CHAPTER 2
Project Description

Sections

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Referenced Appendices

APN - Assessor Parcel Numbers Associated with the SAFER Bay Project

FEMA - FEMA Flood Hazard Zones Near SAFER Bay Project

INFRA - Infrastructure by Reach

2.1 Project Background

The San Francisquito Creek Joint Powers Authority (SFCJPA) is a regional government agency represented and funded by the cities of East Palo Alto, Menlo Park, and Palo Alto; San Mateo County Flood and Sea Level Rise Resiliency District (OneShoreline); and Santa Clara Valley Water District. The SFCJPA works with its member agencies to plan, design, and implement multi-benefit projects across these jurisdictional boundaries to reduce flood risks, enhance and restore ecosystems, and improve public trails within member cities.

The project known as the Strategy to Advance Flood Protection, Ecosystems, and Recreation along San Francisco Bay Project (SAFER Bay Project or Project) would be implemented by the SFCJPA and its member cities, specifically East Palo Alto and Menlo Park.

2.2 Project Location

The SAFER Bay Project site is located west of San Francisco Bay along approximately 7 miles of shoreline, starting from O'Connor Street, East Palo Alto at San Francisquito Creek to Redwood City near the Menlo Park city boundary to the northwest (refer to **Figure 2-1**). The Project would connect to and is consistent with design criteria for the SFCJPA's completed San Francisquito Creek Flood Protection and Ecosystem Restoration Project. The Project is divided into eight reaches[1] based on local geography and hydrology, shown on Figure 2-1:

- South of Bay Road—East Palo Alto (South of Bay Road)
- North of Bay Road—East Palo Alto (North of Bay Road)
- Dumbarton Approach
- Substation and Marsh Restoration
- Tech Campus
- Bayfront Expressway
- Bedwell Bayfront Park
- Marsh Road

The Project site is within the cities of East Palo Alto, Menlo Park, and Redwood City on both public and privately owned property. The Project includes actions within the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge), including Refuge-managed land in the Ravenswood Pond Complex; in Laumeister and Faber marshes (owned by the City of Palo Alto); and in the Ravenswood Open Space Preserve (owned by Midpeninsula Regional Open Space District). The Project also includes actions within land owned by the State of California (within the State Route [SR] 84 right-of-way at the western approach to the Dumbarton Bridge), San Francisco Public Utilities Commission (SFPUC), Cargill Corporation, and others. **Appendix APN** lists the Assessor Parcel Numbers of properties that are wholly or partially within the footprint of the Project site.

[1] A reach is a section or length of bank or waterway.

SOURCES: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

NOTES: Reaches to be evaluated at a project-level of detail are shown in solid lines; reaches to be evaluated at a program-level of detail are shown as dashed lines. The northern ends of the Bayfront Expressway and Bedwell Bayfront Park Reaches tie into high ground at Bedwell Bayfront Park.

SAFER Bay Project

Figure 2-1
Project Location and Components

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2.3 Project Need, Purpose, and Objectives

2.3.1 Need for the Project

Currently, parts of East Palo Alto and Menlo Park are exposed to coastal flooding from San Francisco Bay, and this flood hazard is expected to worsen with sea level rise. These areas are within the existing 1-percent annual chance (commonly referred to as the 100-year flood event) flood hazard area as mapped by the Federal Emergency Management Agency (FEMA, refer to **Appendix FEMA** for a map of flood hazard zones near SAFER Bay Project). With respect to habitat, According to the *Baylands Ecosystem Habitat Goals Science Update 2015*, between years 1800 and 1998, 79 percent of San Francisco Bay tidal marshes were lost to diking and filling.[2] Tidal marsh habitat provides nesting and foraging habitat and upland refugia for endangered species such as the California Ridgway's rail (*Rallus obsoletus obsoletus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*). In some areas of the Project site, tidal salt marsh habitat cannot be restored until adequate flood protection for landward uses is in place. Where salt marsh habitat has been restored, there has been a reduction in available nesting and foraging habitat for federally threatened western snowy plover (*Charadrius nivosus nivosus*). Managed pond habitat for the plover is also vulnerable to coastal flooding, as are segments of the San Francisco Bay Trail (Bay Trail) and other trails.

2.3.2 Project Purpose and Objectives

The overall purpose of the Project is to reduce risks to people, property, and infrastructure from current tidal flooding and projected sea level rise through engineered and natural features that enhance shoreline ecosystems and improve recreational opportunities. The specific objectives of the Project include:

- Reduce the risk of flooding within the cities of East Palo Alto and Menlo Park from San Francisco Bay waters, including consideration of up to 3.5 feet of future sea level rise, and support the communities' objective to be removed from the FEMA floodplain.
- Enable adaptation to our changing climate by implementing flood protection in ways that sustain and restore marsh habitat and enhance and protect habitat for western snowy plover, consistent with the South Bay Salt Ponds Restoration Project (SBSPRP) and other restoration efforts.
- Expand opportunities for recreation and community connectivity in collaboration with the Bay Trail Program and efforts to enhance local trails.
- Minimize future maintenance requirements.
- Partner with agencies and organizations pursuing similar goals and objectives and with assets to be protected by the Project.

[2] Goals Project. 2015. *The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update 2015* prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. California State Coastal Conservancy, Oakland, CA.

2.4 Project Components

2.4.1 Proposed Shoreline Protection, Habitat Improvement, and Recreation Features

Proposed SAFER Bay Alignment

The SFCJPA has engaged with member agencies, regulators and other interested parties in identifying the proposed SAFER Bay reach alignments. Factors considered in identifying the proposed reach alignments and flood protection design include but are not limited to the following:

- Spatial requirements and design guidelines and regulations for engineered shoreline protection features;
- Limiting impacts on salt marsh habitat;
- Limiting impacts on waters of the U.S. and waters of the state;
- Habitat improvements proposed as part of the Project;
- Property ownership;
- Presence of soil and groundwater contamination and remediation systems;[3] and
- Presence of existing utilities.

Please refer to Chapter 4, Alternatives, for descriptions of other alignments considered.

Program-Level and Project-Level Components

Those Project components for which 30-percent design is available are evaluated at a project level of detail; those Project components for which conceptual (generally 10-percent) design information is available are evaluated at a program level of detail, summarized below and depicted with solid and dashed lines, respectively, on Figure 2-1:

- ***Project-Level Components***. Proposed flood protection, restoration, and recreation features within the South of Bay Road and Substation and Marsh Restoration reaches are described and evaluated at a project level of detail. Within the Dumbarton Approach reach, the shoreline levee through and enhancements to western snowy plover habitat within Pond SF2 are evaluated at a project level of detail.
- ***Program-Level Components***: Proposed flood protection, restoration, western snowy plover habitat enhancement, and recreation features within the North of Bay Road, Tech Campus, Bayfront Expressway, Bedwell Bayfront Park, and Marsh Road reaches as well as parts of the Dumbarton Approach are described and evaluated at a program level of detail. In addition, implementation of the Project would require changes to stormwater facilities and other

[3] For more information on the presence of contamination, please refer to Section 3.10 Hazards, Hazardous Materials and Wildfire, and Section 3.11, Hydrology and Water Quality. For a discussion of the potential for the Project to affect groundwater and water quality, please refer to Section 3.11, Hydrology and Water Quality.

infrastructure generally on the landward side of shoreline protection features. This Project Description chapter reflects the design detail currently available for such improvements.

There may be changes to the program-level components described and evaluated as design progresses in the future based on factors such as funding and land acquisition. For example, in the future, California Department of Transportation (Caltrans) may pursue a long-term solution of elevating the approach to Dumbarton Bridge or the City of East Palo Alto may elevate the segment of Bay Road between the Cooley Landing Substation and Cooley Landing. The SFCJPA or its member agencies will conduct supplemental evaluations pursuant to the California Environmental Quality Act (CEQA) in the future for those components evaluated herein at a program level of detail.

Shoreline Protection Features

The Project is being designed to satisfy current FEMA coastal flood protection requirements (i.e., the existing 100-year event with required freeboard for FEMA accreditation) and an additional 3.5 feet of elevation to account for anticipated sea level rise as well as other applicable FEMA design criteria (e.g., for the evaluation of settlement and structural stability). The design criteria are consistent with the intermediate scenarios described in State of California *Sea Level Rise Guidance: 2024 Science and Policy Update*, as well as San Mateo County Flood and Sea Level Rise June 2023 *Planning Policy Guidance*.

The Project includes the following features to protect parts of Menlo Park and East Palo Alto from coastal flooding: levees, floodwalls, hybrid shoreline protection features, and flood risk reduction structures:

- ***Levees***. A typical levee, composed of engineered fill, would have 3:1 (horizontal to vertical) side slopes, a final levee crest height of 16 to 17 feet North American Vertical Datum of 1988 (NAVD88),[4] and a base width of about 60 to 100 feet. In some cases, levees might be constructed and raised in stages given the long-term effects of sea level rise and budget limitations.
- ***Floodwalls.*** Where existing spatial or other constraints do not allow for the construction of a levee, concrete or steel floodwalls could be constructed.
- ***Hybrid Shoreline Protection Features.*** Some segments of the Project have a hybrid design incorporating levee and floodwall features.
- ***Flood Risk Reduction Structures.*** There are existing roadways that cross the Project site. Where it is impractical to raise roadways to an elevation sufficient to provide flood protection, a flood risk reduction structure such as a flood gate is proposed.

Section 2.4.2 describes the proposed shoreline protection design as well as changes to infrastructure (e.g., stormwater management facilities) by reach.

[4] The North American Vertical Datum of 1988 is the official vertical datum of the United States.

Habitat Improvements

Information in this section is from *SAFER Bay Preliminary Wetland Habitat and Western Snowy Plover Impacts and Restoration Options* and *SAFER Bay Project High Tide Refugial Habitat Assessment and Resulting Salt Marsh-Upland Transition Zone Configuration Recommendations, North and South of Bay Road, East Palo Alto*.

Flood protection improvements would adversely affect tidal salt marsh and managed pond habitats that provide important habitat in the South San Francisco Bay for threatened and endangered species including California Ridgway's rail, western snowy plover, salt marsh harvest mouse, and nesting seabirds. The SFCJPA has been working with representatives of the U.S. Fish and Wildlife Service (USFWS), the Refuge, SBSPRP,[5] and San Francisco Bay Restoration Regulatory Integration Team regarding the incorporation of habitat improvements into the Project to offset adverse effects on these resources in a manner consistent with the restoration goals of the SBSPRP.[6] These habitat improvements primarily consist of tidal salt marsh restoration, enhancement of habitat for western snowy plover, creation of seabird islands in the Ravenswood Pond Complex, and creation/restoration of salt marsh-upland transition habitat within the Ravenswood Pond Complex and elsewhere within the Project site. Section 2.5 describes the phasing of habitat improvements and the Project schedule.

Figure 2-2 presents an overview of the target habitat improvements. **Table 2-1** presents the estimated area of habitat improvements proposed as part of the Project.

TABLE 2-1
ESTIMATED HABITAT RESTORATION, ENHANCEMENT, AND CREATION FOR THE PROJECT

Habitat Type and Action[a]	Area (acres, approximate)
Restoration of tidal salt marsh in Ponds R1 and R2	563
Restoration of transition zone (salt marsh to upland) habitat within Pond R2	18
Enhancement of perennially ponded waterbird habitat in Pond SF2 (cells U2 and U4) to seasonally, partially inundated western snowy plover habitat	81
Enhancement of western snowy plover habitat in Pond SF2 (cell U3) and Pond R3 through installation of oyster shell/gravel and predator management	366
Construction of seabird nesting islands in Pond R1	1.8

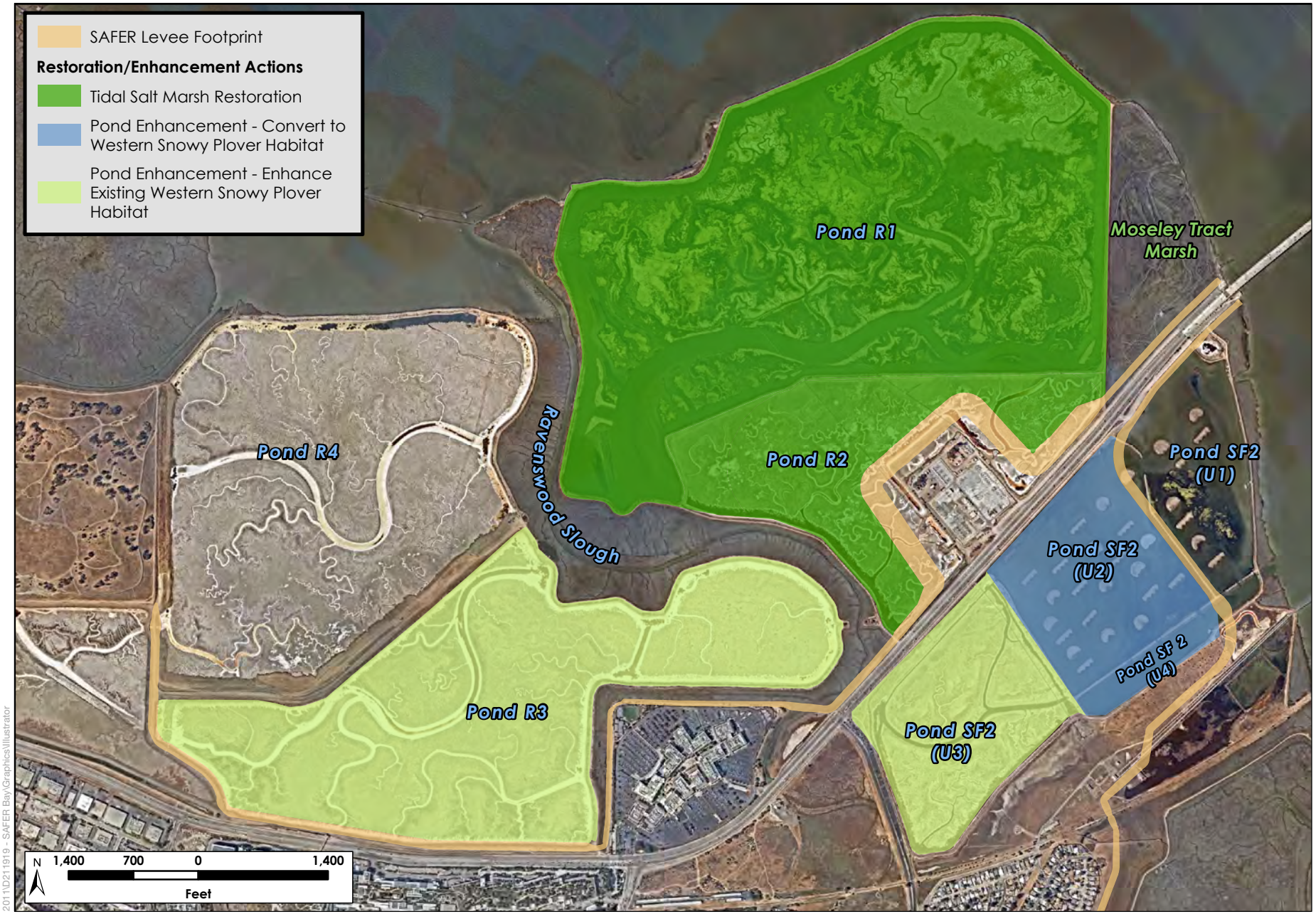
NOTES:

[a] Refer to Section 3.4, Biological Resources, for a description of the Project's impacts on wetlands and waters of the U.S. and state and special-status species.

SOURCE: H.T. Harvey & Associates 2024

[5] The SBSPRP's programmatic environmental impact statement/report (EIS/R) calls for large-scale restoration of tidal salt marsh habitat in and adjacent to the SAFER Bay Project site, which involves breaching pond berms. The SBSPRP is currently using an adaptive management process to guide restoration activities. The SFCJPA is coordinating closely with the SBSPRP to ensure consistency with SBSPRP goals and objectives.

[6] Adequate flood protection for land side uses (e.g., SR 84) must be in place before the breaching of berms surrounding Ponds R1/R2 and associated restoration can be implemented.



SOURCE: H.T. Harvey & Associates, June 2024

SAFER Bay Project

Figure 2-2
Target Habitats Overview

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Tidal Salt Marsh Restoration in Ponds R1 and R2

Figure 2-3 presents the tidal salt marsh restoration plan within and adjacent to Ponds R1 and R2 (Substation and Marsh Restoration Reach). The goals of the plan are to restore high quality tidal salt marsh habitat suitable for California Ridgway's rail, salt marsh harvest mouse, and other salt marsh resident species, including tidal channels providing high quality fish habitat; facilitate vegetated tidal marsh establishment; facilitate establishment of ample high tide refugial habitat for resident marsh species throughout the restored marsh; and incorporate sea level rise resilience into restored tidal marsh and constructed seabird nesting island plans.

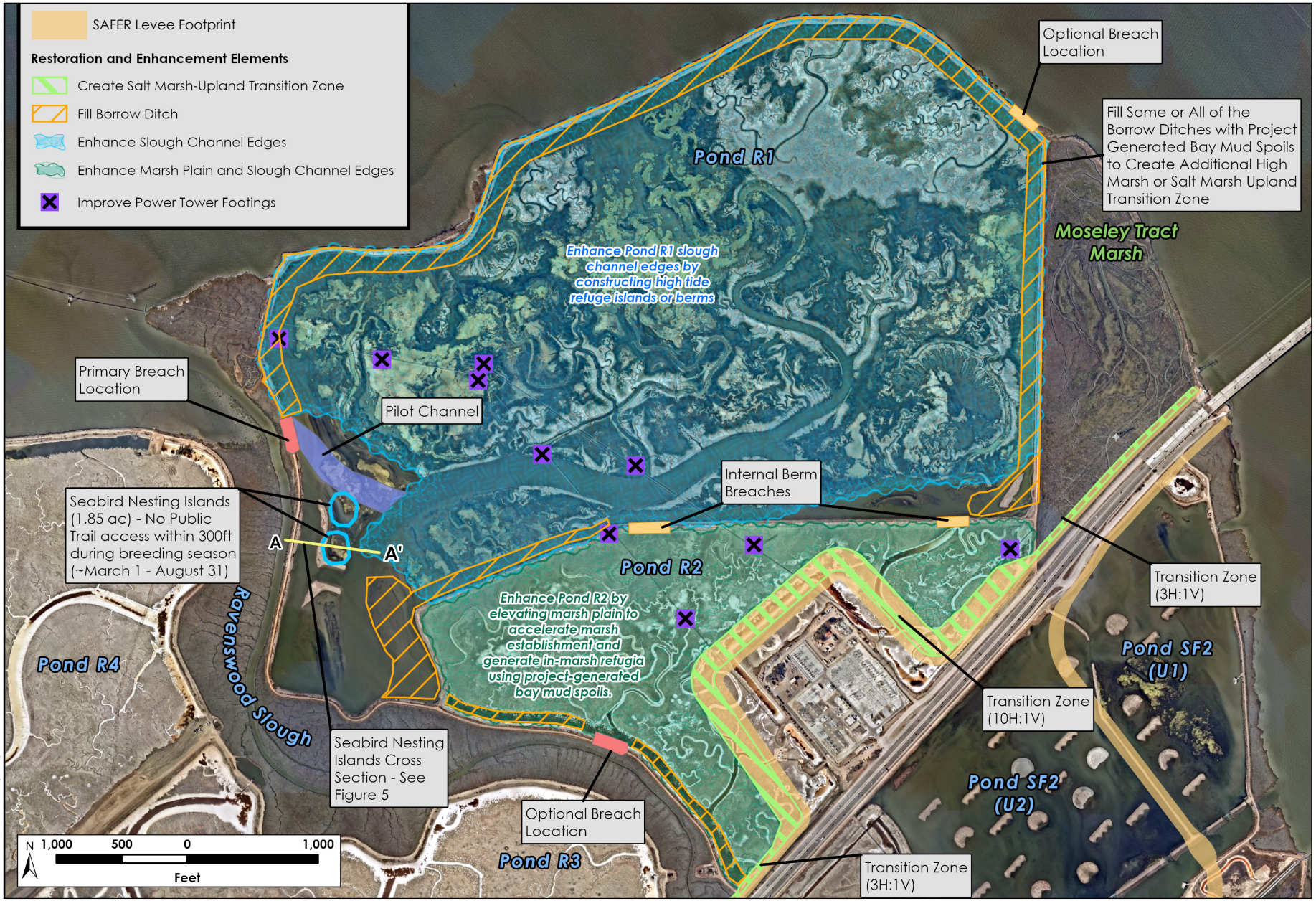
The Project would implement tidal marsh restoration in Ponds R1 and R2 early in the construction sequence to reduce the temporal loss of tidal marsh habitat from levee fill in marshes. Marsh vegetation is expected to naturally establish in Ponds R1 and R2 within 5 to 10 years of breaching.

The proposed design targets restoration of full tidal action to the existing slough channel network and adjoining areas, which reflects the natural slough system that existed prior to construction of the salt pond berms. This approach promotes functions vital to tidal marsh habitat restoration, including efficient sediment transport and deposition as well as tidal flooding and draining. The primary breach location (shown on Figure 2-3) includes excavation of a pilot channel within Pond R1. An internal berm between Ponds R1 and R2 (also shown on Figure 2-3) would be breached in two locations to restore tidal action between the two former salt ponds.

Levee construction would generate spoils from excavation of soils that are not expected to be geotechnically suitable for the levee foundation (e.g., young bay mud). The SFCJPA proposes to reuse such spoils[7] (as well as spoils from excavating the historic channel beds) in Ponds R1 and R2 to fill portions of borrow ditches along the perimeter of the ponds, create elevated slough channel berms to restore in-marsh high tide refugia, provide vegetated refugia along the perimeters of the restored marshes, and potentially raise the initial marsh plain elevation in portions of Pond R2.[8]

[7] Spoils would be tested prior to reuse to ensure compliance with applicable water quality standards.

[8] The existing marsh plains in Ponds R1 and R2 are subsided. Sediment would need to accrete following levee breaching to restore marsh habitat and to keep pace with sea level rise. Reuse of spoils (placed bayward of the transition zone and outside historic slough channels) would increase the rate of vegetated marsh establishment.



SOURCE: H.T. Harvey & Associates, June 2024

SAFER Bay Project

Figure 2-3
Tidal Marsh Restoration and Enhancement Elements

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Tidal Salt Marsh-Upland Transition Zone Habitat

Tidal salt marsh-to-upland transition zone (T-zone) habitat would be integrated on the bayward side of levee segments. The ecological benefits of T-zone habitat include:

- Provision of high tide refugia for the endangered salt marsh harvest mouse, California Ridgway's rail, and other tidal marsh animals considered essential for the survival and recovery of these species.[9]
- Promotion of high habitat diversity and high plant and animal diversity.
- Accommodation of landward movement of a relatively small portion of tidal marsh in response to sea level rise.

Substation and Marsh Restoration Reach

The T-zone habitat incorporated into the Pond R2 side of the levee surrounding the Ravenswood Substation would be constructed with a 10:1 (horizontal to vertical) slope from a combination of reused spoils and imported terrestrial topsoil (to support establishment of upland vegetation above the high tide line).

All Other Reaches

Some T-zone habitat would be incorporated into the bayward-facing slopes of levees in all other reaches. The slope and width of the T-zones would be determined based on characteristics of existing habitat and may follow an irregular or undulating pattern based on site specific quality of existing habitat. For example, the width of T-zones would be reduced where high quality tidal marsh is already present, such as Faber and Laumeister marshes (South of Bay Road and North of Bay Road reaches).

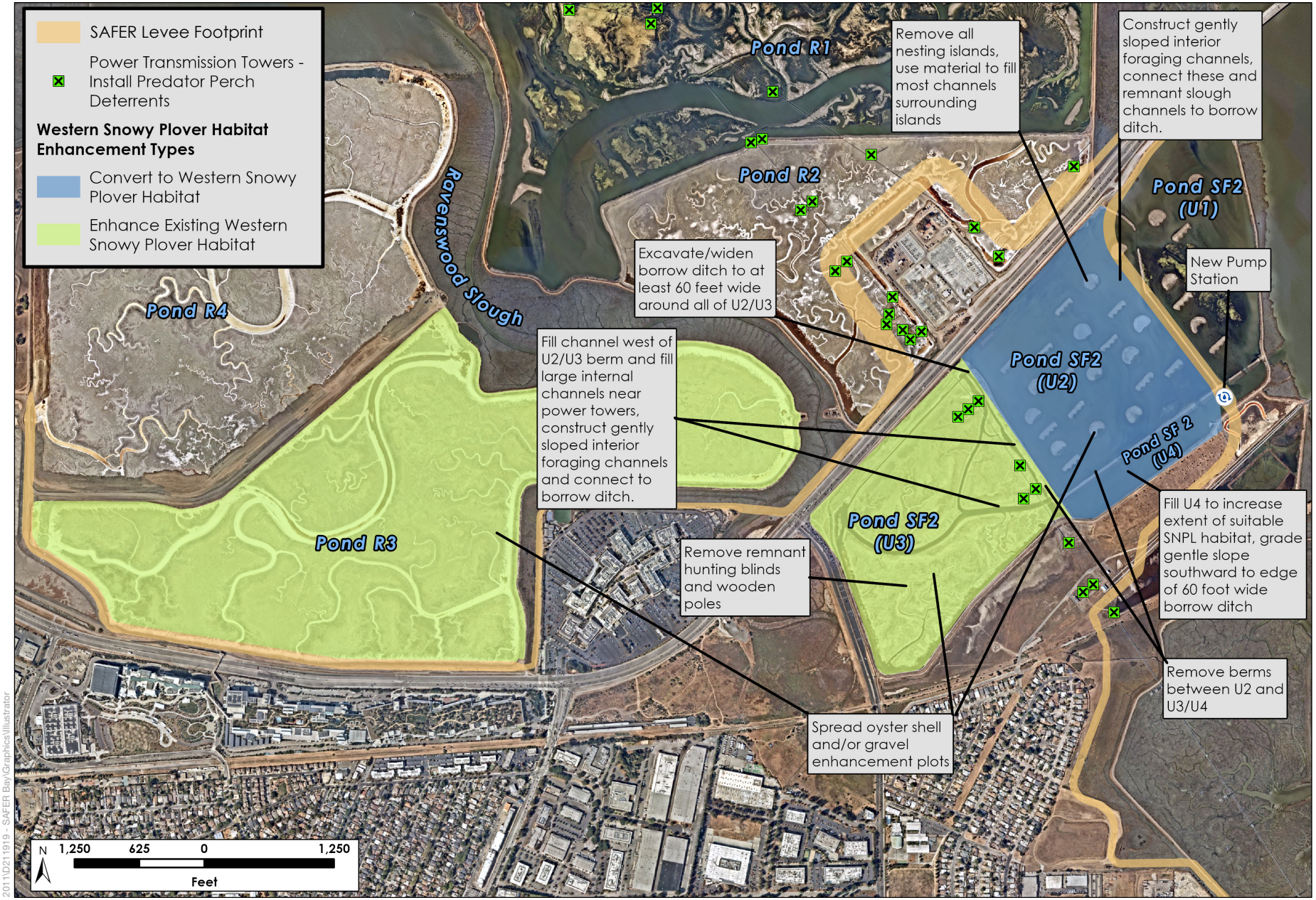
Western Snowy Plover Breeding Habitat Enhancement

To offset the loss of snowy plover habitat that could occur with levee construction and the breaching of Ponds R1 and R2, the Project proposes to construct high quality, contiguous western snowy plover breeding and foraging habitat in Pond SF2 and enhance western snowy plover habitat in Ponds R3 and SF2. **Figure 2-4** presents planned enhancements to western snowy plover habitat.

Construction of Western Snowy Plover Breeding Habitat

The Project would construct an earthen levee through Pond SF2 along an existing berm between cells U1 and U2. This alignment would provide coastal flood protection to the enhanced western snowy plover breeding habitat in cells U2, U3, and U4. Following levee construction, new western snowy plover habitat would be constructed in cell U2; cells U3 and U4 would be altered to connect with constructed habitat in cell U2, and substrate and predator deterrent elements

[9] U.S. Fish and Wildlife Service. 1984. *Salt Marsh Harvest Mouse and California Clapper Rail Recovery Plan*. Shellhammer, H. 2012. *Small Mammals. Ecology, Conservation, and Restoration of Tidal Marshes, the San Francisco Estuary*. San Francisco Bay Area Wetlands Ecosystem Goals Project. 2015. *The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update*. U.S. Fish and Wildlife Service. 2013. *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*.



SOURCE: H.T. Harvey & Associates, May 2024

SAFER Bay Project

Figure 2-4
Western Snowy Plover Habitat Enhancement Plan

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would be installed in areas of Ponds SF2 (cells U2 and U3) and R3. Cell U3 is currently designated critical habitat for western snowy plover. The construction of the flood control levee combined with construction of additional breeding habitat in cells U2 and U4 would both protect existing critical habitat from future flooding (with sea level rise resilience) and approximately double the surface area of snowy plover breeding habitat in Pond SF2 relative to the current area of critical habitat in U3.

Following levee construction across Pond SF2, the existing nesting islands in cell U2 would be removed and the area would be graded to create western snowy plover nesting and foraging habitat. Existing berms between cells U2, U3, and U4 would be removed to create contiguous habitat, and an existing borrow ditch around cells U2 and U3 would be connected and widened to create a water barrier to mammalian predators.

The viewing platform currently located in Pond SF2 (cell U4) would be removed and relocated elsewhere to reduce the potential for disturbance from people and eliminate a predator perch.

Water Management in Pond SF2

USFWS currently uses a system of culverts and weirs to manage water in Pond SF2. The existing structures in cells U1 and U4 that provide intake from and discharge to the Bay would remain in place, while internal culverts and weirs used to manage water between cells would be removed. A new pump station with intake and discharge capabilities would be installed on the newly constructed levee. USFWS would use the new water infrastructure to manage the hydroperiod in reconfigured Pond SF2 for targeted western snowy plover seasonal management, as follows:

- ***Non-breeding Season***. During the non-breeding (wet) season, the pond would be managed to provide western snowy plover roosting and foraging habitat and, when deemed necessary, flooded with bay water to varying depths to limit vegetative growth on the pond bottom. Wet season water management in Pond SF2 would be coordinated with Pond R3 (which requires similar management) to ensure that ample suitable habitat is always available to western snowy plover within the Ravenswood Pond Complex. This habitat is also expected to support foraging and roosting habitat for large numbers of migrant and wintering shorebirds of other species.
- ***Breeding Season***. During the breeding season, water levels in reconfigured Pond SF2 and Pond R3 would be drawn down to fully expose the pond bottom and allow them to dry for nesting. Water would always be present in the borrow ditch, inflow/outflow channel, and interior channels to provide foraging habitat and predator deterrence.

Substrate Enhancement, Predator Deterrents, and Predator Management Funding

Figure 2-4 depicts the proposed locations for substrate enhancement and predator deterrent elements. In Ponds SF2 (cells U2, U3, and U4) and R3, oyster shell and/or gravel enhancement plots would be spread over dry pond bottoms to attract plovers and improve crypsis[10] for plovers at all life stages. Remnant hunting blinds and salt pond infrastructure would be removed to reduce predator perches. Installation of anti-perching devices are recommended on power transmission towers present in Ponds R1, R2, and SF2 and land adjacent to Pond SF2 to further reduce

[10] Crypsis is the ability of an animal to avoid observation or detection by other animals. In this case, predators such as ravens (*Corvus corax*) would be less able to detect western snowy plover nesting on oyster shells or gravel compared to other land cover.

predation by avian species. The SAFER Bay Project would need to fund predator management (e.g., mammalian predator trapping and targeted avian predator removal) to be implemented under the direction of USFWS and in accordance with USFWS's practices.

Seabird Habitat Creation

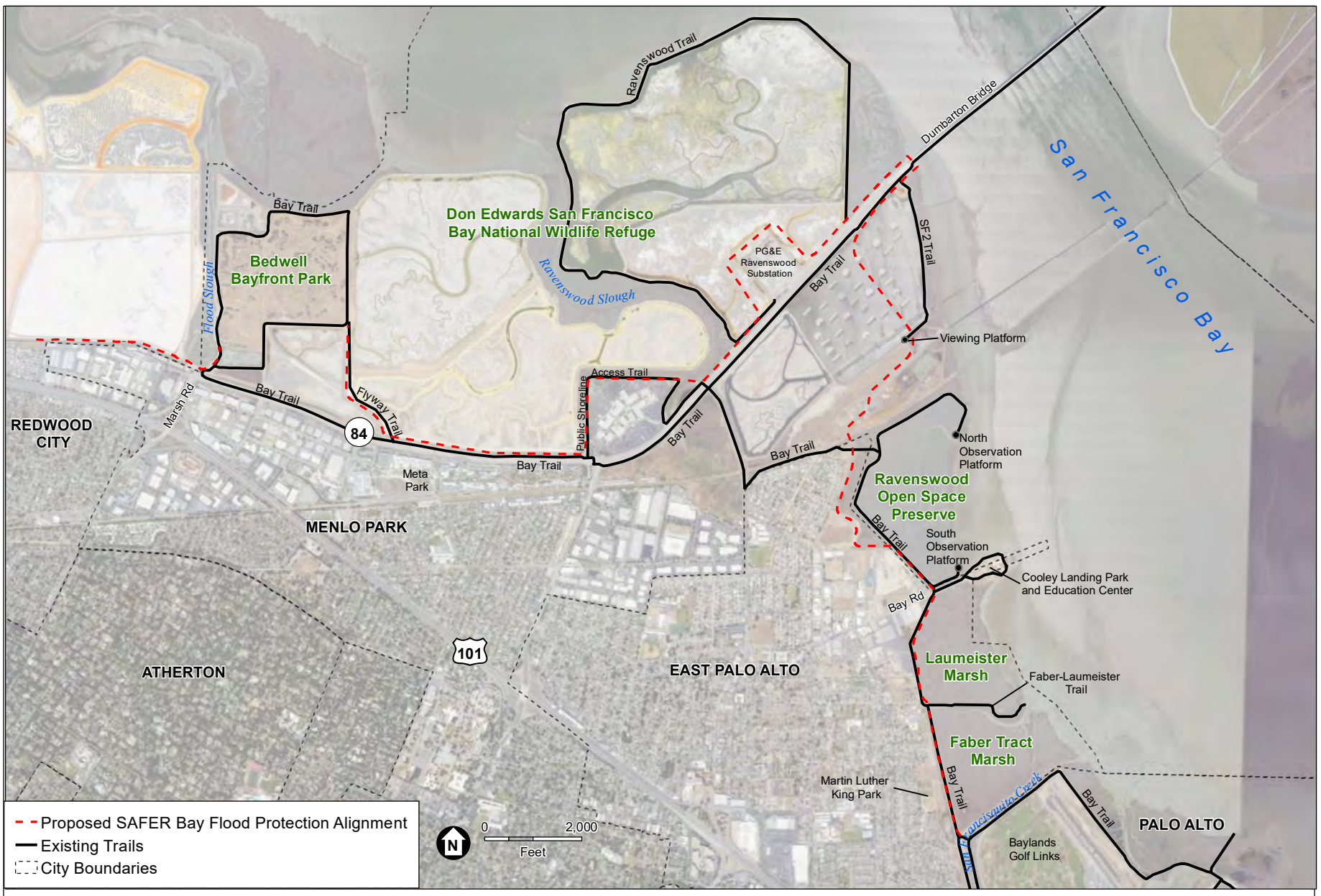
Pond SF2 is currently used by numerous bird species including the Caspian tern (*Hydroprogne caspia*), elegant tern (*Thalasseus elegans*), and black skimmer (*Rynchops niger*), which nest on islands in cell U2. Habitat enhancement for western snowy plover proposed in Pond SF2 would require removal of the nesting islands in cell U2. Consequently, to offset a loss of seabird nesting habitat, the Project would construct seabird island nesting habitat in the southwest corner of Pond R1, which would function in tandem with proposed tidal marsh restoration (refer to Figure 2-3). Two islands totaling at least 1.84 acres of nesting habitat would be constructed to replace the nesting area provided by the four islands that these species have used for nesting in Pond SF2 cell U2. The islands would be placed in an area of existing high ground in Pond R1 where small islands have supported nesting Caspian terns and black skimmers in the past. Tidal flushing would be restored to existing channels around these islands to minimize vegetated marsh establishment directly around the islands that could impair their use by seabirds. The nesting habitat at the tops of these islands would be constructed to a height of 11–12 feet NAVD88. Since these species prefer mostly unvegetated areas for nesting, the islands would be topped with several feet of gravel to inhibit the growth of vegetation. Occasional vegetation management would be required to ensure that these islands remain mostly unvegetated.

Recreation Improvements

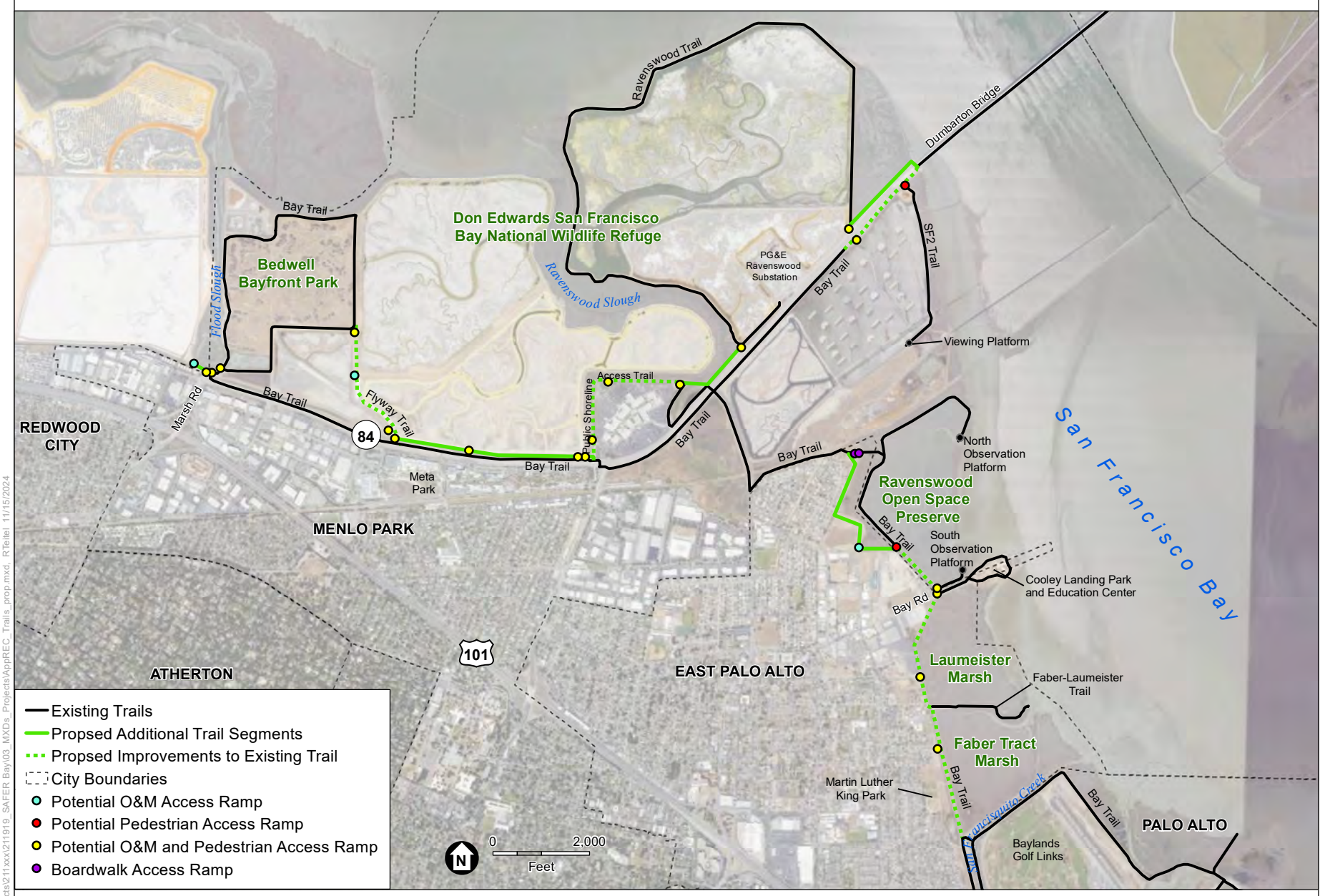
The Project overlaps with segments of the Bay Trail and other trails and includes improvements to shoreline access. **Figure 2-5** shows the location of existing trails and other recreation facilities near the Project site in relation to the SAFER Bay Project alignment (upper half) and proposed improvements to trails (lower half). Where the Bay Trail would be replaced or extended, the segments would incorporate design standards adopted for the Bay Trail. By elevating shoreline trails, the Project would also reduce the trails' exposure to flooding, thereby increasing public access and trail longevity. The reconstructed portions of the Bay Trail along the new levee tops would be paved; would include signage, viewing points, benches, and access points (specific locations to be determined in future detailed designs and in coordination with stakeholders); and would be designed in compliance with the Americans with Disabilities Act (ADA).

2.4.2 Proposed Design by Reach

Table 2-2 summarizes key features of the SAFER Bay Project by reach. **Table 2-3** summarizes basic Project dimensions. The reaches are described from south to north.



Existing Trails and Other Recreational Resources



Proposed Trail Additions and Improvements

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SOURCES: NAIP Imagery, 2024; Metropolitan Transportation Commission, August 2024; adapted by ESA

SAFER Bay Project

Figure 2-5
Existing Recreation Resources and
Proposed Trail Additions and Improvements

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TABLE 2-2
OVERVIEW OF SAFER BAY PROJECT BY REACH

Reach	Shoreline Protection	Habitat Improvements		Recreation[a]
		Transition Zone Habitat	Salt Marsh, Western Snowy Plover Habitat	
South of Bay Road—East Palo Alto	Levee/floodwall hybrid Flood gate at Bay Road	3H:1V slopes adjacent to Faber, Laumeister marshes	Realign channel segments near bayward levee toe.	Realign and widen Bay Trail; reestablish connection to Faber-Laumeister Trail, create pedestrian access points.
North of Bay Road—East Palo Alto	Levee Flood gate at railroad tracks	3H:1V slopes adjacent to Ravenswood Open Space Preserve	Realign channel segments near levee toe, providing tidal connectivity west of existing Bay Trail.	Realign and widen Bay Trail from Bay Road to Bay Trail boardwalk, route boardwalk section over proposed levee.
Dumbarton Approach	Levee Levee/floodwall hybrid Floodwall	3H:1V slopes adjacent to Mosely Tract Marsh	Expand and enhance western snowy plover habitat in Pond SF2.	Southern portion of SF2 Trail would terminate at new levee. Construct new Bay Trail north of SR 84. Widen affected existing portions of the Bay Trail south of the eastbound lanes of SR 84. Relocate viewing platforms near Pond SF2.
Substation and Marsh Restoration	Levee	10H:1V slopes adjacent to Pond R2	Restore tidal salt marsh in Ponds R1/R2 Create seabird nesting islands in Pond R1.	No improvements proposed.
Tech Campus	Levee/floodwall hybrid Floodwall	3H:1V slopes adjacent to Ravenswood Slough	Enhance western snowy plover habitat in Pond R3.	Extend Bay Trail from Substation and Marsh Restoration Reach to public shoreline access trail at Meta Campus; replace public shoreline access trail around Meta Campus.
Bayfront Expressway	Levee	3H:1V slopes adjacent to Pond R4	Enhance western snowy plover habitat in Pond R3.	Create levee top trail (will parallel existing Bay Trail which is landward/south of proposed levee); improve existing Flyway Trail.
Bedwell Bayfront Park	Levee	3H:1V slopes adjacent to Flood Slough	No improvements proposed.	Extend Bay Trail west to Marsh Road Reach.
Marsh Road	Levee	3H:1V slopes adjacent to Flood Slough	No improvements proposed.	No improvements proposed (levee alignment is on private property).

NOTES: H:V = horizontal to vertical

a. Refer to Figure 2-5 for a map of existing trails in the Project vicinity.

SOURCE: HDR 2024; ESA 2024.

TABLE 2-3
PROJECT REACH DIMENSIONS

Reach	Approx. Length (feet)	Elevation Change (approximate feet NAVD88)		Max. Depth of Disturbance below Grade (approximate feet NAVD88)	
		Existing Grade	Proposed Grade[a]	Excavation Depth	Sheet Pile Depth
South of Bay Road—East Palo Alto	5,270	4.5–18	Top of Bay Trail: 12.8–18; top of floodwall: 16.5	-2	-25 to -40
North of Bay Road—East Palo Alto	4,735	6.5–12	Top of Bay Trail/levee: 17.8–18.5	-6	N/A
Dumbarton Approach	9,135	3–12	• Southern Program-level segment, top of levee: 18.5–21.4 • Project-level segment, top of levee: 8–24.4 • Northern Program-level segment, top of floodwall: 18.5; top of Bay Trail: 14.5–21	-6	-25 to -40[b]
Substation and Marsh Restoration	5,215	2–10	Top of levee: 10–21	-6	N/A
Tech Campus	4,940	6–19.5	Top of levee: 19.3–22.3; top of levee/trail around Meta Campus: 14.7–19.6; top of floodwall: 18.5	-6	-25 to -40[b]
Bayfront Expressway	6,700	2–15	Top of Bay Trail/levee: 10–19.6		
Bedwell Bayfront Park	1,065	5–13	Top of levee: 12–18.7		
Marsh Road	3,165	4.5–13	Top of levee: 10.5–18.7		

NOTES:
a. Does not include appurtenant trail features such as handrails or signage.
b. To be confirmed in future design phases.
SOURCE: HDR 2024; ESA 2024.

South of Bay Road—East Palo Alto

Existing Conditions

Refer to **Figure 2-6** and **Figure 2-7** for photos that represent existing conditions and features along the reach. The South of Bay Road Reach is wholly within the city of East Palo Alto and generally follows the existing levee/Bay Trail from O'Connor Street north to Bay Road. The eastern (bayward) side of the reach is within/borders Faber Marsh and Laumeister Marsh, owned by the City of Palo Alto and managed by the Refuge. The western (landward) side of the reach is bordered by the Runnymede Drainage Ditch that drains stormwater to Bayshore Pond. The O'Connor Pump Station pumps water from Bayshore Pond to San Francisquito Creek. Additional adjacent uses include residences, Martin Luther King Park, East Palo Alto Charter School, and Cooley Landing Substation. The Faber-Laumeister Trail starts east of Runnymede Street and extends into the marsh.

View A: Southern end of the reach facing northwest towards Bayshore Pond.

View B: Runnymede Drainage Ditch east of Martin Luther King Park facing north.

Viewpoint locations shown on Figure 2-7

View C: Bay Trail and transmission tower east of East Palo Alto Charter School facing south.

View D: Bay Trail and transmission tower south of Cooley Landing Substation facing south; Laumeister Marsh shown on left side of photo.

SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-6
Existing Conditions: South of Bay Reach

ESA

Existing infrastructure along the reach includes O'Connor Pump Station at the southern end, a sanitary sewer pipeline just west of the levee's inboard toe, transmission towers and overhead transmission lines, and the adjacent Runnymede Drainage Ditch and Bayshore Pond. The levee is designed not to interfere with the geosynthetic clay liner overlain by one foot of imported fill that was installed as an approved cap.[11] For more information concerning this issue, refer to Chapter 3, Section 3.10, Hazards, Hazardous Materials and Wildfire.

Proposed Reach Conditions

This reach is evaluated at a project level of detail in this EIR.

Shoreline Protection. The proposed shoreline protection design for this reach consists of a hybrid levee/floodwall. Refer to **Figure 2-8** for typical sections along the reach and Figure 2-7 for the locations of those sections. The SFCJPA's recently completed levee at San Francisquito Creek (shown on Figure 2-7) considered sea level rise in its design criteria and protects East Palo Alto from coastal and fluvial flooding from San Francisquito Creek. The southern end of the South of Bay Road Reach would tie into the levee at San Francisquito Creek. At the northern end of the South of Bay Road Reach/southern end of the North of Bay Road Reach, a flood gate across Bay Road would be installed. This flood gate would lay flat, embedded in the roadway, to allow access to the Cooley Landing Education Center most of the time. When bay flood waters rise to the height of Bay Road at the gate's location, the gate would automatically rise to provide contiguous flood protection from the South of Bay Road Reach to the North of Bay Road Reach. Temporary sheet piles would be installed on the bay side of the reach to control water during initial site preparation and would be removed during closeout. Permanent sheet piles would be installed along the levee for seepage control after construction of the levee prism. While the primary access to the reach would be along the top of the levee, an approximately 15- to 20-foot-wide unpaved access road would be maintained on the western side of the levee for operations and maintenance.

Habitat. T-zone habitat would be constructed on the bayward side of the levee slopes adjacent to existing tidal salt marsh habitat in Laumeister and Faber marshes. The proposed 3:1 slope (compared to a shallower slope and broader T-zone) would limit adverse impacts on existing high quality tidal marsh in the Laumeister and Faber marshes. Slough channels filled by the levee would be realigned to prevent compromise of the structural integrity of the levee while retaining adequate tidal flushing of the adjacent tidal salt marsh.

[11] The deed restriction, San Mateo County Recorder's Office Document Number 2001040627, was recorded March 27, 2001. In accordance with the deed restriction, the cap cannot be penetrated without prior approval of the RWQCB. Arsenic in the soil in this area is greater than 200 milligrams per kilogram (2014 Comprehensive Site Management Plan 1990 Bay Road Site East Palo Alto, California.)

SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-7
South of Bay Road Reach Plan

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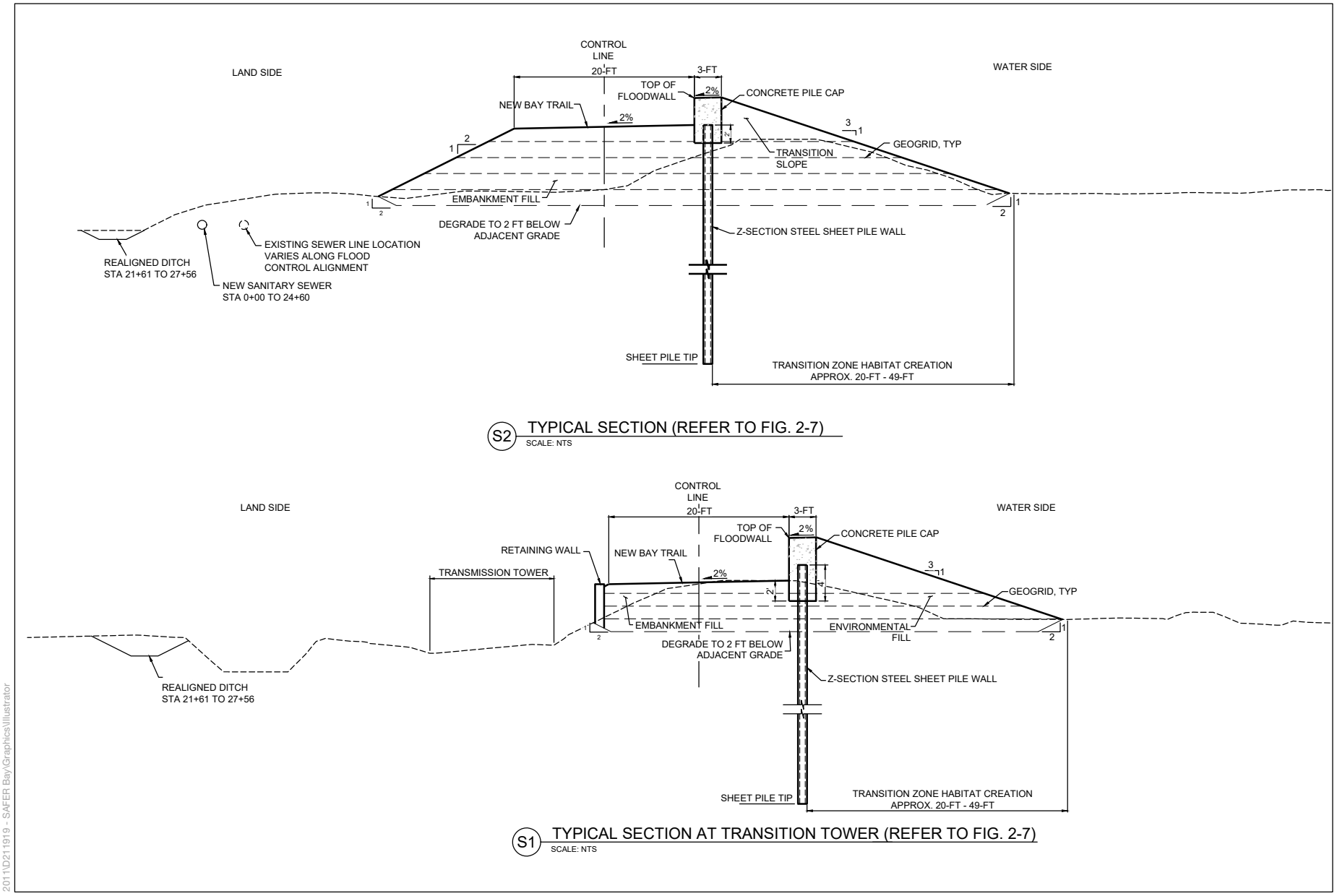

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SOURCE: HDR, June 2024

SAFER Bay Project

Figure 2-8
Typical Sections: South of Bay Road Reach

ESA

Recreation. The Bay Trail would be reconstructed atop the proposed levee and widened from about 8 feet to 20 feet. ADA-compliant pedestrian ramps would be installed at the locations shown on Figure 2-7. Connection to the Faber-Laumeister Trail would be reestablished following levee construction.

Infrastructure. Refer to **Appendix INFRA** for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. A portion of the Runnymede Drainage Ditch near the middle of the reach would be relocated west of the proposed levee where the levee toe would overlap the existing ditch. The relocated stormwater drainage ditch would continue to function as under current conditions and drain to Bayshore Pond. The O'Connor Pump Station would not be altered by the Project. An existing sanitary sewer line would be reconstructed landward of the levee toe in coordination with East Palo Alto Sanitary District. The levee would be routed around the existing transmission towers. As indicated on Figure 2-7, a retaining wall would be constructed around a transmission tower across from East Palo Alto Charter School, and the walkway to one tower would be demolished and reconstructed. The capped containment cell would be protected in place.

North of Bay Road—East Palo Alto

Existing Conditions

Refer to **Figure 2-9** and **Figure 2-10** for photos that represent existing conditions and features along the reach. The North of Bay Road Reach is in the cities of East Palo Alto and Menlo Park, and follows the existing levee/Bay Trail from Bay Road, shifting landward near 391 Demeter Street. The reach terminates just north of the Southern Pacific Railroad tracks (not currently in operation). The eastern (bayward) side of the reach is bordered by Ravenswood Open Space Preserve, owned and managed by the Midpeninsula Regional Open Space District. Uses adjacent to the western (landward) side of the reach include Infinity Auto Salvage, 391 Demeter Street (a potential future development site), and residences.

Existing electrical utilities along the reach include transmission towers and overhead transmission lines. Several stormwater catchments north of Bay Road currently drain via gravity to the Bay, across the proposed levee alignment.

Proposed Reach Conditions

This reach is evaluated at a program level of detail in this EIR.

Shoreline Protection. Refer to Figure 2-10 for proposed improvements along the North of Bay Road Reach and **Figure 2-11** for typical sections along programmatic-level reaches, which includes the North of Bay Road Reach. The proposed shoreline protection design for this reach includes levee and levee/floodwall hybrid. As indicated above, a flood gate would be installed at Bay Road. Another flood gate would be installed across the railroad tracks. Refer to Figure 2-10 for potential locations for operations and maintenance and pedestrian access.

View A: Drainage channel east of Bay Trail facing northwest.

View B: 2081 Bay Road and adjacent property from Bay Trail facing west.

Viewpoint locations shown on Figure 2-10

View C: End of Steven Avenue facing east towards Ravenwood Open Space Preserve.

View D: Bay Trail Boardwalk north of Ravenswood Open Space Preserve facing east towards transmission towers and overhead power lines.

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SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-9
Representative Photos of North of Bay Reach

ESA

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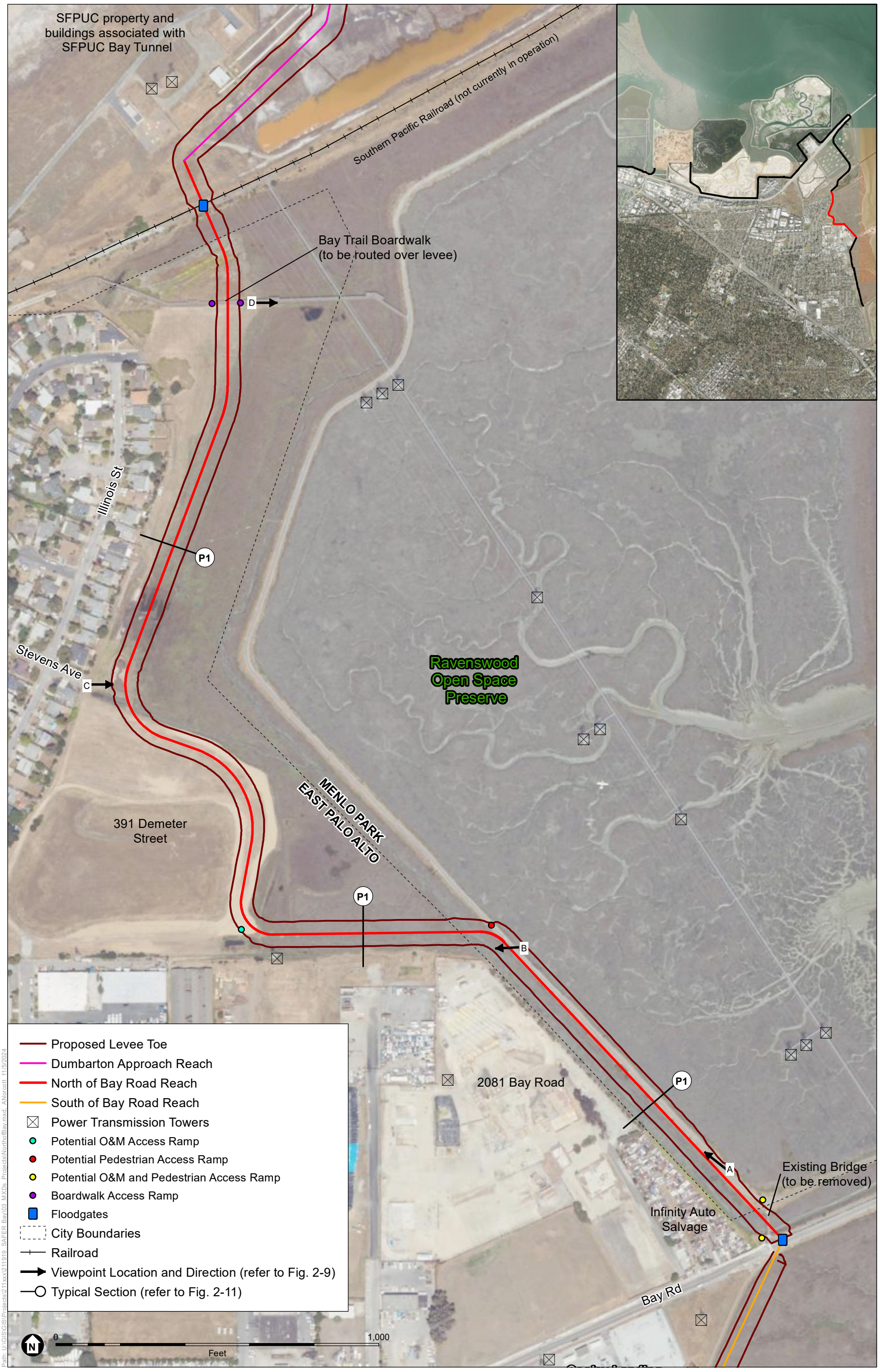

SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-10
North of Bay Road Reach Plan

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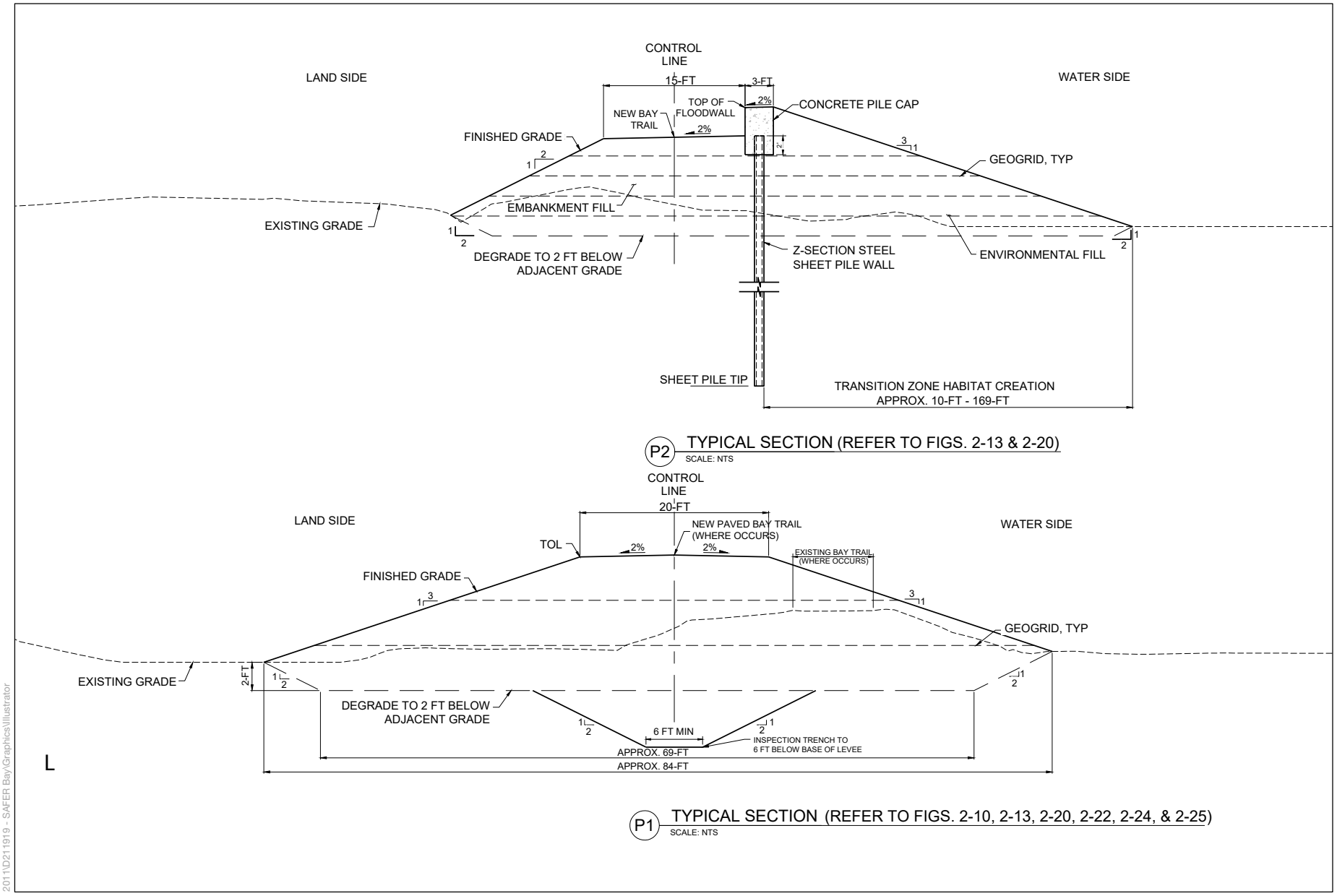

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SOURCE: HDR, 2024; adapted by ESA

SAFER Bay Project

Figure 2-11
Typical Section: Program-level Reaches

ESA

Habitat. T-zone habitat would be constructed on the bayward side of the levee adjacent to existing tidal salt marsh habitat. The proposed relatively narrow 3:1 slope would limit adverse impacts on sensitive resources within the Ravenswood Open Space Preserve marshes. Slough channels filled by the levee would be realigned to prevent compromise of the structural integrity of the levee while retaining adequate tidal flushing of the adjacent tidal salt marsh.

Recreation. The Bay Trail would be realigned atop the proposed levee and widened to 20 feet. An existing Bay Trail pedestrian bridge at the southern end of the reach would be demolished. Toward the northern end of the reach, the Bay Trail boardwalk would be routed over the levee. Refer to Figure 2-10 for potential pedestrian access locations.

Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. The storm drain outfall located just north of Bay Road and just west of the Midpeninsula Open Space District pedestrian bridge would be relocated to the east to a minimum of 20 feet beyond the water side toe of the new levee. A pipeline would be relocated and upgraded to current standards. The drainage from several smaller stormwater catchments that currently drain across the levee alignment are assumed to be removed by a combination of onsite stormwater management and/or new storm drain connections that convey stormwater to other trunk lines and pump stations.

Dumbarton Approach Reach

Existing Conditions

Refer to **Figure 2-12** and **Figure 2-13** for photos that represent existing conditions and features along the reach. The Dumbarton Approach Reach is wholly within the city of Menlo Park. The reach extends through land owned by the City and County of San Francisco and managed by SFPUC, federally owned land managed by the Refuge (Pond SF2), state-owned land managed by the Caltrans, and land owned by the City of San Jose (part of the Moseley Tract Marsh). The reach extends from north of the Southern Pacific Railroad tracks, through Pond SF2, and around the east-bound lanes of SR 84 to the northern side of the west-bound lanes. The reach crosses portions of the Bay Trail and is adjacent to an existing viewing platform south of Pond SF2 and viewing area north of Pond SF2. North of SR 84, the Moseley Tract Marsh is within and north of the reach.

Existing infrastructure in this reach includes SR 84 and its associated approach and frontage road, the Dumbarton Bridge (managed by Caltrans), active and abandoned water conveyance facilities for SFPUC's Bay Tunnel, and water control facilities and structures associated with Pond SF2 and salt pond works.

Proposed Reach Conditions

This reach is evaluated at both a project and program level of detail in this EIR.

View A: Pond SF2 from the Bay Trail facing southeast.

View B: Bay Trail and SR 84 north of Pond SF2 facing southwest.

Viewpoint locations shown on Figure 2-13

View C: Ravenswood frontage road north of SR 84 and south of Moseley Tract Marsh facing northeast.

View D: Ravenswood frontage road north of SR 84 and south of Moseley Tract Marsh facing southwest.

SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-12
Existing Conditions: Dumbarton Approach Reach

ESA

Shoreline Protection. Refer to Figure 2-13 for proposed improvements along the Dumbarton Approach Reach and **Figures 2-11**, **2-14**, and **2-15** for typical sections along different segments of the reach. The proposed shoreline protection design for this reach includes a levee south of and through Pond SF2, a hybrid floodwall/levee north and south of SR 84, and floodwalls beneath SR 84.

Habitat. A T-zone with 3H:1V slopes would be restored on the bayward side of the levee adjacent to the Moseley Tract Marsh (see Figure 2-13). Refer to *Habitat Improvements* (above) for a description of habitat improvements associated with Pond SF2.

Recreation. The southern portion of the existing SF2 Trail would terminate at the new levee (refer to Figure 2-5). There would be no trail atop the levee through Pond SF2. Existing affected segments of the Bay Trail immediately south of SR 84 would be widened and a new segment of the Bay Trail would be constructed north of SR 84 adjacent to Mosely Tract Marsh. An existing viewing platform in Pond SF2 cell U4 and a viewing area south of SR 84 would be removed and relocated as part of the Project (location to be determined). Refer to Figure 2-13 for potential pedestrian access locations.

Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. This reach would protect active SFPUC infrastructure, and it is assumed that abandoned SFPUC infrastructure within the construction corridor for the levee would be demolished as part of the Project. An existing stormwater pump station north of SR 84 and appurtenant structures would be modified.

Substation and Marsh Restoration Reach

Existing Conditions

Refer to **Figure 2-16** and **Figure 2-17** for photos that represent existing conditions and features along the reach. The Substation and Marsh Restoration Reach is within the city of Menlo Park and extends through the Refuge (Pond R2). The eastern terminus of the reach is near a berm separating the Moseley Tract Marsh and Pond R2, and the western terminus is at the western edge of Pond R2, adjacent to Ravenswood Slough. The reach is bordered by Pond R2, SR 84, the Ravenswood Substation, and Menlo Park Fire District training site.

Existing infrastructure along the reach includes SR 84 and frontage road, the Ravenswood Substation, and overhead transmission lines.

Proposed Reach Conditions

This reach is evaluated at a project level of detail in this EIR.

Shoreline Protection. Refer to Figure 2-17 for proposed improvements along the Substation and Marsh Restoration Reach and **Figure 2-18** for typical sections. The proposed shoreline protection design for this reach includes levees adjacent to SR 84 and around the Ravenswood Substation.

Existing Pump Station
(to be relocated)

F1

F2

Moseley Tract
Marsh

Existing Viewing Area
(to be removed
and replaced)

C

D

P2

Cargill brine
maintenance pond

B

P2

A

SF2 Trail

D1

Pond SF2
(U1)

PG&E Ravenswood
Substation

84

D1

Pond SF2
(U2)

Existing Viewing Platform
(potentially to be relocated)

D1

Pond SF2
(U3)

Pond SF2
(U4)

Abandoned SFPUC
Infrastructure

SFPUC Property

P1

Southern Pacific Railroad (not currently in operation)

- Proposed Levee Toe
- Dumbarton Approach Reach (Program-Level
- North of Bay Road Reach
- Substation and Marsh Restoration Reach
- Existing Water Line to be Removed and Replaced
- Power Transmission Towers
- Potential Pedestrian Access Ramp
- Potential O&M and Pedestrian Access Ramp
- Potential Pump Station
- Pump Station Modification
- Railroad
- Viewpoint Location and Direction (refer to Fig. 2-12)
- Typical Section (refer to Figs. 2-11, 2-14, 2-15)

N

0 1,000

Feet

Path: U:\GIS\GIS\Projects\211xxx\211919_SAFER Bay\03_MXDs_Projects\DumbartonApproach.mxd_ANorcott 11/7/2024

SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-13
Dumbarton Approach Reach Plan

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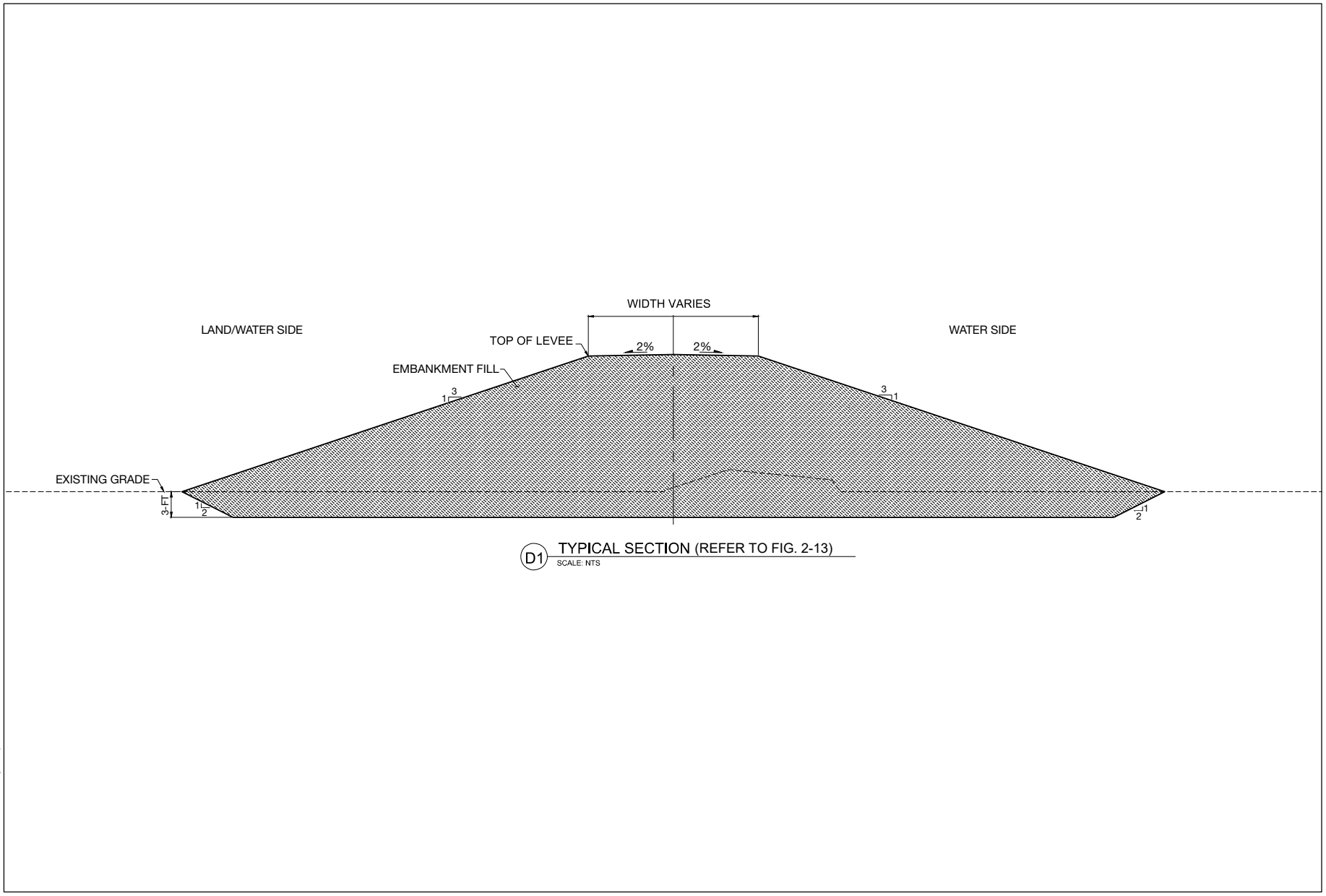


2011\D211919 - SAFER Bay\Graphics\Illustrator

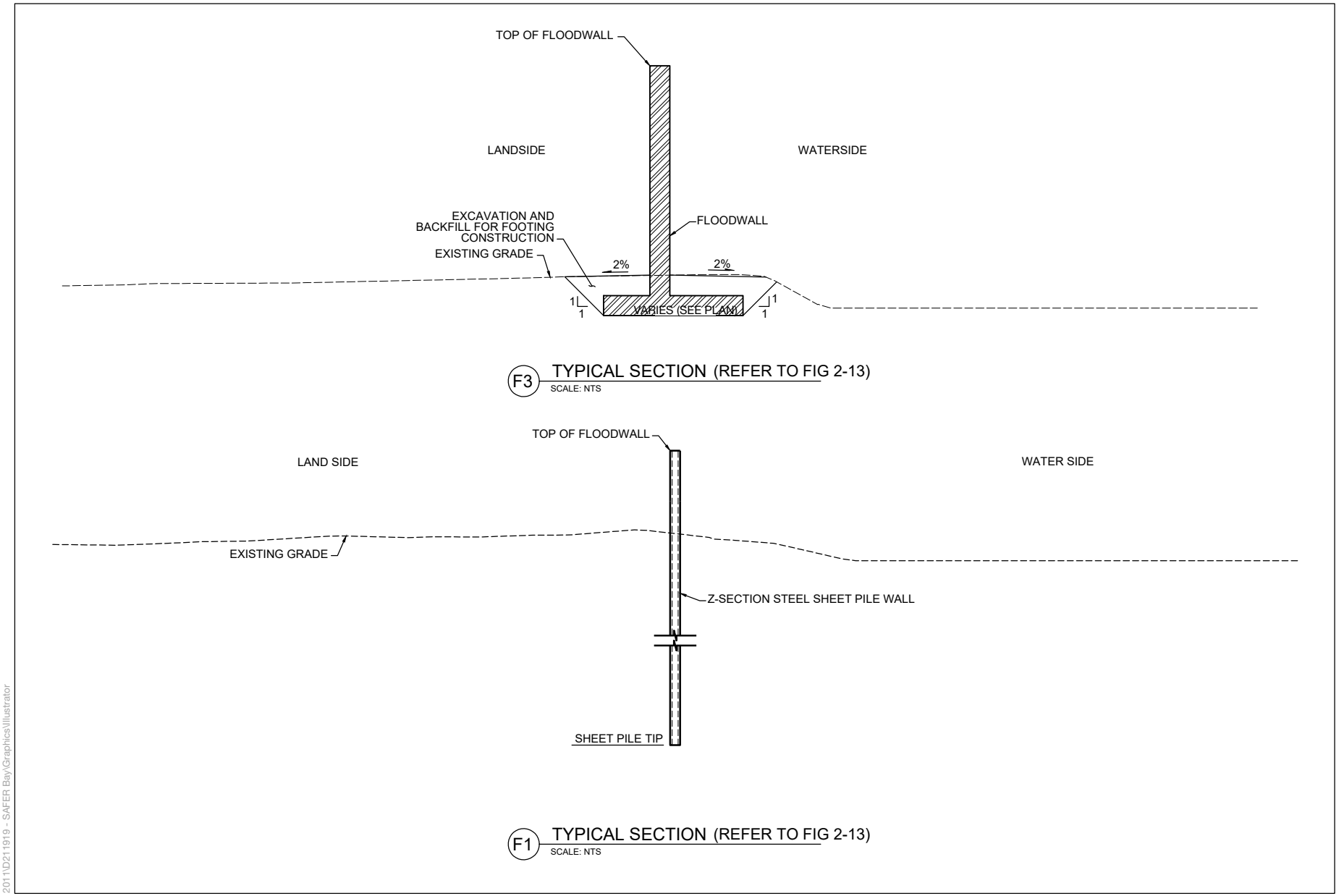
SOURCE: HDR, June 2024; adapted by ESA

SAFER Bay Project

Figure 2-14

Typical Section: Dumbarton Approach Reach through Pond SF2

ESA



2011\D211919 - SAFER Bay\Graphics\Illustrator

SOURCE: HDR, July 2024

SAFER Bay Project

Figure 2-15
Typical Section: Dumbarton Approach Reach
Under State Route 84

ESA

View A: Bay Trail facing west towards PG&E Ravenswood Substation.

View B: Bay trail south of PG&E Ravenswood Substation facing northeast.

Viewpoint locations shown on Figure 2-17

View C: PG&E Ravenswood Substation from Bay Trail facing north.

View D: PG&E Ravenswood Substation and transmission towers within Pond R2 from trail facing northwest.

2011\D211919 - SAFER Bay\Graphics\Illustrator

SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-16
Existing Conditions: Substation and Marsh Restoration Reach

ESA

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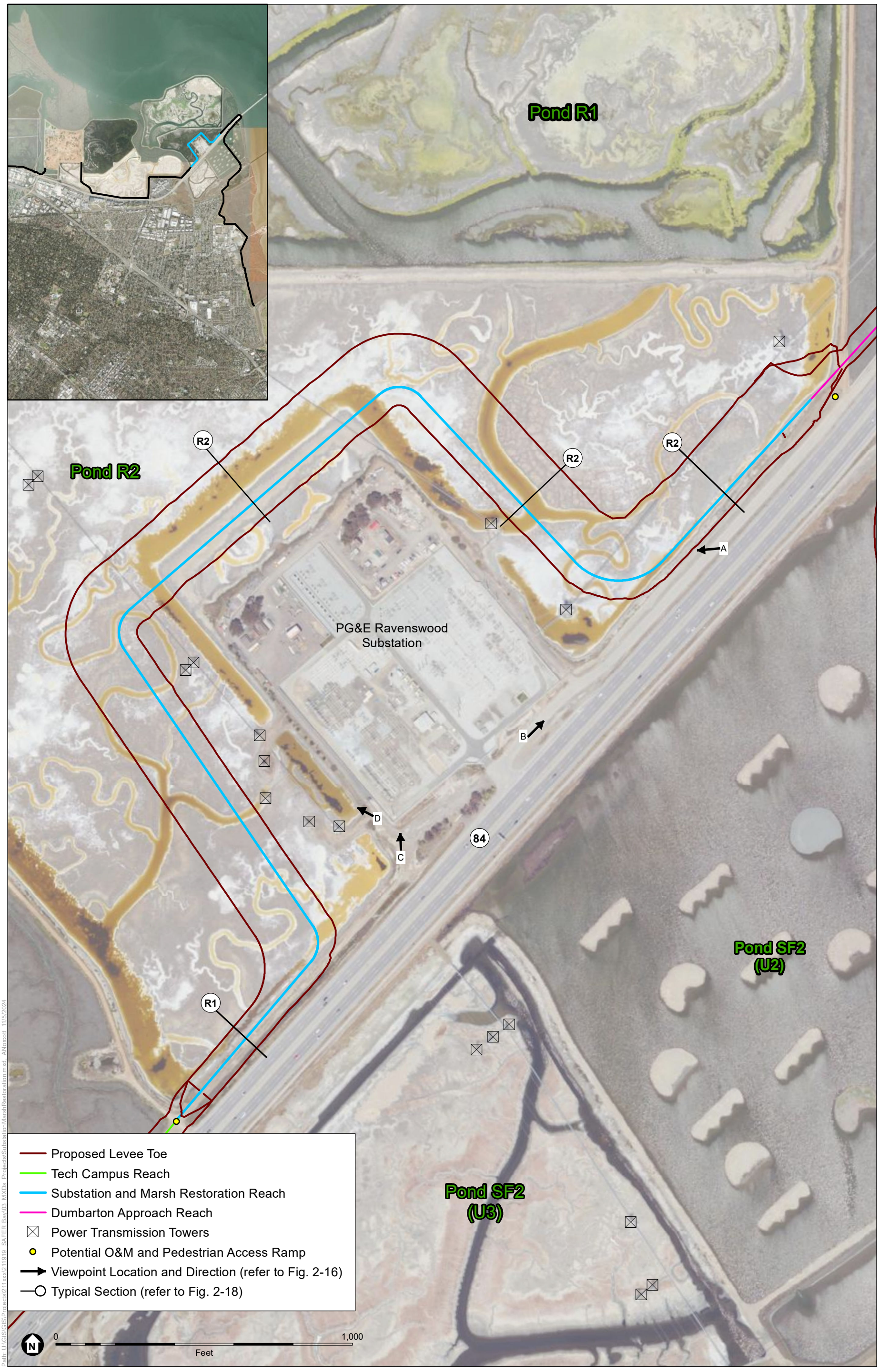

SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-17
Substation and Marsh Restoration Reach Plan

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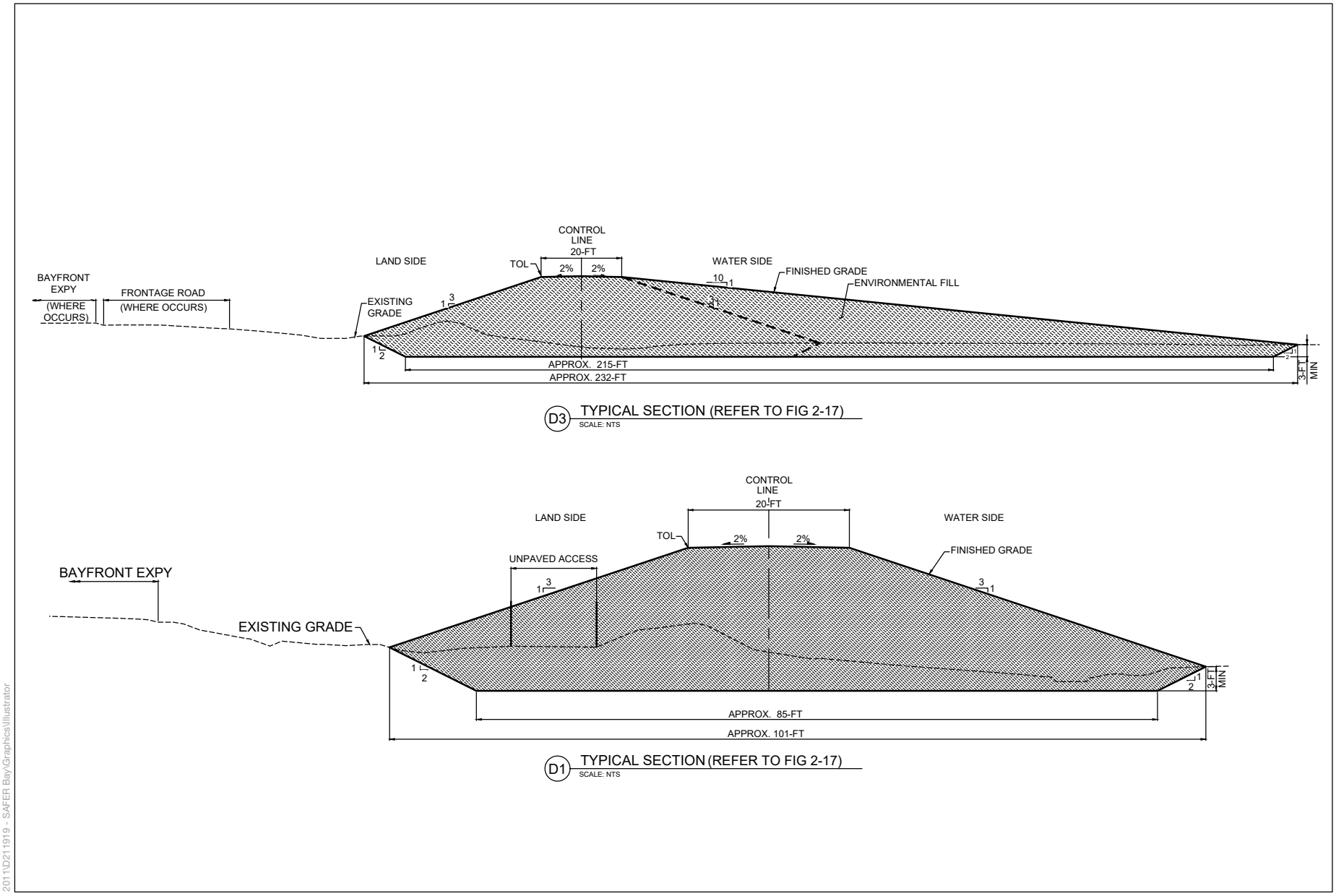

2011\D211919 - SAFER Bay\Graphics\Illustrator

SOURCE: HDR, June 2024

SAFER Bay Project

Figure 2-18
Typical Sections: Substation and Marsh Restoration Reach

ESA

Habitat. Refer to *Habitat Improvements* (above) for a description of habitat improvements associated with Ponds R1 and R2.

Recreation. No improvements to trails are proposed for this reach.

Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. The proposed levee may impair Caltrans' stormwater drainage infrastructure from the north frontage road, SR 84, and the Ravenswood Substation to detention in Pond R2. The Project would maintain current stormwater management conditions from these areas by providing either alternative conveyance, storage, and/or pumping.

Tech Campus Reach

Existing Conditions

Refer to **Figure 2-19** and **Figure 2-20** for photos that represent existing conditions and features along the reach. The Tech Campus Reach is wholly within the city of Menlo Park and parallels the west-bound lanes of SR 84 and a pedestrian trail that surrounds Meta Headquarters/Classic Campus at 1 Hacker Way. The bayward side of the reach is bordered by Ravenswood Slough and Pond R3. Uses adjacent to the landward side of the reach include SR 84 and Meta.

East of the Meta Headquarters, the alignment crosses the Ravenswood Pump Station outfall channel within Pond R3. Stormwater runoff from SR 84 collects in a basin adjacent to SR 84 and Highway 109. The Ravenswood Pump Station is south of the reach on the opposite side of SR 84, and pumps stormwater from this basin to the outfall channel.

Proposed Reach Conditions

This reach is evaluated at a program level of detail in this EIR.

Shoreline Protection. Refer to Figure 2-20 for proposed improvements along the Tech Campus Reach and Figure 2-11 for typical sections along program-level reaches, which includes the Tech Campus Reach. The shoreline protection design proposed for this reach includes a levee along SR 84 and hybrid levee/floodwalls around Meta Headquarters. A pump station would be constructed east of Meta Headquarters.

Habitat. T-zone habitat would be constructed on the bayward side of the levee adjacent to tidal salt marsh habitat in Ravenswood Slough. The proposed relatively narrow 3:1 slope would limit adverse effects on sensitive resources associated with salt marsh habitat. Refer to *Habitat Improvements* (above) for a description of habitat improvements associated with Pond R3.

View A: Trail along west-bound Highway 84 facing southwest towards Meta Headquarters.

View B: Meta Headquarters Trail east of campus facing south.

Viewpoint locations shown on Figure 2-20

View C: Meta Headquarters Trail north of campus facing east.

View D: Pond R3 and Meta Headquarters Trail west of campus facing north.

SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-19
Existing Conditions: Tech Campus Reach

ESA

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SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-20
Tech Campus Reach Plan

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Recreation. The Bay Trail would be extended atop the levee from the Substation and Marsh Restoration Reach to the public shoreline access trail around Meta Campus. The existing public shoreline access trail around Meta Campus would be replaced by a levee-top trail. Refer to Figure 2-20 for potential pedestrian access locations.

Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. Since the proposed levee alignment would be bayward of the current discharge point for the existing Ravenswood Pump Station, supplemental pumping and/or piping would be added to convey discharge from that pump station to Ravenswood Slough. Although these changes have not been designed yet, a potential location for a pump station to convey water from the outfall channel to Ravenswood Slough has been identified (see Figure 2-20).

Bayfront Expressway Reach

Existing Conditions

Refer to **Figure 2-21** and **Figure 2-22** for photos that represent existing conditions and features along the reach. The Bayfront Expressway Reach is within the city of Menlo Park, largely within the Refuge, and extends between the Meta Headquarters and Bedwell Bayfront Park (owned by the City of Menlo Park) along the Bay Trail. The eastern segment of the reach parallels SR 84 (referred to in this area as the Bayfront Expressway), and the western segment of the reach extends between Ponds R3 and R4 to the east and S5 and R5 to the west. Uses adjacent to the landward side of the reach include SR 84, a portion of the Bay Trail, and a bike/pedestrian bridge spanning SR 84. Menlo Park Pump Station (owned and operated by Silicon Valley Clean Water) is south of the reach, on the opposite side of SR 84. A section of a brine channel (part of Cargill's brine conveyance system used to convey saline water between its various salt production facilities) runs along the southern berm of Pond R3.

Proposed Reach Conditions

This reach is evaluated at a program level of detail in this EIR.

Shoreline Protection. Refer to Figure 2-22 for proposed improvements along the Bayfront Expressway Reach and Figure 2-11 for typical sections along programmatic-level reaches, which includes the Bayfront Expressway Reach. The shoreline protection design proposed for this reach is a levee. An existing water pipeline would be removed and replaced in-kind as needed for levee construction.

Habitat. A borrow ditch would be constructed along the bayward side of the proposed levee in Pond R3 to deter mammalian predator access to the pond and its western snowy plover habitat. At the northwest end of this reach adjacent to Pond R4, T-zone habitat would be constructed on the Pond R4 side of the 3H:1V levee slope to complement existing tidal salt marsh habitat recently restored in R4 by the SBSPRP. Refer to *Habitat Improvements* (above) for a description of habitat improvements associated with Pond R3.

View A: Bay Trail along west-bound SR 84 facing east towards Meta Headquarters.

View B: Pond R3 and Bay Trail along west-bound SR 84 facing west towards bike and pedestrian bridge.

Viewpoint locations shown on Figure 2-22

View C: Bay Trail adjacent to bike and pedestrian bridge over SR 84 facing east.

View D: Bay Trail along west-bound SR 84 facing east towards bike and pedestrian bridge.

SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-21
Existing Conditions: Bayfront Expressway Reach

ESA

SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-22
Bayfront Expressway Reach Plan

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Recreation. There would be no change to Bay Trail where it parallels SR 84. The levee would be constructed on the bayward side of the Bay Trail.

Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. Two water control structures operated by the Refuge that regulate water levels within the adjacent ponds to support habitat would be rebuilt. The Project would disrupt operations of Cargill's brine conveyance system. If Cargill continues to operate the brine conveyance system in the future, implementation of the Project would require an alternative conveyance facility for the brine line outside the levee footprint.

Bedwell Bayfront Park Reach

Existing Conditions

Refer to **Figure 2-23** and **Figure 2-24** for photos that represent existing conditions and features along the reach. The Bedwell Bayfront Park Reach is in the city of Menlo Park. The reach (which is not contiguous with Project reaches to the east) generally extends along Marsh Road within Bedwell Bayfront Park, which also functions as a segment of the Bay Trail, between Bedwell Bayfront Park and Flood Slough. The western terminus of the reach is near four existing water control structures, including one that conveys water from the Bayfront Canal to Flood Slough, one that diverts water from the Bayfront Canal to Refuge Ponds S5 and R5 during storm events, another that provides water inflow/outflow to Refuge Ponds S5 and R5, and a fourth that provides muted tidal exchange from Flood Slough to a pond in Bedwell Bayfront Park.

Existing infrastructure in the immediate vicinity includes structures to control flows into and out of Flood Slough, stormwater channels and outfalls, the Menlo Park Pump Station, and a water line.

Proposed Reach Conditions

This reach is evaluated at a program level of detail in this EIR.

Shoreline Protection. Refer to Figure 2-24 for proposed improvements along the Bedwell Bayfront Park Reach and Figure 2-11 for typical sections along programmatic-level reaches, which includes the Bedwell Bayfront Park Reach. The proposed shoreline protection design for this reach is a levee.

Habitat. T-zone habitat would be constructed on the bayward side of the levee slope adjacent to existing tidal salt marsh habitat in Flood Slough. The proposed relatively narrow 3:1 slope would limit adverse impacts on sensitive resources associated with salt marsh habitat.

Recreation. The Bay Trail (and Marsh Road) would be atop the proposed levee. Refer to Figure 2-24 for potential pedestrian access locations. The Bay Trail would be extended west to the Marsh Road Reach.

View A: Existing construction staging area within Bedwell Bayfront Park from Marsh Road north of park entrance.

View B: Marsh Road and SR 84 intersection/Bedwell Bayfront Park entrance from inside Bedwell Bayfront Park facing south.

Viewpoint locations shown on Figure 2-24

View C: Existing stormwater outfall at Flood Slough from Marsh Road within Bedwell Bayfront Park facing southwest.

View D: Flood Slough from Marsh Road within Bayfront Park facing north.

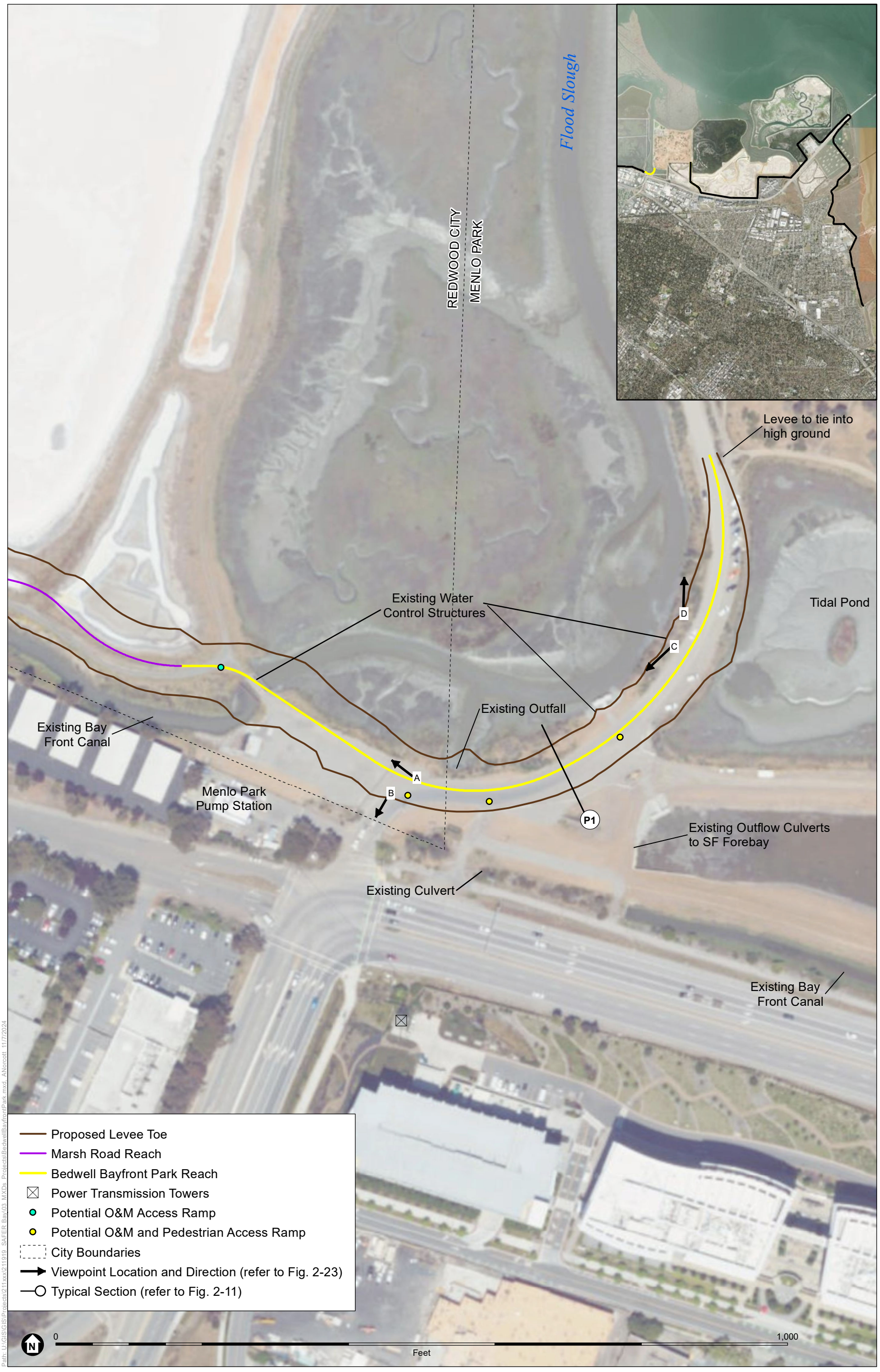
2011\D211919 - SAFER Bay\Graphics\Illustrator

SOURCE: S. Villegas and V. Molina, March 26, 2024

SAFER Bay Project

Figure 2-23
Existing Conditions: Bedwell Bayfront Park Reach

ESA



SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-24
Bedwell Bayfront Park Reach Plan

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Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. Marsh Road within Bedwell Bayfront Park would be replaced atop the proposed levee. A new flow control structure would be constructed on the western side of the reach, and the other three water control structures and an existing water line would be replaced in-kind as needed for levee construction. Refer to Figure 2-24 for potential pedestrian access locations.

Marsh Road Reach

Existing Conditions

Refer to **Figure 2-25** for the location of this reach, which is not publicly accessible.[12] The Marsh Road Reach is within the city of Menlo Park. The reach extends westward from the Bedwell Bayfront Park Reach and follows the Bay Front Canal levee north of a storage facility and other industrial uses north of Haven Avenue and south of Pond 7C (used for salt production).

Existing infrastructure includes the canals on either side of the reach alignment: the Bay Front Canal is used to manage stormwater; the canal north of the proposed levee is used for water management in salt production. There are numerous water control structures and outfalls (see Figure 2-24) as well as overhead transmission lines.

Proposed Reach Conditions

This reach is evaluated at a program level of detail in this EIR.

Shoreline Protection. Refer to Figure 2-25 for proposed improvements along the Marsh Road Reach and Figure 2-11 for typical sections along programmatic-level reaches, which includes the Marsh Road Reach. The proposed shoreline protection system for this reach is a levee.

Contiguous connectivity of shoreline protection along this reach would be coordinated with the City of Redwood City, which is planning for flood protection west of and including this reach.

Habitat. At the eastern end of this reach, a short segment of T-zone habitat would be constructed on the bayward side of the levee adjacent to existing tidal salt marsh habitat in Flood Slough. The proposed relatively narrow 3:1 slope would limit adverse impacts on sensitive resources associated with salt marsh habitat.

Recreation. No recreation improvements are proposed for the Marsh Road Reach, which is on private property.

Infrastructure. Refer to Appendix INFRA for a list of utilities and encroachments that have been identified within the reach and proposed actions to address each. Numerous changes to existing infrastructure would be required in this reach. Two concrete water control structures that convey flow from SBSPRP-managed ponds and from the Bayfront Canal to Flood Slough would be replaced. Wooden utility poles with overhead transmission lines would be relocated. The levee

[12] As the reach itself and views of the reach are entirely on private property, representative photos of existing conditions were not taken.

would fill the existing Cargill brine channel which, if necessary, would be realigned away from the levee toe.

2.5 Project Phasing and Schedule

The Project would be implemented in phases and in segments within each reach. General construction phases that would occur within each segment of a reach include site preparation/ mobilization, demolition, grading and drainage/water control, shoreline protection construction, structural section and paving, and closeout.

Construction of the Project would be implemented by member agencies who would determine the ultimate construction schedule. A preliminary schedule, depicted in **Table 2-4**, has been developed for purposes of evaluation and represents the best estimate based on the current state of design. As described in Section 2.4.1, the project proposes to restore tidal marsh and western snowy plover habitat to offset the spatial and temporal loss of habitat that would result from construction of shoreline protection and recreation features. This approach is reflected in the proposed construction phasing, which would proceed as follows:

- The SFCJPA or its member agencies would enhance western snowy plover habitat in Ponds SF2 and R3 and construct levees to protect Pond SF2 habitat before disturbance of plover habitat in Ponds R1 and R2 and elsewhere in the Project area.
- After enhancement of western snowy plover habitat in Ponds SF2 and R3 and flood protection for Pond SF2 is completed, the SFCJPA or its member agencies would initiate restoration earthwork in Ponds R1 and R2 and construct flood protection for the Substation and Marsh Restoration Reach. Excavated spoils from levee construction in Pond SF2 and the Substation and Marsh Restoration Reach would be beneficially reused in marsh restoration in Ponds R1 and R2.
- The SFCJPA or its member agencies would also initiate construction of shoreline protection features in the South of Bay Road Reach at roughly the same time as initiation of restoration within Ponds R1 and R2 to reduce the duration of temporal marsh habitat loss from impacts in the South of Bay Road Reach. Excavated spoils from levee construction could also be beneficially reused for marsh restoration in Ponds R1 and R2.
- After shoreline protection is completed for the South of Bay Road Reach, it is assumed that levee construction would be implemented for the other reaches. The construction schedule shown in Table 2-4 is somewhat staggered to account for the scale and magnitude of the construction effort and the different agencies involved.

SOURCE: NAIP Imagery, 2024; HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-25
Marsh Road Reach Plan

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TABLE 2-4
SAFER BAY PROJECT IMPLEMENTATION SCHEDULE[a]

	Reach/Activity	Approximate Schedule						
		2025	2026	2027	2028	2029	2030	2031
Project-Level Components	NEPA[b], supplemental CEQA as needed, design, and permitting for project-level components							
	Dumbarton Approach Reach							
	Construct snowy plover habitat in Pond SF2							
	Construct levee through Pond SF2 from railroad tracks to SR 84							
	Substation and Marsh Restoration Reach							
	Construct levee and 10H:1V T-zone at substation							
	Conduct Pond R1 and R2 restoration earthwork, except for breaching levees							
	Breach existing levees at Ponds R1 and R2 to restore tidal hydrology[c]							
	South of Bay Road Reach—East Palo Alto							
	Construction							
Program-Level Components	**North of Bay Road Reach—East Palo Alto**							
	Supplemental environmental review, design, supplemental permitting, bidding							
	Construction							
	Dumbarton Approach Reach							
	Supplemental environmental review, design, supplemental permitting, bidding							
	Construct remaining shoreline protection							
	Tech Campus Reach							
	Supplemental environmental review, design, supplemental permitting, bidding							
	Construction							
	Bayfront Expressway Reach							
	Supplemental environmental review, design, supplemental permitting, bidding							
	Construction							
	Bedwell Bayfront Park Reach							
	Supplemental environmental review, design, supplemental permitting, bidding							
	Construction							
	Marsh Road Reach							
	Supplemental environmental review, design, supplemental permitting, bidding							
	Construction							

NOTES:

a. Project-level components shown in green; program-level components shown in blue; construction shown in dark green and dark blue.
b. NEPA - National Environmental Policy Act.
c. Enhancement of western snowy plover habitat in Pond 3 would occur before Ponds R1 and R2 berms are breached.

SOURCE: SFCJPA, HDR, HT Harvey, ESA 2024

2.6 Construction Details

2.6.1 Construction Process

Shoreline Protection, Recreation, and Levee T-zones

Table 2-5 presents a description of the basic construction phases and activities to be employed for shoreline protection and recreation features for each reach. While some activities (e.g., trail closures, demolition and off-haul of existing trail surfaces, construction of temporary access points) would be implemented for the entire reach, most would be sequenced over segments of a reach (e.g., implementing drainage/water control systems, removal of topsoil, degrading existing berms, constructing the levee or floodwall).

Degrading existing berms and excavating soils to develop the levee foundations would generate excess material (spoils). Spoils generated during Project construction would be used to construct habitat improvements or off-hauled to Recology Mountain View or an appropriate recycling facility/disposal area.

A diesel generator would be used for approximately 10 days at each reach for dewatering/ pumping water. Active construction sites would be watered up to three times per day for dust suppression. Construction water would be provided by potable water fire hydrants adjacent to the Project sites.

Habitat Improvements

Table 2-6 presents a description of the basic construction phases and activities to be employed for habitat improvements for each reach.

2.6.2 Construction Work Hours

Construction would generally occur between 8:00 a.m. and 5:00 p.m. Monday through Saturday. Approximately four shifts of site preparation would occur for vehicles to place and remove a K-rail along the Bayfront Expressway. Construction in and near sensitive habitats would occur outside of breeding seasons for California Ridgeway's rail (February 1 to August 31) and western snowy plover (March 1 to September 15).

TABLE 2-5
CONSTRUCTION PROCESS FOR SHORELINE PROTECTION AND RECREATION FEATURES

Construction Phase	General Description of Construction Activities[a]
Site Preparation/ Mobilization	• Close trails • Install erosion control features (e.g., silt/biological resources fencing) • Plug and fill water side channels as needed • Relocate channels as needed • Construct temporary access routes • Remove vegetation • Strip and stockpile soil
Demolition	• Demolish/remove/relocate existing infrastructure (e.g., utilities, walkways, gates, signs, etc.)
Grading, Drainage/ Water Control	• Degrade existing berm • Install temporary sheet pile wall • Install dewatering wells • Install water treatment and discharge systems • Excavate levee foundation
Shoreline Protection Construction	• Prepare foundation subgrade • Install settlement monitors • Place initial geogrid • Place embankment-initial lifts • Construct utilities • Place levee prism and water side embankment • Drive sheet pile (if applicable) • Construct floodwall concrete cap • Finalize embankment placement
Section and Paving for Trail	• Respread topsoil • Make aggregate base subgrade • Haul and place aggregate base • Pave trail
Closeout	• Add trail striping and marking • Install access point fencing, bollards, signs, etc. • Hydroseed levee and habitat berms • Decommission dewatering wells • Remove temporary sheet piles • Remove temporary erosion control features • Re-open trails • Demobilize

NOTES:
a. Descriptions are general and may vary by reach.
SOURCE: HDR 2024

TABLE 2-6
CONSTRUCTION PROCESS FOR HABITAT IMPROVEMENTS

Construction Phase	General Description of Construction Activities[a, b]
Site Preparation/ Mobilization	• Temporarily close trails • Install erosion control and biological exclusion fencing • Construct temporary access routes (e.g., upgrade berms) • Remove vegetation within the footprint of earthwork • Strip and stockpile soil for beneficial reuse in restoration
Demolition	• Remove water control features and predator perches
Grading, Drainage/ Water Control	• Beneficially reuse bay mud from levee construction for restoration: transport and place bay mud (excavated from SF2 and Substation/R2 flood control levee key) into R1 and R2 for restoration (e.g., to fill borrow ditches in R1/R2) • Remove SF2 (cell U2) nesting islands • Regrade SF2 (cells U2, U3, U4) to enhance and create WSP breeding and foraging habitat • Construct R1 seabird nesting islands • Build in-marsh high-tide refugia in R1/R2 • Install water control features • Dredge outboard slough channel (Ravenswood Slough) at R1 • Create transition zones following construction of shoreline protection on outboard levee face at R2 • Excavate proposed channels and borrow ditches and breach internal berms
Planting and creating nesting habitat	• Implement surface treatment for nesting areas (e.g., regrading import of gravel and/or oyster shells) • Install perch deterrents on power transmission towers • Plant high-tide refugia and transition zone with marsh and ecotone species
Breach existing berms (Ponds R1/R2 only)	• Excavate channel through existing berms to reintroduce tidal action
Closeout	• Install public access improvements where proposed • Decommission water management measures • Remove temporary erosion control features • Re-open trails • Demobilize

NOTES:

a. Descriptions are general and vary by restoration area.
b. Construction of shoreline protection features (described in Table 2-5) would be done in coordination with habitat restoration activities and would be completed before breaching berms.

SOURCE: HDR, ESA, HT Harvey, 2024

2.6.3 Staging, Access, Vehicle Trips, and Workforce

Figure 2-26 presents proposed staging and materials laydown areas for project-level components. No staging areas have been identified for program-level components. Worker parking would generally occur near active work areas. Construction workers and vehicles would access the sites via major roadways such as United States Route 101, SR 84, and University Avenue (SR 109), connecting to smaller adjacent roads such as Bay Road, Clark Avenue, Weeks Street, Donohoe Street, O'Connor Street, Marsh Road, and a privately owned railroad/pipeline access road.

Refer to **Table 2-7** for estimated worker and truck trip information during each construction phase. Refer to **Table 2-8** for expected construction equipment. **Table 2-9** indicates estimated construction water use and off-haul associated loads of demolition debris and spoils that would be taken to Recology Mountain View.

TABLE 2-7
ESTIMATED CONSTRUCTION WORKER AND VEHICLE TRIPS PER REACH

Construction Phase	Estimated Daily Construction Workforce	Estimated Daily One-Way Worker Trips[a]	Estimated Daily One-Way Truck Trips[b]
Site Preparation/Mobilization	14–15	28–30	2
Demolition	5–11	10–22	10
Grading, Drainage/Water Control	10–29	20–58	200–248
Shoreline Protection Construction	9–50	18–100	6–8
Structural Section and Paving	8–10	16–20	200–248
Closeout	7–10	14–20	4

NOTES:

a. **Worker Vehicle Trips:** Trips made by workers to and from the jobsite, as well as within the jobsite, for purposes unrelated to material haul-off or material placement. One-way worker trips are based on an estimate of three workers per vehicle and two one-way trips per day.

b. **Truck Trips:** Trips made for the sole purpose of loading and unloading material destined for permanent disposal outside the Project area or destined for onsite staging. Construction trucks would have a capacity of between 10 to 20 cubic yards.

SOURCE: HDR 2023

2.6.4 Trail Closures

During levee construction, segments of the Bay Trail would be closed for the duration of the construction period for a given reach. Access to segments of existing trails that intersect with a given reach and associated recreation destinations would also be disrupted during construction. Examples include Faber-Laumeister Trail, Cooley Landing, the SF2 Trail, the public shoreline access trail around Meta Headquarters, and Bedwell Bayfront Park. Recreational facility closures would be noticed in advance and may be added to 511.org. Cautionary detour signs and/or possible trail closure mechanisms (e.g., red and white striped gate arms, warning lights) would generally be implemented when detours are in place, but would be subject to the protocols of the local agency that operates each portion of the Bay Trail.[13]

[13] Personal communications between N.Szibbo (Metropolitan Transportation Commission) and S. Villegas (ESA) regarding Bay Trail operations. November 6, 2024.

SOURCE: HDR, 2024; ESA, 2024

SAFER Bay Project

Figure 2-26
Potential Staging and Materials Laydown Areas

TABLE 2-8
EXPECTED CONSTRUCTION EQUIPMENT

Construction Phase	Equipment[a]	
Site Preparation/Mobilization	• Excavators • Generator Sets • Rough Terrain Forklifts	• Rubber Tired Loaders • Tractors/Loaders/Backhoes
Demolition	• Cranes • Excavators • Graders	• Rough Terrain Forklifts • Tractors/Loaders/Backhoes
Grading, Drainage/Water Control	• Bore/Drill Rigs • Cranes • Crawler Tractors • Excavators • Generator Sets • Graders	• Rollers • Rough Terrain Forklifts • Dozers • Tractors/Loaders/Backhoes • Vibratory Pile Drivers or Hammers[b]
Shoreline Protection Construction	• Bore/Drill Rigs • Cranes • Excavators • Generator Sets	• Rollers • Rough Terrain Forklifts • Tractors/Loaders/Backhoes • Vibratory Pile Drivers or Hammers[b]
Structural Section and Paving	• Graders • Pavers • Rollers	• Rubber Tired Loaders • Tractors/Loaders/Backhoes
Closeout	• Cranes • Excavators • Rubber Tired Loaders	• Rough Terrain Forklifts • Tractors/Loaders/Backhoes

NOTES:

a. Construction equipment would have Tier 4-rated engines where possible.
b. Vibratory hammers or pile drivers would be used for temporary (water control) and/or permanent (installation of sheet pile floodwalls or flood gates) features in the following reaches: South of Bay Road, North of Bay Road, Dumbarton Approach, Tech Campus, and Bedwell Bayfront Park.

SOURCE: HDR 2023

TABLE 2-9
ADDITIONAL CONSTRUCTION DETAILS

Reach	Water Use (gallons)	Truckloads (truck capacity)
South of Bay Road	9,300,000	20 (10 cy)
North of Bay Road	16,000,000	15 (20 cy)
Dumbarton Approach	26,000,000	20 (20 cy)
Substation and Marsh Restoration	27,000,000	10 (10 cy)
Tech Campus	12,500,000	20 (20 cy)
Bayfront Expressway	13,100,000	10 (20 cy)
Bedwell Bayfront Park	2,600,000	10 (20 cy)
Marsh Road	1,000,000	5 (20 cy)

NOTES: cy – cubic yards

SOURCE: HDR 2024

2.7 Operations and Maintenance

Member agencies would be responsible for conducting routine inspections of the shoreline protection facilities, operating flood gates, managing interior drainage, and maintaining the Bay Trail. Existing landowners would be responsible for maintaining public trails on their property.[14] The SBSPRP and/or Refuge would be responsible for monitoring and maintenance of proposed restoration areas. Maintenance activities would be completed by existing staff; no new staff would be hired for operation and maintenance of the Project.

The activities described below would result in an estimated two truck trips per month, except during high water events, which may require daily inspections. Task lighting during maintenance and inspection would be temporary; no permanent lighting would be installed as part of the Project, and no emergency generators would be needed for Project operations.

2.7.1 Shoreline Protection

Levee maintenance would generally include vegetation control such as annual slope mowing or grazing. T-zone habitat on the levee slopes would be actively maintained and monitored during a 5- to 10-year period (to be determined). Vegetation maintenance would include irrigation, weed control, and plant replacement, as needed to meet vegetation success criteria. The vegetation maintenance plan, ecological monitoring plan, and associated vegetation success criteria would be set forth in the Project's future Habitat Restoration and Monitoring Plan (HRMP), prepared for Bay Restoration Regulatory Integration Team (BRRIT) approval during the regulatory permitting process. For vegetated slopes that are not T-zones (i.e., on the landward side of levees), annual mowing would likely occur over 2 days per reach and would be completed with a 40-horsepower mower.

The Project design includes one flood gate at Bay Road and potentially another at the railroad tracks in the North of Bay Road Reach; as design progresses for those reaches evaluated at a program level of detail, additional flood gates or other flood control infrastructure may be incorporated. Operation of the flood gates would depend on the type of flood gates selected during design and coordination with regulatory agencies and SFCJPA members. The frequency of flood gate operation would depend on hydraulic modeling and actual conditions. Flood gates would likely require annual testing and maintenance, which would be coordinated with various agencies. Flood gate operations would depend on weather forecasting. If flood conditions are forecast and a storm may require flood gate closure, the member agency would mobilize the appropriate staff (e.g., a public works crew with training in gate operations) to close the flood gates at a pre-determined length of time prior to potential flooding. Once floodwaters recede, the gates would be returned to their open position. Flood gate operations would be documented in a Flood Management Plan and/or an Operations and Maintenance Plan. Power for operation of the

[14] While the Metropolitan Transportation Commission acts as the regional planning, funding and coordinating agency, operations and maintenance of the Bay Trail are the responsibility of the local right-of-way owner. The multiple different jurisdictions and local agencies that are responsible for segments of the Bay Trail network each have their own policies and practices around maintenance. The Metropolitan Transportation Commission coordinates with and provides guidance for local agencies as appropriate. (Personal communications between N.Szibbo (Metropolitan Transportation Commission) and S. Villegas (ESA) regarding Bay Trail operations. November 6, 2024.)

flood gates installed at Bay Road and the railroad crossing would be provided by Pacific Gas & Electric Company.

A key complement to coastal shoreline flood protection is the interior drainage system that manages water on landward development areas. Currently, interior drainage is addressed for the developed areas by the cities of Menlo Park and East Palo Alto and Caltrans via each entity's existing storm drain system. These systems rely on pump stations to remove storm and flood water from within the confines of the flood control project, in accordance with interior drainage requirements needed for FEMA levee system accreditation. As described in Section 2.4.2, where the Project would affect components of the existing storm drain infrastructure that intersect with the levee alignment, the Project includes improvement and/or replacement of those components to maintain the system's current capacity.[15] Pump stations would be operated once interior flood waters are visually observed in certain key areas, to be determined during design. The pumps would cease operations once the storm has passed and the flood areas return to normal. Pump station operations would be documented in a Flood Management Plan and/or an Operations and Maintenance Plan. Pacific Gas & Electric Company would provide power for operation of the pump stations.

As is common for most storm drain systems, shallow groundwater infiltrates into the systems' pipes and ditches and then is conveyed to the Bay along with stormwater runoff. Future sea level rise will raise the groundwater table along the shoreline, which could result in additional groundwater infiltration into the interior drainage system. These future conditions facing the interior drainage system would be assessed in other studies and then addressed in future design phases for the interior drainage system. As indicated in Section 2.4.1, there are areas of soil and groundwater contamination near the proposed alignment. For a discussion of the potential for the Project to affect interior drainage, groundwater, and water quality, please refer to Section 3.11, Hydrology and Water Quality.

2.7.2 Habitat Restoration and Enhancement in the Ravenswood Pond Complex

The SFCJPA would prepare an HRMP for both the restoration in the Ravenswood Pond Complex and the T-zone restoration on levee slopes for BRRIT approval during the regulatory permitting process. The HRMP would set forth a 5- to 10-year habitat maintenance and ecological monitoring plan with success criteria. Following the attainment of success criteria, the SBSPRP and Refuge would adaptively manage the restoration in accordance with the SBSPRP's Adaptive Management Plan. The proposed restoration within Ponds R1 and R2 would be monitored and

[15] As is common for most storm drain systems, shallow groundwater infiltrates into the systems' pipes and ditches and then is conveyed to the bay along with stormwater runoff. Future sea level rise will raise the groundwater table along the shoreline, which could result in additional groundwater infiltration into the interior drainage system. These future conditions facing the interior drainage system would be assessed in other studies and then addressed in future design phases for the interior drainage system. For a discussion of the potential for the Project to affect interior drainage, groundwater, and water quality, please refer to Section 3.11, Hydrology and Water Quality.

adaptively managed,[16] based on actual conditions that occur (for example, sediment accretion, vegetation establishment, and other hydrologic, geomorphic, and habitat responses to the reintroduction of tidal action), to achieve the intended restoration goals. Examples of adaptive management procedures that could be implemented include invasive species management and dredging of the tidal channels that block predator access to the proposed seabird nesting islands in Pond R1.

In some areas, the Project would impede flow to and from ponds managed for wetland habitat. These ponds would require active management to ensure that the water levels and water quality are being maintained to meet various biological requirements. The pumps in these instances would have low flows to manage and maintain water elevations.

2.7.3 Recreation

There would be no change to existing maintenance practices for the Bay Trail. As indicated above, while the Metropolitan Transportation Commission acts as the regional planning, funding and coordinating agency, operations and maintenance of the Bay Trail are the responsibility of the local right-of-way owner.[17] The Metropolitan Transportation Commission would continue to coordinate with and provide guidance for local agencies as appropriate.

2.8 Intended Uses of the EIR

Responsible and trustee agencies are expected to use this EIR in their decision-making. **Table 2.10** presents a summary of anticipated permits and authorizations, organized by agency.

[16] *Adaptive management* is a process that promotes flexible decision-making that can be adjusted to address uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of outcomes advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. National Research Council of the National Academies. 2004. *Adaptive Management for Water Resources Project Planning.*

[17] Personal communications between N.Szibbo (Metropolitan Transportation Commission) and S. Villegas (ESA) regarding Bay Trail operations. November 6, 2024.

TABLE 2-10
REQUIRED PERMITS AND APPROVALS

Agency or Organization	Action Potentially Requiring Permit or Consultation
Federal	
U.S. Army Corps of Engineers	Impacts on wetlands and waters of the U.S.
U.S. Fish and Wildlife Service	Impacts on federally listed threatened and endangered species Authorizations related to construction of flood protection and related improvements on federal property managed by USFWS
National Oceanic and Atmospheric Administration, National Marine Fisheries Service	Impacts on federally listed threatened and endangered species and on Essential Fish Habitat and managed fisheries
State	
State Historic Preservation Office	Construction in or near cultural resources
State Lands Commission	Lease for portions of Project encroaching on state sovereign land
California Department of Fish and Wildlife	Impacts on state-listed species; impacts on streams/drainages
Regional Water Quality Control Board	Impacts on waters of the state and potential for surface water quality impairment from pollutant discharge
Bay Conservation and Development Commission (BCDC)	Impacts on lands within BCDC jurisdiction
Regional	
Midpeninsula Regional Open Space District	Authorizations related to construction of flood protection and related improvements on District-owned property
Local	
City of East Palo Alto	Various
City of Menlo Park	Various
City of Palo Alto	Various
City of Redwood City	Various
City and County of San Francisco	Authorizations related to construction of flood protection and related improvements on City-owned property managed by the San Francisco Public Utilities Commission

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Appendix APN

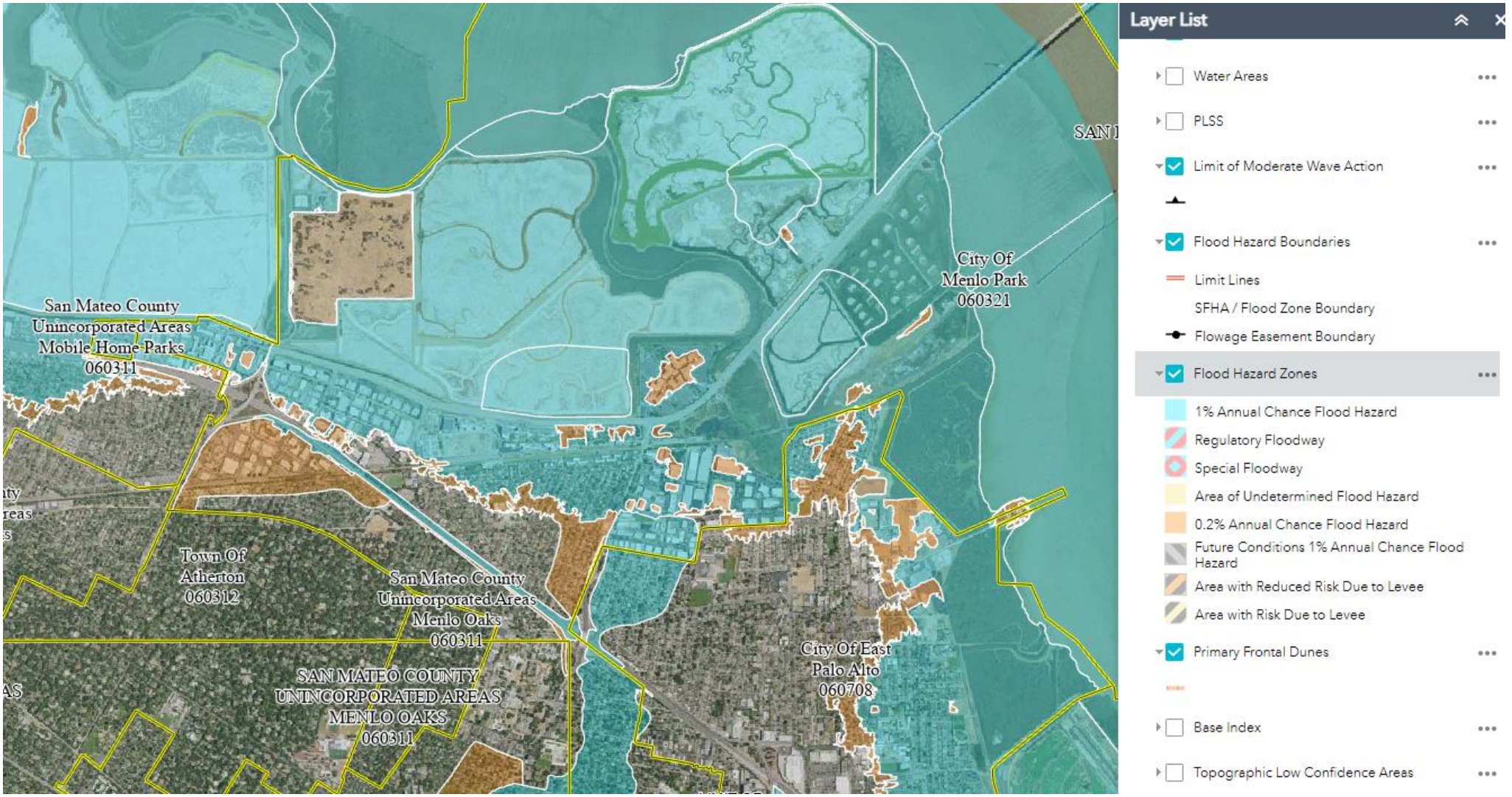
Assessor Parcel Numbers Associated with the SAFER Bay Project

TABLE APN-1
PARCELS POTENTIALLY AFFECTED BY THE SAFER BAY PROJECT

054-310-060	054-310-160	055-400-421	055-400-423
055-400-450	055-400-460	055-400-520	055-400-530
055-400-570	055-400-580	055-400-610	055-400-620
055-400-630	055-400-640	055-400-999	055-411-060
055-411-150	055-411-999	060-411-070	063-050-050
063-271-070	063-271-480	063-272-080	063-381-190
063-580-090	063-580-100	063-590-040	063-590-060
093-590-050	093-590-060	093-600-010	096-220-180
096-220-200	096-220-270		

Appendix FEMA

FEMA Flood Hazard Zones Near SAFER Bay Project



SOURCE: Federal Emergency Management Agency, FEMA's National Flood Hazard Layer (NFHL) Viewer, June 2024. Accessed September 25, 2024.

Appendix INFRA

Infrastructure by Reach

Reach	Encroachment	Description	Action
South of Bay Road	O'Connor Pump Station	A stormwater pump station which penetrates the San Francisquito Creek West Levee	Protect in Place
	Drainage Basin	Earthen drainage basin appx. 45-ft from landside toe	Protect in Place
	Runnymede Drainage Ditch	Existing earthen stormwater drainage ditch along the landside toe	Generally Protect in Place, Relocation segment
	Sewer Line and Manholes	Sewer line and manholes appx. 20- to 45-feet from the landside toe	Relocate
	Landside Bay Trail Access Ramp	10-foot-wide access ramp from Martin Luther King Park	Replace
	Landside Bay Trail Access Ramp	10-foot-wide access ramp from Cypress Street	Replace
	Landside Foot Path and Ditch Crossing	Earthen foot path from Garden Street with non-engineered ditch crossing	Remove
	Landside Chain Link Fence	Chain link fence with barbed wire at landside toe from Garden St access to Bay Road	Replace
	Overhead Transmission Lines	Overhead electrical transmission lines adjacent to and crossing the alignment	Protect in Place
	Transmission Tower	Electrical transmission tower at landside toe	Protect in Place with retaining wall
	Bay Trail Access Point	Paved access ramp from Runnymede Street with post and cable fence	Replace with new culvert under ramp
	Drainage Ditch	Drainage ditch through Laumeister Marsh, follows natural path north of drainage structure.	Replace
	Drainage Structure	Concrete drainage structure on west side of drainage ditch	Protect in Place
	Transmission Tower	Electrical transmission tower at bayside toe	Protect in Place
	Bayside Access Point	Transmission tower access path, ditch crossing, and ramp to embankment crown	Replace
	Bay Trail Access Point	10-foot-wide access path from Weeks Street with bollard access control	Replace
	Capped Containment Cell	Capped containment cell for contaminated material abutting landside construction limit, slurry wall at northside of property	Protect in Place
	Transmission Tower	Electrical transmission tower abutting landside construction limit	Protect in Place
	Transmission Tower	Electrical transmission tower abutting landside construction limit	Protect in Place
	Bay Road	Bay Road intersects Bay Trail, bollards for access control, striped pedestrian crossing across Bay Road	Replace
North of Bay Road	Bay Road	Bay Road intersects Bay Trail, bollards for access control, striped pedestrian crossing over Bay Road	Replace
	Bay Trail Entrance	Public trail entrance from Bay Road crosswalk and sidewalks, access control bollards, signage, and trash receptacles for public use.	Replace
	Bay Trail Bridge	10-foot-wide, 70-foot-long Bay Trail footbridge spanning the drainage ditch.	Remove
	Access Control Gate	Wire fence with swing gate for public access control at end of footbridge.	Replace
	Bay Trail	Aggregate base Bay Trail segment constructed on the crown of an earthen embankment	Replace
	Drainage Ditch	Landside drainage ditch within or abutting footprint.	Relocate
	Storm Drain Penetration	Storm drain penetration at curve in alignment, penetration remains within part of footprint .	Replace
	Drainage Ditch	Drainage ditch crosses alignment.	Remove and Regrade Landside
	Bay Trail	Raised wooden walkway segment of Bay Trail crosses alignment.	Replace
	Railroad	Railroad track crosses alignment.	Protect-in-place
	Overhead Transmission Lines	Overhead electrical transmission lines	Protect-in-place
	Fencing (SFPUC Ravenswood Station)	Barrier fencing associated with SFPUC Ravenswood Pump Station.	Relocate

Reach	Encroachment	Description	Action
Dumbarton Approach (Program-Level, southern segment)	Concrete Headwall	Concrete headwall within footprint, likely with associated pipe	Replace
	Above-ground Pipe Crossings	Two above ground pipes cross alignment, associated with SFPUC Ravenswood Station.	Replace
Dumbarton Approach (Project-Level)	Viewing Platform	Public viewing platform located appx. 180- feet west of STA 124+00.	Relocate (part of habitat project, not flood control embankment)
	Ravenswood Pond Complex Segment of the Bay Trail	Aggregate base Bay Trail segment constructed on the crown of an earthen embankment bordering Pond SF2. Access to the segment is from the main Bay Trail Highway Path and is discontinuous from the rest of the trail.	Relocate
	Earthen Seabird Nesting Islands and Berms	Several nesting islands and berms within the inundated Pond SF2 area.	Varies, Remove or Protect in Place (part of habitat project, not flood control embankment)
	Bay Trail Highway Path	Paved 8-foot-wide Bay Trail which crosses under the Dumbarton Bridge and extends southwest past the Project alignment.	Replace
	Highway 84 Frontage Road	Paved 2-lane, 24-foot-wide frontage road.	Protect in Place
Dumbarton Approach (Program-Level, northern segment)	Bay Trail Highway Path	Paved 8-foot-wide Bay Trail which crosses under the Dumbarton Bridge and extends southwest past the Project alignment.	Replace
	Highway 84 Frontage Road	Paved 2-lane frontage road.	Protect in Place
	Concrete Drainage Ditch within Project footprint	Concrete-lined drainage ditch along Bay Trail and frontage road, culverts under Pond SF2 access ramps.	Replace
	Ravenswood Pond Complex Segment of the Bay Trail	Bay Trail crosses alignment and extends into Pond SF2.	Replace
	Ravenswood Pond Complex Segment of the Bay Trail	Bay Trail crosses alignment and extends into Pond SF2.	Replace
	Viewing Platform	Concrete viewing platform and access path cross alignment.	Relocate
	Dumbarton Bridge	Dumbarton Bridge, 2 concrete abutments, 1 set of concrete bridge piers, 2 lane paved frontage road.	Protect in Place
	Pumphouse	Pumping facility intersects alignment. Chain link fence, gate, bollards at frontage road entrance.	Protect in Place
Substation and Marsh Restoration	Concrete Retaining Wall	Concrete and Sheet Pile wall on the east side of the Pond R2 berm.	Partial Removal
	Access Gate	Pipe gate controlling access from Highway 84 frontage road to pond maintenance road	Relocate
	Concrete Retaining Wall	Concrete wall on the west side of the Pond R2 berm.	Remove
	Earthen Access Road	Pond maintenance road intermittently abutting footprint.	Protect in Place
	Overhead Transmission Lines	Overhead transmission lines crossing the alignment.	Protect in Place
	Elevated Walkway	Elevated walkway for transmission tower access intersects alignment.	Replace
	Overhead Transmission Lines	Overhead transmission lines crossing the alignment.	Protect in Place
	Elevated Walkway	Elevated walkway for transmission tower access intersects alignment.	Replace
	Overhead Transmission Lines	Overhead transmission lines crossing the alignment.	Protect in Place
	Earthen Access Road	Pond maintenance road within footprint.	Relocate
	Water Line	Water line crossing from Highway 84 into Pond R2, exposed along pond access road.	Relocate
	Access Gate	Pipe gate controlling access from Highway 84 frontage road to pond maintenance road, north of footprint.	Protect in Place

Reach	Encroachment	Description	Action
Tech Campus	Earthen Access Road	Pond maintenance road within footprint.	Relocate
	Drainage Ditch	SBSPRP Pond R3 drainage ditch within Project footprint.	Relocate
	Drainage Ditch	SBSPRP Pond R3 drainage ditch crosses Project footprint.	Relocate
	Pedestrian and Bike Path	Approximately 8-foot-wide paved public path on earthen embankment bordering the tech campus parking lot.	Replace
	Bench	Bench for public use.	Replace
	Access Ramp	Earthen landside ramp.	Replace
	Access Ramp	Earthen landside ramp.	Replace
	Bench	Bench for public use.	Replace
	Viewing Platform	Wooden viewing platform and access path on bayside of alignment.	Replace
	Access Ramp	Earthen landside ramp.	Replace
	Access Ramp	Paved landside ramp.	Replace
	Access Ramp	Paved landside ramp.	Replace
	Drainage Ditch	SBSPRP Pond R3 drainage ditch within Project footprint.	Replace
	Access Road	Pond maintenance road within footprint.	Replace
Bayfront Expressway	Pedestrian and Bike Path	Approximately 8-foot-wide paved public path between Bayfront Expressway (Highway 84) and Pond R3 abuts landside Project footprint.	Relocate trail to top of new embankment; new connection to overcrossing
	Water Line	Water line exposed along Pond R3 limit.	Relocate
	Water Control Structure	Concrete control structure with gated conveyance channel through existing berm between Ponds R3 and S5, rock slope protection on both sides of berm.	Replace
	Water Control Structure	Concrete control structure with gated conveyance channel through existing berm between Ponds R4 and R5, rock slope protection on both sides of berm.	Replace
Bedwell Bayfront Park	Marsh Road	Paved 2-lane public road.	Replace
	Water Control Structure	Culvert between ponds	Improve with Future Design
	Water Control Structure	Concrete structure controlling flow within the Bayfront Canal, includes 2 gates.	Improve with Future Design
	Utility Pole	Wooden utility pole with overhead transmission lines, guy wires.	Relocate
	Box Culvert	20-foot-wide concrete box culvert which conveys water under Marsh Road.	Improve with Future Design
	Utility Pole	Wooden utility pole with overhead transmission lines, guy wires.	Relocate
	Chain Link Fence and Gate	Fence and gate controlling access to Silicon Valley Clean Water Pump Station from Marsh Road.	Replace
	Menlo Park Pump Station	Alignment extends along north limit of paved pump station yard.	Improve with Future Design
	Water Line	Waterline within levee footprint	Replace
	Bayfront Canal Bridge	12-foot-wide access bridge over Bayfront Canal, provides access between pond maintenance roads and Menlo Park Pump Station.	Replace
Marsh Road	Drainage Pipe	Drainage pipe penetrates existing berm, pipe appears to extend from pumping station, across the canal, through berm into pond.	Replace
	Water Line	Water line exposed along pond limit.	Replace
	Bayfront Canal	Canal abuts landside of Project footprint.	Protect in Place

SOURCE: HDR, Draft Design Documentation Report, Strategy to Advance Flood Protection Ecosystems, and Recreation along the Bay (SAFER Bay Project). September 6, 2024