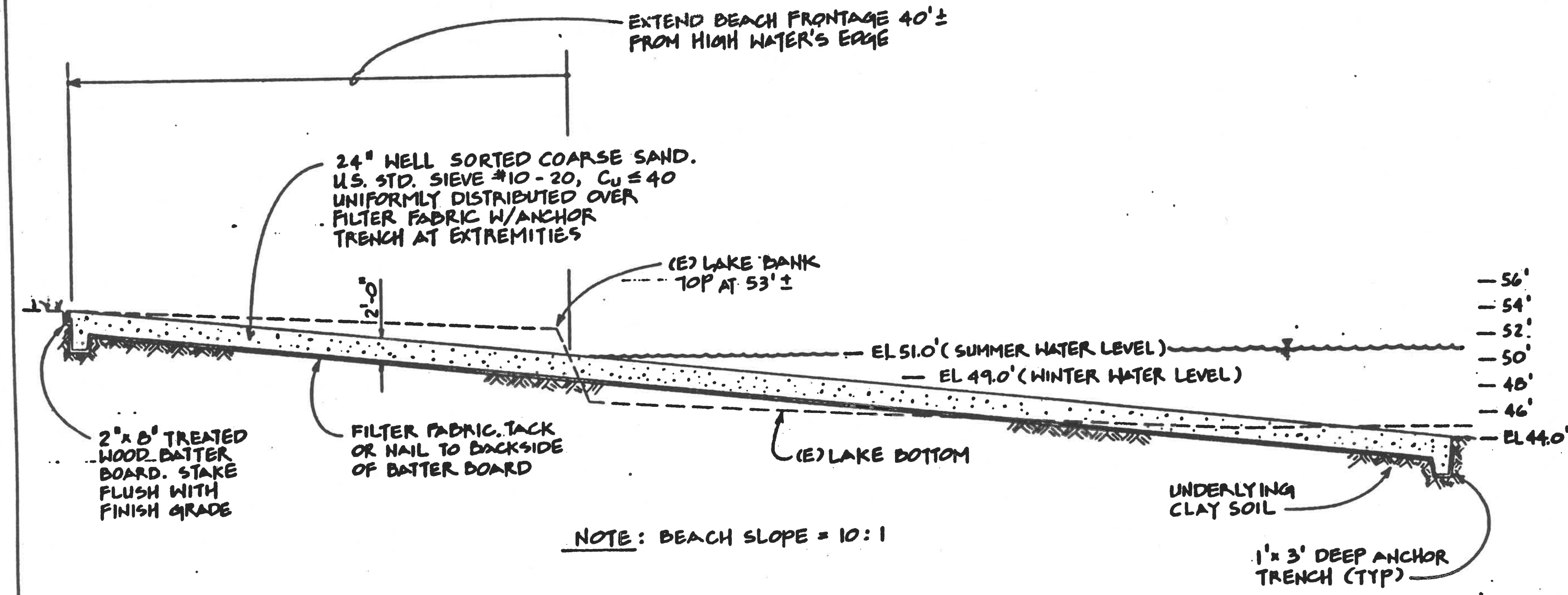
Consultants in Hydrology

Application of Shoreline Treatment Alternatives to Lake Elizabeth

Figure 13



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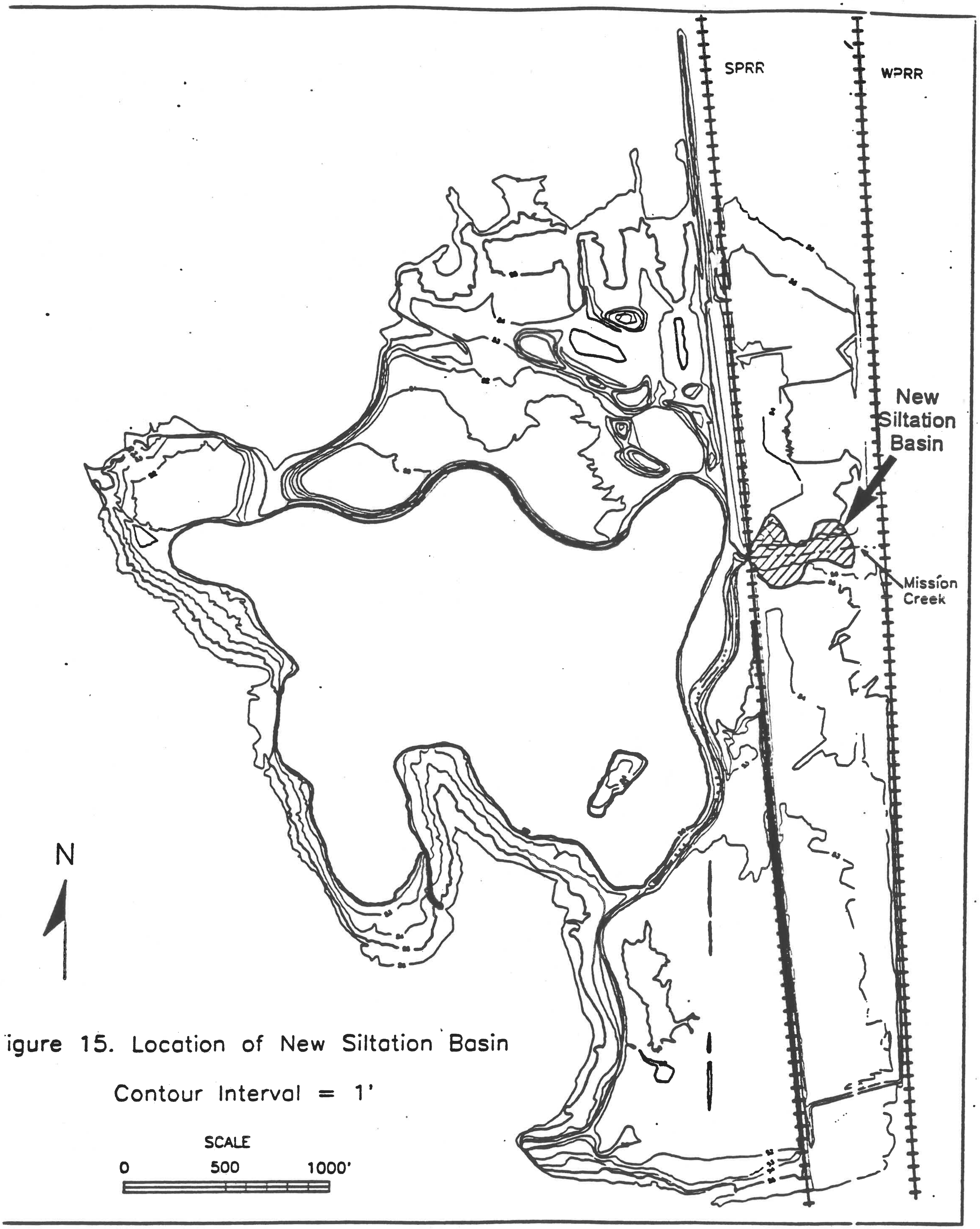
Sailboard Beach

Source: Rutherford & Chekene

Figure 14



igure 15. Location of New Siltation Basin

Contour Interval = 1'

APPENDIX C

STIVERS LAGOON MARSH
Restoration / Enhancement Plan

February 1993

Prepared for:
City of Fremont

STIVERS LAGOON MARSH
Restoration / Enhancement Plan

February 1993

Prepared for:
City of Fremont

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In Association With:

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San Francisco, CA. 94133

ESA

STIVERS LAGOON MARSH RESTORATION/ENHANCEMENT PLAN

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1.0 INTRODUCTION

The City of Fremont, recognizing that the quality of Stivers Lagoon Marsh has been deteriorating, has requested development of a marsh enhancement plan. Stivers Lagoon Marsh encompasses an area of approximately 40 acres to the southeast of Lake Elizabeth in Fremont's Central Park. Lake Elizabeth is an 88 acre, constructed lake first developed in 1968 and subsequently expanded in 1986. Stivers Lagoon Marsh is a remnant of a formerly larger body of natural open water and marsh which, due in large part to an altered surface and groundwater hydrologic regime, has changed to an emergent wetland that is quite dry in summertime. While Stivers Lagoon still retains significant habitat value and also serves as a recreational and educational facility to the community, the marsh will become primarily a weedy, non-native grassland unless specific restoration and management actions are taken.

This report first summarizes historical conditions and discusses the existing topography, hydrology, vegetation, wildlife uses and human access and use of the Lagoon. Research for this portion of the report included a review of the literature, field reconnaissance, surveys and data collection, and consultation with agency staff. This report identifies restoration plan objectives and develops specific restoration strategies. The overall restoration plan allows for "adaptive management" of the marsh, in which the water regime is modified and the results monitored. Management of the marsh can be then "fine-tuned" as necessary to best meet plan objectives.

2.0 HISTORICAL CONDITIONS

Stivers Lagoon Marsh (referred to as either the "lagoon" or "marsh" hereafter) is one of a number of freshwater marshes along the east side of the Hayward Fault. The marsh was formed as a sag pond as a result of crustal movement along the fault. This movement has created a shallow depression of about 200 acres which retained freshwater runoff and created the Marsh. The wetland is fed by Mission Creek and several small tributary creeks. Mission Creek flows northwest in upstream reaches, turns at the marsh crossing the fault and flows southwest towards San Francisco Bay.

The marsh historically included both areas of deep open water and freshwater marsh which were used by the Native Americans, and subsequently by Spanish and American settlers. At the time of the earliest maps (Figures 1 and 2), it occupied an area of about 200 acres. However, even by the mid-1800's to early 1900's, when the first maps were prepared, significant modifications were evident. In the 1904 map (Figure 2), it can be seen that a levee had been constructed around the marsh to limit its areal extent. Thus, the natural marsh might have been significantly larger than even the earliest maps indicate.

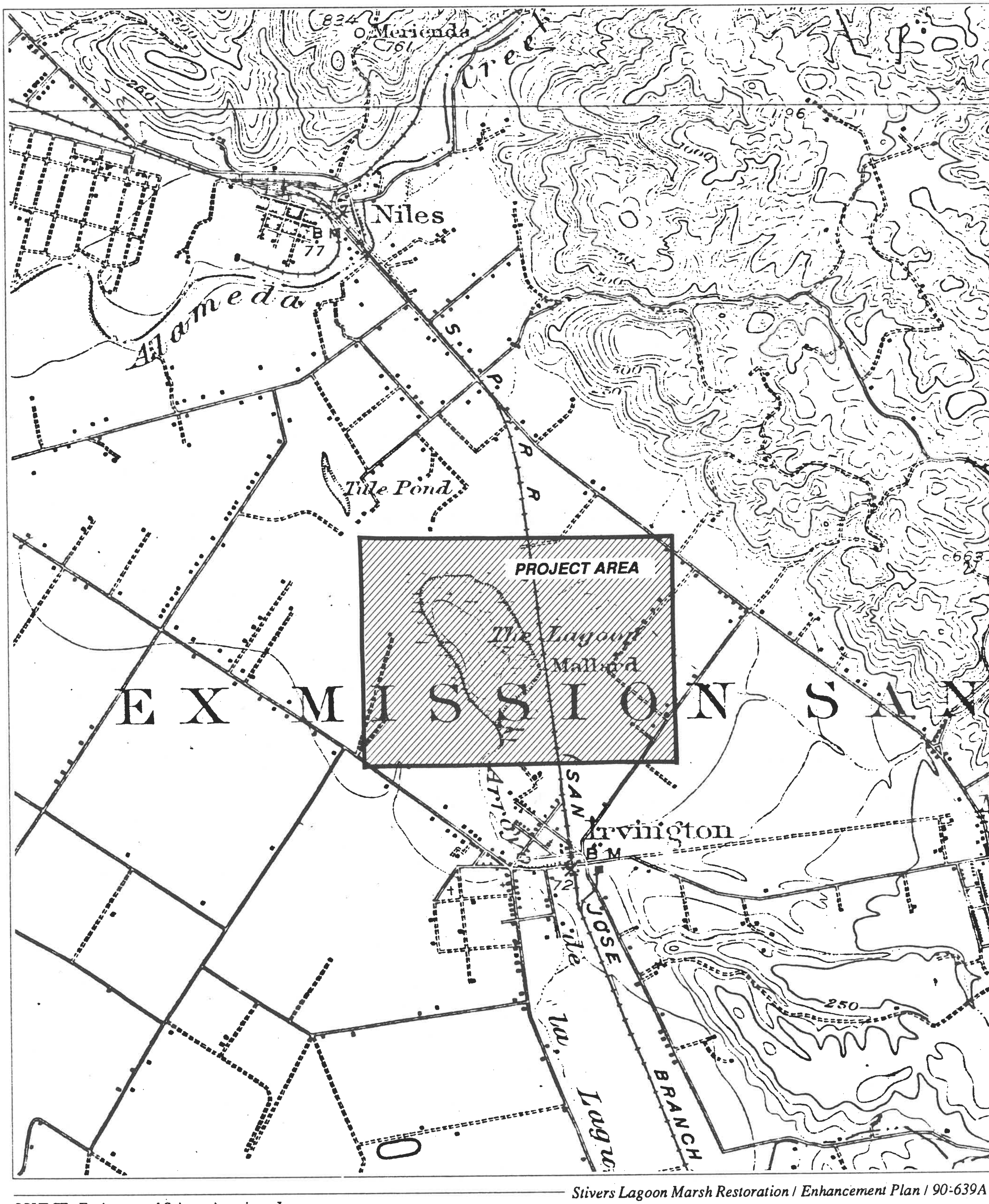
Although there are no early detailed topographic maps of the marsh, it apparently included areas deep enough for boating and swimming, as well as shallower zones. The marsh is described by an early explorer in 1776 as a "somewhat salty lagoon."[1] The name given to the outflow channel, "Arroyo de la Laguna" ("Creek from the Lake"), also suggests that there were deeper, open water areas. Conspicuously absent in this early record of the area is any description of vegetation near or in the Laguna. The record notes the arroyos flowed into the Laguna, and the country was level, green and flower-covered all the way to the estuary.

Concluding from this early account, there likely was not a well-defined channel through the marsh itself. Hydrologically, it functioned more as a lake, with Mission Creek and another tributary discharging into the broad, open area. There was a well-defined outlet and channel downstream. As a result, the water depth and inundated areas would have varied dramatically both seasonally and annually. The groundwater table would have been much higher than it is today. Soils were probably saturated throughout the dry season in many years.

SOURCE: Environmental Science Associates, Inc.

Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A

Figure 1
1864 Map of Fremont and Vicinity



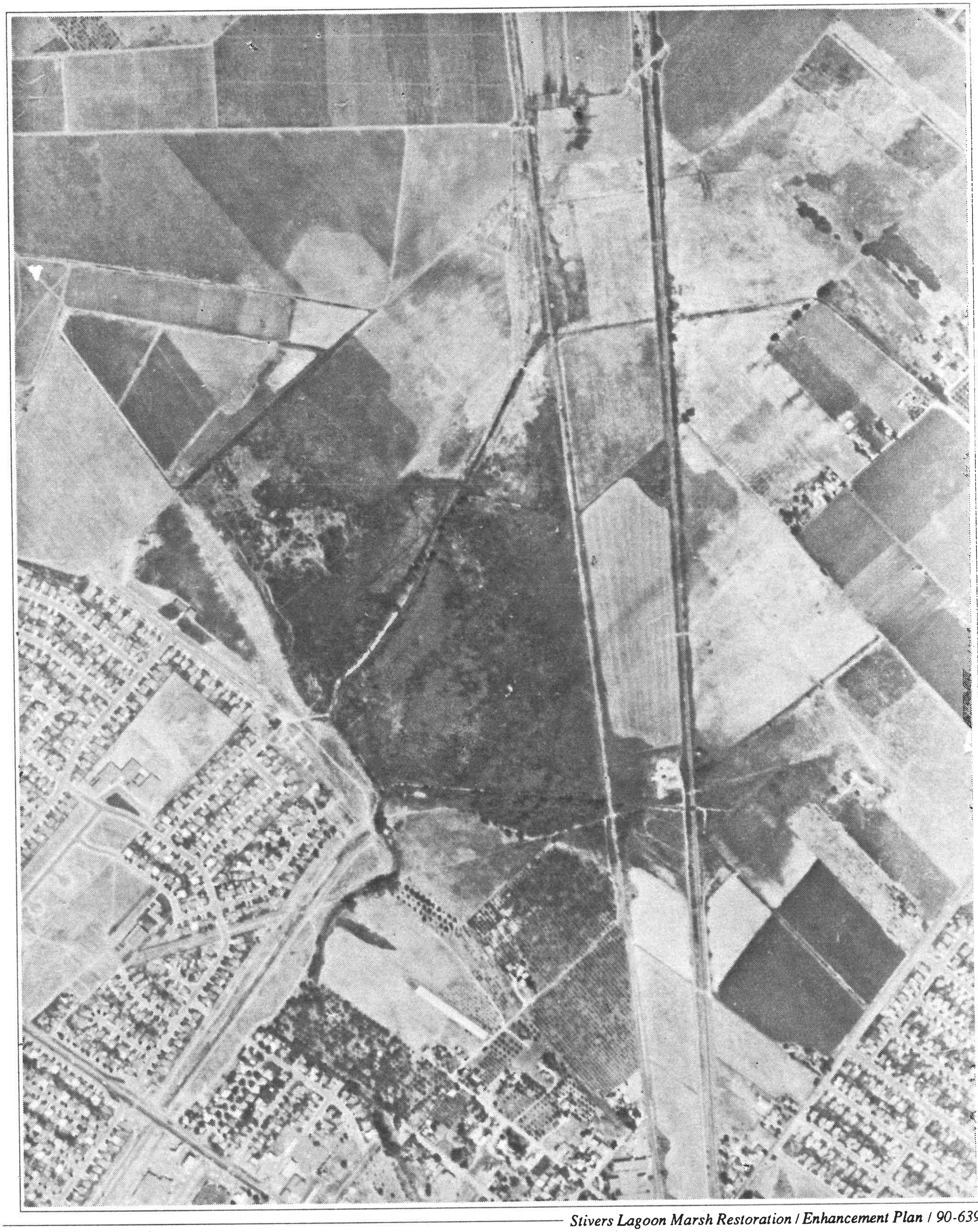
Stivers Lagoon Marsh Restoration / Enhancement Plan / 90:639A

SOURCE: Environmental Science Associates, Inc.

Figure 2
1904 U.S.G.S. Quadrangle Map
of Lake Elizabeth and Vicinity

Historical alterations in the land use and topography of the middle elevations (50 to 400 feet MSL, mean seal level) of the watershed of these two creeks have occurred. Mission San Jose was founded 2.5 miles from the "Laguna" in 1797. San Jose was a richly productive mission growing corn, maize, barley, peas, beans, and other grain in 1806.[2] In 1808, there were 1,821 people living at the Mission.[3] When secularized in 1834, the Mission owned 10,000 head of cattle, 4000 horses, and 12,000 sheep.[4] United States Geologic Survey (USGS) Niles 7.5 minute quadrangle map (1961, photorevised 1980) shows several small water impoundments and topography which indicates that the stream courses had been diverted from their original beds (see Figure 3). It is believed that the major stream course changes near and within Stivers Lagoon occurred during the construction of the Hetch Hetchy aqueduct which was completed in 1934.[5]

In the mid-1800's and early 1900's, the land surrounding the wetlands was farmed. A levee was constructed to limit the extent of flooding and reduce soil saturation. As the area around the marsh developed, the ranches containing the marsh land remained intact. However, there was increased emphasis on local and regional flood control needs. In the mid-1930's this resulted in the channelization of portions of Mission Creek and the excavation of the channel through the marsh. This later work was probably most damaging to the marsh, as it provided a mechanism to lower the water table and dry the wetland. In 1968, the creation of Lake Elizabeth resulted in a decrease in marsh size to about 40 acres with a new Mission Creek channel located immediately adjacent along the north and west sides. The small marsh size and proximity of the drainage channel has resulted in a more rapid drying of marsh soils, particularly during summer months. This process has allowed encroachment of upland plants and trees into the former marsh plain.



Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A ■

SOURCE: Pacific Aerial Surveys

Figure 3
1963 Aerial Photography
of Stiver's Lagoon Marsh

3.0 EXISTING CONDITIONS

Section 3.0 of this report includes a description of the existing topography and the hydrologic regime, and a description of plant communities and wildlife habitat at Stivers Lagoon Marsh. This section also discusses the importance of this natural resource to the surrounding human community.

3.1 Topography and Hydrology

3.1.1 Overview

The following discussion describes the physical processes that created Stivers Lagoon Marsh, the methods used to analyze the wetland function, and the characteristics of the various hydrologic components of the Marsh. The hydrologic functioning of the system is also described.

3.1.2 Methods

The functioning of a marsh is determined by the local topography and the surface and subsurface hydrology of the area. General topography of the Stivers Lagoon Marsh was obtained from a 200-scale (1 inch = 200 feet) aerial photogrametric map with 1-foot contour intervals prepared in 1985. This was supplemented with field surveys conducted in Fall, 1991 by Philip Williams & Associates, Ltd. (PWA) staff. These field surveys were used to provide cross-section data in the Mission Creek channel (the presence of water prevents the use of aerial photo methods), and to provide accurate spot elevations in heavily vegetated areas of the marsh (the presence of vegetation may also obscure the ground surface from aerial photos). The spot elevations from the field surveys showed excellent agreement with the existing topographic map.

Historical data on marsh conditions were obtained from maps obtained from the Bancroft Library, U.C. Berkeley. The maps included an 1864 survey of ownership boundaries, an 1868 map of the Mission San Jose, and a 1904 USGS quadrangle map. Historical air photos were available for the following dates from Pacific Aerial Survey: July 22, 1963; April 18, 1973; June 21, 1983; and July 19, 1990.

To obtain information of groundwater fluctuations and salinity, three shallow piezometer wells were installed in October 1991. These were constructed by auguring a hole to a depth of 5 to 6 feet, and inserting a length of 2-inch PVC plastic pipe, perforated and wrapped in filter fabric (to prevent clogging of the slots). The space between the auger hole and plastic pipe was plugged with clay to prevent percolation of surface water along the casing. The tops of the wells were topographically surveyed, to allow determination of water depth and absolute elevation. Water levels were read approximately monthly, with more frequent readings made before and after significant storms.

For information on surface water flows in Mission Creek, data were obtained from the Alameda County Flood Control and Water Conservation District.[6]

3.1.3 Wetland Features and Hydrologic Regime

Watershed and Mission Creek

Mission Creek, the main water source for the marsh, drains a watershed of approximately 11 square miles. Elevations range from sea level at San Francisco Bay to 2500 ft. NGVD[7] at Mission Peak. Annual precipitation ranges from 14 inches at the Bay to 20 inches in the upper watershed. The morphology of Mission Creek channel is influenced both by movement along the Hayward Fault, and by human-induced changes during the past 150 years. Upstream of the marsh, the creek flows in a northwesterly direction. As it reaches the marsh/Lake Elizabeth area, it turns 90-degrees, and flows southwesterly, crossing the fault zone and eventually discharging to San Francisco Bay.

As discussed in the section on historical conditions (Section 2.0), the present channel location in relation to the marsh/Lake system was established in 1968 when Lake Elizabeth was excavated. The channel was excavated along the perimeter of the lake and parking lot, as shown in Figure 4. It exits the site via three culverts (one 42-inch RCP [reinforced concrete pipe] and two 5 ft. X 8 ft. RC Box culverts) under Paseo Padre. Design drawings[8] prepared at that time indicated that the channel was to be parabolic in shape, with a 12-foot bottom width and an invert of 49.0 ft. NGVD.Because of the terrain, the longitudinal profile of the channel is virtually flat throughout this entire reach.

During the 1968 channel and lake construction, a siltation basin was also excavated (see Figure 4). The basin site was 2.5 acres, with a bottom elevation of 46.0 feet. The intent of this was to trap sediments before they entered the lake during large flood events.

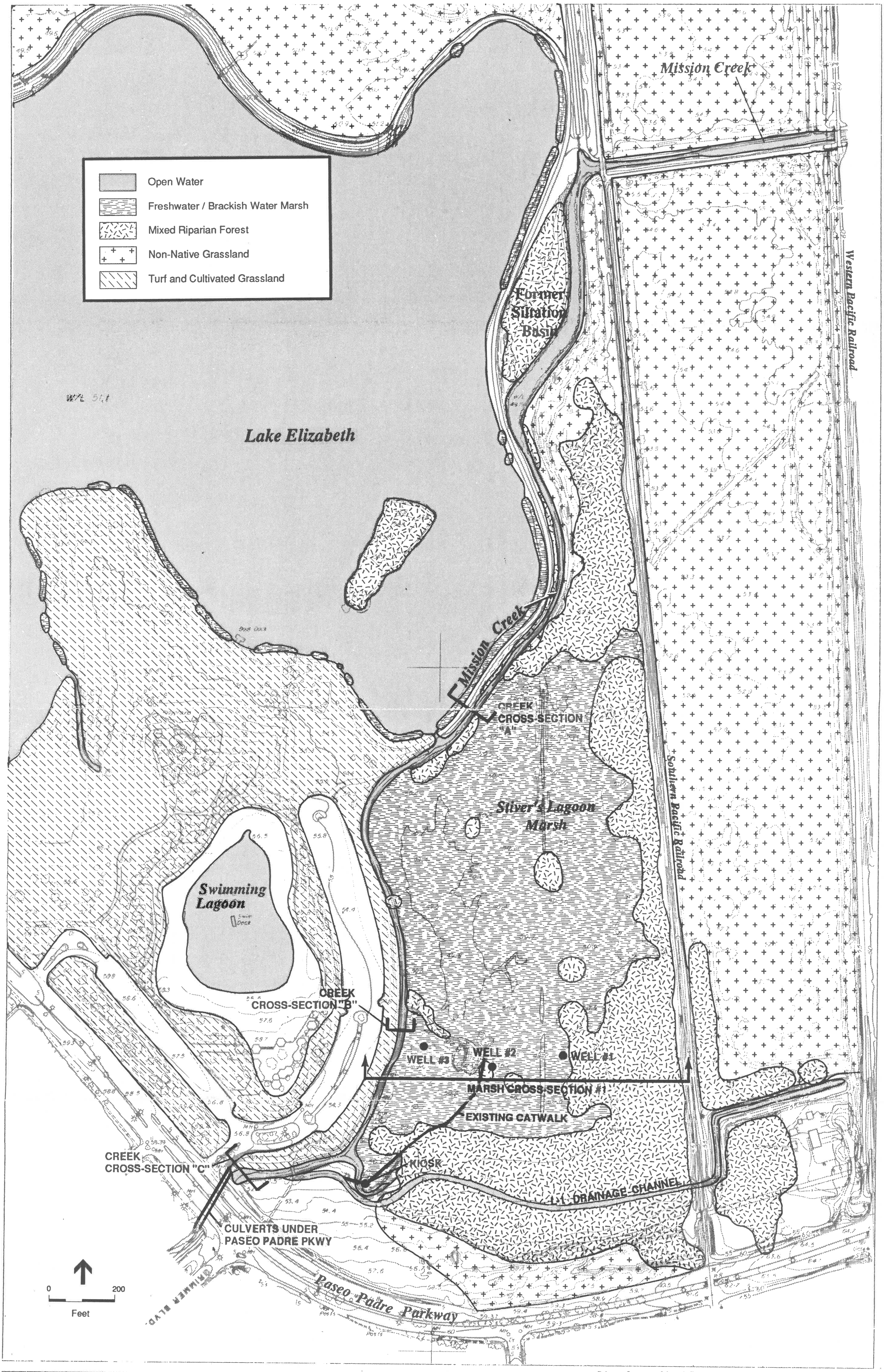
During construction of both the channel and the silt pond, the excavated spoils were apparently side cast, creating an irregular levee about 2-feet high between the channel and the marsh and creating an upland area south east of the silt pond.

Aerial photographs (Figures 5, 6, and 7) from 1973, 1983 and 1990 clearly document the effects of sedimentation during the past 24 years on the channel and siltation basin. In the 1973 photo (5 years after construction), the siltation basin is approximately half filled. By 1983, the entire basin has filled with vegetation establishment over about half the deposited sediment. By 1990, vegetation covers the entire basin. Approximately 25,000 cubic yards (cy) of sediment accumulated in the basin during the period 1968 to 1990. The Mission Creek channel has also experienced some sedimentation during this period, although the extent is more difficult to estimate. During this period, Lake Elizabeth accumulated about 200,000 cubic yards of sediment.

To determine the present channel configuration, PWA surveyed 3 channel cross-sections (Figures 8, 9, and 10). The cross-section locations are shown on Figure 4. All three cross-section locations show reasonable conformity with the proposed 1968 grading plans. Bottom width ranges from 15 to 20 feet and invert (bottom) elevations are between 47 and 48 ft. NGVD. However, based on the air photos, some channel narrowing and extensive vegetation establishment has occurred along this reach.

Stivers Lagoon Marsh

The 40-acre Stivers Lagoon Marsh is bounded on the north and west by Mission Creek, on the east by the SPRR railroad tracks, and on the south by Paseo Padre Parkway and the Hetch Hetchy pipeline. The present topography is shown in Figure 4. The marsh plain slopes gently from east to west, with elevations ranging from 52 feet NGVD adjacent to the SPRR tracks to about 50 feet NGVD adjacent to Mission Creek. In addition to Mission Creek, a smaller channel (referred to as the L-1 line by the Alameda County Flood Control and Water Conservation District [ACFCWCD] flows from east to west along the southern project border. It joins Mission Creek just west of the kiosk (Interpretative Center). This channel conveys runoff from a small area east and south of Paseo Padre Parkway.



SOURCE: Environmental Science Associates, Inc.

Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A ■

Figure 4
Existing Natural Communities
at Stiver's Lagoon Marsh

SOURCE: Pacific Aerial Surveys

Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A ■

Figure 5
1973 Aerial Photography
of Stiver's Lagoon Marsh

SOURCE: Pacific Aerial Surveys

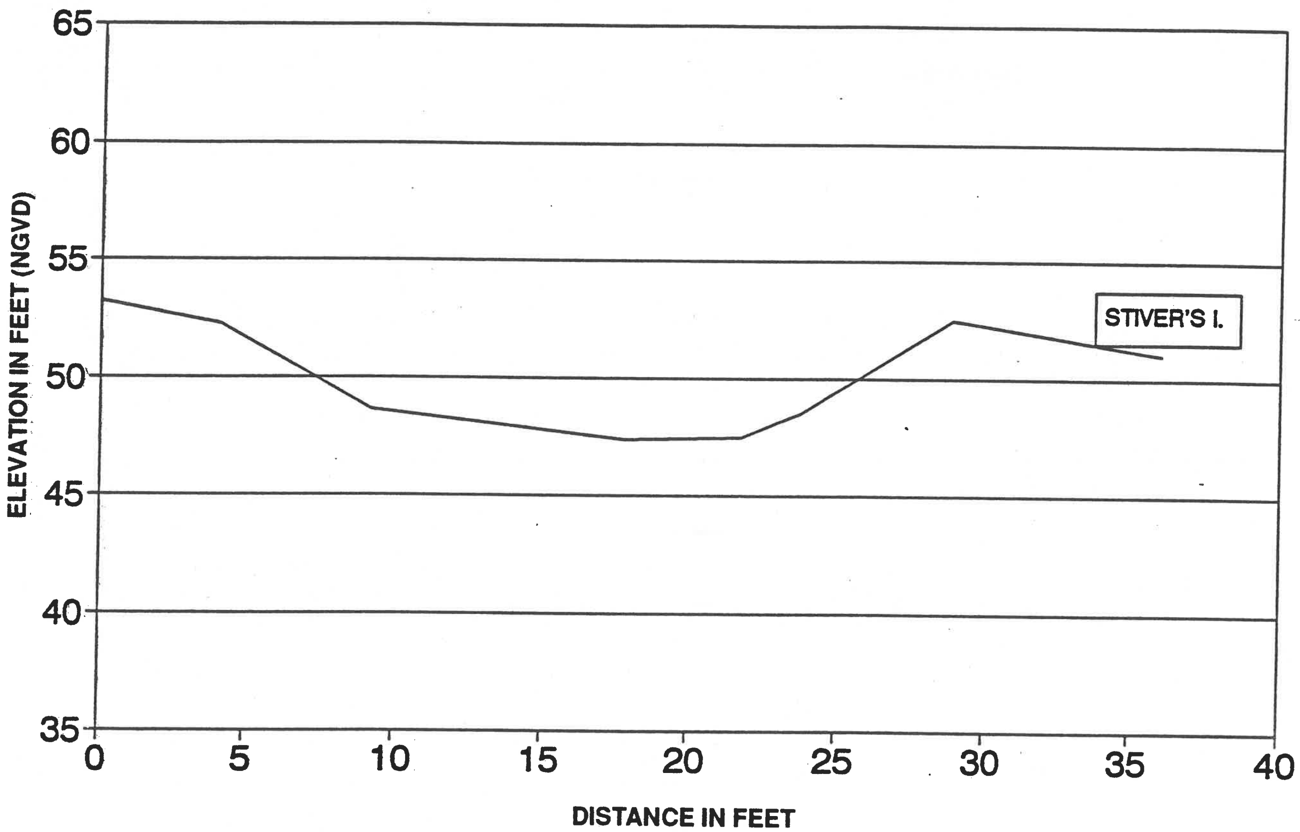
Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A ■

Figure 6
1983 Aerial Photography
of Stiver's Lagoon Marsh

SOURCE: Pacific Aerial Surveys

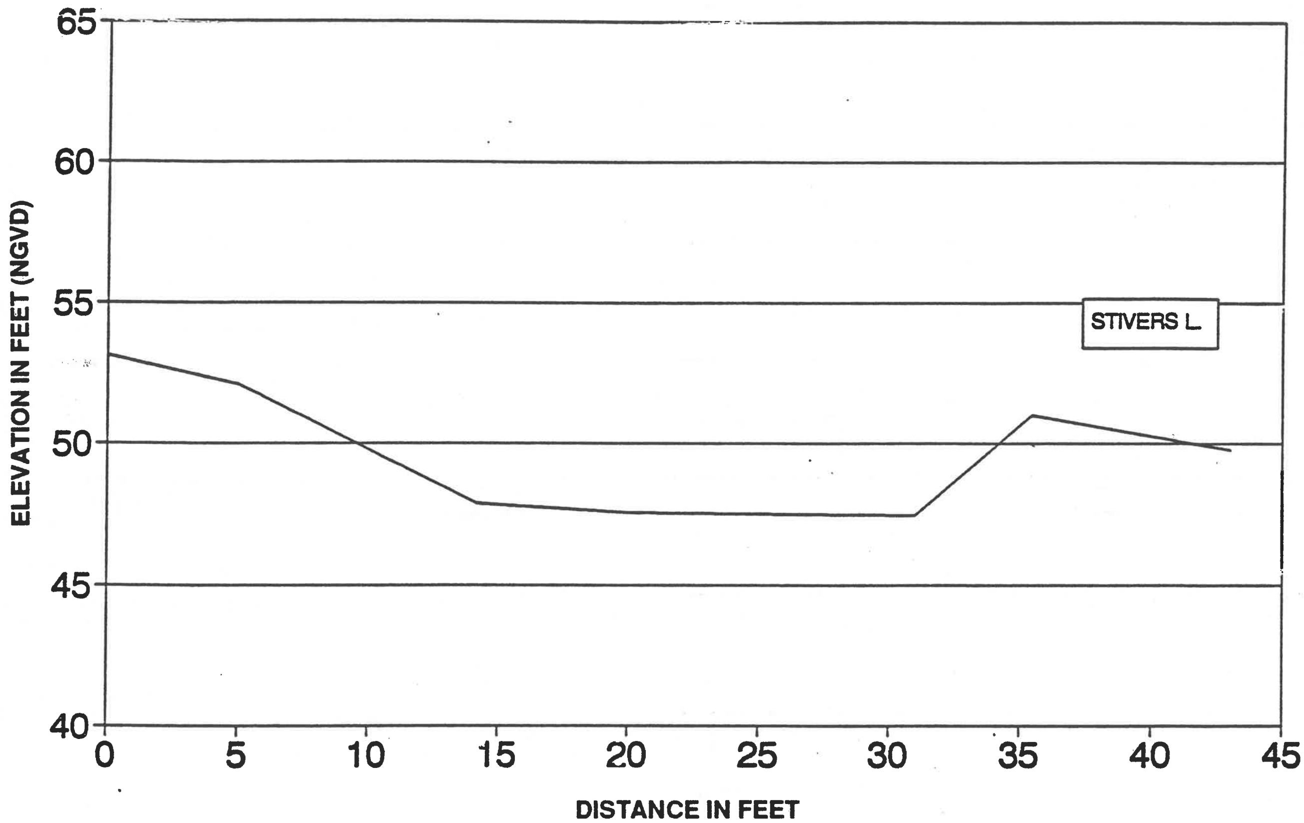
Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A ■

Figure 7
1990 Aerial Photography
of Stiver's Lagoon Marsh



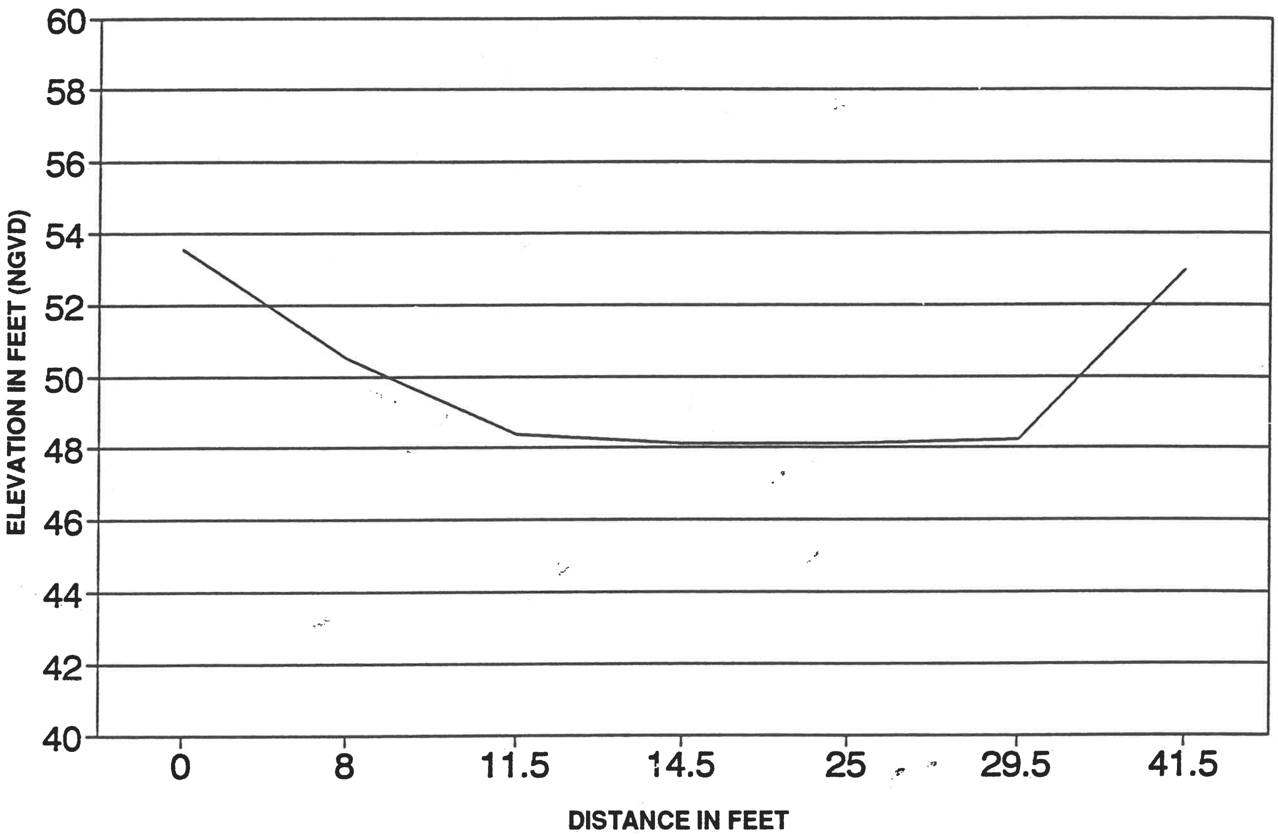
SOURCE: Philip Williams and Associates

Figure 8
Cross-Section A of
Mission Creek (Near Lake Outlet Weir)



SOURCE: Philip Williams and Associates

Figure 9
Cross-Section B of
Mission Creek (Near Boardwalk)



SOURCE: Philip Williams and Associates

Figure 10
Cross-Section C of Mission Creek
(Near Paseo Padre Parkway)

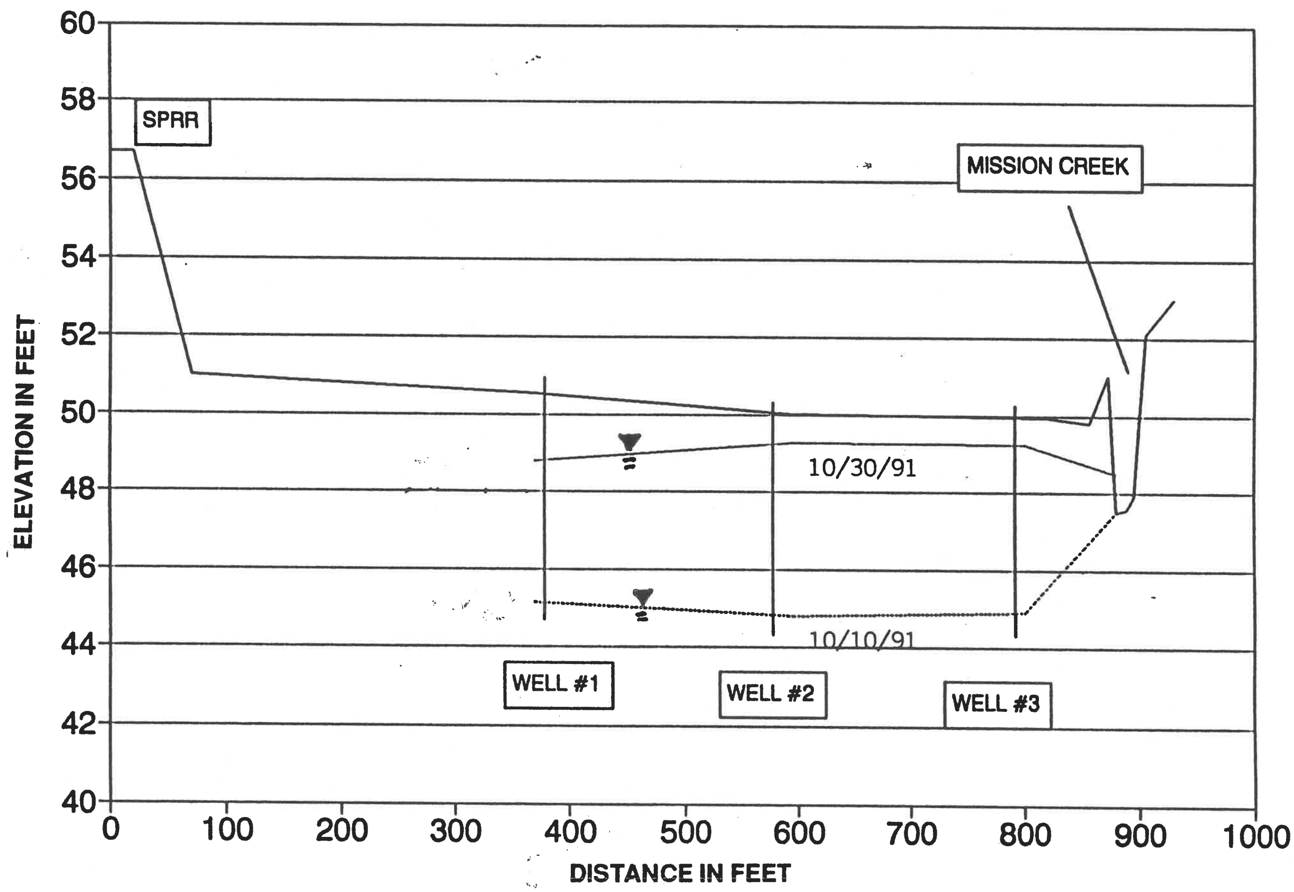
Two other shallow depressions are evident in the west-central portion of the marsh near the existing catwalk. These depressions are about one foot lower in elevation than the rest of the marsh plain. A remnant drainage channel is also evident in the center of the marsh. This was apparently excavated to provide drainage during the 1968 channel construction. A topographic cross-section of the marsh including the three test well locations is shown in Figure 11. The cross-section and well locations are also shown in Figure 4. It can be seen that the marsh slopes slightly from east to west, with a low levee separating the marsh from Mission Creek. The marsh is bounded on the east side by the railroad tracks and has a maximum width of approximately 800 feet.

The hydrologic regime of the marsh is affected by direct overflows into the marsh during high creek flow and by the level of the underlying groundwater table. Groundwater level variations are in turn controlled by the precipitation regime, creek flows and local groundwater pumping. Adjacent to the marsh, estimated flood flows in Mission Creek are predicted to be about 3000 cubic feet per second (cfs) for a 15-year event (storm with a recurrence of once in fifteen years on the average) and 6000 cfs for a 100-year event. The channel capacity is relatively small and flows greater than about 50 cfs overtop the shallow levee and enter the marsh. On the average, several flows per year are likely sufficient to allow some direct flow into the marsh.

From a hydrologic perspective, groundwater levels are most important to the marsh functioning. During the rainy season (and, prior to human alteration, throughout much of the year), high groundwater levels produce saturated soil conditions and shallow ponding throughout the marsh. This promotes wetland plant species and limits competition by upland vegetation. The creation of a defined Mission Creek channel throughout the marsh (approximately mid-1930's) and the reduction in marsh size (1968) have lowered water table elevations, especially during the dry season.

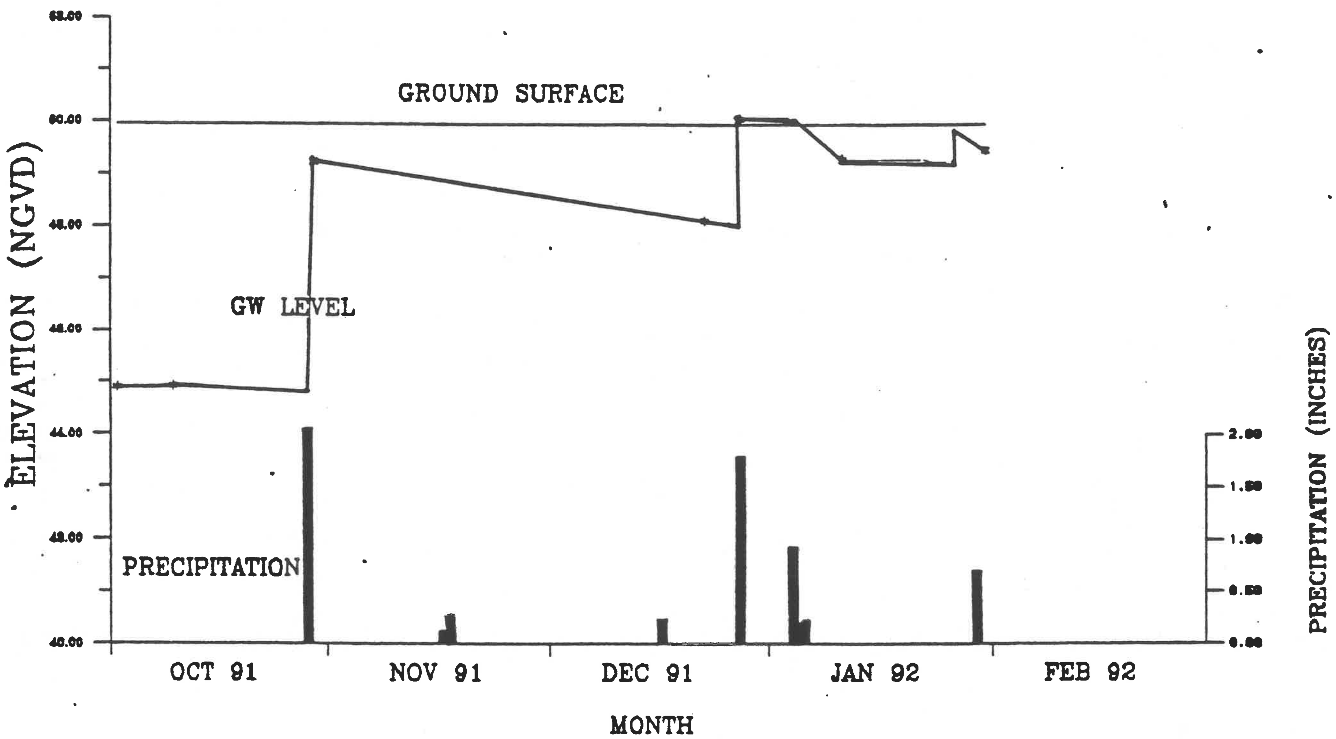
Pumping of the water supply well to provide inflow for the Swim Lagoon and Lake may also be causing a gradual lowering of the local water table, but this is less clear. The water supply well (150 feet deep) is sufficiently close to the marsh that the "cone of depression" of the groundwater table resulting from the pumping of 407 acre-feet of water per year could affect the marsh. However, intervening clay lenses between the near-surface marsh soils and the well intake depth (150 feet) may prevent a direct impact.

The results of the fall/winter (1991-1992) monitoring of shallow groundwater levels in the marsh is shown in Figure 12 and summarized in Table 1. Water levels were first measured in early



SOURCE: Philip Williams and Associates

Figure 11
Cross-Section through Stivers Lagoon Marsh / Ground-Water Levels at 3 Wells (Looking Down Stream)



SOURCE: Philip Williams and Associates

Figure 12
Groundwater Levels and Precipitation Events
Between October 1991 and February 1992, Well No.3

TABLE 1:

GROUNDWATER LEVELS IN STIVER'S LAGOON MARSH
(well locations shown in Figure 4)

DATE	WELL No. 1		WELL No. 2		WELL No. 3		COMMENTS
	Depth[1]	Elevation[2]	Depth	Elevation	Depth	Elevation	
10/2/91	5.6	44.89	4.9	45.08			Wells installed. Dry season conditions.
10/10/91			5.3	44.68	5.03	44.92	Wells stabilized.
10/30/91	1.7	48.79	0.7	49.28	0.7	49.22	4 days after 2 inches rain
12/24/91	2.5	48.06			1.9	48.10	No rain since 10/24
12/29/91	0.2	50.29	0.1[3]	50.10	0.1[3]	50.06	Immediately following 1.77 inches rain.
1/12/92	0.6	49.87	0.4	49.60	0.7	49.27	
2/1/92	0.7	49.79	1.0	49.02	0.5	49.44	Follow 0.66 inches rain on 1/31.

[1] Depth refers to the water table depth in feet <u>below</u> the ground surface.

[2] Elevation refers to the absolute elevation (ft. NGVD) of the water table.

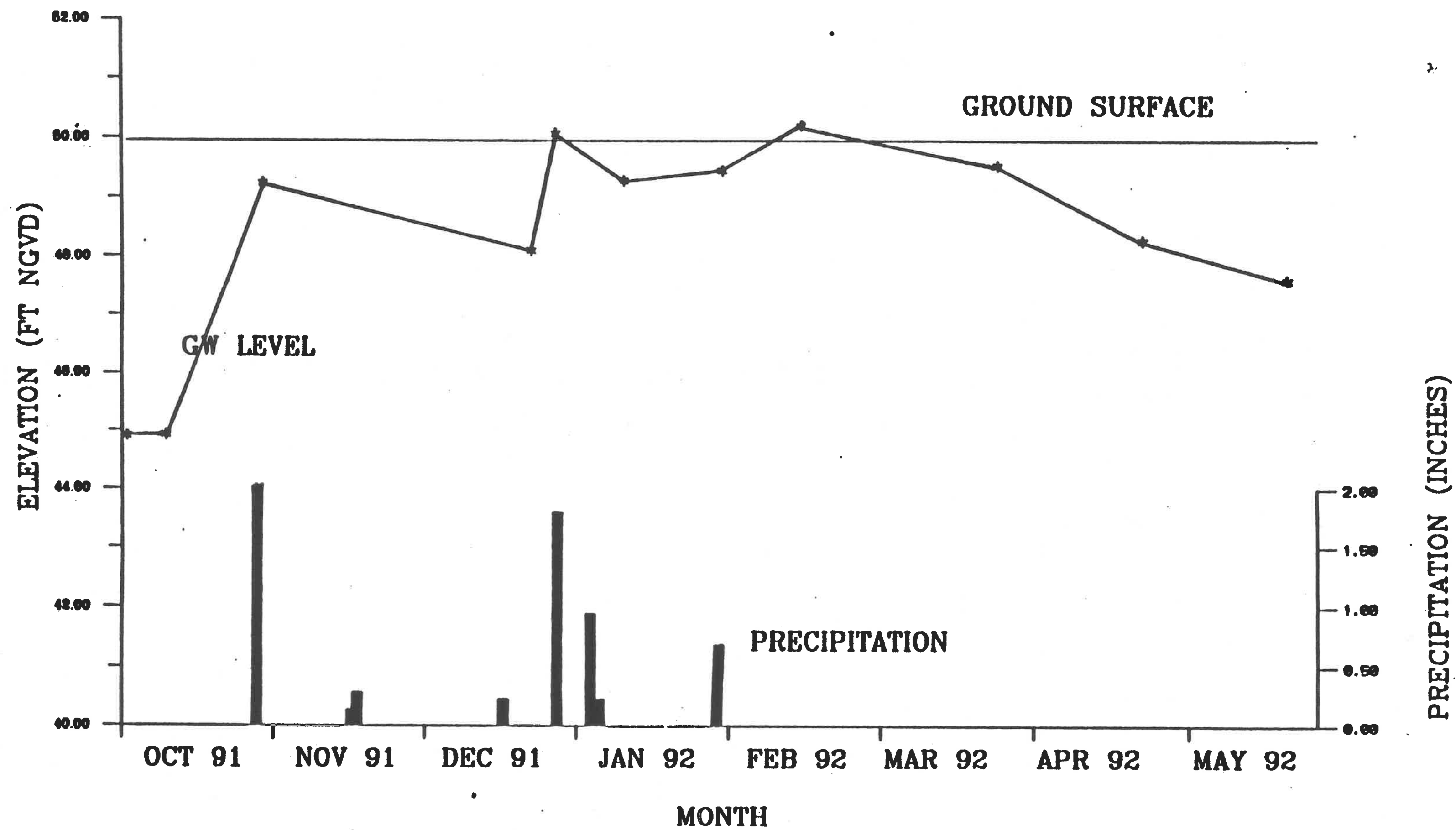
[3] This depth represents height of the water table <u>above</u> the ground surface.

DATE	WELL No. 1		WELL No. 2		WELL No. 3		COMMENTS
	Depth[1]	Elevation[2]	Depth	Elevation	Depth	Elevation	
2/17/92	0.25	50.54	.92	49.68	2.33	50.19	
3/28/92	0.58	50.21	1.25	49.35	3.0	49.52	
4/26/92	2.83	47.96	2.33	48.27	4.25	48.27	
5/25/92	3.58	47.21	3.83	46.77	4.92	47.60	
6/28/92	4.58	46.21	4.58	46.02	5.58	46.93	Had some rain in 6/2[illegible]
7/24/92	5.0	45.79	4.58	46.02	6.08	46.43	

1

2

3



DATE: 6/22/92 BY: C.K. CUFFE	Lake Elizabeth Oct 91 through May 92 Groundwater Levels	Philip Williams & Associates, Ltd Pier 35, The Embarcadero San Francisco, California 94133	Fig. No.

October, 1991 and on October 30 following the first major winter storm. Subsequent measurements were made throughout winter, spring and early summer, 1992. The early October levels depict conditions at the end of the dry season (and in the midst of the ongoing 5-year drought), and are of primary concern. They indicate that water levels were about 5 feet below the ground surface and even below the creek channel. (This would suggest that groundwater pumping may lower the water table even below the drainage resulting from the creek channel.) These extremely dry conditions are likely responsible for the gradual encroachment of upland vegetation into the marsh which has been occurring during the past 25 years. Figure 12 depicts the variation of water table depth at well #3. This shows how quickly the water table responds to precipitation events and flow in Mission Creek and gradually decreases in late spring and summer. The water table rose nearly 5 feet following the first precipitation events on October 26, 1991. Present conditions do, however, allow the marsh soils to drain at a moderate rate following a precipitation event.

In addition to the hydrologic regime, it is important to recognize that the flows in Mission Creek convey sediment as well as water. This is evident in Lake Elizabeth, where overflows from Mission Creek have deposited an average 1.5 feet of sediment (about 200,000 cy) during the past 25 years. This same process of deposition is occurring in Stivers Lagoon Marsh, although at a much slower rate. The design of this area to function as a flood detention basin also results in its functioning as a sedimentation basin. This is evident in the changes to the 2.5 acre siltation basin, which filled in during the first 10 to 15 years following its construction. It is less evident in the marsh itself. The level of accuracy of the historical (1968) and current topographic surveys are not sufficiently accurate to detect changes of this magnitude. However, each time overflow from Mission Creek ponds on the marsh surface, fine-grained sediments are allowed to settle out. Over time, these sediments raise the marsh plain surface, gradually producing dryer soils. Essentially the marsh is in a transitional state, gradually becoming a meadow.

The topography of the marsh at any time in geologic history represents a balance between the tectonic processes along the Hayward Fault which creates the sag pond conditions, and fluvial deposition which tends to eliminate the pond. These represent natural processes, since the creek flows have always contained sediment. However, in most California creeks, the sediment load has been much higher over the past one or two centuries as a result of human activities (grazing, farming and urbanization). In addition, the undersizing of the culverts under Paseo Padre Parkway to store water upstream hastens this process. It is likely that at least several inches of sediment have been deposited on the marsh plain in the past 25-years. While not producing dramatic changes in the marsh form, this process will gradually eliminate the marsh over the next century or two, and converting it to upland brush and riparian forest. While this seems long in the human time frame, it is short from a geologic perspective.

In summary, the degradation of the marsh has resulted from a decrease in size, dewatering, and over a longer term, sediment deposition.

3.2 Vegetation

3.2.1 Overview

The plant communities found within Central Park are a result of either purposeful creation, land use changes, or retention of the native vegetation. The marsh is one of these relict areas of native vegetation. Once open water in winter and drying to marsh in the summer, the marsh is now functioning as a marsh in the winter and a meadow or grassland in the summer. Land use changes may have brought about these changes, but the plant species that are supported by this habitat are for the most part, native. Therefore, functionally, the marsh supports natural plant communities. Names and descriptions of these natural communities on the project site follow Holland[9] and are discussed below. Figure 4 illustrates the location of these communities within the marsh.

3.2.2 Methods

As discussed previously in Section 3.1, the functioning of a wetland is primarily determined by surface topography as well as surface and subsurface hydrology. The presence or absence of indicator species of plants often give a visible indication of changes in physical parameters which would otherwise be unseen. The first method employed to determine the past condition of the vegetation within the marsh consisted of a search of the historic record-photography, historic mapping, and historic references. Secondly a careful walking survey was conducted to record plant species and their general locations. The final method employed involved contacting City, County, and State resource agencies staff and the California Natural Diversity Data Base (CNDDB) to elicit their professional input.

3.2.3. Natural Communities

Open Water The water of Mission Creek supports a rich mixture of one celled algae such as diatoms and probably a number of aquatic plants such as duckweed (Lemna sp.) and pondweed

(Ruppia maritima). Some cattails (Typha sp.) and tules (Scirpus acutus) grow along the bank at the water's edge. These plants have rhizomes and roots which tend to bind the sediment of the bank together and slow the process of erosion.

Lake Elizabeth and the new channel of Mission Creek hold water because they were excavated out of a naturally occurring clay layer on the surface of an alluvial fan. Below this relatively impermeable clay layer is the gravel of an aquifer; if the clay layer is breached water could drain from the lake to the aquifer.[10] Evidence of locally elevated groundwater, in the vicinity of Lake Elizabeth and Tule Pond (an approximate 6-acre water body located north of Walnut Avenue and east of the Fremont BART station), is cited to support the belief that these water bodies do recharge the aquifer.[11] Groundwater in this vicinity ranges in depth from 5 to 20 feet below the surface. Both lake and creek would be classified as oligohaline ["distantly salty"] brackish, which spans salinity ranges of 0.5 to 5 parts per thousand (specific conductance from 800 to 8000 umhos at 25^{o} C) [12] Because of high evaporation rates both the Lake and sediments in the marsh may continue to become more saline over time.

Freshwater/Brackish Marsh All types of marshes are considered sensitive communities by the California Natural Diversity Data Base (CNDDB), which is kept by the California Department of Fish and Game (CDFG) to record occurrences of plants, animals, and habitats of special value for CDFG biologists who are charged with the responsibility for these resources.

The portion of Central Park (approximately 20 percent of the areal extent of the entire Park) that is called Stivers Lagoon, consists largely of Coastal and Valley Freshwater Marsh and exists in a relatively undisturbed condition. The dominant species is the native tule or hardstem bulrush (Scirpus acutus), which grows in an almost pure stand on the areas of lowest (49.5 feet MSL) elevation. Most of the other dominant plants in the marsh are also native species. In depressions where water ponds for longer periods a pink-flowered knotweed (Polygonum coccineum) grows, and on the higher mounds are clumps of arroyo and polished willow (Salix lasiolepis, and S. laevigata), Douglas baccharis (Baccharis douglasii), and western goldenrod (Solidago occidentalis).

The higher ground (50.5 to 51 feet NGVD) of the marsh has become dryer in recent years. Physical evidence suggests that this change is morely likely a result of general lowering of the groundwater due to the drought and flood control measures rather than increased elevation from siltation. The black color of the hydric sediments (clays, silts and organic material), which make up the soil of this wetland, has not been covered with the lighter colored silts from surface flooding. Also, a fine white crust from salt deposits on the black soil is evident in some high areas. These conditions suggest that large scale sediment deposition has not occurred. As the sediments have dried, non-native species such as fuller's teasel (Dipsacus fullorum) and bristly ox tongue (Picris echioides) have successfully invaded the upper marsh areas and are dominant in some areas.

A catwalk extends northeast from the kiosk into the marsh (see Figure 4). A second channel was excavated (before 1983) which connects Mission Creek and a small pond created at the end of this catwalk . The pond bottom is at present covered with cocklebur (Xanthium strumarium var. canadense), a cosmopolitan weed of moist areas. The channel that connects the pond to Mission Creek is currently filled with silt and lined with willows.

Mixed Riparian Forest Although located in coastal California and not in the Central Valley, the riparian area at the southeast corner of Stivers Lagoon marsh is most similar in species composition to Great Valley Mixed Riparian Forest (Holland 1986). Because of the long history of land use, some of the species may have been introduced from other areas of California. The tree canopy consists of arroyo and polished willow, Fremont cottonwood (Populus fremonti), and California black walnut (Juglans hindsiana). The understory is California blackberry (Rubus ursinus) and poison oak (Toxicodendron diversilobum). Sandbar willows (S. hindsiana) are found at the open edge of this riparian forest with an understory of wooley sedge (Carex lanuginosa), baltic rush (Juncus balticus), pink smartweed, and lippia (Lippia nodiflora). The individual plants of this community are reported to be young, having grown within the last 20 years.[13] Aerial photos,[14] however, demonstrate that "hydric", dark-colored soils developed in the area of Stivers Lagoon in the more distant past. A hydric or natural wetland soil is a soil which has developed under anaerobic (without oxygen) conditions-under water.

Grassland

There are small areas of uncultivated non-native grass consisting of wild oats (Avena sp.), ripgut brome (Bromus diandrus), soft chess (B. mollis), and Mediterranean and hare barley (Hordeum hystrix and H. leporinum). Also in these ruderal areas are the "weedy" forbs such as mustard (Brassica sp.), fennel (Foeniculum vulgare), poison hemlock (Conium maculatum), cocklebur and yellow starthistle (Centaurea solstitialis). In some of the marginal areas that occur near the kiosk there is a sparse covering of salt-tolerant species such as salt bush (Atriplex patula ssp. hastata), salt grass (Distichlis spicata), and alkali mallow (Sida hederacea) (see Figure 4).

3.3 Wildlife

3.3.1 Overview

The use of a plant community or vegetation type as habitat by many common species of wildlife or a special status species has often been used as a measure of the value of that plant community or natural community. Never common in California, freshwater wetlands are the habitat for several special status plant and animal species and are considered "rare" habitat types.

3.3.2 Methods

This portion of the report was compiled from a survey of the literature (both published and unpublished), from consultation with City of Fremont staff members, and from consultation with staff of the state and federal resource agencies.

3.3.3 Wildlife Use of Natural Communities

Open Water Birds observed diving and dabbling in the open water of Mission Creek are the belted kingfisher (Ceryle alcyon), mallard (Anas platyrhynchos), and ruddy duck (Oxyura jamaicensis). Wading along the edges of the creek and feeding in the water are great blue heron (Ardea herodias), green-backed heron (Butorides striatus), great egret (Casmerodius albus), snowy egret (Egretta thula), and the black-crowned night heron (Nycticorax nycticorax). Both greater white-fronted goose (Anser albifrons) and Canada goose (Branta canadensis) utilize Lake Elizabeth and graze on the turf grass of Central Park in groups of up to 400 animals [15]. The large numbers cause these species to be regarded as a park pest animal and attempts to manage the populations are being made. Cliff and barn swallows (Hirundo pyrrhonota and H. rustica) are dependent on the open water and banks of Mission Creek for foraging territory and a source of mud for nest building. Marsh wrens (Cistothorus palustris) and red-winged blackbird (Agelaius phoeniceus) nest and call from the tules and cattails at the water's-edge and yellow warbler (Dendroica petechia) and common yellowthroat (Geothlypis trichas) utilize the willows on the island and near the water [16]. Mosquito fish and small catfish are found in Mission Creek. Crayfish and many other invertebrate species (particularly aquatic insects) depend on the creek for habitat.

Freshwater/Brackish Marsh Bird species dependent on the freshwater wetlands for foraging, resting and in some cases, nesting include great egret, great blue heron, green-backed heron, probably the black-crowned night heron, marsh wren, common yellowthroat, American bittern (Botaurus lentiginosus), Virginia rail (Rallus limicola) and the red-winged blackbird. The common shorebirds, such as sandpipers, yellow-legs and dowitchers, black-necked stilt (Himantopus mexicanus) and killdeer (Charadrius vociferus) while not nesting in the area, would use the marsh for foraging and resting.

In the1960's, before Lake Elizabeth was constructed, there were breeding colonies of 10,000 pairs of tricolored blackbirds (Agelaius tricolor) nesting in the Stivers Lagoon Marsh.[17] These birds have suffered a precipitous population decline as a result of loss of habitat and other factors.[18] Tricolored blackbird is currently a federal candidate (C2) species and was recently proposed for state listing as an endangered species[19]. Tricolored blackbirds nest in colonies that at one time numbered as high as 200,000 individuals in vegetation over water. They feed their young 90 percent insects, clams, and snails. The adults feed on grain and weed seeds[20]. Approximately 10 to 12 individuals have been seen in recent years in the Stivers Lagoon vicinity.[21]

The California tiger salamander was commonly caught in the project site vicinity as late as the 1950s.[22] This salamander is currently a federal candidate (C2) for listing as endangered as a result of habitat loss. The animal was once common in grasslands of California. Other amphibians likely using both the freshwater wetlands and the grassy areas at higher elevations are the California newt (Taricha torosa), California slender salamander (Batrachoseps attenuatus) and western toad (Bufo boreas). Western pond turtles (Clemmys marmorata) are present in both Lake Elizabeth and in Mission Creek.[23, 24] It is not known whether these turtles are of the northwestern or southwestern subspecies which overlap in the region of San Francisco Bay. Both the northwestern (C. m. marmorata) and the southwestern (C. m. pallida) subspecies are California species of concern (CSC) and in addition the southwestern subspecies is a federal candidate (C2) for listing as endangered. Two other reptiles reported to have been present in the Stivers Lagoon area in the past are the rubber boa (Charina bottae) and garter snake (Thamnophis couchi [unknown subspecies]).[25]

The mammals reported to have been observed using Stivers Lagoon marsh and Lake Elizabeth are raccoon (Procyon lotor), gray fox (Urocyon cinereoargenteus), red fox (Vulpes fulva), mule deer (Odocoileus hemionus columbianus), muskrat (Ondatra zibethica), Virginia opossum (Didelphis virginiana), striped skunk (Mephitis mephitis), long-tailed weasel (Mustela frenata)[26] and a number of rodents including California vole (Microtus californicus), house mouse (Mus musculus), Norway rat (Rattus norvegicus), deer mouse (Peromyscus maniculatus), western harvest mouse (Reithrodontomys megalotis) , and Botta pocket gopher (Thomomys bottae).

Riparian Forest Birds using the riparian trees for foraging, nesting and roosting include the violet-green swallow (Tachycineta thalassina), tree swallow (T. bicolor), northern rough-winged swallow (Stelgidopteryx serripennis), Anna's hummingbird (Calypte anna), northern flicker (Calaptes auratus), Nuttall's and downy woodpeckers (Dendrocopos nuttallii and D. pubescens), scrub jay (Aphelocoma coerulescens), bushtit (Psaltriparus minimus) and Swainson's thrush (Catharus ustulatus). Warblers, towhees, sparrow species, house finch, and goldfinches are some of the birds that have been observed regularly in the riparian forest. Cooper's hawk (Accipter cooperii) a California Species of Concern (CSC), black-shouldered kite (Elanus caeruleus) and red-shouldered hawk (Buteo jamaicensis) are raptors who hunt from the riparian zone trees and could occur in the Marsh.[27] Moist forest and riparian areas may provide habitat for the Alameda striped racer (Masticophis lateralis euryxanthus), the Pacific ringneck snake (Diadophis punctatus amabilis) and the arboreal salamander (Aneides lugubris).

Grassland The turfgrass around Lake Elizabeth is used for grazing by both greater white-fronted goose, Canada goose and American coots.

The non-native "weedy" grassland, primarily limited to the north area of the lake, is used by many insectivorous birds such as the northern shrike (Lanius excubitor), the black phoebe (Sayornis nigricans) [which more commonly makes its sallies over water] and the Say's phoebe (S. saya). The following raptors have been observed hunting in the grassland: black-shouldered kite, northern harrier (Circus cyaneus), sharp-shinned hawk (Accipter striatus), Cooper's hawk, red-shouldered hawk, red-tailed hawk (Buteo jamaicensis), ferruginous hawk (Buteo regalis), and the American kestral (Falco sparverius). The northern harrier and Cooper's hawk are both California species of special concern while the ferruginous hawk is a candidate (C2) species for federal listing as endangered on its wintering grounds. The grassland would also be used by tricolored blackbirds if present and represents an important habitat which is required by these birds in addition to marsh habitat. Twenty-one long-billed curlew (Numenius americanus) have been observed foraging in the grassland on site. Great blue heron have been reported hunting in the grassland; prey of the great blue includes Botta pocket gophers , fish, frogs.and insects.[28] A number of rodents including California vole house mouse, Norway rat, deer mouse, western harvest mouse , (Reithrodontomys megalotis) and Botta pocket gopher are expected to used this grassland along with the common local reptiles and amphibians such as the western fence lizard (Sceloporus occidentalis), northern and southern alligator lizards (Gerrhonotus coeruleus and G. multicarinatus) and western toad.

The ruderal grassland north of Lake Elizabeth and northeast of Stivers Lagoon has supported small breeding burrowing owl populations off and on in the past few years. The burrowing owl (<u>Athene cunicularia</u>) is a state Species of Special Concern and is protected under the Migratory Bird Act.

3.4 Community Importance

Stivers Lagoon Marsh has been used for public education for nearly 20 years. In 1991, one-thousand Fremont students visited the kiosk and marsh. Park Rangers with the Fremont Recreation and Leisure Services typically takes groups of 30 students and three adults through Stivers Lagoon Marsh at a given time. The Service is offered to all schools in Fremont from March through June. On average there are 4 to 6 tours per week, and each tour lasts from 45 minutes to one hour. Occasionally teachers request a pre-tour lesson on some specific aspect of biology such as the food chain of a particular species. There has been good community support for this program as evidenced by the fact that the same two rangers have been teaching the program for 12 and 13 years, respectively.

Scouting groups also use the Lagoon and Lake for summer programs sponsored by the City's Recreation and Leisure Services Department.

It would appear that the marsh and Central Park as a whole are a highly recognized resource to the surrounding community. During a field reconnaissance, one passing jogger stopped to ask what the study investigators were looking for in "his" park. Investigators asked what he knew about the history of the marsh and he explained that it had been there since he was a boy and that he had played in it. The only negative comment expressed about the marsh was the difficulty of keeping persons from using the forested portion of the complex as a clandestine meeting place.

4.0 SUMMARY OF OPPORTUNITIES AND CONSTRAINTS

4.1 Hydrologic Issues

Opportunities:

- Raise the water table to improve wetland conditions;
- Excavate to create open water or wetter areas;
- Breach the shallow levees to allow more frequent flooding of the marsh plain;
- Trap additional sediment upstream of the marsh;
- Improve the riparian regime along Mission Creek.

Constraints:

- Raised water table should not destroy valuable existing vegetation or create other nuisance problems;
- Mosquito problems should not be created;
- Additional water to the site should not increase siltation rates;
- Improvements should be compatible with flood control requirements of the area.

4.2 Biological Issues

Opportunities:

- Raising the groundwater level may enhance the marsh by creating a favorable habitat for native wetland species and prevent upland and weedy species encroachment;

- Planting will not need to be extensive, wetland species quickly colonize if habitat is right;

- A new cattail marsh may provide habitat for tri-colored blackbird;

- Possible site for (re) introducing special status plant species such as Delta tule pea (<u>Lathyrus jepsonii jepsonii</u>).

- An opportunity to monitor wetland vegetation succession;

- Exotic vegetation can be removed and replaced with native species;

- Some new wetland areas can be created by excavating upland areas. Existing degraded wetlands can be enhanced by modifying the topography.

- The riparian zone along Mission Creek can be enhanced by providing additional native trees. Over time, these trees will shade the channel, reducing temperature and limiting the encroachment of emergent vegetation.

Constraints:

- Proposed changes should be carefully monitored so that existing valuable habitats are not degraded.

- Care must be exercised when re-introducing species to maintain integrity of wildlife populations;

- Care must be taken not to increase habitat for native species that are regarded as pests by the City. The Canada goose is in this category, a native that breeds on site, increasing in population and contributing to water pollution problems.

- Willows are known to be tolerant of wet soil but no data is available on the specific requirements/range of tolerance of native willows. These species will have to be monitored to determine the effects of changed groundwater levels. The same can be said for almost all of the native wetland species.

4.3 Public Access Issues

Opportunities:

- Expand educational activities at Stivers Lagoon Marsh to increase student awareness of this wetland and its functions;

- Develop an adult constituency for the Marsh; consider establishing a docent program, which, among other things, would educate other adults regarding Marsh values who in turn would convey that knowledge to other members of the public.

- Improve public access by creating a trail along Mission Creek. Consider expanding the catwalk to create a circular loop trail. Consider a trail along the east side of the marsh. Consider additional catwalks with observation areas.

- Buffer zones can be established and designed to restrict human access.

- Feral domestic animal presence in the marsh should be reduced.

Constraints:

- Trails must be safe and not create a threatening environment;

- Humans should not be encouraged to intrude into the marsh in ways that would reduce the marsh's habitat value.

- Some parts of the marsh must be "off limits" to create a safe habitat for wildlife species.

5.0 RESTORATION/ENHANCEMENT PLAN OBJECTIVES

5.1 Hydrologic Objectives

- Create higher summer/fall groundwater table levels and increased soil saturation.
- Increase soil saturation from surface water.
- Create a more diverse marsh environment by creating areas of varying elevation.
- Reduce the silt load from Mission Creek into the marsh.

5.2 **Biological Objectives**

- Increase sheltered open-water habitat that will serve as a resting place for water birds and will support populations of small fish, including mosquito fish (Gambusia) that will serve as food for diving and wading birds such as grebes and egrets.
- Encourage habitat diversity in the lower elevations of the marsh that are currently one-species stands of tules.
- Promote some cattail growth to improve habitat for the tri-colored blackbirds. This action may also provide habitat for red-winged black birds, which compete for tri-colored nesting sites. If populations of tri-color blackbirds slowly increase, they possibly may become competitive at this site.
- Improve habitat in the mid-elevation on the marsh.

- Eliminate undesirable "weedy species" of plants.

- Promote the (re)establishment of native, wetland species such as spike rush (Eleocharis acicularis, E. coloradoensis, and E. macrostachya) in the mid to low elevation areas.

- Encourage the naturally occurring woolly sedge (Carex lanuginosa) to spread down into the newly re-saturated sediments.

- Create new low marsh areas to support cattail and arrow-leaf plant establishment.

- Create a new riparian natural community, containing red alder (Alnus oregona), Fremont cottonwood (Populus fremontii), walnut (Juglans hindsii), western sycamore (Platanus racemosa), valley oak (Quercus lobata), ash (Fraxinus latifolia)) and box elder (Acer negundo var. californicum) and several willow species. Establish an understory including wild rose (Rosa spp.), buttonbush (Cephalanthus occidentalis), and wild grape (Vitis californica).

5.3 Public Access/Education Objectives

- Increase accessibility to a portion of the marsh.

- Maintain the feeling of comfort and security that the public feels when visiting the Lake Elizabeth/Stivers Lagoon marsh.

- Increase the aesthetic and educational value of a visit to Stivers Lagoon for both students and the general public.

6.0 RESTORATION/ENHANCEMENT PLAN COMPONENTS

6.1 Stivers Lagoon Restoration/Enhancement Plan Overview

The proposed restoration and enhancement plan is depicted on Figure 13. The main elements of the plan are listed below and described in more detail in Section 6.2 through 6.5 below.

Water Management

- Construct a flashboard weir or a weir gate in Mission Creek at the Paseo Padre culvert. Flashboards would be installed in April or May and left until August or September to raise water surface elevations to 49.5 or 50 feet NGVD. This will raise the groundwater level and resaturate the sediments of Stivers Lagoon Marsh. Some additional groundwater pumping and releases from Lake Elizabeth may be necessary to raise the water table.

- Create a single or a series of new siltation ponds in Mission Creek in the undeveloped upland between the railroad tracks. The ponds should be designed in conjunction with the proposed golf course. These ponds should be narrow enough to allow sediment removal from the bank. These ponds should be 8 feet deep with bottom elevations of 44 to 46 feet NGVD.

- Use active water management to retain upper elevation trees (recognizing that some along the RR at elevations of 51 feet may die from lack of oxygen in the sediments).

Vegetation Enhancement

- Excavate the dredge spoils to create a lower terrace along the east bank of the existing siltation pond. The terrace elevation will encourage new marsh to develop.

- Excavate a terrace along the west side of Mission Creek next to the parking lot to elevations that will allow riparian trees and a narrow band of new marsh to grow along the creek. A berm will be created to buffer the creek from the parking lot.

- Control the fuller's teasel (Dipsacus fullorum) and bristly ox-tongue (Picris echioides) by mowing and mulching with black plastic sheets. East Bay Regional Park District has had success with using volunteers to pull some weeds within the District. It is possible that these plants will become less competitive if marsh conditions return but they are both wetland indicator species and may achieve greater dominance in the marsh. As an alternative use the herbicide Rodeo which is an aquatic formulation of glyphosate (53%) with no surfactant as a last resort.

Wildlife Enhancement

- Excavate a deep, long pond beginning at the existing pond next to the catwalk and extending into the center of the existing tule stand and then curving to the east.

- Encourage cattails to grow in areas of the new pond by transplanting rhizome sections. Maintain summer water in some existing pond areas to also favor cattails. The presence of cattails may create habitat which is suitable for nesting of tricolored blackbirds.

- Create open water within the tule stands to add structural diversity and allow animals access to this protected open water. Provide habitat for other plant species such as cattails, arrow leaf (Alisma plantago-aquatica). which, in turn, will improve habitat for egrets, herons, marsh wrens, bitterns, and muskrats.

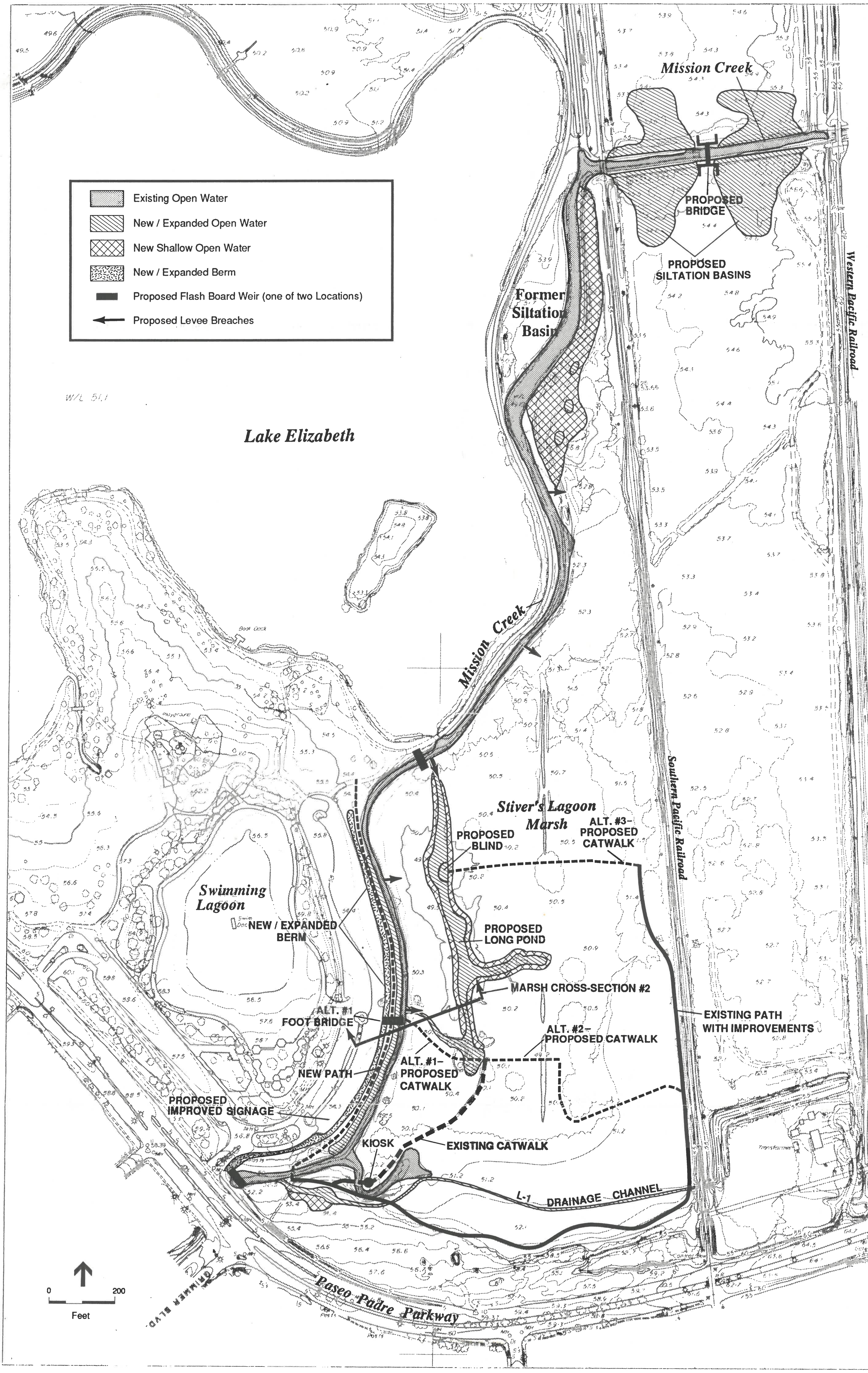
Public Access/Education

- Enlarge and enhance the ponds around the kiosk so that a range of habitat types may be developed near the kiosk for public recreation and educational purposes.

- Expand public access compatible with wildlife needs. Three alternative extensions/additions to the existing catwalk are depicted in Figure 13.

6.2 Water Management

Based on our analysis of historical changes and existing conditions, the most critical problem affecting marsh functioning is excessively dry soils during the summer and fall. On a conceptual basis, three types of solutions are possible:



SOURCE: Environmental Science Associates, Inc.

Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A

Figure 13
Proposed Stivers Lagoon Marsh Enhancement / Restoration Plan

- raise the existing groundwater table closer to the ground surface;
- lower the ground surface closer to the water table; and/or
- provide additional water directly to the marsh.

These options are discussed in greater detail below.

6.2.1 Increase Dry-Season Ground Water Table Elevation

It appears that channelization of Mission Creek (and perhaps, groundwater pumping) has lowered the local water table several feet during the dry season. Raising the water table closer to the ground surface would produce saturated soils and allow wetland vegetation to become established while discouraging non-wetland species. Accomplishing this will require a retardation of drainage via the Mission Creek channel and perhaps some additional dry season water supply. This could be accomplished by blocking summertime flows in the channel and by providing additional fresh water to the creek from the nearby City well. Flow blockage could be accomplished by installing a flashboard weir in the channel at some point downstream of the Lake Elizabeth outlet. The weirs would create a low dam (about 1.5 feet high) and store water in the channel upstream. This stored water would then raise the local groundwater levels by percolation. As shown in Figure 13, two locations are feasible. The simplest approach would be to construct the weirs directly on the culverts/head walls where the Mission Creek goes under Paseo Padre Parkway. A second approach would be to place a single larger weir across the channel just downstream of the Lake Elizabeth outlet. If feasible, the former location is preferred for a number of reasons:

- construction is simpler since the weirs can be affixed to the existing structures;
- the possibility of damage to the weirs during high flows (as a result of erosion of the channel banks, etc) is reduced because strength of the existing headwall/culverts;
- some additional water source area is gained, as the downstream location includes the L-1 line which is the small creek draining into Mission Creek along the south boundary of Stivers Lagoon; and
- A greater area of marsh could be enhanced.

The flow control weir could be designed as either a simple flashboard weir or a weir gate (see Figure 14a&b). In either case, the lower portion of the culverts would be blocked and the water level raised in the channel behind until the elevation exceeds the height of the top flashboard. The water level is controlled by inserting or removing flashboards. Of the two structures shown in Figure 14, the weir gate provides a tighter seal between the boards (they are bolted together) and allows the entire weir to be raised or lowered. The flashboard weir is simpler and less expensive, but provides a less watertight seal. Operation of a flashboard weir requires manipulation of individual boards.

Seasonally, the weir would be in place only during the dry season. It would be installed in April or May of each year and removed in September. As one option, the top of the weir could be established between 49.5 and 50 feet NGVD. The outlet structures under Paseo Padre include a 42-inch culvert (invert 49.5 ft. NGVD) for Line E, and two 5 ft. X 8 ft. box culverts (invert 48.2 feet) for Line G. This would imply that perhaps no weir is required on Line E and that a weir height of 1.3 to 1.8 ft. would be sufficient on the twin box culverts.

The source of addition groundwater represents the second critical element. At present, the dry season flows in the creek are low and inconsistent. They derive from overflow from pumping to the Swim Lagoon/lake complex, urban runoff within the developed areas of the Mission Creek watershed, and any perennial springs or seeps. Simply installing the flashboard weirs would be beneficial in trapping available flows in the creek and allowing backwater to flow into the marsh and percolate into the soil. It is unclear if the existing flows will be adequate to significantly raise the water table. An additional step would be to pump some additional water from the supply well through this lake to keep the channel filled to the top flashboard weir at Paseo Padre. (At present, pumping is conducted to keep the lake at the top of weir when set at summertime elevation [51.0 ft.].)

Water management elements of this program should be implemented as part of an "adaptive management" program, in which changes are made incrementally and the results monitored. This would be accomplished by raising the water level about 4 to 6 inches at a step, then allowing the groundwater table to stabilize. The existing shallow groundwater wells could be maintained for monitoring. The potential success of this approach could be tested by constructing sandbag weirs at the Paseo Padre culvert, filling the creek channel with water and monitoring groundwater levels for several months.

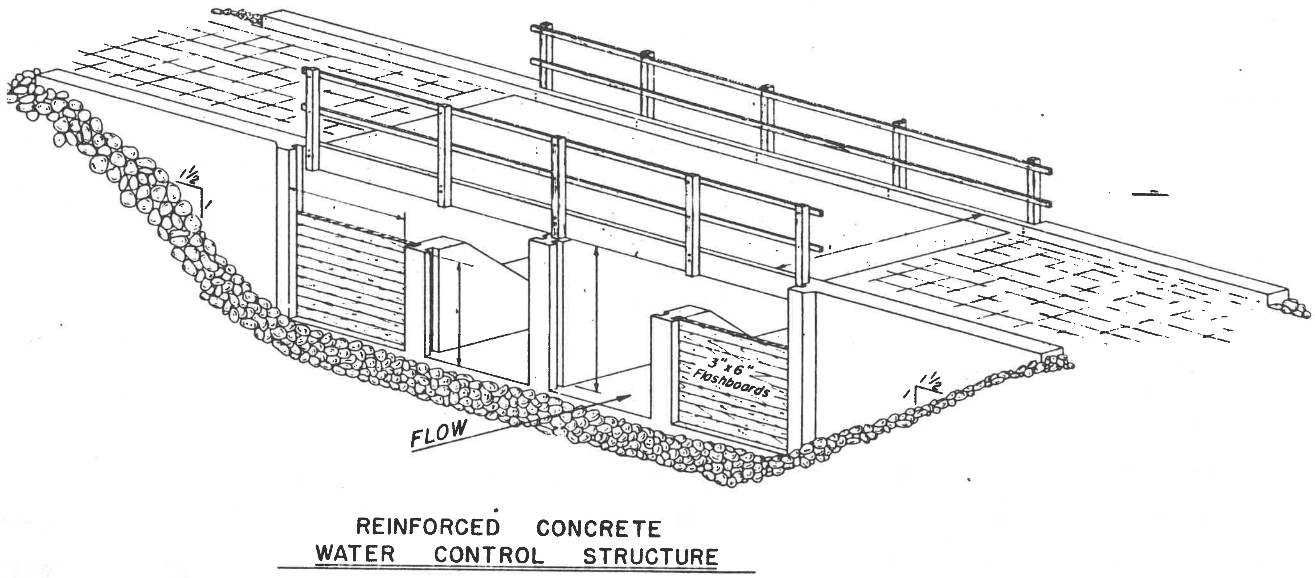
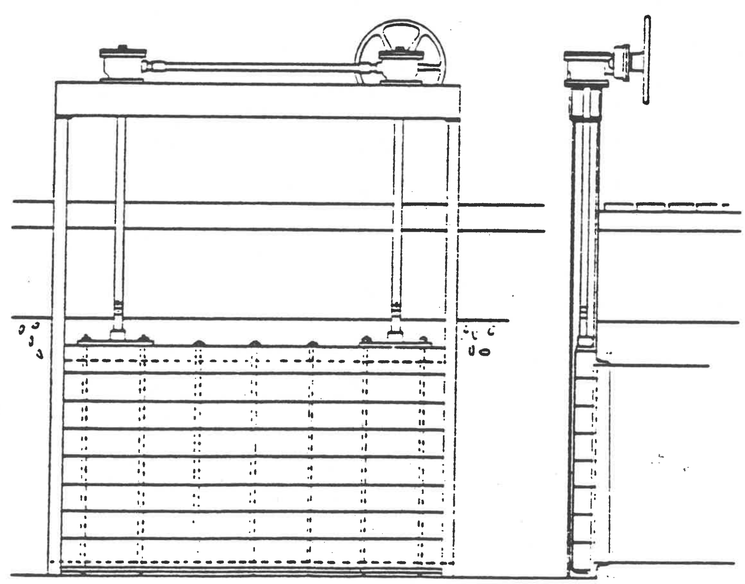


Figure 14A
Example of Flashboard Weir



SOURCE: Philip Williams and Associates

Stivers Lagoon Marsh Restoration / Enhancement Plan / 90-639A ■

Figure 14B
Example of a Weir Gate

6.2.2 Modification of Marsh Plain Topography

In its natural state, Stivers Lagoon Marsh included a more diverse topography and associated wetland characteristics. These included deep, open water areas, shallows, and areas with saturated soils. It's size and characteristics provided a natural buffer from intrusion. Historic changes and its present small size provided a limited variety of habitat types. The Mission Creek channel along the north and west sides provides some buffer from human intrusion. However, direct access is possible from the south and east sides. In addition, feral and domestic animals are common.

A limited program of excavation and grading is recommended to improve circulation from Mission Creek, restore upland areas to wetland, and create some additional open water areas. The layout of the additional open water areas will reduce access to some areas (functioning as a moat). The proposed plan is shown in Figure 13. It includes the following features:

- breaching of the low levee along the east side of Mission Creek;

- excavation of a shallow channel and open water area "long pond" just northwest of the boardwalk;

- excavation of the upland area southeast of the siltation pond to elevations which will create wetlands; excavation of several deep open water areas within these wetlands;

- excavation of additional wetland areas adjacent to the kiosk; and

- excavation of a terrace along the west side of the Mission Creek channel. The elevation of the terrace will promote the establishment of riparian trees and should also include a pedestrian trail, linking the kiosk with the lake perimeter trail.

- long-term rates of sediment deposition in the marsh should be measured using sediment plates or detailed survey transects. If sediment deposition raises the marsh by more than 0.5 feet, a long-term program of phased excavation would be necessary to maintain the wetland. This could be done in increments, with one area of marsh excavated, and the remainder undisturbed in any given year.

Upstream of the marsh, construction of a new siltation basin is recommended on the City's property between the railroad tracks. The basin would occupy between 2.5 and 4.0 acres, with an irregular shape to accommodate the tees, greens and access bridge associated with the proposed golf course. The actual shape of the basin can vary to accommodate the final golf course layout. If the basin in configured such that no lobes are greater than about 100-feet wide, the periodic excavation required to remove silt could be done using land-based excavators. A wider basin would require a floating dredge. The basin should include an access road around all sides to permit vehicle access. This road can be used as part of the golf course circulation as well as part of an east-west access road between the subdivision to the east and Lake Elizabeth.

The pond should be about 8 ft. deep, with a bottom elevation of 44 to 46 ft. NGVD. It will require excavation and disposal of 30,000 to 45,000 (cy) of material. The basin may include perimeter riparian vegetation and be designed to integrate aesthetically with the golf course. Based on the performance of the previous basin, sediment deposition in the new basin will likely average about 1500 to 2500 cy per year. The actual deposition process is extremely episodic, with minimal deposition in dry or average years, and extreme sediment conveyance and deposition during infrequent high flow events. The basin will require maintenance dredging at about 5-year intervals to maintain depth and water quality, and to prevent the establishment of emergent vegetation.

6.3 Vegetation Enhancement

Based on the present condition of Stivers Lagoon vegetation and the hydrologic plan presented above, the restoration plan for vegetation will consist of three major approaches:

- Improving conditions for native plant species already present by habitat enhancement;
- planting native plant species in areas where project actions will change the topography; and
- elimination of invasive, weedy species of plants.

6.3.1 Habitat Enhancement

Plant species which comprise vegetation in an area may be candidates for habitat enhancement for one or more reasons: (1) the species is rare and therefore given special status by the local, state and/or federal government; habitat enhancement is proposed to preserve the loss of its gene pool; (2) the species is a component of a habitat type or natural community, such as freshwater marsh, which was never widespread and has become very limited in its areal extent due to land use changes and thus is considered a rare natural community; (3) the species forms a critical part of a natural community upon which a special status animal species is dependent (4) the species forms a critical part (e.g., is the productive base of the food chain) of a natural community upon which many common species are dependent and/or (5) the species has particular functional, cultural, aesthetic or educational values.

Enhancement of habitat for plant species in the vegetation will be accomplished by creating (re-creating) physical conditions in the marsh that closely approach the habitat requirements of those species. Most marsh plants are perennial, that is, they have underground stems which remain alive from year to year maintaining a "space" for the organism to grow within. Because marshes are also environments in which sudden, dramatic disturbances periodically occur species are generally adapted to seeding themselves on bare mudflats when they become available for occupation. Biologists may, therefore, disturb and "re-format" this environment and if propagules (seed or living plant parts) remain in the sediments, the plants will re-establish themselves and the marsh. The habitat requirements of the species of Stivers Lagoon which are available in the literature are as follows:

> **Hardstem bulrush, tule or giant bulrush**: These plants are all perennial herbs with thick creeping rhizomes. The stems are from 6 to 10 or 12 feet in height; they are erect and stout , round to slightly triangular, dark green and unbranched. Small, triangular basal leaves sheath the stem, barely showing above the sediment. The flowers are born in clusters of spikelets at the apical end of the stem. Tules grow in water that is from 1.5 to 10 feet deep[29] with the optimum water table elevation from 2 feet below the sediment surface to 6 feet above. In the freshwater tidal marshes of the Sacramento-San Joaquin Delta when sediments accumulate until they reach less than 3 feet from the water surface, seedlings of California tule (S. californicus) establish and develop as a thin stand of plants along with seedlings of common reed grass (Phragmites communis).[30] As sediments reach closer to the surface, common tule (S. acutus) establishes among the pioneer species. Tules grow without serious effect in water salinities from 2 to 12 ppt[31] and are found growing over a pH range of 4-9.

Cattail: Tall, upright plants with flattened leaves and brownish-red seed in club-like clusters on top of the flowering stem. Leaves vary from the broad-leaved cattail (Typha latifolia) to narrow-leaved cattail (T. angustifolia); both species occur in the marsh. Narrow-leaved cattail is the most salt tolerant of the Typha species growing in fluctuating (but not continuous) salinities up to 25 ppt.[32] Seeds require only trace amounts of oxygen for germination[33] and therefore may germinate under water. Cattails grow in water which is from 0.5 to 3 feet in depth and in a range of pH from 4.5 to 10 and are apparently stimulated by summer-time water above the sediment in which they grow.[34]

Spikerush: Spikerush is difficult to establish from seed, but can be propagated using scrapings from sediment (top 4 inches) in which the spikerush is growing. This is a source of rhizomes and seeds. Spike rush germinates during early March when the soil 2 inches below the surface is 65 ^{0} F. At this time, seedlings do well in drained soil and are able to tolerate deeper water as they grow taller. They do not tolerate being covered by the water. When plants reach 8 inches in height, water should be drained completely. Spikerush provides food used by mallards, green-winged and cinnamon teal in the late-season.[35]

To enhance habitat in the lowest elevations of the area of Stivers Lagoon Marsh (labeled "Freshwater/Brackish Water Marsh" on Figure 4) consisting largely of tules or hardstem bulrush, raising the surface of the groundwater elevation to within 2 feet of the ground surface during the summer is recommended as cattails thrive in 0.5 to 3 feet of standing water. After initial flooding and saturation of the marsh sediments, maintain groundwater level in monitoring wells at an elevation of no less than 48 feet NGVD and the tules should recover vigorous growth reaching heights of 10 to 15 feet. The willows growing on the lowest elevation (50.3 feet NGVD) will still have 2 feet of unsaturated sediment between the surface of the groundwater and the surface of the sediment during the summer. If two feet of aerated sediment is adequate for their survival the first two years, these willows should be capable of producing new surface roots and will likely survive. It is possible that the willows on higher sediments of the riparian forest may experience enhanced growth from the greater availability of summer water.

To enhance habitat for cattails in areas such as the new terrace to the southeast of the existing siltation pond and the linear pond (see Figure 13), excavation of terrace to an elevation 0.5 foot below the summer elevation of the groundwater/open water in Mission Creek is recommended. If the summer elevation of groundwater/open water in Mission Creek is 48 to 50 feet NGVD, it will support the growth of cattails on a terrace at an elevation of 47.5 feet NGVD. It is further recommended that the vegetative effects of the increased elevation of groundwater be monitored and the most beneficial groundwater elevation for the largest number of native species be the criteria upon which the other elevations to be subsequently established are based.

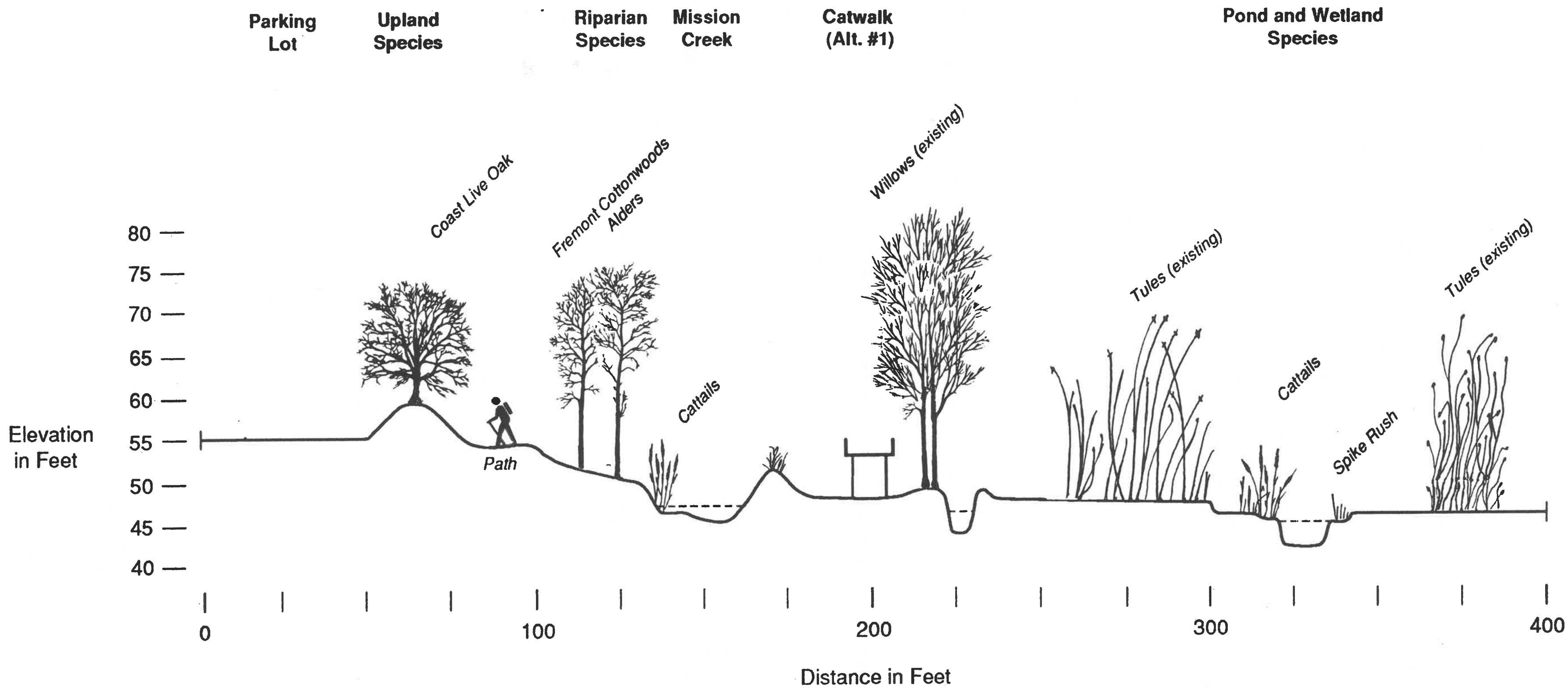
To enhance habitat for riparian forest tree species, it is recommended that a terrace approximately 20 to 30 feet wide and 1,000 feet long be created on the west side of Mission Creek. This terrace should be separated and buffered from the parking lot by a linear, topographically varied berm with a pedestrian path between the terrace and the berm (see Figure 15). The terrace should be excavated to a depth of approximately 48 feet (NGVD) at the edge of the Creek and sloped up to 50 feet at the path. Depths should be sufficient to expose original marsh sediments. Soils used to build up the terrace and berm should be marsh sediments excavated in the creation of the "long pond" (see Figure 13). Recommended finished elevations beginning at Mission Creek (X) are: X+00 = 48 feet NGVD; X+4 feet = 48 feet NGVD; X+10 feet = 51feet NGVD; X+20 to 30 = 53 feet NGVD; X+25 to 35 = toe of berm; path elevation = 55 feet NGVD; highest berm elevation = 60 feet NGVD (see Figure 15. The location of cross section is shown as cross section #2 Figure 13).

6.3.2 Native Species Planting

It is recommended that cattails (Typha angustifolia and T. latifolia) be seeded on the newly created terraces by collecting cattail flower spikes and scattering the small seeds by breaking the cattail spikes and releasing the seeds. If this method is unsuccessful in establishing cattails, it is recommended that the second year clumps of cattail root and rhizome be transplanted to the terraces on 10 foot centers.

It is recommended that a source of sediment containing spikerush rhizomes be located and permission to harvest approximately 400 square feet of surface sediment be obtained. The sediment should be hand-spread in four small areas along the edge of the long pond and along the west side of Mission Creek at an elevation of 49 feet NGVD. The plant materials and rhizomes should be spread in late fall or early spring before the summer water rises.

The terrace to the west of Mission Creek should be planted with trees and shrubs naturally found in riparian communities of the region. Such species may be purchased as bare-root or small containerized stock and planted according to accepted horticultural practices. The species recommended for the elevations between 51 and 53 feet NGVD are red alder, Fremont cottonwood, California walnut, western sycamore, Oregon Ash, and box elder with arroyo and polished willow interspersed for rapid growth. The understory should be planted in California blackberry, Mexican elderberry, buttonbush, California rose, and California grape. These trees should be planted fairly close to each other, approximately 15 to 20 foot centers, spaced irregularly with members of the same species in proximity as would be found in a natural habitat.



NOTE: Vertical Exaggeration = 2.5x

SOURCE: Environmental Science Associates, Inc.

Figure 15
Cross-Section through Stiver's Lagoon Marsh with Proposed Improvements

It is recommended that the berm be planted with riparian species adapted to a habitat that is farther above the groundwater level or with a more ephemeral water source than the stream/groundwater level regime in the restoration. Recommended species include valley oak, coast live oak and a small number of California sycamore. The understory shrubs should be toyon (Heteromeles arbutifolia), California rose, California coffeeberry (Rhamnus californica) and Mexican elderberry. The berm plantings should be in clusters of trees and shrubs which are widely spaced from other clusters. The trees may be 15 or 20 feet apart and the clusters 50 to 75 feet apart. Groups of shrubs are recommended to be planted under and between tree clusters (see Figure 15).

It is recommended that the bare sediment of the berm be conditioned by mixing one inch of manure or compost into the top six inches of sediment. The berm surface should then be seeded with a mix of grass and forb seeds which includes two native needlegrasses (Stipa pulchra and S. lepida) and numerous native herbaceous plants (wild flowers) such as butter and eggs (Orthocarpus erianthus), owl's clover (Orthocarpus purpurascens), lupine (Lupinus bicolor), tidy tips (Layia platyglossa), blue-eyed grass (Sisrynchium bellum) and California poppy (Eschscholzia californica) with the introduced annual grass soft chess (Bromus mollis) and filaree (Erodium sp.) as the soil stabilizing components of this seed mixture. Soft chess and filaree are preferable to perennial ryegrass because they are shorter and will not shade the young needlegrass seedlings which develop later than the annual grasses and forbs.

6.3.3 Elimination of Weedy Plant Species

Several plant species in Stivers Lagoon Marsh at the present time are introduced "weedy" species. Fuller's teasel (Dipsacus fullorum), bristly ox-tongue (Picris echioides), cocklebur (Xanthium strumarium var. canadense) and spiny clotbur (X. spinosum) are all weeds of low, moist places with heavy soils. All four species are present in Stivers Lagoon marsh. The first three are quite numerous on the upper elevations of the drying marsh sediments just beyond the tree canopy and in the dry basin to the west of the end of the catwalk. The spiny clotbur is found in small numbers along with a fifth weed, yellow star-thistle (Centaurea solstitialis) on the fill to the southeast of the sedimentation pond. Enhancement of the marsh would include the destruction and removal of the larger stands of these species.

It is recommended that the first two years, as the groundwater level is being increased, the teasel and the bristly ox-tongue be cut off at the ground and the ground covered with black "mulching" plastic sheets. The recommended time to do this is right before flowering. These plants are annual or biennial and, if the plant is cut before it can set seed, the plants can be successfully killed without re-seeding. Bristly ox-tongue flowers from June to December and Fuller's teasel flowers from May to July. The star thistle occurs at the location of the recommended bench excavation in the vicinity of the sedimentation pond. The star thistle will be removed during this excavation. If the bench is sufficiently low (recommended elevation 47.5 feet NGVD) and the water level is sufficiently high (recommended surface elevation 48 to 50 feet NGVD), the star thistle should be eliminated as it is not adapted to life in freshwater marsh habitats and bristly ox-tongue should be severely stressed. Weedy plants that are not crowded out by freshwater marsh species and/or successfully eliminated through cutting should be removed during the third year through a very selective and limited use of an herbicide. The aquatic formulation of glyphosate (Rodeo) would be an appropriate herbicide.

6.4 **Wildlife Enhancement**

The proposed excavation and vegetation of a long pond (see Figure 13) from the flashboard weir south to the dry basin and old channel at the end of the catwalk and then west to Mission Creek will create a sheltered open water habitat surrounded by native species including cattails and spikerush. The long pond and the two open water areas in the old siltation pond excavation should be deep enough to create 3 to 5 feet depth of standing water to prevent cattails from encroaching on the open water. The combination will provide nesting and foraging area for many water dependent wildlife species such as herons, bitterns, grebes, diving ducks, redwing blackbirds and possibly tricolor blackbirds, belted kingfisher, swallows, crayfish and other species of invertebrates such as dragonfly and damselfly nymphs and many species of fish.

A wide variety of wildlife species presently use the habitat available in the marsh. The major planned change of the habitat to restore saturated soil conditions to the marsh will likely increase the value of the marsh for water dependent animals. Other small mammals and reptiles may be utilizing the marsh in the way that the native grasslands were used in the past. These animals such as deer mouse, house mouse, western harvest mouse and undoubtedly Norway and brown rats (R. rattus) western fence lizard, alligator lizard will lose habitat in the restored marsh. These are not species of concern; in fact, the rats are non-native species and their displacement would improve overall wildlife habitat. The desirable mammal species are the small plant eating animals that form the basis of the food for predators like raptors and mammals such as foxes and weasels. The lizards and insects of the grassland such as grasshoppers and ants form the food base for skunks.

It is recommended that the upper elevations of the marsh and the area to the south of the kiosk that is not restored as wetland be allowed to have an uneven surface (piles of soil randomly arranged) planted in native grass and herbaceous plants and allowed to be uncultivated "native" habitat. The piles of soil create suitable habitat for California ground squirrels (Citellus beecheyi) whose old burrows are potential habitat for burrowing owls. Mice, rats, gophers and other small mammals such as ground squirrels, amphibians and reptiles such as toads, salamanders, lizards and snakes may reestablish populations in this area. It is also recommended that a corridor of open space (along Mission Creek or the Rail Road) be set aside to connect the Lagoon with the hills east of Fremont could provide a wildlife corridor for animal movement.

On the bench of the former spoils area for the siltation pond it is recommended that cattails be planted as densely as possible to create a "cattail marsh" extensive enough to allow tricolored blackbirds to establish in it and to eventually "out compete" the red-winged blackbirds for nesting space.

Garbage cans in the marsh and elswere in Central Park should be securely covered to prevent wildlife such as gray foxes and raccoons from becoming dependent on human garbage.

6.5 **Public Access/Education**

Based on the public access/education objectives presented in Section 5.3, the following improvements are proposed within the marsh.

- Improve the visitor's initial perception of the wetland by providing a signed parking area focused on the marsh.

- Additional interpretive and educational signs could be installed. The purpose of these would be to inform visitors about the functioning of a marsh ecosystem and of seasonal biological activity in the marsh.

- Increase biological diversity near the kiosk and existing catwalk by creating additional wetland habitats (pond, marsh, and riparian forest) to provide varied educational opportunities and encourage educational groups to remain in this portion of the marsh for the active part of their nature study.

- Design and construct a new trail along Mission Creek between the kiosk and the existing lake-side trail (see Cross section A-A', Figure 4). The trail should be buffered from the parking lot by a new berm, 3 to 6 feet high.

- Access to the marsh could be improved by additional catwalks. Figure 13 illustrates three possible alternative layouts in Figure 13. Alternative 1 would link the end of the existing catwalk to the new creek trail and the parking lot, providing an easily accessible, circular walk. It would require a new bridge over Mission Creek. Alternative 2 would be constructed east from the end of the existing catwalk and connect with the existing, semi-improved trail along the Southern Pacific railroad tracks. This trail should be further improved to increase security. A third catwalk (Alternative 3) extending west (with viewing blind) could be constructed further north from the existing path that parallels the Southern Pacific Railroad tracks. This catwalk would terminate at the proposed "long pond" and be equipped with a viewing blind to minimize human intrusion.

- A well marked path and catwalks through the marsh, and a wildlife observation blind will encourage users to remain on these paths and catwalks and leave the remainder of the marsh undisturbed.

- Encourage the training by City of Fremont Leisure Services staff of local residents as docents (patterned after the docent program at Audubon Canyon Ranch, Bolinas, California) to serve as guides and teachers in the Stivers Lagoon Marsh and at the local schools. This would increase the amount of pre-visit education that could occur and very importantly it would involve the community in the fate and use of this significant natural resource. Publicity about the marsh would enhance civic pride by allowing residents to appreciate Fremont's foresight in preserving the Lagoon.

6.5.1 Evaluation of Public Access Alternatives

Alternative 1 would require the construction of a small pedestrian bridge across Mission Creek and approximately 200 feet of new wooden catwalk to connect with the north end of the existing catwalk and create a circular path. This alternative would cross through the freshwater marsh habitat near the kiosk, riparian habitat along Mission Creek, and open water habitat of proposed long pond on the south end. Alternative 1 would allow for human exposure to a variety of habitat types without inviting human activity into the central part of the marsh that could decrease value for wildlife. Alternative 1 would provide easy access from the parking lot and could be easily patrolled. The disadvantages of Alternative 1 are that the course would be rather short in comparison to the other alternatives, and would not include "nature-study" access to the riparian woodland along the south and east sides of the marsh or the central portions of the marsh.

Alternative 2 would require the repair and maintenance of approximately 1,150 feet of existing trail through mixed riparian habitat, and 300 feet of existing trail through mixed riparian habitat parallel to the railroad tracks. This alternative proposes to construct approximately 600 feet of new catwalk/path across the marsh/riparian woodland to meet the north end of the existing catwalk. The advantages of this alternative are that the trail would create a longer loop than Alternative 1. Alternative 2 would carry human visitors closer to the center of the marsh, increasing their opportunities for observing wildlife. Human access to the central portions of the marsh, however, could degrade wildlife value of the marsh, particularly for those species requiring isolation from humans to carry out normal courtship and breeding behaviors. This alternative would pass through dense riparian woodland, which would make this course harder to effectively patrol than Alternative 1, but safer than the existing trail because it would create a loop.

Alternative 3 would require the repair and maintenance of approximately 1,450 feet of existing trail through mixed riparian habitat, and 1,100 feet of existing trail through mixed riparian habitat along the railroad tracks. This alternative proposes to construct a new catwalk west across 600 feet of tule marsh that terminates at a blind on the edge of the proposed long pond. The blind would allow visitors to observe the wildlife using the pond without being visible themselves. The advantages of this trail are that it would allow observation of not only common wildlife, but the more rare animals such as the pond turtles and tricolored blackbirds if they were to recolonize the new cattail plantings along the margins of long pond. There is, however, no way to keep sounds of conversation from reaching the animals and therefore the blind may have greater disadvantages than advantages. Consequently, this alternative may be too intrusive to wildlife. Alternative 3 would traverse dense riparian woodland and would not create a circular loop, which could make it more difficult to patrol than both Alternatives 1 and 2.

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APPENDIX D

REGULATORY OVERVIEW FOR BIOLOGICAL RESOURCES

Special Status Species Protection in California

Special status plant and animal species include those species that are listed by the federal or state governments as endangered, threatened, rare, or candidate for listing; listed by federal or state governments as species of special concern; or listed by the California Native Plant Society (CNPS) as rare or endangered. These species have varying degrees of legal protection under federal and/or California Endangered Species Acts (ESA and CESA), and the California Environmental Quality Act (CEQA). The United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) share responsibility for management and protection of special status species in California. Under separate state and federal legislation, each agency conducts a detailed review of any project that could affect a special status plant or animal species. If a species listed as endangered or threatened may be affected, the lead agency, as defined by CEQA and NEPA, must initiate a formal consultation with the USFWS and/or CDFG, as applicable under federal or state law. See Table A-1 for federal and state listing categories.

The Federal Endangered Species Act (16 USC 1531 et seq.) Section 9 prohibits the "taking" of listed species, including their habitat. If incidental taking might occur from a project, that is, if individuals of a listed species would be inadvertently harmed, harassed, or collected, or would suffer significant habitat modification, consultation with the USFWS is required. Section 7, which applies to federally funded or permitted projects or projects on federal lands, and Section 10(a), which applies to nonfederal projects and development on private land, require formal consultation where a project may affect a species currently listed as threatened or endangered. The USFWS recommends that candidate species and species proposed for listing also be considered in informal consultation during a project's environmental review. This is recommended because, in the event that a species were to be listed during the design or construction phases of a project (i. e., before occupancy), new studies and restrictions might be imposed.

Additionally, a formal consultation process must be initiated with the CDFG for projects the CEQA lead agency has determined may or will have an adverse effect on state-listed species. As is the case under USFWS policy, state candidate species are not subject to the same consultation requirements as listed endangered or threatened species. However, CESA encourages informal consultation for candidate species which may become officially listed prior to completion of the CEQA process for a given project.

The CDFG has established the California Natural Diversity Data Base - Rare Find (CNDDB), a program that maintains an inventory of the State's natural communities and special status species and also provides information on their current listing status. The CNDDB inventory is limited to occurences of special status species that have been previously reported. Many private lands have never been surveyed; therefore, the CNDDB serves as a regional information resource, not necessarily a site specfic one unless a site has been previously surveyed.

The CNPS publishes and regularly updates the *Inventory of Rare and Endangered Vascular Plants of California*[1] . The CNPS gathers information from the CDFG and from amateur and professional botanists throughout the State and contributes this information to the CNDDB. The Inventory has become the standard current reference on the distribution of California's rare and endangered plants. Plants listed by CNPS on List 1A, 1B, or 2, but not officially listed by the State, nevertheless can receive limited protection under CEQA in that substantial adverse effects of a proposed project on rare, threatened, and endangered species, including these CNPS-listed species, are considered to be potentially significant in the impact analysis of projects undergoing CEQA review. See Table A-1 for CNPS listing categories.

In addition to the protected species designations listed in Table A-1, the CDFG has developed a list of "Species of Special Concern." These species are defined as having California breeding populations which are of special concern in that they may face extinction within the State in the near future. By so listing a species, the CDFG draws attention to the potential for future designations of such species to a more protected status.

California Fully Protected Species are bird species which, although not listed as endangered or threatened, are protected by law in California. Under Section 3511 of the California Fish and Game Code, it is illegal to take, harass, or possess these species, their nests, or their eggs. These species, as well as certain other bird species, are afforded further protection under Sections 3503 (protection of nests and eggs), 3503.5 (protection of raptor eggs), and 3513

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1 California Native Plant Society, *Inventory of Rare and Endangered Vascular Plants of California*, September 1988.

TABLE A-1: SPECIAL STATUS SPECIES PROTECTION CLASSIFICATION

Federal Status	
Endangered	Species in danger of extinction throughout all or significant portion of its range.
Threatened	Species likely to become endangered within foreseeable future throughout all or significant portion of its range.
Category 1	Candidate information now available indicates that listing may be appropriate with supporting data currently on file.
Category 2	Candidate information now available indicates that listing may be appropriate but supporting data is not currently on file.
Category 3a	Non-candidate previously considered candidate but now extinct.
Category 3b	Non-candidate previously considered candidate but now invalid taxonomically.
Category 3c	Non-candidate previously considered candidate but now too widespread or not threatened.
California State Status	
Endangered	Species whose continued existence in California is jeopardized.
Threatened	Species, although not presently threatened with extinction, which is likely to become endangered in the foreseeable future.
CNPS	
List 1	A. Plants presumed extinct in California.
	B. Plants are rare and endangered in California and elsewhere.
List 2	Plants are endangered in California, but more common elsewhere.
List 3	Plants about with more information is needed.
List 4	Plants of limited distribution (a "watch" list).

Source: Environmental Science Associates, Inc., 1991 (protection of migratory birds) of the California Fish and Game Code as well as the federal Migratory Bird Treaty Act of 1914.

Regulation of Waters, Including Wetlands and Riparian Areas

Authorities and Jurisdiction

Under two separate statutory authorities, the U.S. Army Corps of Engineers is charged with issuing permits for placement of structures and other potential obstructions to navigation in navigable waters (Section 10, Rivers and Harbors Act), and discharge of dredged or fill material into "waters of the United States," a broadly defined classification which includes most streams, rivers, and wetlands (Section 404, Clean Water Act). Certain activities such as normal farming practices, emergency reconstruction of existing structures, and construction of irrigation ditches are exempt from Section 404 permit requirements.

In tidal areas, waters that fall within the Corps' jurisdiction include those areas that are: subject to the ebb and flow of the tide up to the plane of Mean High Water (MHW); are no longer tidal but still fall below MHW; or are wetlands adjacent to regulated waters. In nontidal areas, jurisdiction extends to the Ordinary High Water Mark (OHWM), a line that, in the absence of hydrologic data, is evident from lake shoreline or stream or riverbank indicators (bank shelving, debris lines, etc.). This latter definition, which extends into and encompasses the Nation's "headwaters" (see below, Nationwide Permit Program), includes intermittent as well as perennial streams.

Delineation of Wetlands and Determination of Jurisdiction

Wetlands subject to Corps regulation may be either adjacent to navigable tidal or nontidal waters and their tributaries, or isolated from them. (A recent federal appeals court decision [Hoffman Homes, Incorporated v. EPA] has found that isolated wetlands cannot be regulated under the Clean Water Act, a decision that may be appealed to the Supreme Court.) To determine whether areas that appear to be wetlands are subject to Corps' jurisdiction (i.e., are "jurisdictional" wetlands), a wetlands delineation must be performed. Three criteria are applied in this determination: (1) evidence of inundation or saturation by surface or groundwater for at least two weeks during an average rainfall year (hydrology), (2) a prevalence of wetland vegetation (hydrophytes) if the site is undisturbed, and (3) typical wetland (hydric) soils, that is, soils formed under saturated, anaerobic conditions. Since streams, including those with riparian habitat, rarely meet all three criteria for delineation as a wetland, those portions of a stream or river that lie below the line of "ordinary high water", or "bankful stage",are generally regarded by the Corps as falling within their jurisdiction as either navigable waters, tributaries to navigable waters, or "other waters" of the United States.

In 1987 the Corps published a manual which standardized the manner in which waters, including wetlands, were to be delineated nationwide. While the manual was effective in most circumstances, differences arose in certain instances among federal agencies which had their own wetland definitions. Consequently the Corps, EPA, Soil Conservation Service (SCS) and the U.S. Fish and Wildlife Service (USFWS) in 1989 published a new "unified" method for wetland delineation. Under the 1989 methodology an area meeting the minimum soils criteria and supporting plant species adapted to occasional saturated conditions was considered a jurisdictional wetland if the soil, even six to 18 inches below the surface, showed evidence of saturation for as little as seven consecutive days per year during the growing season.

Public and legislative debate concerning the 1989 methodology led to a new effort to refine the delineation criteria and methods. As a result, on August 14, 1991 a proposed new wetland delineation manual was published in the Federal Register for public review. The proposed manual, sponsored by the same four agencies, was intended to replace the 1989 manual. Public comment revealed considerable dissatisfaction with the proposed revised manual, and the revisions are currently undergoing extensive review following the close of public comment in October 1991. In the interim, the Corps has provided guidance through its Districts that, until a new (revised) delineation manual is completed and approved (probably late 1992 or early 1993), the 1987 manual is to be used to identify and delineate wetlands potentially subject to Section 404 regulation.

Individual 404 Permit

Under the general procedures of applying for an individual permit, a field survey is first conducted to determine whether a proposed development would encroach upon (place fill in) a potential jurisdictional stream or wetland area or would otherwise adversely alter a jurisdictional area. To carry out this evaluation, it is necessary to determine the extent to which "waters of the United States" exist on a development site, applying the accepted methodology contained in the 1987 Manual. If the activity would affect wetlands adjacent to "navigable" waters or their tributaries, or would affect greater than ten acres above the "headwaters" of navigable waters or their tributaries (see below - Nationwide Permit #26), then an application would be made to the Corps for a permit to fill.

Several steps can be anticipated in the processing and review of an individual permit application, in the following general order: (1) A Public Notice would be issued by the Corps; (2) The Corps staff would analyze information provided by the applicant, request comment from other resource agencies, and conduct their own field visit to confirm the wetland delineation and to identify areas under the Corps' jurisdiction; (3) It would be determined whether the proposed fill were for a water dependent project; if not, (4) It would be necessary to demonstrate through preparation of an alternatives analysis pursuant to Clean Water Act Section 404 (b)(1) Guidelines that there were no practicable alternative upland sites and that there were no environmentally less damaging sites that did not affect special aquatic sites; (5) If the absence of practicable alternatives were succesfully demonstrated, it would be necessary to provide mitigation for the fill, in sequence: first, avoiding the impact, second, if avoidance were not possible, minimizing the impact, and, only as a last resort, compensating for the loss by creating or restoring wetlands in equivalent kind and value. This sequencing of mitigation is spelled out in a Memorandum of Agreement between the Corps and EPA and is generally in keeping with the current Federal policy of "no net loss" of wetland acreage.

In evaluating the permit application, the Corps District Engineer would also consider the consistency of the proposed project with numerous factors reflecting the "public interest"and would conduct a review of environmental impacts of the project in accordance with the National Environmental Policy Act (NEPA).

Nationwide Permit Program

The Corps' Nationwide Permit program (NWP) is a form of general permit which the Corps can apply to projects that are substantially similar in nature and/or have minimal individual or cumulative adverse effect on waters, including wetlands. The purpose of the program is to assist in separating "significant" from "insignificant" activities and potential impacts, to reduce potential duplication with other governmental agencies, and reduce paperwork.

The Department of the Army recently authorized 36 Nationwide Permits, effective on January 12, 1992. Authorized under either Section 10 and Section 404, or both, the NWPs vary widely in types of activities covered. Twelve of the Permits require notification to the Corps and distribution of a Predischarge Notification (PDN) Nationwide Permit No. 26, provides a mechanism for processing and review of activities which would affect fewer than ten acres of waters, including wetlands, in areas that lie "above the headwaters." Headwaters are defined as having a mean annual flow of five cubic feet per second or less (33 CFR Parts 320 through 330), or, in the arid West, a flow of less than five cubic feet per second more than 50 percent of the time. This includes many intermittent streams.

Since NWP #26 is one of the NWPs requiring a PDN, if one to ten acres of stream and/or wetland fall within this definition, the Corps must be notified of any proposed action that would place fill in jurisdictional waters. The Corps may elect to process an individual permit or allow the proposed fill to proceed under the Nationwide Permit. Generally, the closer the proposed fill area is to one acre, the greater the probability that a Nationwide Permit may be issued. The Corps has provided in a Public Notice an outline of information required for preparation and processing of a PDN. The Corps has 30 days in which to contact other agencies, receive their comments, and approve or deny the "application."

For filling of jurisdictional waters which fall outside this definition and/or are greater than ten acres, either another NWP may be considered, or an application for an individual permit would be filed with the Corps (see above). If less than one acre "lies above the headwaters" and meets the other conditions of the Nationwide permit program, no formal notification is required. However, the Corps has indicated that informal "notification" is advisable if there is any question as to the applicability of any Nationwide permit. To this end, written request would be made to the Chief of the Regulatory Section, Corps of Engineers, accompanied by a description of the property, a map documenting the findings of a preliminary wetland delineation, and other information recommended by the Corps.

<u>State Water Resources Control Board</u>

Section 401 of the Clean Water Act requires an applicant for a permit to discharge dredged or fill material into waters of the United States to first obtain a certificate from the appropriate State agency that the fill is consistent with State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for individual permits is delegated by the State Water Resources Control Board to the Regional Water Quality Control Boards. A request for certification or waiver is submitted to the

Regional Board at the same time that an application is filed with the Corps. The Board has 60 days to review the application and act.

All of those Nationwide permits that were recently authorized under Section 404 also must have certification from the State Board. In the past, the Board has withheld certification from several of the NWPs, including #26, on a State-wide basis, requiring instead that any project qualifying for NWP #26 involving greater than two acres receive 60-day review, probable mitigation requirements, a public hearing, and approval of the water quality certification by the State Water Resources Control Board as an agenda item. For less than one acre, the Board has issued a waiver, provided the aplicant also entered into a Stream Alteration Agreement with the CDFG (see below).

The Board has not yet promulgated rules consistent with the recently authorized NWP program; that action is anticipated in May, 1992. It is likely, however, that certification for NWP #26 in California as a whole will continue to be denied, and therefore each request for greater than two acres will continue to be treated individually, requiring that procedures outlined above be followed.

California Department of Fish and Game Stream Alteration Agreement

In addition to Corps regulatory authority over "Waters of the United States," CDFG has authority to oversee work in streams pursuant to Fish and Game Code Sections 1601 (public projects) and 1603 (private projects). A landowner or agency proposing to substantially divert the natural flow of a stream, substantially alter its bed or bank, or use any material from the streambed, must first enter into a "Streambed Alteration Agreement" with CDFG. The CDFG, while being able to impose reasonable conditions on the agreement, may not decline to enter into an agreement.

FINAL

LAKE ELIZABETH / STIVERS LAGOON MARSH DESIGN AND IMPROVEMENT PROGRAM
Environmental Impact Report

July 1993

Prepared for:
City of Fremont
SCH # 91113077
EIR-92-56

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ESA

I. INTRODUCTION AND ORGANIZATION OF FINAL EIR

The Guidelines implementing the California Environmental Quality Act (CEQA) require that written responses be prepared for all written and oral comments received on a draft Environmental Impact Report (EIR) during the public review period. This Final EIR responds to comments on the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Draft EIR, dated February 1993, and incorporates the Draft EIR by reference.

This EIR has been prepared in compliance with the State EIR Guidelines and the California Administrative Code, Title 16, Division 6, Chapter 3. The EIR is also intended to comply with recent judicial actions pertinent to CEQA.

The Draft EIR for the Improvement Program was circulated in late February 1993, for review by public agencies and other interested parties. On April 7, 1993, a public hearing was held before the City Recreation Committee in City Hall to receive comments on the Draft EIR. Comments made at this hearing were recorded and are responded to in this document (see Section III). The review period in which to receive written comments ended on April 26.

Section II of this Responses to Comments Addendum reproduces and responds to written comments received during the review period. The responses follow and are keyed to the written comments as numbered in the individual letters or as indicated in the outside column of these letters. Section II also responses to oral comments made at the April 7, 1993 public hearing. A list of all commentors on the Draft EIR is provided at the beginning of Section II. No comments from any state agencies were received.

The Final EIR serves as an informational document for the public, and will be used by the City as it reviews and acts upon the proposed improvement program for Lake Elizabeth and Stivers Lagoon. Copies of the Final EIR are available for public review in the offices of the City, 39700 Civic Center Drive, Fremont, California and in the Fremont Public Library.

II. COMMENTS RECEIVED AND RESPONSES

This section includes all written comments received on the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Draft EIR during the public comment period, oral comments presented at the Recreation Commission public hearing and responses to all comments. The responses follow each letter or transcript. In order to locate the response to one's particular comments, the reader should locate his/her letter in the index below. Each letter has been assigned a unique number (i.e., Letter 3). Each distinct comment within a comment letter was assigned a unique number (i.e., Comment 3-1). The response to Comment 3-1 will be found following Letter 3.

The following letters were submitted on the Draft EIR.

Respondent	Letter Number	Date
AGENCIES		
Alameda County Flood Control, as provided by Engineering-Science	1	March 23, 1993
Alameda County Mosquito Abatement District	2	March 30, 1993
Bay Area Rapid Transit District	3	April 22, 1993
Alameda County Public Works Agency	7	May 28, 1993
ORGANIZATIONS		
Tri-City Ecology Center	4	April 6, 1993
INDIVIDUALS		
Alice Hoch	5	April 19, 1993
PUBLIC HEARING		
Recreation Commission	6	April 7, 1993

1

APPENDIX C

MEMORANDUM
23 March 1993

To: Jim Scanlin, Alameda County Flood Control

cc: Bob Schneider, Fremont Public Works
Pat Hayes, Fremont Leisure Services
Brian Kalahar, Environmental Science Associates
Jeff Haltiner, Philip Williams & Associates

From: Gary Halsey, Engineering-Science
John Hake, Engineering-Science

Subject: Review of Draft Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program Environmental Impact Report (EIR)

Attached is a review of the above referenced Draft EIR. Some of the issues discussed in this report are included in the Maintenance Recommendations and Lake Management Plan prepared by Engineering-Science in 1991.

Items of primary concern to the District include:

- Maintenance of flood storage requirements
- Construction of silt pond
- Lake water quality related to turbidity, clarity, sediment, contamination, and storm water runoff.

ES recommends that the District officially submit these comments to the City regarding the Draft EIR for the CIP.

Groundwater Levels and Pumping, pages 2-18, 3.5-7, 3.5-8, 3.5-9, 3.5-10

Expansion of pumping facilities to restore Stivers Lagoon Marsh and improve lake water quality is discussed extensively. We agree that the role of groundwater is crucial in maintaining a freshwater marsh and improving lake water quality during the summer months. However, a more thorough groundwater study needs to be conducted before pumping facilities may be expanded. This should include careful examination of the relationships between deep aquifers which are proposed as sources of surface water recharge and shallow unconfined aquifers (i.e., those immediately underlying the marsh and the lake). An accurate determination of available water supply (safe yield) and demand for all Central Park uses, including irrigation, maintenance of the swim lagoon, marsh restoration and flushing to maintain lake water quality, will also be necessary. 1-1

The Draft EIR indicates that shallow groundwater monitoring occurred in Stivers Lagoon Marsh. Groundwater levels in the marsh at the end of the dry season and in the middle of the drought were about 5 feet below the ground surface. It was also observed that groundwater levels respond rapidly to precipitation and that marsh soils drain at a moderate rate. In order to determine whether groundwater derived from the deep aquifers is sufficient for marsh maintenance, it is important that recharge rates for those aquifers be assessed. As part of this assessment, groundwater flow rates, groundwater flow directions, and the degree of hydrologic connection between the unconfined aquifer immediately underlying the marsh and the deeper potential source aquifers should be determined. This information should allow prediction of whether water pumped into the marsh would contribute significantly to recharge of the deeper aquifers, or be lost from the system through lateral components of flow. 1-2

Flood Storage Capacity of Lake Elizabeth, pages 5-3, 2-6, 3.3-2, 3.3-5, 3.5-2, 3.5-3, 3.5-10

Throughout the Draft EIR a required flood storage capacity of 931 acre-feet is assumed for Lake Elizabeth south of the SPRR trestle. This capacity is taken from the existing but outdated (1968) lease agreement between the City and the District. In 1990 an ES study for the District calculated the flood storage requirement for this area to be 970 acre-feet based on recent hydrologic and hydraulic models. Hydraulic requirements calculated by modeling studies contain a degree of error dependent upon assumptions made and accuracy of data provided. ES does not desire to dispute which figure is more accurate. However, it is generally desirable to err on the conservative side and use the higher figure for storage requirements. The District has indicated it would utilize the 967 acre-feet flood storage figure as an interim requirement while they complete their review and potential revision of the hydraulic model. 1-3

The Draft EIR asserts that 985 acre-feet of storage are presently available; that 34 acre-feet would be removed by sediment disposal; and that 951 acre-feet would remain following sediment disposal, with a comfortable storage buffer above the 931 acre-feet required. If 970 acre-feet of required storage is assumed, however, no more than 15 acre-feet, less than half of the estimated dredge spoil, could be disposed of in the park.

Lake Clarity, pages 2-5, 3.6-8, 3.6-9

Dredging the lake will certainly decrease turbidity by increasing depth and reducing suspension of bottom sediments due to wind-stirring. A side-effect of increased lake clarity may be increased growth of aquatic weeds such as ruppia or lemna due to increased light penetration. This problem may be exacerbated by fertilizer runoff from adjacent playing fields. This potential impact should be identified in the report. 1-4

Shoreline Stabilization, pages 2.7-15

We concur with the use of vegetated rock rip rap, planters in existing rip rap and vegetated shoreline as the primary means of shoreline stabilization. Creating a new island to protect the eastern shoreline is inadvisable. Islands encourage nesting by ducks and geese, the major cause of water quality deterioration and turf damage, and create poor sailing conditions on their leeward sides. Establishment of an emergent marsh along the shoreline could provide a location for dredge spoil disposal, stabilize the shoreline and provide valuable food and cover habitat without encouraging nesting. 1-5

Lake Sediment Contamination, pages 5-6, 3.6-4, 3.6-9

More recent sediment data for heavy metals and other potential urban contaminants is contained in the 1991 Lake Elizabeth Annual Report prepared by ES and should be included in the report. 1-6

Bacteria Standards for Water Contact Recreation, page 3.6-1

The Alameda County Department of Environmental Health does not have jurisdiction over water contact recreation standards at Lake Elizabeth. However, in the past the City has sought their concurrence in establishing practical criteria. 1-7

Storm Water Runoff to Lake, page 3.6-10

Mitigation measures to ensure that contaminated parking lot runoff is not discharged to the lake should be include (i.e., sediment, oil and grease traps). 1-8

Dredging Alternatives: New Siltation Pond, page 4-2

The New Siltation Pond (sediment detention basin) proposed on Mission Creek between the railroads above the lake should not be considered an alternative to lake dredging. The New Siltation Pond is critical to long-term maintenance of flood storage and conveyance in Mission Creek (Line L), protection of Stivers Lagoon Marsh restoration and enhancement and to minimize sediment load to the lake. As indicated 1-9 earlier, the District should be responsible for the design, construction and maintenance of the detection basin.

The New Silt Pond is probably the easiest and most cost-effective long-term means of minimizing siltation of Mission Creek, the lagoon, and lake from the standpoint of maintenance and operations. During the summer, the accumulated silt could be removed with earth moving equipment and would not require dewatering. 1-9

COMMENTING ENTITY: Alameda County Flood Control District

Responses

1-1 and 1-2 The recommendation to provide additional water to maintain saturated soils in the marsh does not require expansion of the existing pumping facilities. The existing pump system would be used, and an additional amount (estimated to be 5-10% of the existing use) of groundwater would be pumped. While additional studies on regional groundwater, safe yield analyses, etc., would provide useful information, they are not necessary to determine the feasibility of the proposed project. The actual groundwater requirements to maintain the marsh are difficult to predict accurately, and the presence of the Hayward fault zone and interbedded aquifers and intervening clay layers make detailed predictions of groundwater behavior in the project area even more difficult.

Consequently, an empirical approach is appropriate, in which the creek weir would be installed and the amount of groundwater required to maintain the marsh determined based on a monitoring program. This monitoring would include both an analysis of the wetland functioning (groundwater levels and vegetation response) and the pumping requirements (amount of additional groundwater pumped, drawdown levels, etc.). Based on these measurements, a long-term operating plan would be developed.

1-3 Alameda County has not adopted a new 100-year flood storage requirement for Lake Elizabeth, pending the outcome of ongoing hydrologic analyses of the Mission Creek watershed. These studies will identify new 100-year peak flows based on updated modeling procedures and data. In the interim, the County will continue to require the flood storage specified in the existing agreement of 931 acre-feet (Jim Scanlin, ACFCD, personal communication). It is recognized that the final flood storage requirement may be higher or lower than 931 acre-feet; if it does change significantly, the on-site versus off-site dredge disposal options would be reevaluated.

1-4 This comment is noted. The long-term effect of improved water clarity due to increased lake depth is not expected to be substantial enough to noticeably increase the growth of aquatic weeds. This is because the dredging would deepen the lake by only 2 to 3 feet, increasing the lake's dilution capacity by only 10 to 20%.

1-5 The creation of a new island was presented as an alternative in the EIR, and was not selected as the preferred alternative for the reasons stated in the comment. The draft EIR does recommend creation of a wetland zone around a portion of the lake perimeter (page 2-12). While creation of a more extensive marsh would provide some additional shoreline protection, it would be difficult to maintain because of the variation in lake operating levels. In addition, past experience with more extensive wetlands have indicated an potential for increased mosquito problems. Creation of an emergent marsh would not provide for significant dredge disposal volume, and would also conflict with recreational boating on the lake.

1-6 This comment is noted. The proposed testing describing on page 3.6-9 of the Draft EIR should be modified as warranted by a review of the test data contained in the 1991 Lake Elizabeth Annual Report.

1-7 Comment noted. The following sentence is added at the end of the third paragraph on page 3.6-1 of the Draft EIR:

> "Although the County Health Care Services Agency does not have jurisdiction over contact recreation standards at Lake Elizabeth, the City typically seeks the Agency's concurrence in establishing water quality criteria."

1-8 The mitigation on page 3.6-10 is expanded by adding the following to the second paragraph under "Mitigation Identified by the Report:"

> "Any new parking lot constructed in the north area of the lake should be equipped with sediment traps and/or grease and oil traps in the drains."

1-9 As stated on page 4-2, the siltation basin will not reduce the need for current dredging, and is recommended in addition to the dredging plans, not as an alternative. It would reduce the need for future dredging projects. We concur that the ACFCWCD has a major interest in the siltation pond design, construction and maintenance. Because of the recommended location of the ponds within the proposed golf course, and the public access, wetland and wildlife characteristics, the City also has a strong interest in both the design and the maintenance of these facilities. An agreement should be developed between the City and County defining their respective roles (design, review, construction, maintenance) and be included as a revision to the existing agreement between these agencies on the operation of Lake Elizabeth.

Alameda County Mosquito Abatement District

FRED C. ROBERTS
MANAGER
23187 CONNECTICUT STREET
HAYWARD, CALIFORNIA 94545
(510) 783-7744
FAX (510) 783-3903

2

March 30, 1993

Bob Scheider
Public Works Department
P.O. Box 5006
Fremont, CA 94537

Dear Bob:

RE: Lake Elizabeth/Stivers Lagoon Design and Improvement Program EIR 92-56

We are concerned that mosquito control issues are not adequately addressed in the DEIR. We have previously written to the city about mosquito problems in this area in comments about the proposed golf course on the adjacent property between the railroad tracks. The area along the Southern Pacific Railroad tracks and the drainage channel in the southeast corner of the marsh is the location of most of our mosquito control work presently. Aedes increpitus, the most common mosquito found in Stivers Lagoon Marsh, is a vicious day biter that would fly into the surrounding neighborhoods if not controlled. This is an opportunity to correct current and future mosquito problems at Stivers Lagoon. Other mosquitoes such as Culex tarsalis, an encephalitis vector, and Anopheles freeborni, the malaria vector, could become a problem if the marsh is not managed properly. The ESA/PWA plan for the Stivers Lagoon restoration (Appendix D, page 29) does say under constaints for hydrologic issues that "mosquito problems should not be created".

Here are some recommendations that can improve mosquito control problems at Stivers Lagoon. Longterm maintenance and monitoring plans should be a major component of this restoration. Alameda County Mosquito Abatement District personnel should continue to have input on this project. There should be access points for inspecting and treating mosquitoes in the marsh. The existing path along the Southern Pacific Railroad tracks should be wide enough to allow use by maintenance equipment. Manipulation of water levels in the marsh using the proposed weir structures might be sufficient to reduce mosquitoes in most cases and should be considered as part of the management plan. 2-1

Thank you for the opportunity to comment on these plans. We look forward to working together to enhance this valuable wetland.

Sincerely,

ALAMEDA COUNTY MOSQUITO
ABATEMENT DISTRICT

John R. Rusmisel

John R. Rusmisel
Environmental Specialist

JRR:vcd

COMMENTING ENTITY: Alameda County Mosquito Abatement District

Responses

2-1 The following mitigation measure has been added for the Stivers Lagoon Marsh Enhancement Plan on page 3.8-17 of the Draft EIR:

> "Mitigation Identified in This Report: Provisions for a mosquito abatement should be incorporated into the Stivers Lagoon Restoration Plan. These provisions could include maintaining adequate access for District personnel to inspect and treat the marsh and manipulation of water levels in the marsh using the proposed weir structures. This provision should be reviewed by the Alameda County Mosquito Abatement District prior to final design."

BART

BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street - Lake Merritt Station
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (510) 464-6000

APR 26 1993

3

April 22, 1993

Bob Schneider
Associate Civil Engineer
City of Fremont
39700 Civic Center Drive
Fremont, CA 94537

Re: Lake Elizabeth/Stivers Lagoon Improvement EIR

Dear Mr. Schneider:

Thank you for the opportunity to review the Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program EIR. After review of the document, it appears this improvement program will have no affect on the proposed BART Warm Springs Extension.

However, there are some clarifications which should be made at this time. Figure 2.11 on Page 2-22 of the EIR contains an inaccurate representation of the proposed BART alignment. South of Mission Creek, the BART alignment would be located further east from the Southern Pacific Railroad track and Stivers Marsh Lagoon than is depicted in your EIR. An accurate depiction of the BART horizontal route in the project vicinity is shown on sheets 72 and 73 of the Appendix for the Draft Environmental Impact Report for the Warm Springs Extension. These sheets show the adopted BART alignments Alternative 5, Design Options 2A (aerial) and 2S (subway). 3-1

The EIR indicates that BART construction would cause some disruption to the north shore area. Your development north of Lake Elizabeth is scheduled to be complete before BART construction takes place; therefore development in the northern part of the 21 acre area would be affected or temporarily removed by BART construction. Also, BART construction could require temporary diversion of Mission Creek and the proposed siltation basins east of Southern Pacific Railroad. Temporary disruption to these areas would occur for either aerial or underground construction. During construction, BART will restore facilities which have been disrupted. During project design, the City should consult with BART to avoid conflicts with the extension alignment. 3-2

Please contact me at (510) 287-4863 if you have any questions regarding this letter.

Sincerely,

Kat A Z

Karita A. Zimmerman
Manager of Environmental Compliance

cc: Joan A. Kugler
Marianne A. Payne
Farrell Schell

COMMENTING ENTITY: BART

Responses

3-1 Figure 2.11 has been revised accordingly. In addition, the following is added after the second sentence of the second full paragraph on page 2-20 of the Draft EIR:

> "The BART aerial structure could disrupt the proposed turf area north of the Lake Elizabeth and separate it from the soccer field complex in Central Park."

3-2 These comments regarding the potential for temporary disruption in Central Park due to BART construction are acknowledged.

4

TRI-CITY ECOLOGY CENTER

P.O. BOX 674 • FREMONT, CA 94537 • (415) 793-6222

April 6, 1993

Bob Schneider, Associate Civil Engineer
Public Works Department, City of Fremont
39550 Liberty Street
P.O. Box 5006
Fremont, CA 94537

Re: Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program
Draft EIR (SCH #91113077)

Dear Mr. Schneider,
Thank you for the opportunity to comment on the Lake Elizabeth EIR. It is a very thorough document. The Ecology Center has some concerns about the proposals described in the report. Our comments fall into two areas: Part 1: Questions or concerns regarding the EIR itself, and Part 2, questions or concerns regarding the City's proposals for the park.

Part 1

Page S-12, Sect. 4.2.2:
Alternative 1, creating offshore islands with dredge spoils, would seem to be highly desirable for lake-dwelling wildlife (by creating habitat that is not accessible to people) as well as reducing erosion. It would also minimize the disturbance to wildlife that use the northern ruderal grass area, as dredge spoils would be not be used to fill seasonal wetlands in that area, which currently provide good wildlife habitat. 4-1
Alternative 2 proposes a vertical retaining wall on the northeast shoreline instead of Treatment 1, vegetated rock rip-rap. Such a wall would unacceptably alter the character of the north shore, which is natural in character.

Page S-14, Sailboard Beach:
Option 2-B, Sand Beach on North Shore. The northeastern shore was described on page S-12 as having the highest erosion levels. This would seem to make it a poor choice for the sand beach, which would require more frequent sand replenishment due to increased erosion. In addition, isn't this the windiest side, and therefore more difficult to launch a 4-2

sailboard from? (If the sailboarders have not yet been consulted as to the best locations for a beach, they should be, and their concerns incorporated in the report.) 4-2

Page 2-7, Section 2.5.3:
"The existing grouted rip-rap would be aesthetically improved by installing planters every 10 to 20 feet." These would be used to establish shade trees, it says in numerous places. Shade trees should be no closer than 20 feet apart, and if they are willows (as suggested on page 3.8-15), they should probably be more like 35 feet apart. The report should specify that riparian species should be used in these planters, since they are 5 feet from the water's edge. Finally, as a landscape architect, I find the design portrayed in Figure 2.7--a concrete planter poking out of the shoreline--almost as aesthetically offensive as the grouted rip-rap. It should be possible to incorporate trees in at-grade planters. 4-3

Table S-1
3.4: Traffic and Parking. No mention is made of the increase in traffic and parking caused by the proposed grassy picnic area in the northern part of the park. The report indicates on page 3.4.6 that this development will result in 200 more people coming to the park on peak days, and could result in a need for new parking. This is a significant impact and should be mentioned in the summary of mitigation measures. 4-4
3.8.A: "Construction should generally take place during the dry season"--can the word "generally" be removed? Also add more language regarding protecting existing riparian vegetation, e.g., "A qualified biologist shall determine species to be saved, which will be tagged and surrounded with mesh construction fencing for the duration of the construction. Protective fencing will come out to the dripline where possible. When tree roots are encountered during dredging operations, roots up to 4" in diameter shall be cut cleanly; larger roots shall require the presence of a certified arborist." This may be too specific, but the language in the report is currently too vague. 4-5
3.9.E: The burrowing owl is not the only wildlife that will be affected by the proposed lawn and picnic area to the north. Pages 3.9-5 and 3.9-6 list nine species of birds and many rodents, reptiles and amphibians; compare this to the number of important species that occupy the turf areas (three species of birds). The ruderal grasslands currently provide a unique, natural habitat for a variety of species, and it seems that this impact has been minimized. In addition, burrowing owls have been seen in this area as recently as 1991 (see page 3.9-7), which counts as "recent years." 4-6

The report later (page 3.9-18) refers to this ruderal grass habitat as "low quality." Still, it seems that 21 acres of "low-qualtity" wildlife habitat in the middle of an urban area is prefered to 21 acres of "no-quality" wildlife habitat, i.e., lawn. Which brings me to Part 2 of these notes. 4-7

Part 2

One of the projects proposed by the city for Central Park is converting the 21-acre ruderal grass area north of the lake to lawn and picnic areas. While there are many fine reasons to consider installing more lawn at Central Park, there are also some compelling ones to consider other alternatives. Some of the most important reasons are summarized below:

1. Of all the landscaping alternatives that could meet the needs of park users for this area, lawn requires the highest maintenance (mowing, aerating, fertilizing, watering, etc.), the highest use of pesticides and herbicides, and the greatest quantities of water (estimated at 1 million gallons *per acre* a year--see page 3.5-8). This also makes it the costliest alternative in an era of shrinking budgets. 4-8

2. Lawn is a monoculture that does little to support or encourage wildlife. It does not reflect the city's agricultural heritage, or offer seasonal or other visual interest. In other words, it is boring.

Central Park, as the "Jewel of Fremont," has a great deal of diversity, with the lake, lagoon and marsh, play areas, etc. But one thing is does not have is gardens--areas of special plantings that say something about our community, and create beautiful, unique outdoor spaces. Gardens of special plantings are what set the "great parks" apart from standard-issue neighborhood parks. 4-9

The area north of the lake would be a perfect opportunity for garden areas that incorporate picnic tables, pathways and sitting areas. All the passive recreation activities so popular at the park could be accommodated--and paths that connected into the main path system would add an element of active recreation as well. The use of native plants and wildlife-attracting species would be especially appropriate. Drought-tolerant, low-maintenance gardens can be beautiful and lush--and much more interesting than "plain vanilla" lawn. Such a landscape would also be much more environmentally appropriate.

Again, thank you for the opportunity to review this EIR. I look forward to hearing from you.

Sincerely,

Lori Pottinger

Lori Pottinger
on behalf of Tri-City Ecology Center

COMMENTING ENTITY: The Tri-City Ecology Center

Responses

4-1 The advantages of creating a new island cited in this comment were certainly recognized. However, the island concept in this case was rejected because of it's likely attractiveness to common wildlife (ducks and geese) for nesting, which would further degrade water quality and the surrounding turf. In addition, the island would create poor sailing conditions on its leeward side.

The comment regarding opposition to Alternative 2 for shoreline restoration is noted.

4-2 Section 4.0, Alternatives, discusses the various Sailboard Beach options and potential impacts. This section states that the sand beach on the north shore could be damaged if large scale slumping occurs. The potential for erosion of the sailboard beach under this alternative is acknowledged and a good reason for not selecting this alternative.

4-3 The species of tree to be planted within the existing grouted rip-rap areas would likely be a willow, but this has not been finally determined. The specifics of tree species to be used, tree spacing, and placement relative to ground level will be determined during final design. Your comments will be taken into account at that time.

4-4 It is expected that the additional demand for parking could be accommodated in the project area. Page 3.4-9 of the Draft EIR states that if demand exceeds supply in the park more than 30 weekend days per year, plans could be made to increase parking. Turf area development is intended to satisfy existing demand for this type of recreational use.

4-5 Your comment is well taken. The Mitigation Measure 3.8B is amended by adding the following language:

> "A qualified biologist will determine and mark in the field all trees and other significant biological resources to be avoided during construction of the proposed and other improvements. A certified arborist shall be consulted as warranted by the need to preserve significant trees."

4-6 Comment noted that other wildlife species also make use of the area north of the lake on occasion. It is true that burrowing owls have been observed in this area within the past two or three years, but not more recently than that. Nevertheless, the EIR identifies as a potentially significant impact, the loss of this potential habitat.

4-7 Comment acknowledged.

4-8 to 4-9 These comments are acknowledged and will be considered by City staff during preparation of final design plans.

5

41727 Chiltern Drive
Fremont, CA 94539-4696
April 19,1993

RECEIVED
APR 20 1993
Environmental Science Assoc.

Environmental Science Associates, Inc.
301 Brannan St.
Suite 200
San Francisco, CA 94107-1811

Re: Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program EIR 92-56; SCH #91113077 prepared for City of Fremont

I spoke briefly at the Fremont Recreation Commission meeting of 4/7/93 on the DEIR, raising a number of points. I feel it might be helpful to you if I put some of my concerns in writing (to facilitate your answering them).

Unfortunately, I have not had the time to "digest" the entire DEIR. Time did not permit me to study the section on the marsh. Thus, my comments refer only to the parts of the DEIR that I have had time to read. It is extremely difficult for a concerned citizen with an already busy life to find time to read through EIR's and make thoughtful comments on them.

I have lived at my home in Fremont for 26 years. For almost 18 years I have taught bird-watching for the Fremont Adult School (part of the Fremont Unified School District). I am a member of the Audubon Society, Tri-city Ecology Center, San Franciso Bay Bird Observatory, Pt. Reyes Bird Observatory and other organizations. However, I am writing as a concerned citizen and not as a representative of any of those organizations. I walk around Lake Elizabeth for exercise. I find that many others who do so are also interested in the wildlife at the park. As I am walking around the Lake, I am often stopped and asked about the birds and other aspects of nature.

In the DEIR, one of the most important environmental aspects of the proposed projects for Central Park has not truly been addressed. If these projects are completed, more people will be using the park. Having more people using the park will greatly affect the wildlife both directly and indirectly.

5-1

It is proposed to change the only "undeveloped field" presently at the lake edge into a developed area. The birds and other wildlife that presently use that area will no longer have a place to feed and rest. Among the birds that currently use that area are migrant Canada Geese, including Aleutian Geese. Aleutian Geese are listed as Endangered. I have seen no referrence in the DEIR to Aleutian Geese. I have seen at least 4 Aleutian Geese feeding in the undeveloped field this winter. Bob Richmond, a better birder than I, has reported at least eight there at once this winter. (Because they are migratory, they have now left the area for their northern nesting grounds.) Long-billed Curlews, American Pipits, Western Meadowlarks, Red-winged and Brewer's Blackbirds, European Starlings, Great Blue Herons, White-fronted Geese, Snow Geese, Mallards and other ducks, Coots, Turkey Vultures, Red-tailed Hawks, Killdeer, Dowitchers, Greater Yellowlegs, Least Sandpipers, California and Ringed-billed Gulls, Rock and Mourning Doves, Barn, Cliff, Tree, Violet-green, and Northern Rough-winged Swallows, Loggerhead Shrikes and other birds use this area. (These are just the species I can think of, "off the top of my head". Right now, I do not have time to go through my records for additional species.) 5-1

Burrowing Owls nested in that field every year through 1990. (Somewhere in the DEIR, it states that Burrowing Owls have not used the area in recent years. This is untrue. In the fall of 1990 Burrowing Owls used the area.) Burrowing Owl habitat has decreased precipitously in the last few years. The undeveloped field has been important habitat for this species. (I can remember, not long ago when five families of Burrowing Owls were successfully raised there simultaneously.) At the moment, the Burrowing Owl is listed as a species of Special Concern. However, it is hoped that its California listing will soon be upgraded to Threatened. 5-2

I have concentrated on birds because I know more about them and because most people notice them more than other wildlife. However, we must bear in mind that they are not the only wildlife inhabiting the field. There is a whole community of organisms that will be affected if the field is destroyed. Another group of animals that people will miss if the field is destroyed are the butterflies which need some of the plants presently there as food plants during their larval (caterpillar) stage. 5-3

Remnants of a vernal pool may be in this field. This vernal pool was mostly destroyed in the last enlargement of the lake. Vernal Pools are an endangered habitat in California. 5-4

On another aspect of the projects: Traffic near Central Park during holidays and summer week-ends is already problematic. It would be better to add additional picnic sites elsewhere in Fremont. That alternative is not considered in this report. The heavy use of the park is not only hard on humans. It is also hard on other park life. 5-5

I am also concerned about the shoreline rehabilitation. **Rip-rap is not aesthetically pleasing.** Native vegetation is much more pleasing. After the last enlargement of the lake, many people stopped me to chat. Everyone who mentioned the lake edge expressed dismay at the ugliness of the new shoreline treatment (rip-rap with concrete). No one said they 5-6

I wonder whether willow cuttings stuck into the cobble rip-rap will produce willow trees. While it is worth a try, I would not count on it. (After the last change in the shoreline to a concreted rip-rap, we were told that soon wild plants would grow through the concrete and beautify the rip rap. I'm still waiting for this beautification,) 5-7

Any new plantings added to the park should be plants native to the habitat. This way spraying, watering, and other care will be unnecessary. 5-8

I am concerned about the dredging techniques. Where and how will a 21 acre pond be created for acceptance of dredge spoils during dewatering?

If 20 foot mounds are created from these spoils, how will this effect security? (You can't see over or through the mounds.) How will this affect the open-space look of the park? And, how long will it take the mounds of dredged material to be dry enough to support heavy use by children? 5-9

Also, it seems as if the dredge spoils (both during dewatering and permanently) will be on Burrowing Owl habitat. Please comment.

I am concerned how closure of the east shore path (during construction) will effect walkers from the Gomes Park area? What will be done to facilitate their walking from Gomes Pk. to the lake? 5-10

I have another basic question. Please clarify and specify how and for which organisms the aquatic habitat will be improved by dredging. On page S-2 of the DEIR it is said that an objective of dredging the lake is to improve the aquatic habitat. In reading "aquatic habitat", one would assume that means the habitat for non-humans. I would appreciate information on this. 5-11

The bird list I gave the clerk was made a while back. I now realize that I left off of it: Aleutian Goose and Red-breasted Merganzer. Of course, my list is incomplete. It includes only birds I have noticed while I walked around the lake. 5-12

Thanks for the opportunity to comment on the DEIR.

Sincerely,

Alice Hoch

Alice Hoch
510-657-0475

Copies to Bob Schneider; Patrick Hayes; Recreation Commission; City Council;Tri-city Ecology; Audubon Society; Sierra Club

Mrs. Alice Hoch

4/7/93 Recreation Commission Mtg.

* NOTE: SOME OF THESE BIRD NAMES HAVE BEEN [illegible]

Pocket Field Check List

614 Birds of Western States

File Key: ......

Date ......

Place ......

Title * INCOMPLETE *

Total ......

Weather LIST OF BIRDS

Time SEEN FROM

Territory covered PATH AROUND LAKE ELIZABETH

(These birds were seen by

Observers Alice Hoch as she walked for exercise. She was not really birding or making a survey.)

5.

- Magpie, Black-billed
- Magpie, Yellow-billed
- Raven, Common
- Raven, White-necked
- X Crow, Common
- Crow, Northwestern
- Jay, Piñon
- Nutcracker, Clark's
- Chickadee, Bl-cpd
- Chickadee, Mexican
- Chickadee, Mountain
- Chickadee, Gray-hd
- Chickadee, Boreal
- X Chickadee, Ch-bckd
- Titmouse, Plain
- Titmouse, Bridled
- Verdin
- X Bushtit, Common
- Bushtit, Black-eared
- Nuthatch, Wh-brstd
- Nuthatch, Red-brd
- Nuthatch, Pygmy
- Creeper, Brown
- Wrentit
- Dipper
- Wren, House
- Wren, Brown-thrd
- Wren, Winter
- Wren, Bewick's
- Wren, Cactus
- X Wren, Lng-bld Msh
- Wren, Cañon
- Wren, Rock
- X Mockingbird
- Catbird
- Thrasher, Brown
- Thrasher, Bendire's
- Thrasher, Curve-bld
- Thrasher, California
- Thrasher, Le Conte's
- Thrasher, Crissal
- Thrasher, Sage
- X Robin
- Thrush, Varied
- X Thrush, Hermit
- Thrush, Swainson's
- Thrush, Gray-chkd
- Veery
- Bluebird, Eastern
- Bluebird, Western
- Bluebird, Mountain
- Wheatear
- Bluethroat
- Rubythroat
- Solitaire, Townsend's
- Warbler, Arctic
- Warbler, Middendorff's
- Gnatcatcher, Bl-gray
- Gnatcatcher, Blk-tld
- Kinglet, Golden-crd

- X Kinglet, Ruby-crd
- Accentor, Mountain
- Wagtail, White
- Wagtail, Yellow
- X Pipit, Water
- Pipit, Red-throated
- Pipit, Pechora
- Pipit, Sprague's
- Waxwing, Bohemian
- X Waxwing, Cedar
- Phainopepla
- Shrike, Northern
- X Shrike, Loggerhead
- X Starling
- Myna, Crested
- Vireo, Hutton's
- Vireo, Bell's
- Vireo, Gray
- Vireo, Yellow-thrtd
- Vireo, Solitary
- Vireo, Red-eyed
- Vireo, Warbling
- Warbler, Bl-and-Wh
- Warbler, Prthntry
- Warbler, Tennessee
- Warbler, Orange-crd
- Warbler, Nashville
- Warbler, Virginia's
- Warbler, Colima
- Warbler, Lucy's
- Warbler, Parula
- Warbler, Olive
- X Warbler, Yellow
- Warbler, Magnolia
- Warbler, Cape May
- Warbler, Bl-thrd Blue
- X Warbler, Myrtle
- X Warbler, Audubon's
- Warbler, Bl-th Gray
- Warbler, Townsend's
- Warbler, Bl-thrd Grn
- Warbler, Hermit
- Warbler, Cerulean
- Warbler, Blckburnn
- Warbler, Grace's
- Warbler, Ch-sided
- Warbler, Blackpoll
- X Warbler, Palm
- Ovenbird
- Water-Thrush, Nthn
- Water-Thrush, Lena
- Warbler, MacGilvry's
- X Yellowthroat
- Chat, Yellow-brd
- Warbler, Red-faced
- X Warbler, Wilson's
- Warbler, Canada
- Redstart, American
- Redstart, Painted
- X Sparrow, House

6.

- X Bobolink
- Meadowlark, Eastern
- X Meadowlark, Western
- Blackbird, Yell-hd
- X Blackbird, Redwinged
- Blackbird, Tricolored
- Oriole, Orchard
- Oriole, Hooded
- Oriole, Scott's
- Oriole, Scarlet-headed
- Oriole, Baltimore
- X Oriole, Bullock's
- Blackbird, Rusty
- X Blackbird, Brewer's
- Grackle, Bost-tailed
- Grackle, Purple
- X Cowbird, Brown-hd
- Cowbird, Bronzed
- Tanager, Western
- Tanager, Hepatic
- Tanager, Summer
- Cardinal
- Pyrrhuloxia
- Grosbeak, Rose-brstd
- X Grosbeak, Black-hd
- Grosbeak, Blue
- Bunting, Indigo
- Bunting, Lazuli
- Bunting, Varied
- Bunting, Painted
- Brambling
- Dickcissel
- Grosbeak, Evening
- Finch, Purple
- Finch, Cassin's
- X Finch, House
- Grosbeak, Pine
- Finch, Gr-crnd Rosy
- Finch, Blk Rosy
- Finch, Brn-cpd Rosy
- Goldfinch, European
- Redpoll, Hoary
- Redpoll, Common
- Siskin, Pine
- X Goldfinch, American
- X Goldfinch, Lesser
- Goldfinch, Lawrence's

- Crossbill, Red
- Crossbill, Wh-wngd
- Towhee, Green-tailed
- X Towhee, Rufous-sided
- X Towhee, Brown
- Towhee, Abert's
- Bunting, Lark
- X Sparrow, Savannah
- Sparrow, Grasshopper
- Sparrow, Baird's
- Sparrow, Le Conte's
- Sparrow, Sharp-tailed
- Sparrow, Vesper
- Sparrow, Lark
- Sparrow, Rufous-wgd
- Sparrow, Rufous-crnd
- Sparrow, Botteri's
- Sparrow, Cassin's
- Sparrow, Black-thrd
- Sparrow, Sage
- Junco, White-winged
- Junco, Slate-colored
- Junco, Oregon
- Junco, Gray-headed
- Junco, Mexican
- Sparrow, Tree
- Sparrow, Chipping
- Sparrow, Clay-colored
- Sparrow, Brewer's
- Sparrow, Field
- Sparrow, Worthen's
- Sparrow, Black-chnd
- Sparrow, Harris'
- X Sparrow, Wh-crnd
- X Sparrow, Golden-crnd
- Sparrow, Wh-thrtd
- X Sparrow, Fox
- Sparrow, Lincoln's
- Sparrow, Swamp
- X Sparrow, Song
- Longspur, McCown's
- Longspur, Lapland
- Longspur, Smith's
- Longspur, Ch-collд
- Bunting, Snow
- Bunting, McKay's
- Bunting, Rustic

ADDITIONAL SPECIES

- Loon, Common
- Loon, Yellow-billed
- Loon, Arctic
- Loon, Red-throated
- Grebe, Red-necked
- X Grebe, Horned
- X Grebe, Eared
- X Grebe, ~~Least~~ CLARK'S
- X Grebe, Western
- X Grebe, Pied-billed
- Albatross, Black-ftd
- Albatross, Short-tld
- Albatross, Laysan
- Albatross, Black-brd
- Albatross, Wh-cpd
- Albatross, Yel-nosed
- Shearwater, Bl-bld
- Shearwater, Booty
- Shearwater, Manx
- Shearwater, Pale-ftd

- Shearwater, Pink-ftd
- Shearwater, Wdg-tld
- Shearwater, N Zeal
- Petrel, Scaled
- Petrel, Cook's
- Petrel, Wh-winged
- Petrel, Bulwer's
- Fulmar
- Petrel, Cape
- Petrel, Galapagos
- Petrel, Fork-tailed
- Petrel, Leach's
- Petrel, Ashy
- Petrel, Black
- Petrel, Least
- Petrel, Wilson's
- Tropic-Bird, Red-bld
- X Pelican, White
- X Pelican, Brown
- Booby, Blue-faced

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2

x Booby, Blue-footed
Booby, Brown
x Cormorant, Dbl-crstd
Cormorant, Olivaceous
Cormorant, Brandt's
Cormorant, Pelagic
Cormorant, Red-faced
Anhinga
Frigate-bird, Magn
Frigate-bird, Pacific
x Heron, Great Blue
x Egret, Common
x Egret, Snowy
x Egret, Cattle
Egret, Reddish
Heron, Louisiana
Heron, Little Blue
x Heron, Green
x Heron, Bl-crnd Night
Heron, Yel-crnd Nt
x Bittern, American
Bittern, Least
Ibis, SACRED
Ibis, White-faced
Ibis, White
Spoonbill, Roseate
Swan, Whistling
Swan, Trumpeter
x Goose, Canada
Brant
Brant, Black
Goose, Emperor
x Goose, White-fronted
Goose, Bean
x Goose, Snow
Goose, Blue
x Goose, Ross'
Duck, Bl-bld Tree
Duck, Fulvous Tree
x Mallard
Duck, Mexican
Duck, Black
x Gadwall
x Pintail
Teal, Falcated
Teal, Common
x Teal, Green-winged
Teal, Baikal
x Teal, Blue-winged
x Teal, Cinnamon
Widgeon, European
x Widgeon, American
x Shoveler
x Duck, Wood
Redhead
x Duck, Ring-necked
Duck, Tufted
x Canvasback
Scaup, Greater
x Scaup, Lesser

x Goldeneye, Common
Goldeneye, Barrow's
x Bufflehead
Oldsquaw
Duck, Harlequin
Eider, Steller's
Eider, Common
Eider, King
Eider, Spectacled
Scoter, White-winged
Scoter, Surf
Scoter, Common
x Duck, Ruddy
x Merganser, Hooded
Merganser, Common
x Merganser, Red-br
x Vulture, Turkey
Vulture, Black
Condor, California
x Kite, White-tailed
Kite, Mississippi
Goshawk
Hawk, Sharp-shinned
Hawk, Cooper's
x Hawk, Red-tailed
Hawk, Harlan's
Hawk, Red-should
Hawk, Swainson's
Hawk, Zone-tailed
Hawk, Rough-legged
x Hawk, Ferruginous
Hawk, Gray
Hawk, Harris'
Hawk, Black
x Eagle, Golden
Eagle, Wh-tld Sea
Eagle, Bald
Eagle, Steller's Sea
x Hawk, Marsh
Osprey
Caracara
Gyrfalcon
x Falcon, Prairie
Falcon, Peregrine
Falcon, Aplomado
Hawk, Pigeon
x Hawk, Sparrow
Grouse, Blue
Grouse, Spruce
Grouse, Ruffed
Ptarmigan, Willow
Ptarmigan, Rock
Ptarmigan, Wh-tld
Chicken, Gr Prairie
Chicken, Le Prairie
Grouse, Sharp-tailed
Grouse, Sage
Partridge
Chukar
Bobwhite

x Gallinule, Purple

3

Quail, Scaled
Quail, California
Quail, Gambel's
Quail, Mountain
Quail, Harlequin
x Pheasant, Ring-nckd
Turkey
Crane, Whooping
Crane, Sandhill
Rail, Clapper
x Rail, Virginia
x Sora
Rail, Yellow
Rail, Black
x Gallinule, Common
x Coot, American
Oystercatcher, Am
Oystercatcher, Black
Plover, Semipalmated
Plover, Little Ringed
Plover, Piping
Plover, Mongolian
Plover, Snowy
Plover, Wilson's
x Killdeer
Plover, Mountain
Dotterel
Plover, Am Golden
Plover, Black-bellied
Surfbird
Turnstone, Ruddy
Turnstone, Black
x Snipe, Common
x Curlew, Long-billed
Whimbrel
Curlew, Bristle-thghd
Curlew, Eskimo
Plover, Upland
x Sandpiper, Spotted
Sandpiper, Solitary
Tattler, Wandering
Tattler, Polynesian
Willet
x Yellowlegs, Greater
Yellowlegs, Lesser
Knot
Knot, Great
Sandpiper, Rock
Sandpiper, Shp-tld
Sandpiper, Pectoral
Sandpiper, Wh-rpd
Sandpiper, Baird's
x Sandpiper, Least
Sandpiper, Ruf-nckd
Sandpiper, Curlew
x Dunlin
x Dowitcher, Sh-billed
x Dowitcher, L-billed
Sandpiper, Stilt
Sandpiper, Semipalm

x Sandpiper, Western
Sandpiper, Buff-br
x Godwit, Marbled
Godwit, Bar-tailed
Godwit, Hudsonian
Ruff
Sanderling
Sandpiper, Spoon-bld
x Avocet, American
x Stilt, Black-necked
Phalarope, Red
Phalarope, Wilson's
Phalarope, Northern
Jaeger, Pomarine
Jaeger, Parasitic
Jaeger, Long-tailed
Skua
x Gull, Glaucous THAYER'S
x Gull, Glaucous-wngd
Gull, Slaty-backed
x Gull, Western
x Gull, Herring
x Gull, California
Gull, Black-tailed
x Gull, Ring-billed
x Gull, Mew
Gull, Black-headed
Gull, Laughing
Gull, Franklin's
x Gull, Bonaparte's
Gull, Heermann's
Gull, Ivory
Kittiwake, Bl-legged
Kittiwake, Red-lgd
Gull, Ross'
Gull, Sabine's
Tern, Gull-billed
x Tern, Forster's
Tern, Common
Tern, Arctic
Tern, Aleutian
Tern, Least
Tern, Royal
Tern, Elegant
x Tern, Caspian
Tern, Black
Murre, Common
Murre, Thick-billed
Guillemot, Black
Guillemot, Pigeon
Murrelet, Marbled
Murrelet, Kittlitz's
Murrelet, Xantus'
Murrelet, Craveri's
Murrelet, Ancient
Auklet, Cassin's
Auklet, Parakeet
Auklet, Crested
Auklet, Least
Auklet, Whiskered

4

Auklet, Rhinoceros
Puffin, Horned
Puffin, Tufted
Pigeon, Band-tailed
x Dove, Rock
Dove, White-winged
x Dove, Mourning
Dove, Spotted
Dove, Ringed Turtle
Dove, Ground
Dove, Inca
Parrot, Thick-billed
Cuckoo, Oriental
Cuckoo, Yellow-billed
Roadrunner
Ani, Groove-billed
Owl, Barn
Owl, Screech
Owl, Flammulated
Owl, Whiskered
Owl, Great Horned
Owl, Snowy
Owl, Hawk
Owl, Pygmy
Owl, Ferruginous
Owl, Elf
x Owl, Burrowing
Owl, Spotted
Owl, Great Gray
Owl, Long-eared
Owl, Short-eared
Owl, Boreal
Owl, Saw-whet
Whip-poor-will
Poor-will
Nighthawk, Common
Nighthawk, Lesser
Swift, Black
Swift, Vaux's
Swift, White-rumped
x Swift, White-throated
Hmgbird, Lucifer
Hmgbird, Bl-chnd
Hmgbird, Costa's
x Hmgbird, Anna's
Hmgbird, Broad-tld
Hmgbird, Rufous
Hmgbird, Allen's
Hmgbird, Heloise's
Hmgbird, Calliope
Hmgbird, Rivoli's
Hmgbird, Blue-thr
Hmgbird, Violet-cr
Hmgbird, Wh-eared
Hmgbird, Br-billed
Trogon, Cop-tailed
x Kingfisher, Belted
Kingfisher, Green
Flicker, Yel-shafted
x Flicker, Red-shafted

Flicker, Gilded
Woodpecker, Pileated
Woodpecker, Gn-frnd
Woodpecker, Gila
Woodpecker, R-hdd
Woodpecker, Acorn
Woodpecker, Lewis'
Sapsucker, Yel-bld
Sapsucker, Williamson's
Woodpecker, Hairy
x Woodpecker, Downy
Woodpecker, L-bcktd
x Woodpecker, Nuttall's
Woodpecker, Arizona
Woodpecker, Wh-hdd
Woodpecker, Bl-bkd
Woodpecker, Th-toed
Wryneck
Becard, Rose-thr
Kingbird, Eastern
Kingbird, Tropical
Kingbird, Western
Kingbird, Cassin's
Flycatcher, Fork-tld
Flycatcher, Sc-tailed
Flycatcher, Sulph-bld
Flycatcher, Gr-Crstd
Flycatcher, Wied's
Flycatcher, Ash-thr
Flycatcher, Olvcs
Phoebe, Eastern
x Phoebe, Black
x Phoebe, Say's
Flycatcher, Yel-bld
Flycatcher, Traill's
Flycatcher, Least
Flycatcher, Hammond's
Flycatcher, Dusky
Flycatcher, Gray
Flycatcher, Western
Flycatcher, Buff-brstd
Flycatcher, Coues'
Pewee, Eastern Wood
Flycatcher, Olv-sdd
Flycatcher, Vermilion
Flycatcher, Beardless
Skylark
Lark, Horned
x Swallow, Violet-green
x Swallow, Tree
Swallow, Bank
x Swallow, Rough-wngd
x Swallow, Barn
x Swallow, Cliff
Martin, Purple
Jay, Gray
Jay, Blue
Jay, Steller's
x Jay, Scrub
Jay, Mexican

COMMENTING ENTITY: Alice Hoch

Responses

5-1 As noted in the Draft EIR (page S-2) the proposed projects are intended to respond to the current high demand for and increased use of recreational facilities at Central Park. If this leads to overuse of the facilities, it could negatively affect wildlife use in the area. This is one reason why the City is pursing enhancement of the Stivers Lagoon Marsh, which would benefit and help safeguard wildlife in the area. With respect to the Aleutian Canada Geese, this species is known to make occasional use of open areas throughout the Bay Area during its migratory movements. Its presence in the area north of the lake, on an infrequent basis, is not considered significant.

5-2 Comment noted. The Draft EIR considers the loss of this habitat potentially significant and recommends suitable mitigation. (See also response to comment 4-6 by the Tri-City Ecology Center.)

5-3 Comment noted that other wildlife will be displaced by some of the project elements.

5-4 A wetlands delineation has been conducted for the area north of the lake and no vernal pool remnant was identified.

5-5 Traffic and parking impacts are analyzed in Section 3.4 of the EIR. One of the project objectives is to increase the recreational use capacity at Central Park while at the same time enhancing overall habitat quality. Off-site picnic sites were not considered as part of this analysis. Section 4.0, Alternatives, describes a range of project alternatives.

5-6 This comment is acknowledged. The existing north shore grouted rock rip rap would be aesthetically improved by installing planters every 10 to 20 feet. Section 2.5.3, Shoreline Rehabilitation of Lake Elizabeth, details the five proposed shoreline treatment options to be used at different locations around the lake.

5-7 Comment noted. See also response to comment 4-3 by the Tri-City Ecology Center.

5-8 Any new plantings in the Park will be with species appropriate to the use envisioned. In areas where more natural conditions are desired (i.e., Stivers Lagoon, portions of lake shoreline) native species will be employed.

5-9 The temporary dredge spoil pond would likely be created by excavating settling basins surrounded by low (4-6 feet) levees. After the decant process was complete, the remaining sediments would be allowed to air-dry to the point where machinery could enter the area and move the material into mounds. The mounds would be allowed to further dry until they could be reworked as part of the turf development. While the height of the mounds could create an attractive nuisance and heighten safety considerations, security or safety should not be significantly affected.

5-10 Page 3.1-13 of the Draft EIR details a mitigation measure that requires appropriate construction mitigation measures be designed to minimize disruption of recreational uses of the area.

5-11 Aquatic habitat for common species such as turtles, frogs, and some fish would be improved by deepening the lake. However, the lake would still be shallow in a limnological sense and would not enable a tremendously wide diversity of aquatic species to live there.

5-12 Comment noted.

7.1 LAKE ELIZABETH AND STIVERS LAGOON MARSH RENOVATION PROGRAM - ENVIRONMENTAL IMPACT REPORT AND SCHEMATIC DESIGN

Director Rogers introduced this agenda item. He explained the 1989/90 Capital Improvement Program Plan budgeted $100,000 to conduct an Environmental Impact Report [EIR] on the renovation of the Lake Elizabeth shoreline and the Stivers Lagoon Marsh. The draft EIR for this project was circulated on March 10, 1993 for a 45-day review period, and this meeting will serve as the public hearing. Director Rogers then introduced Associate Civil Engineer Bob Schneider from the Department of Public Works and Environmental Services Supervisor Patrick Hayes from the Leisure Services Department. Environmental Services Supervisor Hayes then introduced Gary Oates, Project Director, from Environmental Science Associates.

Commissioner Paris asked Project Director Oates and staff, "How long will an EIR remain in effect?" Mr. Oates explained, although there is no timeline or guarantee, this EIR should remain valid as long as there are no significant changes in the projects or the circumstances surrounding the EIR. [Projects include: Dredging Lake Elizabeth, turf development north of Lake Elizabeth, Stivers Lagoon marsh rehabilitation, shoreline rehabilitation of Lake Elizabeth, Boathouse demolition and removal, sailboard beach, dock extension.]

Commissioner Paris asked, "Why did the EIR study the sailboard beach?" As explained in the agenda report, bacterial contamination in the water has been too high to permit sail boarding. Staff explained the projects to be included in the EIR were proposed by the public and included in the 1989/90 budget. As an approved project, it needed to be addressed.

With regard to the difference between a draft EIR and a final EIR, Project Director Oates explained that comments from the public hearing and other sources will be addressed as an addendum to the draft EIR. The attachment of this addendum to the draft EIR will constitute the final EIR.

This item was opened to public input.

Alice Hoch, 41727 Chiltern Drive, Fremont 94539: Ms. Hoch stated she has lived in Fremont for 26 years and has taught bird watching for 18 years for the Fremont Adult School. Ms. Hoch believes one of the most important environmental aspects for Central Park was not addressed in the EIR. If the projects listed in the EIR are completed, she expressed concern that the number of visitors to Central Park will increase and will greatly effect the 6-1 wildlife at the park. In addition, Ms. Hoch was very concerned about developing the north field area of Central Park. She pointed out that birds use the rough field area for feeding and resting. Using this field as turf means Park Maintenance staff will use pesticides and herbicides to maintain the turf, which will effect birds when they eat effected insects, etc.

Although Mrs. Hoch stated she has not made a formal study of the lake area, she has noticed a number of different kinds of bird life at Central Park. [The Commission Clerk was asked to make copies of a list of Central Park birds prepared by Ms. Hoch.] She pointed out that she has seen Aleutian Geese at Lake Elizabeth, which are an endangered species. In addition, the Burrowing Owl habitat has decreased drastically over the last few years. Ms. Hoch stated that in the fall of 1990, Burrowing Owls were still using this area.

Ms. Hoch added that part of a vernal pool is located in the undeveloped northern field. In response to a question from Commissioner Paris, she explained that a vernal pool is an area which has water in it during the rainy season and as the water evaporates, rings of wildflowers develop, like concentric circles of wildflower groups..

Ms. Hoch also asked how the aquatic environment will be improved by dredging the lake.

Ms. Hoch believes any plantings around the lake should be native plantings. She suggested that vegetation should be planted around the lake. She believed the use of stones held together with concrete around the rim of lake is very artificial.

Ms. Hoch explained that traffic at Central Park on the weekends and holidays creates a problem. If more picnic sites are needed in Fremont, she suggested they be located in other City parks. She stated she did not notice this alternative addressed in the EIR.

Ms. Hoch asked if 20-foot mounds of material dredged from the lake would present a problem. She expressed concern that children may want to run up and down the mounds. She asked how long it would take the mounded material to dry.

Ms. Hoch briefly expressed a variety of concerns and questions about the EIR, including the possibility that the path from Gomes Elementary School Park to Central Park would be closed to the public.

In response to a question from Chair Alfaro, Ms. Hoch stated she no longer brings her bird watching classes to Central Park. She stated she takes her students to one of the regional parks.

In response to concerns raised by Ms. Hoch, Project Director Oates explained that the dredged material would be pumped in slurry form to the undeveloped area north of the lake. Levees would be created to allow the material to dry out. When the material is dry enough to work with equipment, it would be put into mounds and would double as a base material for the turf development. Project Director Oates believes this is a much more efficient option than transporting the dredged material to a landfill. In addition, as part of the City's agreement with the Alameda County Flood Control and

Water Conservation District, the City is obligated to maintain a certain amount of flood control capacity. In order to maintain the required flood storage capacity, the dredged material would be mounded to a height of 20 feet above existing grade.

In response to a question from Commissioner Paris, Project Director Oates stated it would take two-to-three months to dredge the lake. He added that Ms. Hoch has raised some very valid concerns worthy of further attention, which is the intent of the EIR review process.

Associate Civil Engineer Schneider added that the rock-and-mortar rim around Lake Elizabeth is called "rip-rap" and was installed for a variety of reasons. The mortar used with the rip-rap makes it maintenance free and prevents rats from nesting around the lake. Environmental Services Supervisor Hayes explained that there have been problems in the past with Norway rat colonies in Central Park. The Norway rat travels throughout Fremont-area waterways and is indigenous to this area.

Associate Civil Engineer Schneider summarized the five lake shoreline treatments illustrated by diagrams included in Commission agenda packets, including: Rip-Rap Protected Vegetated Shore; Vertical Retaining Wall with Vegetation; Precast Concrete Sheet Pile Retaining Wall; Concrete Planter with Rip-Rap; and Vegetated Shore.

Commissioner Paris asked if the rip-rap will create problems with safety, as opposed to concrete. Associate Civil Engineer Schneider stated he has not heard of any problems in areas around the lake where rip-rap is currently installed.

With regard to Stivers Lagoon, Commissioner Paris stated she felt divided between maintaining it as a wild area and widening the path, etc. She stated she does not feel comfortable walking there unless she is accompanied by a ranger. Project Director Oates stated they are trying to find ways to make the lagoon area wetter. Stivers Lagoon has become steadily drier over the years and plants have grown in this area which are not normally associated with wet areas. He pointed out that park maintenance staff may have a problem going into this area to do very much pruning, etc. However, making it more of a marsh will make it less attractive for people to enter the area.

Commissioner Pohle expressed concern about the walkway from Gomes Park to Central Park. Director Rogers pointed out that City Council's opposition to the permanent elimination of that pathway is on record. Environmental Services Supervisor Hayes pointed out there will have to be a temporary closure period since the walkway will be located along one of the levees.

Joe Doering, 3110 Dunsanay Court, Fremont 94536: Mr. Doering stated he is the Commodore of the Lake Elizabeth Sailing Club. He encouraged the 6-2

Commission to recommend City Council proceed with the dredging of Lake Elizabeth as soon as possible. He stated that the water level in some parts of the lake is so low that the rudders actually touch the bottom of the lake. He added that the members of the Lake Elizabeth Sailing Club have enjoyed very good relations with the park recreation staff. 6-2

In response to a question from Commissioner Haggerty, Mr. Doering discussed the types of boats used by club members at Lake Elizabeth. He added that the Boathouse staff have made a map using soundings to detect the shallower portions of the lake.

Michelle Stone, 3688 Norfolk Road, Fremont 94538: Ms. Stone stated she represented the Hawaiian KeAnuenue Outrigger Canoe Club. She stated their members would also like the lake dredged as soon as possible. In addition, their club is very concerned about future boat storage. For example, the outrigger boats used by their club are 40-feet long, so they need a large storage area. Ms. Stone stated they only practice during the weekends due to staff cutbacks at Central Park. 6-3

Director Rogers explained that the Boathouse project was previously reviewed by the Recreation Commission, and the City Council approved the schematic design two weeks ago. He added that the Boathouse project was actually outside the scope of the EIR.

Ms. Stone added that their club would not recommend extending the boat dock at Lake Elizabeth. Although the current dock is only one year old, it is already broken.

Commissioner Mulcahy asked staff about the condition of the docks. Director Rogers stated there has been a problem with the docks torquing in the wind during the winter and creating added pressure on the hinges. The docks are still under guarantee with the contractor and various remedies are under investigation.

This item was closed to public input.

Commissioner Hernandez asked when the EIR will be completed for the Boathouse facility. Associate Civil Engineer Schneider explained that staff is in the process of doing a negative declaration on that project. City Council will review the Boathouse EIR along with the final plans.

Chair Alfaro asked when the final EIR before the Commission will be completed. Project Director Oates stated the review period will end in two-and-one-half weeks, and the final EIR should be complete two-to-three weeks later. Anyone who has commented on the draft EIR will receive a copy of the addendum to the draft EIR.

Commissioner Hernandez expressed concern about closing off a portion of the walkway around Lake Elizabeth during the lake dredging. Associate Civil Engineer Schneider explained that part of the pathway will be removed to accommodate water flow from the dredged material. However, staff suggested that it may be possible to place a wooden platform over flexible piping in order to keep the pathway open to the public. He explained that funds have been set aside to replace the asphalt pathways with concrete after this project has been completed.

IT WAS MOVED BY COMMISSIONER MULCAHY, SECONDED BY COMMISSIONER HAGGERTY, TO:

1. FORWARD THE LAKE ELIZABETH/STIVERS LAGOON DESIGN AND IMPROVEMENT PROGRAM DRAFT ENVIRONMENTAL IMPACT REPORT AND ASSEMBLED PUBLIC COMMENTS TO CITY COUNCIL AND RECOMMEND THE CONSULTANT INCORPORATE RESPONSES TO PUBLIC COMMENTS IN THE FORM OF A FINAL ENVIRONMENTAL IMPACT REPORT.
2. RECOMMEND CITY COUNCIL FIND THE FINAL ENVIRONMENTAL IMPACT REPORT COMPLETE.
3. RECOMMEND CITY COUNCIL APPROVE THE PRELIMINARY PLANS FOR THE STIVERS LAGOON ENHANCEMENT/RESTORATION, SHORELINE REHABILITATION AND SAILBOARD BEACH.
4. RECOMMEND CITY COUNCIL APPROVE THE INSTALLATION OF A FLASHBOARD WEIR ACROSS MISSION CREEK AT PASEO PADRE PARKWAY WITH FUNDING COMING FROM THE SHORELINE REHABILITATION PROJECT.

Motion unanimously approved and so ordered.

Project Director Oates encouraged the public, commissioners and staff to contact him through the remainder of the public review period.

[END OF ITEM 7.1]

Recreation Commission Meeting Comments

Responses

6-1 Please refer to response to Comments 5-1 through 5-12.

6-2 and 6-3 These comments are acknowledged and will be considered by the City during final design.

COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY
399 Elmhurst Street • Hayward, CA 94544-1395
(510) 670-5480

JUN 01 1993

May 28, 1993

Zone No. 6, Lake Elizabeth

Bob Schneider
Associate Civil Engineer
City of Fremont
Public Works Department
39550 Liberty Street
P.O. Box 5006
Fremont, CA 94537

Dear Mr. Schneider:

SUBJECT: Draft EIR #92-56 for Lake Elizabeth/Stivers Lagoon Marsh Design and Improvement Program

We apologize for the late delivery of the following comments pertaining to the Draft Environmental Impact Report for the subject project. Our comments are as follows:

1. Please consider the comments contained in the attached memo from Engineering-Science, dated March 23, 1993, addressed to the Flood Control District.

2. See Appendix C, "Stivers Lagoon Marsh Restoration/Enhancement Plan," Section 6.2.1, "Increase Dry-Season Ground Water Table Elevation." One option noted in this Section involves a proposal to restrict the flow in Mission Creek by installing an adjustable height weir structure at the culvert headwall at Paseo Padre Parkway. This option is not encouraged as it will create potential for flooding of Paseo Padre Parkway and surrounding areas due to possible blockage of the culvert by debris. Also, the weir itself may become an obstruction to creek flow if it is not removed in a timely manner at the start of the rainy season. A separate structure located upstream of the culvert would be preferable. It would be designed so that in emergencies, the creek would flow over the top of the weir structure and still be able to enter the culvert.

Very truly yours,

Ralph Johnson

RALPH JOHNSON
ACTING DEPUTY DIRECTOR OF PUBLIC WORKS
DEVELOPMENT SERVICES DEPARTMENT

AYO:lb
AB0617

COMMENTING ENTITY: Alameda County Public Works Agency

Responses

7-1 These comments have been considered and are responded to in this document. See pages II-7 and II-8.

7-2 This comment is noted. The City will consider construction of the weir structure further upstream as suggested, although it believes that an adjustable height weir structure at the Paseo Padre Parkway culvert headwall as proposed can be designed and managed in a manner that would address the Agency's concerns.