

# Newark-Fremont Bay Trail Realignment Feasibility Study

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*Prepared for:*  
City of Newark Community Development Department  
*and*  
City of Fremont Transportation Engineering Division

*Prepared by:*  
Questa

*In association with:*  
2M Associates  
Bicycle Solutions



May 1, 2013

# NEWARK-FREMONT BAY TRAIL REALIGNMENT FEASIBILITY STUDY

*Submitted to*

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# 1. INTRODUCTION

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## 1.1 OVERVIEW

The San Francisco Bay Trail Plan was adopted in 1989 by the Association of Bay Area Governments (ABAG) with the goal of developing a 500-mile continuous trail network around the Bay shoreline with connections to local and regional trail systems. The alignment of the Bay Trail continues to evolve over time as opportunities arise to plan and develop new or revised Bay Trail alignments that meets its goal of providing off-street bicycle and pedestrian trails that run along or near the Bay shoreline.

Within the Cities of Fremont and Newark, there are approximately fifteen miles of San Francisco Bay shoreline. Of these fifteen miles of shoreline, there are only five miles of off-street trails that are planned or already exist along the shoreline, and there are currently no shoreline trails planned for the remaining ten miles of Bayfront. Visitors to the area use a variety of trails, paths and streets, including on-street city sidewalks, bike lanes and segments of off-street paths within the Don Edwards Wildlife Refuge to reach the shoreline area. .

There are no off-street Bay Trail segments in Newark. In Fremont, there are three existing, designated off-street Bay Trail segments:

1. Loop shoreline trails around salt ponds along San Francisco Bay and Alameda Creek within Coyote Hills Regional Park, north of Highway 84;
2. Loop shoreline Bay Trail segment around salt ponds within Don Edwards San Francisco Bay National Wildlife Refuge; and
3. Two mile shoreline segment completed in the early 1980s as part of the Bayside Business Park west of Fremont Blvd. and south of Warren Avenue.

In Fremont, there is also an off-street path constructed as part of the Fremont Auto Mall between Auto mall Parkway and Nobel Drive.

The Newark-Fremont Bay Trail Feasibility Study (Study) is a planning-level study to determine a preferred alignment for a shoreline-oriented Bay Trail Alignment from Don Edwards Wildlife Refuge near Highway 84 south to the Santa Clara County line, near Dixon Landing Road.

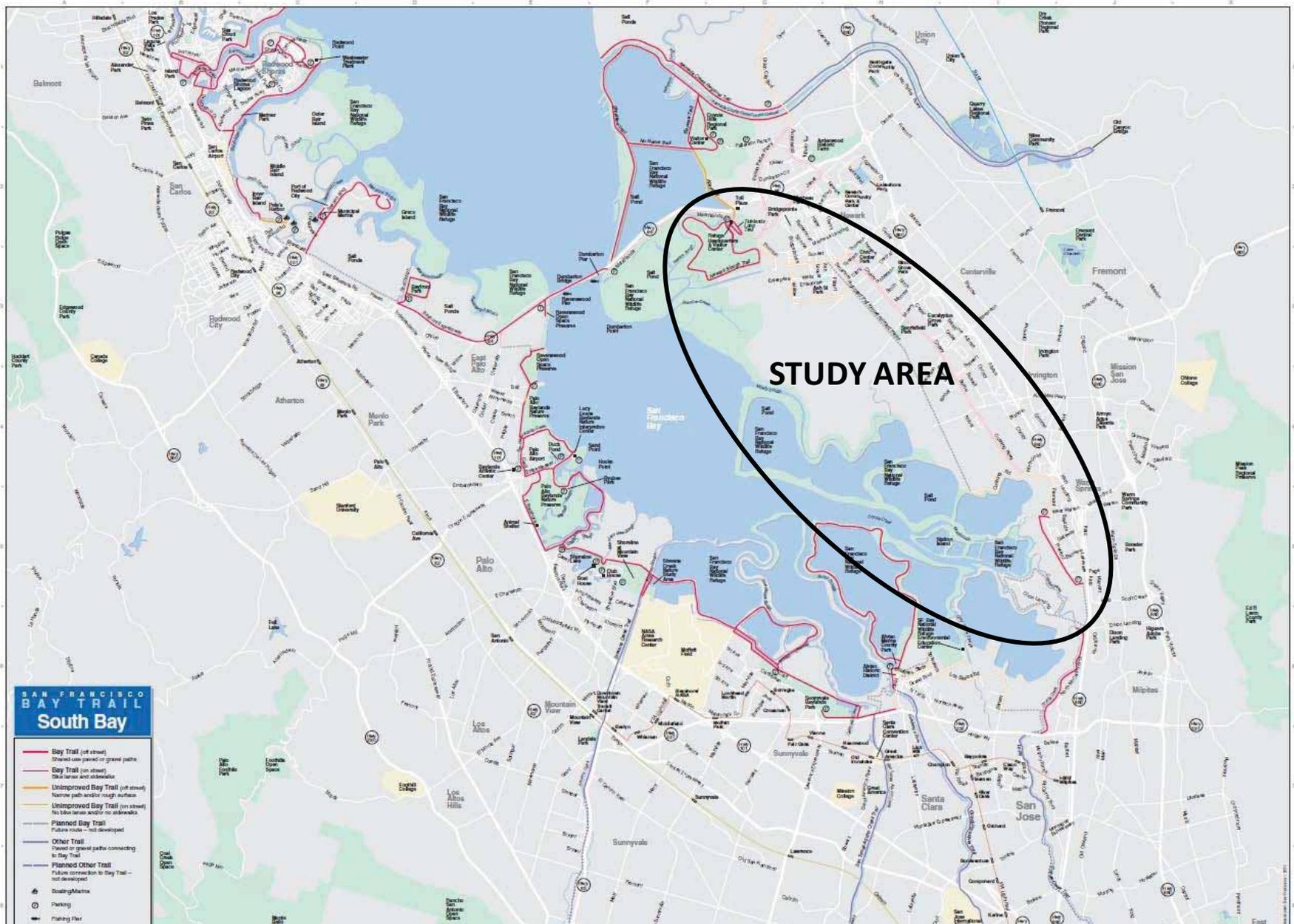
## 1.2 PURPOSE

The goal of this Feasibility Study is to identify a shoreline-oriented trail along the fifteen miles of Bay edge in the Newark and Fremont study area that would be incorporated into the Bay Trail system. For much of Newark and Fremont, the current Bay Trail alignment is planned either along city streets or along the active Union Pacific Railroad Corridor. In an effort to provide better access to the shoreline and in keeping with Bay Trail Goals, this Study examines the best solutions for a shoreline-oriented bicycle and pedestrian trail network. The Study Area encompasses trails at the Don Edwards National Wildlife Refuge Headquarters in the vicinity of Highway 84 and continues south to the existing Bay Trail in the vicinity of Coyote Creek at Dixon Landing Road.

Public participation and coordination with landowners, agencies, and staff from the Cities of Newark and Fremont, Alameda County, and ABAG's Bay Trail Project were completed to document existing conditions, identify potential routes, review project opportunities, constraints, and design criteria, conduct community outreach and address community goals for a Bay Trail along or near the shoreline. The Study identifies options for phasing, funding, and implementation of the recommended trail system. It is recognized that (in some areas) constructing the Bay Trail will be a long term effort, depending on future development and land use changes. This Study also provides guidance for future implementation.

The proposed route through this area will be considered for incorporation into the General Plans for Newark and Fremont. This recommended route may be considered for adoption by the Bay Trail Project if it is determined to meet the Bay Trail goals. Potential project partners and other groups that will be key to project success have also been included in the planning process, including primary landowners and stakeholders such as:

1. US Fish and Wildlife Service (USFWS), Don Edwards San Francisco Bay Wildlife Refuge
2. Newby Island Landfill/Allied Waste Management Inc.
3. Tri-Cities Landfill/Waste Management
4. Cargill Inc.
5. Catellus
6. Pacific Commons
7. Creekside Landing/Bayside Business Park
8. King and Lyons Development
9. Bicycle Advisory Committees of the Cities of Fremont and Newark
10. Alameda County Flood Control & Water Conservation District (ACFCWCD)



### 1.3 GOALS AND OBJECTIVES

The primary goal of this Study is to create a system of off-street trails along the Newark and Fremont shoreline to accommodate a variety of bicyclists and pedestrians. This Study includes a recommended alignment for a Bay-oriented shoreline trail (Bay Trail) that is accessible by many modes and abilities. The overall Study objective is to identify a preferred alignment that will provide a Bay-oriented trail along the fifteen miles of shoreline in Newark and Fremont, a safe and efficient mode of travel for bicyclists and pedestrians, and connections to other trail systems. Realignment of the current Bay Trail Plan designated trail will fulfill key objectives of the Plan to:

- Provide a Bay-oriented shoreline trail,
- Provide connections to existing parks and recreation facilities,
- Create links to existing and proposed transportation facilities, and
- Be planned in such a way as to avoid or minimize adverse effects on the environment.

Study Objectives include:

#### 1. Trail

- Examine alternatives and identify the optimum route or alignment for the main stem of the San Francisco Bay Trail through the Study Area.
- Identify strategically located parking/staging areas and support facilities to encourage use of the Bay Trail.

#### 2. Trail Connections

- Where feasible, align the trail as close as practical and/or provide views to the waters and wetlands of the South San Francisco Bay.
- Identify feasible spur and loop trail opportunities.
- Link to and accommodate planned regional and local trail connections, including the Bay Water Trail. Link to and accommodate planned regional and local transit connections including Class II and Class III bicycle routes.
- Provide connections to existing parks and recreation facilities.

#### 3. Land Use / Safety

- Provide a safe and enjoyable trail experience as it relates to vehicular traffic patterns, rail traffic, utility lines, and nearby industrial uses.
- Coordinate alignment and design considerations with the use and/or security needs of adjacent land uses.

#### 4. Public Access / Wildlife Compatibility

- Site public access trails and features to minimize impacts on sensitive habitat, including habitat fragmentation.
- If necessary, identify alternative trail alignments should any section of the optimum alignment need to be seasonally closed for habitat protection purposes.

5. Facilities
  - Provide sustainable trail and related facilities in terms of design and material selection.
6. Education / Interpretation
  - Educate visitors about how the site design accommodates global climate change and sea level rise.
  - Provide exhibits and/or programs to inform visitors about natural and cultural resources on the site.
7. Implementation
  - Identify an alignment and develop a plan that can be permitted.
  - Identify an implementation strategy that encourages partnership funding.
  - Advance a trail alignment and design that is cost-effective to the greatest extent practical.

## **1.4 ISSUES**

Issues to be resolved in determining the optimal trail alignment:

1. Consistency with local and regional plans:
  - Newark General Plan, Bicycle/Pedestrian Plan<sup>1</sup>
  - Fremont General Plan, Bicycle/Pedestrian Plan
  - ABAG Bay Trail Plan
  - Alameda County Bicycle and Pedestrian Plan
  - Don Edwards Wildlife Refuge Trail Plans
2. Coordinate alignment to facilitate implementation as part of adopted and planned projects:
  - Dumbarton Rail Transit Oriented Development (Area 2)
  - Newark Areas 3 and 4 Specific Plans
  - Fremont Tri-Cities Landfill
  - Newby Island Landfill
  - Pacific Commons Phase II
  - Creekside Landing
3. Consider adjacent land uses, existing operations, security and potential operational conflicts in selecting an alignment.
4. Consider trail sustainability issues, including the condition of levees and the effects that future Sea Level Rise may have on the project.
5. Design the trail to minimize potential environmental impacts, including wetlands and sensitive wildlife habitat.
6. Coordinate with landowners and stakeholders to seek input on the trail alignment:

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<sup>1</sup> In preparation

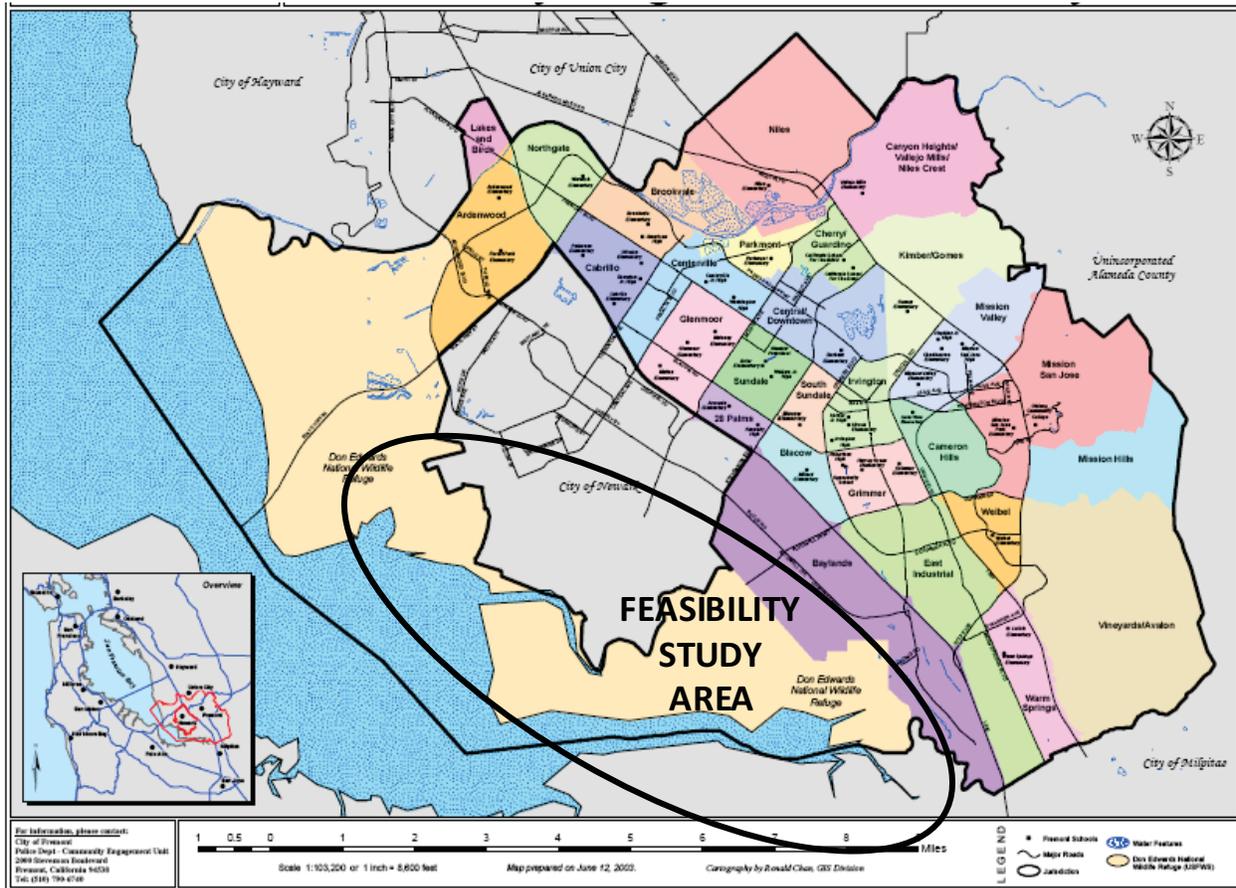
- USFWS, Don Edwards Wildlife Refuge
  - Newby Island Landfill/Allied Waste Management
  - Tri-Cities Landfill/Waste Management
  - Cargill Inc.
  - Union Pacific Railroad
  - Bicycle/Pedestrian Advisory Committees; Cities of Newark and Fremont
  - Citizen advocacy groups
  - ACFCWCD
7. Select and design an alignment that reflects geotechnical, hydrologic, biological, permitting, and other challenges that may affect project approval, design and cost.
  8. Minimize street/trail/rail safety and traffic conflicts.
  9. Determine options for creek/road/rail crossings and potential levee alignments.
  10. Minimize expensive infrastructure where possible.

### **1.5 PUBLIC PARTICIPATION**

Coordination with project stakeholders and the community is a key component of the planning process. Workshops were held in Fremont and Newark, at the Fremont Bicycle/Pedestrian Technical Advisory Committee (BPTAC) on September 22, 2010, May 18, 2011, March 21, 2012, as well as a public workshop and community meeting held in Newark on June 13, 2011 to solicit input from interested community members, other agency stakeholders and neighborhood residents. Information from the workshops is contained in Appendix A.

## 2. PLANNING, LAND USE, AND LAND OWNERSHIP

The Study Area is within the jurisdiction of the cities of Newark and Fremont. Fremont includes lands generally north of Highway 84, and portions of Don Edwards National Wildlife Refuge, as well as lands south of Stevenson Blvd. Newark City limits include lands between Highway 84 and Stevenson Blvd. The City of Newark is surrounded on all sides by the City of Fremont, although the west side is the Bay.



## **2.1 GENERAL PLAN LAND USE**

Land use within the Study Area is primarily designated as Agriculture-Open Space on USFWS Refuge and Cargill Inc. lands used for salt production or as wildlife habitat. Industrial lands and Office Business Parks and Commercial Shopping Centers, are located west of Cherry Street, Boyd Avenue and south of Central Avenue, while existing residential land use is primarily located east of Cherry Street and north of Central Avenue. Lands within the Areas 3 and 4 Specific Plan and Dumbarton TOD are designated for future residential use. Park and recreational land uses include Silliman Park in Newark and a proposed City of Fremont park on Auto Mall Parkway near the Union Pacific Railroad tracks. There are also two landfills within the Study Area: Tri-Cities Landfill, which is being converted to a recycling/resource recovery facility, near the center of the Study Area, and the Newby Island Landfill near the south end of the Study Area in Milpitas, Santa Clara County. In addition, there are several wetland mitigation parcels scattered throughout the Study Area. The undeveloped lands, landfills, and mitigation parcels present especially good opportunities for consideration of public access trails. Figure 2-1 presents a map of land use and ownership.

## **2.2 PLANNING FRAMEWORK**

There are many jurisdictions within the Study Area that have adopted planning documents that guide area planning. Consistency with these local and regional plans is an important consideration for selecting a feasible Bay Trail route. Regional Trail Connections are shown in Figure 2-2. Applicable local and regional plans include:

### Local Plans

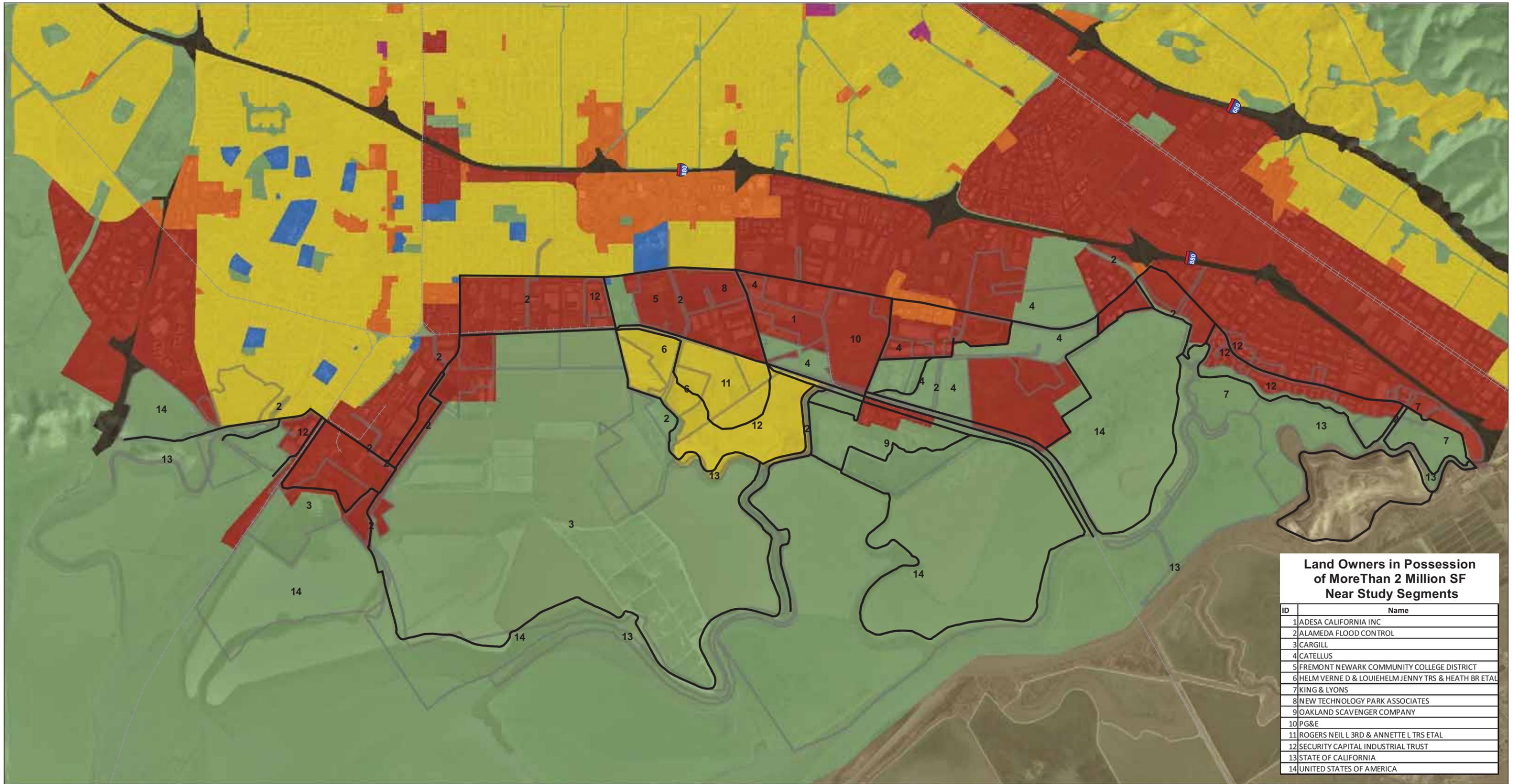
- Newark General Plan, Bicycle/Pedestrian Plan
- Fremont General Plan, Bicycle/Pedestrian Plan
- Dumbarton Rail Transit Oriented Development (Area 2)
- Newark Areas 3 and 4 Specific Plans

### Regional Plans

- ABAG Bay Trail Plan
- Alameda County Bicycle and Pedestrian Plan
- Regional Rail Planning

### Related Planning Efforts

1. Don Edwards Wildlife Refuge Comprehensive Conservation Plan
2. East Bay Regional Park District Master Plan
3. City of San Jose Bicycle and Pedestrian Plans
4. City of Milpitas Bicycle and Pedestrian Plans
5. San Jose/Santa Clara Water Pollution Control Plant Master Plan



**Land Owners in Possession of More Than 2 Million SF Near Study Segments**

ID	Name
1	ADESA CALIFORNIA INC
2	ALAMEDA FLOOD CONTROL
3	CARGILL
4	CATELLUS
5	FREMONT NEWARK COMMUNITY COLLEGE DISTRICT
6	HELM VERNE D & LOUIEHELM JENNY TRS & HEATH BR ETAL
7	KING & LYONS
8	NEW TECHNOLOGY PARK ASSOCIATES
9	OAKLAND SCAVENGER COMPANY
10	PG&E
11	ROGERS NEILL 3RD & ANNETTE L TRS ETAL
12	SECURITY CAPITAL INDUSTRIAL TRUST
13	STATE OF CALIFORNIA
14	UNITED STATES OF AMERICA

- Agricultural - Open Space
- Rural
- Residential
- Commercial
- Industrial
- ROW
- Mixed Use
- Public - Institutional
- Study Segments
- Union Pacific Railroad

## FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

FIGURE 2-1: LAND USE & PROPERTY OWNERSHIP

Source: Newark and Fremont General Plans



**Legend**

- Study Segments
- Existing Bay Trail
- - - Proposed Bay Trail
- Existing Trails/Bike Lanes
- Proposed Bike Network



# FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 2-2: REGIONAL TRAIL CONNECTIONS**

## Local Plans

### Newark Bicycle and Pedestrian Planning

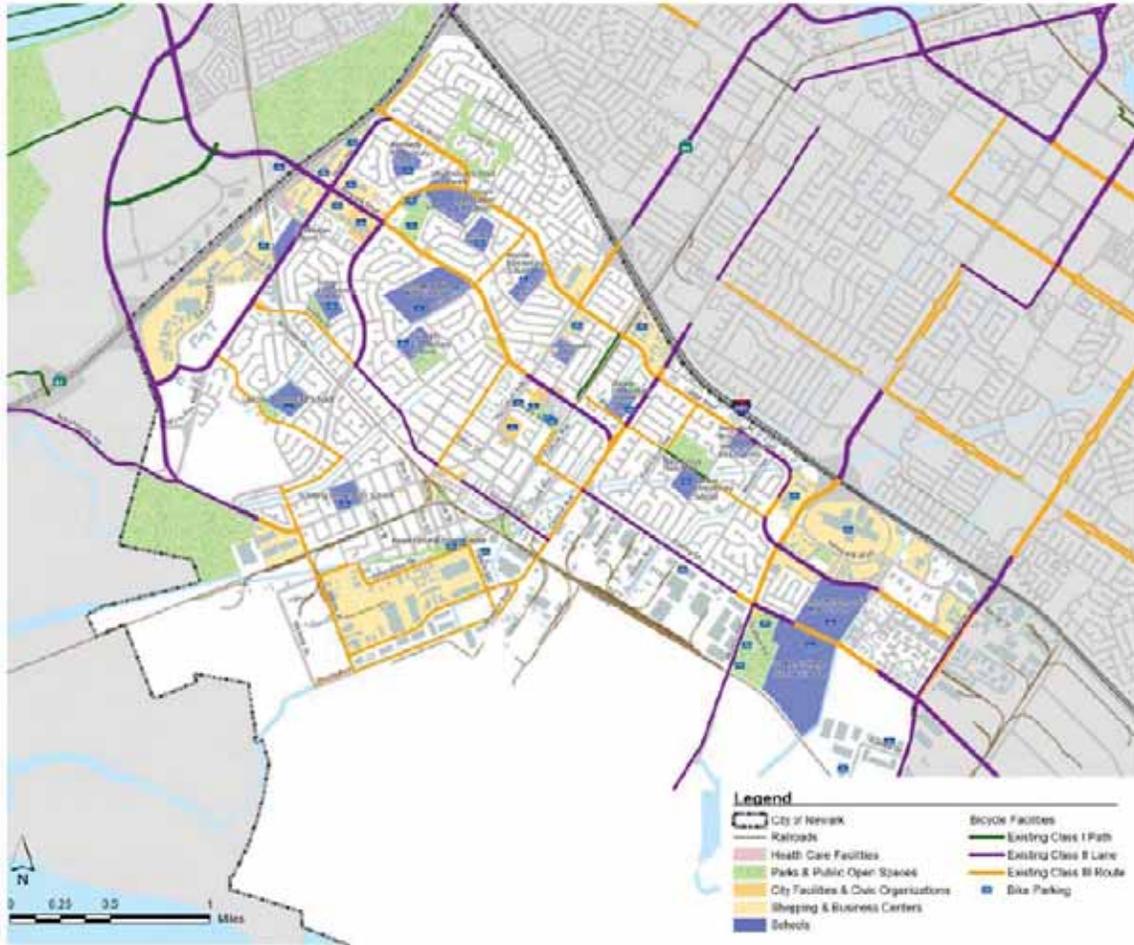
The City of Newark General Plan sets forth the goals, objectives, policies and programs to guide the City's growth and development. In an effort to provide a vision for Newark's future biking and walking environment, the City commenced preparation of its first Pedestrian and Bicycle Master Plan (PBMP, December 2010, <http://newarkbikepedplan.febrandpeers.net/>), which was released to the public, but has not been officially adopted. The PBMP is intended to be a comprehensive planning document that identifies recommendations for making biking and walking more viable alternatives to automobile use for recreational, school, and work trips. The plan will address gap closure needs, safety improvements and programs, and access to public transit, activity centers, and schools. The goal of the PBMP is to prioritize and implement infrastructure improvements and educational/enforcement programs that will improve the biking and walking environment in Newark to reduce traffic congestion and improve community health. The PBMP Draft Vision Statement and Goals include:

*The City of Newark will be a community that provides its residents, employees, and visitors with viable walking and biking facilities. These facilities will serve to meet the community's travel needs, to improve health and recreation opportunities, and to provide economic benefit. The City will have a complete, well-integrated system of bicycle and pedestrian networks and support facilities that encourage walking and biking as active transportation modes.*

*The purpose of this Pedestrian and Bicycle Master Plan is to make the City of Newark as walking and bicycling friendly as possible to encourage people of all ages, abilities, and means to walk and bike.*

#### *Goals:*

- 1. Create a connected bicycle and pedestrian network*
- 2. Increase the number of people walking and bicycling*
- 3. Improve safety for pedestrians and bicyclists*
- 4. Develop a comprehensive Safe Routes to School program and supporting infrastructure plan*
- 5. Establish citywide design guidelines for bicycle and pedestrian facilities*



**Figure 1: Existing Bicycle Facilities**

Source: Fehr and Peers, City of Newark Pedestrian and Bicycle Master Plan  
 Working Paper 2: Bikeway Element  
 December 2010

### Dumbarton Rail Transit Oriented Development (Area 2) (TOD)

The Dumbarton TOD site is located within the Study Area in the vicinity of Central Avenue and Willow Street, south of the Dumbarton rail corridor, with future passenger rail service across SF Bay. Adopted by the City of Newark in September 2010, the approximately 200 acre site is planned for a transit-oriented mix of residential, commercial and retail uses clustered near a future transit station. The project includes an off-street trail around the perimeter of the site, which would be proposed for adoption as part of the Bay Trail. A pedestrian overpass of the rail tracks may be incorporated as part of a Transit Station, although its specific location has not been determined.

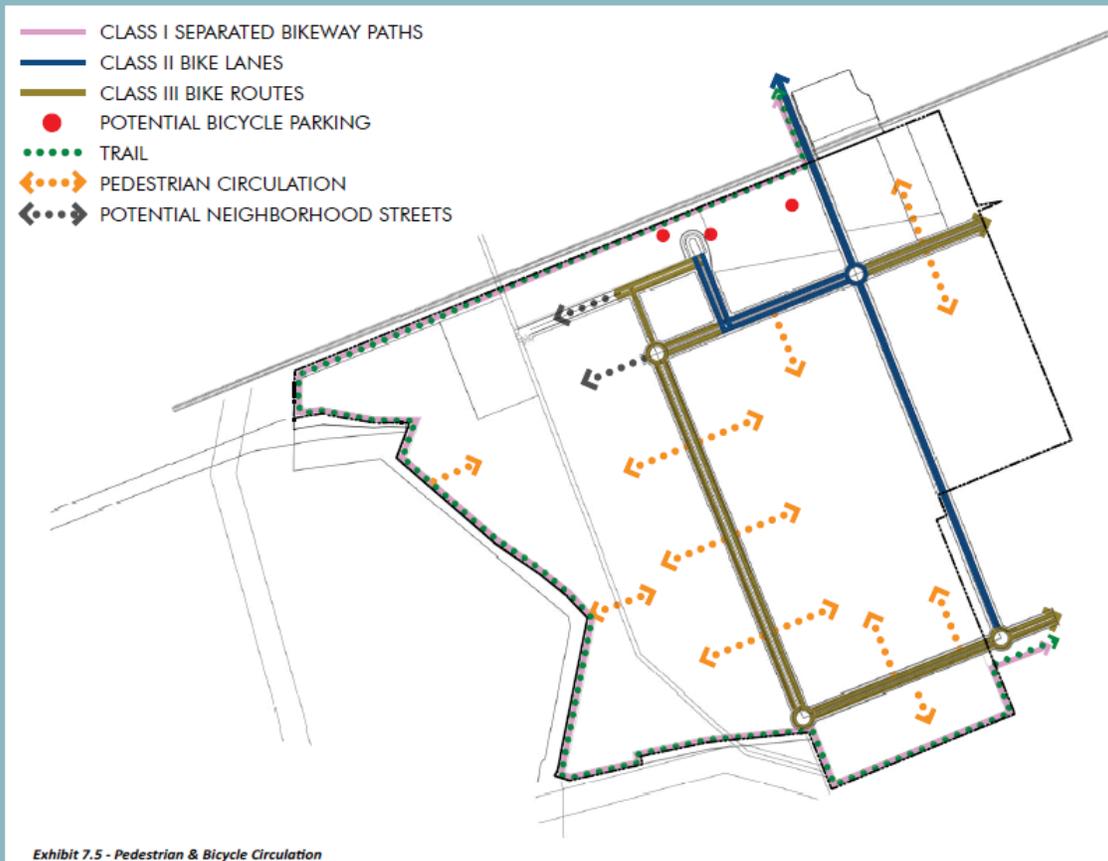


Exhibit 3.1 Conceptual Illustrative Plan Only  
(subject to change based on actual development plans)

Dumbarton TOD Specific Plan

City of Newark | Dalvin Group Architecture Planning

Source: Dumbarton TOD Specific Plan  
Community Form`



Dumbarton TOD Specific Plan  
City of Newark | Dahlin Group Architecture Planning

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Source: Dumbarton TOD Specific Plan  
Pedestrian and Bicycle Circulation

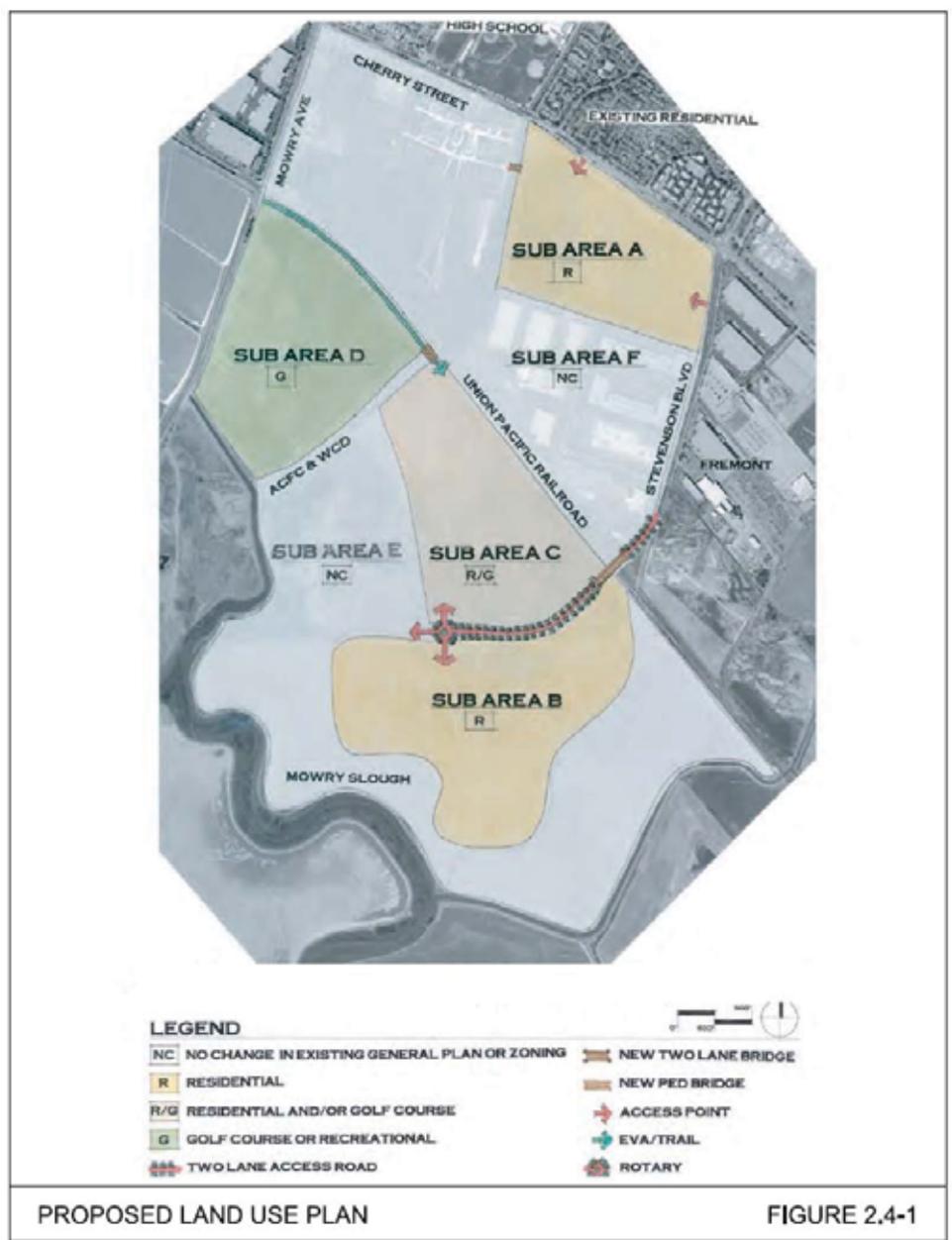
## Newark Areas 3 And 4 Specific Plans

The proposed Newark Areas 3 and 4 Specific Plan will include a golf course, up to 1,260 housing units of various densities, an up to 600 student elementary school, undeveloped areas, as well as retention of existing light industrial, institutional (Ohlone College), and City fire station, park, and community center uses.

As part of the project, a paved trail is planned adjacent to the ACFCWCD property on the south side of the flood control channel. This trail will also connect to a proposed pedestrian bridge that will cross over the ACFCWCD channel. This bridge will provide a connection to the Ohlone Community College and the George M. Silliman Recreation Complex.

The Specific Plan includes a public street extension of Stevenson Boulevard with a structural overpass over the Union Pacific railroad tracks to provide vehicular and pedestrian access to the Area 4 development. On the north side of Area 4, an Emergency Vehicle Access (EVA) and pedestrian/bike trail from Mowry Avenue into Area 4 will be provided adjacent to the railroad tracks. According to the Plan, both the Stevenson Boulevard extension and the EVA will also provide pedestrian access connecting Area 4 and Area 3. Considering CPUC/UP policies and practices generally prohibiting at-grade public pedestrian crossings, provision of pedestrian and bicycle facilities on the Stevenson overpass and providing connections to them will be a critical component of the potential realigned Bay Trail route.

The Area 3 & 4 Specific Plan also describes potential realignment of the Bay Trail through Area 4, possibly along the Mowry Slough levee. According to the Specific plan EIR, *"The future Specific Plan developer(s) of Area 4 will be required to provide an easement for the Bay Trail to*



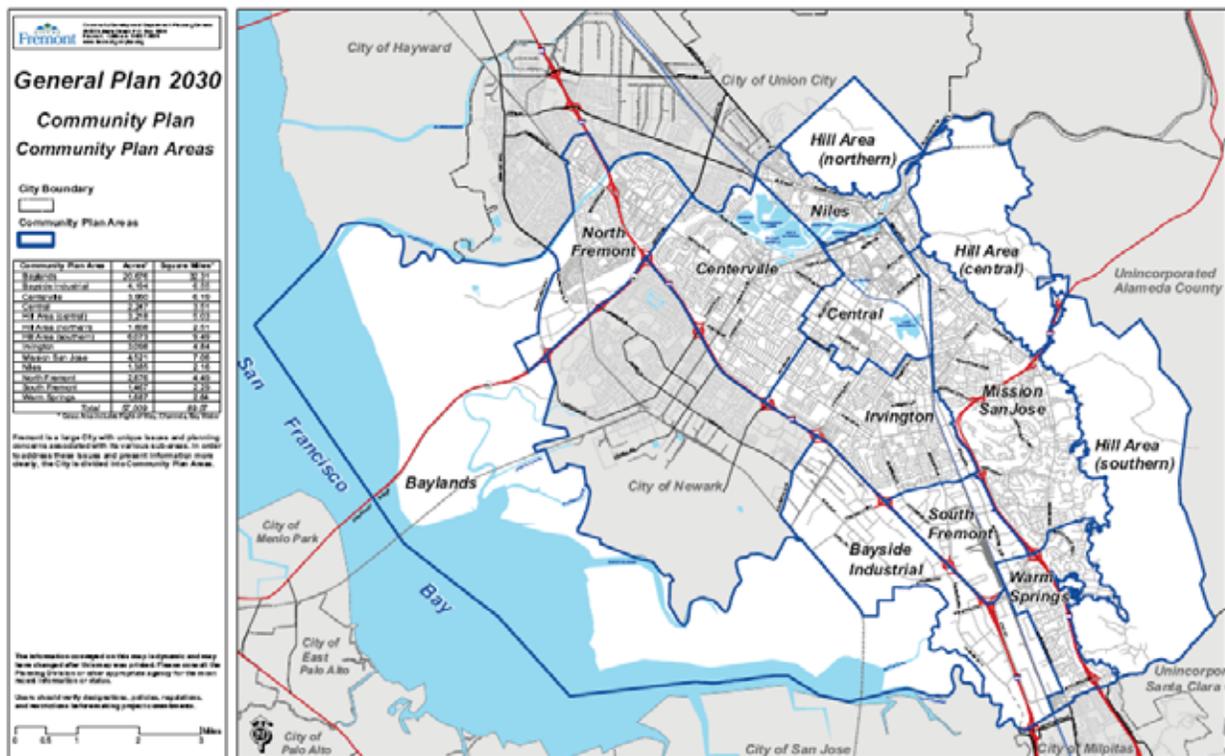
run along the top of the levees that form the western edge of the project, if that ultimately is the preferred alignment. The Specific Plan is consistent with the Bay Trail and does not conflict with efforts to complete the Bay Trail.” Trail connectivity from internal trails and the Mowry Slough crossing should be coordinated with Bay Trail implementation when the Specific Plan area is developed. Public pedestrian access from Mowry west of the UP tracks will also be key to Bay Trail implementation.

## Fremont Bicycle and Pedestrian Planning

<http://www.fremont.gov/index.aspx?NID=1188>

The City of Fremont General Plan contains policies for growth and development within eleven Community Plan areas, reflecting Fremont’s history as a now incorporated collection of separate historic unincorporated communities. The Study Area is located within the Baylands and Bayside Industrial Community Plan Areas. The Plan contains numerous goals and objectives to promote mobility and support trails implementation:

- Policy/Implementation 3-2.4.B: *Connect recreational trails in City and regional parks, access trails along creeks and flood control channels, and sidewalks and bike lanes on local streets to fill the gaps and improve the continuity of the city’s bike and pedestrian trail system.*
- Implementation 3-5.2.A: *Bay Trail and Ridge Trail: Support completion of the Bay Trail along the Fremont Shoreline and the Ridge Trail through the Fremont hills, and establish trail connections across the city between these two regional networks.*
- Implementation 8-3.1.D: *Don Edwards Wildlife Refuge: Encourage the Don Edwards San Francisco Bay National Wildlife Refuge, to maintain and enhance recreational offerings to the community.*
- Implementation 8-3.1.E: *Alameda County Flood Control District: Encourage the Alameda County Flood Control District to open access roads for trails and other land holdings for recreational use where feasible.*



## Fremont Baylands Community Plan

Much of the Study Area is within the Baylands Planning area of the City of Fremont. The area encompasses 31.5 square miles in the western part of the City, most of which is protected for habitat conservation. Development potential in the area is extremely limited due to its location near the Bay and because it is largely in public ownership. It includes wetland areas, sensitive habitat, and salt harvesting, and because it is low-lying it will be susceptible to the effects of sea level rise. Policy 12-1.5 of the General Plan calls for continued recreational use, including the further development of the Bay Trail.

The Baylands Community Plan Area includes the entire western shoreline portion of the city, from Hayward on the north, around Newark, and south to the San Jose city limits. It is bounded by San Francisco Bay on the west. The Area is divided into northern and southern Baylands at Mowry Slough. This area includes open water, salt ponds owned and/or managed by Cargill, Inc., wetlands, mudflats, and upland open spaces. It also includes land uses such as the Tri-Cities Landfill, Dumbarton Bridge, former Dumbarton Quarry, railroad rights of way, and utility towers. The majority of the Baylands Community Plan Area is protected for habitat conservation. Policies within the plan support environmental education as well as implementation of the Bay Trail.

The Plan contains affirmation that the *“Baylands will continue to remain viable for salt production and habitat conservation. Additional recreation opportunities may be pursued, provided they are consistent with plant and animal protection goals...other recreational improvements in the Baylands will include continued development of the Bay Trail and various spur trails, providing linear access along the shoreline and lateral access between Fremont/Newark neighborhoods and the wetland preserves.*

## Bayside Industrial Community Plan

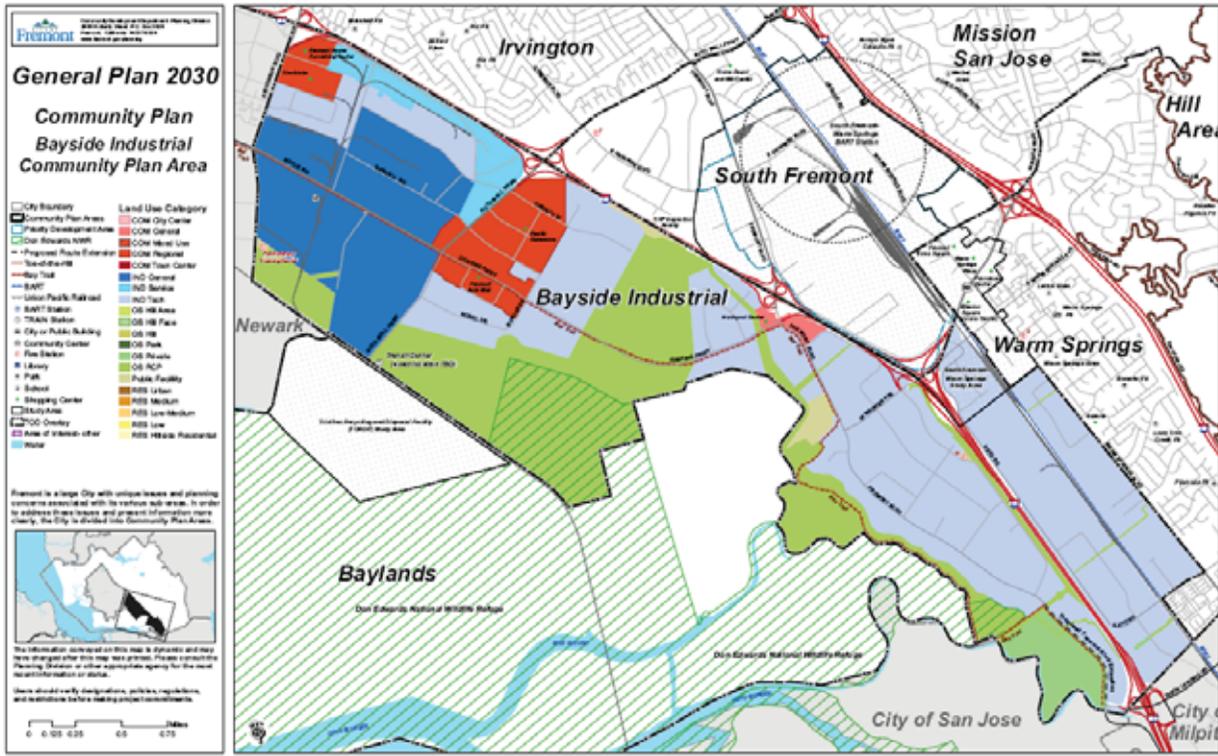
The Bayside Industrial part of the Study Area includes 8.9 square miles of primarily industrial land in the southwest part of Fremont. The Area is bounded on the north by Stevenson Boulevard and on the south by the Alameda/Santa Clara County line, between UPRR and Highway 880.

The area is dominated by industrial land uses but also includes regional commercial uses such as Pacific Commons commercial center, hotels and the Fremont Auto Mall. Undeveloped sites within the area include 200 acres at Pacific Commons, and the 147- acre proposed Creekside Landing development north of Dixon Landing Road.

The Catellus' Pacific Commons project was developed as the Fremont Area 5 Specific Plan, and includes existing trail segments between Auto Mall Parkway and Cushing Parkway. It is envisioned that the remainder of the trail within this area be developed as individual parcels are built out.

The King and Lyons Creekside Landing Phase II project is subject to a development agreement with the City of Fremont and includes development of 59 acres and extension of the Bay Trail through the site as part of project development. Three Bay Trail alignments are considered through the site.

Policies for this area include *“Ensure the continued compatibility of uses in the Bayside Industrial area with nearby wetlands in the Baylands area. Economic development programs and capital improvements in this area should be coordinated with efforts to improve water quality, restore wetlands, and expand the Don Edwards National Wildlife Refuge.”*

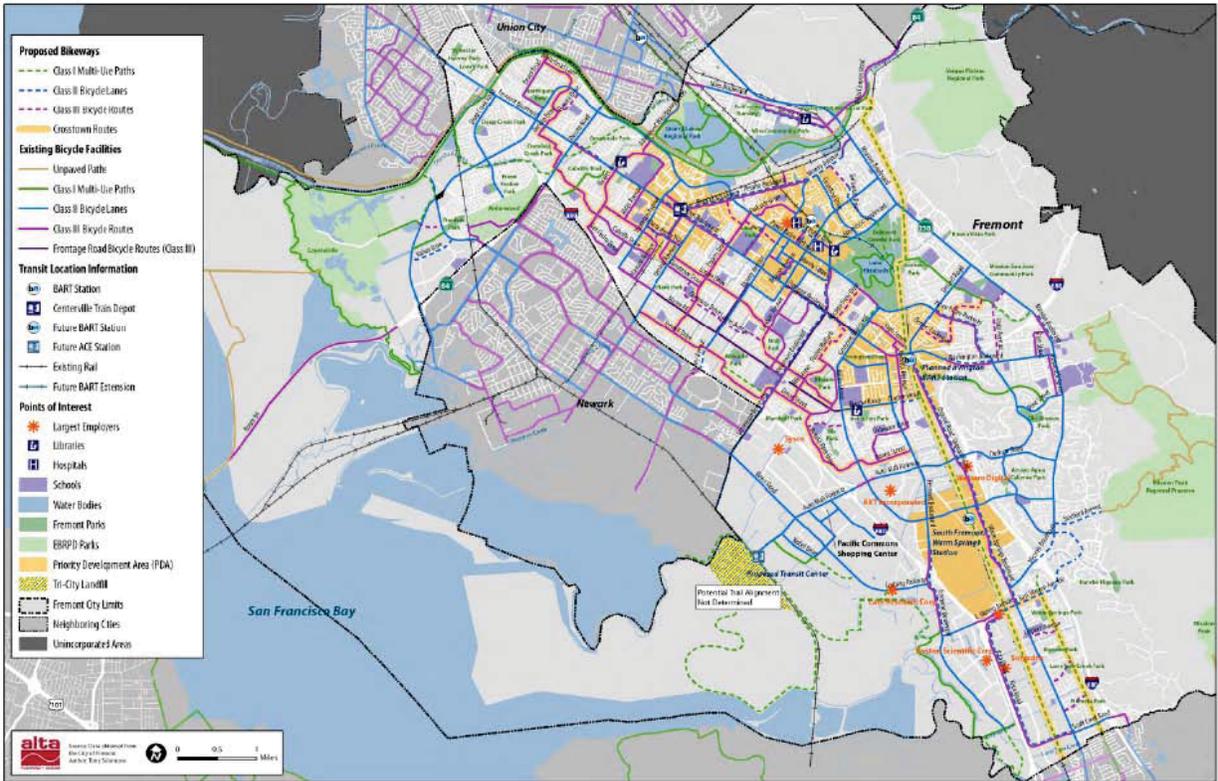


## Fremont Bicycle Plan

<http://www.fremont.gov/index.aspx?NID=649>

The City of Fremont Bicycle Master Plan (January 2012) provides a blueprint for making bicycling an integral part of daily life in Fremont. The Plan outlines future bicycle facilities and programs in the City to facilitate bicycling for transportation and recreation and help the City attain General Plan goals. The Bicycle Master Plan contains a vision statement, strategies and actions for the improvement of the bicycling environment in Fremont. The Plan's goals include – to enhance and expand the existing network, fill network gaps, provide greater connectivity, educate, encourage and to maximize funding sources. A key purpose for this Plan is to satisfy requirements of the California Bicycle Transportation Account (BTA), and other state and federal funding programs that require the adoption of a bicycle master plan.

The Plan includes Class I paths on the levees within the Don Edwards Wildlife Refuge and SF Bay shoreline south of the Tri Cities Landfill.



## Regional Plans

### ABAG Bay Trail Plan

<http://www.baytrail.org/>

The Bay Trail Plan provides broad guidance and policies for the implementation of the San Francisco Bay Trail, a planned recreational corridor that, when complete, will encircle San Francisco and San Pablo Bays with a continuous 500 mile network of bicycling and hiking trails. The current Bay Trail route through the Study Area as designated on the Bay trail Plan is mainly on-street, using sidewalks and bike lanes along Thornton Ave. Cherry Street, Boyce Street and Cushing Parkway. However, the sidewalks and bike lanes in this area are not continuous. As it does not meet Bay Trail Goals and Objectives as a shoreline trail, Bay Trail staff consider the on-street alignment to be “Interim”.

The Bay Trail Plan also shows a possible future alignment along the Union Pacific Railroad tracks through this area, but this route is not considered to be feasible, and according to Bay Trail staff, it has been considered to be more of a “place-holder”, until detailed studies (such as this present study) identify a preferred alignment that more fully meet Bay Trail Plan objectives. Segments within the Study Area were identified in the 2005 Gap Study as medium and long-term projects due to complexity, right-of-way, cost and/or environmental issues, where a study (this report) would be appropriate to identify site-specific issues and alignment options. Guidelines for determining a potential alignment are also part of the Bay Trail Plan, and are used as criteria for determining trail potential alignments:



Bay Trail in Feasibility Study Area

### Bay Trail Alignment Policies

1. *Ensure a feasible, continuous trail around the Bay.*
2. *Minimize impacts on and conflicts with sensitive environments.*
3. *Locate trail, where feasible, close to the shoreline.*
4. *Provide a wide variety of views along the Bay and recognize exceptional landscapes.*

5. Investigate water trails as an enhancement to the trail system where necessary or appropriate.
6. In selecting a route for the trail, incorporate local agency alignments where shoreline trail routes have been approved.
7. Where feasible and consistent with other policies of this plan, new trails may be routed along existing levees.
8. Where existing trails through wetlands are well-maintained and well-managed, the Bay Trail can feasibly be routed there. In these cases, trails should be used according to current regulations. Alternate routes should be provided where necessary and additional buffering/transition areas designed to protect wetland habitats should be provided where appropriate to protect wildlife.
9. In selecting a trail alignment, use existing stream, creek, slough and river crossings where they are available. This may require bridge widening in some locations. In selecting trail alignments, new stream, creek and slough crossings should be discouraged. Where necessary because acceptable alternatives do not exist, bridging may be considered.
10. In order to minimize the use of existing staging areas along the shoreline and to reduce the need for additional staging areas, the choice of trail alignment should take full advantage of available transit, including rail service (e.g., Caltrain, BART), ferries and bus service.
11. Connections to other local and regional trail and bikeway systems should be actively sought in order to provide alternatives to automobile access to the Bay Trail. In particular, opportunities should be explored for trail connections to the Bay Area Ridge Trail, which is envisioned to circle the Bay along the region's ridgelines.

The Wildlife and Public Access Study (2008) was initiated by the Bay Trail Project (who provided fundraising and administrative support) to begin to provide a body of statistically valid data about how human use of shoreline trails might affect foraging shorebirds around San Francisco Bay. The results of this ten-year effort were published fall 2008 issue of the *Journal of Wildlife Management*. "Foraging Shorebird Response to Trail Use Around San Francisco Bay" evaluated 3 paired locations along the Bay - one trail and one control site at each location, to determine whether numbers of trail users had an effect on the number of birds, species richness or proportion of birds foraging, either overall or by season, when comparing trail to non-trail sites. The study concluded that there were no negative effects of trail use either overall or by season when comparing trail to non-trail sites. The article states:

*"Our results indicate that, under certain conditions, managers may allow responsible types and levels of trail use in areas adjacent to tidal mudflats where migratory and resident shorebirds forage. Potentially acceptable types of recreational conditions are those where motorized vehicles and other high-noise and high-speed activities are excluded, where humans do not approach shorebirds directly, and where birds have become accustomed to human presence."*

Implementation of a trail system within the Newark-Fremont shoreline area in a fully integrated manner should provide significant opportunities for wildlife foraging away from areas of public access.

## Alameda Countywide Pedestrian and Bicycle Plans

Alameda County Transportation Commission adopted the Alameda Countywide Pedestrian Plan and Alameda Countywide Bicycle Plan on October 25, 2012. The Plan provides a broad vision and framework for completion of a network of pedestrian facilities in Alameda County. Within the Study area, the Plans cited gaps in the Bay Trail between south Fremont Boulevard and Dixon Landing Road (Fremont) and a number of trail segments along creeks and canals. Funding and implementation of Bay Trail projects is a key goal of the Plans.

## San Francisco Bay Conservation and Development Commission (BCDC) San Francisco Bay Plan

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

BCDC is the federally designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the Commission to use the authority of the federal Coastal Zone Management Act to ensure that projects and activities are consistent with the policies of the San Francisco Bay Plan and state law. Its mission states: "The Bay Conservation and Development Commission is dedicated to the protection and enhancement of San Francisco Bay and to the encouragement of the Bay's responsible use."

BCDC's responsibilities include:

- Providing maximum feasible public access to and along the shoreline of the Bay consistent with the BCDC's policies on Public Access, as well as
- Regulating all filling and dredging in San Francisco Bay and new development within the first 100-feet inland from the Bay to ensure that the limited amount of shoreline area suitable for high priority water-oriented uses is reserved for ports, water-related industries, water-oriented recreation, airports, and wildlife areas.

The Commission provides a multi-agency perspective for project review and development, and one of its primary responsibilities is to review proposed projects to ensure consistency with goals and objectives to increase public access to the San Francisco Bay shoreline.

In 2005, BCDC published Shoreline Spaces Public Access Design Guidelines for San Francisco Bay that provides guidance for the design and implementation of shoreline access to meet their public access objectives:

1. *Make public access public*
2. *Make public access usable*
3. *Provide, maintain and enhance visual access to the Bay and shoreline*
4. *Maintain and enhance the visual quality of the Bay, shoreline and adjacent developments*
5. *Provide connections to and continuity along the shoreline*
6. *Take advantage of the bay setting*
7. *Ensure that public access is compatible with wildlife through siting, design and management strategies*

The guidelines contain recommendations for public access planning to minimize potential wildlife impacts, such as varying trail widths, pavement types and site amenities; using durable materials on trails; providing trail spurs; locating parking and staging areas away from shoreline areas; minimizing lighting; and trail design and signage to help educate and inform trail users. These elements would be incorporated into design strategies for implementation of trails within the Study Area.

In 2001, BCDC published a study that surveyed potential effects of public access on wildlife. The Public Access and Wildlife Compatibility Report (March 2001) led to revisions of policies in the *San Francisco Bay Plan* to acknowledge the need for balance in providing public access to shoreline wildlife areas. The project included the participation of a broadly representative Policy Advisory Committee as well as a one-time survey of natural resource area, and park and recreation managers in coastal and Great Lakes states concerning the effects of public access on wildlife and the use of siting, design, and management strategies to avoid or minimize potential adverse effects on wildlife. Implementation of the trail system in a fully integrated manner is expected to complement the Wildlife Compatibility Report's conclusion that predictable public access may allow wildlife to successfully adapt to areas of human presence.

The San Francisco Bay Plan was completed and adopted by the San Francisco Bay Conservation and Development Commission (BCDC) in 1968 and has been periodically revised since then to reflect current conditions and policies regarding use and protection of the Bay, including provision of shoreline access, protection of wildlife resources, regulation of shoreline development, and guidance regarding the San Francisco Bay Area Water Trail and climate change issues. Implementation of the Water Trail is being led by the California State Coastal Conservancy. Within the Study Area, the existing Jarvis Landing ramp at Thornton and Marshlands Road.

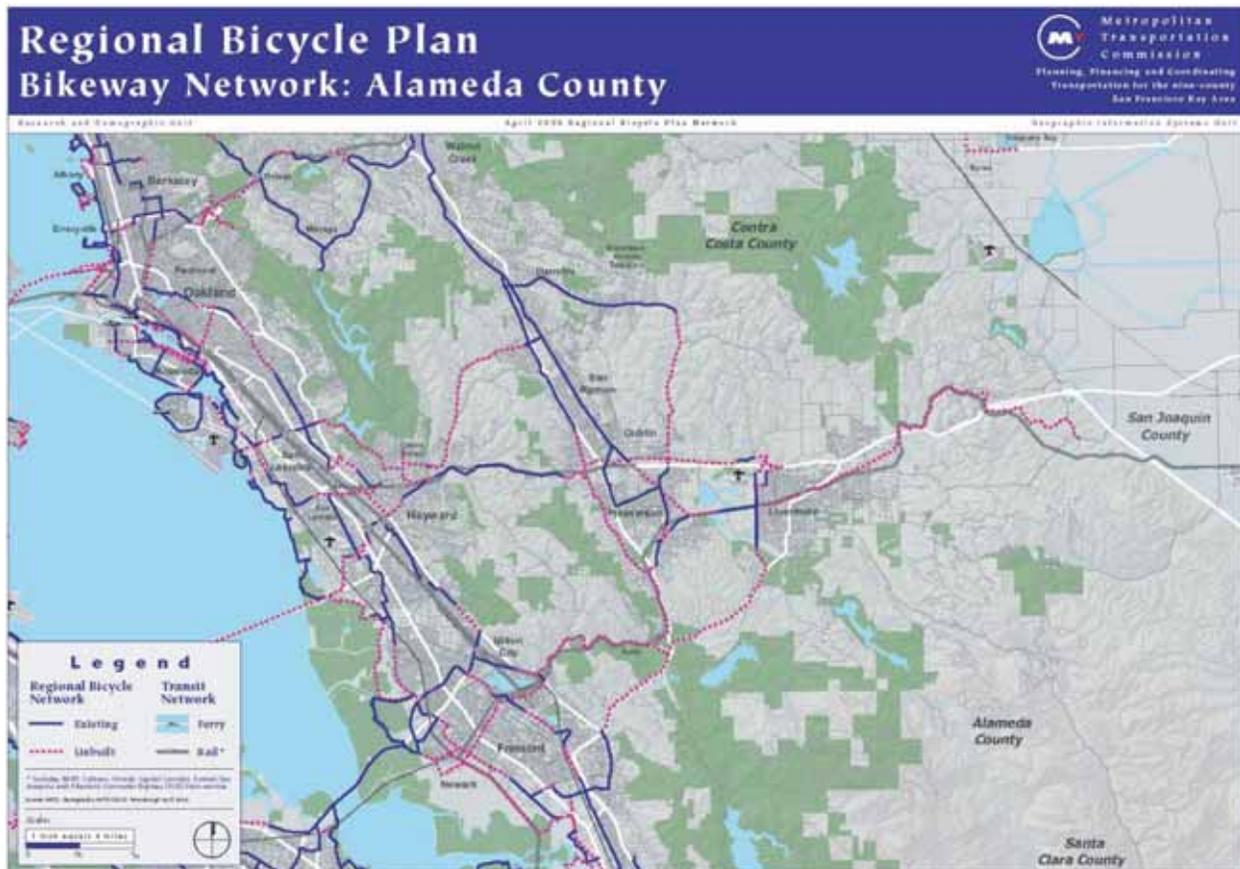
The Bay Plan includes policies to guide future uses of the Bay and shoreline and maps that apply these policies to the present Bay and shoreline. Within the Study Area, the Plan calls for protection of harbor seal haul-out and pupping sites between Newark and Coyote Slough, with projects allowed only if protective of harbor seals and other sensitive wildlife. Implementation of the Bay Trail along shoreline areas within the Study Area would be subject to BCDC regulations.



## Regional Bicycle Plan for the San Francisco Bay Area

[http://www.mtc.ca.gov/planning/bicyclespedestrians/MTC\\_Regional\\_Bicycle\\_Plan\\_Update\\_FINAL.pdf](http://www.mtc.ca.gov/planning/bicyclespedestrians/MTC_Regional_Bicycle_Plan_Update_FINAL.pdf)

The Metropolitan Transportation Commission (MTC) completed the Regional Bicycle Plan Update in 2009, Goal 2.0 of the Plan is to define a comprehensive regional bikeway network that includes the Bay Trail. Planning goals include work to complete the Bay Trail and other intercounty trail systems, to ensure a complete system of safe and efficient trails for cyclists in the Bay Area. The Regional Bikeway Network expressly incorporates all existing and unbuilt links of the Bay Trail spine into the Regional Bicycle Plan.



## MTC Regional Rail Plan

<http://www.mtc.ca.gov/planning/rail/>

MTC completed the Regional Rail Plan in 2007, identifying a vision, goals and policies for the development of an integrated regional rail network, including freight, passenger rail, and regional transit. One element of the Plan is the preservation of existing rail corridors to provide for future growth, expansion and interconnection of rail facilities. Rail planning in the Study Area is discussed further in Section 2.5.

## Related Planning Efforts

US Fish and Wildlife Service Don Edwards San Francisco Bay National Wildlife Refuge (Refuge)

The northern end of the Study Area contains the Headquarters of USFWS Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). The National Wildlife Refuge system considers wildlife-dependent recreation to be a priority public use, and trails within the lands owned and managed by USFWS would be consistent with Refuge goals and objectives for the National Refuge system. These include:

*"The National Wildlife Refuge System hosted an estimated 39.5 million visitors in fiscal year 2003. Over 27 million of these visitors participated in nature observation and interpretation, while over 15 million visitors participated in wildlife-dependent recreation. Refuges provide outstanding opportunities to observe and appreciate wildlife in its natural environment. Refuges also provide quality opportunities to engage in wildlife-dependent recreation and foster an appreciation for wildlife and habitat as a participant in the natural environment. To this end, Refuges have attempted to provide facilities that promote on-the-ground experiences when visiting refuges. These include orientation kiosks, boat launches and docks, observation towers and interpretive trails. To many visitors, and to the wildlife which depend on Refuges, conveying the importance of proper wildlife management is one of the most important things that a refuge can do.*

*...Wildlife-dependent recreation is a priority public use of the Refuge System and, as such, is facilitated whenever it is found to be compatible with the purposes and management of the refuge. This is great news to recreationists who are seeking the high quality opportunities that Refuges provide.*

*The Service has worked hard to develop a wide array of facilities on many refuges to enhance our visitor's wildlife-dependent recreational experience. Examples include hunting, photo, and observation blinds, fishing piers, boat launches, nature and interpretive trails, observation towers, boardwalks, and auto tour routes.*

*...In 1991, the Service joined with 13 other agencies and organizations in a national "Watchable Wildlife" agreement, to facilitate a coordinated approach in the development of wildlife-viewing opportunities nationwide. Other refuge recreational activities that are enhanced by exposure to wildlife and wildlands include hiking, backpacking, canoeing and cross-country skiing.*

In addition to the National Wildlife Refuge system, USFWS administers the Endangered Species Act for the protection of sensitive wildlife species, including endangered species currently inhabit the site that could be affected by the implementation of visitor serving facilities.

Don Edwards encompasses over 30,000 acres of wetlands and open water in Fremont and other South and East Bay cities. The Refuge was created in 1972 with the following purposes:

- 1. Preservation of the natural resources of the South Bay, which include among others the habitat of migratory birds, harbor seals and five endangered species.*

2. Provide environmental education and wildlife interpretation opportunities to Bay Area schools and residents.

3. Ensure the protection of an important open space resource and other wildlife oriented recreation opportunities for the enjoyment of local residents and visitors.

As an ongoing planning effort, USFWS is in the process of completing a Comprehensive Conservation Plan (CCP) for the Refuge. The CCP provides vision and guidance for the management of the refuge for the next 15 years. This includes goals for habitat protection as well as wildlife-oriented recreation, environmental stewardship and public access opportunities. Provisions for priority public uses, such as hunting, fishing, and environmental education, as well as other appropriate and compatible uses are based on federal criteria.

The CCP currently contains three alternatives for Refuge management: no action, moderate increase in wildlife management, visitor services and environmental education, and substantial increase in wildlife management, visitor services and environmental education. Each alternative will provide over thirty miles of trails, multiple access sites and overlooks to facilitate wildlife observation. The Plan is scheduled for completion by September 2012.

APRIL 2011 DESFB NWR Draft CCP Alternatives

	Alternative A: No Action (Status Quo)	Alternative B: moderate increase in wildlife, habitat, visitor services, and environmental education programs	Alternative C: substantial increase in wildlife management, habitat management, visitor services and environmental education
		restore, and enhance the Refuge.	restore, and enhance the Refuge.
<b>Public Uses</b>			
	<ul style="list-style-type: none"> <li>Visitor Services division offers a variety of programs related to Refuge Resources.</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement a unified message with three main themes for the public. Incorporate the unified message in all programs and outreach.</li> <li>Develop a visitor services plan.</li> </ul>	<ul style="list-style-type: none"> <li>Same as Alternative B.</li> </ul>
Wildlife observation	<ul style="list-style-type: none"> <li>Provide more than 30 miles trail, multiple access sites, and overlooks to facilitate wildlife observation.</li> <li>Offer guided walks.</li> <li>Provide visitor contact services on weekends.</li> </ul>	<ul style="list-style-type: none"> <li>Improve Tidelands Trail by installing water bars to slow down erosion.</li> <li>Install a raised boardwalk extending the entire length of the interior levee of the Faber-Laumeister site.</li> <li>Same as Alternative A.</li> <li>Update EEC to improve visitor contact services on weekends.</li> <li>Collaborate with local transportation agencies to explore feasibility of a bus stop near the headquarter entrance.</li> <li>Install a webcam near closed and/or sensitive areas for the purpose of remote public viewing.</li> <li>Research and if feasible promote water-based wildlife observation at Alviso Slough, Newark Slough, and Bair Island (canoe, kayak, tours).</li> <li>Identify potential launch sites on the refuge for canoes and kayaks (Bair Island, near Dumbarton Bridge, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>Same as Alternative B.</li> <li>Same as Alternative B.</li> <li>Same as Alternative B.</li> <li>Same as Alternative A.</li> <li>Remodel EEC to improve visitor contact services on weekends.</li> <li>Same as Alternative B.</li> <li>Collaborate with local transportation agencies to bring public transportation to the EEC.</li> <li>Develop a walking path/bridge from bus stop to the headquarters.</li> <li>Same as Alternative B.</li> <li>Same as Alternative B.</li> <li>Buy kayaks or canoes for water-based, wildlife observation programs.</li> <li>Construct a dock on the Refuge.</li> <li>Develop at least one stop on the proposed Water Trail.</li> </ul>
Photography	<ul style="list-style-type: none"> <li>Provide more than 30 miles trail, multiple access sites, and overlooks to</li> </ul>	<ul style="list-style-type: none"> <li>Same as Alternative A.</li> </ul>	<ul style="list-style-type: none"> <li>Same as Alternative A.</li> </ul>



City of San Jose General Plan Update, Envision San Jose 2040

[http://www.sanjoseca.gov/planning/gp\\_update/](http://www.sanjoseca.gov/planning/gp_update/)

This Plan (in progress) has goals, policies and an implementation program to develop a regional trails network of at least 100 miles (including Coyote Creek Trail, SF Bay Trail and Juan Bautista de Anza Trail) with local connections to parks and activity centers. Its importance to the Study Area is that the southern segment of the Newark-Fremont Bay Trail will connect to the Coyote Creek Trail at Dixon Landing Road.

San Jose/Santa Clara Water Pollution Control Plant

[www.Rebuildtheplant.org](http://www.Rebuildtheplant.org)

This Master Plan for the San Jose/Santa Clara Water Pollution Control Plant, located south of Newby Landfill, proposes 8.25 miles of new trails associated with updated/rebuilt water treatment plant. Currently in Master Plan preparation, the trails will connect with the Coyote Creek trail in the vicinity of the Newby landfill.

City of Milpitas Trails Master Plan

[http://www.ci.milpitas.ca.gov/government/planning/plan\\_trails.asp](http://www.ci.milpitas.ca.gov/government/planning/plan_trails.asp)

Off street trail system is planned to extend 5.1 miles along the Coyote Creek levee, from Dixon Landing Road to Montague Expressway, except within the McCarthy Ranch development where the trail is an extended sidewalk. The Coyote Creek Trail, SF Bay Trail and Juan Bautista de Anza trail all share the same alignment in this area. As noted above, they would join on their north end of the Bay Trail segment constructed through the Study Area.

Milpitas General Plan, 2002

[http://www.ci.milpitas.ca.gov/pdfs/plan\\_plan\\_general\\_chapter3.pdf](http://www.ci.milpitas.ca.gov/pdfs/plan_plan_general_chapter3.pdf)

This Plan reaffirms the Coyote Creek/Bay Trail alignment along the Coyote Creek levee.

Santa Clara County Parks - Alviso Marina County Park

<http://www.sccgov.org/SCC/docs%2FParks%20and%20Recreation%2C%20Department%20of%20%28DEP%29%2FAttachments%2FAlvisoGuideFinal.pdf>

This park provides pedestrian and bicycle access to Coyote Slough and trails within the Don Edwards SF Bay Wildlife Refuge. This site is also the nearest planned ramp south of Jarvis Landing for the SF Bay Area Water Trail.

## **2.3 KEY STAKEHOLDERS**

Primary property owners within the Study Area are shown below. Land use within the area includes a regional park, industrial salt facility, marina, grazing lands, pipelines and pump stations, power plant, roads, levees, railroad corridors, wetlands and vacant land.

Key stakeholders within the Study Area include:

- USFWS Don Edwards Wildlife Refuge

- ACFCWCD (government/flood control)
- Cargill Inc. Newark (salt plant)
- Catellus (Pacific Commons retail/commercial/industrial development)
- Fremont-Newark Community College District (Ohlone College)
- Helm et al (Areas 3 & 4 Specific Plan development area)
- King and Lyons (existing Bayside Landing and planned Creekside Landing business parks)
- Waste Management, Inc. (Tri Cities Landfill)
- Allied Waste Management (Newby Island Landfill)
- PG & E (utility/transmission site)
- State of California (Department of Fish and Game, State Lands Commission lands)Wildlands Inc. Mitigation Bank
- Union Pacific Railroad

#### USFWS/Don Edwards Wildlife Refuge

As discussed above, the Refuge is a primary landowner and stakeholder in the Study Area, and current Comprehensive Conservation Plan efforts include a commitment to provide and expand outdoor recreational and wildlife viewing opportunities consistent with stewardship of lands for protected wildlife species. Integrating trails into restoration projects presents a unique opportunity to fulfill these goals in an integrated manner, as well as incorporate strategies for long term monitoring and adaptive management to ensure that Refuge objectives are met.

#### Alameda County Flood Control and Water Conservation District (ACFCWCD)

ACFCWCD is part of Alameda County Public Works Agency, responsible for maintaining the area's flood control facilities, including channels, levees, pumps and infrastructure related to flood control and stormwater management. The District provides planning, design and inspection of flood control projects, maintains flood control infrastructure, reviews new developments and supports watershed enhancement and education. Flood control channels and creeks in the Study Area are in Zone 5 (Newark) and Zone 6 (south Fremont). Within the Study Area, the creeks are referred to by a letter (Line B), and managed as part of Zone 5 or 6. These creeks primarily discharge to either Coyote Creek or Mowry Slough. From these waterways, stormwater flows to San Francisco Bay.

Opportunities for public access include use of levee maintenance roads for trails, as well as incorporation of public access amenities as part of flood control maintenance, creek restoration and watershed enhancement projects. The Flood Control District has agreements with several local government entities, including East Bay Regional Park District, allowing them to construct, operate and maintain trails within their rights-of-way. Although in general agreement with the concept of a trail network on District levees and maintenance roads in the Study Area, ACFCWCD will need to review each proposed trail segment on a site by site and case by case basis to make sure their licensing agreement is signed with the trail management entity, making them responsible for construction, maintenance, and operations of the trail, including patrol policing and emergency response.

Cargill, Inc.

Cargill Inc. owns and operates approximately 3,000 acres of an industrial salt facility and related processing facilities at its Newark Plant Site. The salt is used for pharmaceutical use, food, agriculture, industrial and other commercial purposes, such as water softening. In addition, Cargill Inc. owns lands within the Dumbarton TOD that may be developed for residential uses. More than 90% of its lands have been donated and sold to resource agencies for wetlands restoration purposes.

Solar salt production in the San Francisco Bay dates back to the 1850s, when the State of California encouraged reclamation of marshlands – one of those being salt ponds. This was accomplished by diking, leveeing and draining historic salt marsh and seasonal wetlands to the east for creation of salt through a complex process of concentrating salt in bay water involving evaporation and moving or pumping increasingly saline brine through a series of ponds. Some of the salt ponds were acquired by the USFWS and became a part of the Don Edwards Wildlife Refuge in condemnation dating back to 1972, and Cargill retains perpetual operating rights to harvest salt on approximately 8,000 acres of the land donated and sold to the USFWS.

Of the Service-owned salt ponds, (totaling 8,000 acres) as indicated above, all will continue indefinitely to be operated by Cargill Inc. A portion of the salt ponds near Coyote Creek are a part of the larger South Bay Salt Ponds Restoration Project (SBSP), and most of the lands in this area have been restored to tidal wetlands, but the active salt ponds within the Study Area, including both those owned by Cargill Inc, and those owned by the USFWS and operated by Cargill are not included in the SBSP system, which occurs just to the north in the Hayward area, and mostly further south and west in the Alviso area of San Jose and in the East Palo Alto area.

Apart from the interior and portions of the western and eastern levees immediately adjacent to the Newark Plant Site, most of the salt pond levees are owned in fee title by the USFWS but operated and maintained by Cargill exclusively under an agreement with the Service for salt production and outlining their on-going maintenance responsibilities.

The levees are mostly underlain by former tidal marsh and were created beginning in the early 1900's by dredging and placing Bay Mud soils on the drained and diked lands to create the berms that prevent bay water from entering the salt production areas. The levees require a high level of maintenance, and Cargill Inc. places a very high priority on this because bay water intrusion interferes significantly with their salt production operations. Cargill has a very well developed program involving levee inspection, monitoring, maintenance and repair. This includes topping, or adding soil to bring the levee surface up to grade in elevation and width, and beaching, to strengthen, repair and bolster levee side slope areas eroded by bay waters.

The exterior levees are typically 12 to more than 14 feet wide and range in elevation from about 8 to 10 feet. Although the 100-year still water tide height is estimated to be elevation 10 feet in this area (NAD 88), they are not certifiable by FEMA as flood control levee structures because they were not designed and constructed, nor currently maintained, for flood protection. Cargill Inc. does not consider the levees to provide flood benefits to adjacent areas, because in part they are not designed and engineered to provide the level of risk protection needed for a flood control structure, and therefore cannot be responsible for emergency maintenance for flood protection.

The historic agreement (1972) between Cargill Inc. and the USFWS designated certain levees for public access, generally only around the existing Don Edwards Wildlife Refuge headquarters and visitor center area. The agreement sets forth a process whereby certain additional areas can be opened for public access, after certain safety and security improvements (security fencing, etc.) are made, at which point ongoing levee maintenance and patrol would be turned over to the USFWS.

As a practical matter, all involved stakeholders must agree with the decision to open lands to public access in order to proceed. Both Cargill Inc. (levee operator) and the USFWS Don Edwards Refuge (levee owner) do not believe it is feasible to allow use of the exterior levees for shared public access because of potential impacts on Cargill's salt production operations, concerns about the Service's capability to maintain and manage the levees, and manage public access in these areas, and potential impacts on sensitive wildlife species that occupy the immediately adjacent tidal wetlands along Mowry Slough.

At some time in the future it is possible that some or most of the Newark Plant site salt ponds would no longer be needed by Cargill Inc. for salt production, or that it is no longer economically feasible or practical to produce salt at current production rates at this location. If this turns out to be the case, it is conceivable that some of the exterior levees could be relocated and reconstructed

Changes in operations and security procedures (such as use of closed circuit cameras, or touch security fencing, etc.) could also become available in the future that might affect the feasibility of a shared levee roadway.

It is also possible that at some time in the future, an exterior flood control levee to protect the Fremont-Newark area from increased flood frequency and flood heights as a result of Sea Level Rise will be considered necessary, and the existing levee system be raised and re-built or a new flood control levee system in the general vicinity of the Cargill-managed levees be constructed. Although there is no planning for such a levee system currently underway or programmed (such as there is for areas to the north and south of the Study Area), this is a concept that has been discussed. Such a flood control levee system could incorporate public access, including a Bay Trail, as a component of a multi-use project, and may contribute favorably to the Benefit: Cost analysis.

#### State of California-Owned Lands

California Department of Fish and Game (DFG) and State Lands Commission (SLC) are landowners within the Study Area, primarily along Mowry Slough and Coyote Creek, and restored wetlands west of Bayside Landing Business Park, along the existing Bay Trail segment.

DFG lands are typically open for public access (including both designated trails as well as informal, non-delineated paths), without formal management. SLC governs "sovereign" lands—submerged and tidal, historic river alignments, including lands along Mowry Slough and Coyote Creek. Their purpose and mission includes:

*"The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways when it became a state in 1850. The state holds these lands for the benefit of all the people of the State for statewide Public Trust purposes of waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open*

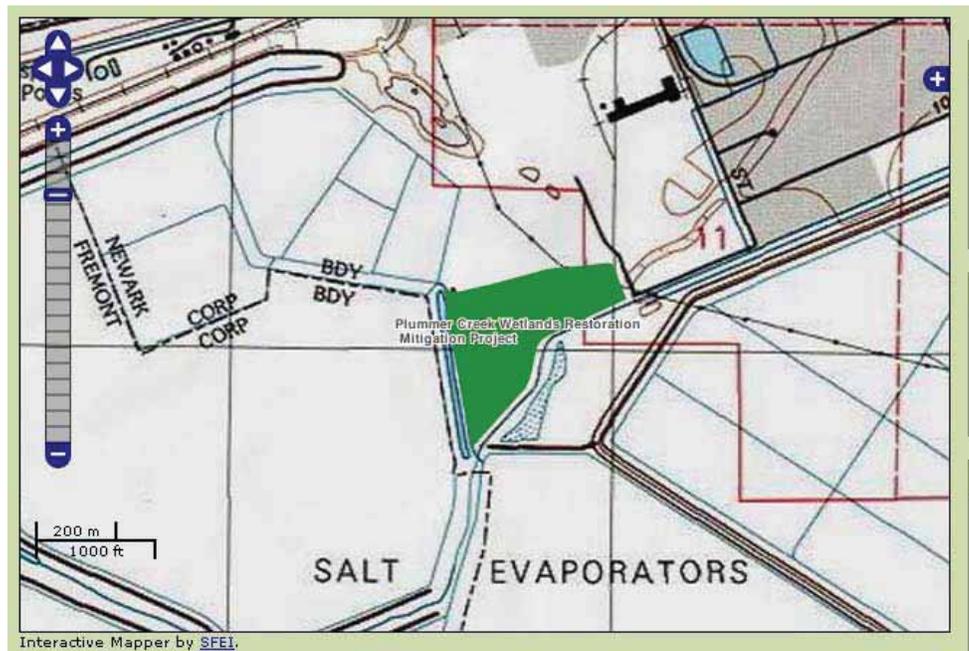
*space. The State owns sovereign fee title to tide and submerged lands landward to the ordinary high water mark (OHWM) as they existed in nature, prior to fill or artificial accretions. The State's sovereign interests are under the jurisdiction of the Commission. A lease from the Commission is required for any portion of or proposed improvements extending onto State-owned lands that are under its jurisdiction."*

Since portions of Mowry Slough and Coyote Creek have been altered over time, exact location and jurisdictional authority of these areas may be subject to further study and precise survey.

#### Wildlands, Inc. Mitigation Bank, Newark Slough

Wildlands, Inc owns and operates the Newark Slough Mitigation Bank, which offers mitigation banking services to provide compensatory mitigation credits to offset wetlands impacts for development projects.

The project was originally approved as the Plummer Creek Wetlands Restoration Mitigation Project in September 1999. The project promised the creation of tidal wetlands, seasonal wetlands, and 6.96 acres of uplands on the 25 acre site. The project also included implementation of a public access trail along the northern and eastern levee and interpretive signage to comply with BCDC requirements. Although a pedestrian bridge was installed, the public access levee trail was not completed, although staff at Wildlands Inc. indicated a willingness to make the trail improvements when the mitigation site trail would connect to another trail segment.

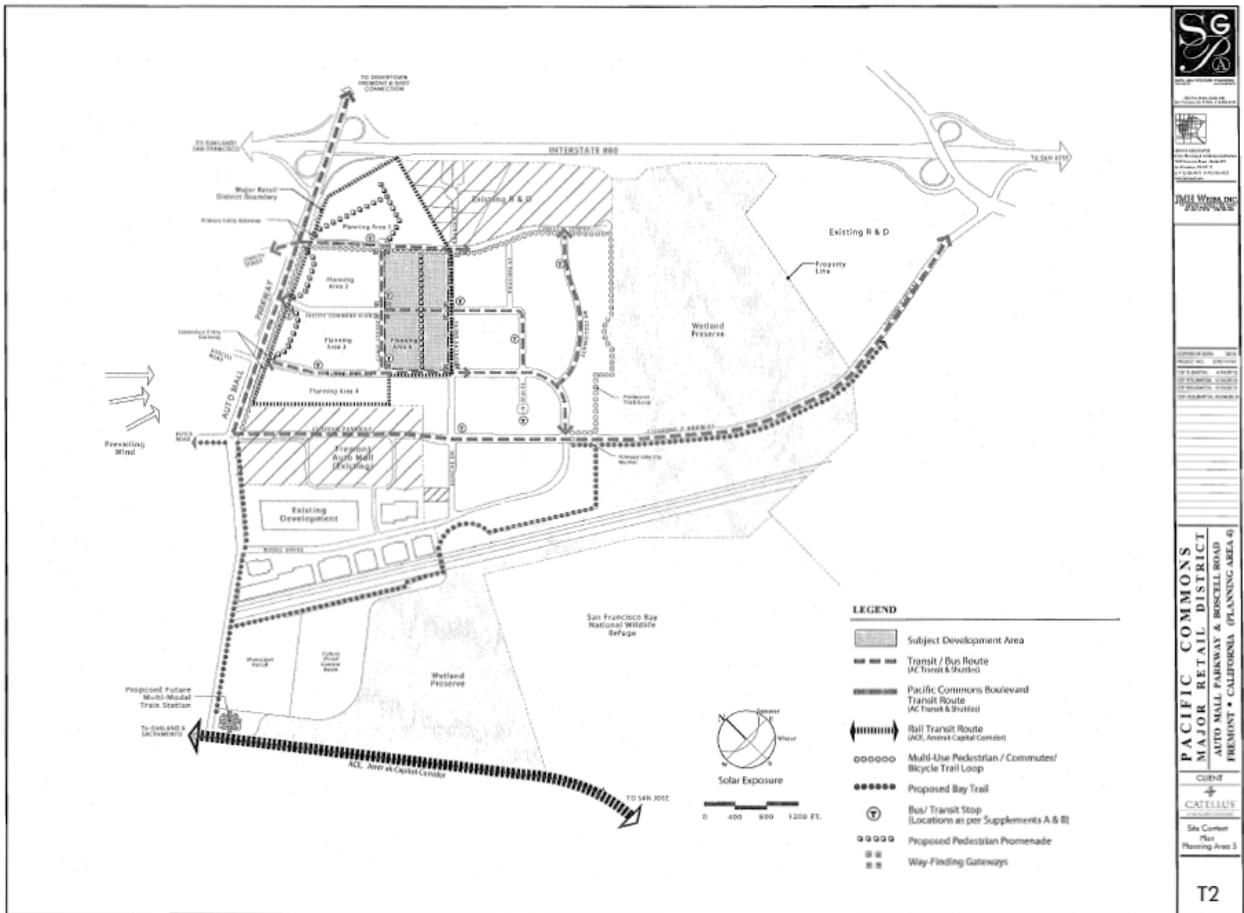


Wildlands, Inc. is also studying creation of another mitigation bank off Thornton Avenue in Newark. If approved, construction of public access components at both locations should be included in the project to fulfill the original project intent.

#### Pacific Commons

The 200 acre Pacific Commons site, developed by Catellus, includes regional commercial uses, existing paved trail segments that can potentially be used as part of the Bay Trail, as well as widened sidewalk segments on Cushing Parkway that have been dedicated to the City of Fremont. The area also includes a potential future multi-modal transit center at the end of Auto Mall Parkway, a city park site, and a wetlands

restoration (via transfer of lands to USFWS). Implementation and development of the multi modal facility would be considered a long term option, as the Plan was developed when a high intensity use (ballpark) was envisioned for the site, rather than the current use and build-out.



### Tri-Cities Landfill

The former Durham Road Landfill, also known as the Tri-Cities Resource Recovery Facility, occupies approximately 46 acres at the western end of Auto Mall Parkway. It began receiving municipal solid waste in 1967 and began recycling activities in 1991. The landfill was closed to the public in July 2007.

The owner of the property, Waste Management, obtained a General Plan Amendment in 2012 (PLN2011-00100) to change the land use from Agriculture and Light Industrial to Open Space-Public Resource Conservation and Service Industrial, and a Rezoning from Agricultural/Flood Combining District and Planned District P-2005-262(F) to Open Space/Flood Combining District and a new Planned District which would allow as permitted and conditional uses a medical waste processing facility, mulch processing and sales of finished products, concrete recycling and sales of finished products, and other associated waste disposal and recycling services at the former Tri-Cities Recycling and Disposal Facility, as well as a Conditional Use Permit to allow some of the proposed uses.

Operation of the facility is currently regulated by a municipal contract agreement for landfill operations and by a Conditional Use Permit. The contract and CUP included milestones for eventual closure of the facility, including a maximum landfill height of 150 feet and submittal of a reuse plan prior to final closure. A portion of the site has been permitted for continued use for interim waste and recycling activities while the final reuse plan is prepared. These activities include concrete and asphalt recycling, a corporation yard, and maintenance facilities for refuse collection vehicles. These operations are permitted through 2015.

The 2012 General Plan amendments satisfy the 2007 Planned District conditional approval that allowed for interim uses while preparing a final land use plan for City approval prior to 2015. The current Conditional Use Permit (PLN PLN2000-00085) will remain in effect for continued obligations associated with the closure and monitoring of the landfill.

Final project approval and closure should include consideration of a bicycle/pedestrian parking lot, and trail connection around portions of the landfill, including a connection to the Bay Trail system envisioned in the Area 3 and 4 Specific Plan, which is across Mowry Slough, immediately to the north. This is a complex and difficult issue to resolve because:

- It involves some Flood Control District levee lands,
- Potentially involves crossing a wetlands with a boardwalk,
- Presents potential operational conflicts with the landfill,
- Involves use of at-grade crossing of UP Railroad tracks (California Public Utilities Commission objects to use of at grade crossing for non-landfill business visitors).

According to the Community Plan, the future of the landfill site may ultimately be influenced by decisions regarding the rail corridor which runs along its eastern edge. The rail line presently accommodates the Amtrak Capitol Corridor and the Altamont Commuter Express. The possibility of a rail stop at the west end of Auto Mall Parkway has been considered, with bus and shuttle service to nearby employment centers in the I-880 corridor. If a rail station is pursued, some degree of transit oriented or intermodal facility development could be considered for the former landfill site, but is a very long-term prospect.

Baylands Community Plan policies for Tri-Cities landfill:

**Policy 12-1.6: Durham Road Landfill Reclamation**

*Support reclamation of the former Durham Road Landfill with a low intensity use that retains the open space character of the site, is compatible with adjacent land uses, protects environmental quality, advances habitat restoration programs in the surrounding wetlands, and is consistent with local sustainability goals.*

*Implementation 12-1.6.A: Durham Road Landfill Reuse Plan Prepare a Reuse Plan for the Durham Road Landfill, with appropriate environmental review documents. A number of alternatives for the site should be considered. Interim use of the site for waste management and recycling activities may be permitted. More intense uses of the site than those described in the "Special Study Area" text above would be subject to a future General Plan Amendment.*

## Newby Island Sanitary Landfill

Allied Waste/Republic Services owns and operates the Newby Island Resource Recovery Park at 1601 Dixon Land Road in San Jose. In addition to active waste receiving/disposal operations, the facility processes a maximum yearly average of 160,680 tons of green yard waste, food waste, and wood waste on an 18-acre composting facility, and operates a recycling facility. The Facility currently serves all of Santa Clara County and portions of Alameda, Contra Costa and San Mateo counties. The Facility processes curbside yard waste for several jurisdictions in Santa Clara County. Allied plans to process all of San Jose's commercial waste and is retrofitting this facility.

In 2009, the City of San Jose completed a Draft EIR to rezone the landfill and raise the maximum height of allowable fill by approximately 100 feet, increase landfill capacity, and update and clarify the legal nonconforming uses on the site to specify allowable current and future uses.

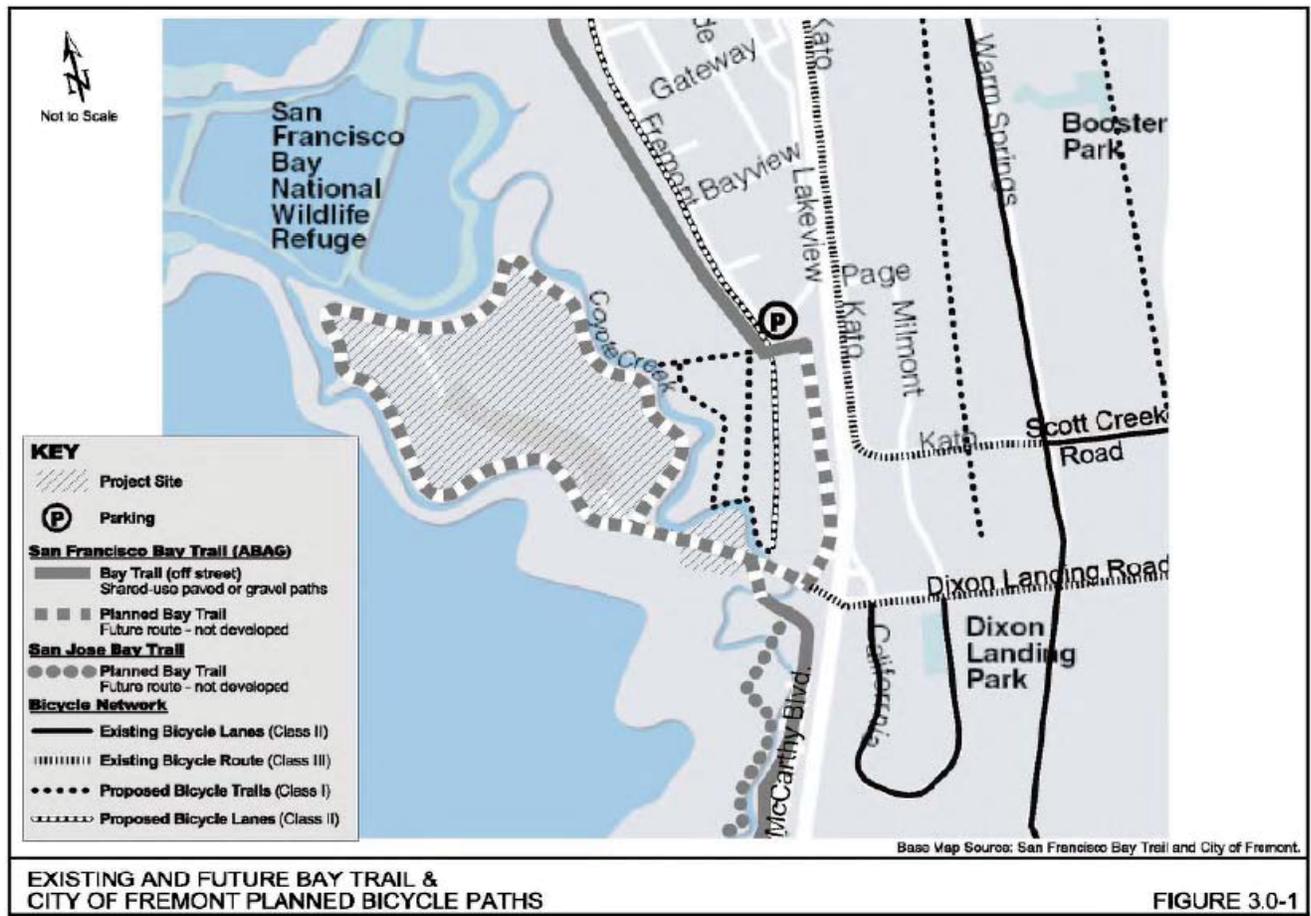
Although the Draft EIR indicates that raising the landfill height does not affect the landfill footprint or intended long-term use of the site perimeter roads for Bay Trail, it does not include any trails as part of the project. The EIR states:

*It is unlikely that the San Francisco Bay Trail segment on Newby Island would be constructed prior to closure of the landfill, and there is no proposal to change the anticipated closure date. The San Francisco Bay Trail segment planned around the perimeter of Newby Island Landfill is located on land owned by the applicant and the San Francisco Bay Trail would not likely be constructed prior to closure of the landfill due to safety and security concerns with ongoing landfill operations and trail users. As discussed previously, the City of San José has no direct control over the closure date of the landfill and it is possible that the landfill could close at a later date than 2025. For this reason, the proposed project would delay the opening of San Francisco Bay Trail segment around the perimeter of the landfill.... The planned San Francisco Bay Trail loop around the landfill is not a fundamental, connecting segment of the Bay Trail. Therefore, its possible delay would not result in a significant impact.*

*As part of the project, existing uses and their associated traffic that are not currently permitted would be allowed. If the project were not approved, those existing unpermitted uses and their associated traffic would be required to cease. Therefore, there will be more traffic and possible future conflicts*

*Santa Clara County Parks has requested that the City of San Jose take steps that will ensure that the end use vision can be realized as part of project, such as securing necessary land use easements for future trails with bicycles and pedestrians on the two lane bridge onto Newby Island than there would be if the proposed rezoning were not approved.*

*(source: Newby Island Sanitary Landfill and the Recyclery Rezoning Project DEIR, 2009)*



Santa Clara County Parks has requested that the City of San Jose take steps that will ensure that the end use vision can be realized as part of the project, such as securing necessary land use easements for future trails with bicycles and pedestrians on the two lane bridge onto Newby Island, and providing multi-modal facilities to serve the area as part of project approval.

Allied Waste has also indicated that they are in the process of evaluating geotechnical stability around the perimeter of the landfill that may include bank stabilization and reconstruction of the perimeter road to improve shoreline stability. This work would affect the timeline potential use of the perimeter road for a trail.

### King and Lyons Creekside Landing Phase II

The King and Lyons Creekside Landing Project was originally approved in 1994 for the planned development of 159 acres west of Interstate 880 and north of Dixon Landing Road. The City of Fremont entered into a Development Agreement for the parcel, which has subsequently been renewed and is in effect until March 2020. In addition to extending Fremont Blvd. south to Dixon Landing Road, contribution to Dixon Landing interchange improvements and provision of a Class I Bicycle Path next to the Fremont Blvd. extension, a portion of the Development Agreement includes *“in order to facilitate extension of the Bay Trail, make an irrevocable offer to dedicate to City of Fremont an easement for pedestrian/bicycle access on, or within the vicinity of, the levee road adjacent to “Coyote Creek” and along the Alameda County Flood Control Channel levee...”*.

Under separate study, the City of Fremont is exploring potential alignments for a Bay Trail segment to provide a connection from the current terminus of Fremont Blvd. and Dixon Landing Road. The project will also include Dixon Landing Road intersection improvements to accommodate bicycle and pedestrian users and provide a connection to the Bay Trail at McCarthy Ranch.

## 2.4 RAILROADS

The Study Area contains two primary rail lines that serve freight and passenger rail needs. The north-south corridor is within the Coast Subdivision owned by Union Pacific Railroad (UPRR), and is utilized by UPRR freight operations and passenger rail, including the Capitol Corridor, Amtrak Coast Starlight and Altamont Commuter Express (ACE).

The east-west Dumbarton Corridor, which connects the Peninsula to the East Bay, has been identified as a key corridor for future commuter rail service. This corridor provides a critical component of establishing a regional rail network as identified in the Metropolitan Transportation Commission (MTC) Regional Rail Plan. The Dumbarton commuter rail project is overseen by the Dumbarton Rail Corridor Policy Advisory Committee (DRCPAC) and managed by Caltrain. It is currently at 10 percent design and in the environmental review phase of planning.

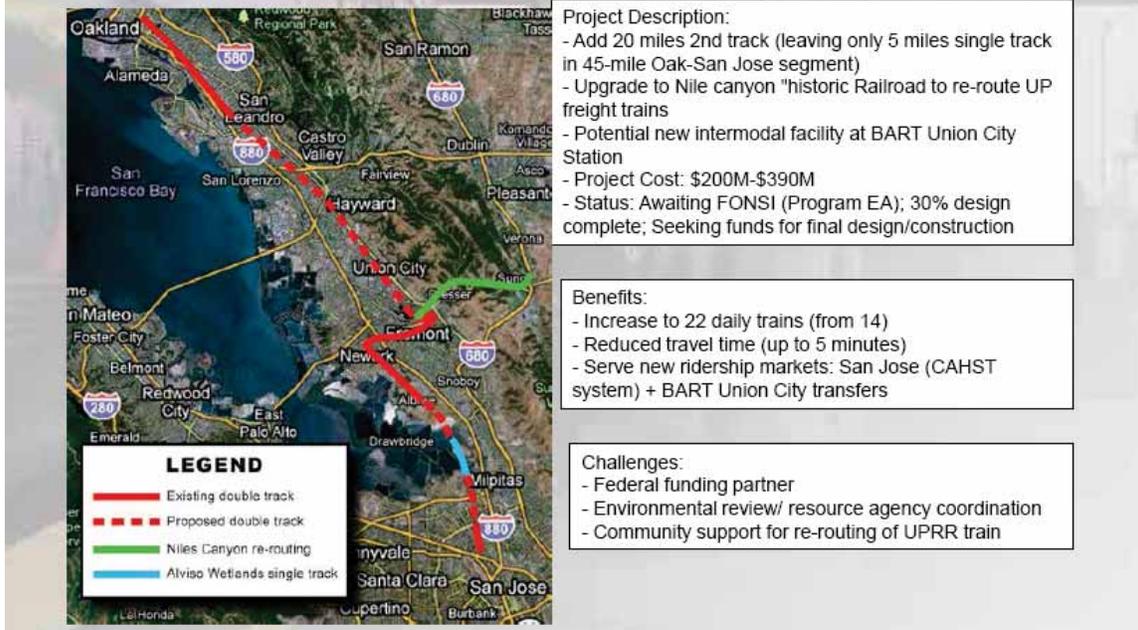
Coast Subdivision. Union Pacific Railroad (UPRR) has a network of interconnected routes in Northern California that connects to the entire UPRR national system. The Study Area is within the UP Coast subdivision, which runs approximately 82 freight trains per week (*Dumbarton Rail Corridor Project - Environmental Phase 1 Draft Final Report, 2006*). The Coast Subdivision contains the rail line between Control Point (CP) Coast in Santa Clara and Newark. It is single track with two sidings at Newark (Milepost [MP] 30.80 – MP 32.20) and Albrae (MP34.00 – MP 34.90). Track rehabilitation is planned and ongoing that would include tie replacement, ballasting and track resurfacing and realigning to allow improved running times and fewer maintenance outages through roadbed stabilization procedures, primarily in the areas adjacent to the wetlands.

Capitol Corridor Joint Powers Authority (CCJPA)/Capitol Corridor. Commuter and intercity rail service between Sacramento and San Jose via Oakland is over the UPRR- owned rail lines, administered by the CCJPA. The CCJPA presently operates 14 passenger trains between Oakland and San Jose and Improvements are planned to allow the CCJPA to operate 22 round-trip trains. Specific objectives for the Capitol Corridor include increasing frequency to meet growing passenger demand, reducing travel times and improving operational reliability.

The Capitol Corridor Service Expansion Program (CCSEP), currently in program environmental assessment, would add additional trackage in the Study Area to facilitate joint passenger/freight use. This program is part of the Federal Railroad Administration's (FRA) comprehensive capital investment program for high-speed intercity passenger rail service. Additional trackage would be located adjacent to the Tri Cities Landfill, generally north of Drawbridge and south of Mowry.

It does not appear that any of these plans include provisions for bicycle and pedestrian facilities within the railroad right of way; however since the Bay Trail Plan, and the Newark, Fremont, and Alameda County Bicycle and Pedestrian plans all show public access facilities within the corridor, some accommodation or mitigation might be considered.

# Oakland to San Jose Improvements



Altamont Commuter Express (ACE). Commuter rail service between Stockton and San Jose is over the UPRR-owned rail lines. ACE presently operates six (6) weekday trains between Stockton and San Jose, with three morning rush-hour trains from Stockton to San Jose, and three afternoon rush-hour trains in the reverse direction. There are no current plans to expand this operation.

Amtrak. Intercity rail service (Coast Starlight) between Seattle and Los Angeles via San Jose. Amtrak operates one daily round trip between Seattle, WA and Los Angeles, CA. These trains operate between Oakland and San Jose on the UPRR Coast Subdivision, with no intermediate stops. There are no plans at present to modify the existing operations.



## 2.5 AGENCIES WITH REGULATORY AUTHORITY

A number of regulatory agencies may have jurisdictional authority over a proposed trail project, may review and comment on the project's environmental document, request mitigation measures, and may require issuance of a permit with approval conditions and other mitigation and monitoring requirements. The trail implementation project may incur both temporary disturbance and permanent fill of wetlands, and could possibly disturb nearby endangered species habitat. In addition, potential water quality and stormwater construction-related impacts associated with any required excavation, filling, construction of hard elements such as bridges, boardwalks, retaining walls, and concrete and asphalt paving, must also be addressed in grading and improvement plans and associated Stormwater Pollution Prevention Plans (SWPPPs).

Table 2-1 summarizes the agencies that potentially have jurisdictional review as well as permitting authority for the project. Impacts to wetlands and sensitive habitat are subject to regulatory review, including U.S. Army Corps of Engineers wetlands permitting (and associated consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NOAA Fisheries/NMFS), as well as California Department of Fish and Game (DFG), California Regional Water Quality Control Board, and in some areas the Bay Conservation and Development Commission (BCDC). The Joint Aquatic Resources Permit Application (JARPA) was developed by Association of Bay Area governments (ABAG) to provide a simplified permit application for activities in or near Bay Area aquatic environments, and could potentially be utilized to facilitate trail implementation.

In addition to these state and federal resource and regulatory agencies, Alameda County Public Works may require either both an encroachment permit and licensing agreement. Agreements with the Don Edwards Wildlife Refuge may also be necessary, along with approval from the California Public Utilities Commission (CPUC) and the various railway operating entities for any facilities within or crossing a railway.

State and federal permit requirements may include:

- Section 7 of the federal Endangered Species Act;
- Section 404 of the Clean Water Act;
- Coastal Zone Management Act (administered by BCDC)
- California Fish and Game Code (Section 1600 Lake or Streambed Alteration Agreement program);
- California Endangered Species Act;
- National Pollutant Discharge Elimination System (NPDES) permitting and Section 401 water quality certification processes through the San Francisco Bay Regional Water Quality Control Board (RWQCB) and State Water Resources Control Board (SWRCB).

Table 2-1:  
Agencies with Jurisdictional Review and/or Permitting Authority

Agency		Permitting Authority	Issue or Concern
Local	City of Newark	Coordination with trail implementation, construction permits	Potential lead agency for trail construction and operation. Land Owner
	City of Fremont	Coordination with trail implementation, construction permits	Potential lead agency for trail construction and operation. Land Owner
	Alameda County Public Works	Licensing agreement, easement or joint implementation of trails on flood control levees	Land Owner
State	California Department of Fish and Game	DFG has regulatory authority over activities to ensure conservation, protection and management of California's fish, wildlife, and native plant resources as described in Sections 1600-1616 of the State Fish and Game Code. To meet this responsibility, the law requires any person, state or local governmental agency, or public utility to notify the Department before beginning an activity that will substantially modify a river, stream, or lake. If the Department determines that the activity could substantially adversely affect an existing fish and wildlife resource, a Lake or Streambed Alteration Agreement is required. DFG also has responsibility for overseeing and enforcing provisions of the California Endangered Species Act and for review of project proposals for potential impacts on riparian areas, wetlands, fish, and wildlife resources. This is most often completed as part of their role in environmental review and comment.  Streambed Alteration Agreement, Section 1603 Fish and Game code (alteration of wetlands, sensitive species); California Endangered Species Act	Permit if wetlands or creeks are potentially affected
	California Public Utilities Commission (CPUC)	The CPUC regulates privately owned utility, railroad, rail transit, and passenger transportation companies. Primary role is regulation of railroad crossings in the Study Area. Standing policy prohibits new public at-grade crossings of rail facilities.	Permit needed to convert private rail crossing to public, or implementation of grade separation projects. Has provided preliminary input regarding rail crossing at end of Auto Mall Parkway.
	San Francisco Bay Conservation and Development Commission (BCDC)	Development permit for construction within shoreline band (within 100 feet of highest tidal action) of San Francisco Bay, including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level; Providing maximum feasible public access to and along the shoreline of the Bay consistent with BCDC's policies regarding Public Access	Jurisdiction within Study Area
	San Francisco Bay Regional Water Quality Control Board (RWQCB)	National Pollution Discharge Elimination System (NPDES) Permit, Waste Discharge Requirements to prevent impacts to surface water quality from construction runoff, Water Quality Waiver/Certification for any wetlands or Waters of US fill.	May be needed in association with construction activities

Agency		Permitting Authority	Issue or Concern
	State Lands Commission (SLC)	<p>SLC holds jurisdiction over, and regulates land use of the State's sovereign lands, including all historic rivers, tidelands and submerged areas:</p> <ul style="list-style-type: none"> <li>▪ 120 rivers, streams and sloughs;</li> <li>▪ 40 non-tidal navigable lakes, such as Lake Tahoe and Clear Lake;</li> <li>▪ Tidal navigable bays and lagoons; and</li> <li>▪ Tide and submerged lands adjacent to the entire coast and offshore islands of the State from the mean high tide line to three nautical miles offshore.</li> </ul> <p>In general, the State acquired sovereign ownership of tidelands when it became a state in 1850, and holds these lands in the Public Trust for purposes of waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open space. Ownership extends landward to Ordinary High Water (OHW) of lands as they existed prior to fill or alteration, and a lease is required for use of such lands for any proposed improvements. Lease agreements with SLC often require provision of public access.</p> <p>Governs "sovereign" lands—submerged and tidal, historic river alignments. Trail project will need approval of public easement or licensing for trail use from State Lands Commission Board members.</p>	Ownership of shoreline lands and levees unknown
Federal	US Army Corps of Engineers (Corps)	<p>Corps enforces Section 404 of the Clean Water Act, related to the protection of wetlands. In addition, the Corps is involved in navigation and coastal maintenance and improvements to ports and harbors, regulatory compliance and permit activities, flood control planning activities, and emergency management</p> <p>Wetlands, creeks and waters of the US on the Study properties are likely subject to Section 404 of the Clean Water Act, DFG under Section 1600 of the California Fish and Game Code, as well as the Regional Water Quality Control Board. Trail construction that may cause a loss of wetland or substantial alteration of the wetland functions and values evaluated as part of the permit process. Impacts to federally protected wildlife species trigger review and consultation by the USFWS.</p> <p>Section 404 Clean Water Act permit Fill of jurisdictional waters of the U.S. or wetlands fill (fill of wetlands, fill associated with bridges and boardwalks over marshes or sloughs)</p>	Permit needed if wetland fill is anticipated.

Agency	Permitting Authority	Issue or Concern
US Fish and Wildlife Service (USFWS)	<p>In addition to Refuge activities, US Fish and Wildlife Service (USFWS). The USFWS is the principal federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. Its mission includes:</p> <p><i>"The U.S. Fish and Wildlife Service is the only agency of the U.S. Government whose primary responsibility is fish, wildlife, and plant conservation.</i></p> <p><i>The Service helps protect a healthy environment for people, fish and wildlife, and helps Americans conserve and enjoy the outdoors and our living treasures. The Service's major responsibilities are for migratory birds, endangered species, certain marine mammals, and freshwater and anadromous fish."</i></p> <p>USFWS enforces federal wildlife laws including the Endangered Species Act (ESA), designates migratory flyways, and conserves and manages wildlife habitat and wetlands. Under the authority of Section 7 of the ESA, USFWS would also provide consultation regarding possible habitat impacts to endangered species, if trail planning conflicts with species protection.</p> <p>Section 7 (U.S. Endangered Species Act) Consultation for effects to special status species associated with federal (Corps) permit application. (Tidal marsh impacts)</p>	Not known if endangered species impacts will occur. Could potentially require consultation with Corps.
National Oceanic and Atmospheric Association, National Marine Fisheries Service	<p>NMFS is responsible for the stewardship of the nation's living marine resources and their habitat. NMFS is responsible for the management, conservation and protection of living marine resources within waters of the US. It conducts consultations under Section 7 of the Endangered Species Act to ensure that proposed activities do not adversely affect endangered species. Like the USFWS regulatory review, NMFS consultation is triggered in association with the issuance of a Corps Section 404 Permit. Section 7 (U.S. Endangered Species Act) Consultation for effects to anadromous species associated with federal (Corps) permit for creek and slough crossings.</p>	Consultation if Corps 404 permit is needed, if adjacent to water body.

### 3. ENVIRONMENTAL SETTING

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This section provides an overview of the Study Area's biological resources, including habitats, wetlands, and special status species. Also provided is an analysis of hydrology, flooding, geology and soils, as they affect the selection of the preferred alignment and influence trail design. Historical conditions are shown in Figures 3-1A and 3-1B. The Study Team completed a comprehensive review of existing information and site visits to identify potential trail alignment selection, design issues, physical and environmental constraints, use conflicts, and permitting issues.

#### 3.1 BIOLOGICAL RESOURCES

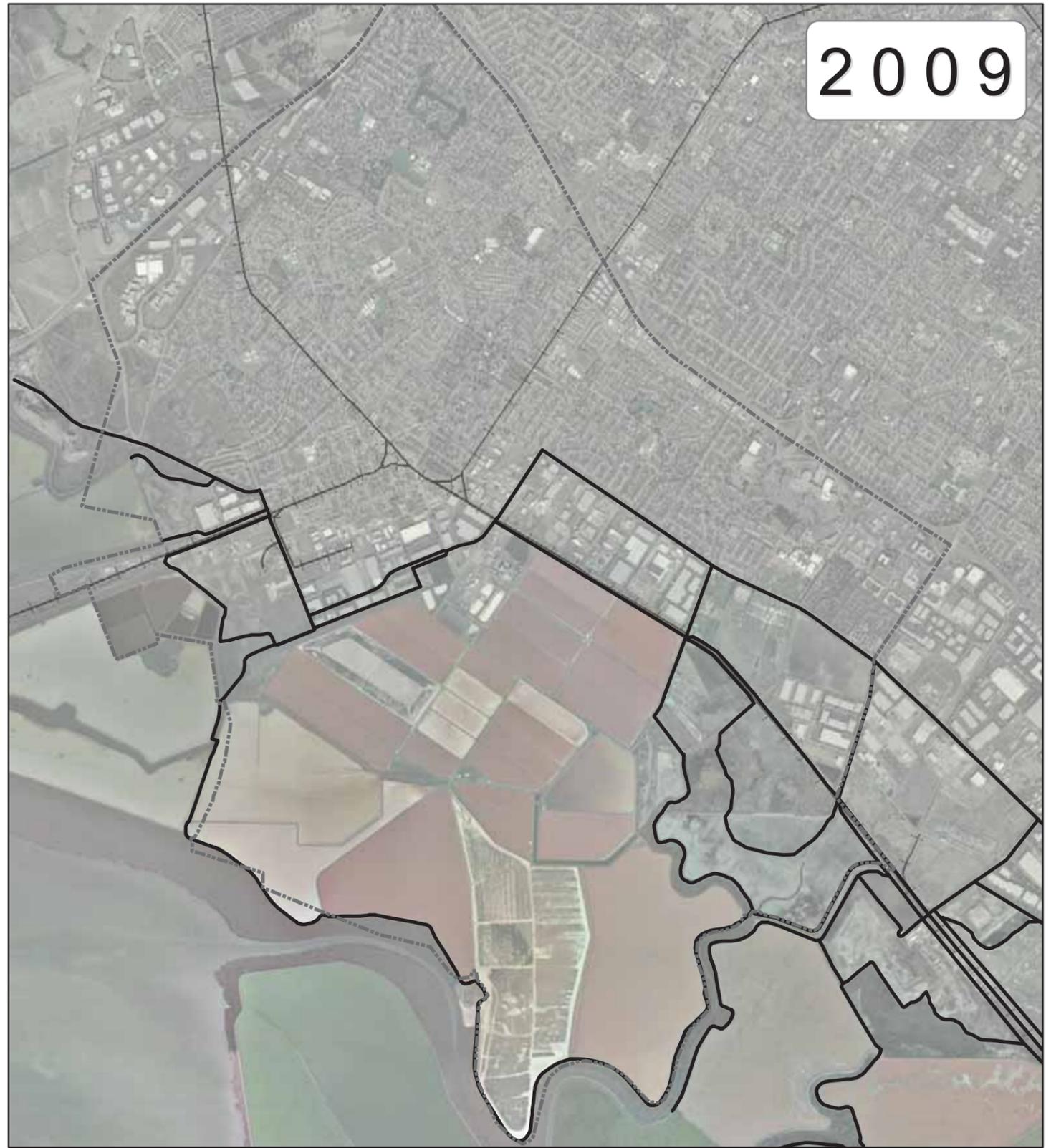
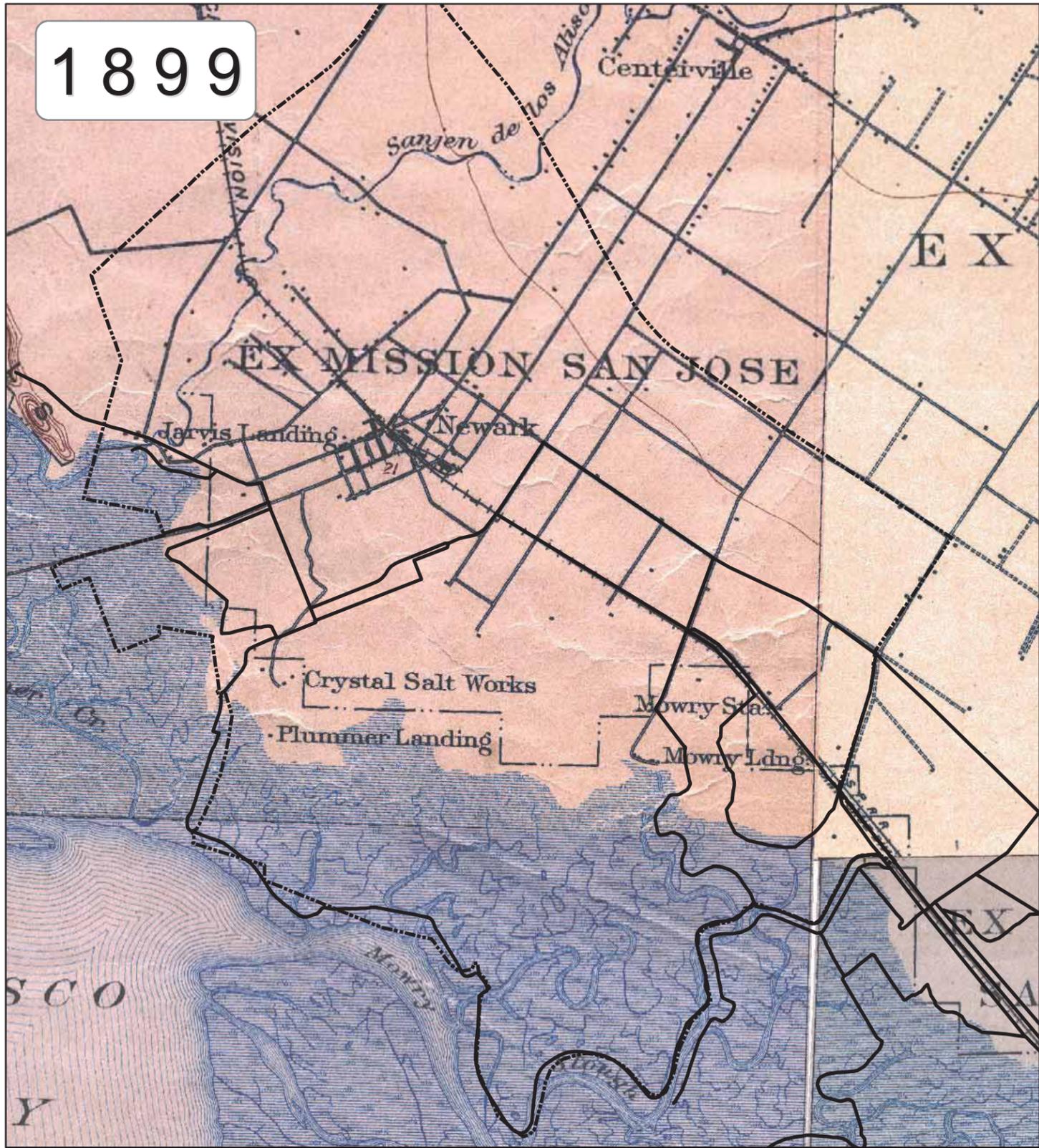
The project study area occurs along the historic eastern edge of the south San Francisco Bay shoreline, with some of the trail alignment alternatives or trail segments on levees placed over historic tidal marsh. Other alignment options being considered are located on what were historically seasonal wetlands and adjacent upland areas further to the east. These seasonal wetlands were historically topographically a few feet higher than, but near, the tidal marsh habitat. The historic marsh areas are shown in Figures 3-1A and 3-1B.

Much of the historic tidal salt marsh in the Fremont-Newark area was levied and drained and turned into commercial salt production ponds (salt ponds) by predecessors of the current Newark (Salt) Plant operator, Cargill Inc., beginning in the late 1800's. Also around the turn of the 20<sup>th</sup> century, and especially during the late 1960's and 1970's, as the area to the west of Interstate 880 was being developed, fill was placed over the areas of historic seasonal wetlands and adjacent upland areas, and the remnant salt marsh areas that were not converted to salt production. These areas have since been developed for commercial and industrial uses in addition to salt production, including two municipal landfills, several auto-wrecking yards, and other light commercial, warehousing and industrial uses. Currently, remnants of historic salt marsh occur primarily as small patches and as linear strips along tidal sloughs adjacent to salt ponds in the Fremont- Newark area, including important salt marsh along Newark Slough, Plummer Creek Slough, Mowry Slough, and Coyote Creek.

In a federal condemnation, whereas the USFWS condemned lands from Cargill Inc. to create the nation's first urban refuge, Cargill's Newark Plant Site remains in fee ownership by Cargill. Under the condemnation, some of the federally owned salt ponds remain in salt production in perpetuity, to be managed by Cargill. Other salt ponds were acquired by the USFWS and CDFG in 2003. Some of these salt ponds have been restored to tidal salt marsh for wildlife habitat. The salt ponds that have been restored to salt marsh are primarily located near the southern end of the project area, near the Santa Clara County line and adjacent to Coyote Creek. <sup>1</sup>

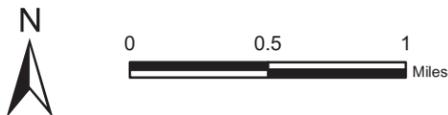
Large parts of bay shore seasonal wetlands and adjacent upland grassland areas west of I-880 were also developed during this same time period through the construction of drainage and flood control channels and placement of engineered fill, including large areas now used for commercial office parks, shopping centers and residential communities. Remnant areas of seasonal wetlands, including some larger tracks of land used for open space and grazing still occur within this corridor.

A number of what were once poor quality seasonal wetlands, including areas degraded by historic fill placement, or adjacent upland areas that did not technically meet the criteria and definition of US Army Corps of Engineers jurisdictional wetlands were enhanced and restored in this corridor and now occur as



**Legend**

— Study Segments

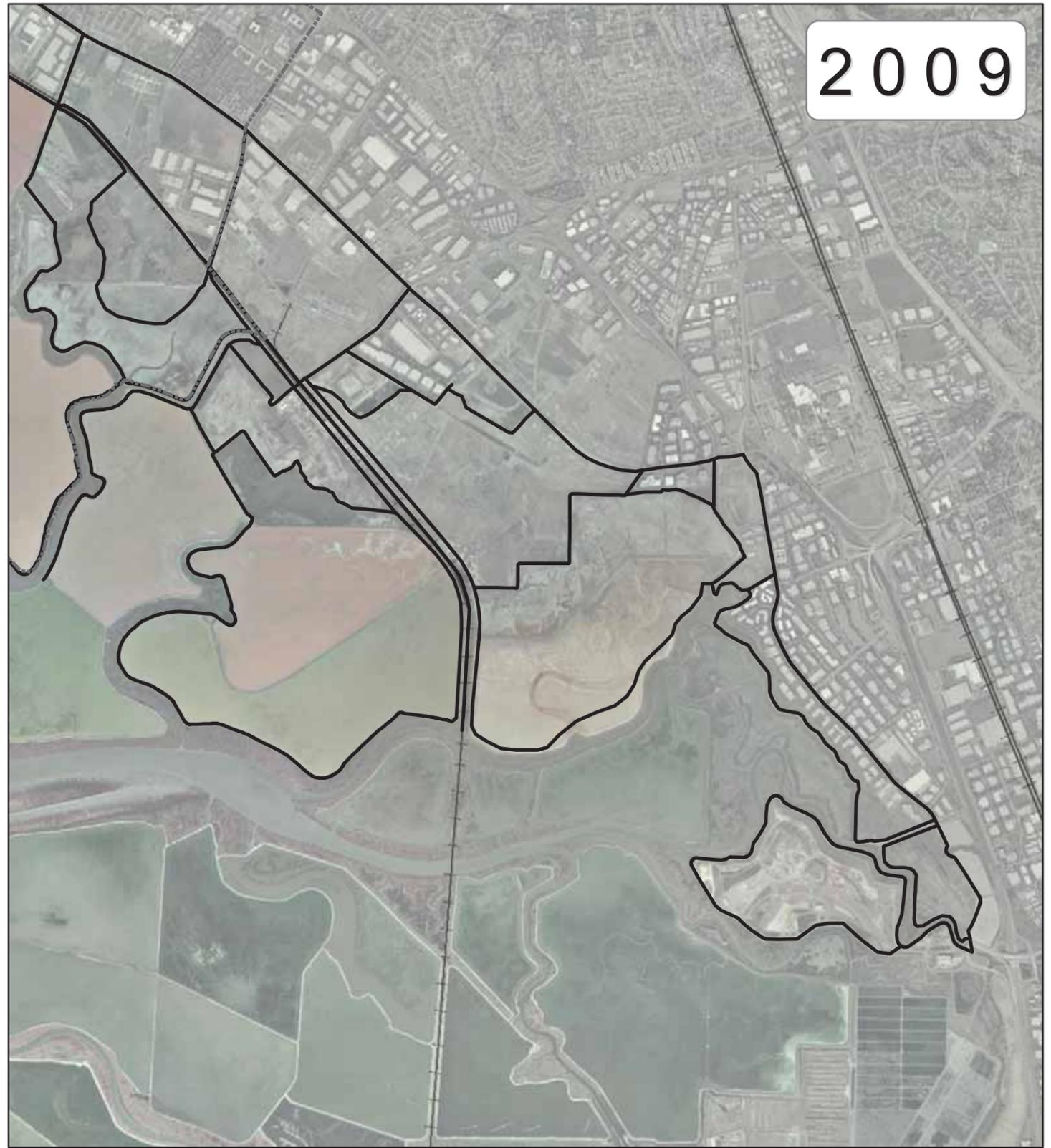
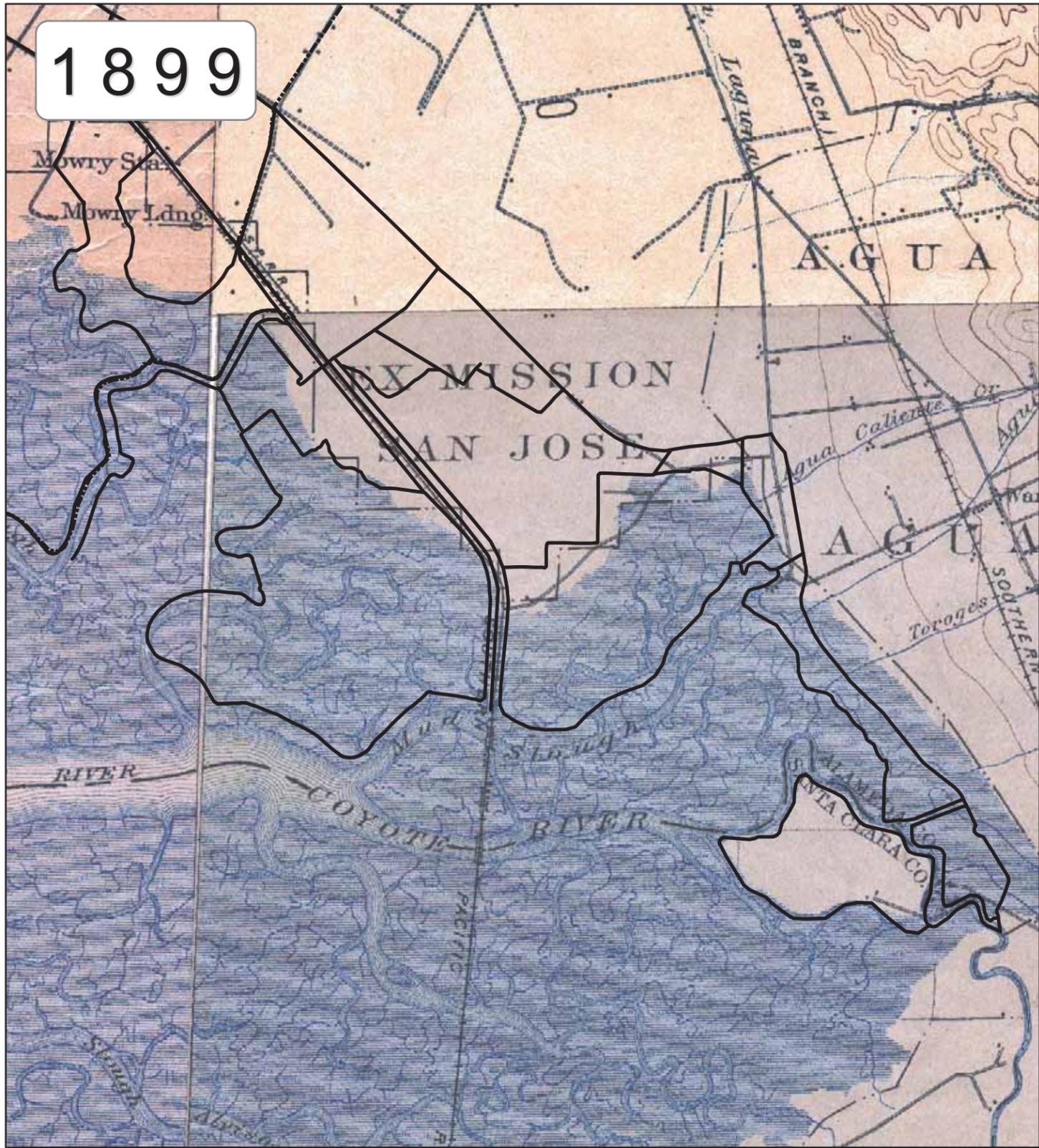


**FREMONT-NEWARK BAY TRAIL**

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 3-1A: HISTORICAL CONDITIONS (NORTH)**

Source: 1899 Hayward and Palo Alto, and 1906 San Jose and Livermore 100K USGS Quads. Obtained from UC Berkeley Digital Library and georectified in ArcGIS 10.



**Legend**

— Study Segments



**FREMONT-NEWARK BAY TRAIL**

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 3-1B: HISTORICAL CONDITIONS (SOUTH)**

Source: 1899 Hayward and Palo Alto, and 1906 San Jose and Livermore 100K USGS Quads. Obtained from UC Berkeley Digital Library and georectified in ArcGIS 10.

protected wetlands mitigation parcels. In some cases, public access is a requirement on the mitigation parcels, while in other instances public access may be limited to the periphery of the parcel.

## Habitat Types

The Feasibility Study Area contains a number of distinct habitat types, as defined by the San Francisco Estuary Institute (US EPA 1999). Figure 3-2 (source: SFEI EcoAtlas, <http://www.sfei.org/ecoatlas>) shows the location of habitat types within the study area. The habitat areas termed “wetlands” should be considered “potential wetlands,” as these areas have not been confirmed by the US Army Corps of Engineers to be Jurisdictional Wetlands or Waters of the US under Section 404 of the Clean Water Act. Ruderal/ developed areas appear as uncolored urban imagery in the figure.

### Developed

Developed areas are all urban that occur within the Feasibility Study Area. These areas are characterized by roads, buildings, industrial, commercial and residential developments, railroad tracks and other urban land uses. Developed areas occur throughout the study area, mainly west of Boyce, Cherry, and Cushing streets, east of Coyote & Mowry sloughs, south of highway 84 and north of Dixon Landing Road. Approximately 4,168 acres or 28.7 % of the Feasibility Study Area is developed.

### Diked Marsh

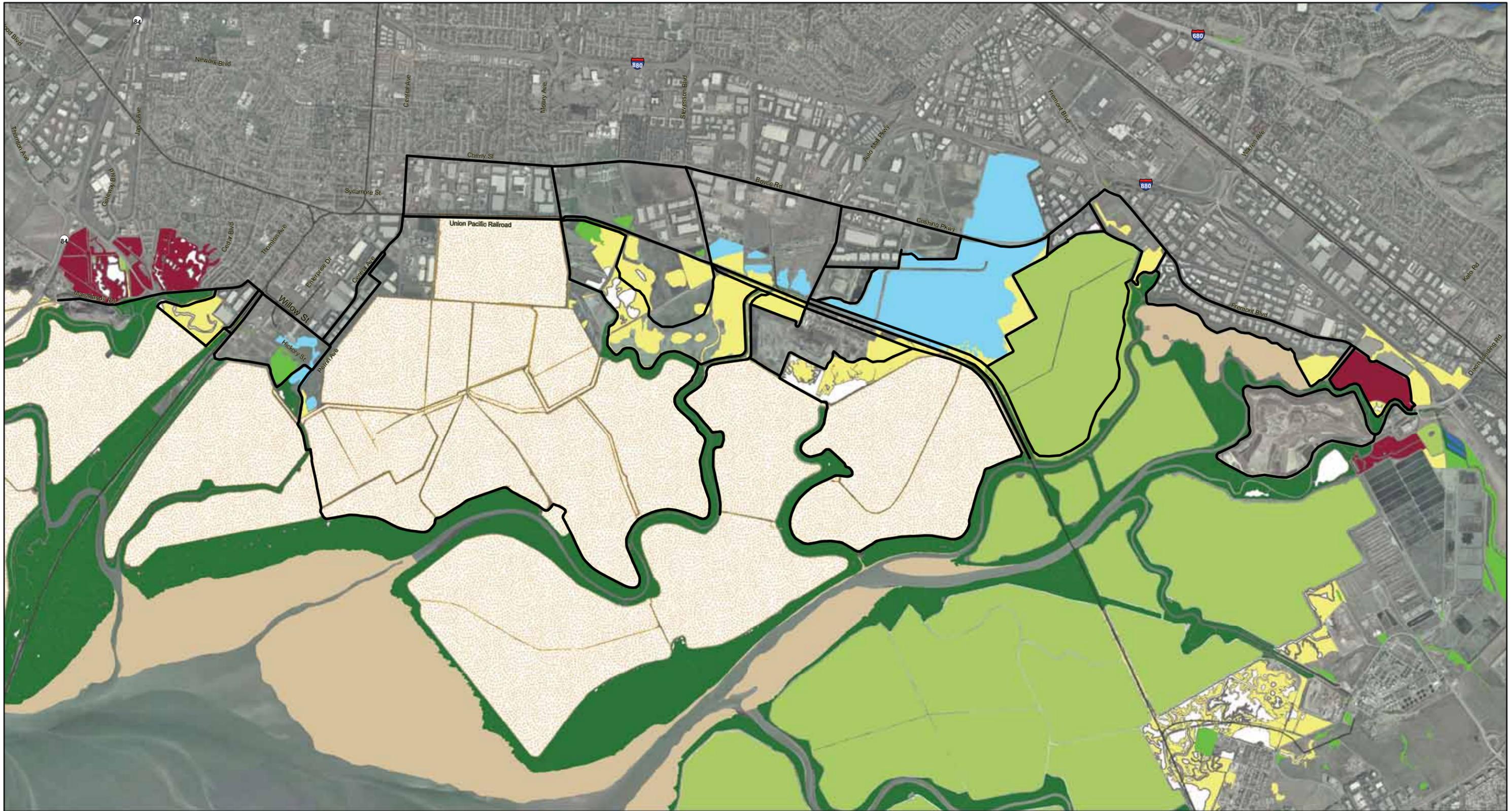
Diked marsh or other forms of diked wetland is an area of historical tidal marsh that has been “reclaimed” from full tidal influence, but still retains primary wetland features. Diked marshes occur in poorly drained areas adjacent to dikes or levees. As rainfall and runoff are the primary water sources, the degree and duration of inundation varies from year to year. Although diked marshes may not be highly managed, they may provide important foraging and roosting habitat for waterfowl, shorebirds, and high tide refugia for small mammals when found next to tidal marshes. Within the study area a section of diked marsh is located southwest of Thornton Ave and west of Willow Street and a diked marsh/Panne complex is located south of Boyce Rd. and Cherry St. between Mowry Ave and Auto Mall Parkway. Over all, there are 602 acres of diked marsh habitat which makes up 4.1% of the Feasibility Study Area.

### Managed Pond

The managed pond habitat type refers to perennial shallow or deepwater pond habitat that has been constructed to store or treat stormwater runoff, wastewater, and/or industrial discharges. These ponds tend to support only small amounts of vascular plants; however, they function ecologically similarly to lagoons and attract waterfowl such as mallard, northern shoveler, pied-billed grege, scaup, bufflehead and American coot. Within the study area a large managed pond occurs in the area south of Cushing Parkway between Cargill salt ponds and Fremont Blvd. Managed ponds are also located south of the tidal marshes near Fremont Blvd, and north of Mud Slough. Some are in the process of being restored to salt marsh habitat. Managed ponds make up 1,218 acres or 8.4% of the Feasibility Study Area.

### Muted Tidal Marsh

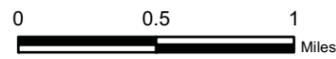
Muted tidal marsh, also known as “damped tidal marsh”, is a tidal marsh that receives regular, but less than full tidal inflow due to a natural or man-made physical impediments such as culvert tide gates, or other



**Legend**

**Potential Habitat Types\***

- |                                                                                              |                                                                                                        |                                                                                                      |                                                                                                       |                                                                                                    |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|  Salt Pond |  Riparian           |  Diked Marsh      |  Tidal Marsh       |  Tidal Flat   |
|  Panne     |  Vernal Pool System |  Seasonal Wetland |  Muted Tidal Marsh |  Managed Pond |



**FREMONT-NEWARK BAY TRAIL**

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 3-2: GENERALIZED HABITAT TYPES**

\*All wetland habitats depicted on this map are potential wetlands and have not been confirmed as jurisdictional wetlands under Sec. 404 of the Clean Water Act. Source: South Bay Salt Pond Restoration

water control structures. Because of their generally low elevations due to historic ground subsidence from diking and drainage, muted tidal marshes would pond water for prolonged periods if open to full tidal action, and would not support high marsh habitat. As a result, tidal flows in and out of these marshes are often managed using closely regulated tide gates and sometimes pump systems. Many areas of muted tidal marsh have an open to semi-dense vegetative cover consisting of pickleweed and salt grass. Muted tidal marshes are usually less diverse than fully tidal marshes but are particularly important to shorebirds during their fall migrations. Many also support populations of the endangered salt-marsh harvest mouse. Muted tidal marsh/panne complex also occurs, north of Marshlands Rd between Thornton Ave and Highway 84 in the north part of the Feasibility Study Area, as well as the parcel east of Coyote Creek Slough, between Fremont Blvd and Dixon Landing Road. Muted tidal occurs on the west of Interstate 880, and just north of Dixon Landing Rd, an area of 103 acres (0.7%).

### Panne

Pannes are natural ponds that form within the marsh plain. The ponds are usually less than one foot in depth, fill with water only during very high tides, or from winter rainfall and may become hypersaline in late summer. Pannes typically do not support vascular plants, although some support wigeon grass and green macro-algae. Pannes are often found at the tidal marsh/upland ecotone. Small areas of pannes also occur in the study area interspersed with muted tidal marsh and diked marsh. They make up 119 acres or about 0.8% of the Feasibility Study Area.

### Salt Pond

This is the largest habitat type within the Feasibility Study Area. Salt ponds are large, persistent hypersaline ponds that are intermittently flooded with Bay water and used for commercial salt production. There historically were natural salt ponds in the South Bay; however these have been entirely replaced by the commercial salt ponds. Salt ponds support highly specialized salt tolerant and salt-loving biota such as microalga, photosynthetic bacteria, blue-green algae and invertebrates (brine shrimp, brine fly, etc.). These ponds provide habitat for shorebirds, gulls and other water birds and the construction of artificial salt ponds have greatly increased their populations. Salt ponds owned or managed by Cargill occur throughout the study area west of the Union Pacific Railroad, between Newark Slough and Mud Slough and encompassing 5,783 acres or about 40 % of the Feasibility Study Area.

### Seasonal Wetland

Areas of seasonal wetlands are scattered throughout the Feasibility Study Area and in total occupy 45.6 acres, or 0.3% of the area. Seasonal wetlands are areas that are periodically flooded or ponded during the wet season but do not remain inundated all year. Flooding may be from rainfall-ponding, or in some cases from extreme tides. Seasonal wetlands are characterized by the presence of annual hydrophytes such as loosestrife hyssop, bristly ox-tongue, Mediterranean barley, sour clover, Italian ryegrass, Bermuda grass, and rabbits-foot grass. The largest area seasonal wetlands are present on the site near the Union Pacific Railroad in the central part of the Feasibility Study Area. Seasonal wetland habitats located west of the intersection of Union Pacific Railroad and Stevenson Blvd contain pickleweed, saltgrass, Italian ryegrass, and rabbits-foot grass. Some seasonal wetland habitats near disturbed areas along the railroad track tend to be dominated by thickets of the invasive perennial pepperweed. A number of seasonal wetlands have been created and are managed as mitigation sites for adjacent areas of development, such as the Plummer Creek mitigation site, Pacific Commons, and Bayside Business Park.

## Tidal Flats

Consisting primarily of mudflats; tidal flats also include limited sandflats and shellflats. Found at the edges of the Bay, these habitats typically have a sparse vegetative cover, of less than 10% vegetation. Mudflats support extensive communities of diatoms, worms, shellfish, and algal flora. Tidal flats undergo twice daily high tides; during high tides Bay water inundates the tidal flats and they become foraging habitat for many species of fish, while during low tides they become a major feeding ground for many species of shorebirds. The largest area of tidal flat within the study area is south of Fremont Blvd between Warren Ave and Coyote Creek Lagoon. This habitat type consists of 249 acres, or 1.7% of the Feasibility Study Area.

## Tidal Marsh

Tidal marsh exists along the lower banks of the Newark, Mowry, and Mud Sloughs, Plummer Creek and Coyote Creek, and in an area between Marshlands Road and the salt ponds in the southwest part of the Feasibility Study Area. They comprise 1,719.4 acres or 1.2% of the Feasibility Study Area. Tidal marsh consists of wetlands that are subject to twice daily tidal action. Tidal marshes have tidal channels which distribute tidal flow throughout the marsh. Plant communities present within these marshes vary based on salinity and the depth and duration of tidal inundation. Tules and Cattails are often found in the brackish areas while pickleweed and Pacific cordgrass are found in the saltier areas. The marsh/upland ecotone is a very important ecologically as it is characterized by a diverse assemblage of vegetation and provides habitat for many species including the Federal and State listed endangered salt-marsh harvest mouse and California Clapper Rail.

## Vernal Pool System

Vernal pools are surface depressions usually less than 12" inches deep that are underlain by impervious soils. Typically they occur as scattered shallow ponds surrounded by seasonal wetlands and uplands. They receive water via direct rainfall or from nearby runoff during the wet season and dry out in the late spring or early summer, depending on the amount and distribution of rainfall. Native vernal pool plant species include goldfields, popcornflower, *Navarretia*, and *Downingia*. Common wildlife species include endangered fairy shrimp and, tadpole shrimp, California tiger salamander and others. A small vernal pool area occurs near Hickory Street, Willow Street, and Perrin Ave. A vernal pool mitigation area developed by Catellus Inc. is located immediately south of Stevenson Blvd, north of Cargill salt ponds and west of Fremont Blvd to I-880 Freeway. Vernal pool wetlands comprise 496.4 acres or 3.4% of the Feasibility Study Area.

## Special Status Species

Several species of plants and animals within the State of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the State's human population grows and the habitats these species occupy are converted to agricultural and urban uses. State and federal laws have provided CDFG, the USFWS, and NOAA Fisheries with a mechanism for conserving and protecting the diversity of plant and animal species native to the State. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under both State and Federal Endangered Species Act (ESA) legislation. Others have been designated as candidates for such listing. Still others have been designated as "Species of Special Concern" by the CDFG or are protected by other legislature (Migratory Bird Treaty Act, Federal Marine Mammal Protection Act, etc.) The California Native Plant Society (CNPS) has developed its own set lists of native plants considered rare, threatened, or

endangered (CNPS 2001). These plants are afforded some level of protection during CEQA review of the project. Collectively, these plants and animals are referred to as "Special Status Species."

Special Status Species potentially present in the Feasibility Study Area were determined through a search of the following: 1) California Natural Diversity Database (CNDDDB 2011), 2) the Bayside Marketplace Sensitive Species & Habitats Assessment (2008) 3) the Creekside Landing Project Draft EIR (2008), 4) the Dumbarton Transit Oriented Development Specific Plan Draft EIR (2011), 5) the Newby Island Sanitary Landfill EIR (2009), 6) the Newark Areas 3&4 Specific Plan Draft EIR (2009), 7) the South Bay Salt Pond Restoration Project Final EIR (2007), and 8) site habitat evaluations. The location of special status animal and plant species that have potential to occur within the Feasibility Study Area is presented in Figures 3-3 and 3-4, respectively. Note however, that these figures do not show the locations of Sensitive Species observed during recent surveys that have not been reported to the CNDDDB (the CNDDDB is a voluntary database) and therefore do not show all Sensitive Species known to occur in the Project Study Area.

This section provides a discussion of the ten species that are of special importance. Discussions on the remaining species are included in Appendix B.

### Sensitive Species of Particular Importance

#### **Alameda Whipsnake**

The Alameda whipsnake (*Masticophis lateralis euryxanthus*) is a federally and state listed threatened species. It is a 6 foot long, green and orange striped ("lateralis euryxanthus" refers to this species orange stripes), swift, whip-like snake thought to only live in the mountains of Contra Costa, Alameda, and northeastern Santa Clara counties. This animal is known to live in chaparral and scrub habitats but may also occur in adjacent grasslands, oak savanna and oak woodland habitats. The Alameda whipsnake has 2 recorded occurrences within the general region; however they were confined within oak woodland and grassland complexes east of the project area. They are not expected to occur within the Feasibility Study Area, as there is no suitable habitat present.

#### **California Black Rail**

The California black rail (*Laterallus jamaicensis corturniculus*) is a small (6 in length) and difficult to observe year-round resident of tidal emergent wetlands dominated by pickleweed as well as brackish marshes dominated by a mix of bulrush and pickleweed. California black rails nest at ground level in dense vegetation at the upper limits of tidal flooding (Dumbarton EIR, Creekside Landing EIR). California black rail is known to occur in tidal marsh in the general area and had a CNDDDB occurrence noted in 2003 at nearby Dumbarton Point. California black rail has potential to occur in the Feasibility Study Area in areas with tidal marsh.

#### **Western Burrowing Owl**

A California species of special concern, western burrowing owls (*Athene cunicularia hypugaea*) are found in open, grassland, rural and desert habitats associated with burrowing mammals (especially ground squirrels). They are also known to make use of concrete culverts, riprap, and levies for breeding wintering, foraging and migration stopovers. Western burrowing owls are known to occur in the general area in burrows located in agricultural fields and on the edges of levees (Creekside Landing EIR). Burrowing owls are known to inhabit the levee and adjacent upland areas of a South Bay Salt Pond Restoration Project



**Legend**

- Alkali Milk-Vetch
- Contra Costa Goldfields
- Study Segments
- Britlescale
- Hoover's Button-Celery
- California Seablite
- San Joaquin Spearscale
- Congdon's Tarplant
- Prostrate Navarretia

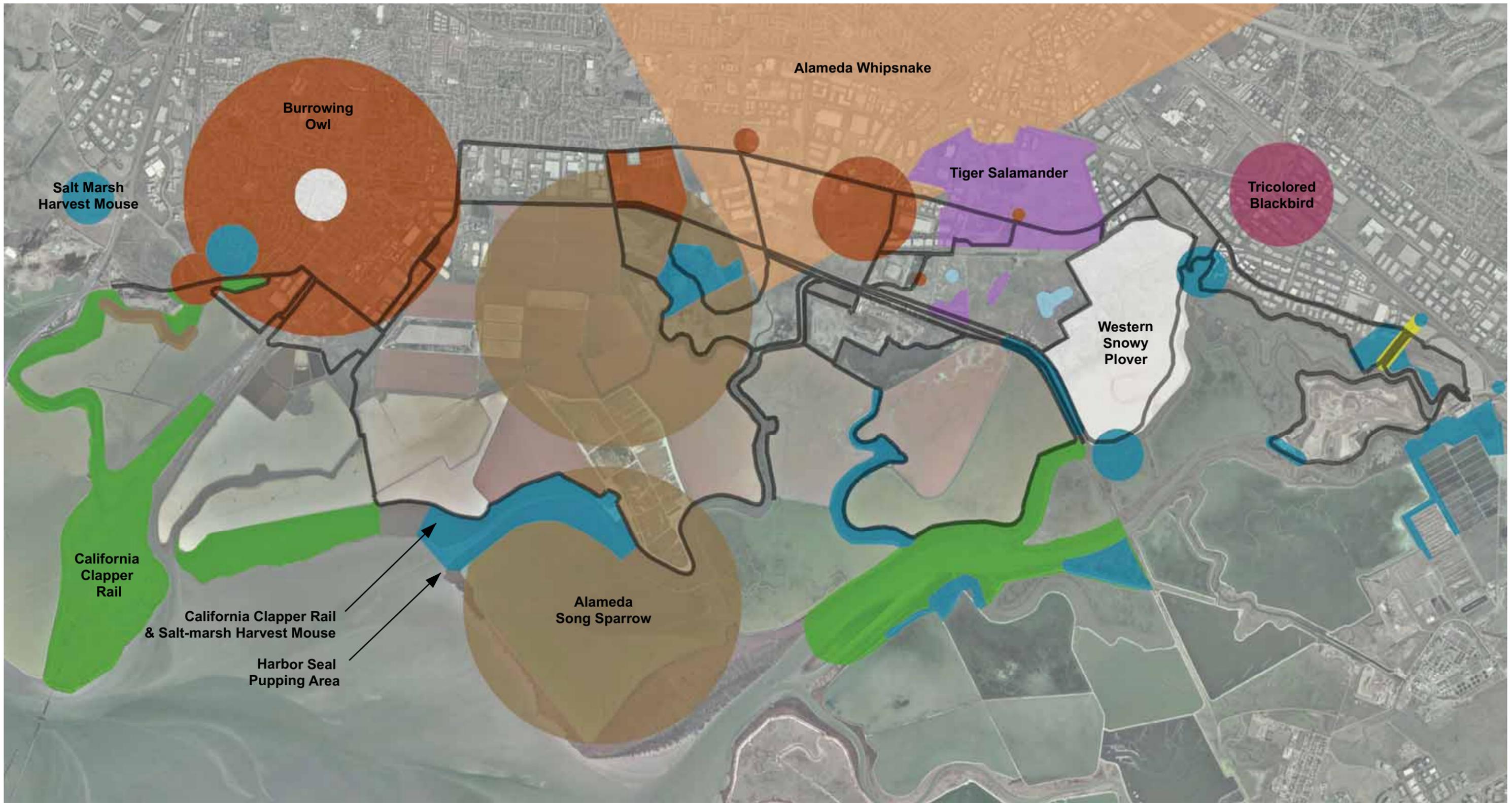
Source: CNDDB, 10/2011



# FREMONT-NEWARK BAY TRAIL

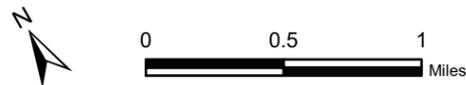
DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 3-4: SENSITIVE PLANT SPECIES**



**Legend**

- Alameda Song Sparrow
- Alameda Whipsnake
- Burrowing Owl\*
- California Clapper Rail
- Saltmarsh Common Yellowthroat
- Salt-marsh Harvest Mouse
- Tricolored Blackbird
- Western Snowy Plover
- California Tiger Salamander
- Vernal Pool Tadpole Shrimp
- Study Segments



# FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 3-3: SENSITIVE ANIMAL SPECIES**

\*The extent of Burrowing Owl habitat depicted on this map indicates verified observations (CNDDDB). Burrowing Owls have the potential to occur on all undeveloped upland parcels in the project area. Source: CNDDDB (10/2011)

pond that occurs in the southwest part of Feasibility Study Area (SBSPRP EIR), and can potentially occur on upland and seasonal wetland habitats throughout the Study Area.

#### **California Clapper Rail**

The California clapper rail (*Rallus longirostris obsoletus*) is a federal and state listed endangered species endemic to the marshes of San Francisco Bay. California clapper rails nest in salt and brackish marshes along the edge of the Bay, and forage on crabs, clams, and other invertebrates. Breeding-season surveys of the South Bay conducted by various agencies and organizations during the 1990's found California clapper rails to be primarily concentrated in larger areas of tidal marsh, in alkali bulrush-dominated brackish marsh and saline/brackish transitional marshes. California clapper rails are also known, in rare occasions, to occupy brackish/freshwater transition marshes during the non-breeding season. A CNDDDB search revealed the clapper rail to have known occurrences near Newark, Mowry and Mud sloughs.

#### **Fall-run Chinook Salmon (Central Valley ESU)**

A California species of special concern, Chinook salmon (*Oncorhynchus tshawytscha*) is a salmonid known to occur in Coyote Creek. This species is known to move through Coyote Creek and possibly other sloughs to upstream spawning areas.

#### **Pacific Harbor Seal**

Pacific harbor seals (*Phoca vitulina richardsi*) are true seals, having no ear flaps or limbs sufficient for terrestrial locomotion. They have spotted coats in a variety of shades from white or silver-gray to black to dark brown. They grow between five and six feet in length and may weigh up to 300lbs. Pacific harbor seals are not a listed species, however they are protected by the Federal Marine Mammal Protection Act. Pacific Harbor Seals are known to pup in Mowry Slough in the Feasibility Study Area and may abandon their pups if they are approached or otherwise disturbed by humans.

#### **Salt-marsh Harvest Mouse**

The salt marsh harvest mouse (*Reithrodontomys raviventris*) is federally and state listed as an endangered species. A small native rodent, the salt marsh harvest mouse is primarily found in tidal and non-tidal, or muted marshes with a dense cover of pickleweed (*Salicornia virginica*) and only around San Francisco, San Pablo, and Suisun Bays. Habitat loss, competition with other small mammals, especially western harvest mice, lack of adequate cover and vulnerability to predation limit their populations. Salt marsh harvest mice are known to occur in tidal and muted marsh habitat throughout the Feasibility Study Area and they should be considered likely to be present where ever there is suitable habitat.

#### **Western Snowy Plover**

Western snowy plover (*Charadrius alexandrinus nivosus*) is a small-bodied shorebird with a pale brown upper body, dark patches on either side of the upper breast, and dark gray to blackish legs. Snowy plovers weigh less than a ¼ pound and are about 6 inches long. Habitats used by nesting and non nesting birds include sandy coastal beaches, salt pannes, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars. The western snowy plover has been observed in active and inactive salt ponds within the Don Edwards National Wildlife Refuge and in Newark Slough near the Feasibility Study Area.

#### **Steelhead (CA Central ESU)**

A type of rainbow trout, the federally threatened steelhead (*Oncorhynchus mykiss*) is known from several streams in the South Bay, including Coyote Creek. It is not well documented whether they spawn in any

reach of Coyote Creek in the Feasibility Study Area but like Chinook salmon, they are known to move through sloughs between the bay and upstream spawning streams and have been observed in Coyote Creek during migration periods.

### **Vernal Pool Tadpole Shrimp**

Vernal pool tadpole shrimp (*Lepidurus packardii*) is a federal listed endangered species that has no California ESA status. Vernal pool tadpole shrimp are approximately 2 inch long aquatic crustaceans found in vernal pools with clear to turbid water. The occurrences of this species in the Feasibility Study Area (like the California Tiger Salamander), is confined to the deep vernal pools in and around the Pacific Commons vernal pool mitigation site and the Warms Springs unit of the Don Edwards Wildlife Refuge.

### **Biological Resource Protection Recommendations**

Several endangered wildlife species that occur only in salt marshes are known to occur in the vicinity of the proposed trails. Especially important among these are California clapper rail (*Rallus longirostris obsoletus*) California black rail (*Laterallus jamaicensis*), and salt marsh harvest mouse (*Reithrodontomys raviventris*). Although located immediately adjacent to areas of pickleweed tidal marsh, no portions of the proposed trail alignment would actually cross through areas of pickleweed. These special status animals that utilize marsh habitats could potentially risk mortality during construction of any trail, but exclusion fencing and monitoring by a qualified biologist would greatly reduce any potential animal losses. Special status species of birds of prey such as northern harrier, white-tailed kite, and red-tailed hawk are also known to forage in the Feasibility Study Area and may potentially nest on or near proposed trail segments. In addition, other protected species such as the Alameda song sparrow, tricolored blackbird, and salt-marsh yellowthroat, as well as more common perching birds may also nest there. As with the Western burrowing owl, disruption of nesting birds would be prohibited under by the MBTA. Impacts could be readily avoided by scheduling the construction outside of the nesting season or by conducting bird surveys and avoiding nest locations until young are fledged. Burrowing owls are known to nest about in the levees surrounding the Don Edwards Wildlife Refuge Restoration salt ponds near Coyote Creek (South Bay Salt Pond Restoration Project EIR 2007). Disturbance to nesting Western burrowing owls would be prohibited under the federal MBTA and state regulations. However, impacts to this species can be readily avoided by constructing the trail during the non-breeding season (generally September 1 through January 31) or conducting nesting bird surveys and excluding them from burrows before the breeding season if they are present. Exclusion of owls from burrows during the non-breeding season, usually by installation of one-way doors, has been used (in coordination with the DFG) to avoid take and allow for development or other projects to proceed as approved under the California Environmental Quality Act (CEQA).

A number of special status fishes are known to breed or otherwise utilize the marshes and sloughs located within the Feasibility Study Area. These species would likely not be affected by any trail construction project except where erosion could result from upland disturbances during the trail installation. Best Management Practices (BMPs) for erosion control should be incorporated into the project plans and specifications and will protect against significant impacts to water quality that could affect these fishes.

Pacific harbor seals are known to have a pupping site in Mowry Slough however, this is a significant distance from where any trail construction would take place and the trail construction and use is not likely to have an impact on them.

Several special status plant species are known from the project area, although most would not likely be affected because the special habitats they occupy will be avoided. Congdon's tarplant has been seen in ruderal habitat and may grow on levees. No focused botanical surveys were conducted as part of this Feasibility Study. Trail construction and use segments that have been studied would primarily be on disturbed or ruderal areas such as levee tops that do not provide habitat for special status plant species. Construction impacts to special status plants would be therefore unlikely within the proposed project alignment, but detailed botanical surveys would be necessary to determine whether any plants requiring protection are present.

## 3.2 GEOLOGY AND SOILS

### Regional Geology

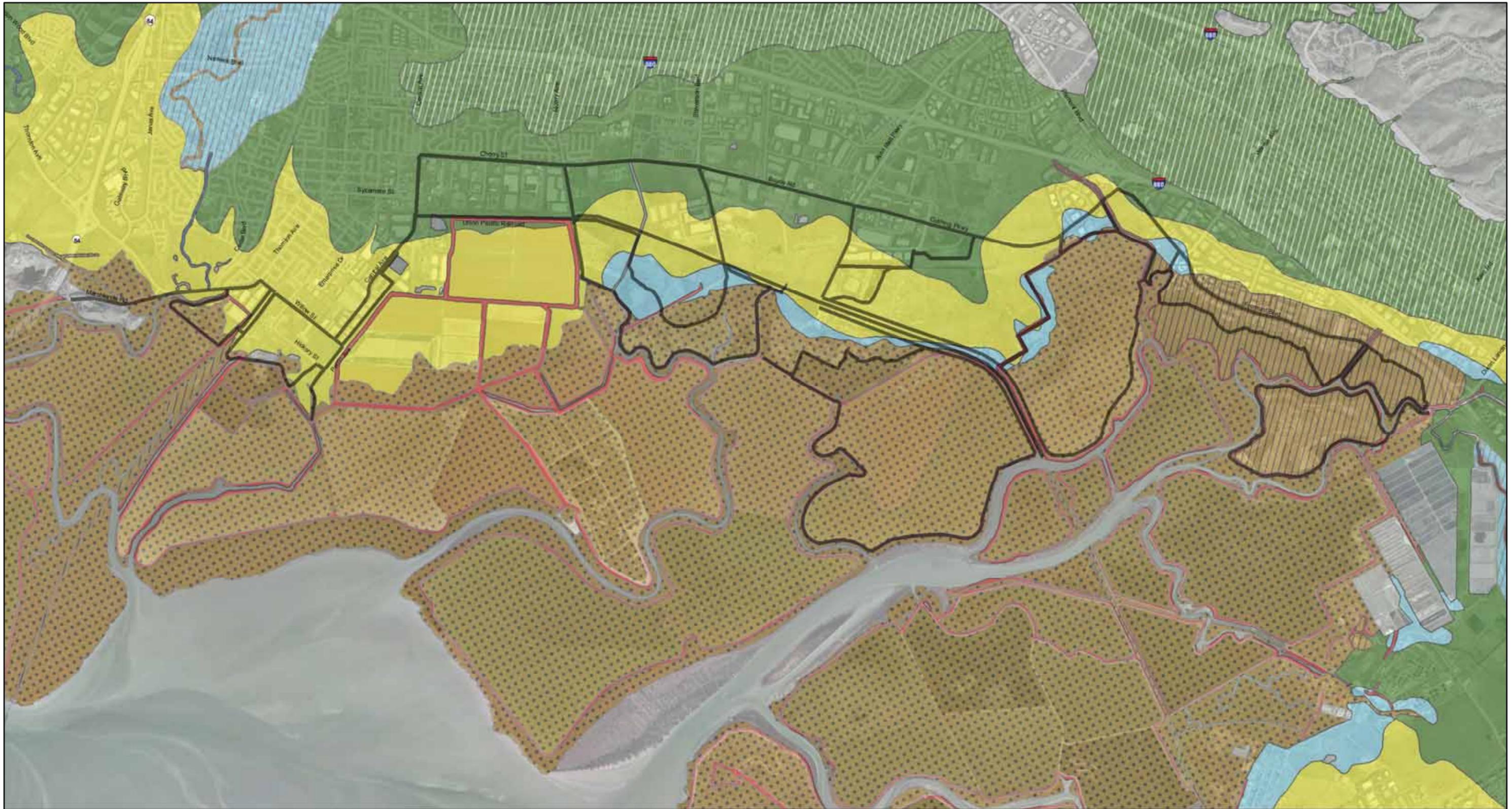
The Study Area is located within the Coast Ranges geomorphic province along the eastern edge of southern San Francisco Bay (Figure 3-5). The Coast Ranges Geomorphic Province is characterized by northwest trending mountain ranges and valleys oriented sub-parallel to faults of the San Andreas Fault system. In general, Tertiary and younger materials in the San Francisco Bay Area lie atop two highly deformed Mesozoic basement rock complexes, one of which is the Coast Range Ophiolite with overlying Great Valley sequence. The Coast Range Ophiolite consists of serpentinite, gabbro, diabase, basalt, and chert, while the overlying Great Valley sequence consists of sedimentary rocks including sandstone, shale, and conglomerate. Portions of both the Coast Range Ophiolite and the Great Valley Sequence outcrop in the Hamilton-Diablo range along the eastern side of San Francisco Bay to the east-northeast of the Study Area. The other main basement rock complex in the San Francisco Bay Area is the Franciscan Complex, a subduction zone complex formed over one hundred million years ago when plate motions were largely convergent and the Farallon Plate was being subducted beneath the North American Plate. Portions of the subducted oceanic crustal material was scraped off the subducting plate and metamorphosed under low temperature and low to high pressure. This material has been extensively folded, faulted and deformed to create what is referred to as "mélange", which includes generally coherent blocks of greywacke sandstone, greenstone, blueschist, and eclogite in a matrix of highly sheared shale. Rocks exposed in the hills to the east of the Study Area overlie these basement complexes and consist of sandstone, shale, siltstone, mudstone, chert, conglomerate, and volcanic rocks of the Tertiary-age Briones, Claremont, Rodeo, Oursan, and Orinda formations. Additionally, areas of the Cretaceous age Knoxville formation of the Great Valley Sequence outcrop as inter-bedded shale and sandstone. Rocks exposed in the Coyote Hills to the north of the Study Area consist of Franciscan Complex shale mélange including coherent blocks of chert, limestone, and greenstone of Cretaceous age.<sup>2</sup>

### Seismicity

Seismicity of the project region has resulted in several major earthquakes during the historic period, including the 1868 Hayward Earthquake, the 1906 San Francisco Earthquake, and most recently, the 1989

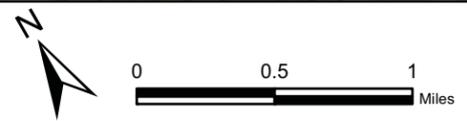
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<sup>2</sup> Graymer, R.W., Jones, D.L., and Brabb, E.E., Preliminary Geologic Map Emphasizing Bedrock Formations in Alameda County, California, USGS Open-File 96-252.



**Legend**

- Alluvial Terrace (Holocone)
- Stream Channel (Holocone)
- Bay Mud (Holocone)
- Alluvial and Fluvial Deposits (Pleistocene)
- Floodplain Deposits (Holocone)
- Artificial Fill
- Basin Deposits (Holocone)
- Natural Levee (Holocone)
- Levee Fill
- Study Segments



**FREMONT-NEWARK BAY TRAIL**

DIXON LANDING TO HIGHWAY 84  
 PRELIMINARY FEASIBILITY STUDY  
**FIGURE 3-5: GEOLOGY**

Source: Helley, E.J., and Graymer, R.W., 1997, Quaternary geology of Alameda County, and parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California: A digital database: U.S. Geological Survey Open-File Report 97-97.

Loma Prieta Earthquake. Each of these earthquakes resulted in significant seismic shaking in the Study Area. The California Geological Survey has developed a Probabilistic Seismic Hazards Assessment Program wherein probabilities for estimated peak ground acceleration due to an earthquake are given for any location within the State. This program estimates the peak ground acceleration within the Study Area to be approximately 54% of the acceleration due to gravity, with a 10% chance of being exceeded in 50 years.<sup>3</sup>

Three major fault lines occur in the region including the San Andreas Fault, the Calaveras Fault, and the Hayward Fault, all of which run approximately north/south. The nearest known active fault is the Hayward fault trace, located approximately 3 miles east-northeast of the Study Area. Other nearby active faults include the Calaveras Fault 10 miles east, the San Andreas Fault located approximately 14 miles to the west-southwest, and the Greenville Fault located approximately 21 miles to the east-northeast.<sup>4</sup> There are no Alquist-Priolo Earthquake Fault Zones and there are no known fault traces that cross through the project study site. A moderate to large earthquake centered on any of these faults, which is estimated to have over a 60% chance of occurring over the next 30 years, would result in strong to violent seismic shaking within the Study Area, of Modified Mercalli Intensity of VII to IX<sup>5</sup>.

### Site Geology and Soils

The Study Area is nearly flat, consisting of alluvial terrace, fan and basin deposits, salt-affected floodplain deposits and bay mud, large portions of which have been drained and diked with artificial levees. The eastern part of the Study Area is mapped as alluvial terrace deposits of Holocene age, described as “deposits generally less than one meter thick consisting of rounded gravel and historic artifacts in a clayey silt matrix.” Large portions of the trail segments studied cross land mapped as Basin Deposits of Holocene age, described as very fine silty clay to clay deposits occupying flat floored basins at the distal edge of alluvial fans adjacent to the bay mud. The Study Area also includes large areas along San Francisco mapped as Bay Mud and Flood Basin Deposits (salt-affected). Much of these deposits has been leveed and turned into commercial salt ponds. These are described as “Water saturated estuarine mud, predominantly gray, green and blue clay and silty clay underlying marshlands and tidal mud flats of San Francisco Bay and Carquinez Strait. The upper surface is covered with cordgrass and pickleweed. The mud also contains a few lenses of well-sorted, fine sand and silt, a few shelly layers, and peat. The mud inter-fingers with and grades into fine-grained deposits at the distal edge of Holocene fans, and was deposited during the post-Wisconsin rise in sea level, about 12ka to present.” The latter is described as “Clay to very fine silty clay deposits similar to the Qhb deposits except that they contain carbonate and iron

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<sup>3</sup> Peterson, M.D., Bryant, W.A., Cramer, C.H., Probabilistic Seismic Hazard Assessment for the State of California, California Geological Survey (formerly Division of Mines and geology) Open-File report issued jointly with U.S. Geological Survey, CDMG 96-08 and USGS 96-706, 1996.

<sup>4</sup> California Geological Survey (Formerly the California Department of Conservation, Division of Mines and Geology). Fault Activity Map of California and Adjacent Areas. 1994.

<sup>5</sup> Association of Bay Area Governments (ABAG). *Shaking Intensity Maps for Future Earthquake Scenarios*. 2007. Obtained from <http://www.abag.ca.gov/bayarea/eqmaps/mapsba.html>

–stained mottles. These deposits may have been formed by the interaction of bicarbonate-rich upland water and saline water of the San Francisco Bay estuary.”<sup>6</sup>

The United States Department of Agriculture National Resource Conservation Service Soil Survey for Alameda County mapped three main soil types within the Study Area. The northern portion of the area is mapped as Omni Silty Clay loam, described as a very deep, poorly drained soil that formed in recent alluvium derived from sedimentary rock. Typically the surface layer is light brownish gray, moderately alkaline silt loam about 18 inches thick. The subsoil is mottled, grayish brown and light olive gray, moderately alkaline silt loam. The substratum is very dark gray clay and extends to a depth of 60 inches or more. The soil has a moderate expansion index. Permeability is moderate in the surface layer and subsoil and slow in the clay substratum. Drainage has been improved by flood control structures that have lowered the water table to a depth of six feet or more in most areas. Runoff is slow and the hazard of erosion is slight. This soil is highly corrosive to steel and only slightly corrosive to concrete.<sup>7</sup>

Much of the central portion is mapped as Willows Clay, drained. This soil is described as a deep, poorly drained soil that formed from alluvium derived from sedimentary rock. Typically, the surface layer consists of slightly saline clay to the total depth described. Permeability is very low and the expansion index is high. Runoff is slow and the hazard of erosion is slight. This soil is highly corrosive to steel and slightly corrosive to concrete.<sup>8</sup>

The southern end of the Study Area is mapped as Percadero Clay, drained. This soil is described as a very deep, poorly drained soil that formed on basin rims in alluvium derived from sedimentary rock. Typically the surface layer is a gray, slightly acid clay loam about two inches thick. The subsoil is mottled, dark gray and light gray, moderately alkaline clay. The substratum is gray, light olive gray, and light gray calcareous clay loam and extends to a depth of more than 60 inches. Permeability is very slow and the expansion index is high. The water table has been lowered to a depth of 60 inches in most areas by flood control structures and natural stream cutting. Runoff is very slow and some areas are ponded. Erosion is not a hazard. This soil is highly corrosive to steel and only slightly corrosive to concrete.<sup>9</sup>

## Groundwater

Shallow groundwater is located throughout the Study Area at depths from just below surface to 8 to 10 feet. Shallow groundwater conditions cause hydrostatic uplift pressure on below grade foundations. These impacts may include potentially wet and unstable foundation subgrade, difficulty achieving compaction, and difficulty installing underground utilities.

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<sup>6</sup> Helley, E.J. and Graymer, R.W., Quaternary Geology of Alameda County and Surrounding Areas, California – Derived from the Digital Database Open file 97-97, USGS.

<sup>7</sup> USDA Natural Resource Conservation Service, Soil Survey for Western Alameda County, 2005, Obtained from <http://websoilsurvey.nrcs.usda.gov/app/>

<sup>8</sup> *ibid*

<sup>9</sup> *ibid*

## Geotechnical Recommendations

In general, the soil conditions in the Study Area are poor for construction purposes. The portions of the Study Area that have native soils consisting of soft, often organic-rich, poorly consolidated and poorly drained silty clays (organic soils, bay mud, and basin deposits) provide especially poor foundation support for trails, bridges and boardwalks. The bay mud and basin deposits shown on the Geologic map have very low bearing strengths and are prone to consolidation settlement under loading. These materials may have interbedded sand deposits that are susceptible to liquefaction settlement during earthquake induced ground shaking. These conditions will be a consideration in pedestrian bridge foundation design. In addition, the soils are typically acidic, have high salt contents and are considered highly corrosive, which must also be accounted for in foundation design.

A detailed geotechnical investigation should be completed for design of any pedestrian bridges and boardwalks that are required to cross waterways and slough channels, as well as for foundation design of all areas that are to be improved with a hard, non-flexible trail surface (such as asphalt concrete or concrete paving). Depending on soil conditions and pavement design needs, the use of geotextiles, and a more flexible trail surface, such as stabilized decomposed granite (dg) or stabilized quarry fines (qf) could be considered for areas with weak supporting soil materials.

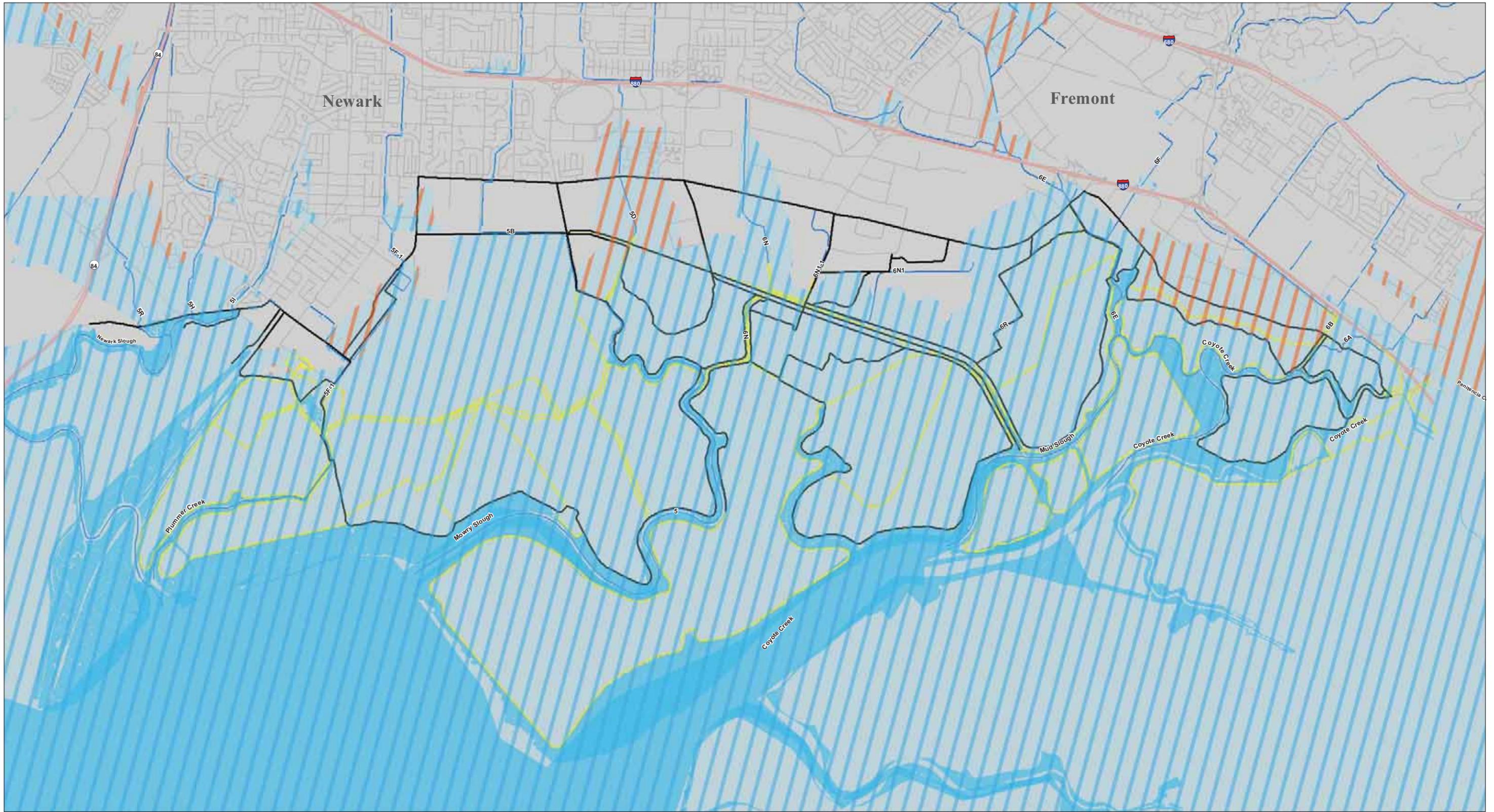
### 3.3 HYDROLOGY AND FLOODING

#### Hydrology

As shown on Figure 3-6, five major slough channels, flow through the Study Area, including from north to south, Newark Slough, Plummer Creek Slough, Mowry Slough, and Coyote Creek in the southwest corner and its northerly tributary, Mud Slough. In addition to these re-aligned historic sloughs, there are a number of small flood control channels and drainage ditches that cross through the project area, carrying local stormwater runoff from adjacent open space and developed areas, as well as from the greater urban watershed areas of Fremont and Newark to the east. All of the slough channels discharge to South San Francisco Bay at the west side of the Study Area.

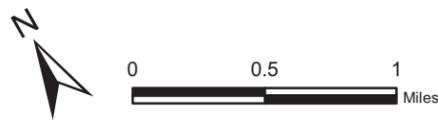
The upper or more easterly portions of the channels have generally been constructed by and are maintained by the ACFCWCD, while the lower, or more westerly portions, adjacent to active and former salt ponds, are either owned by Cargill Inc. or owned by the USFWS, and maintained by Cargill (see discussion of levees, next section). The majority of the lines or ditches were historically tidal marsh slough channels in their lower parts, and seasonal creeks in their upper parts, that have been partially straightened and re-aligned, deepened in some parts, and leveed for drainage and flood control purposes Figures 3-1A and 3-1B). Prior to levee construction there were numerous narrow, shallow channels in the tidal marsh areas. Most of the levees were constructed in the early 1900's to create salt ponds, and to provide drainage and flood protection of the adjacent low lying lands immediately to the east of the historic marsh, as well as for flood control and drainage of the urbanizing areas along I-880 and urban areas to the east. ACFCWCD channel maintenance activities consist of raising or re-establishing the elevation of levee tops, which continue to sink due to ground settlement of the underlying Bay Muds, repairing eroding levee side slopes, and de-silting or removing sediment and vegetation that has accumulated in the channels to restore design flow capacity.

The ACFCWCD organizes and names flood conveyance facilities according to a Flood Control Tax Assessment Zone (FCTAZ) that each channel or drainage ditch is located within (i.e. Zone 5 or 6). An



**Legend**

- Study Segments
- Levees
- ACFCO Open Channels
- AE- 100-YR Flood Zone
- X - 500-YR Flood Zone



**FREMONT-NEWARK BAY TRAIL**

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 3-6: FLOODING & HYDROLOGY**

alphabetical designation is then appended on each FCTAZ number to differentiate specific tributaries and drainage channels within each. For example, the drainage facility that parallels the UPRR tracks between Central Ave and Mowry Ave is specified as Line 5B because it is within FCTAZ 5.

The western portion of the Study Area is low lying with slough channels and baylands subject to tidal and stormwater flooding. Therefore, a number of managed tide gates and pump stations are operated within the Study Area to discharge stormwater runoff from some of the drainage ditches and poorly drained or undrained parcels that are entirely surrounded by levees, to the major slough channels which drain to the San Francisco Bay. The maintained flood control facilities generally consist of well-defined earthen or concrete trapezoidal channels confined between adjoining levees. Throughout the western portion of the Study Area (e.g. Mowry Slough) flood control channels and adjacent levees vary between 400 and 600 feet wide. Channel and levee widths greater than 200 feet constitute major trail constraints as they are too wide to easily bridge.

## Flooding

The Study Area ranges in elevation from approximately zero (mean sea level or below) in the Cargill salt ponds, to over 100 feet along the tops of adjacent landfills. However, most of the area (including the levee tops) lies between about 9-10 and 16-20 feet (NAVD88). During rainfall induced runoff events the Study Area is subject to riverine flooding from over topping along the flood control channel levees. These storm flows and resulting flood conditions are exacerbated when seasonal high tides coincide with major rainfall events. In addition to storm-related floods, the Study Area is also subject to flooding during seasonal extreme high tide events.

The Federal Emergency Management Agency (FEMA) has prepared a series of maps that show flood hazards in the area (Figure 3-6). According to the Flood Insurance Rate Maps (FIRM), much of the Study Area is located within Zone AE of the 100-year flood zone with a base flood elevation of 11 feet. Several areas outside of Zone AE are placed in Zone X, indicating that this area has shallow flooding of less than one foot for the 100-year base flood or is within the 500-year flood zone. Since most of the levees in the Study Area are not FEMA certified, the assumption is that they can overtop or fail, subjecting most of the area to floods at the base flood elevation of 11 feet.

Trails can be located within floodplain areas with much greater flooding frequency (i.e., 10-year floodplain), provided that appropriate considerations are included in the trail and structure designs that prevent frequent and costly trail and bridge damage and washouts, clogged drainage structures, or prolonged trail closure. Most of the proposed trail system would be on levees at elevations that flood less than about every 10 years, although breaks and breeches in levees can and do occur much more frequently. Although trail use is not expected to occur during major storm events, a flood warning system or a system of levee and trail closures could be considered to protect trail users, if severe weather or flooding events are forecasted.

In general, the trail design surface elevation should be a minimum of 1 foot above the 100-yr flood elevation (12 feet) on all non-certified levees and 3 ft above the 100-yr flood elevation (14 feet) for trails designed on FEMA certified levees. Particular attention should be paid towards the design of bridge and boardwalk structures. The bottom cord or structural support member of all bridges and boardwalks within the regulatory floodplain should ideally be at a minimum elevation of 13-14 feet (Base Flood Elevation of 11 feet plus 2-3 feet of freeboard) to be fully compliant with FEMA regulations, the City of Fremont, City of Newark, and Alameda County Floodplain Management Ordinances. This will make the design of any

required bridges and boardwalks challenging because ramps will be required to make the transition between new trail segments and adjacent trail grade surfaces on levees. Each bridge or boardwalk crossing should be designed to have no impact on flood water surface elevations, or block or redirect flood flows to adjacent lands.

In addition to current seasonal ponding and flooding conditions, some consideration should also be given to designing trail elevations and structures to accommodate sea level rise, as tidally influenced flood elevations may be up to 1.5 feet higher than the current base flood elevation by the mid 21st century. That would mean that to be fully above tidal and flood stages, and with bridges and boardwalks with a minimum of 2-3 foot of freeboard to the bottom of the structure, minimum elevations would need to be between 14.5 and 15.5 feet for bridges and boardwalks. Designing for sea level rise will certainly present additional design challenges especially in making transitions between boardwalks and bridge crossings work and adjacent trail grades and cost considerably more for additional construction materials. However, if designed for sea level rise, future grading and elevating of flood levees would not necessitate bridge or boardwalk replacement.

## Levees

Most of the trail system close to the San Francisco Bay will likely be on existing or reconstructed levees. For trail feasibility planning and discussion purposes, we divided the Study Area levees into six kinds, based on land ownership and levee purpose. For each kind of levee and land ownership combination we recommend a different level of engineering design, maintenance, and monitoring.

1. ACFCWCD Flood Levees. These are levees built and maintained by the ACFCWCD, primarily for flood control purposes, including protection of areas adjacent to sloughs from seasonal flood flows and riverine flooding, and areas near the bay to provide protection from storm surges and tidal flooding during extreme tide events. FEMA and the Flood Control District are in the process of evaluating these levees to determine if they can be certified as meeting more stringent levee height, stability and integrity requirements for flood protection after the hurricane Katrina disaster initiated widespread evaluation of the nation's levee systems. With well over 100 miles of levees in Alameda County alone, the evaluation and certification of levees as meeting FEMA standards for flood protection will take several years to complete. The Coyote Creek levees have been certified, but not all of the levees along Mowry Slough and Plummer Creek have.

As noted earlier the FEMA 100 year flood heights for the sloughs immediately west of the Union Pacific Railroad track range from elevation 11 to 12 feet. A freeboard of 3 feet is required for levees providing flood protection of adjacent areas. That means that in addition to stability and integrity requirements, the levees will need to have top elevations in excess of 14 or 15 feet to meet minimum federal standards.

Some of the ACFCWCD Flood Levees may be available for use as public access facilities under a trail use licensing agreement between the Flood Control District and local agencies, such as East Bay Regional Park District, and/or the cities of Fremont and Newark. Typically the local agency would be responsible for trail construction, maintenance and patrol, and repair. The license or use agreement will need to include provisions to close the levees to public use during maintenance activities, or if more significant reconstruction is needed.

2. Salt Pond Levees. These are levees built and/or maintained by Cargill Inc. around salt ponds for the primary purpose of salt production. Some salt pond levees are on lands owned by Cargill Inc. and some are on lands owned by the USFWS and operated by Cargill Inc. under a long standing agreement with the Service for salt production. Although these levees do provide some incidental degree of flood protection for lands located to the east, they are not designed and maintained for flood protection purposes and are not FEMA certified flood control structures. The levees are regularly monitored and maintained by Cargill Inc. with a high degree of integrity, including rapid repair of failing sections; however, Cargill Inc. has specifically requested that they not be considered as public flood control facilities.

Cargill Inc. has specifically expressed opposition to placement of any public access facilities on their levees, as well as levees adjacent to lands used for salt production that are owned by the USFWS and managed by Cargill Inc. The USFWS has also indicated that they are opposed to public access on commercially active salt pond levees, primarily because of potential impacts to sensitive wildlife species that inhabit adjacent slough-side wetlands, but also because of potential conflicts with Cargill's salt production activities.

3. Habitat Restoration Levees. These are levees maintained by the USFWS and/or in a few cases by the California Department of Fish and Game for salt marsh habitat restoration purposes. In nearly all cases the restoration areas were former salt ponds and the levees were originally constructed to facilitate salt production and not provide flood protection.

In some instances the restoration area levees have been breached to facilitate tidal exchange and salt marsh development through the gradual accumulation of sediment to build up interior elevations, while in other instances the levees are maintained to protect adjacent low lying areas that if opened to full tidal exchange would be persistently under several feet of bay water and therefore not provide the kinds of habitat desired to support endangered wildlife species, such as Salt Marsh Harvest Mouse.

Generally these levees are not located near and are not intended to provide flood protection to adjacent areas of development and infrastructure. They are managed for habitat restoration objectives. The USFWS may consider installation of public access facilities on some of the Habitat Restoration Levees, on a case by case basis, depending on the sensitivity of adjacent habitat areas. Some levee top trails on Habitat Restoration Levees may be subject to seasonal closure to protect resources, as well as closure for maintenance purposes.

4. Landfill Levees. These are levees built and maintained by the two landfill operators, Tri-Cities and Newby Island. Landfill levees protect the adjacent landfill slopes from encroaching flood waters as required by the California Integrated Waste Management Board. Although they do not necessarily come under FEMA levee certification requirements, levee landfills provide flood protection and must meet California Integrated Waste Management Board (CIWMB) stability and integrity requirements that are equally as stringent as FEMA flood control levee requirements.

Because the landfill levees and service roads will need to be used by the landfill managers for site maintenance and monitoring, they may require some form of joint-use or other agreement to be available for public access. Tri-Cities Landfill believes there may be operational conflicts with joint-use of their service roads and levees, although Newby Island Landfill managers had somewhat less concern. There are several existing Bay Area landfills that are closed to receiving new municipal

wastes but still require daily maintenance and monitoring using site roads, and where public access trail construction and use has been permitted, including the West Contra Costa Sanitary Landfill in Richmond and the American Canyon Landfill in southern Napa County.

5. Other Private Levees. In some instances levees within the project planning area are privately owned by other interests besides Cargill Inc. These include levees around private wetlands mitigation sites, such as the levee on the east side of Coyote Creek in the Newby Island area, and private stormwater detention facilities, as well as around commercial and office business parks and existing and proposed residential developments.

Where they provide flood protection of real estate improvements, these privately owned levees are subject to the same FEMA levee certification program as a part of the National Flood Insurance Program being administered by the ACFCWCD and the County's Flood Plain Manager.

As with the ACFCWCD and USFWS levees, use of the private levees for public access will require some sort of easement or other form of agreement between the property owner and the trail management entity, including an agreement or understanding regarding liability from public use, per the California Recreational Use Statute, where a proposed development project (or mitigation parcel) is adjacent to a privately owned levee.

6. Railroad Embankment Levees. Although technically not a flood control levee, some portions of the UP railroad embankment are elevated and may serve to block flood flows

## 4. STUDY AREA SEGMENTS

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### 4.1 STREETS IN THE STUDY AREA

There are several main arterials and streets in the Study Area that provide Class II and III bicycle facilities, some with pedestrian sidewalks. Some of the streets have significant gaps.

**Cherry Street.** Cherry Street is the primary north-south arterial with high auto vehicle speeds, multiple travel lanes and intermittent sidewalks. According to the Newark Pedestrian and Bicycle Plan (NPBP), however, this street lacks sufficient signage and protected space for bicyclists. Cherry Street is a four-lane arterial with a landscaped median and center two-way left-turn lane and turn pockets. Class II bike lanes are provided on portions of this section. Cherry Street provides connections to Fremont, as it becomes Boyce Road. Within Newark, it also provides access to the Silliman Activity and Family Aquatics Center and Ohlone College Newark Campus. The posted speed limit increases to 45 mph on this section, creating undesirable conditions for a Class III bike route, which is more appropriate for streets with slower speeds.

Improvements proposed as part of the NPBP include closing the gaps in the existing bike lanes on Cherry Street at the Mowry Avenue intersection and between Ohlone College and Stevenson Boulevard to provide a continuous Class II facility on the high speed section of Cherry Street. Pedestrian access would continue to have gaps, as there are not continuous sidewalks in the area.

**Thornton Avenue** is an arterial roadway that crosses the Study Area from SR 84 to Willow Street. It is a two-lane roadway, with a center two-way left-turn lane and on-street parking. It provides access to/from the Don Edwards National Wildlife Refuge and existing Bay Trail. According to the NPBP, the City's long-term vision for this section of Thornton Avenue (between the railroad tracks and Willow Street) is to improve the two-way left-turn lane to a raised center median with turn pockets. Portions of the street have Class II bike lanes. With a speed limit of 45 mph, this may be an undesirable condition for a bike route.

The NPBP recommends Class II bike lanes west of the railroad tracks to provide an improved connection between Don Edwards National Wildlife Refuge, the Bay Trail trailhead, and central Newark. The City is planning to enhance this section of Thornton Avenue with a raised median and turn pockets. Adequate right-of-way exists for bike lanes in this corridor.

**Willow Street** provides a connection to the Newark industrial area and the Dumbarton TOD site. Local street improvements will be completed as part of that project. The NPBP recommends Class II bike lanes along Willow Street, from Thornton Avenue to Central Avenue because this arterial is a critical connection for bicyclists wishing to access the Bay Trail and the Dumbarton Bridge, and also serves as a key recreational cycling route.

**Central Avenue** is an arterial roadway that provides access from the Newark industrial area to Cherry Street and beyond. It is an important bicycle connection because it provides access to the City on the eastern side of I-880. West of Newark Boulevard, Central Avenue is a designated Class III bike route where the posted speed limit is between 40-45 mph. Within the CCF Industrial Park, Central Avenue narrows to two-lanes with a landscaped center median and turn pockets.

The NPBP recommends Class II bike lanes on Central Avenue between Willow Street and Filbert Street because adequate right-of-way exists. Between Filbert Street and Newark Boulevard, an interim Class III

bike route is proposed, with long-term Class II bike lanes planned for the corridor. Central Avenue is a key bicycle route in Newark, as it is the only roadway that provides access to the City on the eastern side of the City that does not cross a freeway interchange.

Mowry Avenue within the Study Area has Class II bike lanes and provides access to the Silliman Activity and Family Aquatics Center. Improvements proposed as part of the Areas 3 and 4 Specific Plan will provide access from the Silliman Center to pedestrian and bicycle facilities within the site. Grade separation of the Mowry/UPRR intersection is not a part of the Specific Plan.

Stevenson Boulevard is a four-lane road with a landscaped median, and with a speed limit of 40 mph. Class II bike lanes are provided, and a grade separated overpass with sidewalks and bicycle lanes is planned as part of the Areas 3 and 4 Specific Plan implementation.

Boyce Road is the extension of Cherry Street within Fremont. It provides the primary north-south arterial with high auto vehicle speeds, multiple travel lanes and intermittent sidewalks. Class II bike lanes are provided on portions of this section, and designated as such in the Fremont Bicycle Master Plan. The posted speed limit increases to 45 mph on this section, creating undesirable conditions for a Class III bike route, which is more appropriate for streets with slower speeds.

Auto Mall Parkway within the Study Area is a two lane road, primarily lacking sidewalks and bicycle lanes. It currently serves the Tri Cities Landfill recycling facility west of Nobel Drive. A Class I trail built as part of the Pacific Commons development trends south from Auto Mall Parkway, but no public trailhead facilities are provided. This area is designated as a future transit facility or public park.

Applications by Tri Cities Landfill to continue waste recycling at the landfill site were approved by Ordinance No. 1-2012 on February 7, 2012. The California Public Utilities Commission (CPUC) has indicated that Auto Mall Parkway is a private crossing of the UPRR train tracks, and that grade separation improvements would be required for any use of the crossing by the public.

Cushing Parkway is a four lane arterial with widened sidewalks and bicycle lanes completed as part of the Pacific Commons project. A portion of the street is a causeway constructed over restored wetlands. This section of the causeway includes a 10 ft wide sidewalk section generally suitable for a Bay Trail facility.

Fremont Boulevard provides primary access from I-880 to Pacific Commons development and Bayside Business Park. South of Cushing Parkway, there are intermittent sidewalks and sufficient ROW for bike lanes. The Fremont Bicycle Plan calls for a combination of Class II and Class III facilities in this area.

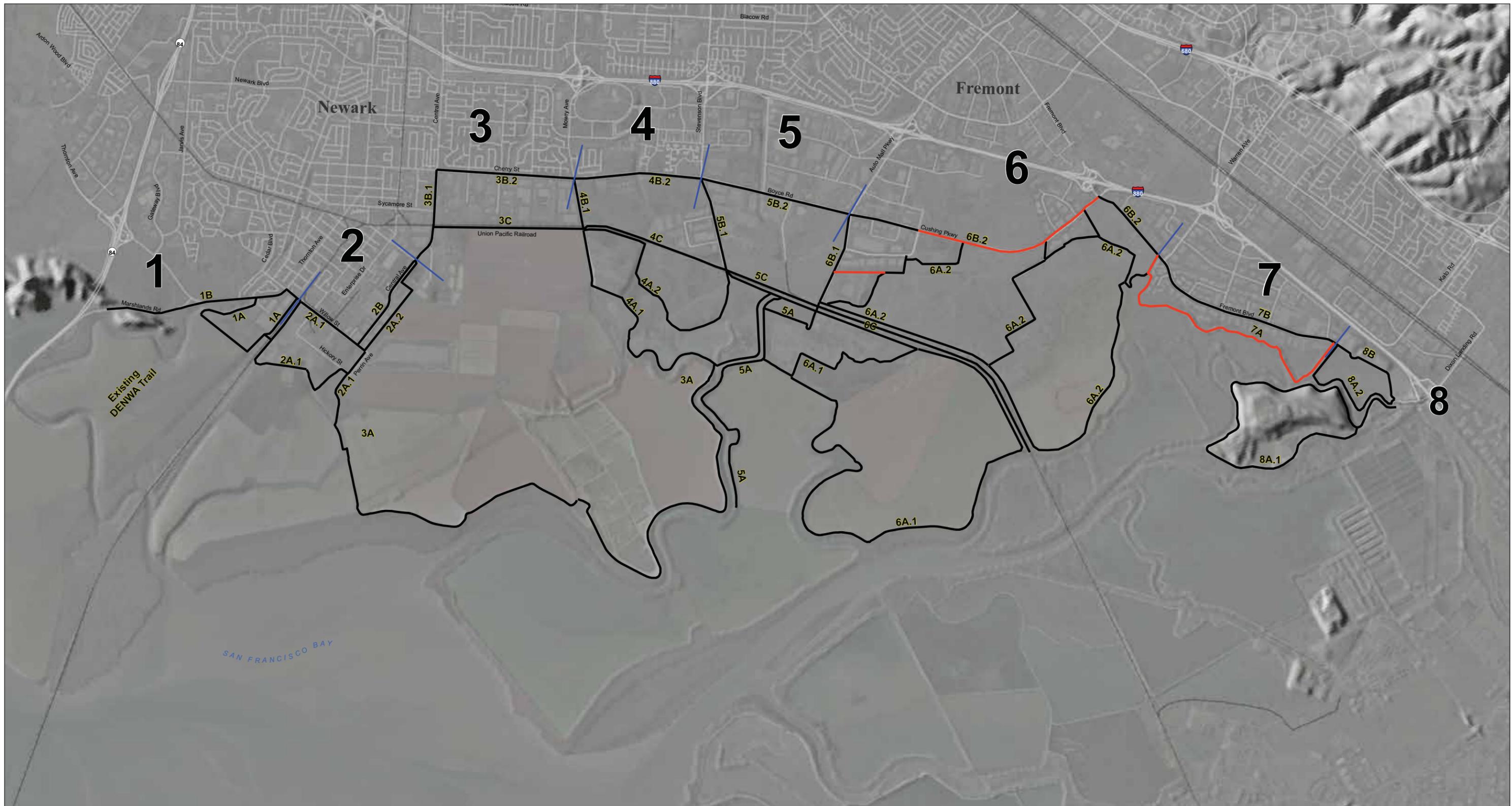
Fremont Blvd. is planned for extension to Dixon Landing Road as part of the Creekside Landing project as discussed in the previous section. This project will include installation of sidewalks, bicycle lanes and a Class I Bay Trail segment west of the street extension.

## 4.2 STUDY SEGMENTS

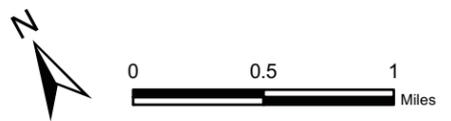
For discussion and preliminary planning purposes, the Study Area is divided into eight segments, with Segment 1 beginning at the existing Bay Trail at Don Edwards, and Segment 8 located to the south end of Fremont, at the Santa Clara County line. The eight segments are:

1. Don Edwards Wildlife Refuge to Filbert Street
2. Filbert Street to Mowry Avenue
3. Mowry Avenue to Stevenson Boulevard
4. Stevenson Boulevard to Auto Mall Parkway
5. Auto Mall Parkway to Fremont Boulevard
6. Fremont Boulevard to Line B Channel
7. Line B to Dixon Landing Road (Coyote Creek Study)
8. Fremont Boulevard Extension

Many of the segments are further divided into three general corridors: Shoreline Segments (A), On-Street Segments (B), and Railroad Segments (C) (i.e.; Segments 3A, 3B, 3C). Study segments are shown in Figure 4-1. Following is a discussion of each segment.



- Legend**
- Study Segment
  - Existing Bay Trail
  - Segment Boundary



# FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 4-1: STUDY SEGMENTS**

THIS MAP IS A PLANNING TOOL. THE ROUTES IDENTIFIED ON THE MAP ARE FOR STUDY PURPOSES ONLY. IDENTIFIED ROUTES DO NOT CONVEY PUBLIC USE RIGHTS OR EXEMPT ANY PERSON FROM TRESPASSING CHARGES.

# 1

## SHORELINE SEGMENT

1A: EXISTING SHORELINE TRAIL, DON EDWARDS NWR

6,000 LF



### Existing Conditions

This existing refuge trail provides a loop shoreline levee trail accessed by two pedestrian boardwalk/bridges at the Don Edwards Visitor Center. The trail is a gravel surface levee access road, ranging from approximately 8-20 feet wide. Two gated roads provide vehicular service access to the trail from Marshlands Rd. and Hickory St. The City of Newark owns a parcel parallel to the eastern edge of the trail between the two service roads. Lands west of Hickory St. are under consideration for a mitigation bank.

Bay Trail connections are provided to the west, along the Highway 84 Frontage Rd. to Dumbarton Point, and to the north, to Coyote Point Regional Park via a bicycle/pedestrian overpass located near the Dumbarton Bridge toll plaza (see Segment 2A.1)

### Issues

- Loop trail is isolated shoreline connection and does not provide linear connectivity to the north and south of the Refuge.
- Opportunities for direct connection to streets at southeast end to improve connectivity should be explored.
- Accessibility improvements may be needed in future to comply with ADA requirements.
- 175-ft. bridge/boardwalk would be needed to cross from service access road to Water Trail launch site off Marshlands Rd. The Water Trail launch site is owned by Cargill Inc. .
- Hetch Hetchy waterline and Dumbarton rail line along south edge of trail are crossing constraints to south.
- Connections to trails at Dumbarton Point and Hwy 84 overcrossing pass through roads and parking areas.
- Lands within mitigation bank should provide connected pedestrian access to the existing trail, and facilitate connections to the south.
- Private ownership of some lands between Refuge trail and adjacent streets.

### Recommendations

- Provide improved wayfinding for trails within Refuge, including identification of connecting trails.
- Incorporate accessibility improvements into trails projects within Refuge.
- Explore trail to street connections on existing service roads to improve connectivity to bikeway system and trails to the north and south of Refuge.
- Incorporate pedestrian connection to trail as part of Dumbarton TOD station improvements to connect to Bay Trail segment around perimeter of TOD. This will facilitate access across rail and Hetch Hetchy lines (Grade separation overpass as part of station, or underpass if suitable location can be determined).
- Incorporate bike/ped facilities into existing and planned mitigation bank projects; require implementation as part of approval.
- The eastern 1/3 of the segment paralleling the Dumbarton Railway to Willow Street would not be needed if the Willow Street option is not selected.

# 1

## ON STREET TRAIL SEGMENT

### 1B: MARSHLANDS AND THORNTON AVE/WILLOW TO DUMBARTON RAIL CROSSING

8,000 LF



#### Existing Conditions

Although a Class II bicycle facility exists on this segment, there are no sidewalks along Marshlands Rd. The paved surface parallels a partial causeway spanning Highway 84 to the north and Thornton Ave., a major thoroughfare, to the south. Tidal marshes lie beyond the segment's shoulders which are constrained by causeway widths. These conditions make road widening and/or additional construction difficult and possibly infeasible. Current road widths vary with the presence of left turn pockets, bridge choke points, and painted medians. The segment accommodates one travel lane in each direction for the majority of its length.

Thornton Ave is an arterial road with 45 mph speed limit and is abutted by marsh lands on each side and overhead utility lines and poles on the west shoulder. There is an existing shoulder serving as a Class II bike facility and one travel lane in each direction to the west of Hickory St. Channelization at Thornton Ave. and Marshlands Rd. intersection creates a bow in the road which serves as a parking lot. The road widens with a landscaped median approximately 525 ft before Hickory St. The road continues as four lane arterial with a landscaped median (12 ft wide, approx.) and left turn lane pockets west of Willow St. Willow St. begins as a four lane road with a right turn pocket, a left through lane, and a dedicated left turn lane in the northbound direction and two travel lanes in the southbound direction. All lanes merge into one travel lane in both directions and a painted median/bidirectional left turn median up until past the southbound approach to the railroad tracks. A meandering sidewalk is present from Hickory St. to the railroad tracks and fronts a business park as part of the landscaping scheme.

#### Issues

- This area provides primary access to existing trails at Don Edwards NWR and water trail launch site from Newark residential areas. Improved off-street pedestrian and bicycle connections in this area would benefit local trail users.
- Portions of segment are adjacent to wetlands and shoreline areas. Mitigation restoration concepts should include improved public access.
- Narrow bridge crossing on Marshlands Rd. limits pedestrian use.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Provide interim bicycle and pedestrian facilities until Dumbarton TOD is developed, with connections to planned trails.
- Conduct traffic impact analysis for a road diet to median and install bicycle and pedestrian detectors with actuated crossing signals at the intersection of the trailhead near Highway 84 and Marshlands Rd.
- If a road diet is feasible, eliminate turn pockets, painted medians, and bike lanes to accommodate 15 ft minimal space along western edge of causeway.
- Use new space to construct grade separated Class I facility running along the causeway's western edge.
- Consider reducing 35 mph speed limit to 25 mph, if no traffic impacts.
- Determine if left turn movements will cause rightward circumvention of passing vehicles that might encroach upon facilities.
- Coordinate with Bicycle Plan recommendations for non motorized facilities.
- Consider removal of Class II bike facilities along Thornton Ave. and restripe 12-ft travel lanes on eastside of roadway to install bidirectional Class I shared use facility along western edge of road with buffer separation. Re-landscape existing meandering sidewalk to accommodate 15-ft wide bidirectional Class I facility to Willow St.
- If Thornton to Willow Street option is selected for an interim trail, consider removing westbound dedicated left turn lane at Willow St. and Thornton Ave. as traffic can be accommodated by through left. Use added space by removing turn lane to restripe road as three lanes with one southbound lane, one eastbound right turn lane, and a northbound/westbound through left turn lane and use left-over space for bidirectional Class I shared use facility.

# 2

## SHORELINE SEGMENT

### 2A.1: DUMBARTON TOD PERIMETER TRAIL

14,200 LF



#### Existing Conditions

This site is planned for redevelopment as a mixed use residential development and transit center to serve Dumbarton Rail. Future improvements to be incorporated into the bicycle and pedestrian framework, including a shoreline section of the Bay Trail, with sidewalks, bike lanes and a Class I perimeter path. The path should be designed to be adjacent to the street, rather than separated from the street by rear yards.

#### Issues

- Perimeter trail to be provided as part of Dumbarton TOD site development.
- Crossing of Hetch Hetchy line and rail to connect to Bay Trail at Don Edwards NWR not a specific component of current plan, but should be included in future planning.
- Public access improvements required as part of adjacent mitigation bank project have not been completed.

#### Recommendations

- Trail should provide safe and logical connections to adjacent streets in design.
- Where possible, trail should be located off street with direct access to shoreline and street, not adjacent to rear yards.
- Provide wayfinding and signage for trail amenities.
- Explore pedestrian crossing options for trails to north of site.
- Explore incorporation of grade separated access to north as part of transit center.
- Integrate public access into mitigation site and provide links to TOD trails.
- Trail should be designed to recognize future shoreline connections to the south.
- Two potential crossing of the Dumbarton rail line are shown; only the western crossing is recommended; the segment to the eastern crossing at Willow Street is not recommended, as the Willow Street option for the Bay Trail could be considered as a potential interim alignment.



# 2

## SHORELINE SEGMENT

### 2A.2: ACFCWCD CHANNEL LEVEE

4,675 LF



#### Existing Conditions

This trail segment would offer an off-street alternative to Central Ave., utilizing existing ACFCWCD levee roads immediately adjacent to Cargill Inc. salt ponds and behind industrial buildings to provide public access. The City of Newark owns a linear alignment along a portion of this section that may be suitable for a portion of the trail.

#### Issues

- Potential conflict with adjacent industrial uses regarding privacy or security.
- Cargill Inc. may consider this segment to pose operational conflicts with their adjacent salt processing activities.

#### Recommendations

- Design features should be compatible with ACFCWCD maintenance needs.
- Trail should provide safe and logical connections to adjacent streets in design.
- Provide wayfinding and signage for trail amenities.
- Trail should be designed so that it does not preclude future shoreline connection to the south.
- Additional wayfinding and warning signage, as well as security fencing along channel and separating the salt ponds, may be needed.

# 2

## ON STREET TRAIL SEGMENT

### 2B: WILLOW STREET AND CENTRAL AVENUE RAILROAD TRACKS TO FILBERT STREET

4,150 LF



#### Existing Conditions

Willow St. has two travel lanes in each direction south of the railroad tracks. Trees and utilities within the street ROW present significant difficulties in providing bike lanes and a Class I pathway. The road is wide in most sections (approximately 70 ft) continuing south to Central Ave. where landscaped medians are present along Central east to Filbert St. A gravel access road runs along a levee for part of the way paralleling Willow St. just before intersecting with Central Ave. An additional levee exists off of Central Ave. just before Filbert St. This is part of the Dumbarton TOD area and will be reconfigured with bicycle and pedestrian facilities, when this project is built.

#### Issues

- Mature landscaping, meandering street design, lack of sidewalks and prevalence of landscaped mounds constrain implementation of efficient and cost-effective pedestrian improvements.
- An “on-street” Bay Trail option is not preferred by stakeholders, except perhaps as interim local solution, and only if constructed as part of Bike Plan improvements.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Narrow road to three lanes conforming to the road dimensions near the railroad tracks (i.e. one travel lane in each direction and one bidirectional left turn lane median).
- Provide improved bicycle facilities as interim or transition to Class I trail system.

# 3

## SHORELINE SEGMENT

### 3A: TRAIL WEST OF CARGILL PROPERTY

30,900 LF



#### Existing Conditions

Segment 3 is entirely on a levee system adjacent to Cargill's Newark Plant site salt ponds that is owned by the USFWS and operated and maintained by Cargill under an agreement with the Service. The levees are susceptible to problems with settlement, resulting in overtopping, and bank erosion, and require a high level of maintenance. The exterior levees are typically 12 to more than 14 feet wide and range in elevation from about 8 to 10 feet.

#### Issues

- The agreement between Cargill Inc. and the Service designated certain levees for public access. Segment 3 was not one of them. Although the agreement provides a process where additional areas can potentially be opened for public access, after certain safety and security improvements are made, with on-going maintenance turned over to the Service, as a practical matter, all involved stakeholders must agree with this to proceed.
- Both Cargill and the Don Edwards Refuge Manager do not believe it is feasible to allow use of the exterior levees for shared public access because of potential impacts on Cargill's salt production operations, and/or impacts on sensitive wildlife species that occupy the immediately adjacent tidal wetlands along Mowry Slough.

#### Recommendation

- At some time in the future it is possible that some of the Newark Plant will no longer be needed by Cargill Inc. for salt production, or that it is no longer economically feasible and practical to produce salt at current production rates at this location. The exterior levee designated as Segment 3 could potentially become available.
- It is also possible that at some time in the future, an exterior flood control levee to protect the Fremont-Newark area from increased flood frequency and flood heights as a result of Sea Level Rise will be considered necessary, and the existing levee system be acquired and raised and re-built or a new flood control levee system built in the general vicinity of the Segment 3 levee.
- Although there is no planning for such a levee system currently underway or programmed, this is a concept that has been publicly discussed. Such a flood control levee system could incorporate public access, including a Bay Trail, as a component of a multi-use project.
- Bay Trail alignment could be broadly shown in the general vicinity of Segment 3, such that if and when Cargill's Newark Plant site lands become available at some time in the future, or a new flood control levee system is designed and constructed, the Bay Trail be a part of project planning.

# 3

## ON STREET TRAIL SEGMENT

### 3B.1: CENTRAL AVENUE FILBERT STREET TO CHERRY STREET

3,925 LF



#### Existing Conditions

The segment of Central Ave. between Filbert St. and Cherry St. consists of landscaping and a series of parking lots, some which are vacant properties. This segment is designated as a Class III bike route and has posted speed limits between 40-45 mph. However, these speeds create undesirable conditions for a Class III bike route which is more appropriate for streets with slower speeds. Trees and landscaping front property along the south side of Central Ave. where a meandering sidewalk exists. The segment crosses the UP railroad tracks and continues with landscaped sections containing winding sidewalks to Cherry St.

#### Issues

- This street does not meet Bay Trail goals and key stakeholder desires for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas.
- This segment provides connectivity to neighborhoods and bicycle/pedestrian network.
- Planned grade separation at railroad tracks is contained in regional CIP funding plans and is a long-term goal.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Where possible, continue Class I improvements along Central to the east, with implementation of a part of the City's Bicycle/Pedestrian Plan.
- Consider incorporating Class I improvements into the grade separation project, as well as bicycle lanes.
- Provide continuous sidewalks on the south side of street to connect with potential Class I facilities.

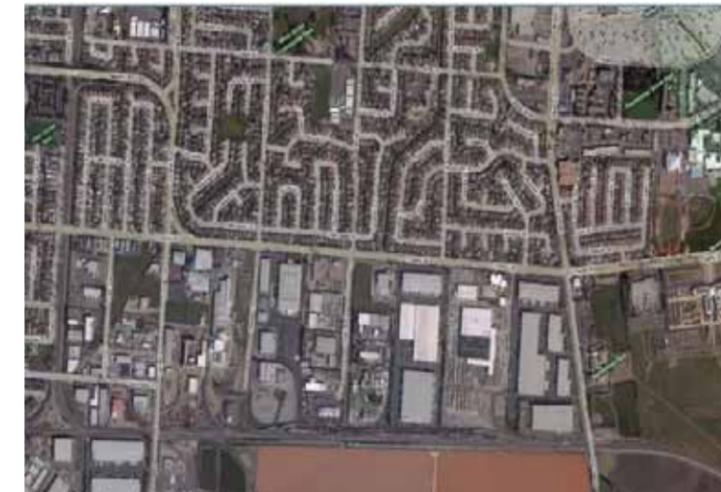
# 3

## ON STREET TRAIL SEGMENT

### 3B.2: CHERRY STREET

#### CENTRAL AVENUE TO MOWRY AVENUE ALONG CHERRY STREET

5,525 LF



#### Existing Conditions

Cherry St. is a principal arterial with discontinuous sidewalks, mounded landscape areas and sections with bike lanes. The speed limit on Cherry St. is up to 45mph. The average cyclist would feel uncomfortable riding on the street within the Class II bicycle facility, which is more appropriate for streets with slower speeds. Most of the west side of Cherry St. is heavily landscaped, with mature trees present. Options for Class I trail construction are limited because of lack of useable ROW, elevation changes and the occurrence of industrial driveways, necessitating expensive improvements.

#### Issues

- This street does not meet Bay Trail goals for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas.
- High traffic speeds, industrial character and heavy truck volumes are generally uninviting for bicyclists.
- Street has continuous sidewalks only on east side.
- Wide street width, lack of pedestrian crossing improvements may inhibit pedestrian use.
- Street section may be “too long” for use as a pedestrian connection to a shoreline trail.
- Grading requirements, utility relocation, mature trees, and available ROW complicate developing a workable bicycle/pedestrian-friendly design.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Improve crosswalks and intersections (including median refuges where feasible) to improve neighborhood connectivity and pedestrian safety.
- Consider street reconfiguration options to provide dedicated areas for pedestrian and bicycle use as part of larger street improvement projects.
- As properties develop or redevelop, consider requiring widened sidewalks and bicycle facilities as part of project to provide interim trail connection.
- As properties redevelop, consider reconfiguring mounded landscaping where feasible in front of properties along southern edge of Central Ave. and install improved bicycle and pedestrian facilities.
- Consider acquiring additional ROW in areas where trees and utilities present significant barriers to grading – this potentially includes property beyond fence lines as well as parking lots.

# 3

## RAILROAD SEGMENT

3C: UPRR LINE BETWEEN CENTRAL AVENUE AND MOWRY

5,950 LF



### Existing Conditions

Segment 3C includes rail lines owned by UP that serve passengers on Amtrak's Capitol Corridor as well as freight services. This segment of the UP Coast Subdivision contains spur lines and is adjacent to a drainage channel and heavy industrial uses, as well as immediately adjacent to Cargill's Newark plant site facilities.

The rail line has also been identified for expansion to accommodate increased passenger rail and freight operations.

### Issues

- This rail corridor does not meet Bay Trail goals for a shoreline experience.
- There is insufficient ROW outside rail ROW for a continuous trail.
- Since the Bay Trail is shown along the rail corridor on the Bay Trail Plan, and the Alameda County Bike and Pedestrian Plans, some accommodation or mitigation may be required for rail corridor expansion.
- The trail would need to cross spur tracks, with significant crossing safety and separation issues.
- Relocation of Cargill's northern salt pond levee system was suggested at a public meeting, including process water treatment ponds, and could be considered, but this would be expensive and would likely be opposed by Cargill.

### Recommendations

- Locating trail within existing railroad ROW is not feasible for this segment, given ROW and cost considerations.
- Local agencies should actively monitor rail planning activities and seek partnerships for incorporation of bicycle/pedestrian improvements with regional rail planning projects.
- Locate trails away from rail corridor as far as possible to avoid noise, use and safety conflicts; provide security fencing.



# 4

## SHORELINE SEGMENT

### 4A.1: MOWRY SLOUGH NORTH-EAST LEVEE (NEWARK)

17,000 lf



#### Existing Conditions

Segment 4A.1 follows Mowry Slough, partly on levee lands owned by the USFWS and managed by Cargill (the west and south parts), or along the ACFCWCD flood control levee just south of the Union Pacific Railroad corridor (the east part). A small portion of trail abuts the west side of the Tri-Cities landfill. Much of the segment is along side or adjacent to Newark Specific Plan Areas 3 & 4 (the open space portion), and final trail alignment, design, and construction of a Bay Trail will be a condition of project approval for any development that occurs here, and will be considered a major asset for the new community.

#### Issues

- Any trail that utilizes Cargill managed levees adjacent to active salt ponds will have the same issues as were discussed for Segment 3A, and will likely be opposed by Cargill Inc. and Don Edwards Wildlife management.
- Mowry Slough has some important biological resources that will need to be considered in planning the Bay Trail, and may require mitigation measures as part of any final design.
- Use of ACFCWCD levee lands for Bay Trail is more feasible, but will require a licensing agreement between the trail management entity and the District. The trail may be subject to closure during periods of slough maintenance, or if any levee improvements are required for compliance with FEMA certification requirements or (more distantly) future Sea Level Rise levee planning efforts.
- Connection to the north will require a bridge across Mowry Slough and resolution of issues described under Segment 3A, and may not be possible or feasible for some long time into the future.

#### Recommendation

- Segment 4A.1 appears to be feasible, and could be constructed as a local community trail following development of Specific Plan Area 3 & 4, and/or as a spur trail, ending where shown on the Alameda County Bicycle and Pedestrian Plans. Final alignment and design decisions should be made during planning and engineering design of this area by the City of Newark, in close coordination with ACFCWCD.
- The Cities of Fremont and Newark should continue to coordinate in planning the development of the Specific Plan Area 3 & 4, and with Tri-Cities landfill and ACFCWCD regarding public access trail connections between these areas.
- A bicycle/pedestrian-only crossing of the UP Railroad tracks at Mowry Avenue is recommended. This facility should also be planned and implemented during development of Specific Plan Areas 3 and 4.

# 4

## SHORELINE SEGMENT

### 4A.2: MOWRY SLOUGH INNER LEVEE (PLANNED)

10,440 LF



#### Existing Conditions

Segment 4A.2 would follow the southern boundary of the “built portion” of Specific Plan Area 3 & 4. The residential area to the immediate north would be brought up to an elevated grade above the 100-year flood elevation and accommodate any future Sea Level Rise, while the area to the immediate south would be low lying wetlands (Segment 4.A.1).

#### Issues

- This segment appears to be straightforward without any major environmental, design, Right of Way or permitting issues.
- Connection to the north will require a bridge across Mowry Slough and resolution of issues described under Segment 3A, and this connection may not be possible or feasible for some long time into the future.
- Connection to the east will involve a separated grade crossing of the Union Pacific Railroad corridor, which is currently planned for Stevenson Blvd. and would likely be timed to coincide with development of this area at some future time.

#### Recommendation

- Segment 4A.2 appears to be feasible, and could be constructed as a local community trail following development of Specific Plan Area 3 & 4. Final alignment and design decisions should be made during planning and engineering design of this area by the City of Newark, in coordination with the property owners, Bay Trail, and other interested stakeholders.
- Provide trail improvements and connections to trails as part of Specific Plan 3 & 4 implementation.
- The Cities of Fremont and Newark should continue to coordinate in planning the development of the Specific Plan Area 3 & 4, and with Tri-Cities landfill and ACFCWCD regarding public access trail connections between these areas.
- A bicycle/pedestrian-only crossing of the UP Railroad tracks at Mowry Avenue is recommended. This facility should also be planned and implemented during development of Specific Plan Areas 3 and 4.

# 4

## ON STREET TRAIL SEGMENT

### 4B.1: MOWRY AVENUE RAILROAD TRACKS TO CHERRY STREET

2,075 LF



#### Existing Conditions

Mowry Ave. between the UP Railroad tracks and Cherry St. has a painted turning median as well as four travel lanes (two in each direction), Class II bicycle facilities, and meandering sidewalks. While Mowry Ave. is a major thoroughfare east of Cherry St., traffic appears to be light on the west side of Cherry St., except perhaps for AM and PM peak travel periods when the industrial commercial parking lots along either side of the street experience increased activity. The road narrows approaching the UP railroad tracks to one lane in each direction with little or no shoulder until it terminates near the Cargill salt ponds. This segment passes through an area of industrial and warehouse buildings on the north side; the Silliman Recreation Complex, including sports field and the aquatic center, is located along the south side, presenting options for trailhead staging areas.

#### Issues

- This street option does not meet Bay Trail goals for a shoreline experience, but could be considered as a staging area, or as an interim or connector trail to link accessible shoreline areas.
- Opportunities for street to trail connections within Silliman Recreation Complex.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Implement striping and signage along street to prevent collisions at curb cuts and intersections as part of the Bicycle/Pedestrian Plan.
- Evaluate crossing options for bicycle and pedestrian access west of railroad tracks to connect with future trail segments, and possible staging area at the park.
- Provide trail improvements and connections to trails as part of Specific Plan 3 & 4 implementation.
- A bicycle/pedestrian-only crossing of the UP Railroad tracks at Mowry Avenue is recommended. This facility should also be planned and implemented during development of Specific Plan Areas 3 and 4.

# 4

## ON STREET TRAIL SEGMENT

### 4B.2: CHERRY STREET MOWRY AVENUE TO STEVENSON BOULEVARD

5,525 LF



#### Existing Conditions

Cherry St. between Mowry Ave. and Stevenson Blvd. is a principal arterial that has Class II bicycle facilities with 10-ft wide meandering sidewalks on both sides of the street. The speed limit on Cherry St. ranges between 35mph and 45mph, and many average cyclists would feel somewhat uncomfortable riding on the street even within the Class II bicycle facility. The west side of Cherry St. is mostly landscaped with trees and grading options are limited to 8 ft in some sections without tree removal, and some utility relocations. Newark Memorial High School is located on the east side of the street and Ohlone College Newark Center for Health Sciences and Technology is located on the west side.

#### Issues

- This street does not meet Bay Trail goals for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas, especially considering the planned overcrossing of the railroad at nearby Stevenson Blvd.
- Industrial character and heavy truck volumes are uninviting for bicyclists.
- Street has discontinuous sidewalks.
- Wide street width, lack of pedestrian crossing improvements may inhibit pedestrian use.
- Street section may be “too long” for pedestrian connection to shoreline.
- Location near Newark High School, Silliman Recreation Complex, and Ohlone College presents opportunities for staging and attracting trail users if this were developed as a link.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

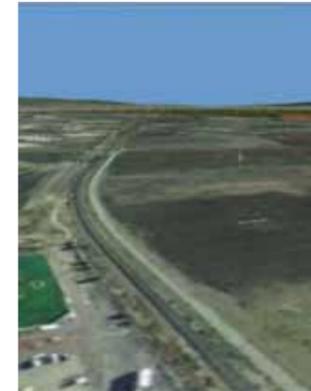
- Improve crosswalks and intersections (including median refuges where feasible) to improve neighborhood connectivity and pedestrian safety.
- Coordinate bicycle/pedestrian facility planning along Cherry St. with Silliman Recreation Complex, Ohlone College, and Newark High School.
- Consider street reconfiguration options to provide dedicated areas for pedestrian and bicycle use as part of larger street improvement projects

# 4

## RAILROAD SEGMENT

4C: UPRR LINE BETWEEN MOWRY AND STEVENSON

6,000 LF



### Existing Conditions

Segment 4C includes rail lines owned by UP that serve passengers on Amtrak's Capitol Corridor as well as freight services. This segment of the UP Coast Subdivision has been identified for expansion to accommodate increased passenger rail and freight operations. Note the occurrence of Station Rd., an apparent "paper street" crossing diagonally from the Silliman Recreation Complex and behind Ohlone College.

### Issues

- This rail corridor does not meet Bay Trail goals for a shoreline experience.
- There is insufficient ROW outside rail ROW for a continuous trail.
- Since the Bay Trail is shown along the rail corridor on the Bay Trail Plan, and the Alameda County Bike and Pedestrian Plans, some accommodation or mitigation may be required for rail corridor expansion.
- Connection to at-grade crossing of Mowry as part of Specific Plan implementation is unclear.
- Trails west of UPRR would need to cross rail tracks, with crossing safety and separation issues, and may not be permitted by PUC. An overcrossing of Stevenson Blvd. is planned for the future, but currently is not programmed.
- Trails parallel to, but outside of rail ROW may be implemented as part of Specific Plan.

### Recommendations

- Resolve crossing issues for bicyclists and pedestrians at Mowry as part of Specific Plan implementation.
- Provide trail connections to Silliman Recreation Complex and Ohlone campus as part of Specific Plan implementation.
- Locate trails away from rail corridor as far as possible to avoid noise, use and safety conflicts; provide security fencing.
- Local agencies should actively monitor rail planning activities and seek partnerships for incorporation of bicycle/pedestrian improvements with regional rail planning projects.

# 5

## SHORELINE SEGMENT

5A: SOUTH MOWRY SLOUGH LEVEE (FREMONT)

16,130 LF



### Existing Conditions

Segment 5A would travel along the southern levee of lower Mowry Slough, adjacent to an active salt pond. The levee is owned by the USFWS and managed by Cargill Inc.

### Issues

- All of the issues related to operational conflicts with salt ponds, and possible environmental impacts, especially biological resources that are present in Segment 3A are also present in this segment.
- An important harbor seal pupping area also occurs in Mowry Slough, near the western tip of this segment. If ROW is acquired at some time in the future for use of the levee as a public access trail, then the trail may possibly be subject to seasonal closure.
- The agreement between Cargill and the Service designated certain levees for public access. Segment 5 was not one of them. Although the agreement provides a process where additional areas can be opened for public access, after certain safety and security improvements are made, with on-going maintenance turned over to the Service, as a practical matter, all involved stakeholders must agree with this to proceed.
- Both Cargill and the Don Edwards Refuge Manager do not believe it is feasible to allow use of the exterior levees for shared public access because of potential impacts on Cargill's salt production operations, and/or impacts on sensitive wildlife species that occupy the immediately adjacent tidal wetlands along Mowry Slough.

### Recommendation

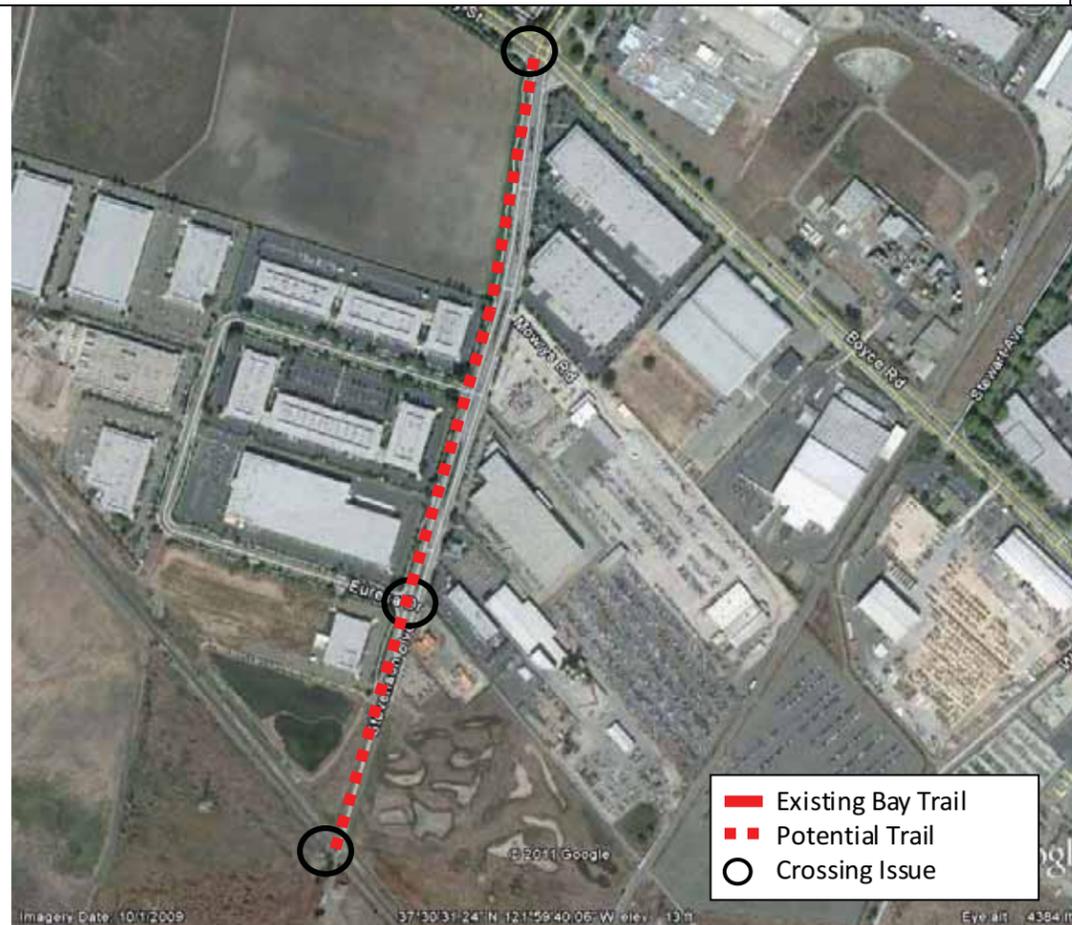
- It is possible that at some time in the future, an exterior flood control levee to protect the Fremont-Newark area from increased flood frequency and flood heights as a result of Sea Level Rise will be considered necessary, and the existing levee system be acquired, raised and re-built or a new flood control levee system built in the general vicinity of the Segment 5 levee.
- Although there is no planning for such a levee system currently underway or programmed, this is a concept that has been publicly discussed. Such a flood control levee system could incorporate public access, including a Bay Trail, as a component of a multi-use project.
- A Bay Trail alignment could be broadly shown in the general vicinity of Segment 5, such that if and when the levee lands become available at some time in the future, or a new flood control levee system is designed and constructed, the Bay Trail be a part of project planning.
- If possible, incorporate bridge crossing of Mowry Slough to provide connection to Landfill planned trails.
- The Cities of Fremont and Newark should continue to coordinate in planning the development of the Specific Plan Area 3 & 4, and with Tri-Cities landfill and ACFCWCD regarding public access trail connections between these areas.

# 5

## ON STREET TRAIL SEGMENT

### 5B.1: STEVENSON BLVD. BOYCE ROAD TO RAILROAD TRACKS

7,800 LF



#### Existing Conditions

Stevenson Blvd. has a landscaped median with left turn pockets as well as four travel lanes (two in both directions), Class II bicycle facilities, and meandering sidewalks. However, there is a 700-foot segment starting from the UP railroad tracks and heading east towards Cherry St./Boyce Rd., which only has two travel lanes, one in each direction. While Stevenson Blvd. is a major thoroughfare east of Cherry St., traffic on Stevenson Blvd. west of Cherry St. appears to be light for most of the day, except for AM and PM peak travel periods. A grade separation project is planned for the Stevenson crossing of the railroad tracks, but has yet to be funded or programmed.

#### Issues

- This street does not meet Bay Trail goals for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas, especially considering the planned overcrossing of the railroad at nearby Stevenson Blvd.
- Industrial character and heavy truck volumes.
- Street has discontinuous sidewalks.
- Wide street width, lack of pedestrian crossing improvements may inhibit pedestrian use.
- Street section may be “too long” for pedestrian connection to shoreline.
- Design new Stevenson Blvd. overpass to accommodate multiple travel modes, including bicycle/pedestrian.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

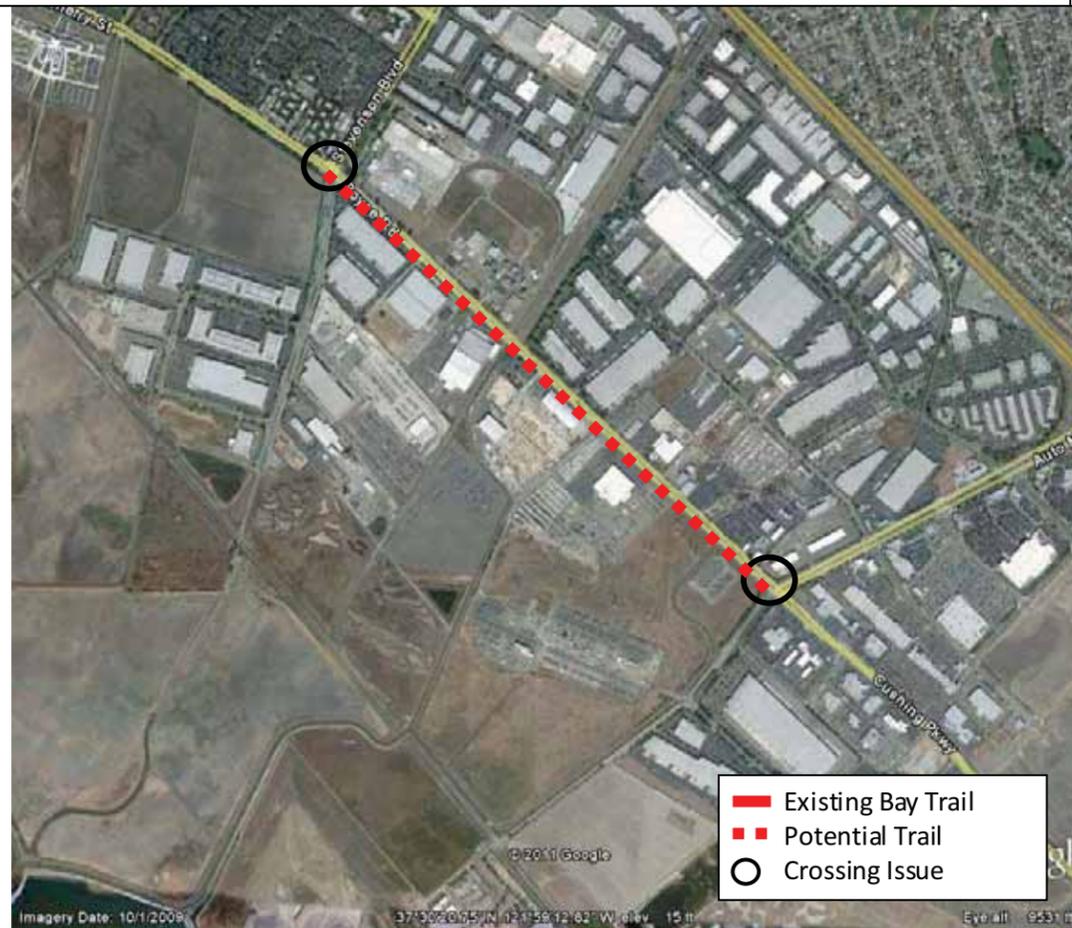
- Improve crosswalks and intersections (including median refuges where feasible) to improve neighborhood connectivity and pedestrian safety.
- Consider street reconfiguration options to provide dedicated areas for pedestrian and bicycle use as part of larger street improvement projects.
- Provide sidewalks on south side of street to improve connectivity.
- Consider providing a Class I trail if such a facility is included in the Stevenson grade separation.
- Implement striping and signage to prevent collisions at curb cuts and intersections.
- As properties develop or redevelop along Stevenson Blvd., require widened sidewalks and bicycle facilities as part of project to provide shoreline trail connection.
- Improve crosswalks and intersections (including median refuges where feasible) to improve neighborhood connectivity and pedestrian safety.

# 5

## ON STREET TRAIL SEGMENT

### 5B.2: BOYCE ROAD STEVENSON BOULEVARD TO AUTO MALL PARKWAY

6,100 LF



#### Existing Conditions

Boyce Rd. is a principal arterial that hosts Class II bicycle facilities and 10 ft wide meandering sidewalks on both sides of the street. The speed limit on Boyce Rd. is 45mph. Landscaping with tree lines front most of the property along Cherry St.'s west side and grading options are limited to 8 ft in some sections without tree removal.

#### Issues

- This street does not meet Bay Trail goals for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas, especially considering the planned overcrossing of the railroad at nearby Stevenson Blvd.
- Industrial character and heavy truck volumes.
- Street has discontinuous sidewalks.
- Wide street width, lack of pedestrian crossing improvements may inhibit pedestrian use.
- Street section may be "too long" for pedestrian connection to shoreline.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Improve crosswalks and intersections (including median refuges where feasible) to improve neighborhood connectivity and pedestrian safety.
- Consider street reconfiguration options to provide dedicated areas for pedestrian and bicycle use as part of larger street improvement projects.
- Improve crosswalks and intersections (including median refuges where feasible) to improve neighborhood connectivity and pedestrian safety.
- Consider street reconfiguration options to provide dedicated areas for pedestrian and bicycle use as part of larger street improvement projects.
- Grade landscaping and install Class I shared use facility

# 5

## RAILROAD SEGMENT

5C: UPRR LINE BETWEEN STEVENSON AND AUTO MALL PARKWAY

3,900 LF



### Existing Conditions

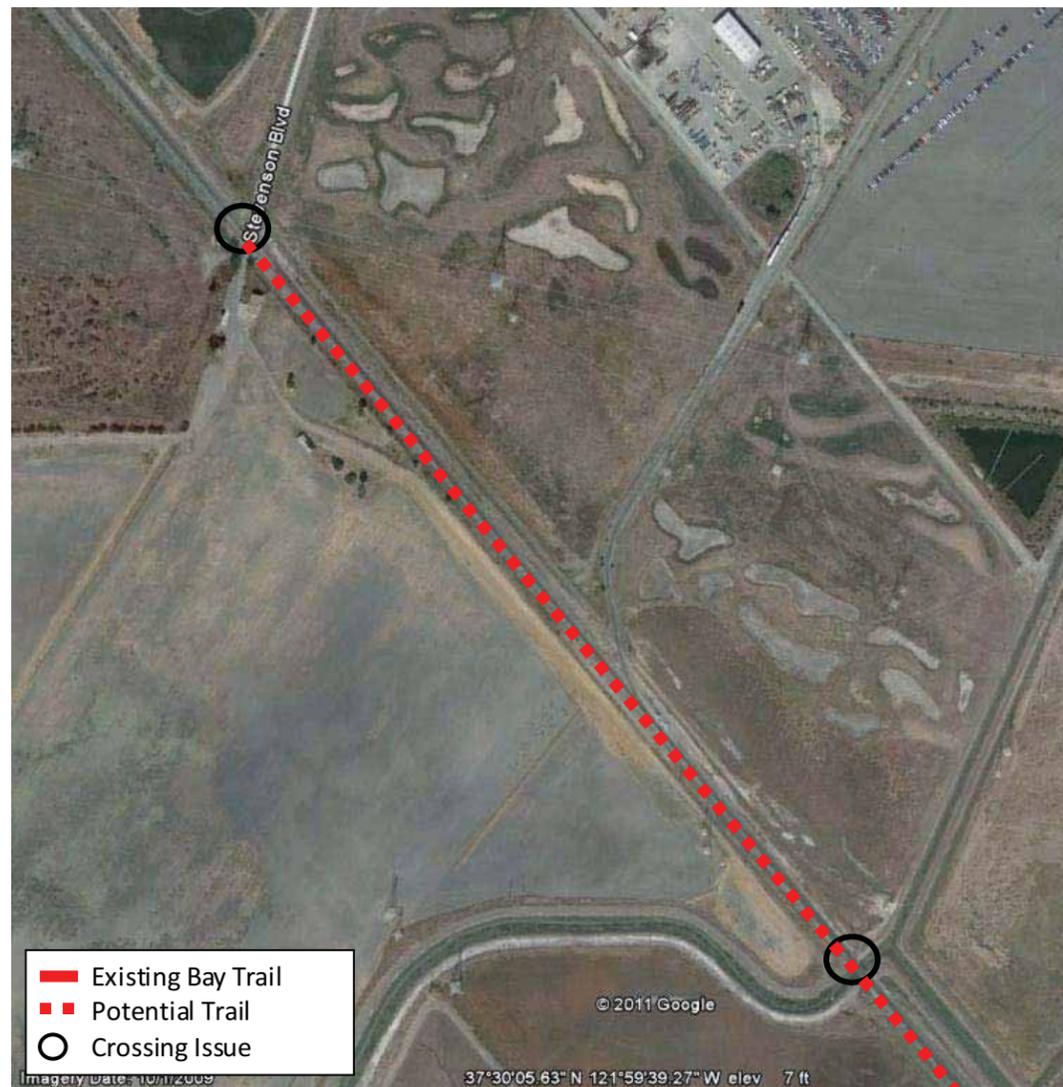
Segment 5C includes rail lines owned by UP that serve passengers on Amtrak's Capitol Corridor as well as freight services. This segment of the UP Coast Subdivision has been identified for expansion to accommodate increased passenger rail and freight operations.

### Issues

- This rail corridor does not meet Bay Trail goals for a shoreline experience.
- There is insufficient ROW outside rail ROW for a continuous trail.
- Since the Bay Trail is shown along the rail corridor on the Bay Trail Plan, and the Alameda County Bike and Pedestrian Plans, some accommodation or mitigation may be required for rail corridor expansion.
- Grade separation is planned at Stevenson to separate street from rail crossing.
- Area east of tracks is a mitigation site created for endangered species recovery as part of the Catellus/Pacific Commons project, and contains a spur rail line currently in use.
- Area west of the tracks is part of the Area 3 and 4 Specific Plan (see Segment 4.A.1).
- A trail segment on the west side of the tracks is needed as part of the Specific Plan to provide a connection to the south. This may be outside of the rail corridor ROW.

### Recommendations

- Incorporate connecting trail segment into Area 3 and 4 Specific Plan implementation.
- Provide buffer and separation from the railroad ROW to the trail segment to improve user experience.
- Design Stevenson overpass to provide bicycle and pedestrian connections that avoid vehicular crossings.
- Provide bicycle and pedestrian safety improvements at Stevenson intersection where it transitions to surface streets.
- Locating trail within existing railroad ROW is not feasible for this segment, given ROW and cost considerations.
- Locate trails away from rail corridor as far as possible to avoid noise, use and safety conflicts; provide security fencing.
- Local agencies should actively monitor rail planning activities and seek partnerships for incorporation of bicycle/pedestrian improvements with regional rail planning projects.

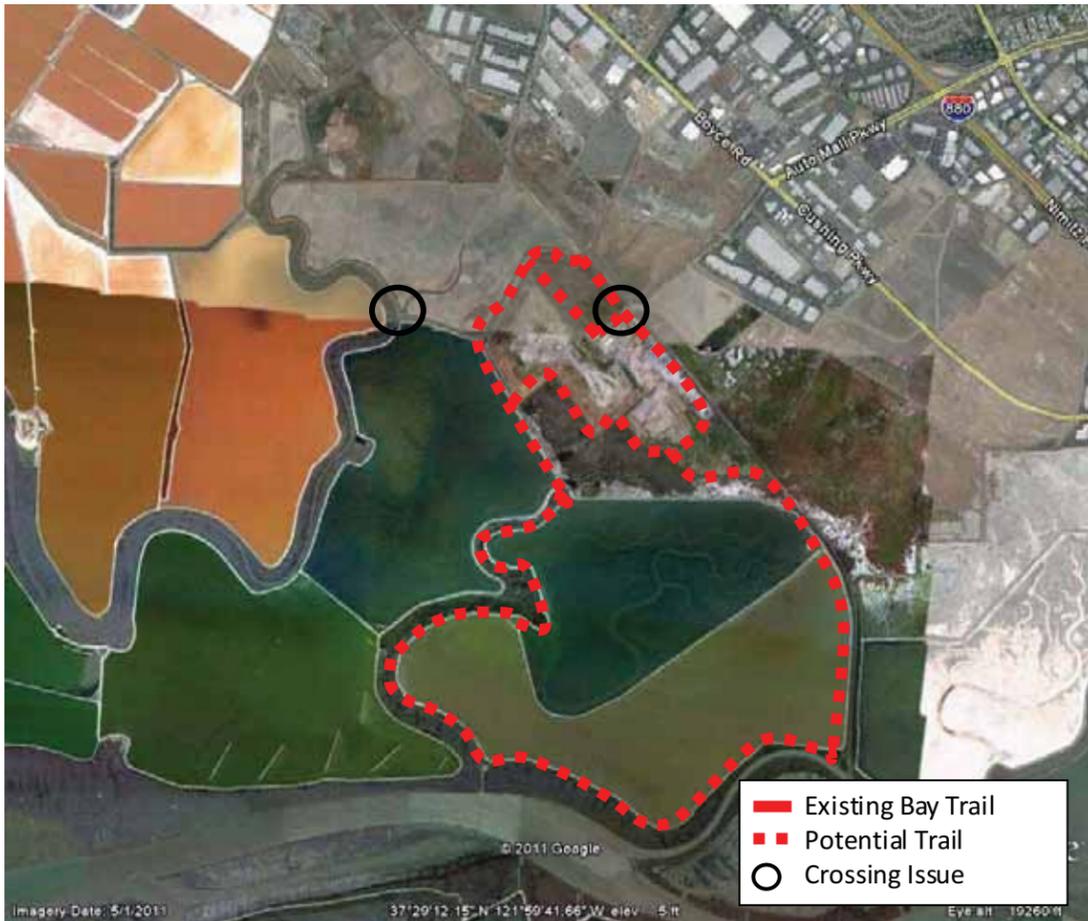


# 6

## SHORELINE SEGMENT

6A.1: TRI-CITIES LANDFILL/LEVEES WEST OF UPRR

4,275 LF



### Existing Conditions

Segment 6A would travel around the northeast and northwest side of the Tri-Cities landfill and then along levees adjacent to an active salt pond near and along the east side of Coyote Creek. The levees are primarily owned by the USFWS and managed by Cargill Inc. However, one option would utilize the Tri-Cities landfill service road on the east side of the landfill slopes, while other options considered would utilize a landfill levee service road along the west side of the landfill, adjacent to wetlands, and a third option would cross an apparently non-jurisdictional wetlands area that is used by the landfill as a stormwater detention facility, in the northeast corner of the landfill facility. A potential staging area should be considered at the landfill property or future City park just east of UPRR tracks.

### Issues

- All of the issues related to operational salt pond conflicts and possible environmental impacts, that are present in Segment 3A are also present in this segment regarding use of USFWS owned/Cargill managed levees adjacent to active salt ponds.
- The agreement between Cargill Inc. and the Service designated certain levees for public access. Segment 6 was not one of them. Although the agreement provides a process where additional areas can be opened for public access, after certain safety and security improvements are made, with on-going maintenance turned over to the Service, as a practical matter, all involved stakeholders must agree with this to proceed.
- Both Cargill and the Don Edwards Refuge Manager do not believe it is feasible to allow use of levees for shared public access because of potential impacts on Cargill's salt production operations, and/or impacts on sensitive wildlife species that occupy the immediately adjacent tidal wetlands along or near Coyote Creek.
- Tri-Cities Landfill also believes there will be operational conflict issues regarding shared use of their service roads for public access. However other closed landfill facilities have implemented shared use service road concepts for public access trails. Tri-Cities do not perceive conflict problems with the construction of a trail across the stormwater detention pond, but this may have regulatory complications and may require construction of elevated boardwalk.
- CPUC has indicated that the private at-grade rail crossing to the landfill can continue to be used by landfill employees, clients, and customers, but that it cannot be used as a general public crossing for non-landfill purposes, such as a public access trail.

### Recommendation

- It is unlikely that an exterior flood control levee to protect the Fremont-Newark area from increased flood frequency and flood heights as a result of Sea Level Rise would be constructed through the western part of Segment 6A, near Coyote Creek, but may be considered for the eastern portion, near the Tri-Cities landfill. Any consideration of a future flood control levee system should also incorporate the concept of a Bay Trail.
- The Cities of Fremont and Newark should continue to coordinate in planning the development of the Specific Plan Area 3 & 4, and with Tri-Cities landfill and ACFCWCD regarding public access trail connections between these areas.

# 6

## SHORELINE SEGMENT

6A.2: CATELLUS/LEVEES EAST OF UPRR

44,350 LF



### Existing Conditions

Segment 6A.2 includes the existing 10-foot-wide privately owned paved pathway running along the west side of the Catellus business park, a decomposed granite (dg) pathway through stormwater detention ponds operated by the business park and ACFCWCD. Segment 6A.2 also includes City-owned right of way (Old Cushing Road) as well as levees adjacent to or managed by the USFWS (Ponds A22 and A23 of the South Bay Salt Ponds Project), and ACFCWCD levees adjacent to creek channels, UP rail corridor and the Bayside Business Park, Phase II.

### Issues

- The USFWS initially indicated preliminary support to the concept of using levee lands in the 6A area for public access, subject to further environmental review. However, subsequent review by the Refuge Manager indicated that trails would not be allowed in or near the Refuge lands. Further evaluation and coordination will be needed to resolve habitat and public access concerns on Refuge lands.
- In some areas, periods of trail closure may be necessary along some portions of the trail for biological resource protection reasons, or for levee maintenance. The trail system could be built and operated by a local public agency such as the City of Fremont, or other agency, if consensus is reached with USFWS Don Edwards Wildlife Refuge.
- A licensing agreement with ACFCWCD would be required for use of their lands, including possible use of lands for staging areas. The agreement would have the trail operating agency, such as the City, be responsible for construction, maintenance, and patrol, and the trail would be subject to periods of closure for levee and channel maintenance and reconstruction.
- Because portions of any new trail system would be constructed on existing levees that are subject to settlement and may require frequent maintenance or reconstruction for flood control purposes, the trail surfacing would likely consist of compacted or stabilized fine aggregate gravel.

### Recommendations

- Implementation of a Bay Trail in this area should be integrated with planning for the larger South Bay Salt Ponds Restoration Project.
- Since Segment 6A.2 connects to the south to an existing Bay Trail and to the north to the Tri-Cities landfill, Mowry Slough and Specific Plan 3 & 4 area, this segment has high potential for consideration for early implementation. This would make a relatively long Bay Trail system in the southwest Fremont and Newark area, if habitat concerns can be addressed.

# 6

## ON STREET TRAIL SEGMENT

### 6B.1: AUTO MALL PARKWAY NOBEL DRIVE TO BOYCE ROAD

2,400 LF



#### Existing Conditions

Auto Mall Parkway between Nobel Dr. and Boyce Rd. consists of landscaped medians with left turn pockets, as well as four travel lanes (two in each direction), Class II bicycle facilities, and a sidewalk enclosed by mature trees on both sides on the southern edge of the roadway. There is no sidewalk on the northern side of the street within this segment. There are no sidewalks west of Nobel Dr.

#### Issues

- This street does not meet Bay Trail goals for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Improve existing landscaped area and consider constructing a Class I shared use pathway (average 10-ft wide) between the trees on the southern edge of the roadway as a part of Bicycle and Pedestrian Plan implementation.

# 6

## ON STREET TRAIL SEGMENT

### 6B.2: CUSHING PARKWAY AUTO MALL PARKWAY TO WARREN AVENUE

14,150 LF



#### Existing Conditions

Cushing Parkway (a continuation of Boyce St.) is a principal arterial that has pedestrian sidewalks and Class II bicycle facilities. The first 2,000 feet of the segment beginning at Bunch Dr. has 10-ft wide meandering sidewalks on both sides of the street, at which point an elevated roadway or-causeway partially above a diked marsh constrains the roadway, making the sidewalks straight. The speed limit on Cushing Parkway is 45mph. Many cyclists feel somewhat uncomfortable riding on a street with the speed limit, even within the Class II bicycle facility. The street is landscaped along most of the property for the first 2000 feet of the segment, beginning just south of Auto Mall Parkway, but not along the causeway section.

#### Issues

- The northern portions of the existing facility are along a busy street and do not fully meet Bay Trail goals for a shoreline experience, while the southern portion is located immediately adjacent to a wetland area.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendations

- Provide connections to existing Class I facility west of Nobel Drive as area is developed.
- Provide signage and site furnishings to improve wayfinding.
- Improve Auto Mall Parkway to satisfy City of Fremont's Complete Streets requirement.

# 6

## RAILROAD SEGMENT

6C: UPRR LINE SOUTH OF AUTO MALL PARKWAY

10,875 LF



### Existing Conditions

Segment 6C includes north-south rail lines owned by UP that serve passengers on Amtrak's Capitol Corridor as well as freight services.

The Capitol Corridor Joint Powers Authority (CCJPA) is a partnership among the six local transit agencies in the eight county service area, which shares the administration and management of the Capitol Corridor. The San Francisco Bay Area Rapid Transit District (BART) provides day-to-day management support to the CCJPA. Capitol Corridor services are developed with input from our riders, private and public sector stakeholders, along with the partners who help deliver the Capitol Corridor service - Amtrak, the Union Pacific Railroad, Caltrans and the various agencies and communities that make up the Capitol Corridor.

This segment of the UP Coast Subdivision has been identified for expansion to accommodate increased passenger rail and freight operations.

The reconstruction of the rail corridor will include track improvements, a new moveable rail bridge, four stations and a centralized traffic control system. Six round-trip trains will travel from Union City during peak commute hours. Three of these trains will travel to San Francisco and three to San Jose. Environmental review of the project is currently underway.

### Issues

- This rail corridor does not meet Bay Trail goals for a shoreline experience.
- There is insufficient ROW outside rail ROW for a continuous trail.
- Since the Bay Trail is shown along the rail corridor on the Bay Trail Plan, and the Alameda County Bike and Pedestrian Plans, some accommodation or mitigation may be required for rail corridor expansion.

### Recommendations

- Locating trail within existing railroad ROW is not feasible for this segment, given ROW and cost considerations.
- Locate trails away from rail corridor as far as possible to avoid noise, use and safety conflicts; provide security fencing.
- Local agencies should actively monitor rail planning activities and seek partnerships for incorporation of bicycle/pedestrian improvements with regional rail planning projects.



# 7

## SHORELINE SEGMENT

7A: EXISTING BAY TRAIL, BAYSIDE BUSINESS PARK, PHASE I

12,175 LF



### Existing Conditions

This is an existing dedicated Bay Trail along a levee owned and operated by the USFWS associated with restoration of former salt ponds in the area. The trail is about 14 to 16 feet wide and surfaced with gravel. Restored wetlands are located immediately to the west, and Bayside Business Park Phase II is located on the other side of a small wetland area. The trail can be accessed via an ACFCWCD levee at the southern terminus of Fremont Blvd. A small parking/trail staging area is located there.

### Issues

- It is not clear if the existing gravel trail fully meets the ADA requirements for a firm and stable surface.
- A gravel surface is used due to long-term settlement of the levee, making an asphalt paved trail difficult and expensive to maintain.

### Recommendations

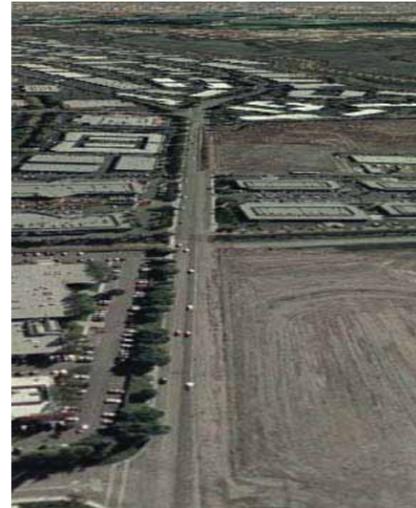
- As noted for Segment 6A, construction of the recommended trail improvements to the immediate north (6A) and south (8A.2, 8B), combined with the existing Bay Trail of Segment 7A, will provide just over a two mile continuous trail, as well as a connector to the Coyote Creek Trail system beginning at MacArthur Blvd. near Dixon Landing Rd. in Milpitas. This should be considered a high priority for advanced planning, ROW acquisition, design, and construction.
- Coordinate wayfinding signage with USFWS/Don Edwards Wildlife Refuge.
- Coordinate with ACFCWCD on use of and improvements to the Scott Creek flood control levee.

# 7

## ON STREET TRAIL SEGMENT

7B: FREMONT BLVD  
WARREN AVENUE TO ACFCWCD LINE B

8,225 LF



### Existing Conditions

Fremont Blvd. is a principal arterial that has a painted left turn median as well as Class II bicycle facilities and 10-foot-wide meandering sidewalks on both sides of the street. The speed limit on Fremont Blvd. is 35mph. The typical cyclist would likely feel somewhat uncomfortable riding on the street even within the Class II bicycle facility. The street and sidewalks are lined by mature trees along most of both sides of Fremont Blvd.

### Issues

- Pedestrian facility improvement options are limited to 8 ft in some sections unless tree removal is considered.
- This street does not meet Bay Trail goals for a shoreline experience, but could be considered as a connector trail to link accessible shoreline areas, especially as a connection via the planned extension of Fremont Blvd. to McCarthy Rd. and the Coyote Creek Trail in Santa Clara County.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

### Recommendations

- Consider and plan improvements along Fremont Blvd., as noted in the City of Fremont and Alameda County Bicycle and Pedestrian Plans as Bay Trail connectors.
- Incorporate wayfinding signage noting the preserve of a staging area at the end of Fremont Blvd., and an existing access point to the Bay Trail, Segment 7A.

# 8

## SHORELINE SEGMENT

### 8A.1: NEWBY ISLAND PERIMETER TRAIL AND LEVEE

19,225 LF



#### Existing Conditions

Segment 8A.1 would be located on the existing dirt service road (loop road) that runs around the toe of the Newby Island landfill. Technically, this area is located in unincorporated Santa Clara County, outside of the jurisdictions of the cities of Fremont and Newark, and Alameda County, but is being discussed here in the interests of describing trail connections to the south, especially the Coyote Creek Trail. It also is a potential alternative to the Coyote Creek levee trail described under Segment 8B, should construction of that segment prove difficult or in the future for Right of Way availability, environmental and permitting reasons. The landfill loop road is currently shown on the Santa Clara County Bike Plan as well as on the SF Bay Trail Plan as a future trail.

Newby Island is an active, Class III Municipal or Sanitary landfill, although portions of the landfill, including the landfill slope areas, have been closed to accepting new wastes and have been capped. The service road is in use, mainly for well monitoring access and landfill slope maintenance activities. The service road is 14 to 18 or more feet wide.

#### Issues

- Discussions with the Newby Island landfill management staff indicate they are amenable to having a public access trail in the future, provided public safety and site security is assured.
- They also indicated that they needed to do additional work on many of the landfill slopes for seismic safety reasons, to ensure that the landfill slopes do not fail during a large earthquake event, discharging the buried solid waste into adjacent wetlands. Therefore the service road will not become available for use as a trail for several more years.
- The service road will need to be managed as a jointly used road, as it will need to continue to be used by landfill staff to reach portions of the landfill for maintenance and monitoring purposes, and may need to be closed for periods of time during this work, to ensure safety of trail users. In addition, a sunrise to sunset schedule or other some other trail use time considerations coincident with landfill operations hours will need to be planned for.
- Typically there is a 30 year period of monitoring following formal closure of the landfill to acceptance of new solid wastes, and the completion of landfill capping and stabilization work. There is precedence for use of landfill service roads for public access, including the West Contra Costa Landfill in Richmond, and the American Canyon Landfill in southern Napa County, both of which have Bay trail spur loops currently in use.
- In addition to potential safety, security and use conflicts on the service loop road, a safe way needs to be located and designed to get trail users from the Dixon Landing- McCarthy Blvd. gate, past the landfill entry area and onto the service road.

#### Recommendation

- This loop trail, along with a connection through the landfill property to McCarthy Blvd., will require careful planning to find a safe alignment through the landfill property.
- Coordinate with Newby Island Landfill management, the City of Milpitas, King and Lyons, and City of San Jose to plan connections through the landfill and between the Bay Trail and the Coyote Creek Trail.

# 8

## SHORELINE SEGMENT

### 8A.2: CREEKSIDING LANDING/COYOTE CREEK TRAIL

6,300 LF



#### Existing Conditions

Segment 8A.2 would be located on an existing levee bordering Coyote Creek., as well as along a levee bordering the south side of Line B. The trail segment would terminate either at Dixon Landing Rd., or through Newby Island Landfill property near the landfill entry gate before connecting to McCarthy Blvd. This area is being studied in greater detail in a separate Bay Trail Feasibility Study. The exact ownership of the levee is unclear, with portions of it owned by King and Lyons, associated with their ownership of the adjacent vacant parcel that has been approved for construction of the Creekside Landing Business Park., and portions of it owned by the State Lands Commission, under a settlement agreement related to the realignment of the historic course of Coyote Creek. The Creekside Landing development agreement between the City of Fremont and King and Lyons requires that they make the levee along Coyote Creek available for construction of a trail, but not that they construct or operate and maintain the trail. The agreement does not cover use of the levee along the south side of Line B. The immediate adjacent lands to the east of Coyote creek consists of a muted tidal wetlands area, with the Line B levee on the north, and the approved business park located further to the east of this. Tidal wetlands occur along Coyote Creek, including several small wetlands connected to Coyote Creek via regulated tide gates that were constructed as mitigation projects. The Newby Island Landfill lies further to the east, on the other side of Coyote Creek. The existing levee top service roadway is fairly narrow, 12 to 14 feet wide, and in places the levee bank slopes are eroding and steeply sloping. In addition, the levee has a fairly low surface elevation, below the height of the 100-year flood.

#### Issues

- Levee ownership is un-certain in places, and ROW agreements with State Lands, King and Lyons, and possibly ACFCWCD and Newby Island Landfill operators, will be needed to secure permission to construct and operate this trail segment.
- Improving the levee by raising its elevation and repairing and stabilizing eroding side slope areas is challenging because of the occurrence of wetlands adjacent to the levee, requiring fill placement in the wetlands to accomplish. The adjacent wetlands contain known occurrences of the fully protected and endangered Salt Marsh Harvest Mouse. However, some improvements can be made to the levee including stabilizing side slopes using biotechnical methods, and locally widening the surface to construct turn outs. This segment can be considered as a part of an interim trail, before the Bay Trail along the planned extension of Fremont Blvd. is constructed as described in segment 8B.
- A pedestrian bridge crossing of Line B will be required, either from USFWS Refuge lands on the west end of the north levee of Line B, or from ACFCWCD lands on the north levee of line B, to the east and near Fremont Blvd.
- Permits from bridge construction and for construction of the levee improvements will be required from the US Army Corps of Engineers, the SF Bay Regional Water Quality Control Board, and the California Department of Fish and Game, as well as consultation with the USFWS on endangered species issues.

#### Recommendations

- This is a high priority section for trail implementation within the overall project Study Areas.
- Construction of the Coyote Creek levee trail will eliminate a key gap in the Bay Trail, providing a connection to the existing Bay Trail near upper Mud Slough (Segment 7A) and other opportunities to the north, and Coyote Creek Trail to the south.
- Interim levee improvements, signage, and wayfinding will be important components of the project in this area.

# 8

## ON STREET TRAIL SEGMENT

### 8B: FREMONT BOULEVARD EXTENSION AFCWD LINE B TO DIXON LANDING ROAD

4,000 LF



- Existing Bay Trail
- - - Potential Trail
- Crossing Issue

#### Existing Conditions

Fremont Blvd. to the north is a principal arterial in southern Fremont. This segment passes through the vacant commercial parcel of approved Creekside Landing Business Park and adjacent to a small restored muted or partially tidal wetland. As a condition of approval, the developer will be required to extend Fremont Blvd. to McCarthy Blvd., including providing a paved and landscaped Bay Trail paralleling the extension and improvements at the new Fremont Blvd.-Dixon Landing intersection. The Coyote Creek Trail system originates near McCarthy Blvd., and a trail system around and near City of San Jose wastewater treatment ponds also occurs in this area.

#### ISSUES

- This street extension and associated trail improvements will close a significant Bay Trail gap, and provision of off-street facilities adjacent to restored wetlands will enhance user experience.
- Construction of the trail will require grading, a new railway surface through elevated fill pads, and bridge crossings of Line B and Scott Creek.
- Timeframe for implementation is unknown, as the improvements are associated with the construction of Bayside Business Park Phase II.
- Bay Trail goal is to have off-street trail facilities that accommodate bicyclists and pedestrians.

#### Recommendation

- Provide trail connection through property to close Bay Trail gap. This alignment could be located at proposed future trail location or along existing levee road owned by ACFCWCD, State Lands Commission, and King and Lyons (see Segment 8A.2).

## 5. OPPORTUNITIES AND CONSTRAINTS

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Selecting the appropriate alignment(s) and best fit for a trail system, as well as providing appropriate trail design elements requires the evaluation of trail conditions, including opportunities and constraints to minimize potential physical, biological, and land use conflicts, and ensure that the trail is safe and enjoyable for users, geotechnically stable, and does not require constant, costly maintenance. In addition, the trail should meet the goals and objectives established in the applicable General Plan(s), local bicycle and pedestrian plans, and other guiding documents. Trail constraints consist of physical, biological and land use and land ownership conditions, or obstacles that need to be carefully evaluated and considered in alignment selection and trail design. Trail opportunities are improvements or elements that enhance, simplify or mitigate trail issues.

Each of the study segments was ranked based on an analysis of their existing conditions, constraints and opportunities. A decision matrix was utilized to rank the potential trail segments based on project goals, trail design issues (discussed in Section 7) and are identified below. Each criterion had a weighting factor reflecting its relative importance:

- Consistency with Bay Trail Policies
- Wildlife and Wetlands Resource Sensitivity
- Geotechnical/Hydrology/Flooding Issues
- Land Use and Safety
- Land Ownership/Available Right of Way
- Relative Cost/Infrastructure Needs
- User Experience and Community Survey Preference

### 5.1 EVALUATION CRITERIA

#### 1. Consistency with Bay Trail Policies

Bay Trail alignment goals, objectives and policies were developed as part of the Bay Trail Plan, and are used to evaluate and guide the adoption of trail segments as part of a continuous Bay Trail System.

Ranking:

- 1 Consistent with many/most of Bay Trail policies
- 2 Consistent with some Bay Trail policies
- 3 Not consistent with Bay Trail policies

#### 2. Wildlife and Wetlands Resource Sensitivity

Noise, intrusion, pets and other factors associated with public access can affect sensitive wildlife resources and wildlife populations. Portions of the Study Area contain existing sensitive wildlife habitat, including areas of threatened and endangered species habitat, areas of restored habitat, or areas set aside as protected habitat for endangered species in dedicated mitigation areas, some of which may limit or preclude public access.

Wetlands, including waters of the United States and the State of California that are subject to regular flooding, ponding, and tidal inundation significantly limit suitability for public access, especially if they require placement of fill or a structure, such as a bridge or boardwalk across or through them. Many of the seasonal wetlands that occur within the Study Area are degraded or of poor quality, but also represent a constraint in that they require regulatory permit approval, and may require compensatory mitigation.

Ranking:

- 1 High benefit or low effect on resource; adjacent areas not subject to regular tidal flooding or seasonal ponding, minimal wetlands impacts
- 2 Moderate benefit or some potential effect; adjacent areas subject to periodic riverine or tidal flooding or seasonal ponding, within or adjacent to poor quality wetlands suitable for enhancement
- 3 Low benefit or potentially significant negative effect; adjacent areas may be subject to regular tidal flooding or seasonal ponding, within or adjacent to high quality wetlands and sensitive species habitat.

### 3. Geotechnical/Hydrology/Flooding Issues

The most significant geotechnical constraint within the Study Area is the presence of Bay Mud, which consists of historic tidal marsh sediments. Much of the area of historic tidal marsh has been converted to salt ponds. The Bay Mud sediments are soft and highly compressible, and provide poor foundations for roads, pathways and structures.

Historic levees located on Bay Mud, including the salt pond levees were often constructed using dredged Bay Mud material. Other developed areas consist of imported artificial fill placed on Bay Mud, or areas of alluvial sediments adjacent to and at elevations just above the historic tide lands. Historic levees may not be well engineered, and as a result may subside, settle, erode, or be overtopped by extreme tides and high slough flood flows.

Not all of the levees which occur within the Study Area are underlain by Bay Mud, and some that have been better engineered, while other levees constructed using Bay Mud are inspected and maintained with a high degree of professional attention. The issue is complex and requires a detailed analysis of specific levee segments to determine their construction and maintenance history, elevation, and existing condition.

Many trail facilities, especially bridge crossings, are located within the 100-year floodplains of rivers and streams, or the 100-year high tide, and require additional consideration in trail and structure design, or necessitate more frequent maintenance to periodically clear flood debris, repave or rebuild washed out sections and repair damage. Typically bridges are located at least 3 feet above expected flood levels. Most often trail occurrence in an area of shallow and/or low velocity flooding is not seen as a major constraint. However crossing poorly drained areas, or installing trail drainage structures such as causeways and culverts can be expensive to construct and maintain.

Most of the trail segments being evaluated within the Study Area are located within areas designated on FEMA Flood Insurance Rate Maps (FIRM) as subject to shallow flooding during extreme bay tide events, although the upper or eastern areas along the major slough channels (near the UP Railroad tracks) may be subject to traditional riverine flooding during a large flood event, or if a levee break occurs.

Areas outside of FEMA designated 100-year floodplains were given a better ranking than those within the FEMA 100 year floodplain. Levee segments that were mostly on Bay Mud were given the most significantly constrained ranking, levees that were mostly not underlain by Bay Mud, but by alluvial deposits were given an intermediate ranking, while segments not on levees and not underlain by Bay Mud were given the least constrained ranking.

Ranking:

- 1 Not a levee trail segment; an/or not underlain by Bay Mud deposits; outside FEMA 100 year floodplain
- 2 Levee trail segment, but not underlain by Bay Mud deposits, or on well engineered fill; within 100 year floodplain
- 3 Levee trail segment underlain by Bay Mud deposits; levee constructed using Bay mud; area within 100 year floodplain

### 3. Land Use and Safety

This is a key component for any public access facility located adjacent to private properties that may have concerns about privacy and security and conflicts with their day to day operations. Alternatives that have potential impacts on the security, privacy, or day to day operation of business of adjacent land uses would score lower than other project alternatives. Trail segments along rail corridors were given the lowest score (highest points) because of noise and safety concerns.

Ranking:

1. Trail in open area, not adjacent to residential or industrial use
- 2 Trail adjacent to residential or industrial use, may require periods of trail closure or installation of security measures such as fencing and CCTV cameras; potential user safety conflicts along street
- 3 Significant operational conflict with adjacent use; user safety issue along arterial street
- 4 Railroad safety issue along rail corridor

### 5. Land Ownership/ Available Right of Way

The availability of public right-of-way for a trail is a very important criterion. Alternatives that require the purchase of easements or property may involve timely and complex negotiations, and add significant land costs. Since trail projects are typically not completed using eminent domain, a willing property owner is most often needed for project implementation. However, combining public access with planned infrastructure improvements, even future infrastructure improvements, such as flood control levees, and making trails conditions of approval for future development projects provide realistic opportunities for trail implementation.

Projects on private lands or where an existing long term agreement makes public lands un-available in the near future would score much lower than projects where right-of-way ownership is already in place, or where there is a cooperating public partner agency. Likewise, an unwilling private property owner represents a significant constraint. Cargill has indicated an unwillingness to locate trails on lands they own, operate or manage. UP is unlikely to allow trails within their right of way due to expansion and upgrade plans within regional framework planning.

Ranking:

- 1 Publicly owned right of way
- 2 Privately owned land planned for future development, and/or where ROW is needed for minor bicycle/pedestrian improvements along street
- 3 Privately owned land or public lands under private management where no development project is anticipated, and/or where ROW is needed for extensive bicycle/pedestrian improvements along street

## 6. Relative Cost and Infrastructure Needs

In addition to right of way or land acquisition costs, relative cost issues include need for infrastructure, utility relocation, or special construction techniques for trail installation, such as bridges, boardwalks, retaining walls, drainage facilities, special construction techniques, street reconfiguration, etc. Additional information regarding infrastructure costs and ranking is contained in the ABAG Gap analysis. This ranking does not directly factor in railroad grade separation, but is noted as a potential additional cost.

Ranking:

- 1 Easy to construct (trail located on existing levees, roads, crossings, etc.)
- 2 Moderate construction cost (retrofit existing crossings, bridge spans less than 200 ft., boardwalks less than 500 feet, minor grading, infrastructure)
- 3 Significant infrastructure challenges (street reconfiguration, signals, ramps, walls, long bridges and boardwalks, utility relocation, etc)

## 7. User Experience/ Community Survey Preferences

The project should appeal to the widest variety of users possible, including bicyclists, walkers, joggers, disabled users and others. At the public workshops held in Fremont and Newark, members of the public were invited to prioritize key issues such as visual impacts, trail connectivity, proximity to neighborhoods, safety concerns, privacy, etc. Virtually all public participants favored a Bay Trail system that was near the Bay and not on city streets, even if implementation were in the distant future and were associated with creation of a new levee system for flood protection and sea level rise mitigation. Connections to local trails and bike lanes were also voiced as being very important. Participants generally expressed concerns regarding safety and quality of experience if the trail is placed on busy streets or along the rail corridor. The results of the public workshops are reflected in the matrix. Worksheets from the public workshop are contained in Appendix A.

Ranking:

- 1 Consistent with community survey preferences
- 2 Somewhat consistent with community survey preferences
- 3 Not consistent with community survey preferences

## 5.2 RANKING MATRIX

Table 5-1 identifies the ranking for the criteria in each study segment, with the lowest scores indicating the most viable segments. Based on this evaluation, the preliminary preferred alignment is identified in Section 6.

Table 5-1: Ranking Matrix

SEGMENT	CRITERIA								TOTAL	NOTES
	1. Bay Trail Policies	2. Wildlife & Wetlands Sensitivity	3. Geotechnical Hydrology Flooding	4. Land Use & Safety	5. Right of Way	6. Cost & Infrastructure	7. Public Workshop Criteria			
1A	1	2	3	2	1	1/2	1		11-12 *	
1B	2	2	2	2	2	2	2		16	
2A.1	1	2	2	2	2	1	1		11 *	
2A.2	2	2	2	2	1	1	2		12	
2B	3	1	1	3	2	2	3		15	
3A	1	3	3	2	3	2	1		15 **	
3B.1	3	1	1	3	2	2	3		15 **	
3B.2	3	1	1	3	2	3	3		16	
3C	3	1	2	4	3	3	3		20	
4A.1	1	3	3	1	1	1/2	1		11-12	
4A.2	2	2	2	2	2	1	1		12	
4B.1	3	1	1	2	1	2	3		13	
4B.2	3	1	1	3	2	3	3		16	
4C	3	1	2	4	3	3	3		19	

SEGMENT	CRITERIA							TOTAL	NOTES
	1. Bay Trail Policies	2. Wildlife & Wetlands Sensitivity	3. Geotechnical Hydrology Flooding	4. Land Use & Safety	5. Right of Way	6. Cost & Infrastructure	7. Public Workshop Criteria		
5A	1	3	3	2	2	1/2	1	13-14	
5B.1	3	1	1	2	1	2	3	13	
5B.2	3	1	1	3	2	3	3	16	
5C	3	2	2	4	3	3	3	20	
6A.1	1	3	3	2	2/3	1/2	1	13-15	
6A.2	1	3	3	1	1	1/2	1	11-12*	
6B.1	3	1	1	2	2	1	3	13	
6B.2	2	1	1	3	2	1	1/3	11-13	
6C	1	3	3	4	3	3	1	18	
7B	3	1	1	3	1	1	3	13	
8A.1	1	2	2	2	2	2	1	12**	
8A.2	1	2	3	1	2	2	1	12**	
8B	2	2	2	1	2	1	2	12**	

\* Apparent Lowest Score for Each Segment

\*\* Apparent Tie

- A Group – Shoreline Segments
- B Group – On-Street Segments
- C Group – Rail Corridor Segments

### **5.3 RESULTS OF RANKING ANALYSIS AND PREFERRED ALIGNMENT DESIGNATION ADD TO TOC**

The ranking matrix provides preliminary guidance regarding a trail segment's suitability and apparent preference for Bay Trail designation, consistent with established policies and environmental characteristics. The bay shoreline alignments (A designations) generally scored slightly lower in points (higher preference) than the on-street, urban alignments (B designations). Trail alignments along the rail corridor (C designations) consistently scored the highest points (lowest preference), and would likely not be permitted unless located some distance away from the rail ROW.

The shoreline segments are generally adjacent to wetlands and sensitive habitat, occur on levees on Bay Mud, and may have Right of Way issues, (all of which are constraints that score relatively higher points) while counterbalancing this, the on-street options generally do not meet fully Bay Trail goals, do not provide a highly positive trail user experience, and potentially have significant infrastructure improvement costs in street realignment and utility relocation. All of these result in higher scores.

In addition, the clear community preference was for a shoreline trail alignment for the Bay Trail, even if it would take many years to fully implement.

## 6. PRELIMINARY POTENTIAL ALIGNMENT

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### 6.2 PREFERRED ROUTE

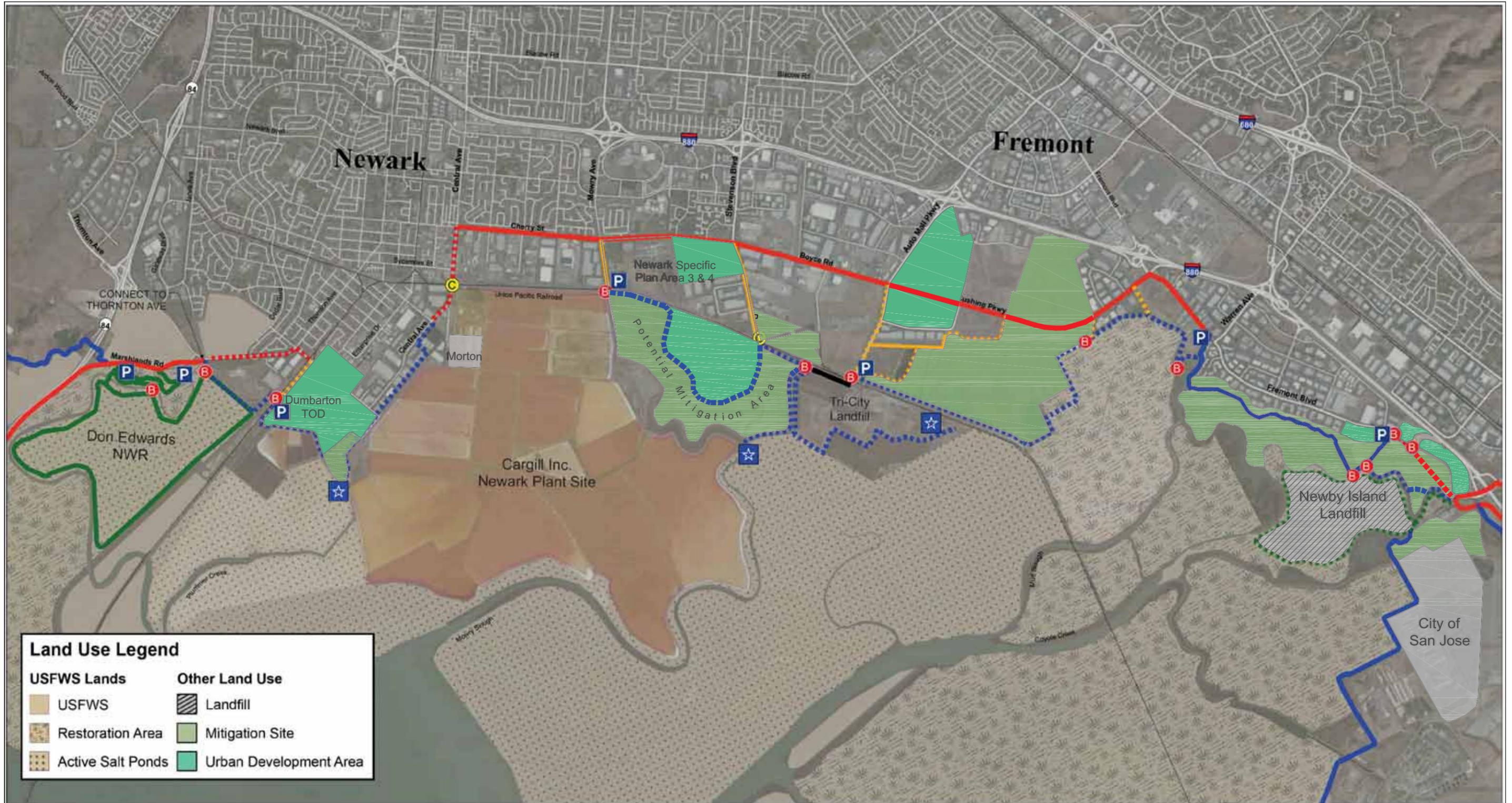
Construction of a continuous shoreline-oriented Bay Trail through the Study Area is a challenging, long term commitment. The trail will likely be completed in individual segments: when opportunities occur for trail construction in conjunction with other development projects, when right of way and/or funding becomes available. The most challenging segment will be to connect the Bay Trail around Cargill's Newark Plant Site. Cargill has expressed reservations about any trails in the areas on or around their operations. An alternative, interim alignment to connect this potential gap between the Dumbarton TOD trails and Areas 3 and 4 Specific Plan trails is to utilize Cherry Street, which the Bay Trail Plan designates as the Bay Trail, but is mostly unimproved. Cherry Street in this area, does not have continuous sidewalks, bicycle lanes or pedestrian accommodations that would provide a safe and enjoyable route for Bay Trail users. In addition, there are challenges along Cherry Street due to existing infrastructure along each industrial parcel such as driveways, utilities, parking areas, mounded landscaping, etc.) that might necessitate significant construction to create a suitable trail connection.

Some use of on-street options should be included, to provide connector trails to neighborhoods, including improvements on Central Ave., Mowry Ave., Stevenson Blvd., Auto Mall Parkway, Thornton Ave. and Fremont Blvd. However, since these trails provide connections and links to neighborhoods and other trails, rather than functioning as a primary shoreline route (it will be costly to make the needed infrastructure improvements), on-street options that improve the existing sidewalk and bike lanes should be considered when they are associated with other development projects, capital improvement projects, such as Green Streets/Complete Streets projects, or Bicycle Plan implementation.

Plan and policy level language should be included in the General Plan and applicable agency documents to affirm each community's commitment to a long term shoreline-oriented trail system within the Study Area.

The preferred Bay Trail alignment is shown in Figure 6-1. The map also shows connections, interim alignments and other trails that will provide connections to the Bay Trail as part of a comprehensive trails network. The section in the vicinity of Cargill's Newark Plant Site (Segment 3) is shown using a broad swath, since coordination needs to occur with the interested stakeholders, who do not currently believe the proposed route is feasible because of operational conflicts and sensitive species issues. Clearly the Bay Trail through this area will be a long- term goal, and may possibly be completed associated with planning for future regional flood control systems to address climate change issues. However, considering the relatively small amount of urban land presently within the 100-year floodplain in the Newark-Fremont area, there may not be an immediate need for providing such a levee system. Figure 6-2 shows how the Bay Trail through the Newark-Fremont area would look in the future, with a connected, shoreline oriented trail and local and regional connector trails that form a comprehensive trails network. The recommended Bay Trail alignment changes are proposed and subject to approval by the cities of Newark and Fremont, as well as the Bay Trail Project Board of Directors.

As indicated above, implementation of the ultimate Bay Trail as close to the bay shoreline and adjacent tidal marsh areas and seasonal wetlands as possible is a long term goal that will be implemented in segments over time as conditions change in the planning area and as specific opportunities arise and are taken advantage of by local governments. The recommended alignment, which is designated as the Preliminary Potential Alignment and shown on Figure 6-1, includes the following distinctions:



Land Use Legend	
<b>USFWS Lands</b>	<b>Other Land Use</b>
USFWS	Landfill
Restoration Area	Mitigation Site
Active Salt Ponds	Urban Development Area

**Trail Legend**

- Trailhead
- Bridge (Bike/Pedestrian)
- Over Crossing (Vehicle/Bike/Pedestrian)
- Boardwalk
- Long Term Connection Goal

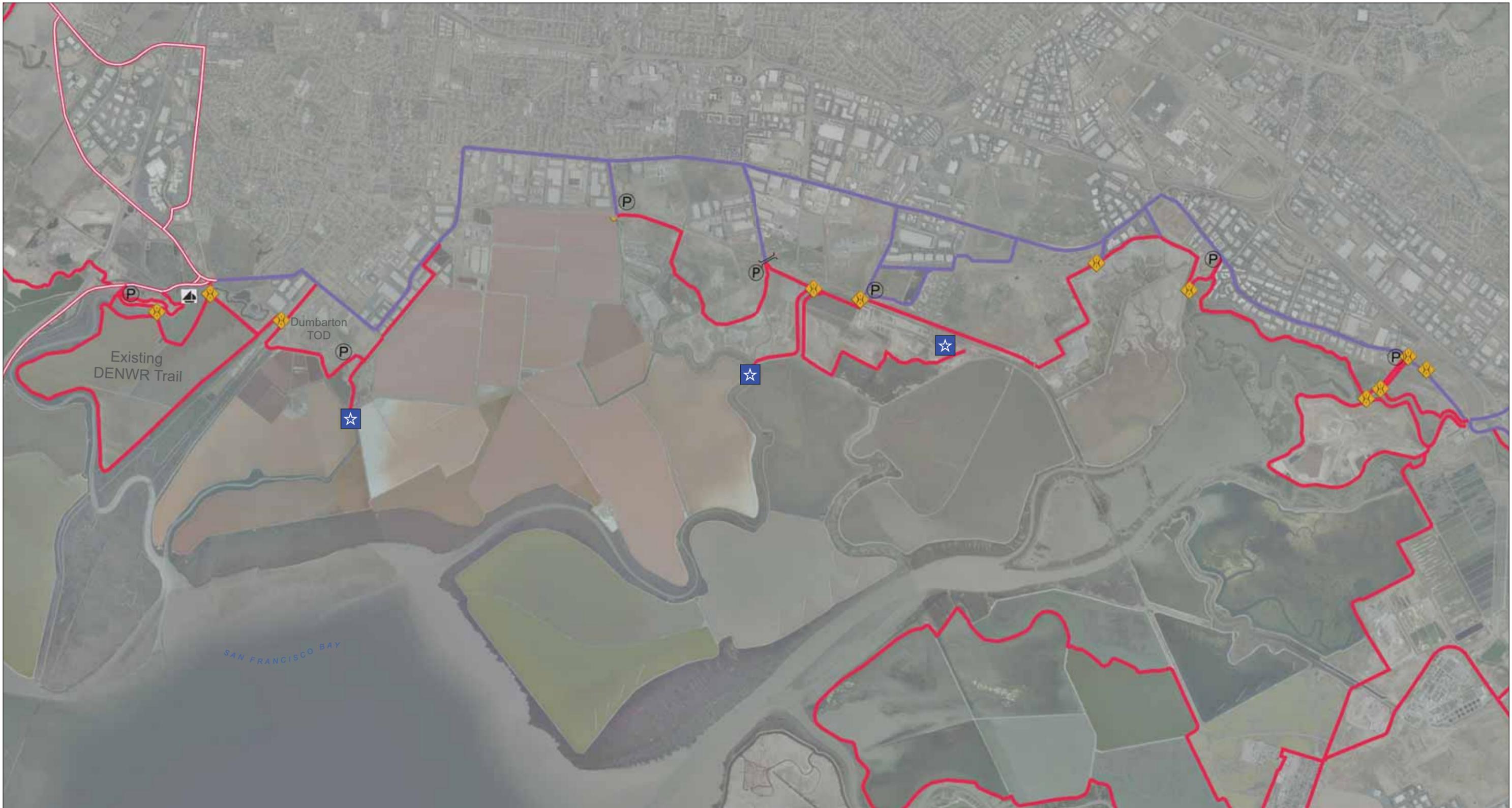
- Trail Alignment**
- |          |          |                                |
|----------|----------|--------------------------------|
| Existing | Proposed | Interim Bay Trail (On Street)* |
| Existing | Proposed | Bay Trail (Off Street)         |
| Existing | Proposed | Connector Trail                |
| Existing | Proposed | Loop/Spur Trail                |
- \*Bicycle & Pedestrian Improvements Recommended

0 0.5 1 Miles

**FREMONT-NEWARK BAY TRAIL**

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

**FIGURE 6-1: RECOMMENDED BAY TRAIL SEGMENTS**



**Legend**

- Bay Trail (off street)
- = Bay Trail (on street)
- Other Trail
- ★ Long Term Connection Goal

-  Boating/Marina
-  Parking
-  Bridge
-  Crossing



# FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84  
PRELIMINARY FEASIBILITY STUDY

FIGURE 6-2: FUTURE BAY TRAIL

1. Preferred Alignment - this includes the trail areas on public lands or on private lands associated with a proposed development project or other action requiring local government approval where construction and dedication of a the Bay Trail, or the granting of an easement or licensing agreement appears relatively straightforward.

Bay Trail construction will occur in a variety of ways, as opportunities arise. This could be through private development or governmentally funded projects. For instance, construction of the Bay Trail west of Cherry Street, between Mowry Ave. and Stevenson Blvd. might be coordinated with implementation of Specific Plan Areas 3 and 4, when the Stevenson Blvd. overpass is constructed.

2. Interim Alignment - It will not be possible to construct the Bay Trail close to the Bay westward around the Cargill Salt Ponds unless consensus is reached with the property owner, and/or the land use changes, which is not anticipated in the near future. The current Bay Trail Plan alignment as shown along the Union Pacific Railroad tracks is not desirable from a safety or aesthetic perspective, and it does not appear to be feasible due to lack of available Right of Way (especially considering proposed track expansion plans in this area). An *interim* on-street alignment along Cherry Street is shown for this area. This will require some safety related improvements be made, associated with implementation of the City of Newark's Bicycle and Pedestrian Plan.

Similarly, construction of a connection to the Bay Trail south of Stevenson Blvd. cannot be made on the east side of the UP railroad tracks and through the Pacific Commons mitigation parcel, and the trail route must occur on Tri Cities Landfill land west of the UP Railroad tracks. This may also require the eventual construction of a pedestrian overcrossing of the UP Railroad Tracks at the west end of Auto Mall Parkway connecting the Tri Cities Landfill at some time in the future, possibly associated with construction of a park on city lands east of the landfill. An *interim* on-street alignment along Boyce Road, as with Cherry Street, is shown for this area. This will require some improvements that can be made, associated with implementation of the City of Fremont's Bicycle and Pedestrian Plan.

3. An alignment is also shown along the levee on the east side of Coyote Creek and on the south side of Zone 6 Line B at the south end of Fremont Blvd. near Newby Island Landfill and Dixon Landing Road. This alignment on the levee top will require some levee improvements and side slope stabilization. There is an opportunity for a loop trail when Fremont Blvd is extended to connect to Dixon Landing Road at some time in the future, associated with the development of Creekside Landing, and a trail segment is built adjacent to the new street.
4. Trail Connections are also designated on the *Preliminary Alignment* Plan. These are mostly on-street facilities that connect a Bay Trail segment either to an Interim alignment, or to a local trail or bikeway system. In some cases the connections could also be considered for use as interim facilities, that would become part of a network of pedestrian and bicycle facilities once the spine of the Bay Trail is completed. As with the interim alignments, some improvements might be needed to the trail connections to make them safer and more bicycle/pedestrian friendly.
4. Loop/Spur Trails. These are recreational trails that are either loops around an area such as wetlands or spurs to a specific destination point, such as Mowry Slough. Loop trails are shown within the Newark Area 3 & 4 Specific Plan, around Tri-Cities Landfill, and around Newby Island

Landfill. The landfill loops cannot be presently constructed as the landfill managers use the existing roads for maintenance and monitoring activities.

5. Preferred Alignment-Existing. In some cases a pathway or widened sidewalk exists, and is suitable with minor modifications, such as signage, for designation as a part of the Bay Trail. This includes the pathway through the Pacific Commons area and along Cushing Parkway.
6. Existing Bay Trail. There are two existing and constructed segments of the Bay Trail within the Study Area, at the north end, the loop around the Don Edwards Wildlife Refuge, and near the south end, the existing segment east of Mud Slough and south of Fremont Blvd., behind Bayside Business Park. When plans are being prepared to construct adjacent sections of the Bay Trail, these existing trail segments should be re-visited to determine if additional improvements are warranted, such as wayfinding signage, benches, and trail surfacing improvements.
7. Long Term Connection Goal. This designation symbol has been placed in two areas on the Plan, around the west side of Cargill's Newark Plant Site, and along the east side of the Tri Cities Landfill. These are areas where it is not presently considered feasible to construct a trail because of operational conflicts with adjacent land uses. The adjacent land use and operations will need to change before a trail can be constructed in these areas, and the land owner will need to be a willing seller. The timeline for such a change is not known, but may be some distance into the future.

In addition to the trail alignment designations, a number of other public access features are shown on the *Preliminary Potential Alignment*, including:

- Trailhead Parking Areas, some of which are existing and need minor improvements such as bay trail designations and wayfinding signage, and some will be new staging areas
- Bridges- New bridge crossings of sloughs are needed at:
  - Zone 5 Line L; Upper Newark Slough near Don Edwards Headquarters, Marshlands Road
  - Zone 6, Line N; tributary to Mowry Slough, adjacent to Tri Cities Landfill
  - Zone 6, Line E; near Pacific Commons Mitigation Site II
  - Zone 6 Line E; upper Mud Slough near Bayside Business Park Mitigation Site I
  - Zone 6 Line B; near Creekside Landing Phase II and Fremont Blvd. extension
  - Zone 6 Line A, Scott Creek at Creekside Landing Business Park Phase II and Fremont Blvd. extension
  - Zone 6 Line B; tributary to Coyote Creek near Newby Island Landfill

In addition to these bridges, pedestrian bridges over Plummer Creek and middle Mowry Slough may be needed in the future to accommodate an envisioned trail around the western side of Cargill's Newark Plant Site.

- Railroad Over-Crossings- Four potential Railroad Overcrossings are shown on the Plan, including crossings at the proposed Dumbarton TOD, at Mowry Ave., at Stevenson Blvd. and at Auto Mall Parkway. Because of their costs, these facilities will likely be constructed associated with a

development project, and not uniquely for Bay Trail use. In most cases these will be automobile over-crossings that have bicycle/pedestrian facilities incorporated into them.

### **6.3 PROJECT PRIORITIZATION AND PHASING**

Projects can be selected and ordered in terms of priority and phasing by considering such factors as the following:

- Connectivity to other local and regional trails
- Fill-in of a short trail gap to make a larger, continuous trail segment
- Ease of implementation and low cost, to build momentum
- Availability of Right of Way
- Proximity of trail to trail user population groups

Certain other factors influencing prioritization and phasing, including:

- High segment construction costs
- Lack of available Right of Way
- Opposition by stakeholders or neighbors
- Environmental and permitting issues

In addition, the implementation of certain segments will be tied to other specific projects, such as the commercial development of a parcel through which the trail has been aligned, or construction of a transportation project. These projects, and the Bay Trail component of them, will proceed independently within each construction implementation schedule.

Based on a consideration of the above factors, the following is the recommended prioritization of projects. Conditions change over time and the Bay trail has traditionally been built by opportunistically taking advantage of situations where a trail can be constructed.

#### Top Priorities

1. Segment 8A.2: Coyote Creek Gap. This is one of the top priorities as construction of this segment will allow a connection to the Coyote Creek Trail in San Jose and Santa Clara County as well as connecting to the existing Bay Trail segment 7A, west of Fremont Blvd.
2. Segment 6A2 Mud Slough to Pacific Commons Area This would include construction of the shoreline segments on city-owned right of way, public access implemented as part of the South Bay Salt Ponds Restoration project, and around the Warm Springs and Pacific Commons Mitigations sites connecting the Tri Cities landfill area near Auto Mall Parkway with existing Bay Trail segment 7).

### Medium Priorities

3. Segment 1A: Connection from Existing Bay Trail Don Edwards Refuge to Plummer Creek. Segment 2A1 Dumbarton TOD area, 2A.2: Connector Trail along ACFCWCD levee road and Central Ave. interim on-street improvements would be made associated with construction of the Dumbarton TOD.
4. Segment 5 Tri Cities Connection: from Specific Plan Area 3&4 to Tri Cities Landfill; to be implemented same timeline as Specific Plan; portions can be implemented with improvements proposed to be made at landfill.
5. Segments 3B1 - 3B2 (Central and Cherry Streets) and 5B1, 6B1, 6B2 (Stevenson Blvd., Boyce Rd., Auto Mall Parkway) These are on-street interim alignments and connectors that would be implemented associated with Bike/Ped Plan improvements or other Capital projects, most likely following the development of Specific Plan Areas 3&4.

### Long Term Goal

6. Segment 8: Newby Island Loop- timeline unknown
7. Segment 3: West side of Cargill Newark Plant Site- timeline unknown

## 7. DESIGN GUIDELINES

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This Section discusses the physical and environmental issues related to trail design, so that the proposed public access improvements maximize the trail user experience, yet minimize impacts to the environment. In general, the trail system should be designed to accommodate a wide range of users of varied abilities, including bicyclists (both road and mountain bikes), pedestrians/hikers, people in wheelchairs and with other mobility limitations, and considerations for maintenance, shared utility use, and emergency access. The trail design will also comply with applicable trail standards of the managing agency, such as USFWS, cities of Fremont or Newark, ACFCWCD, etc.

### 7.1 TRAIL WIDTH, SURFACE, TYPE AND USE

The trail surface must be designed to accommodate pedestrians, bicycles, and others with two-way traffic, and on occasion, patrol, maintenance, and emergency vehicles. Because of the need to meet these requirements, a minimum 14-foot wide trail (10-foot surfaced, 2-foot gravel shoulders) is recommended, with turnouts located in key areas. In constrained areas, the trail can be as narrow as 8 feet. Each phase of trail implementation should be evaluated for compliance with current ADA requirements, and comply with applicable provisions of the following standards, if applicable:

- Bay Trail design guidelines and standards
- BCDC Shoreline Access Guidelines
- USFWS Design guidelines for trails within Refuge lands
- Caltrans Highway Design Manual on Bikeway facilities (Chapter 1000)
- Manual on Uniform Traffic Control Devices (MUTCD), part 9 and California Supplement
- Americans with Disabilities Act
- AASHTO Guide for the Development of Bicycle Facilities (1999)
- National Highway Institute Pedestrian Facility Design
- Newark and Fremont trail design standards and specifications
- ACFCWCD maintenance access requirements

#### Bay Trail Plan Design Guidelines

Consistency with the Bay Trail Plan design guidelines is important in order to create a regional trail system that provides similar accommodations for trail users and maintenance access. Almost all of the segments would be considered multi-use paths, with some areas to be paved, and others with a hardened or stabilized gravel trail surface. The Bay Trail Plan Design Guidelines for implementation of new trails is presented in Table 7-1.

Table 7-1: Bay Trail Design Guidelines

Item	High-use facilities (separate paths)*	Multi-use paths*	Bicycle-only paths*	Hiking-only paths	Natural trails
Min. width (one way)	8-10'	10'	8'	5'	3-5' <sup>a</sup>
Min. width (two way)	10-12'	10-12'	10-12'	8-10'	5'
Surface	Asphalt <sup>b</sup>	asphalt	asphalt	hardened	natural/boardwalks <sup>c</sup>
Horizontal clearance (incl. shoulders)	12-16'	14-16'	10'	9-12'	7-9'
Shoulder <sup>d</sup>	2'	2'	2'	2'	unspecified
Vertical clearance	10'	10'	10'	10'	unspecified
Cross slope	2% max	2% max	2% max	2% max	unspecified
Maximum grades <sup>e</sup>	5%	5%	5%	5%	unspecified

\* Standards meet Caltrans Class I bikeway standards

<sup>a</sup> Minimum widths that are less than 5' will be required to have 5'x5' turnouts at intervals to meet accessibility standards.

<sup>b</sup> High-use pedestrian path could be hardened surface other than asphalt, such as stabilized fine aggregate.

<sup>c</sup> Natural surfaces may require surface hardening to provide accessibility.

<sup>d</sup> Area specified is area on both sides of the trail.

<sup>e</sup> Percentage grade for short distances with flat rest areas at turn outs, except where site conditions require a greater slope for short distance.

The trail surface should be a durable material that complies with universal access needs. Paving designs should be selected that provide permeability, where appropriate, and fit with the rural setting. In some locations, it may be appropriate to remain as “natural” as feasible, and the trail could be constructed as a permeable path with stabilized or cemented aggregate base. Special design considerations, including use of geosynthetic stabilizers (geocells) for areas of soft or organic soils, and surface treatment to withstand ponding may be needed in some areas. In addition, the surface will need to be designed to accommodate ongoing levee settlement, so trail areas on levees probably cannot be asphalt paved. Trail sections along ramps, bridges, rail crossings and boardwalk approaches, and any trails that will be routinely utilized by motorized vehicles for access and maintenance should be paved.

In areas where new asphalt paving is needed, the trail should consist of a minimum 10-foot wide asphalt pathway using 3 inches of asphalt concrete, with 2-foot wide (minimum) shoulders of 4 to 8 inches of Class 2 aggregate base (AB).

The trail should generally be elevated slightly above existing grade, with a cross slope of 2% to provide drainage and trail compaction. Where the trail is located near or over an existing road, the trail should be separated by a vegetated strip or shoulder that is a minimum five feet wide to separate trail users from vehicular travel.

Levee integrity, slope stability, erosion potential, and pathway drainage issues will need to be carefully evaluated during the design of each trail segment. In general, the trail should be outsloped to minimize

slope disturbance. Special precautions may also be needed in placement of fencing and retention structures to avoid or minimize fill placement where existing roads, grades or crossings need to be elevated adjacent to wetlands.

Weed management may be needed along the trail if stabilized aggregate is used, because weed seeds can invade some of the fine cracks that develop in these materials, and non-native invasive species often colonize disturbed areas. Annual spring upper levee mowing, and/or spraying with an herbicide approved for use near wetlands and water bodies, or other form of weed control may be needed in the spring to discourage colonization by invasive plant species. Weed management would need to be consistent with Refuge management guidelines as well as Bay-Friendly landscape requirements applicable to Fremont, Newark, and Alameda County.

## **7.2 DESIGN ISSUES NEAR RAILROADS**

### **Use of the Rail Corridor Alignment for a Trail**

This section of rail line has been identified in numerous plans for expansion of trackage and increased train use to serve San Jose to Sacramento and beyond. It is UP's policy not to support any trails on or near their right of way, and they intend to preserve all right of way for future operating growth. Federal rail guidelines require a minimum setback of 25 feet from the centerline of a rail to adjacent facilities. It may be likely that rail expansion necessitates acquisition of additional right of way for track expansion; if this infrastructure is developed, then opportunities for shared use of service roads or other facilities that parallel the rail line should be explored at that time.

Placing a trail immediately adjacent to a high volume rail corridor may also require infrastructure elements such as security fencing, CCTV surveillance elements, lighting, noise attenuation walls and/or other infrastructure that may affect the trail user experience. Shared use of utility roads may also require special surface treatment, thicker pavement sections, monitoring equipment or other elements to facilitate utility services.

### **Trail/Rail Crossing Issues**

In addition to considerations for a trail along the rail corridor, providing access to the shoreline from the neighborhoods and business parks of Newark and Fremont may necessitate crossing the rail line. Within the Coast Subdivision between Santa Clara and Newark there are 21 at-grade rail/highway crossings, 12 of which have active warning devices consisting of bells, flasher signal lights and gates. Nine of these crossings, classified as private crossings, have only stop signs or crossbuck signs. Within the Study Area, these include public at-grade crossings at Central Avenue, Mowry, Stevenson, and the private Auto Mall Parkway crossing.

Railroad crossings are regulated by the California Public Utilities Commission (CPUC), including setbacks, grade separation, and use issues. General Order 26-D dictates setbacks, and General Order 75-D contains regulations for at-grade private rail crossings. In general, the CPUC strongly prefers that new rail crossing projects be grade separated, and often requires a nearby at-grade crossing to be removed if a new one is approved.

The California Public Utilities Code Section 7537 regulates private railroad crossings in conjunction with General Order 75-D:

*The owner of any lands along or through which any railroad is constructed or maintained, may have such farm or private crossings over the railroad and railroad right of way as are reasonably necessary or convenient for ingress to or egress from such lands, or in order to connect such lands with other adjacent lands of the owner. The owner or operator of the railroad shall construct and at all times maintain such farm or private crossing in a good, safe, and passable condition. The commission shall have the authority to determine the necessity for any crossing and the place, manner, and conditions under which the crossing shall be constructed and maintained, and shall fix and assess the cost and expense thereof.*

Conversion of a private crossing to a public crossing would be subject to agreement from the property owner, the regulatory authority of the CPUC. Recent discussions with the CPUC regarding use of the Tri-Cities landfill for a recycling facility and potential public access trail included the CPUC opinion that the existing private crossing at Auto Mall Parkway could not include public access without the provision of grade separation.

Grade separation of trail facilities is a probable CPUC recommendation for any new designated public access trail crossing, such as at the end of Auto Mall Parkway, at Tri-Cities Landfill.

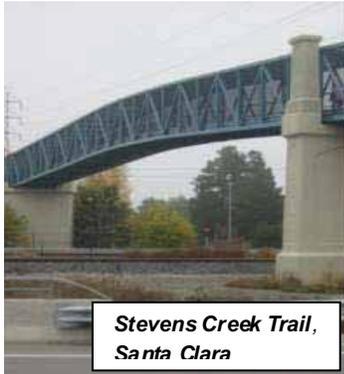
### Grade Separation Guidelines

In urbanized areas, the decision to create grade-separated crossings where an at-grade crossing already exists is often a factor of volume of use. The Manual on Uniform Traffic Control Devices (MUTCD) Guidelines recommend evaluation of all at-grade crossings as part of projects, due to the potential for accidents and congestion. A review of literature regarding pedestrian grade separation projects generally utilizes pedestrian traffic volumes of at least 100 users per hour, or higher peak averages when considering grade separation. Table 7-2 provides some general guidelines to determine the appropriate use of underpasses vs. overpasses for grade separation.

Table 7-2: Railroad Grade Separation/Crossing Guidelines

Design Issue	Underpass	Overpass
Vertical Clearance	8.5 to 10 ft. + 3 ft. cover	26 ft. +
Access Ramp	100 ft.+	208 ft. +
Utility Conflicts	Possible	No
Drainage	Pump may be needed	No
Security/Visibility	May be needed depending on location	May be needed depending on location
Cost	\$500K +	\$1M+
Vandalism	Yes	Yes (need enclosed crossing)

Guidelines for Overpasses. In general, overpasses are utilized to separate high-volume/high-speed pedestrian and motorized traffic. A typical overcrossing of a railroad is elevated more than 26 feet above the tracks, with approach ramps for ADA access at a maximum grade of 5% slope (limited segments may be slightly steeper if a level landing area is provided). Within the Study Area, the flat topography and low elevations would necessitate a long approach ramp, with potential geotechnical issues associated with footing placement and landings. It is likely that the structure would be visually imposing, and relatively expensive, unless combined with traffic grade separation projects.



**Stevens Creek Trail,  
Santa Clara**



**AMTRAK, Emeryville, CA**



**AMTRAK, San Luis Obispo, CA**

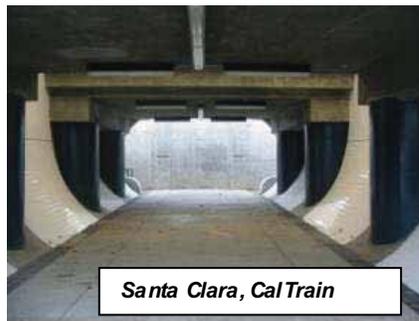
Federal research also indicates that an overpass structure might not be utilized by intended trail users if a more direct or convenient route is available. Vandalism, security and user safety issues increase where the volume of pedestrian use is low, and trail users might create “social trails” with informal trespass of the existing rail line. Ramps and stairs may also discourage use of the structure, although placing a ramp that connects directly from a trailhead or parking area may be utilized to increase accessibility.

Caltrans Highway Manual (1985) recommends overpasses (not underpasses) where grade separation is to be provided, due to potential for vandalism and crime. Costs associated with overpass construction include length and height of the structure, design features, need for vertical clearance, ADA ramp, enclosure to protect the rail line from falling objects, and fencing adjacent to the tracks to prevent trespass.

Guidelines for Underpasses. Underpasses are less popular in urban areas, due to concerns regarding crime, vandalism, drainage, high water tables, and relocation of utilities. Most of the potential grade separation locations would be difficult due to elevation, groundwater and access to levees. However, if track reconstruction occurs as part of rail upgrade projects, the rail track or roadway might be raised slightly to facilitate undercrossing structures.



**Davis CA**



**Santa Clara, Cal Train**



**Fremont, CA**

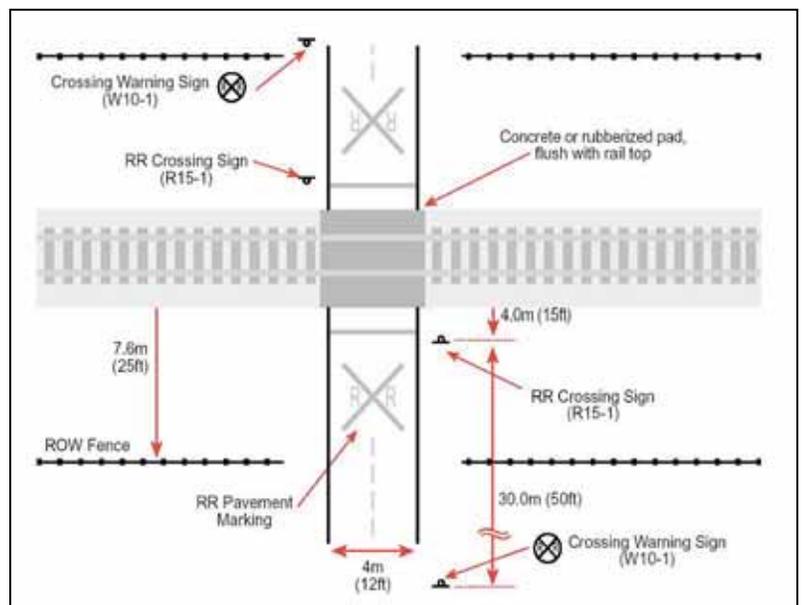
Since UP's right of way is approximately 100 feet wide tunneling for this distance, if required by UP, would be costly and could be technically challenging. Other issues related to an underpass in this area include geotechnical challenges related to shallow groundwater and poorly drained and weak soils, and potential conflicts with future rail use of the corridor. In addition, depending on the proximity of any underpass to existing at-grade crossings, trail users may attempt unsafe crossing shortcuts at-grade, even if they are signed as private crossings.

Design. According to Chapter 1000 of the Caltrans Highway Design Manual, the minimum acceptable vertical clearance for an underpass is 8.5 feet, with a width of 12 to 14 feet. An underpass would likely include concrete headwalls, retaining walls and long ramps, and fitted with lighting and a pump system if located near any creek systems, or in an area subject to seepage.

Warrants. Specific warrants (justification) were developed by the US Department of Transportation in 1984 for grade-separated pedestrian crossings, and warrants were also included in the Caltrans Highway Design Manual (1995, for street grade separation). Generally, use of the Bay Trail does not generate consistent usage to meet these warrants:

- Pedestrian volumes over 100 persons per hour;
- Average Daily Traffic (ADT) vehicular volume greater than 25,000;
- The site is at least 600 feet from the nearest alternative safe crossing;
- There should be a physical barrier to prevent at-grade crossing;
- Artificial lighting of underpasses is recommended;
- Topography should be considered to minimize construction costs;
- Adjacent land uses should be considered;
- Funding must be available for the crossing;
- Study of present and future conditions regarding pedestrian usage and traffic volumes;
- School crossings.

Guidelines for At-Grade Crossings. If an at-grade crossing is allowed, it will be required to have safety signage, crossing improvements and warning devices. Fencing and barriers would be installed to funnel trail users to the crossing location, to avoid unregulated crossings. All signs, safety markings and other improvements will conform to the Manual of Uniform Traffic Control Devices. Signage will be installed to warn trail users, as well as signs warning the public not to trespass on railroad property.



**Typical At-Grade Rail Crossing Improvements**

## Options for Use of the Rail Corridor for Trail Purposes

MTC's Regional Rail Plan identified the rail lines' capacity limits within the Study Area as a constraint, with frequent delays in service due to conflicts with freight and passenger rail operations. According to the plan, there are operational issues, infrastructure needs, and right of way issues that limit optimal rail operations to existing and projected users. It is unlikely that rail corridor reconstruction in this area would be considered to accommodate the Bay Trail.

### 7.3 BRIDGES AND BOARDWALKS

Bridges and boardwalks to accommodate the Bay Trail consist of three types:

- Grade Separation structures to separate roadways from the railroad tracks
- Clearspan bridges to cross existing flood control channels, sloughs or other water bodies
- Boardwalks to connect levees or upland areas, crossing over seasonal wetlands or other marshlands.

Grade Separation. As discussed previously, grade separation of the rail tracks would likely be required for any new public crossings. Stevenson Blvd. is proposed as part of the Areas 3 and 4 Specific Plan, and bicycle and pedestrian facilities will be accommodated as part of that project. Central Avenue at UPRR is also proposed for grade separation. Grade separation of Willow Ave. along the Dumbarton line is not currently planned, but may occur as part of rail reactivation and implementation of the Dumbarton TOD.

Sites where potential grade separation might be required as part of a regulatory process to provide access to trails would occur at Mowry (currently a public at-grade crossing, but street will not be extended as part of Area 3 and 4 Specific Plan) and Auto Mall Parkway (CPUC has indicated this is a private crossing and public use for access is not allowed). Additionally, trail segments in Segment 6 on USFWS lands south of the Tri Cities Landfill could potentially be connected for the convenience of trail users.

Grade separation at each of these areas would either entail construction of an underpass (potentially associated with creek crossings under the tracks) or an overpass. Underpass construction would be problematic due to elevation and groundwater issues as well as the length of an undercrossing structure and associated ramp requirements (approximately 120 ft. ramp on each side to street elevation). An overcrossing would be even more challenging, with approach ramps over 300 feet long required on each side of the overpass/bridge, for a structure length of at least 700 feet.

A trail connection between the existing USFWS Bay Trail segment within Don Edwards to connect with planned trails within Dumbarton TOD would enhance connectivity and trail efficiency. This connection should be explored as part of the Dumbarton TOD in association with design of a Transit Station.

Clearspan Bridges. Prefabricated clearspan bridges are an appropriate choice to facilitate crossings of flood control channels, sloughs, and minor waterways within the Study Area. Typically, pre-engineered bridges are available for spans of about 140 or 150 feet. Depending on location, some of the slough crossings are wider than this and may require custom bridge engineering.

It is estimated that at least six bridges would be needed to cross sloughs and waterways.

Issues associated with bridges at these locations include:

- Geotechnical design of footings within soft Bay muds
- Landings and approach ramps on levees
- Design elevation of bridge to account for potential sea level rise
- Vehicle design loads for bridges, if they will be used by agencies for maintenance and service access (similar bridges installed in the Union City area were designed to accommodate 45,000 lb. design loads)

All potential bridges should be a minimum of 10 to 12 feet wide pre-fabricated steel clear-span bridges, to provide pedestrian and bicycle access, while also supporting an appropriate level of emergency access. Bridge abutments would typically be constructed on 18-inch (minimum) diameter concrete piles or 24-inch (minimum) diameter piers driven or drilled to a minimum depth of 20 feet, and deeper in areas of soft bay mud.

Boardwalks. A boardwalk or causeway would be used in locations where access is needed to connect upland areas and separate users from adjacent wetlands areas. Boardwalks would be needed to cross the Tri-Cities Landfill stormwater detention area in the northeast corner of their parcel, and boardwalks may be needed in other areas where trail parallel the sloughs.

Depending on proximity to other service access areas, the boardwalk or causeway might not carry emergency vehicle loads, but would need to be located out of the floodplain, or extreme tide level. An additional 1.5 feet would be needed to accommodate sea level change issues. Since the boardwalk would cross seasonal wetlands and tidal sloughs, the footings would be within soft soil areas. The boardwalk design could utilize helical anchors and/or drilled piers to minimize construction effects, or could utilize a series of prefabricated clearspan structures, installed by crane to minimize disturbance to adjacent areas. Wood, fiberglass, or prestressed concrete structures can all be considered. All bridges and boardwalks would be subject to regulatory permit approval, and pre-design consultation with the agencies is recommended to determine appropriate design and alignment components.

If a boardwalk is used, it would be constructed using strong and durable materials requiring a minimum of maintenance and capable of supporting lightweight vehicle loads. Because the boardwalk would likely be constructed over wetlands, construction materials and methods that minimize disturbance are critically important. Non-corrosive helical earth anchors (piers) could be considered for the boardwalk foundation system because they will provide sufficient resistance in soft underlying soils, and can be installed without the use of heavy construction equipment. It is anticipated that 1 3/4-inch post helical piers would be spaced at a maximum of 8-feet, and extend 8- to 10-feet into the soft underlying soils. Treated wood or fiberglass driven piles could also be considered. The boardwalks would connect to the adjacent grade with approach ramps constructed of engineered fill at a maximum 5% slope. Preliminary foundation and structural recommendations must be followed up with a comprehensive geotechnical investigation and structural analysis as part of the development of final construction plans.

## 7.4 ACCESSIBILITY

The Study site is generally flat, and compliance with accessibility regulations is expected, to be achieved without great difficulty, other than achieving a “firm and stable surface” in areas of soft levee top soils. Trail alignment, site furnishings and design of observation and interpretive areas should all be designed to comply with current ADA regulations. The goal of trail implementation will be for an all-weather shared-use trail, that is capable of accommodating pedestrians, bicycles, and universally accessible modes, as well as provide for emergency vehicle access where feasible. The trail will be designed in accordance with ADA accessibility guidelines wherever feasible, which require a firm, stable surface for trails, and contain guidelines for grade, cross-slope, width, etc. There are many design standards that provide guidance regarding trail design, and the trail segments will need to comply with one or more standards, depending upon funding, trail classification (hiking only, shared use, bikeway, etc.) and feasibility for compliance with applicable standards. Trail and bikeway advisory and regulatory guidelines include:

- Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas (ABAAGODA, 2007)
- Caltrans Highway Design Manual (HDM) (Chapter 1000: Bikeway Planning and Design)
- Americans with Disabilities Act (ADA) [www.access-board.gov](http://www.access-board.gov)
- American Association of State Highway and Transportation Officials (AASHTO)
- Manual of Uniform Traffic Control Devices (MUTCD)
- Institute of Traffic Engineering (ITE)
- Federal Highway Administration/National Highway Institute (FHWA, NHI)

### Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas (ABAAGODA)

Design of shared use trails such as this falls under the guidelines of the *Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas* (ABAAGODA). Published June 20, 2007, these guidelines are applicable for trails and paths where one of the groups of intended users is pedestrians, as opposed to a facility designed exclusively for bicyclists. These guidelines are under review and expected to be federally adopted in 2012. These guidelines set forth recommended trail width, gradient, cross slope and other factors that affect trail accessibility. Depending upon the type of use, federal guidelines call for a trail gradient of 5%, or 1 ft. rise in 20 feet of distance, with a maximum 2% cross slope. Under some circumstances, depending on the type of anticipated use and connections to accessible facilities, short distances of trail at up to 10-12% grade may be allowed if a landing is provided:

- 1:20 (5%) any length
- 1:12 (8.33%) for up to 200 feet
- 1:10 (10%) for up to 30 feet
- 1:8 (12.5%) for up to 10 feet
- No more than 30% of the total trail length shall exceed 1:12

## Americans with Disabilities Act

Design and implementation of portions of the trail that connect to parking areas, restrooms, trailheads or other physical facilities might also need to comply with federal regulations contained in the *ADA Accessibility Guidelines for Buildings and Facilities* (ADAAG) <http://www.access-board.gov/adaag/html/adaag.htm#4.3>. These guidelines require a 36 inches minimum clear trail width, with passing space at minimum 200-foot intervals if the trail is less than 60 inches wide, depending upon the anticipated trail use.

## AASHTO Guidelines

The primary design guide for bicycle and shared use facilities is the “Guide for the Development of Bicycle Facilities” from the American Association of State Highway and Transportation Officials (AASHTO), 1999. The AASHTO Guide defines a “shared use path” as a facility on exclusive right-of-way and minimal cross flow by motor vehicles. Users generally include bicyclists, skaters, and pedestrians. In most cases, the AASHTO Guide requires a greater level of accessibility when designing trails for pedestrians, including bicyclists and skaters than the ABAAGODA guidelines, but trails should ideally be designed to comply with both standards.

## Caltrans Highway Design Manual (HDM) (Chapter 1000: Bikeway Planning and Design)

Shared-use trails, such as this, also fall under the regulatory requirements of AASHTO and Caltrans Highway Design Manual. Where possible, the trail will be designed to comply with both federal guidelines as well as Caltrans/AASHTO standards for shared use.

If portions of the trail are funded from transportation sources, it may need to conform to Caltrans standards for a Class I Bicycle Path. Caltrans has developed specific design guidelines in the Highway Design Manual for Class I multi-use paths. Design standards should meet or exceed the Caltrans standards to the maximum extent possible.

## Accessibility Exceptions

Although the final trail design should be in compliance with all applicable guidelines and regulations for accessibility, the ABAAGODA Guidelines also contain conditions for exceptions to meeting trail accessibility goals, where there are constrained areas, steep slopes and environmentally sensitive areas that must be avoided. This might apply along the Shell Pond spur trail or observation deck where access is limited or constrained by adjacent habitat. The ABAAGODA exception process provides conditions for exceptions that should be documented as each trail segment is implemented. The conditions include:

- Condition 1. Compliance Would Cause Substantial Harm to Cultural, Historic, Religious, or Significant Natural Features or Characteristics
- Condition 2. Compliance Would Substantially Alter the Nature of the Setting or the Purpose of the Facility, or Portion of the Facility
- Condition 3. Compliance Would Require Construction Methods or Materials That Are Prohibited by Federal, State, or Local Regulations or Statutes
- Condition 4. Compliance Would Not Be Feasible Due to Terrain or the Prevailing Construction Practices

In addition to regulations regarding trail grade, cross-slope, surface and width, regulations regarding accessibility of site furnishings such as benches and drinking fountains, as well as regulations that apply to accessible routes such as trailheads, parking areas and restrooms should be designed in compliance with applicable accessibility regulations.

Future design of water trail elements within the Study Area should integrate access with the Bay Trail and provide amenities such as accessible boat launch, and other features to serve this key access point.

## **7.5 DESIGN AND IMPLEMENTATION PROTOCOLS FOR SENSITIVE AREAS**

An important component of providing public access near sensitive areas is to limit the potential impact of human intrusion and trespass into sensitive areas. The proposed alignment avoids sensitive resources to the extent feasible by locating the trail on or adjacent to existing roads, levees or other developed upland areas. Where there are sensitive habitat areas (wetlands and creeks or sloughs within the Study Area, as well as cultural resources sites), fencing or vegetation buffers may be needed in limited locations where the trail is in close proximity to sensitive habitat areas.

Trail design will need to comply with BCDC Public Access Design Guidelines (2005), which contains protocols for the provision of public access that fits within the site's context. Regarding wildlife impacts, the guidelines state:

- *Use design elements such as varying trail widths, paving materials and site amenities to encourage or discourage specific types of human activities.*
- *Use durable materials to reduce erosion impacts on adjacent habitats and to keep users from creating alternate access routes.*
- *Provide spur trails to reduce informal access into and through more sensitive areas.*
- *Locate parking and staging areas away from sensitive habitat areas.*
- *Locate night lighting away from sensitive habitat areas.*
- *Use physical design features to buffer wildlife from human use.*
- *Manage type and location of public use to reduce adverse effects on wildlife.*
- *Incorporate educational and interpretive elements*

To minimize intrusion, additional design elements that may be considered include:

- When crossing creeks, utilize clear-span pre-fabricated bridges to minimize site disturbance.
- Vegetation buffers should be included, consisting of native plant species to provide a natural barrier to human intrusion into wetlands, as well as provide refugia cover to wildlife. In some places, low (4-foot) fencing may be needed.

- Interpretive components will be included in the project implementation, such as including interpretive displays to inform trail users about the needs of sensitive species, programs and signs to teach trail users how to behave in a habitat, user outreach, docents, adopt-a-trail, stewardship programs, etc.
- Leashed pet policies may be appropriate for certain trail segments. In some especially sensitive areas, even pets on leach may not be allowed.
- If needed to protect habitat conditions, seasonal closure of certain trail segments may be implemented to protect wildlife (during nesting periods).
- The trail should be managed and monitored to provide opportunities to improve or adjust access, such as providing screening, adjusting access points, or incorporating needed buffers, additional signs and fencing, or use restrictions to support habitat needs.

During construction, protocols should be followed to minimize wildlife disturbance, and will likely be required as part of a regulatory permit. Avoidance and minimization measures to be included in the construction process include:

1. *Preconstruction Surveys, Relocation, and Avoidance. Provision will include, but is not limited, to the following:*
  - As close to the beginning of construction as possible, but not more than 14 days prior to construction, a qualified biologist shall conduct a final pre-activity survey of the construction zone to ensure that no special-status wildlife and/or plant species have recently occupied the site, including at a minimum those species described in this report as potentially occurring
  - If any special-status species are found, exclusion zones shall be established and maintained until all construction activities are completed. In some cases it may be preferable to remove and/or relocate the individual plant or animal (to be determined by qualified regulatory agency-approved biologist).
  - If special-status species are found during the pre-construction survey, the biologist will be present immediately prior to construction activities that have the potential to impact special-status species to identify and protect potentially sensitive resources.
  - A cultural and historical resources record search will be completed prior to project implementation. Since portions of the proposed trail are along the bay margins and adjacent to freshwater sources, there is some potential for identifying unrecorded archaeological resources. Avoidance measures will be determined by an archaeologist and incorporated into project construction plans.
2. *Worker Education.* A construction worker education program shall be implemented that includes an explanation of all special-status animal species, identification, avoidance measures, and federal and state laws that protect the species. This shall include at a minimum those species described herein as potentially occurring in this report.
3. *Temporary Exclusion.* Exclusion fencing shall be erected around the perimeter of the work area prior to construction initiation. Fencing shall remain until work in sensitive areas is complete.

4. Presence of Biological Monitor. A qualified, regulatory agency approved Biological Monitor shall be present to oversee all work conducted in or adjacent to sensitive habitats.
5. Nesting Bird Avoidance. If project work would begin between March 1st and September 1st, prior to site grading and construction, a qualified bird biologist will conduct nesting surveys. Follow-up surveys would be performed 30 days prior to project construction if more than 30 days elapse between the initial nesting surveys and start of work. If nesting birds are identified, then prior to grading and/or construction the area around the nest will be fenced to provide a buffer generally with a 100- to 300-foot radius. No construction or earth-moving activity would occur within the non-disturbance buffer until the biologist confirms that the young have fledged (left the nest) and have attained sufficient flight skills to avoid project construction zones, typically by July 1, or as otherwise determined by the biologist.
6. Formal Wetland Delineation. A formal wetland delineation will be confirmed to identify all areas within the vicinity of the trail alignment that meet jurisdictional wetland or waters criteria. This delineation shall be used to determine the final alignment, with boardwalks and/or bridges implemented as necessary to avoid wetland fill.
7. Adherence to Best Management Practices. Best Management Practices should be implemented to limit disturbance outside of the trail footprint, and to prohibit intrusion into surrounding wetlands.
8. Avoidance of Cultural Resources. The construction site shall be monitored by a qualified archeologist during excavation, removal of pavement, fill, vegetation, or structures. Following exposure of the original soils, a field inspection shall be conducted by a qualified archaeologist who meets the Secretary of Interior's Standards. Other measures include:
  - If archeological or paleontological resources are encountered, the contractor shall immediately halt work in the immediate vicinity of the resource and workers should avoid altering the materials and their context until a qualified professional archeologist has evaluated the potential resource and has provided appropriate recommendations. Project personnel should not collect cultural resources. Native American Resources include chert or obsidian flakes, projectile points, mortars, and pestles, and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials.
  - If human remains are encountered, all work within 100 feet shall immediately stop and the Contra Costa County coroner contacted to evaluate the remains. If required, the State Native American Heritage Commission shall also be contacted, and all State requirements shall be met concerning the preservation and disposition of Native American remains.
  - Any identified cultural resources shall be recorded on DPR 523 Historic resource recordation forms, available from the California Office of Historic Preservation.

## **7.6 GEOTECHNICAL CONSIDERATIONS**

Vehicular Load Rating for Emergency Access. Some trail segments should be designed for access by emergency vehicles, with a minimum weight capacity of 10,000 pounds (H10 load). Heavier load ratings (H-

20) may be required by local fire and emergency response units, depending on availability of access and location. Trails connecting levees in the Union City area were designed for 45,000 pound loads. Where there is a nearby service road, lighter load design may be appropriate.

**Flood Prone Areas.** As previously discussed, design at a trail elevation to avoid all potential flooding may be difficult, since much of the Study Area is lower than the 100-year flood or extreme elevation. Trails located adjacent to areas that may be subject to periodic inundation may need to be reinforced with structural geosynthetics such as geocells to provide a stable trail surface and improve year-round accessibility. Maintenance and repair of levee side slopes will need to be coordinated with the levee owner. Special surface treatments may also be necessary. The need for structural support, levee bank slope stabilization and repair, and special surface treatments will need to be determined through additional engineering analysis as part of the trail design. Where trails are proposed to cross over such areas, they will require special structures and treatment, such as over-excavation and placement of engineering geotextile such as Geocell, and import of thick section of granular aggregate base. The wettest of these areas may require the use of a boardwalk structure supported on short piles or another anchor system.

**Slope Instability.** Placement of a fill wedge to support an elevated trail (levee embankment) should typically be designed with a maximum slope of 2:1 or flatter for slope stability. In addition, if the levee is intended as a flood control structure, then it may need reinforcement. Toe retention structures may be needed to keep the fill out of the wetlands.

**Pavement Design.** A detailed geotechnical investigation should be completed for all areas that are to be improved with a hard, non-flexible trail surface (such as asphalt concrete or concrete paving). Depending on soil conditions, persistence of ponding, and pavement design needs, the use of geotextiles, and a more flexible trail surface, such as stabilized decomposed granite (DG) or stabilized aggregate should be considered for such poor soil areas.

## **7.7 SIGNAGE**

Trail signs should incorporate Bay Trail, USFWS and local systems. Trail signs and markings will also be consistent with the guidelines developed by Caltrans and the Manual on Uniform Traffic Control Devices. This includes advisory, warning, directional, wayfinding, and informational signs for bicyclists, pedestrians, and other users. Striping, marking, and signing plans will be subject to approval by partner agencies. Sign elements should be grouped and designed to minimize visual intrusion. Sign elements may include more than one agency.



### Trail Signs

It is recommended that trail signs provide information about the trails' length, condition, accessibility, distance, and/or other characteristics to enable people to make informed decisions about using the trail. Signs should indicate distance to landmarks and observation points.

Interpretive/educational signage should be posted at trail access points and at the turnouts, in addition to location maps and directional signs. Signs should include GPS coordinates to facilitate emergency access. Trail use regulations such as keeping dogs on leash, intrusion into sensitive areas, and other programs to protect sensitive habitat would also be placed at trailhead access locations.

In general, all signs should be located two to four feet from the edge of the paved surface, have a minimum vertical clearance of 8.5 feet when located above the trail surface and be a minimum of four feet above the trail surface when located on the side of the trail. All signs should be oriented for clarity to the user.

The Bay Trail is also considered an alternative transportation corridor for non-motorized users and commuters such as bicyclists. As such, lighting should be incorporated for 24 hour access unless there are conflicts with adjacent use, such as wildlife impacts.

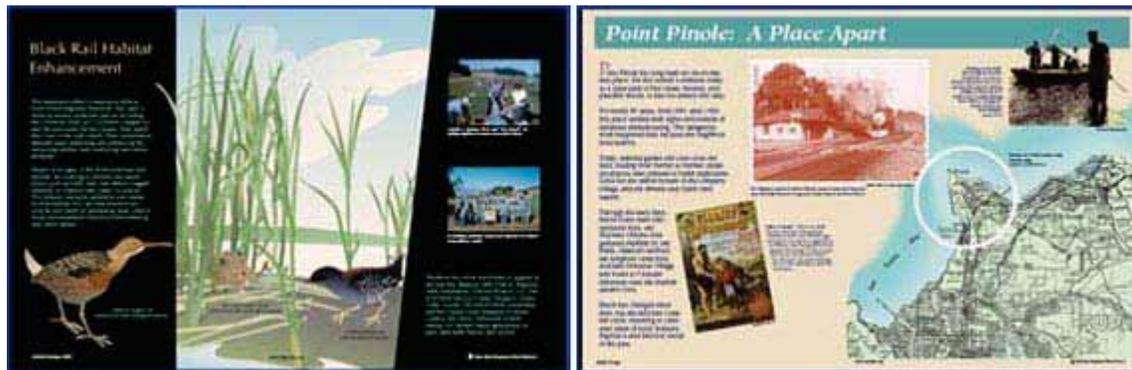
## 7.8 TRAILHEADS AND ACCESS POINTS

Trail access, parking, restrooms, waste disposal, interpretive elements, drinking fountains and benches are appropriate to guide trail users. Existing trailheads are located at Refuge headquarters, and at the north and south ends of the existing segment west of Fremont Blvd. Facilities include parking, picnic tables, grass area and access ramps. The Refuge Headquarters contains restrooms. Other existing trailheads include the Silliman Recreation Center, which has service facilities and restrooms.

Additional trailhead parking and access facilities should be considered at the following locations:

- Jarvis Landing Water Trail connection
- Plummer Creek Mitigation/Dumbarton TOD
- Silliman Center/Mowry Avenue

- Future Fremont Public Park, Auto Mall Parkway
- Cushing Parkway/USFWS access
- Dixon Landing Road



Trailhead Elements and Interpretive Displays

## 7.9 FENCES, GATES AND BOLLARDS

Fencing may be needed adjacent to sensitive habitat areas (wetlands) to preclude trail users and domestic animals from entering the area. This can be simple as 3 or 4 strand wire fencing, or welded wire mesh with wood posts. Top rails should be avoided where possible to minimize perching by raptors. More substantial fencing or rails for user safety may be needed in some areas. Fencing adjacent to industrial facilities would be subject to agreement with the property owner.

Posts/barriers or accessible gates may be needed at trail intersections and entrances to keep vehicles from entering. Posts should be designed to be easily moveable by emergency vehicles, such as bollards or a pipe gate and bollard, but consistent with the rural setting. Pipe Gates are appropriate at locations where vehicular access will be needed.



## 7.10 MANAGEMENT, SAFETY AND SECURITY ISSUES

Operation and maintenance of the trail system is an important component of overall trail implementation. Since it is likely that implementation will occur in phases and possibly by various entities, such as the City of Newark, City of Fremont, USFWS, EBRPD, etc., a commitment to a uniform patrol, maintenance, and emergency response strategy is desirable. Because the trail will span multiple jurisdictions, it will be beneficial to develop policy and cooperative management agreements to facilitate management of the trail. For many trail segments, the USFWS could be the lead management entity, and would provide policing, management and coordination for trail related issues. It is also possible that another entity, such as East Bay Regional Park District, may be interested in managing the trail system, although no discussions have taken place with them regarding this potential.

Some areas of the trail are adjacent to industrial uses, and security cameras, fencing and other devices to monitor and preclude public access may be appropriate. Public safety and liability are common issues related to trail implementation. Strategies for addressing these issues include:

- Implement an emergency response protocol, integrating law enforcement, emergency services and trail maps
- Develop interagency agreements to operate, maintain and provide emergency response for trail system
- Commit funding for operations and maintenance
- Integrate with existing crime reporting database to monitor crime, and address safety and security issues
- Develop education program for trail users regarding safe trail behavior
- Provide outreach to property owners, residents and businesses for trail management
- Post and enforce trail rules
- Perform trail maintenance and vegetation management for fire safety and sight distance.

It is also expected that ongoing management of the trail route would utilize Integrated Pest Management (IPM) practices to manage pest populations and for vegetation management. This includes ecologically compatible practices and treatment strategies for the control of plant and animal pests, as well as fire management activities to reduce or maintain wildland fuels at acceptable levels. These practices comply with local Bay Friendly practices to minimize resource use, an ongoing strategy to select and integrate the most appropriate combinations of acceptable control methods for a given site in ways that will minimize risk to public safety, health and the environment.

## 8. IMPLEMENTATION STRATEGY

### 8.1 PRELIMINARY PROJECT COSTS

Table 8-1 summarizes the preliminary project design and construction costs for the recommended alignment. The costs are based on the Summary of Trail Improvements presented on the following pages. The total cost of the Newark to Fremont Bay Trail, including design, environmental review and permitting, and construction administration are expected to total about \$11.6 million dollars, and would be completed over a number of years, as funding is secured, and associated with build-out of nearby development projects. Bridges over creeks and slough channels and boardwalk crossings of wetland areas account for about \$1.6 million of the total costs. Not included in the costs are pedestrian and bicycle overcrossings, such as the overcrossing of the Union Pacific Railroad tracks near Mowry Avenue, which would cost about \$2.6 million, and a crossing of the railroad tracks at the Dumbarton TOD, which may cost well over \$3 million. About \$1 million is needed to close the gap in the Bay trail between the end of Fremont Blvd and Dixon Landing Road (Segment 8), crossing Coyote Creek. This is a high priority project, and the subject of a separate Feasibility Study.

Table 8-1: Cost Summary

SEGMENT NAME	Construction	15% Contingency	Design/Env./Admin.	TOTAL*
1. Don Edwards Wildlife Refuge	\$ 489,800	\$ 73,500	\$ 197,200	\$ 761,000
2. Dumbarton TOD Project, ACVCWCD Levee Trail	\$ 974,400	\$ 146,200	\$ 392,300	\$ 1,513,000
3. Trail on Central and Cherry Streets	\$ 162,800	\$ 24,500	\$ 50,600	\$ 238,000
4. Area 3 and 4 Specific Plan Improvements	\$ 1,108,100	\$ 166,300	\$ 446,200	\$ 1,721,000
5. Mowry Slough Spur Trail	\$ 688,800	\$ 103,400	\$ 277,400	\$ 1,070,000
6. Tri-Cities/Fremont/USFWS/ACFCWCD Levee Trails	\$ 3,038,800	\$ 455,900	\$ 1,223,600	\$ 4,718,000
7. Mud Slough Levee Trail	\$ 315,200	\$ 47,300	\$ 126,900	\$ 489,000
8. Fremont Boulevard to Dixon Landing Road Bay Trail	\$ 669,650	\$ 100,500	\$ 308,400	\$ 1,079,000
TOTAL	\$ 7,447,550	\$ 1,117,600	\$ 3,022,600	\$ 11,589,000

\*Rounded to nearest \$1,000

These estimates are based on the concept-level plans contained in this report and are subject to adjustment when more site specific and detailed designs are completed for each segment. Cost estimate spreadsheets, which provide the basis for the estimates for each segment and construction component are included in Appendix C. Note that some of the trail improvements would be funded and paid for as a part of separate projects, such as the Dumbarton TOD, or the development of the Specific Plan 3 & 4 area in Newark. These “funded by others” projects are noted with an asterisk (\*) in the cost tables in Appendix C to distinguish them from other publically funded projects.

The total cost estimate does not include any costs for easement acquisition or fees for land purchase, as it is assumed that all of the projects will be located either on public lands, or that if on private lands, the responsible local agency will either be granted an easement for trail construction as a part of a development agreement, or that the land development project will construct the trail and then dedicate that land and improvements to the City or agency as a part of the development approval process.

## Summary of Trail Improvements included in Cost Estimate

### Segment 1: Don Edwards Wildlife Refuge

- Raise and improve existing Don Edwards Refuge levee trail (2,600 feet)
- Improvements to existing access road (900 feet)
- Bridge/boardwalk at water trail access point to existing parking area (175 feet)
- Parking area improvements at water trail

### Segment 2: Dumbarton TOD Project, ACVCWCD Levee Trail

- Overpass over Dumbarton Rail/Hetch Hetchy water line at TOD Station, (1,200 foot long ramp, 100 foot bridge (not included in costs) \*
- Parking/trailhead, Dumbarton TOD \*
- Dumbarton TOD Class 1 path at site perimeter (7000 feet)\*
- Spur trail south of mitigation site (2400 feet)
- Trail improvements to existing ACFCWCD levee behind industrial park (4700 feet)
- Overlook at end of spur trail

### Segment 3 Interim: Trail on Central and Cherry Streets

- Class 2 Trail improvements on Central to Cherry St (cost does not include planned Central Avenue grade separation, 4000 feet)
- Class 2 trail improvements, Cherry St. from Central Ave. to Mowry Avenue (5,600 feet, 3 crosswalks)

### Segment 4: Area 3 and 4 Specific Plan Improvements (Silliman Center Improvements)

- Parking trailhead, Mowry Ave.
- Mowry UPRR Bike/Pedestrian Crossing, (1200 foot long ramp, 120 ft bridge)\*
- Trail at edge of Area 3/4 Specific Plan (does not include planned grade separation at Stevenson, 10,000 feet)
- Parking/trailhead at Stevenson
- Trail on west side of UP tracks, Stevenson to Tri-Cities detention pond (2500 feet)

### Segment 5: Mowry Slough Spur Trail

- Bridge over Mowry Slough (120 feet)
- Spur trail on Mowry Slough ACFCWCD levee (5500 feet)
- Overlook at end of spur trail

#### Segment 6: Tri-Cities Landfill/City of Fremont/USFWS/ACFCWCD Levee Trails

- Tri Cities Boardwalk over Detention Pond (1500 feet, 10' boardwalk)
- Tri Cities Landfill road/trail on perimeter levee (8,200 LF of 10' QF stabilized)\*
- Parking/trailhead, Auto Mall Parkway
- Auto Mall Parkway Bike/pedestrian crossing, (1200 ft ramp, 120 foot bridge (costs not included as part of this project)
- USFWS Trail on e/s UP tracks, and existing levee north of Refuge pond A22 (on USFWS lands, 10,600 feet)
- City of Fremont Improvements to existing levee/road (Old Cushing Road, 4,200 feet)
- Levee improvements, Cushing Road to Warren (USFWS levees on west side or ACFCWCD levees on east side, to be verified, 6,400 feet)
- Bridge to USFWS levee (depending on location of trail, may not be needed if on N/S), 120 feet

#### Segment 7: Mud Slough Levee Trail

- Bridge/boardwalk, Mud Slough, 300 feet
- Levee improvements, Mud Slough to street or existing trail, 1000 feet

#### Segment 8: Fremont Boulevard to Dixon Landing Road (Santa Clara County) Bay Trail

- Newby Landfill perimeter trail, 19,500 LF \*
- Newby pedestrian. bridge, 300 LF
- Creekside Landing trail improvements, bridge and crossing improvements at Dixon Landing Road \* (detailed estimate prepared for Segment 8 is included in the Appendix).

The planning level cost estimate is based on the following assumptions:

- Cost estimates do not include costs for major levee improvements for flood control or sea level rise adaptive management, but include work for minor improvements to level, scarify and re-compact the surface materials necessary for trail construction.
- Costs include an allowance for erosion control and side slope stabilization where needed associated with levee top improvements and trail natural surfacing
- Costs for 4 inches of polymer stabilized 3/8 inch aggregate paving, including compaction and geosynthetic blanket were estimated to be \$3.50 per square foot.
- Costs for 6 inches of aggregate sub base and 3 inches of asphalt concrete paving were estimated at \$5.50 per square foot.
- Costs for a 10 foot wide pickup truck rated pedestrian bridge were estimated at \$1,800 per lineal foot, for a span from 40 to 100 feet long.
- Costs for a 10 foot wide boardwalk structure were estimated at \$900 per lineal foot,

- Costs for a 10 car trailhead parking area were estimates at \$25,00, or \$2,500 per car.
- Costs for interpretive overlooks, including display signage were estimated at \$12,000 each
- Costs for site furnishings, including signage, benches, etc. were estimated to be \$2,000 per 1,000 lineal feet of trail
- Costs for striping, signage and stenciling bikeways were estimated to be \$20.00 per lineal foot.

## **8.2 RIGHT OF WAY ISSUES**

Although many of the potential trail alignments are located on public lands, primarily owned by the ACFCWCD and USFWS, with some portions on California Department of Fish and Game or State Lands Commission lands, key segments are located on private lands or within a planned development.

Use of USFWS lands for public access would likely require a lease agreement, license or memorandum of use, with a designated management entity. A major ROW issue to resolve is the potential use of USFWS-owned/Cargill-managed levees located adjacent to salt ponds. Although both do not consider an adjacent levee trail to be presently feasible, this is a long-term goal and could be many years out before trail implementation becomes feasible, perhaps associated with some future multi-purpose flood control levee project. USFWS probably will not construct nor maintain trails on their lands. However, they are open to further discussions regarding a trail use agreement with another public agency across their lands.

The preliminary project plans for this area call for the installation of wildlife fencing, a minimum 200-foot buffer or setback from the edge of the American Canyon Creek riparian corridor, and the planting of native trees and shrubs to provide additional buffer screening.

## **8.3 FUNDING OPTIONS**

Funding for trail implementation will likely come from multiple sources, and local matching funds are often required to complete a funding package. Bicycle and pedestrian projects are typically funded from State and Federal-aid highway, transit, safety, recreation, and other programs. Bicycle projects must be primarily for transportation (not recreation) purposes and must be consistent with adopted transportation plans.

Obtaining project funding is often very competitive and success varies according to the number of applicants and the relative merits of each competing project. However, receiving grant funding for trail construction is generally more successful when the following components are in place:

1. The project is a component or element of a larger regional trail system, with connections, and has been addressed in a feasibility study or master plan, prepared among cooperating agencies and with stakeholder input.
2. The project has demonstrated local community support and elected government official's support.
3. Partners are included in the project and the partner nonprofit or community organizations have a demonstrated history working with the agency to implement a project, and are involved in implementing the grant request (such as Bay Area Ridge Trail and Land Trusts).
4. Environmental review (CEQA and NEPA for Federal funds) has been completed, including a Notice of Determination from the Lead Agency.

5. A Resolution from the Lead Agency(s) accepting the Master Plan or Feasibility Study and authorizing application for grant funding has been passed.
6. The project has made a commitment of local resources for patrol, monitoring, maintenance, and repair.

Allocation of project funding and procurement of funds from grants or other sources must follow the appropriate guidelines of the granting entity. Caltrans Local Assistance coordination may be required as a project component, including a local agency match and NEPA environmental review, if funding is sought from federal sources.

Most grant funding is for construction only, and does not typically include operations and maintenance costs. Considering the fact that large portions of the trail system could be located on levees that require maintenance, some mechanism to set aside or reserve funds for maintenance and repair will be essential to the long term success of any trail project within this area.

#### **8.4 FUNDING SOURCES**

For regional trail systems such as this, funding would likely come from a variety of sources, including federal, state and regional programs. Since any corridor-wide trail project will be a part of the San Francisco Bay Trail, funding by the Bay Trail and the State Coastal Conservancy can also be considered.

The Metropolitan Transportation Commission, the Regional Transportation Planning Agency for the San Francisco Bay Area, oversees additional state and federal sources of funding that can be considered for a regional trail project. These include the federal government's Transportation Enhancement (TE) program, the Congestion Management Air Quality Improvement (CMAQ) programs, California's Transportation Development Act (TDA) and the State Transportation Improvement Program (STIP).

##### **Local and Regional Funding Sources**

Measure B is Alameda County's half-cent transportation sales tax, which includes allocations for bicycle and pedestrian improvements. Administered by Alameda County Transportation Authority (ACTA) it administers funds for capital projects, local transportation, transit operations, and special transportation (paratransit), as well as to ensure timely project and program delivery. The Alameda County Transportation Commission evolved from ACTA and administers and provides pass through funding to local jurisdictions, including the Countywide Discretionary Fund Bicycle and Pedestrian Grant Program.

Capital Improvement Programs. Local funding for trail projects may include a commitment of funds from local capital improvement programs (CIP). These are typically allocations from City or County General Funds designated for important projects, and given to Public Works Departments to oversee construction plan preparation, bidding, and construction/construction management. These are funds set aside by a local city or county to support specific earmarked projects. CIPs are sometimes used to meet the local share or match requirement of larger competitive grants, and can be combined in partnerships with local nonprofits, and sometimes with developer impact fees and other funding. Due to budgetary constraints, capital improvement funding is often committed to major infrastructure and deferred maintenance needs.

Transportation Development Act (SB 821). Transportation Development Act (TDA) Article III funds are state block grants that are awarded annually to local jurisdictions for the engineering design and construction of bicycle and pedestrian projects throughout California. Two percent (2%) of the local transportation fund in each county are allocated to fund facilities for the exclusive use of bicyclists and pedestrians, including preliminary engineering, ROW acquisition, construction and construction management, and project reconstruction or retrofitting. TDA funds are generated from state sales tax revenues and are distributed through the local transportation agency.

Mello-Roos Community Facilities Act. Bike paths and bike lanes (rarely) can be funded as part of a local assessment or benefit district, approved by the property owners of the special assessment district. This mode of funding is probably applicable to Specific Plan areas or local spur or loop trails constructed off the main spine of any future trail.

Landscaping and Lighting District Act of 1972. The Landscaping and Lighting District is a flexible tool used by local government agencies to pay for landscaping, lighting and other improvements and services in public areas, including annual maintenance. It is based on the concept of assessing only those properties that benefit from the improvements. The construction and maintenance of trails have been successfully included in a number of LLDs. LLDs could be used for area-wide streetscape improvements within the Study Area.

ABAG Bay Trail. The Association of Bay Area Governments (ABAG) administers the Bay Trail project. There is not a secure source of funding for the Bay Trail grants, and the availability of the Bay Trail Grant Program will be dependent on whether or not funding sources are available for the grant program.

Agency Allocation. Funding for trail implementation could conceivably be combined with planned Capital Improvement Projects, such as for Park improvements, for circulation and transportation projects, for flood control/infrastructure and other improvement projects.

Miscellaneous Sources. Local sales taxes, partnerships with other agencies such as EBRPD, non-profit land dedications, private donations, fund-raising events and volunteer actions are other local options to generate funding for trail projects. Creation of these potential sources usually requires substantial local support.

## State Funding Programs

California Dept. of Parks and Recreation-Recreational Trails Program. The Non-motorized Trails Grant Program of the National Recreational Trails Program is administered by the California Department of Parks and Recreation, which receives federal funding to develop and maintain recreational trails and trail related facilities, such as hiking, equestrians, and bicycling, skating and other uses. Funds may be used for maintenance of existing trails, trail restoration, links, trail maintenance equipment, environmental education programs, and easement acquisition. RTP projects must be ADA compliant and may be used for:

- *Maintenance and restoration of existing trails;*
- *Purchase and lease of trail construction and maintenance equipment;*
- *Construction of new trails; including unpaved trails;*

- *Acquisition of easements or property for trails;*
- *State administrative costs related to this program (limited to seven percent of a State's funds);*
- *Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).*

California Department of Parks and Recreation - Habitat Conservation Fund. Also administered by the CA Department of Parks and Recreation, this grant funds habitat acquisition projects, enhancement projects, and programs that provide for the interpretation of the State's park and wildlife resources or programs which bring urban residents into park and wildlife areas or provide opportunities for urban residents to use park and wildlife areas, or programs that include nature interpretation programs designed to increase the peoples' awareness and appreciation for park and wildlife resources.

State Coastal Conservancy. The San Francisco Bay Area Conservancy Program (Bay Program), administered by the Coastal Conservancy, was established to address the natural resource and recreational goals of the Bay Area. The Conservancy may award grants to help achieve the following Bay Program goals:

- *Protect, restore, and enhance natural habitats and other open-space resources of regional significance throughout the nine-county area;*
- *Improve public access and related facilities to and around the Bay, its surrounding hills, and the coast, through completion of bay, coast, and ridge trails that are part of a regional trail system; and*
- *Promote projects that provide open space that is accessible to urban populations for recreational and educational purposes.*

Trail projects that also combine habitat restoration and protection and environmental education would be ideal for grant funding by the Conservancy. Funding can cover project planning and engineering design, environmental review, construction and construction management, and in certain cases, maintenance and land management. Funding availability is subject to legislative appropriations of bond funds, and by the periodic passage of voter approved bonds for outdoor recreation, land acquisition, and habitat restoration and enhancement.

Caltrans Programs. Caltrans Office of Local Programs administers federal programs that can be used for trails-related projects. This includes:

Bicycle Transportation Account, providing grant funding to local jurisdictions for bicycle related projects, with an emphasis on bicycling for commuting. The local match must be a minimum of 10% of the total project cost.

State Transportation Improvement Fund. The STIP is a multi-year capital improvement program of transportation projects funded with revenues from the State Highway Account and other sources. STIP programming generally occurs every two years. Caltrans and the regional planning agencies prepare transportation improvement plans for fund allocations.

Safe Routes to School provides funding for projects that construct facilities to enhance the safety for pedestrians and bicyclists. By enhancing the safety of the pathways, trails, sidewalks, and crossings, the likelihood of attracting and encouraging additional students to walk and bike increases. This could be utilized for trail improvements where there are logical connections to local schools.

Partnership, Statewide, and Transit Planning grants for improvements to the state or regional transportation system.

Community-Based Transportation Planning grants focus on integrated land use and transportation planning, including alternative transportation methods. Pedestrian and bicycle trails to link neighborhoods and transit centers would be applicable, at either end of the trail.

The Environmental Enhancement and Mitigation Program (EEMP) was established by the Legislature in 1989. It generally offers a total of \$10 million each year for grants to local, state, and federal governmental agencies and to nonprofit organizations for projects to mitigate the environmental impacts caused by new or modified state transportation facilities. State gasoline tax monies fund the EEMP. Grants are awarded in three categories:

- Highway Landscape and Urban Forestry-- Projects designed to improve air quality through the planting of trees and other suitable plants.
- Resource Lands -- Projects for the acquisition, restoration, or enhancement of watersheds, wildlife habitat, wetlands, forests, or other natural areas.
- Roadside Recreational -- Projects for the acquisition and/or development of roadside recreational opportunities.

Transportation Funds for Clean Air Program (TFCA). The Bay Area Air Quality Management District (BAAQMD) provides funding for projects consistent with BAAQMD's Clean Air Plan. Projects must demonstrate that they result in air quality benefits. Automobile registration fees generate funds, with approximately \$20 million collected annually. These funds are distributed to either a regional competitive fund (60%) or to a Program Manager Fund (40%).

Regional Bicycle and Pedestrian Program (RBPP). The RBPP program has committed \$200 million dollars towards funding significant bicycle and pedestrian projects, particularly those that serve schools or transit, and is managed through the applicable transportation agency (such as ACTIA).

Wildlife Conservation Board funds the acquisition of lands or improvements that preserve wildlife habitat or provide recreational access for hunting, fishing or other wildlife-oriented activities. Projects eligible for funding include interpretive trails, river access, and trailhead parking areas. The State of California must have a proprietary interest in the project. Local agencies are generally responsible for the planning and engineering phases of each project. Property acquired or developed under the program must be retained in perpetuity for public recreational use.

California Conservation Corps (CCC). Local, state and federal agencies as well as non-profit organizations may contract with the CCC. The CCC does not provide funding, but is a low cost source of labor. Some grants require the inclusion of CCC labor as a project component.

## Federal Funding Programs

Since many of the lands within the Study Area are within the Don Edwards Wildlife Refuge, it is conceivable that trails can be implemented as part of ongoing restoration and public access improvements in conjunction with implementation of the Comprehensive Conservation Plan 2012. Since this plan is intended to serve as a guide for project implementation within the next 15 years, integration of Bay Trail segments that fall within Refuge lands will be a key to an integrated trail system.

Projects within the CCP will be integrated into the Refuge annual budget, or may be implemented in full or in part by other sources, such as partnerships with other local, state, or federal agencies, special legislative appropriations, or grants (i.e., National Fish and Wildlife Foundation, Transportation Enhancement Funds). Other potential sources of funding for restoration projects include: the North American Wetlands Conservation Act Grants Program; and the Cooperative Endangered Species Conservation Fund.

Land and Water Conservation Fund (LCWF). LCWF provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Administered by the National Parks Service and the California Department of Parks and Recreation, it has been reauthorized until 2015. Cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and are reimbursed for 50 percent of costs.

MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141). This program was signed into law on July 6, 2012, funding surface transportation programs at \$105 billion for fiscal years (FY) 2013 and 2014. This program created a streamlined, performance-based, and multimodal program for highways, streets, roads, transit and other transportation related projects. A focus of the program is to streamline work done by the Federal Highway Administration to ensure that local communities are able to build multimodal, sustainable projects ranging from passenger rail and transit to bicycle and pedestrian paths.

Project funding for bicycle and pedestrian projects will be from the Transportation Alternatives (TA) – a new program, with funding derived from the NHPP, STP, HSIP, CMAQ and Metropolitan Planning programs, encompassing most activities previously funded under the Transportation Enhancements, Recreational Trails, and Safe Routes to School programs under SAFETEA-LU.

## 9. NEXT STEPS

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Implementation of the Bay Trail within Newark and Fremont will be a multi-step process, involving:

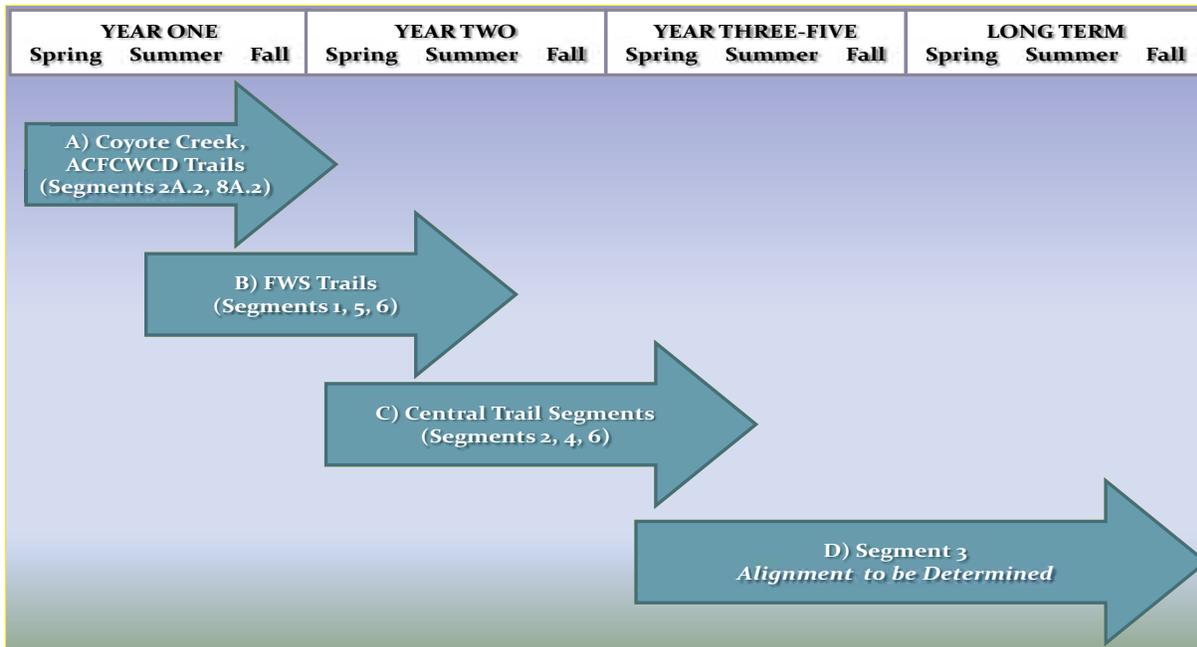
- Review and/or approval of Feasibility Study by lead agencies and project stakeholders
- Integration of plan concepts into applicable Plans of lead agencies (City and County bicycle and pedestrian plans)
- Identification of individual projects, programming funds for project implementation
- Completion of the required environmental review document(s) (CEQA/NEPA)
- Securing funds for preliminary design and construction
- Obtaining regulatory permit approvals
- Negotiation and completion of potential Right of Way (ROW) and trail use or licensing agreements
- Preparation of detailed engineering design plans
- Publically bidding the project's Construction Plans
- Construction oversight of the approved plans by a qualified Contractor to ensure that the project plans, along with all of the CEQA/NEPA mitigation measures and all permit conditions, are followed and implemented as approved.

The following steps outline the near-term process for trail planning.

### 9.1 PROJECT REVIEW AND APPROVAL

The study report, including alignment recommendations, will be presented to the cities of Newark and Fremont for consideration. The report should also be submitted to agencies such as USFWS, ACFCWCD, and possibly EBRPD for review. Where appropriate, this Plan would be integrated with ongoing planning efforts of each agency as part of a coordinated implementation effort (USFWS CCR). As a planning document, CEQA review would not be required at this time.

As discussed previously, a potential implementation sequence would envision completion of priority projects and gaps between existing trails segments, such as an interim connection between Fremont Blvd. and Dixon Landing Road, which will bridge a significant gap and connect two existing Bay Trail segments. Another priority would be to complete the segments within USFWS lands that are being adapted to wildlife use, west of Cushing Parkway, to provide a connection to Auto Mall Parkway. Segments within Specific Plan areas would be completed as those projects are implemented.



## 9.2 CEQA/NEPA CONFIRMATION

As a planning study, this Study itself is exempt from CEQA review. Initially, the Study can be presented to the City Councils (and other decision-making entities) as an informational item, with a request for direction to proceed with any follow-up technical or environmental studies, apply for grants and other sources of funding, and completion of planning/engineering and environmental review.

As noted above, an environmental analysis needs to be conducted per California Environmental Quality Act (CEQA) requirements prior to any project construction. A CEQA Initial Study Checklist must be prepared to determine if there are potentially significant environmental impacts. If there are potential impacts, then an expanded environmental assessment will be prepared, most likely focusing on specific project issues. Mitigation measures may be incorporated into the project design (such as fencing, separation or other measures) to reduce the potential environmental impacts. The public will have several opportunities to review and comment on the project and potential impacts in this process.

If the project receives federal funding, then environmental review will also need to comply with National Environmental Policy Act (NEPA) guidelines. Typically, a number of special technical environmental studies are conducted to assist in the NEPA review and approval process. These often include:

- Section 106 Cultural Resources Study;
- Section 4f determination, if any parks are located nearby that might be closed due to construction activities;
- Location Hydraulic Study, for segments within FEMA designated 100-year floodplain;
- Natural Environment Study (NES)- wetlands delineation, if there are any wetlands present;
- Biological Assessment to verify presence and protection protocols for sensitive wildlife and plant species that might be impacted by project activities.

If the environmental review and special studies identify feasible mitigation measures that adequately address potential project impacts, then a Mitigated Negative Declaration can be adopted by the lead agency, and a Finding of No Significant Impact (FONSI) can be adopted by federal agencies (if applicable).

For any elements of the trail that involve minimal disturbance and construction, such as striping, signage, a project may be eligible for consideration of a Categorical Exemption or Exclusion (NEPA), provided there are no water quality, wetlands, endangered species, or cultural resources impacts. However, a focused or full EIR/EIS could be required if any significant environmental issues are identified during the Initial Study.

Trails identified on USFWS lands that are incorporated into the USFWS CCR could be evaluated as part of the NEPA review for that Plan. Local (Don Edwards Wildlife Refuge) biologists could provide the Section 7 consultation and write the Biological Opinion if the trail is on their refuge lands.

Portions of the trail will be completed in association with other projects (Areas 3 and 4, Dumbarton TOD, Creekside Landing, etc) and construction of physical features for the trail should be included in those respective environmental documents.

### **9.3 RIGHT OF WAY AGREEMENTS**

Separate agreements would be needed with each landowner or easement holder within a trail segment. Continued dialogue with respective property owners and stakeholders (Cargill, Inc., ACFCWCD, etc.) will be critical to incorporate trail elements into current and planned projects where appropriate. Right of way negotiations will likely include provisions for wayfinding, security, maintenance and operations, including the need for periodic closure.

### **9.4 PROJECT PERMITTING**

Preparation of permit applications and requests for permit approvals from applicable regulatory agencies is typically completed concurrent with engineering design. Typically, permitting can often be completed on well thought-out conceptual (35% submittal) plans. Many trail segments will likely be subject to permit and review associated with proximity to sensitive habitat areas. This will need to be confirmed in follow-up discussions with regulatory agencies. Corps and DFG permits may be required for any localized wetlands fill associated with bridge, boardwalk, or culvert structures.

### **9.5 FINAL DESIGN**

The design process can often proceed at the same time the environmental review work is being completed. Next steps may include topographic, property or boundary and ROW/easement surveying, review of “as-built” drawings, completion of soil borings for pavement and boardwalk/bridge design, and preliminary trail design. Typically a design proceeds through several stages of preparation and review, from concept drawings to a final construction bid package (i.e., 35% completion, 70% completion, and 95% completion review and submittals). Depending on complexity, the completion of a final design and bid package, followed by public bidding, can take from six to more than twelve months.

## **9.6 TRAIL CONSTRUCTION**

Depending on size and complexity, trail construction can take from two or three to eight or more months to complete. Trail implementation can also be completed in phases, depending upon prioritization, available funding, environmental requirements, permitting, or combined with other construction projects. The project may also be subject to seasonal implementation restrictions to avoid impacts to wildlife resources during nesting or breeding season.

Construction of the Newark-Fremont Trail system will likely be phased over many years to reflect available funds for implementation, as well as obtaining necessary ROW, private agency cooperation, and coordination with property owners. Construction protocols and Best Management Practices identified in Section 7 as well as required as part of environmental review will be incorporated into the construction project documents.

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## **Appendix A**

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### Meeting Notes and Correspondence

**COMMUNITY WORKSHOP  
NEWARK – FREMONT BAY TRAIL GAP FEASIBILITY STUDIES**

**June 13, 2011 Silliman Community Center  
Meeting Notes**

The Newark Fremont Bay Trail Gap Feasibility Study Community Workshop #1 was held on June 13, 2011. Approximately ten area residents attended, including representatives from Newark and Fremont, representatives of elected officials, and neighborhood residents.

Patrick Miller introduced the project, which is a feasibility study to identify a new, shore-line oriented Bay Trail route between Highway 84 and the Santa Clara County/Milpitas limits (near Newby Landfill). The feasibility study is a long-term plan that will identify potential routes for an “optimum” alignment, recognizing that the area is in transition, with large areas to be redeveloped (Dumbarton TOD and Areas 3 and 4 Specific Plan), vacant lands and some areas in permitting and development (Tri Cities Landfill and Creekside Landing). The Study will evaluate wildlife habitat considerations, land use, property ownership, and other considerations as part of the decision-making process. Within the Study Area, the consultant team is also studying detailed options for an interim trail alignment to bridge the Bay Trail gap between the south end of Fremont Blvd. and Dixon Landing Road, on King and Lyons property. Discussions with individual property owners, including Cargill and US Fish and Wildlife Service, are part of the study.

Jeff Peters of Questa presented an overview of the study, including existing conditions and preliminary segments to be evaluated. Some of the project issues include getting feedback from property owners about where to site a trail to avoid operational conflicts, such as the Tri Cities Landfill. Each segment will be evaluated utilizing common criteria to determine how it meets the project goals.

Questions and comments from workshop participants:

1. What is the Cost difference between Segments 1A and 1B?

Trail segment costs will be developed as part of the planning and decision-making process, including information regarding right of way acquisition as well as actual construction costs.

2. Comment: The trail should not be located on Cherry Street. The street is uncomfortable for a tentative cyclist with issues regarding sight, balance, speed etc. Being away from traffic should be the #1 criteria.

3. Is the Bay Trail for recreation or transportation?

The Bay Trail can serve both uses, it is a multiuse facility, and depending on the alignment segments could serve one or both types of users.

4. Have the two cities provided guidance with respect to their bike planning?

Fremont is currently updating their Bicycle and Pedestrian Plan, and Newark is preparing its first Plan. The Bay Trail route will be coordinated so that connections and links to citywide facilities are consistent.

5. The area west of the freeway provides little connection to businesses. How do the Plans mesh?

The Bay Trail can provide opportunities for recreation oriented wildlife observation, or in some areas, transportation based connections. In this area, the goal is to provide a shoreline experience, so in some areas the transportation route would be located elsewhere.

6. Would the trails be developed in sections?

Yes, the Bay Trail is typically built in sections, depending on adjacent land use/development and funding availability. For instance, the Bay Trail within the Study Area will likely be built as part of the project at Dumbarton TOD, Areas 3 and 4 Specific Plan, and the Creekside Landing/King and Lyons project. Trail improvements might be required as part of the Tri Cities landfill project.

7. There is a landscaped berm on Cherry Street. Could it be redesigned as a Bay Trail?

Cherry Street is not ideal, due to traffic and location away from the Newark shoreline. It could be considered for an interim alignment. Considerations for redesigning it as a multiuse path would be the right of way width, traffic conditions, and cost to realign the street, sidewalk, curbs and other elements.

8. What feedback have you received from Alameda County Flood Control regarding use of levees and sea-level rise?

We have contacted the ACFCWCD and will seek input regarding this issue. There are similar studies that are looking at levee construction and trails, such as ABAG/NOAA "Adapting to Rising Tides" for the Hayward-Union City area, as well as studies in Santa Clara County. There has been no long term planning in the Newark Fremont area by these agencies.

9. Comment: The US Army Corps of Engineers omits the levees around Cargill from their studies, as these levees are privately maintained.

10. Is this the first workshop?

This study (as well as the Coyote Creek Study and Alameda County Bike Plan) was discussed at the May 18, 2011 Fremont BPTAC meeting, which was attended by about fifteen people.

11. What is the purpose of the Coyote Creek Study? Why build this segment?

The Coyote Creek study evaluates the specific alignment for an interim trail, including a pedestrian bridge over Scott Creek/Line B to close a gap in the Bay Trail between the end of Fremont Blvd. and Dixon Landing Road. Due to the economy, this development may not be built in the near future, and this trail segment would connect two existing Bay Trail segments.

**MEETING NOTES**  
**FREMONT BICYCLE PEDESTRIAN TECHNICAL ADVISORY COMMITTEE**

**May 18, 2011, 6:00 PM**

The Newark Fremont Bay Trail Gap Feasibility Study (Gap Study) was Item # 2 on the Fremont Bicycle Pedestrian Technical Advisory Committee agenda.

The first agenda item was a review of the draft ACTIA Alameda County-wide Bicycle and Pedestrian Plans. The committee and public reviewed the ACTIA draft County Bike/Ped Plan, and added comments and annotations. This draft Plan shows a loop trail (on both the bike and pedestrian plans) running down Line N and Mowry Slough west of the Tri Cities landfill, connecting to Coyote Creek and looping south toward Newby Island. Diane Stark (County Planner) was asked what she knew about this trail segment, and she replied that she did not recall any specific details of the alignment and requested further coordination with the Gap Feasibility Study team.

(Note: further research is needed on this issue; depending on what is found out- the study team should consider adding this route to draft Gap Trail Study alignment map and assign it a segment number-for consistency with the County planning effort.)

Jeff Peters (Questa) summarized key points of the two related Bay Trail Projects (Newark- Fremont Bay Trail Gap Feasibility Study, and an in-depth study of the Coyote Creek project area). Patrick Miller was the moderator/facilitator and helped respond to questions from the committee and general public that were present. Questions asked during the PowerPoint presentation and during a Q&A session after the presentation, along with responses by Peters and Miller, are summarized as follows:

1. Question was raised on need to design Bay Trail on existing low elevation levees to be above the 100-year flood and accommodate sea level rise.

Response was the trail surface elevation does not necessarily need to be above the 100-year base flood level, and/or accommodate sea level rise, but all bridges crossing sloughs that are maintained by Alameda County Flood Control District will very likely need to be a foot or more above this. The concern is that the bridges could block flood flows coming down the sloughs and drainage channels, including causing debris jams and creating local flooding or levee breaks. This will likely need to be worked out on a case by case basis during any future project design level investigations. Some ramping up of the trail surface will need to occur to accommodate increased heights needed to transition to bridge elevations.

It was pointed out that some of the levees are privately owned (i.e. Cargill, and some owned by USFWS and managed by Cargill. These levees are not designed or operated for flood control (they are not FEMA certified). Local, state, and federal emergency response providers, including FEMA, Corps, County Flood Control District, are in the process of looking at levee heights and conditions, and a part of their mission in the future may also include considering needs for public levee construction in places to mitigate sea level rise issues. Having a general Bay Trail designation on City and County

planning documents along the South San Francisco Bay shoreline may help in the future to make sure that any new levees are multi-purpose, including a possible recreational hiking component.

2. Follow up question was asked regarding construction of under-passes or over-passes over railroad tracks, as several new grade separated pedestrian/bike bridges are shown on the draft trail study segment plan.

Response was that in general because of the flat terrain, poor soils, and high groundwater conditions, an over-pass structure would likely be more feasible and cost effective. Typically such structures need to be a minimum of 23.5 feet over railroad tracks, so very long ramps are need to meet the ADA maximum grade requirement of 5%.

3. Question was raised about levee conditions and levee stability.

Response was that the levees are old and not well engineered; they are constructed of soft bay mud dredge material, placed on bay mud. They are subject to differential settlement, erosion, etc. and require periodic “topping” and shoring or beaching for erosion control. Having a paved trail surface under these conditions is challenging, and the study team is looking at alternative surfacing materials, such as polymer stabilized fine gravel aggregate.

4. Question was raised on the possibility of running the trail alignment along side or just outside of the Union Pacific railroad alignment, especially through the Cargill property.

The current Bay Trail Plan map for this area shows a study alignment running parallel to the UP tracks as “Planned Bay Trail- Future Route- Not Developed”.

Response was that the study team looked into this issue and discussed this alignment with representatives of Cargill and Alameda County Flood Control District. The alignment is highly constrained by properties that abut the UP alignment, including a flood control ditch and salt pond system adjacent to the Cargill property, and Cargill representatives thought it not feasible, that there was no room and a trail in close proximity would interfere with their operations. It was also pointed out that it is highly unlikely that there is extra/unused Right of Way within the UP railroad property as UP typically reserves any extra ROW for future tracks expansion, especially on busy rail corridors within metropolitan areas- such as the ACE corridor.

A member of the audience pointed out that this area is really near the heart of Cargill’s salt production operations, while someone else suggested the possibility of buying and reconstructing some of the salt pond’s eastern side to make room.

(Note: draft trail study segment plans do not currently show trail along rail corridor, but

perhaps the plan maps should show a study alignment, so it can be formally evaluated, and documented for the record as being feasible or not.

5. Question was asked: Who funds the Bay Trail (suggesting that it was a Bay Trail Project)?

Response: While the ABAG Bay Trail program occasionally does administer grant programs to plan and help construct the trail, local jurisdictions most often take the lead in funding and oversight for construction and then provide ongoing operations and management. Funds are sometimes committed from the State Coastal Conservancy.

6. Question: How much use will the trail get, will there be any use projections associated with the segments being considered?

Response: Developing actual trail use estimates was not currently anticipated but potential usability could be considered evaluation criteria for comparing alternatives. . Generally, most segments of the Bay Trail near populated areas, once constructed, are extremely well used, especially on weekends. Audience members attested to that fact.

7. Comment from Stakeholder present. Dan North from Waste Mgt. Tri Cities landfill spoke regarding the two trail segments that are located on landfill property (the study alignment on the toe maintenance road, and an alignment through possible wetlands along the common UP fence line). Dan indicated that Waste Management welcomed the Bay Trail on their property and welcomed the opportunity to continue to work with the Gap Study team to help select a feasible route. Dan pointed out that he did not think a trail alignment would work along the toe of the landfill and existing maintenance access road. The road is currently 15 feet wide, but he said they need to add 3 or 4 feet of cap to the above landfill slopes, which would narrow the road to 12 feet. He indicated that they have pick-ups on the road daily and will for the next 30 years (the landfill post closure monitoring period) and that in their opinion there was not enough room for a truck and trail users passing.

Dan offered as an alternative route the stormwater/wetlands area- with a boardwalk. (Note: it is possible that under NPDES regulations this is a managed stormwater pond which might not technically classify as a Corps of Engineers jurisdictional wetlands as the divert all landfill runoff to this area then release it. If it is active stormwater facility- it may not be a wetland.)

(Note: Dan also mentioned that coordinating on Bay Trail planning has been placed as an issue to resolve in their landfill Use modification permit application and General Plan amendment application with the City- so continued coordination on this issue with City planning staff will be required.)

Dan also mentioned the City wants a sidewalk/ped crossing of the railroad tracks; this also needs further investigation, as CPUC may require grade separation at this current Private crossing.

Meeting Notes

1. Members of the public included representatives of the CSD Wheelers, a group from California School for the Deaf with 65 members.
2. Coyote Creek Bay Trail-Fremont Boulevard to Dixon Landing Connector

Margaret Henderson and Jeff Peters presented a PowerPoint at the meeting that is attached to the end of these notes. Rene Dalton represented City of Fremont and facilitated meeting and BPTAC committee discussion.

Key points of presentation are as follows.

- The trail represents the south terminus of the Bay Trail in Alameda County.
- Providing connections between Fremont Blvd. and Dixon landing Road will be key for trail users.
- The study team has met with Alameda County Flood Control District, who verbally agreed with the project. They have done channel maintenance in the project area.
- The study team met with Eric Mruz, head of US Fish and Wildlife Service Don Edwards Refuge (north of project area), who did not have issues with trails in the study area.
- The study team met with representatives of Newby Island Landfill, who indicated that trails on Newby perimeter would need to be built after geotechnical work to stabilize the landfill toe is completed in future years.
- The project is consistent with Fremont General Plan goals, and project goals.
- The site was partially improved to facilitate future development of the upland portion of the site. This included completion of the upland building pads and creation of a micro-tidal wetland east of the levee. This is regulated by culverts that connect to Coyote Creek and Line B.
- The trail would be completed as part of the Development Agreement for the King and Lyons site, however, there is a problem with the timeline, since the Development Agreement was extended, but there is a current need for trail connections.
- The study evaluated four bridge crossing locations of Coyote Creek, with a recommendation to place the crossing near the current Fremont Blvd. terminus to ease regulatory permitting.
- The bridge would connect the existing trail with the levee top to the south (Line B is improved trail on the north side, unimproved on the south side).
- There is no need to raise the south side levee for flood protection since the area east of the levee is habitat; levee improvements would be minimal to facilitate trail use.
- The levee in this area is largely privately owned (King and Lyons).
- Sea level rise in the project area is estimated at up to 1-1/2 feet by mid century and 3 feet by 2100. All the levees have a three foot cushion of elevation.

- Interim and permanent improvements are needed at Dixon Landing Road to facilitate bicycle pedestrian crossings, minimize truck conflicts, and to direct users to the trail. Permanent bicycle and trail connections at Fremont Blvd. would also be needed as part of development project.

### 3. Public/Committee Comments:

- There was a question regarding levee maintenance—ACFCWCD maintains Line B, there would need to be improvements to south levee (Line B) to make a uniform gravel surface for trail use. The likely trail surface would be stabilized quarry fines to provide a firm and stable surface without habitat impacts.
- Why not put the trail on the Fremont Blvd. extension? There will be a trail on the Fremont Blvd. extension, this will provide interim and loop trail opportunities that are off-street. This trail was also required as part of the Development Agreement.
- What are the maintenance requirements of the bridges? Piers and pilings need to be designed to withstand weak soils of Bay Mud load from the ground. The deck of the bridge can either be concrete pan or wood decking. The bridge can be a pre-built structure, designed to be removed when permanent improvements on Fremont Blvd. are completed, so that it can be used elsewhere.
- What is the status of the Bay Trail to the north? This area is currently under study to provide Bay Trail connections between this area, Fremont Blvd., north to Don Edwards Refuge via a shoreline route.
- Comment: Bicycle commuting along Dixon landing Road is bad, this route would provide opportunities for casual riders. The Dixon Landing Road area is very difficult.
- Does the Warren Avenue Bridge have bicycle facilities? There is a bike lane on Warren with shoulder stripes.

### 4. Next Steps

- Finalize Study Report , incorporating input from agencies
- Present to Council
- Apply for funding
- Design, regulatory permits and implementation



**SENT VIA EMAIL AND POSTAL SERVICE**

July 1, 2011

Jeffrey H. Peters, Principal  
Questa Engineering Corp.  
Box 70356  
1220 Brickyard Cove Road  
Suite 206  
Pt. Richmond, CA 94807

Subject: Newark-Fremont Bay Trail Realignment Feasibility Study  
Cargill file: 2000.018.18

Dear Mr. Peters:

Thank you for holding the public workshop meeting on June 13 regarding the Newark-Fremont Bay Trail Realignment Feasibility Study at the Newark Silliman Center. I am glad I was able to attend as there are a few items that should be corrected for the record as well as reinforced from my response letter submitted to you on March 23, 2011.

I have attached a copy of the meeting notice for the June 13 public workshop for your reference. It is important to note that the title of your June 13 notice fails to include one important word, which is "Realignment". The title should read "Newark-Fremont Bay Trail Realignment Feasibility Study", not "Newark-Fremont Bay Trail Feasibility Study". The fact that there is currently a Bay Trail through portions of each segment is important to note not just in the text, but also in the title. It presents a false sense that there is no Bay Trail there at all and this should be corrected in future documents.

As a Bay Trail Board Member, I realize that the ideal alignment for the Bay Trail is along the edge of the Bay, and many of these segments exist today. With that said, there is a general recognition by the Bay Trail Board that that may not always be possible. Many sections of the Bay Trail are along streets and sidewalks. In fact, in your presentation at the public workshop, you mentioned the new Cushing Blvd

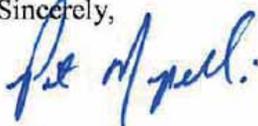
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sidewalk in Fremont as being a new segment of the Bay Trail. All of these contributions to the Bay Trail help the project get closer to the goal of 500 miles.

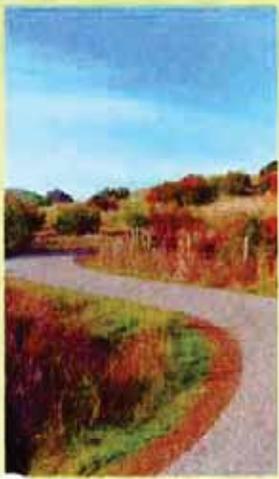
Lastly, for your reference, I have also attached a copy of my March 23, 2011 letter, which was in response to your March 18, 2011 letter. Both the Refuge and Cargill's positions have not changed. Therefore, in summary, your proposed alignment and/or alternatives through Cargill's lands and operations is infeasible and not possible and we strongly recommend you focus the study on improving the already existing alignment in these segments.

Sincerely,



Pat Mapelli  
Manager, Real Property  
Cargill Salt  
7220 Central Avenue  
Newark, CA 94560

cc: Eric Mruz, Refuge Manager - DESFBNWR



**Information:**

Terrence Grindall  
City of Newark  
terrence.grindall@newark.org

or

Rene Dalton  
City of Fremont  
rdalton@fremont.gov

## Newark-Fremont Bay Trail Feasibility Study

The Cities of Newark and Fremont, as well as the San Francisco Bay Trail Project, are jointly conducting a Feasibility Study to identify potential Bay Trail routes between Highway 84 (Dumbarton Bridge and Don Edwards Wildlife Refuge Headquarters) and Dixon Landing Road near Highway 880 (Milpitas and Santa Clara County line).

Attend the following community workshop for an opportunity to share your ideas...

### Community Workshop

**Monday, June 13, 2011  
6:30 to 8:30 PM**

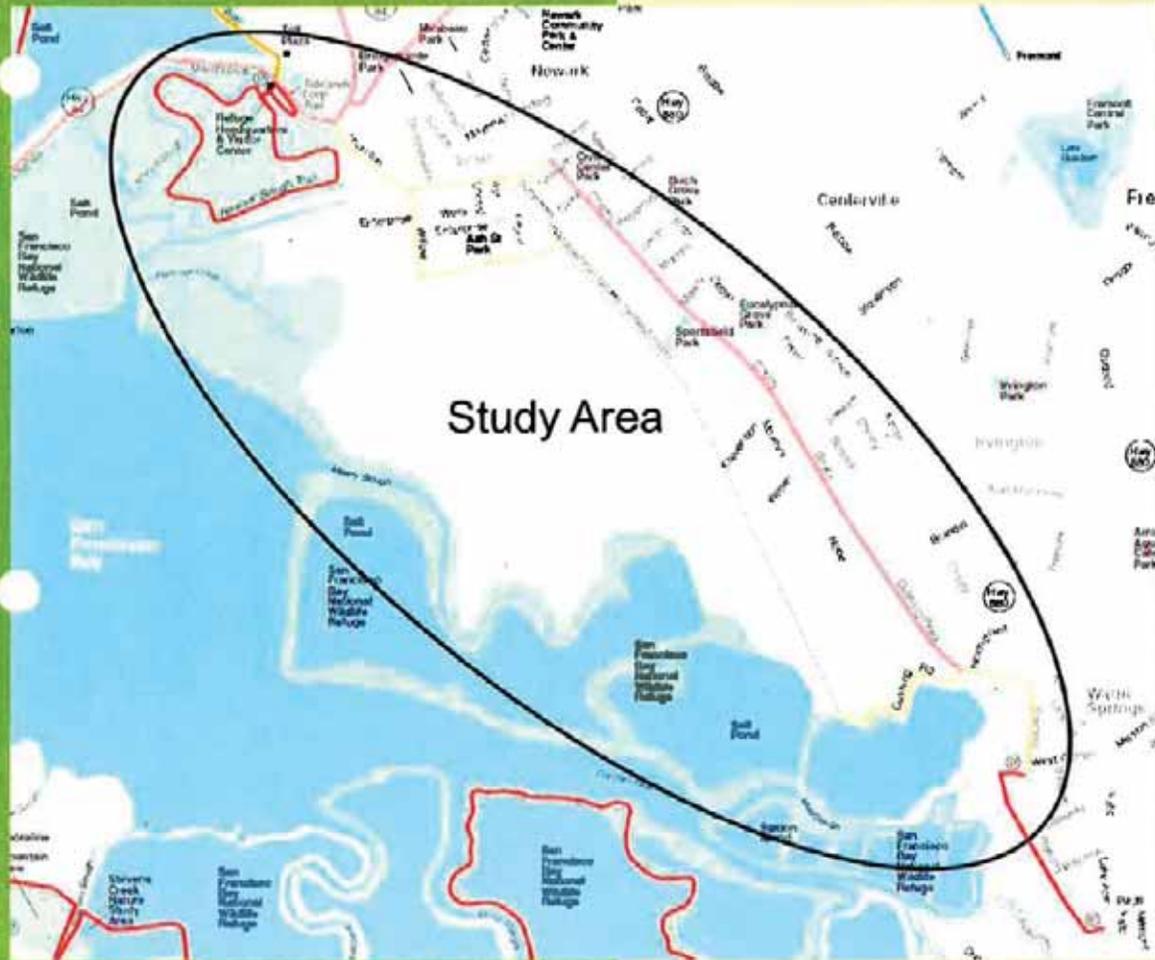
***Silliman Family Aquatic Center  
6800 Mowry Avenue (southwest of Cherry Street)  
Newark, California 94560  
(Driving directions on reverse)***

One Bay Trail goal is to locate trails near the SF Bay shoreline. This Study will evaluate alignments to meet this goal, including potential trails on levees through Wildlife Refuge lands. The current Bay Trail alignment follows along Thornton Avenue, Cherry Street, Boyce Ave, Cushing Parkway, and portions of Fremont Boulevard, with a possible future alignment along or near the Union Pacific railroad tracks within the ACE train corridor.

This workshop is occurring near the beginning of the planning process and your involvement is encouraged. The project Study Team will make a presentation describing the Feasibility Study, including a discussion of trail alignments currently being evaluated, as well as issues affecting potential alignments. Public concerns regarding trail user safety, privacy, conflicts with adjacent property owners and business operations, as well as environmental concerns, will be discussed, and the public will be given the opportunity to provide comments and input on the alignment alternatives and other related issues.

# Newark-Fremont Bay Trail

# Project Location



**Silliman Family Aquatic Center**  
6800 Mowry Avenue  
Newark, CA 94560

To reach the Center:

From I-880, take Exit 17 for Mowry Avenue toward Central Fremont, then head southwest on Mowry Avenue (right turn from I-880 South or left turn from I-880 North).

The Center is just past Cherry Street.



**SENT VIA EMAIL AND POSTAL SERVICE**

March 23, 2011

Jeffrey H. Peters, Principal  
Questa Engineering Corp.  
Box 70356  
1220 Brickyard Cove Road  
Suite 206  
Pt. Richmond, CA 94807

Subject: Newark-Fremont Bay Trail Realignment Feasibility Study  
Cargill file: 2000.018:18

Dear Mr. Peters:

I am writing in response to your letter dated March 18, 2011 regarding the Newark-Fremont Bay Trail Realignment Feasibility Study. The study you are conducting is to determine the feasibility of realigning the current bay trail segment between Newark and Fremont. Your current draft proposal shows the realignment through and immediately adjacent to Cargill's fee owned lands and the heart of our industrial salt operation in the City of Newark.

My comments on your map labeled "DRAFT – NOT FOR PUBLIC RELEASE" are attached, so I will not verbally comment on the map in this letter.

With respect to your letter, I do have a few comments and corrections. First, I would have to disagree with you that the construction of the Bay Trail in the vicinity you have shown on your map provides benefits to Cargill. Your comment that it would relieve Cargill's liability for any trespassing and injury is not true. You mentioned that the Bay Trail would provide a perimeter security system and patrol. Cargill already has security patrol and our current buffers provide the additional security we need without the requirement for fencing. You claim that the levee improvement would provide us with flood protection. We provide ourselves with flood protection – it is an inherent part of our operations. Also, compensation for Cargill's lands is not a benefit but rather an exchange or trade. Again, you mention operation and

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maintenance of the levee to be paid for by others. Although this sounds nice, our experience has shown that we cannot fully rely upon others to protect our operations. Lastly you mention providing a unique opportunity (through interpretive trail panels) to educate the public about our salt making operations. This is something we always strive to do and in fact, do participate in this effort with our partners at the Don Edwards San Francisco Bay National Wildlife Refuge. With all of that said, I would have to disagree that the current proposed realignment would provide Cargill with a number of benefits.

One other correction I would like to make in your letter is with regards to your comment on Cargill providing flood protection. Your sentence reads, “We were not fully aware of the importance of the Cargill levee system in providing urban flood protection (despite apparently not being official FEMA certified levees).” I don’t think you fully understood the conversation in our meeting. Our perimeter levees are designed and maintained to protect our salt operations from the bay and urban runoff in order to have control and manage our salt making system. It is inherent that they do provide some relief for certain urban areas, but for the record, our levees are not “providing urban flood protection”. It is important that you fully understand the sensitivity we have with this issue.

As I mentioned in our meeting on February 11, Cargill is not only a supporter of the Bay Trail Project, but Cargill is a representative on the Bay Trail Board. Of the 310+/- miles that currently exist as part of the Bay Trail, approximately 77+/- miles have been made possible on current and former salt making lands. Some of the closest access to the Bay is located on current and former salt making lands. There is also a general recognition that access immediately adjacent to the Bay is not always possible. For example, the Bay Trail passes through highly urbanized areas like downtown San Francisco and consists of trail segments like bike lanes, sidewalks and paved streets – as is the current Bay Trail alignment through the City of Newark.

After discussion and review with Cargill staff, our operations personnel, our maintenance personnel, the Refuge, as well as a thorough review of the final judgment between Leslic Salt Co. (Cargill’s predecessor) and the federal government that details our operations agreement with the Refuge, we have concluded that the feasibility of a realignment of the Bay Trail through and adjacent to our operations is not possible nor feasible.

As a suggestion, one of the alternatives to consider should be improving the current Bay Trail alignment between Newark and Fremont to promote continued and increase usage. Another alternative would be to consider a possible alignment parallel to the Union Pacific Rail Road on their property. Hopefully these suggestions can lead you to a successful study.

In closing, I would like to thank you for your time and your efforts on the work that you have done to date. Unfortunately, your proposal is infeasible for Cargill and the Refuge and we strongly suggest that your efforts be focused on an alignment that does not require Cargill properties or rights. Should you have any questions, please feel free to give me a call at (510) 790-8610 or alternatively you can email me at [pat\\_mapelli@cargill.com](mailto:pat_mapelli@cargill.com).

Sincerely,



Pat Mapelli  
Manager, Real Property  
Cargill Salt  
7220 Central Avenue  
Newark, CA 94560

cc: Eric Mruz, Refuge Manager - DESBNWR



## **Appendix B**

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Federal or State Protected Plant & Animal Species

This appendix is a discussion of the twenty-six Sensitive Species with the potential for the occurrence in the Feasibility Study Area along with a table with their potential to occur. Some species are of particular interest and are also discussed in the Biological Section of the Newark Fremont Feasibility Study.

Sensitive Species with Potential to occur Sensitive Species of Particular Concern

- |                                      |                          |                                                 |
|--------------------------------------|--------------------------|-------------------------------------------------|
| 1) Alameda song sparrow              |                          | 1. Alameda whipsnake                            |
| 2) Alkali milk vetch                 | 2. Black rail            |                                                 |
| 3) Brittlescale                      |                          | 3. Western burrowing owl                        |
| 4) Bush seepweed                     |                          | 4. California clapper rail                      |
| 5) California seablite               |                          | 5. Fall-run Chinook Salmon (Central Valley ESU) |
| 6) California tiger salamander       |                          | 6. Pacific harbor seal                          |
| 7) Congdon's tarplant                |                          | 7. Salt marsh harvest mouse                     |
| 8) Contra Costa goldfields           |                          | 8. Steelhead (CA Central ESU)                   |
| 9) Hoover's button celery            |                          | 9. Vernal pool tadpole shrimp                   |
| 10) Northern harrier                 | 10. Western snowy plover |                                                 |
| 11) Prostrate navarretia             |                          |                                                 |
| 12) Red-tailed hawk                  |                          |                                                 |
| 13) Salt marsh yellowthroat          |                          |                                                 |
| 14) San Joaquin saltbrush=spearscale |                          |                                                 |
| 15) Tricolored blackbird             |                          |                                                 |
| 16) White-tailed kite                |                          |                                                 |

Federally or State Listed or Proposed Animal Species

**Alameda Song Sparrow**

The Alameda song sparrow (*Melospiza melodia pusillula*) is one of three subspecies of song sparrow endemic marshland of the San Francisco Bay. Alameda song sparrows breed among tidal sloughs at the edge of bays and streams, preferring pickleweed dominated marsh with gumplant (*Grindelia spp*) that's high enough to provide high tide refuge. Alameda song sparrow is known to occur around Dumbarton Point, Newark Slough, and also near Newby Island Landfill. This species has the potential to occur in the Feasibility Study Area in areas of salt tidal marsh or tidal slough (especially in areas with dense pickleweed and gumplant).

**Alameda Whipsnake**

The Alameda whipsnake (*Masticophis lateralis euryxanthus*) is a federally and state listed threatened species. It is a 6 foot long, green and orange striped ("lateralis euryxanthus" refers to this species orange stripes), swift, whip-like snake thought to only live in the mountains of Contra Costa, Alameda, and northeastern Santa Clara counties. This animal is known to live in chaparral and scrub habitats but may also occur in adjacent grasslands, oak savanna and oak woodland habitats. The Alameda whipsnake has 2 recorded occurrences within the general region; however they were confined within oak woodland and grassland complexes east of the project area. They are not expected to occur within the Feasibility Study Area, as there is no suitable habitat present.

### **California Black Rail**

The California black rail (*Laterallus jamaicensis corturniculus*) is a small (6 in length) and difficult to observe year-round resident of tidal emergent wetlands dominated by pickleweed as well as brackish marshes dominated by a mix of bulrush and pickleweed. California black rails nest at ground level in dense vegetation at the upper limits of tidal flooding (Dumbarton EIR, Creekside Landing EIR). California black rail is known to occur in tidal marsh in the general area and had a CNDDDB occurrence noted in 2003 at nearby Dumbarton Point. California black rail has potential to occur in the Feasibility Study Area in areas with tidal marsh.

### **Western Burrowing Owl**

A California species of special concern, western burrowing owls (*Athene cunicularia hypugaea*) are found in open, grassland, rural and desert habitats associated with burrowing mammals (especially ground squirrels). They are also known to make use of concrete culverts, riprap, and levees for breeding wintering, foraging and migration stopovers. Western burrowing owls are known to occur in the general area in burrows located in agricultural fields and on the edges of levees (Creekside Landing EIR). Burrowing owls are known to inhabit the levee and adjacent upland areas of a South Bay Salt Pond Restoration Project pond that occurs in the southwest part of Feasibility Study Area (SBSPRP EIR).

### **California Clapper Rail**

The California clapper rail (*Rallus longirostris obsoletus*) is a federal and state listed endangered species endemic to the marshes of San Francisco Bay. California clapper rails nest in salt and brackish marshes along the edge of the Bay, and forage on crabs, clams, and other invertebrates. Breeding-season surveys of the South Bay conducted by various agencies and organizations during the 1990's found California clapper rails to be primarily concentrated in larger areas of tidal marsh, in alkali bulrush-dominated brackish marsh and saline/brackish transitional marshes. California clapper rails are also known, in rare occasions, to occupy brackish/freshwater transition marshes during the non-breeding season. A CNDDDB search revealed the clapper rail to have known occurrences near Newark, Mowry and Mud sloughs.

### **California Tiger Salamander**

California Tiger Salamander (*Ambystoma californiense*) is a federally and state listed threatened species. California tiger salamanders are associated with deep vernal pools or other similar habitats capable of remaining wet long enough to support this specie's comparatively long maturation period. California tiger salamanders are rarely found far from their breeding ponds or seasonal underground refugia (ground squirrel burrows). Migration barriers include obstacles such as road berms, buildings, walls, or hazards such as roads with high levels of traffic. Four occurrences of California Tiger Salamanders area are listed in the CNDDDB from the deep vernal pools of the Pacific Commons vernal pool mitigation area off of Auto Mall Parkway. California tiger salamander have potential to occur in segment 6B of the project which is a vernal pool complex area east of Union Pacific Railroad, west of Cushing Parkway, south of Auto Mall Parkway and north of Mud Slough.

### **Fall-run Chinook Salmon (Central Valley ESU)**

A California species of special concern, Chinook salmon (*Oncorhynchus tshawytscha*) is a salmonid known to occur in Coyote Creek. This species is known to move through Coyote Creek and possibly other sloughs to upstream spawning areas.

### **Northern Harrier**

Also known as the marsh hawk, the northern harrier (*Circus cyaneus*) is a raptor and California species of special concern that breeds in fresh and brackish wetlands (Creekside Landing EIR). The northern harrier is known to forage throughout the Feasibility Study Area. The northern harrier is also known to nest in nearby salt marsh habitat (CNDDDB) and may nest in diked salt marsh in the Feasibility Study Area.

### **Pacific Harbor Seal**

Pacific harbor seals (*Phoca vitulina richardsi*) are true seals, having no ear flaps or limbs sufficient for terrestrial locomotion. They have spotted coats in a variety of shades from white or silver-gray to black to dark brown. They grow between five and six feet in length and may weigh up to 300lbs. Pacific harbor seals are not a listed species, however they are protected by the Federal Marine Mammal Protection Act. Pacific Harbor Seals are known to pup in Mowry Slough in the Feasibility Study Area and may abandon their pups if they are approached or otherwise disturbed by humans.

### **Red-tailed Hawk**

The red-tailed hawk (*Buteo jamaicensis*) is protected under the US Migratory Bird Treaty Act and is a raptor known for its use of a wide variety of habitat types. Red-tailed hawks have been observed in the Feasibility Study Area foraging over Cargill salt ponds near Cargill's Newark plant site during recent biological studies (Dumbarton EIR). They also reportedly nest in trees and utility towers in the Feasibility Study Area.

### **Salt-marsh Harvest Mouse**

The salt marsh harvest mouse (*Reithrodontomys raviventris*) is federally and state listed as an endangered species. A small native rodent, the salt marsh harvest mouse is primarily found in tidal and non-tidal, or muted marshes with a dense cover of pickleweed (*Salicornia virginica*) and only around San Francisco, San Pablo, and Suisun Bays. Habitat loss, competition with other small mammals, especially western harvest mice, lack of adequate cover and vulnerability to predation limit their populations. Salt marsh harvest mice are known to occur in tidal and muted marsh habitat throughout the Feasibility Study Area and they should be considered likely to be present where ever there is suitable habitat.

### **Salt-marsh Yellow-throat**

The yellow and black masked warbler known as the salt-marsh common yellowthroat (*Geothlypis trichas sinuosa*) is a state species of special concern and is protected under the Federal Migratory Bird Treaty Act. It is a permanent resident of marsh habitat in the San Francisco Bay, often found near cattails, tules or tall grasses which they use for nesting. The nearest reported occurrence is from Line B at the southern end of Bayside Business Park near the Don Edwards National Wildlife Refuge where the species was seen among bulrush. (CNDDDB)

### **Western Snowy Plover**

Western snowy plover (*Charadrius alexandrinus nivosus*) is a small-bodied shorebird with a pale brown upper body, dark patches on either side of the upper breast, and dark gray to blackish legs. Snowy plovers weigh less than a ¼ pound and are about 6 inches long. Habitats used by nesting and non nesting birds include sandy coastal beaches, salt pannes, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars. The western snowy plover has been observed in active and inactive salt ponds within the Don Edwards National Wildlife Refuge and in Newark Slough near the Feasibility Study Area.

### **Steelhead (CA Central ESU)**

A type of rainbow trout, the federally threatened steelhead (*Oncorhynchus mykiss*) is known from several streams in the South Bay, including Coyote Creek. It is not well documented whether they spawn in any reach of Coyote Creek in the Feasibility Study Area but like Chinook salmon, they are known to move through sloughs between the bay and upstream spawning streams and have been observed in Coyote Creek during migration periods.

### **Tricolored Blackbird**

The tricolored blackbird (*Agelaius tricolor*), is named this because of the bright red and white patches on its shoulders, it is a California species of special concern. They are a social species that usually nest in colonies of 50 or more individuals in dense stands of cattails (*Typha spp.*) or tules (*Scirpa spp.*). They have been observed along Scott Creek near Highway I-880 and Dixon Landing Road and have potential to also be present in areas of brackish marsh.

### **Vernal Pool Tadpole Shrimp**

Vernal pool tadpole shrimp (*Lepidurus packardii*) is a federal listed endangered species that has no California ESA status. Vernal pool tadpole shrimp are approximately 2 inch long aquatic crustaceans found in vernal pools with clear to turbid water. The occurrences of this species in the Feasibility Study Area (like the California Tiger Salamander), is confined to the deep vernal pools in and around the Pacific Commons vernal pool mitigation site and the Warms Springs unit of the Don Edwards Wildlife Refuge.

### **White-tailed Kite**

A California Fully Protected Species, the white-tailed kite (*Elanus leucurus*) is a black and white raptor known to nest near marshes. This species is known to forage and nest throughout the Feasibility Study Area and has a moderate potential to occur where there's suitable nesting habitat

## Federally or State Listed Endangered or Threatened Plant species

### **Alkali Milk Vetch**

Alkali milk vetch (*Astragalus tener var. tener*) is a CNPS listed and federal species of concern. It is often found in moist, alkaline soils such as those near vernal pools, foothill grasslands, meadows, playas, and the upper edges of salt marshes. It grows up to 1 foot in height and is a delicate, sparsely hairy to smooth annual herb. It occurs in protected habitat within the Pacific Commons Mitigation Site near the central part of the Feasibility Study Area, where it's found at the edges of vernal pools.(CNDDDB)

### **Brittle scale**

Brittlescale (*Atriplex depressa*) is a CNPS listed species with no federal or state status. It is an annual chenopod with a prostrate growing habit often found in barren areas with alkaline or clay soils. It also occurs in some grasslands, meadows, seeps, playas and vernal pools. It is known to occur in the Don Edwards Wildlife Refuge Seasonal Wetlands Unit of the Warm Springs Area. The species was reported as occurring in an alkaline vernal pool/grassland complex in areas that drain to vernal pools.

### **Bush Seepweed**

Bush seepweed (*Suaeda moquinii*) is a locally unusual shrub known to occur in wet alkaline, saline and wetland areas throughout California. This species was observed in the Project Study Area and relocated to the wetlands mitigation area associated with Creekside Landing near the south end of the Feasibility Study Area.

### **California Sea Blite**

California seablite (*Suaeda californica*) is an evergreen shrub, that occurs along from the margins of coastal salt marshes. The only CNDDDB record for this species in the south bay is from a 1986 collection. It is assumed to have been collected from Mud Slough, in the southwest part of the Feasibility Study Area. California seablite is a moderately conspicuous shrub and has not been seen within the Feasibility Study Area despite the completion of many rare plant surveys and over the last 20 years.

### **Congdon's Tarplant**

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) is a CNPS listed species with no federal or state status. It is a small annual tarplant often found in alkaline soils in grassland habitats. The CNDDDB cites it as having three current occurrences in the Project Study Area: (1) the embankment of an unused Union Pacific Railroad track near seasonal wetland habitat, (2) along dirt roads and the upper margins of vernal pools in Pacific Commons Mitigation Site, and (3) annual grassland near the intersection of Fremont Blvd and Cushing Parkway.

### **Contra Costa Goldfields**

Contra Costa goldfields (*Lasthenia conjugens*) is a federally listed endangered species with no state status. In the family Asteraceae, this plant grows between 4 and 12 inches high, has opposite leaves, and an infrequently branched stem. The blooming period is from March through June and it has specialized adaptations to allow it to grow in vernal pools. The species is an annual, which allows it to complete its life cycle within the time period of vernal pool inundation and drying. It produces dormant seeds that allow them to survive through the dry summers until they can germinate when the winter rains re-flood the vernal pool habitat. There are three known occurrences of this species in the vicinity of the Feasibility Study Area of which two of these are located in vernal pool complexes within the Feasibility Study Area.

### **Hoover's Button Celery**

Hoover's button celery (*Eryngium aristulam hooveri*) is a CNPS listed species with no federal or state status. A member of the carrot family, (Apiaceae/Umbelliferae) this species also occurs in vernal pool habitats. The closest reported official Hoover's button celery occurrence is near Mayfield and Charleston Sloughs in Palo Alto; however a non-flowering specimen of the genus *Eryngium* was found in the Project Study Area in 2009.

### **Prostrate Navarretia**

Prostrate navarretia (*Navarretia prostrata*) is a CNPS listed and federal species of concern. It is a small annual plant with a prostrate growth habit that occurs on undisturbed floodplains and vernal pools. It is known to occur at the Pacific Commons Mitigation Site near the center of the Feasibility Study Area. It has potential to occur within other areas of the Feasibility Study Area on site where there is suitable habitat.

**San Joaquin Saltbrush=Sparscale**

Also known as San Joaquin saltbrush, the San Joaquin sparscale (*Atriplex joaquiniana*) is a CNPS listed species and federal species of concern. It is a gray-green annual herb with a sparsely scaled stem and leaves. It is known to occur in meadows, seeps, and grasslands with clay often alkaline soils. This species is known to occur in the Pacific Commons Mitigation Site near the center of Feasibility Study Area.

Table 1. Federal or State Protected Plant & Animal Species with their Potential to Occur on the Project Site

Name	Fed/State/CNPS Status	Habitat	Potential for Occurrence on site
Alameda Song Sparrow <i>Melospiza melodia pusillula</i>	---/SSC/---	Salt marsh, especially in channels with marsh gumplant and cordgrass.	Has potential to occur in the Feasibility Study Area in areas of salt tidal marsh or tidal slough (especially in areas with dense pickleweed and presence of gumplant).
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	T/T/--	Chaparral, Scrub land, Oak woodland/ grassland complex	Not expected to occur on site; suitable habitat not present.
Alkali Milk Vetch <i>Astragalus tener var. tener</i>	SC/---/1B	Alkaline soils of playas grasslands and vernal pools	Known to occur in the seasonal wetlands of Catellus' Pacific Commons Preserve
Black Rail <i>Laterallus jamaicensis coturniculus</i>	---/T/---	Mainly inhabits salt marshes bordering bays also brackish & freshwater marshes. Nests and forages in dense pickleweed.	Known to occur in tidal marsh in the general area and had a CNDDDB occurrence in 2003 at the nearby Dumbarton Point. California black rail has potential to occur in the Feasibility Study Area in areas with tidal marsh.
Brittlescale <i>Atriplex depressa</i>	---/---/1B	Barren areas of alkali grassland, meadow and scrub; margins of alkali vernal pools	Known from the Don Edwards National Wildlife Refuge, Warm Springs Seasonal Wetland Unit (Creekside Landing EIR)
Western Burrowing Owl <i>Athene cucularia hypugaea</i>	---/SSC/---	Inhabits grasslands, scrublands and ruderal areas. Subterranean nester dependant on burrowing mammals.	Burrowing owls are known to nest the levee and adjacent upland areas of a South Bay Salt Pond Restoration Project pond that occurs in the Feasibility Study Area (SBSPRP EIR).
Bush Seepweed <i>Suaeda moquinii</i>	---/---/1A	Wet alkaline and saline areas; wetlands	Population relocated to nearby Creekside Landing wetland mitigation area.
California Clapper Rail <i>Rallus longirostris obsoletus</i>	E/S/---	Salt marsh habitat dominated by pickleweed and cordgrass.	Known to Newark, Mowry, and Mud sloughs.
California Seablite <i>Suaeda californica</i>	E/---/--	Marshes and Swamps	Highly unlikely to occur as it has not been seen in rare plant surveys in the past 25 years.
California Tiger Salamander <i>Ambystoma californiense</i>	T/T/--	Deep Vernal or temporary pools in annual grasslands or open woodlands.	California tiger salamander is known to occur near Catellus' Pacific Commons mitigation ponds, a site which is being managed for this species.

Name	Fed/State/CNPS Status	Habitat	Potential for Occurrence on site
Fall-run Chinook Salmon Central Valley ESU <i>Oncorhynchus tshawytscha</i>	T/T/--	Pacific Ocean, spawn in coastal streams and rivers over gravel beds	Known to be present in Coyote Creek during migrations.
Congdon's Tarplant <i>Centromadia parryi</i> ssp. <i>congdonii</i>	---/--/1B	Grassland habitats with alkaline soils, vernal pools, ruderal areas	Sighted throughout the Feasibility Study Area near the Union Pacific railroad, in the Pacific Commons Preserve and near Cushing Parkway.
Contra Costa Goldfields <i>Lasthenia conjugens</i>	E/--/--	Vernal pool complex	Moderate potential to occur on site in vernal pool complex habitat. Species is known to occur in study area.
Hoover's Button Celery <i>Eryngium aristulatum hooveri</i>	---/--/1B	Vernal pool complex	Specimen of genus found in Feasibility Study Area by Monk & Associates biologists in 2009.
Northern Harrier <i>Circus cyaneus</i>	---/SSC/--	Grassland and wetland communities	Known to forage throughout the Feasibility Study Area. The northern harrier is also known to nest in nearby salt marsh habitat (CNDDDB occurrence 2) and may nest in diked salt marsh in the Feasibility Study Area.
Pacific Harbor Seal <i>Phoca vitulina richardsi</i>	MMP/--/--	Forage in near shore marine habitats	Pupping site in Mowry Slough
Prostrate Navarretia <i>Navarretia prostrata</i>	SC/--/1B	Seasonal wetlands & vernal pools within grassland also coastal scrub	Known from Catellus' Pacific Common Preserve
Red-tailed Hawk <i>Buteo jamaicensis</i>	MBT/--/--	Wide spectrum of habitats however pasture, grasslands and hardwood habitats preferred.	Observed foraging over Cargill property within the Feasibility Study Area and there's evidence to suggest they may nest there as well.
Salt-marsh Harvest Mouse <i>Reithrodontomys raviventris</i>	E/E/--	Salt marsh habitat dominated by pickleweed	Known to occur in muted tidal marsh areas with pickleweed. Species known to occur near Catellus' Pacific Commons Mitigation Area.
Saltmarsh Yellowthroat <i>Geothlypis trichas sinuosa</i>	---/SSC/--	Marsh habitat throughout the SF Bay near emergent vegetation.	Sited in irrigation channel "B" in the southern part of Bayside Business Park near the Don Edwards Wildlife Refuge among bulrush.
San Joaquin Saltbrush/Sparscale <i>Atriplex joaquiniana</i>	SC/--/1B	Chenopod scrub, meadows and seeps, playas and grasslands; typically with alkaline soils.	Potential to occur in seasonal wetlands of Catellus' Pacific Commons Preserve.
Steelhead- CA Central ESU <i>Oncorhynchus mykiss</i>	T/--/--	Pacific Ocean, spawn in coastal streams and rivers over gravel beds	Known to occur in Coyote Creek during migrations

Name	Fed/State/CNPS Status	Habitat	Potential for Occurrence on site
Tricolored Blackbird <i>Agelaius tricolor</i>	SC/SC/---	Nests colonially in vicinity of freshwater, marshy areas. Colonies prefer heavy growth of emergent vegetation	Species known from general area potential to occur in the Feasibility Study Area in marsh areas supporting cattails and bulrush.
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i>	E/---/---	Vernal pools and swales containing clear to highly turbid water	Known from Don Edwards Wildlife Refuge vernal pools.
Western Snowy Plover <i>Charadrius alexandrinus nivosus</i>	T/SSC/---	Sandy beaches on marine and estuarine shores.	Species has been observed in active and inactive salt ponds within the Don Edwards National Wildlife Refuge and in Newark Slough near the Feasibility Study Area. ..
White-tailed Kite <i>Elanus leucurus</i>	SC/FP/---	Nests in tree stands near grassland, marsh and ruderal forage areas	Known to occur in the Feasibility Study Area may nest around suitable diked salt marsh habitat or ruderal habitat (Dumbarton EIR).
<p>E – Endangered under the Federal or State Endangered Species Act  T- Threatened under the Federal or State Endangered Species Act  FP – Fully Protected under the State Endangered Species Act  MBT – Protected under the Federal Migratory Bird Treaty Act  MMP – Protected under the Federal Marine Mammal Protection Act  SC – Federal species of concern  SLC – Federal species of local concern  SSC – California species of special concern  1A- Plants assumed extinct or extirpated from California  1B- Plant species that are rare, threatened, or endangered in California and elsewhere  Source: EIRs used in study, CNDDDB search of 5 miles surrounding project site.</p>			

# Appendix C

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## Preliminary Project Costs

Segment/Description					5,200 LF
1	USFWS Don Edwards Wildlife Refuge East Levee/Connection to Thornton Avenue				
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$44,600.00	\$44,600
	b) Grading & Levee Top Improvements	LF	5,200	\$10.00	\$52,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	10,400	\$2.50	\$26,000
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF	0	\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	26,000	\$3.50	\$91,000
	f) 4-ft. Post & Rail or Wildlife Fence	LF	0	\$11.00	\$0
	g) 6-ft. Chain Link Security Fence	LF	0	\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	5,200	\$4.00	\$20,800
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF	100	\$700.00	\$70,000
	j) 10-ft-wide Pedestrian Bridge	LF	75	\$1,800.00	\$135,000
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	5	\$2,000.00	\$10,400
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$15,000.00	\$15,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	0	\$10,000.00	\$0
	Trailhead Parking & Improvements (10 cars)	LS	1	\$25,000.00	\$25,000
	Bikeway Signage, Striping, Stencil	LF	0	\$20.00	\$0
	Segment Subtotal				\$489,800
	Plus 15% Contingency				\$73,500
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$563,300</b>
	Engineering Design - 15%				\$84,500
	CEQA/NEPA & Permitting - 8%				\$45,100
	Construction Management, Surveying, & Staking - 12%				\$67,600
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$761,000</b>

Segment/Description					14,700 LF
2*	Dumbarton TOD Project, ACVCWCD Levee Trail			10,000 LF Dumbarton TOD	4,700 LF ACFCWCD Levee
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$88,600.00	\$88,600
	b) Grading & Levee Top Improvements	LF	4,700	\$10.00	\$47,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	9,400	\$2.50	\$23,500
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF	100,000	\$5.50	\$550,000
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	4,700	\$3.50	\$16,500
	f) 4-ft. Post & Rail or Wildlife Fence	LF	10,000	\$11.00	\$110,000
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	14,700	\$4.00	\$58,800
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF		\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	15	\$2,000.00	\$30,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$15,000.00	\$15,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	1	\$10,000.00	\$10,000
	Trailhead Parking & Improvements (10 cars)	LS	1	\$25,000.00	\$25,000
	Bikeway Signage, Striping, Stencil	LF	0	\$20.00	\$0
	Segment Subtotal				\$974,400
	Plus 15% Contingency				\$146,200
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$1,120,600</b>
	Engineering Design - 15%				\$168,100
	CEQA/NEPA & Permitting - 8%				\$89,700
	Construction Management, Surveying, & Staking - 12%				\$134,500
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$1,513,000</b>

\*This segment could potentially be partially implemented as part of the Dumbarton TOD project approval by the City of Newark.  
(including item d-Sub-base & AC Paving, item f-Post & Rail or Wildlife Fence, and any grade separation)  
Cost does not include grade separation at Dumbarton TOD or Central Avenue

Segment/Description					9,500 LF
3*	Central and Cherry Streets Interim Bicycle/Pedestrian Use				
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$14,800.00	\$14,800
	b) Grading & Levee Top Improvements	LF		\$10.00	\$0
	c) Levee Sideslope Stabilization, Erosion Control	LF		\$2.50	\$0
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF		\$3.50	\$0
	f) 4-ft. Post & Rail or Wildlife Fence	LF		\$11.00	\$0
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	9,500	\$4.00	\$38,000
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF		\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF		\$2,000.00	\$0
	l) Overlook w/ Interpretive Panels - Wayfinding	LS		\$15,000.00	\$0
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	3	\$10,000.00	\$30,000
	Trailhead Parking & Improvements (10 cars)	LS		\$25,000.00	\$0
	Bikeway Signage, Striping, Stencil	LF	4,000	\$20.00	\$80,000
	Segment Subtotal				\$162,800
	Plus 15% Contingency				\$24,500
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$187,300</b>
	Engineering Design - 15%				\$28,100
	CEQA/NEPA & Permitting - 8%		NA		
	Construction Management, Surveying, & Staking - 12%				\$22,500
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$238,000</b>

\* Cost does not include grade separation on Central Avenue

Segment/Description					10,440 LF
4*	Area 3 and 4 Specific Plan Improvements (Silliman Center Improvements)				
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$100,800.00	\$100,800
	b) Grading & Levee Top Improvements	LF	10,440	\$10.00	\$104,400
	c) Levee Sideslope Stabilization, Erosion Control	LF	0	\$2.50	\$0
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF	104,400	\$5.50	\$574,200
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	0	\$3.50	\$0
	f) 4-ft. Post & Rail or Wildlife Fence	LF	10,440	\$11.00	\$114,900
	g) 6-ft. Chain Link Security Fence (UPRR)	LF	5,000	\$16.00	\$80,000
	h) Landscaping/Habitat Restoration	LF	10,440	\$4.00	\$41,800
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF		\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	10	\$2,000.00	\$20,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$12,000.00	\$12,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	1	\$10,000.00	\$10,000
	Trailhead Parking & Improvements (10 cars)	LS	2	\$25,000.00	\$50,000
	Bikeway Signage, Striping, Stencil	LF		\$20.00	\$0
	Segment Subtotal				\$1,108,100
	Plus 15% Contingency				\$166,300
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$1,274,400</b>
	Engineering Design - 15%				\$191,200
	CEQA/NEPA & Permitting - 8%				\$102,000
	Construction Management, Surveying, & Staking - 12%				\$153,000
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$1,721,000</b>

\* This trail segment could potentially be implemented by developer of Area 3/4 Specific Plan as part of project approval by City of Newark.

(including items a, b, d, e, f, g, h, k, and l)

Cost does not include Mowry Pedestrian/Bicycle Bridge

Segment/Description					16,130 LF
5	Mowry Slough Spur Trail				
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$62,700.00	\$62,700
	b) Grading & Levee Top Improvements	LF	16,130	\$10.00	\$161,300
	c) Levee Sideslope Stabilization, Erosion Control	LF	32,260	\$2.50	\$80,700
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	16,130	\$3.50	\$56,500
	f) 4-ft. Post & Rail or Wildlife Fence	LF		\$11.00	\$0
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	16,130	\$4.00	\$64,600
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF	0	\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF	120	\$1,800.00	\$216,000
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	16	\$2,000.00	\$32,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$15,000.00	\$15,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	0	\$10,000.00	\$0
	Trailhead Parking & Improvements (10 cars)	LS	0	\$25,000.00	\$0
	Bikeway Signage, Striping, Stencil	LF	0	\$20.00	\$0
	Segment Subtotal				\$688,800
	Plus 15% Contingency				\$103,400
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$792,200</b>
	Engineering Design - 15%				\$118,900
	CEQA/NEPA & Permitting - 8%				\$63,400
	Construction Management, Surveying, & Staking - 12%				\$95,100
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$1,070,000</b>

<b>Segment/Description</b>		<b>Tri-Cities Landfill/City of Fremont/ USFWS/ACFCWCD Levee Trails 31,200 LF (Total Segment 6)</b>			
6.1*	Tri-Cities Landfill				13,600 LF
<b>Segment Cost</b>					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$156,800.00	\$156,800
	b) Grading & Levee Top Improvements	LF	12,100	\$10.00	\$121,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	24,200	\$2.50	\$60,500
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	121,000	\$3.50	\$423,500
	f) 4-ft. Post & Rail or Wildlife Fence	LF		\$11.00	\$0
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	13,600	\$4.00	\$54,400
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF	1,200	\$700.00	\$840,000
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	14	\$2,000.00	\$28,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$15,000.00	\$15,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	0	\$10,000.00	\$0
	Trailhead Parking & Improvements (Automall Parkway, 10 cars)	LS	1	\$25,000.00	\$25,000
	Bikeway Signage, Striping, Stencil	LF		\$20.00	\$0
	Segment Subtotal				\$1,724,200
	Plus 15% Contingency				\$258,700
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$1,982,900</b>
	Engineering Design - 15%				\$297,500
	CEQA/NEPA & Permitting - 8%				\$158,700
	Construction Management, Surveying, & Staking - 12%				\$238,000
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$2,677,000</b>

\*This segment could potentially be implemented by Landfill by City of Fremont project approval.  
Cost does not include Automall Parkway grade separation.

<b>Segment/Description</b>		<b>Tri-Cities Landfill/City of Fremont/ USFWS/ACFCWCD Levee Trails 31,200 LF (Total Segment 6)</b>			
6.2*	USFWS Levees	10,200 LF			
<b>Segment Cost</b>					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$68,300.00	\$68,300
	b) Grading & Levee Top Improvements	LF	10,200	\$10.00	\$102,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	20,400	\$2.50	\$51,000
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	102,000	\$3.50	\$357,000
	f) 4-ft. Post & Rail or Wildlife Fence	LF	10,200	\$11.00	\$112,200
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	10,200	\$4.00	\$40,800
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF		\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	10	\$2,000.00	\$20,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS		\$15,000.00	\$0
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS		\$10,000.00	\$0
	Trailhead Parking & Improvements (10 cars)	LS		\$25,000.00	\$0
	Bikeway Signage, Striping, Stencil	LF		\$20.00	\$0
	Segment Subtotal				\$751,300
	Plus 15% Contingency				\$112,700
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$864,000</b>
	Engineering Design - 15%				\$129,600
	CEQA/NEPA & Permitting - 8%				\$69,200
	Construction Management, Surveying, & Staking - 12%				\$103,700
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$1,167,000</b>

\* Potential coordination/implementation as part of South Bay Salt Ponds project, and/or UPRR track expansion.  
Cost does not include Automall Parkway grade separation.

<b>Segment/Description</b>		<b>Tri-Cities Landfill/City of Fremont/ USFWS/ACFCWCD Levee Trails 31,200 LF (Total Segment 6)</b>			
6.3	City of Fremont Old Cushing Road				3,900 LF
<b>Segment Cost</b>					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$27,700.00	\$27,700
	b) Grading & Levee Top Improvements	LF	3,900	\$10.00	\$39,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	7,800	\$2.50	\$19,500
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	39,000	\$3.50	\$136,500
	f) 4-ft. Post & Rail or Wildlife Fence	LF	3,900	\$11.00	\$42,900
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	3,900	\$4.00	\$15,600
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF		\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	4	\$2,000.00	\$8,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$15,000.00	\$15,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS		\$10,000.00	\$0
	Trailhead Parking & Improvements (10 cars)	LS		\$25,000.00	\$0
	Bikeway Signage, Striping, Stencil	LF		\$20.00	\$0
	Segment Subtotal				\$304,200
	Plus 15% Contingency				\$45,700
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$349,900</b>
	Engineering Design - 15%				\$52,500
	CEQA/NEPA & Permitting - 8%				\$28,000
	Construction Management, Surveying, & Staking - 12%				\$42,000
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$472,000</b>

<b>Segment/Description</b>		<b>Tri-Cities Landfill/City of Fremont/ USFWS/ACFCWCD Levee Trails 31,200 LF (Total Segment 6)</b>			
6.4	ACFCWCD Levees (Pond A23 Mud Slough W/S)				3,500 LF
<b>Segment Cost</b>					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$23,600.00	\$23,600
	b) Grading & Levee Top Improvements	LF	3,500	\$10.00	\$35,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	7,000	\$2.50	\$17,500
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	35,000	\$3.50	\$122,500
	f) 4-ft. Post & Rail or Wildlife Fence	LF	3,500	\$11.00	\$38,500
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	3,500	\$4.00	\$14,000
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF		\$700.00	\$0
	j) 10-ft-wide Pedestrian Bridge	LF		\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF	4	\$2,000.00	\$8,000
	l) Overlook w/ Interpretive Panels - Wayfinding	LS		\$15,000.00	\$0
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS		\$10,000.00	\$0
	Trailhead Parking & Improvements (10 cars)	LS		\$25,000.00	\$0
	Bikeway Signage, Striping, Stencil	LF		\$20.00	\$0
	Segment Subtotal				\$259,100
	Plus 15% Contingency				\$38,900
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$298,000</b>
	Engineering Design - 15%				\$44,700
	CEQA/NEPA & Permitting - 8%				\$23,900
	Construction Management, Surveying, & Staking - 12%				\$35,800
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$402,000</b>

Segment/Description					1,000 LF
7	Mud Slough Levee Trail (East Side of Mud Slough, Fremont Boulevard to Warren)				
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Site Work				
	a) Mobilization, Demolition, & Site Preparation (approx. 10%)	LS	1	\$28,700.00	\$28,700
	b) Grading & Levee Top Improvements	LF	1,000	\$10.00	\$10,000
	c) Levee Sideslope Stabilization, Erosion Control	LF	1,000	\$2.50	\$2,500
	d) Sub-base & AC Paving (3 in. x10 ft. section)	SF		\$5.50	\$0
	e) Sub-base & QF Paving (4 in. x 10 ft section)	SF	10,000	\$3.50	\$35,000
	f) 4-ft. Post & Rail or Wildlife Fence	LF		\$11.00	\$0
	g) 6-ft. Chain Link Security Fence	LF		\$16.00	\$0
	h) Landscaping/Habitat Restoration	LF	1,000	\$4.00	\$4,000
	i) 10-ft-wide Causeway/Boardwalk - Pedestrian	LF	300	\$700.00	\$210,000
	j) 10-ft-wide Pedestrian Bridge	LF	0	\$1,800.00	\$0
	k) Benches, Site Furnishings, Signage (costs per 1,000 LF)	KLF		\$2,000.00	\$0
	l) Overlook w/ Interpretive Panels - Wayfinding	LS	1	\$15,000.00	\$15,000
	m) Miscellaneous				
	Street Crossing Improvements (allowance)	LS	1	\$10,000.00	\$10,000
	Trailhead Parking & Improvements (10 cars)	LS		\$25,000.00	\$0
	Bikeway Signage, Striping, Stencil	LF		\$20.00	\$0
	Segment Subtotal				\$315,200
	Plus 15% Contingency				\$47,300
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$362,500</b>
	Engineering Design - 15%				\$54,400
	CEQA/NEPA & Permitting - 8%				\$29,000
	Construction Management, Surveying, & Staking - 12%				\$43,500
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$489,000</b>

Segment/Description					4,200 LF
8*	Fremont Boulevard to Dixon Landing Road (Santa Clara County) Levee Top Shoreline Trail				
Segment Cost					
Item No.	Description	Unit	Est. Qty.	Unit Price	Total (rounded up to \$100)
1	Mobilization/Habitat Protection	LS	1	\$25,000.00	\$25,000
2	Prepare and Implement Erosion Control Plan and SWPPP	LS	1	\$10,000.00	\$10,000
3	Clear and Grub Levee Trails	LS	1	\$5,000.00	\$5,000
4	Site Demolition, Erosion Control, and Revegetation				
A	Remove Existing Tree at Dixon Landing Ramp	EA	2	\$500.00	\$1,000
B	Enhancement/Mitigation Planting	LS	1	\$12,000.00	\$12,000
5	Earthwork and Grading				
A	Grading 5% Ramp, Dixon Landing Rd. to Coyote Levee Rd.	CY	450	\$40.00	\$18,000
B	Subgrade Preparation of Levee Surface	LF	3,400	\$5.00	\$17,000
C	Biotechnical Stabilization, Coyote Levee Slopes	LF	2,100	\$50.00	\$105,000
D	Repair Minor of Slips Coyote Levee	LF	200	\$100.00	\$20,000
E	Construct Bridge Abutments for 110' x 10' Pedestrian Bridge	EA	2	\$20,000.00	\$40,000
6	Surfacing and Paving				
A	Furnish & Install 4" Stabilized QF 10' Levee Trail Section	LF	4,200	\$35.00	\$147,000
B	Asphalt Concrete Paving 5% Ramp	SF	2,500	\$4.00	\$10,000
7	Furnish & Install 14' Single-Swing Pipe Gate	EA	3	\$4,000.00	\$12,000
8	Furnish & Install Grates for Drainage Structures; Misc. Drainage Improvements	EA	5	\$1,000.00	\$5,000
9	Furnish & Install 110' x 10' Pre-Engineered Steel Bridge	LS	1	\$120,000.00	\$120,000
10	Carpentry and Woodwork				
	Construct 3' Retaining Wall at Dixon Landing Rd. Ramp	LF	250	\$180.00	\$45,000
11	Site Furnishings and Signage				
A	Furnish & Install Trail Sign and Post	EA	6	\$500.00	\$3,000
B	Furnish & Install No Trespassing Signs	EA	5	\$50.00	\$250
C	Furnish & Install Benches	EA	2	\$2,500.00	\$5,000
D	Fencing - T-post & Twisted Wire	LF	4,900	\$6.00	\$29,400
12	Dixon Landing Rd. Intersection Improvements (Ped. Signal, Curb Ramps, Signage, & Striping)	LS	1	\$40,000.00	\$40,000
	Segment Subtotal				\$669,650
	Plus 15% Contingency				\$100,500
	<b>SUBTOTAL CONSTRUCTION (includes 15% contingency)</b>				<b>\$770,150</b>
	Engineering Design - 15%				\$115,600
	CEQA/NEPA & Permitting - 8%				\$61,700
	Construction Management, Surveying, & Staking - 12%				\$92,500
	Biological Monitoring - 5%				\$38,600
	<b>TOTAL (to nearest \$1,000)</b>				<b>\$1,079,000</b>

\* This segment could potentially be implemented by developer as part of project approval by City of Fremont.