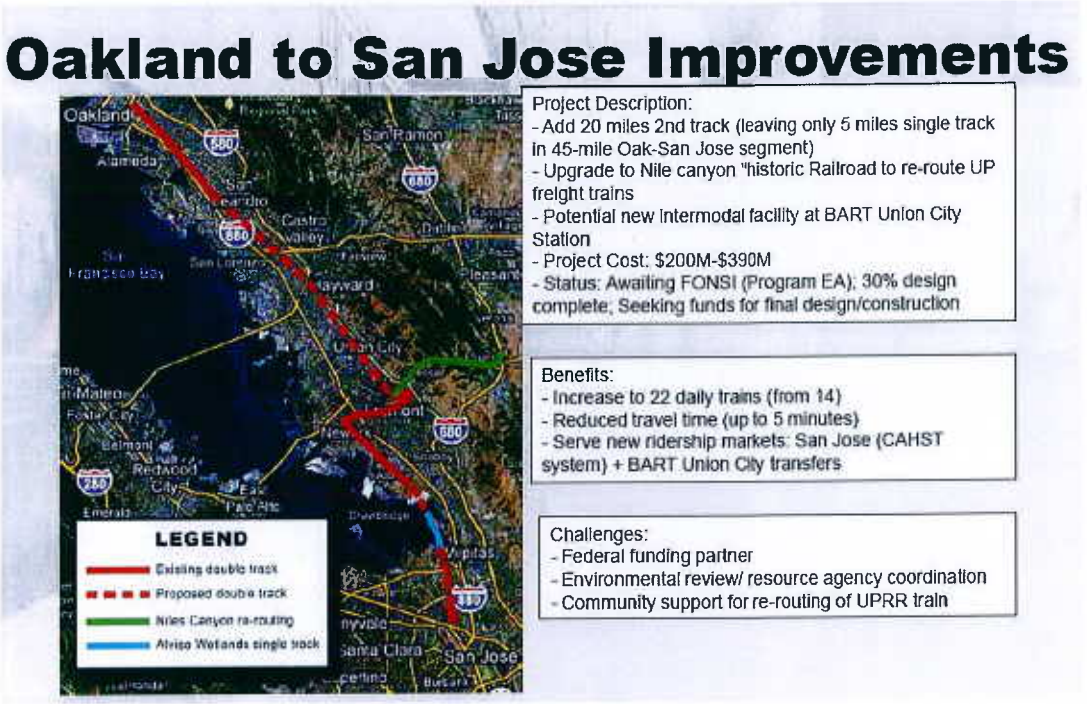
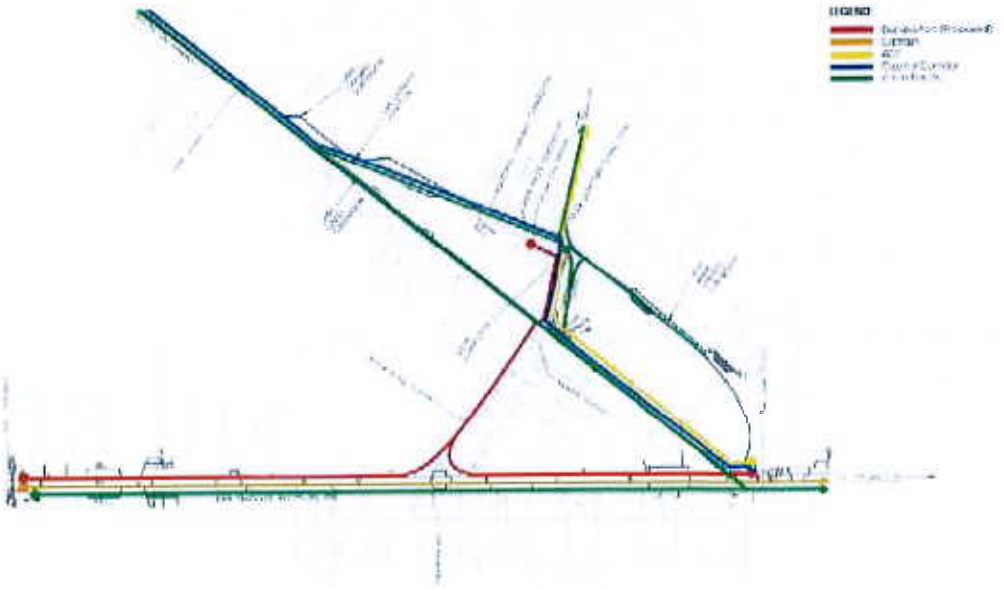


Altamont Commuter Express (ACE). Commuter rail service between Stockton and San Jose is over the UPRR-owned rail lines. ACE presently operates six (6) weekday trains between Stockton and San Jose, with three morning rush-hour trains from Stockton to San Jose, and three afternoon rush-hour trains in the 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.



Agency		Permitting Authority	Issue or Concern
	State Lands Commission (SLC)	SLC holds jurisdiction over, and regulates land use of the State's sovereign lands, including all historic rivers, tidelands and submerged areas: ▪ 120 rivers, streams and sloughs; ▪ 40 non-tidal navigable lakes, such as Lake Tahoe and Clear Lake; ▪ Tidal navigable bays and lagoons; and ▪ 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. 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. 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.	Ownership of shoreline lands and levees unknown
Federal	US Army Corps of Engineers (Corps)	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. 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. 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)	Permit needed if wetland fill is anticipated.

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
	US Fish and Wildlife Service (USFWS)	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: *"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.* *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."* 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. Section 7 (U.S. Endangered Species Act) Consultation for effects to special status species associated with federal (Corps) permit application. (Tidal marsh impacts)	Not known if endangered species impacts will occur. Could potentially require consultation with Corps.
	National Oceanic and Atmospheric Association, National Marine Fisheries Service	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.	Consultation if Corps 404 permit is needed, if adjacent to water body.

3. ENVIRONMENTAL SETTING

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

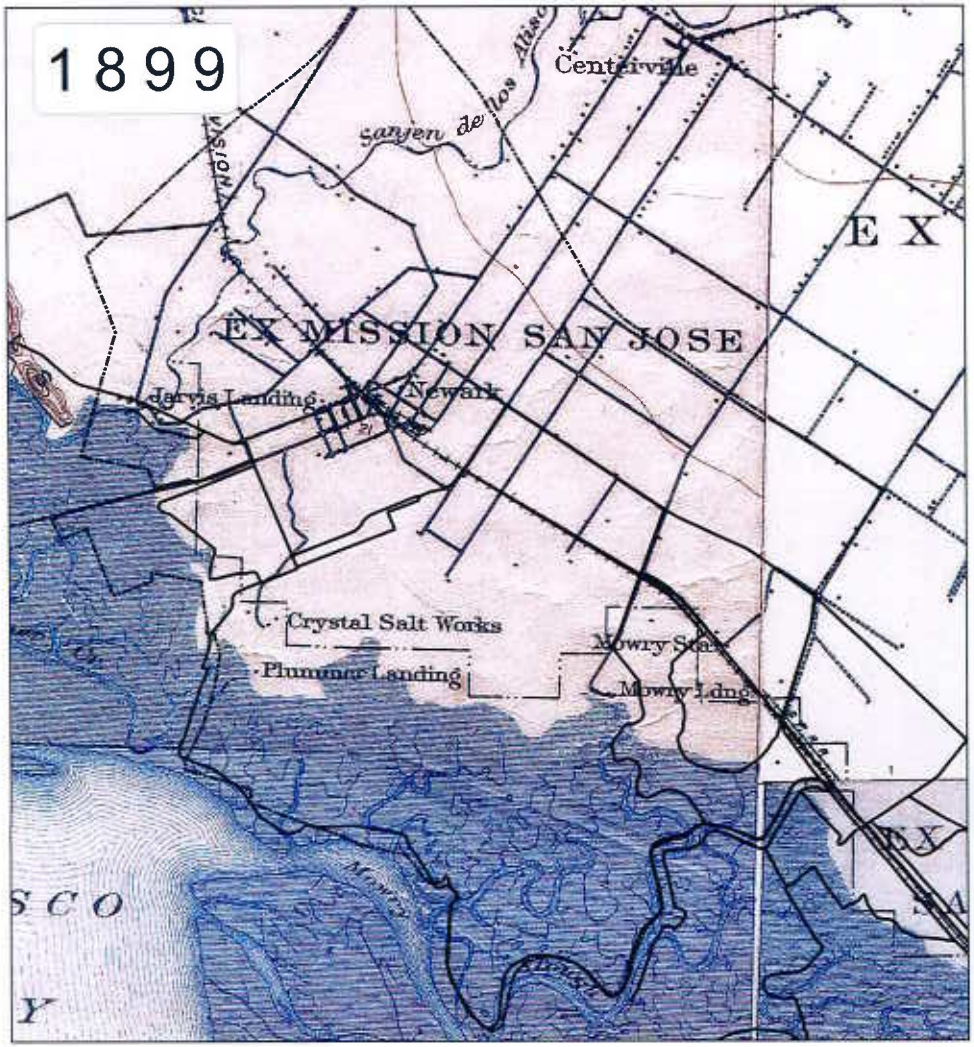
The project study area occurs along the historic eastern edge of the south San Francisco Bay shoreline, with some of the trail alignment alternatives or trail segments on levees placed over historic tidal marsh. Other alignment options being considered are located on what were historically seasonal wetlands 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.

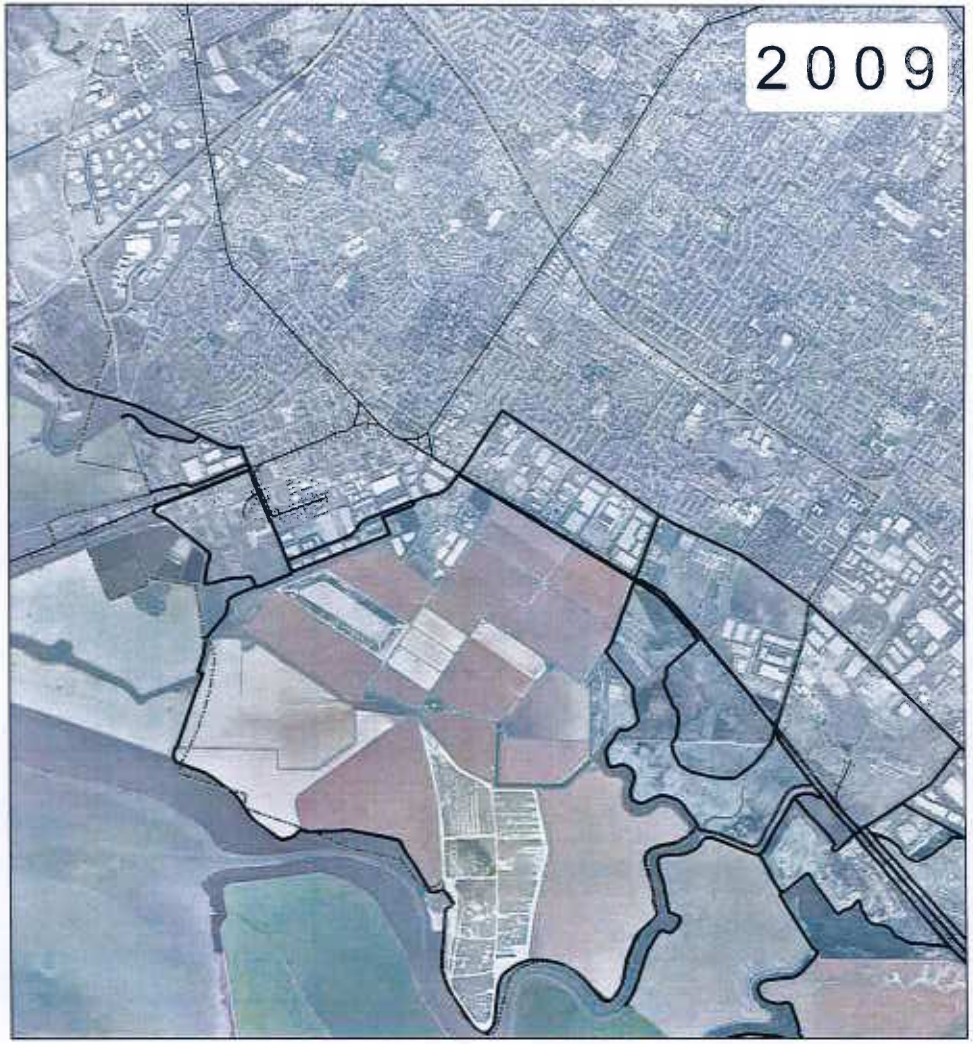
Much of the historic tidal salt marsh in the Fremont-Newark area was levied and drained and turned into commercial salt production ponds (salt ponds) by predecessors of the current Newark (Salt) Plant operator, Cargill Inc., beginning in the late 1800's. Also around the turn of the 20th century, and 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. `1

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

N

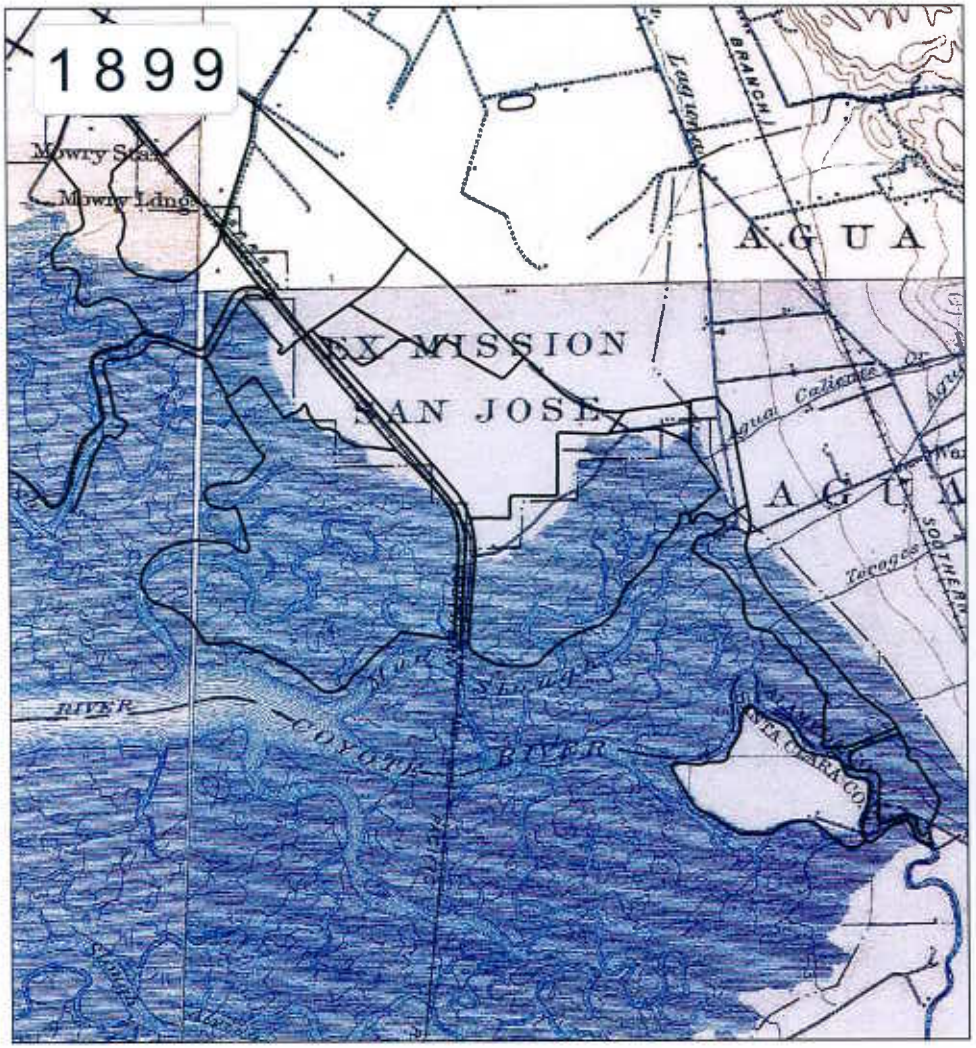
0 0.5 1 Miles

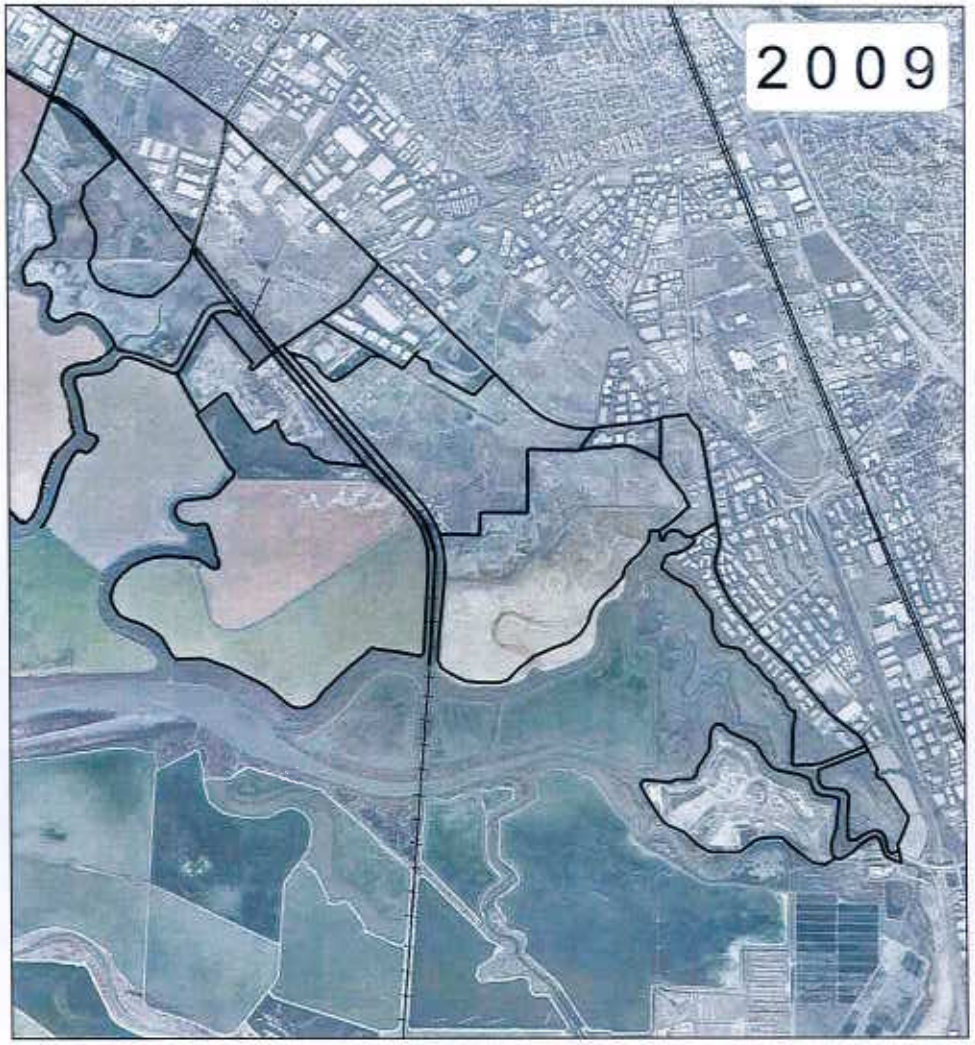
FREMONT-NEWARK BAY TRAIL

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

N

0 0.5 1 Miles

Fremont

Bay Trail

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

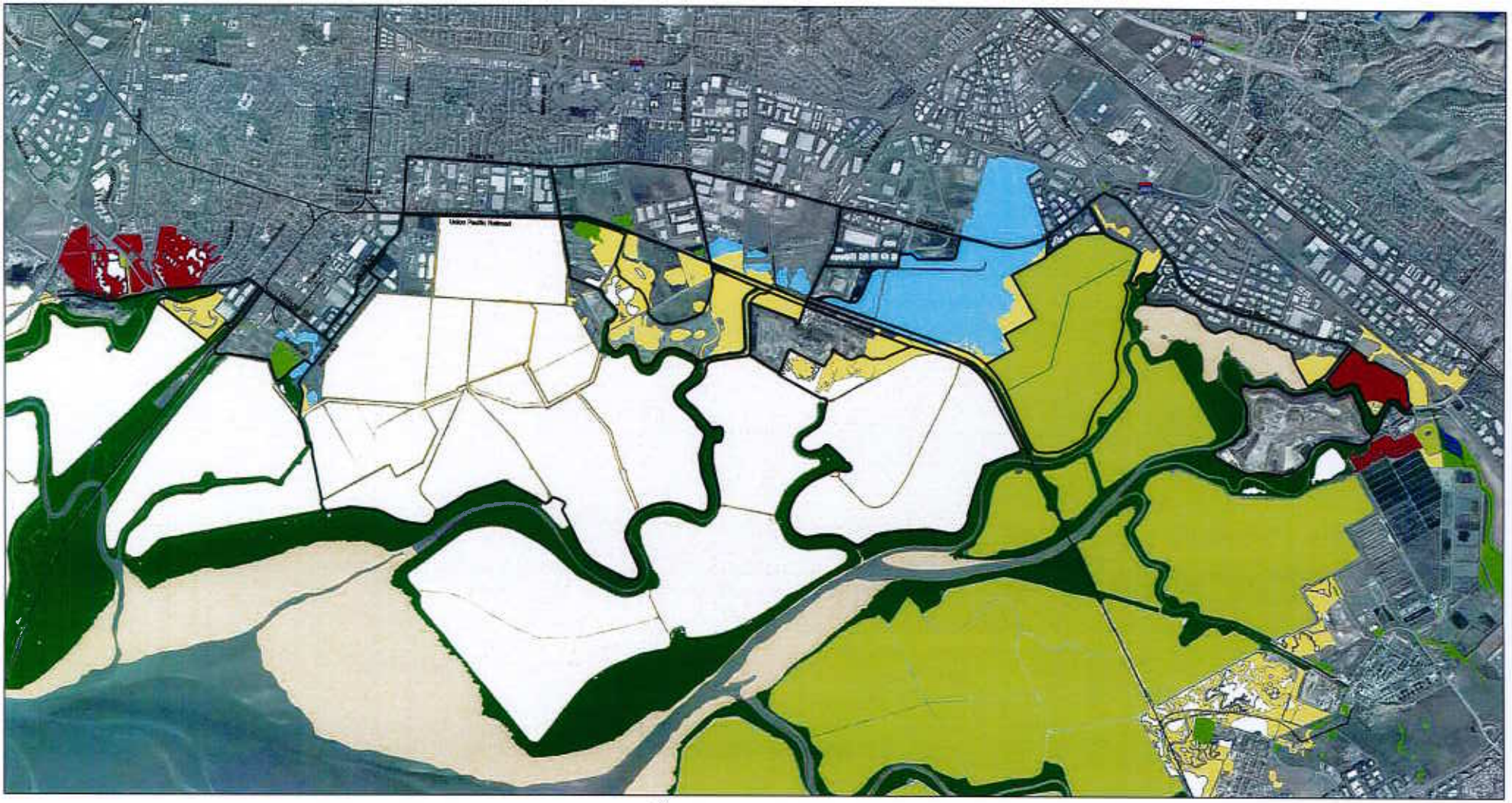
Diked marsh or other forms of diked wetland is an area of historical tidal marsh that has been "reclaimed" from full tidal influence, but still retains primary wetland features. Diked marshes occur in poorly drained areas adjacent to dikes or levees. As rainfall and runoff are the primary water sources, 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



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Potential Habitat Types*

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

*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

N

0 0.5 1 Miles

City of Fremont California

Newark

Bay Trail

FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84
PRELIMINARY FEASIBILITY STUDY

FIGURE 3-2: GENERALIZED HABITAT TYPES

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 within 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 (CNDDB 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 CNDDB (the CNDDB 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

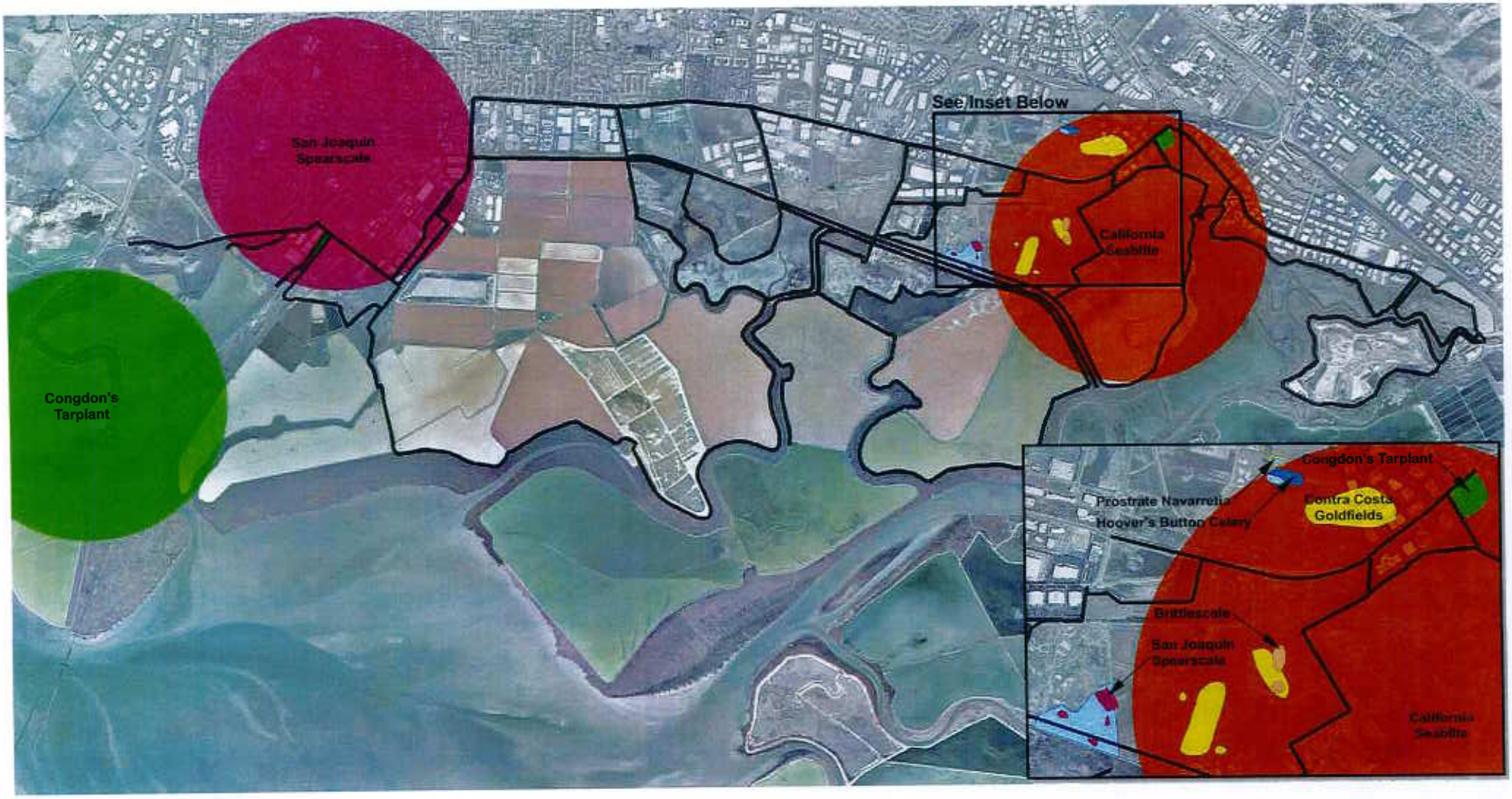
The Alameda whipsnake (*Masticophis lateralis euryxanthus*) is a federally and state listed threatened species. It is a 6 foot long, green and orange striped ("lateralis euryxanthus" refers to this species orange stripes), swift, whip-like snake thought to only live in the mountains of Contra Costa, 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 CNDDB 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
- Brittlescale
- California Seablite
- Congdon's Tarplant
- Contra Costa Goldfields
- Hoover's Button-Celery
- San Joaquin Spearscale
- Prostrate Navarretia
- Study Segments

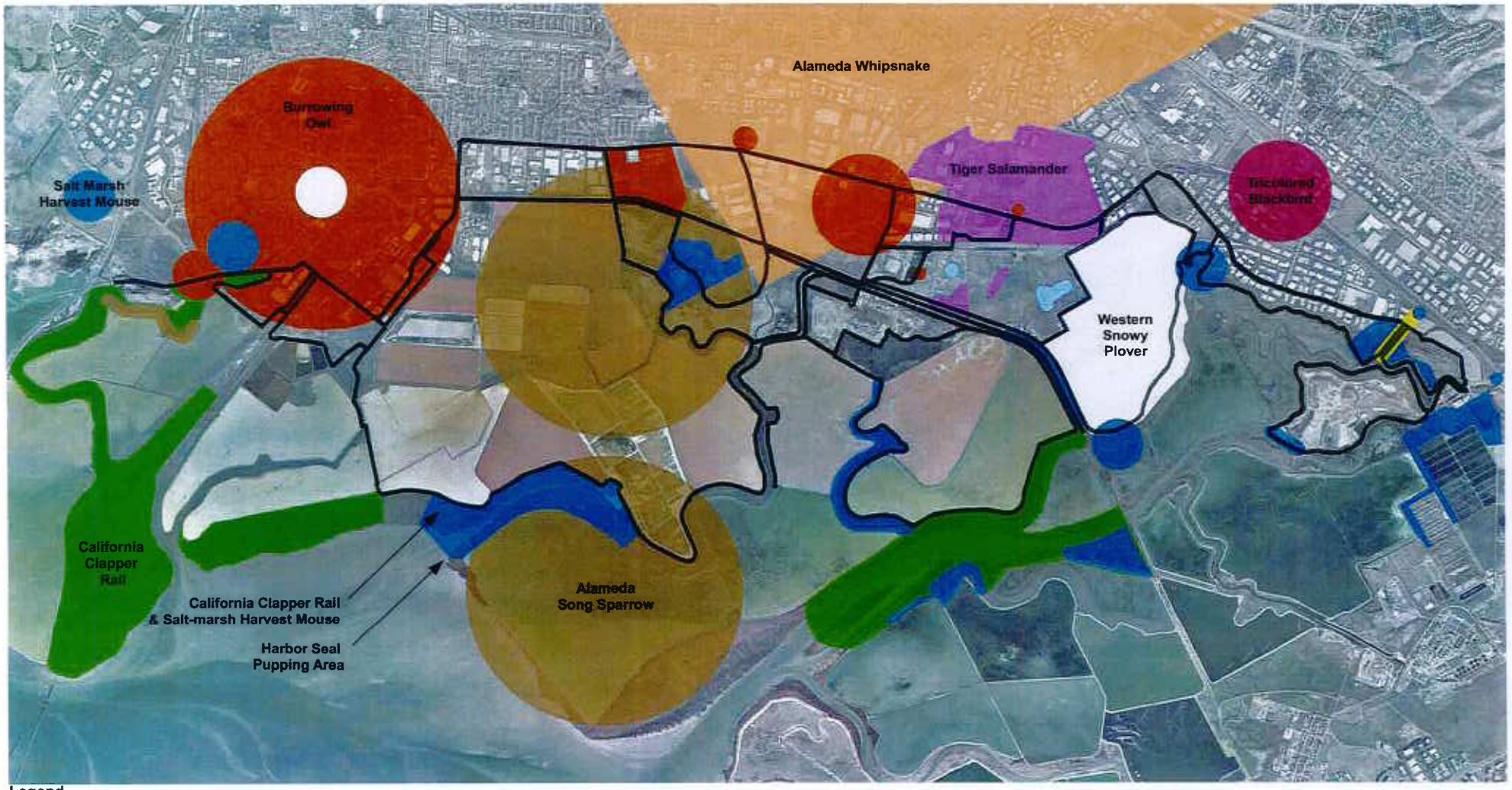
Source: CNDDB 1/2011

0 0.5 1 Miles

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

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

0 0.5 1 Miles

FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84
PRELIMINARY FEASIBILITY STUDY

FIGURE 3-3: SENSITIVE ANIMAL SPECIES

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 CNDDB 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 alexandrines 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 (Oncorhyncus 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 packardi*) 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

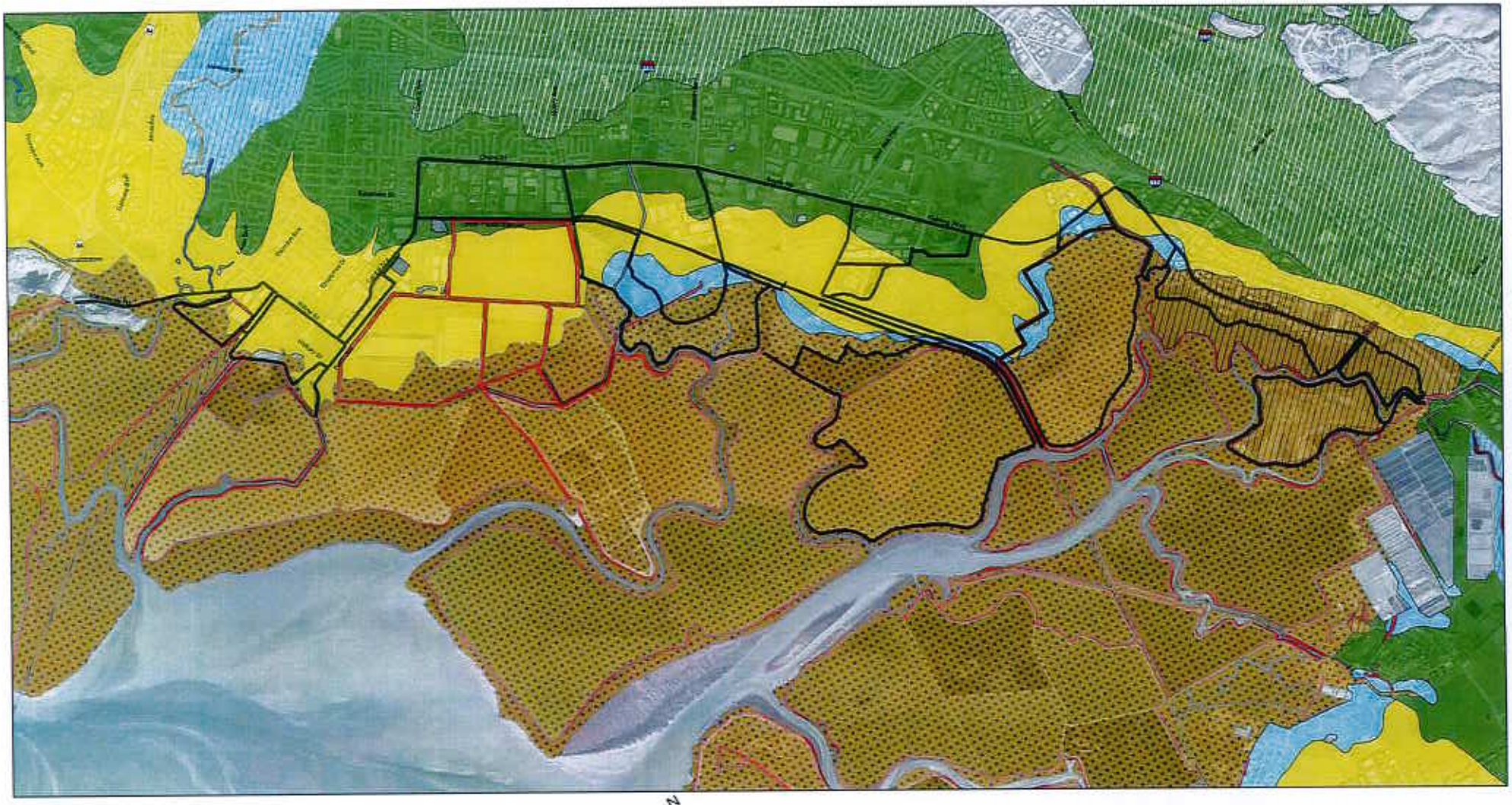
Regional Geology

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.[2]

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

[2] 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 (Holocene)
- Alluvial and Fluvial Deposits (Pleistocene)
- Basin Deposits (Holocene)
- Study Segments
- Stream Channel (Holocene)
- Floodplain Deposits (Holocene)
- Natural Levee (Holocene)
- Bay Mud (Holocene)
- Artificial Fill
- Levee Fill

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.

N

0 0.5 1 Miles

FREMONT-NEWARK BAY TRAIL

DIXON LANDING TO HIGHWAY 84
PRELIMINARY FEASIBILITY STUDY

FIGURE 3-5: GEOLOGY

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.[3]

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. [4] 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[5].

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

[3] 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.

[4] California Geological Survey (Formerly the California Department of Conservation, Division of Mines and Geology). Fault Activity Map of California and Adjacent Areas. 1994.

[5] 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."[6]

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.[7]

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.[8]

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.[9]

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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[6] 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.

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

[8] ibid

[9] 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.

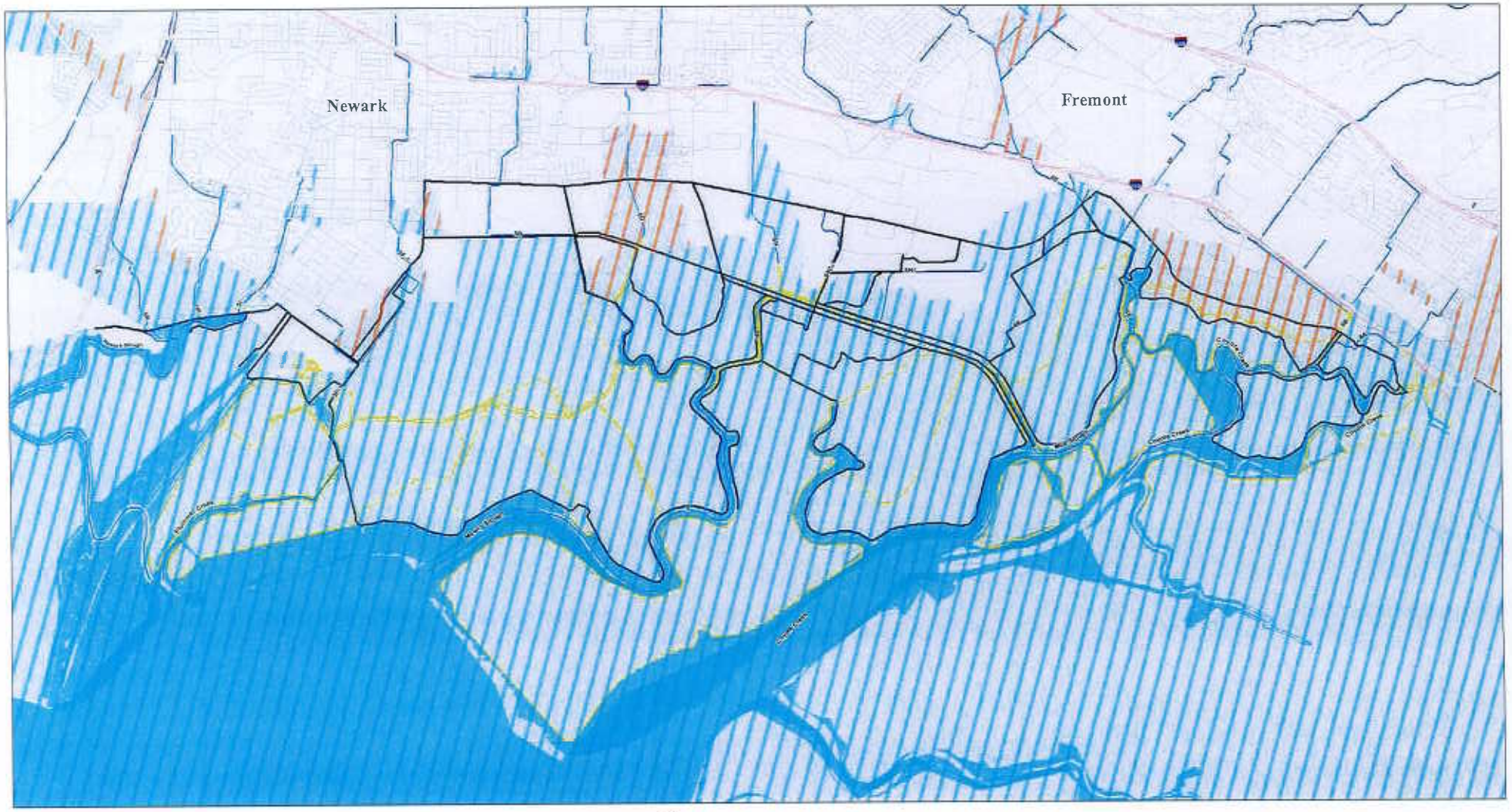
3.3 HYDROLOGY AND FLOODING

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
- ACFCD Open Channels
- AE- 100-YR Flood Zone
- X - 500-YR Flood Zone

N

0 0.5 1 Miles

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 un-drained 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

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.

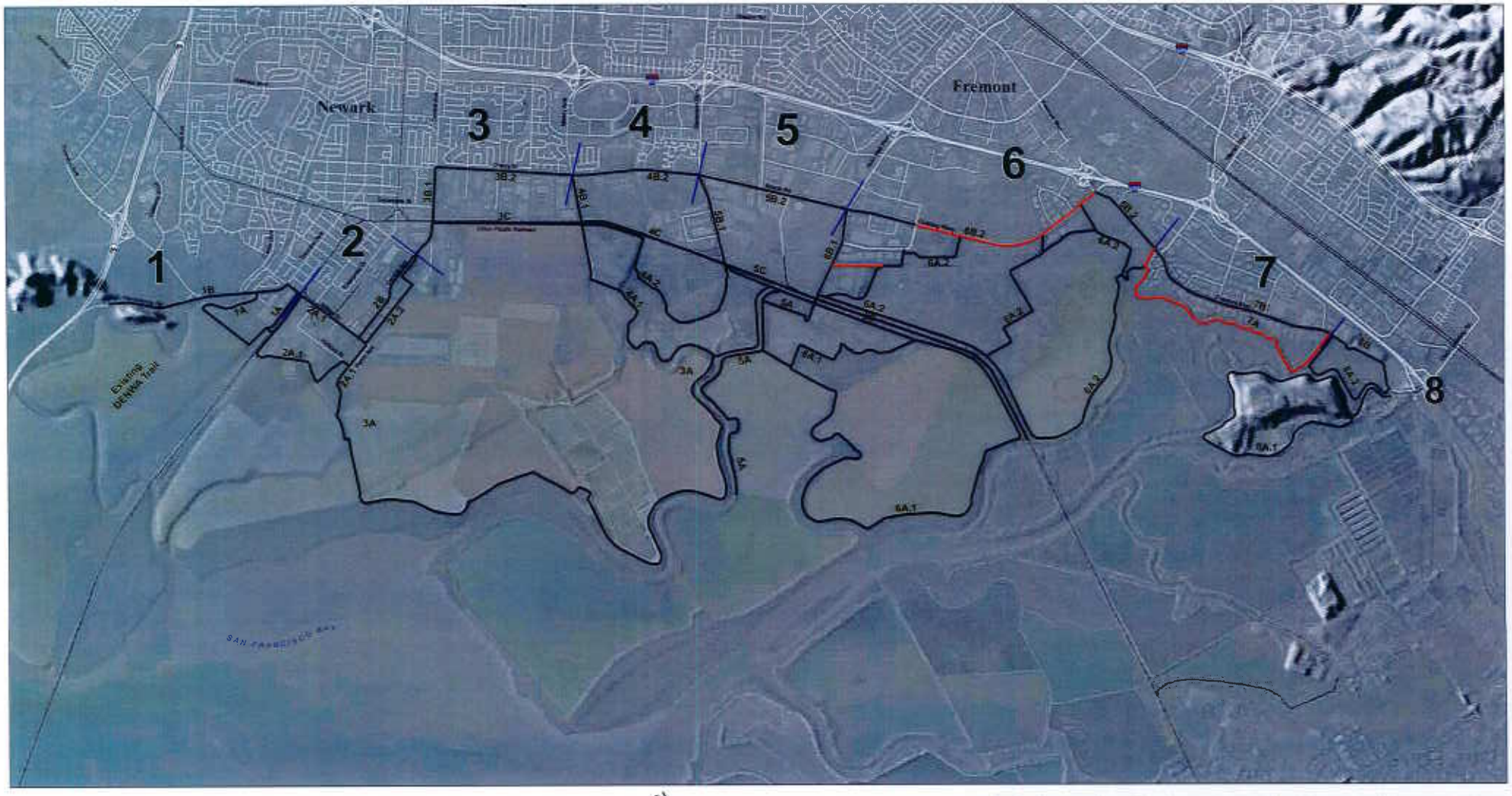
Fremont Blvd. is planned for extension to Dixon Landing Road as part of the Creekside Landing project as discussed in the previous section. This project will include installation of sidewalks, bicycle lanes and a Class I Bay Trail segment west of the street extension.

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

0 0.5 1 Miles

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

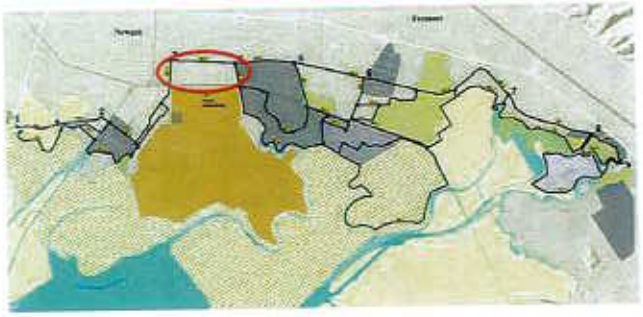
- Where possible, continue Class I improvements along Central to the east, with implementation of a part of the City's Bicycle/Pedestrian Plan.
- Consider incorporating Class I improvements into the grade separation project, as well as bicycle lanes.
- Provide continuous sidewalks on the south side of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

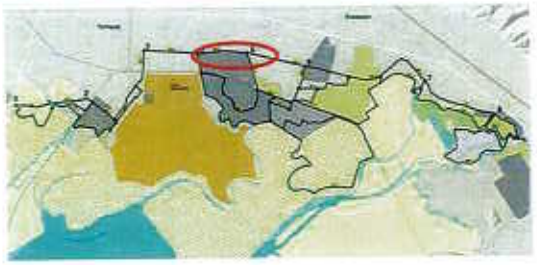
Recommendations

- 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.

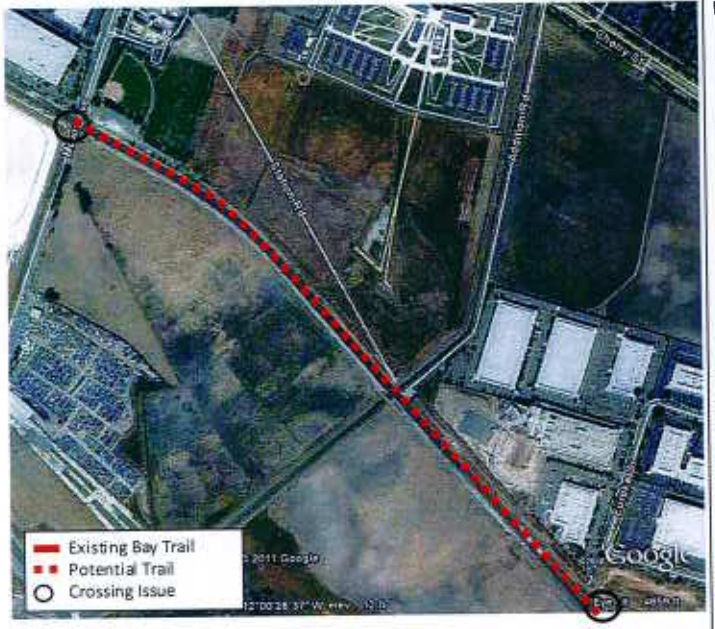
Recommendations

- 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.

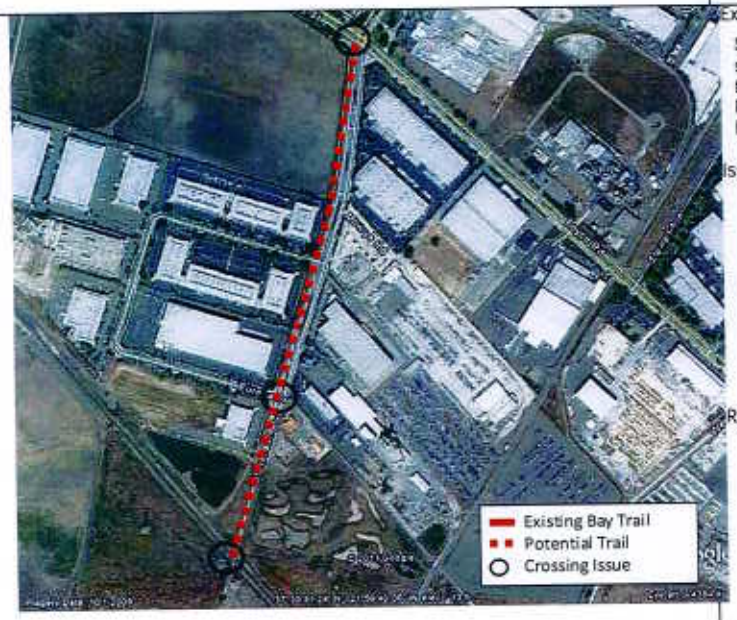
Recommendation

- 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.

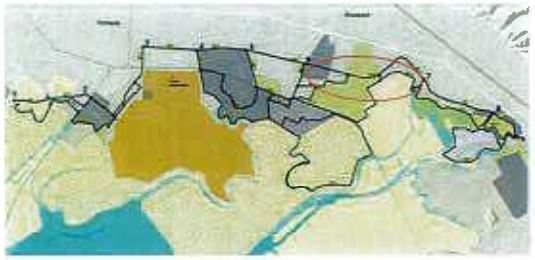
Recommendations

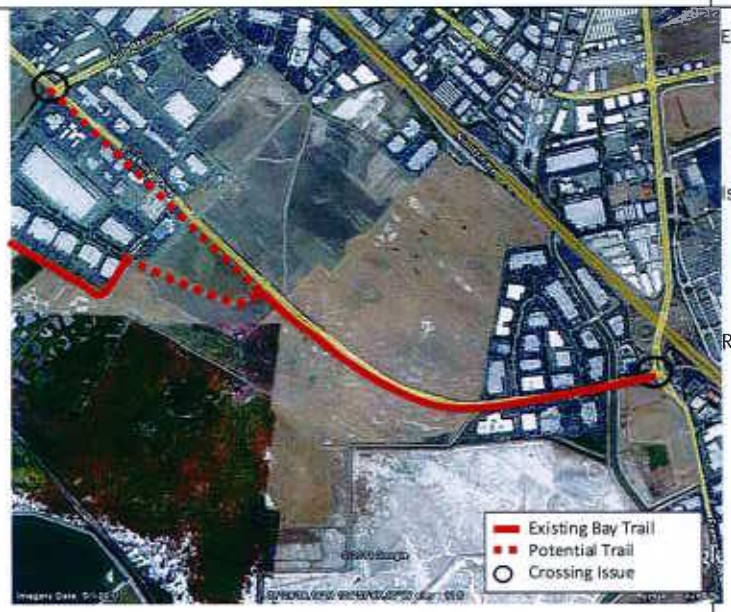
- Improve existing landscaped area and consider constructing a Class I shared use pathway (average 10-ft wide) between the trees on the southern edge of the roadway as a part of Bicycle and Pedestrian Plan implementation.

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.