

Palo Alto Horizontal Levee Project

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Project Highlights

- **First horizontal levee** with treated wastewater conveyance directly to the SF Bay
- **Implements Estuary Blueprint** Task 3-1, 4-1, 4-2 – focused on design and implementation of nature-based shoreline adaptation projects
- **Innovative** design, permitting and construction strategies
- **Paves the way** for future horizontal levee projects regionally
- **Funding** from US EPA Region 9 WQIF and Climate Ready Estuaries, State Coastal Conservancy, City of Palo Alto



Expected Construction
start date – June 2024



Why Nature-based Solutions?

- Increasing urgency to advance projects using innovative approaches that support multiple benefits – people, nature, communities
- Regional Guidance
 - Bay Adapt, Estuary Blueprint, Adaptation Atlas
- State Guidance
 - Executive Order N-82-20 on NBS
- Federal guidance
 - Executive Order 14072 - Strengthening the Nation's Forests, Communities, and Local Economies



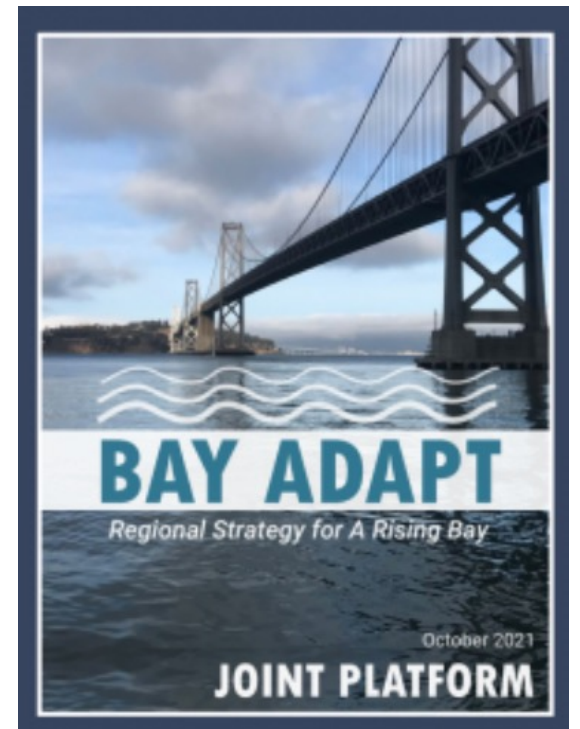
SAN
FRANCISCO
**Estuary
Blueprint**



APRIL 22, 2022

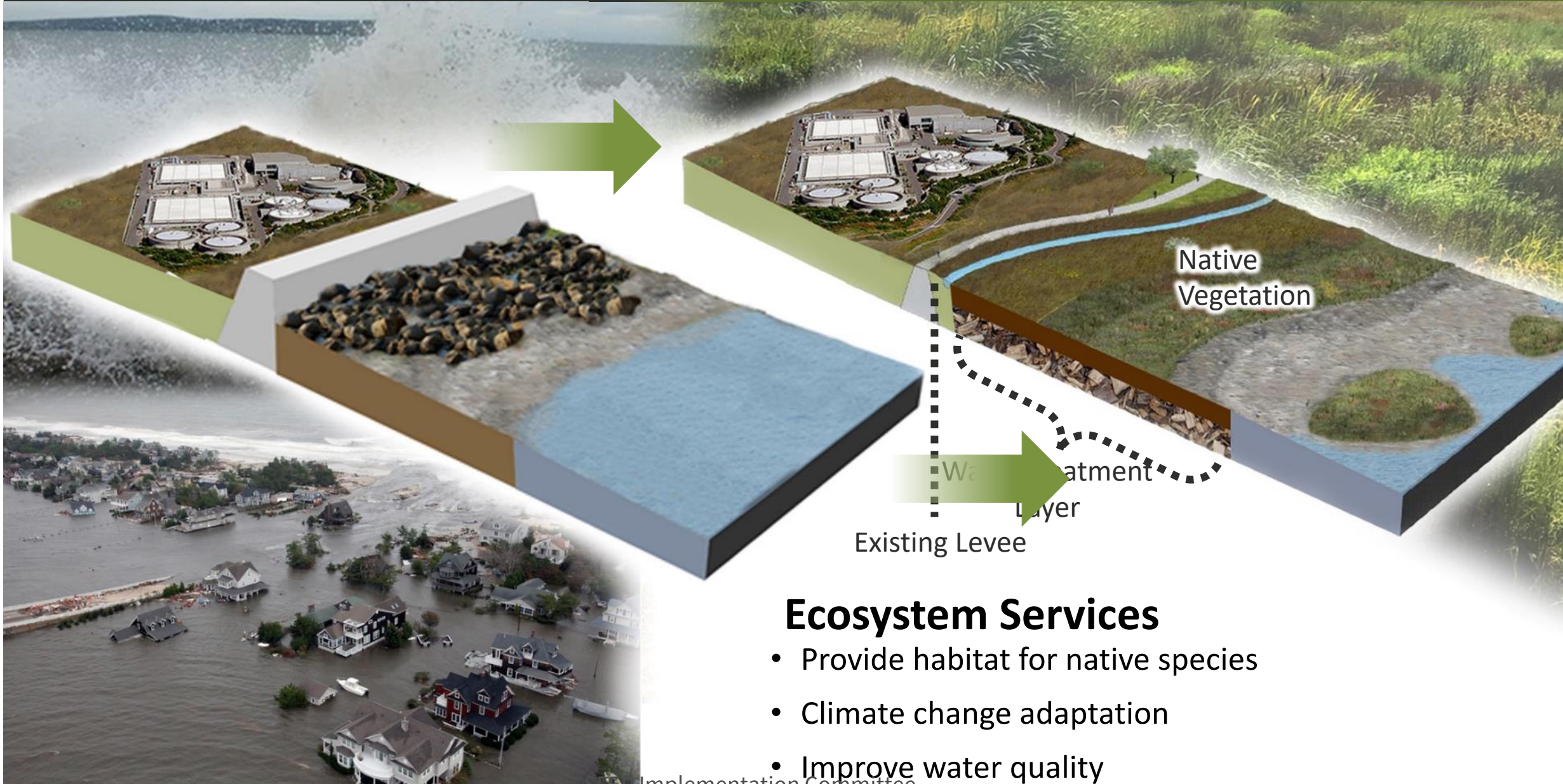
**Executive Order on Strengthening the
Nation's Forests, Communities, and
Local Economies**

[BRIEFING ROOM](#) • [PRESIDENTIAL ACTIONS](#)



CONVENTIONAL LEVEES & SEA WALLS

HORIZONTAL LEVEE SOLUTION



Ecosystem Services

- Provide habitat for native species
- Climate change adaptation
- Improve water quality



Reimagining Wastewater as a Resource

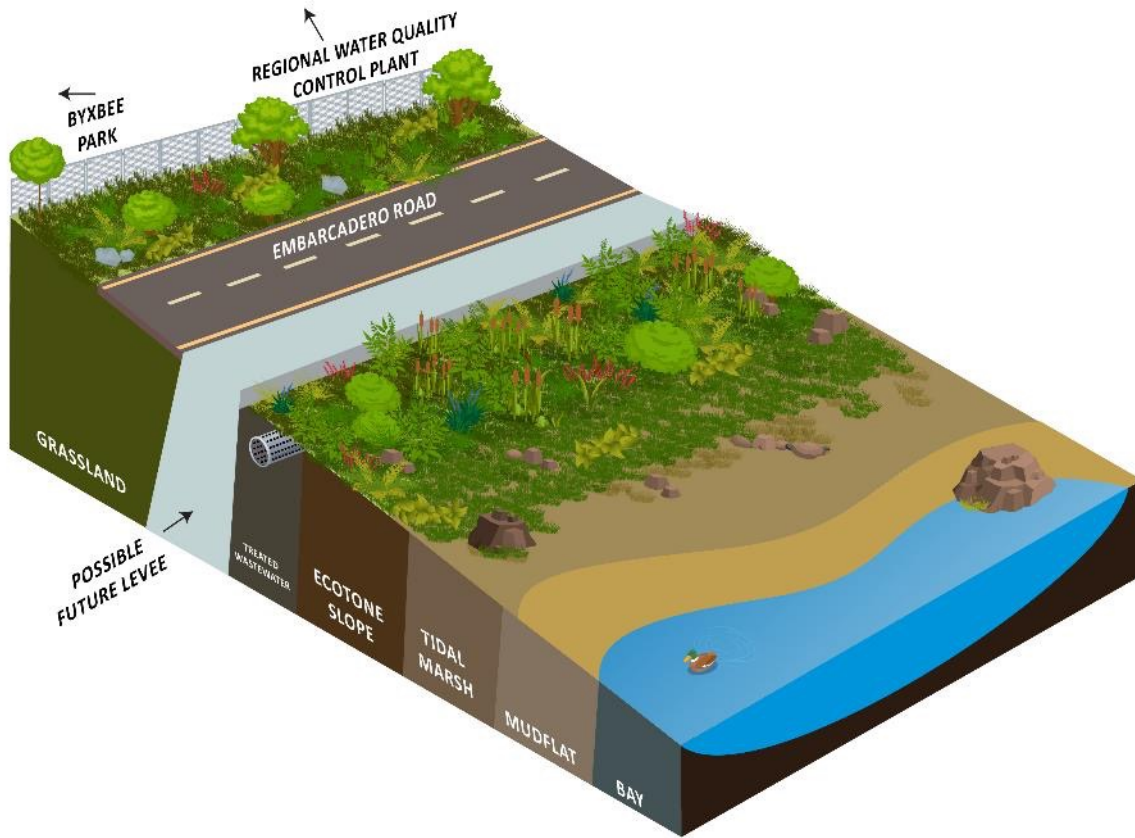


SLEP Implementation Committee

Reimagining Wetlands for People and Nature



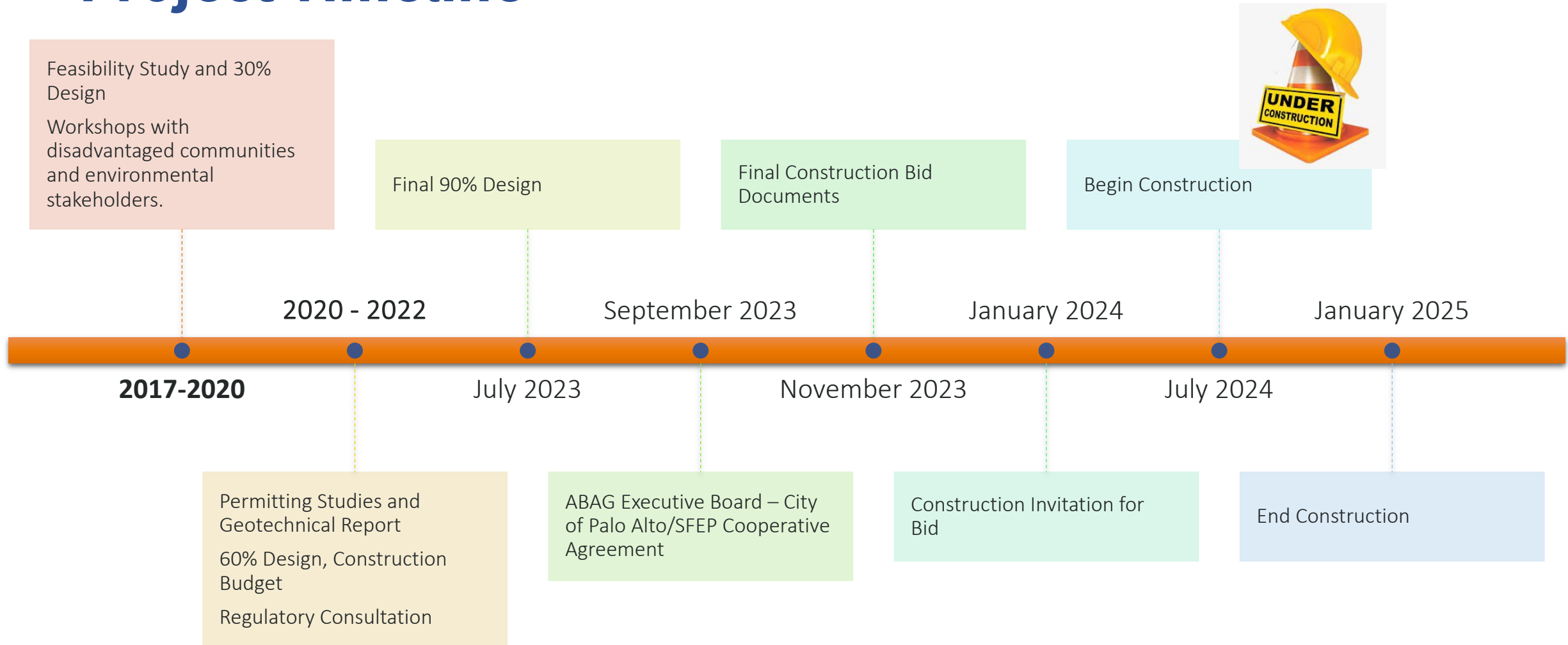
Palo Alto Horizontal Levee – Project Goals



- Improve habitat along the perimeter of Harbor Marsh for native species.
- Restore rare and historic broad ecotone that supports a variety of transitional plant assemblages.
- Determine design standards, permitting requirements, and extent of maintenance for incorporation into the future larger levee improvement project (i.e., SAFER Bay/Shoreline Study).
- Adapt to sea level rise by providing a transitional slope that will support freshwater plants, which in turn build organic soils, all of which is aimed at keeping pace with sea level rise.
- Maintain public access to the existing trail system while providing opportunities for compatible low-impact recreation, increased social infrastructure, and educational opportunities on sea level rise.
- Ensure perspectives of marginalized communities are incorporated into social infrastructure and educational components.
- Provide polishing treatment to discharged treated wastewater.



Project Timeline



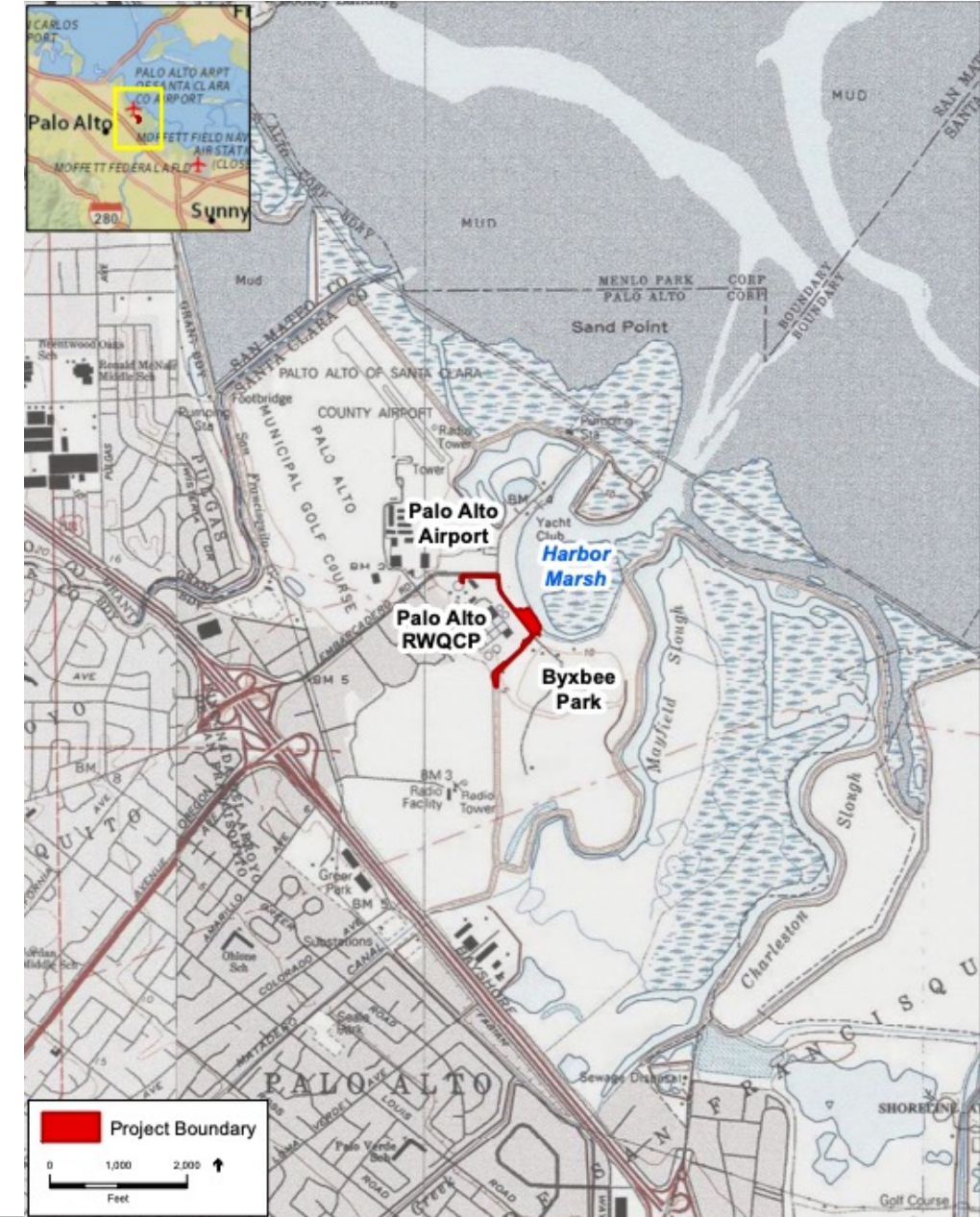
Partnership and Programming

- SFEP and City of Palo Alto – partners on construction, construction management, biological monitoring. All contracts will be managed by SFEP/ABAG
- Community-based monitoring and education with Nuestra Casa (East Palo Alto) and CSU Channel Islands
- Plant propagation, community planting days and post-construction monitoring with Save The Bay



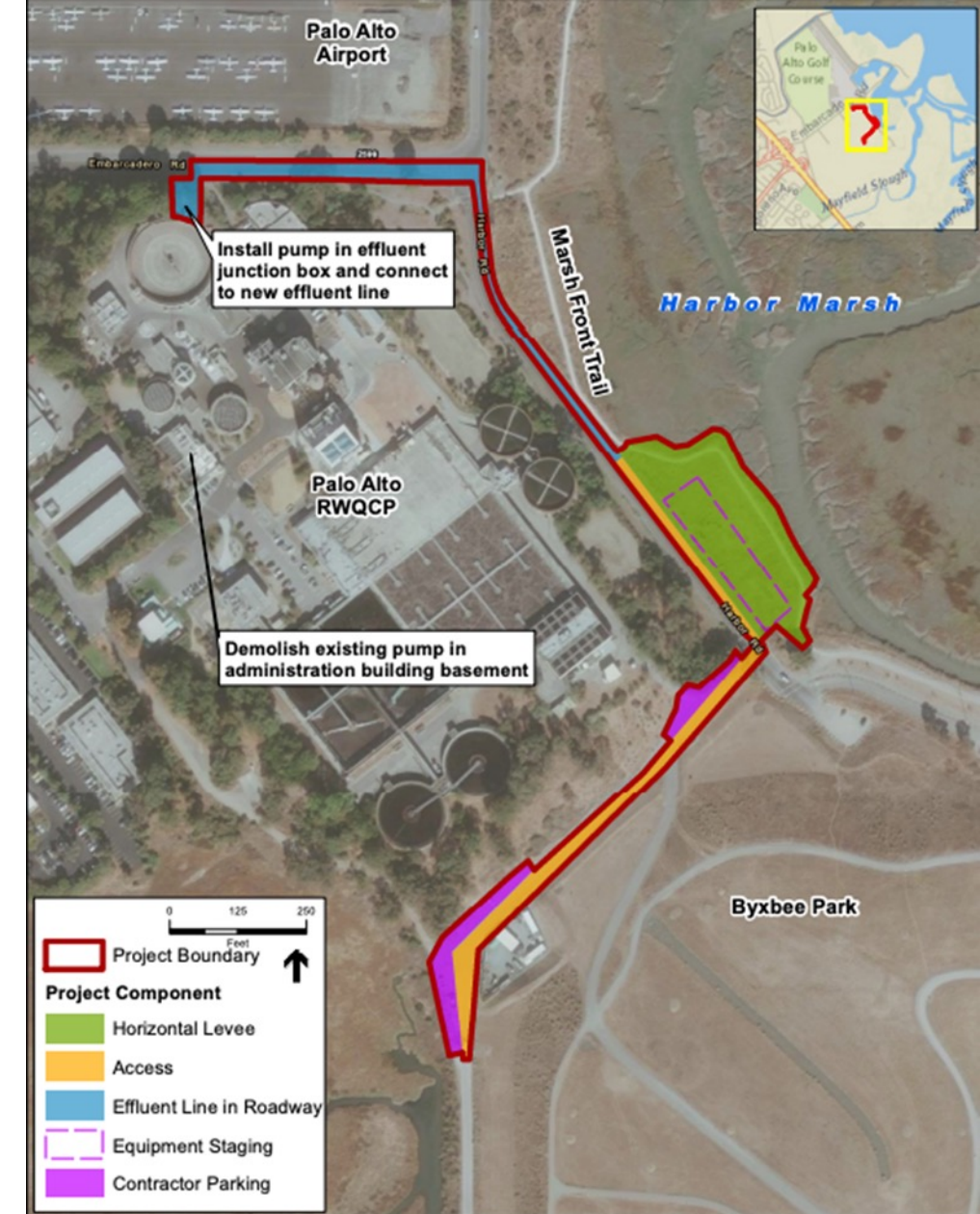
Project Location

- Across Embarcadero Road from City of Palo Alto Regional Water Quality Control Plant (RWQCP)
- Adjacent to Harbor Marsh, an approx. 90-acre tidal saltmarsh
- Byxbee Park parking lot entrance and trail connection to the south



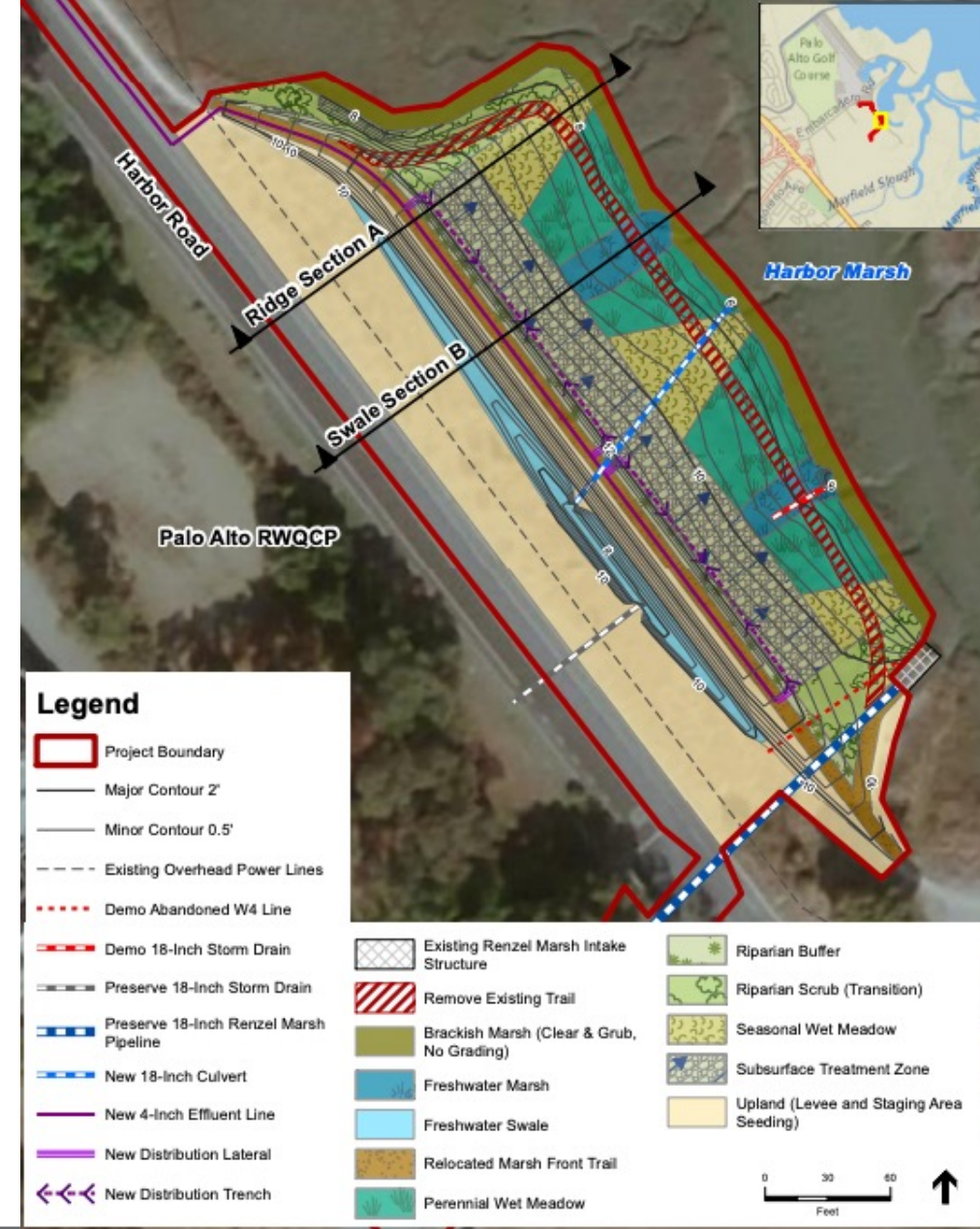
Project Setting

- Harbor Marsh and Baylands Nature Preserve backed by low levees and a closed landfill
- Significant City of Palo Alto infrastructure behind these levees: RWQCP, airport, Palo Alto Flood Basin, roads and light commercial development
- Coordinates with SAFER Bay levee/Shoreline Study and shares the same alignment with two alternatives



Project Components

- 500-linear-foot levee berm
- 315-linear-foot horizontal levee and irrigated ecotone
- New pump at the RWQCP
- Buried pipeline (effluent line) along Harbor Road and Embarcadero Road
- Relocated trail



Post-Project Habitats

- Upland grassland (levee berm)
- Wet meadow (treatment/transition zone)
- Tidal Marsh



Permitting Status Update

- Permits Issued:
 - USACE Nationwide Permit 27 (SPN-2019-00445)
 - NMFS Letter of Concurrence (with ‘not likely to adversely affect’ determination) (WCRO-2023-00141)
 - USFWS Signed/approved ESA Section 7(a)(2) Review Form (2022-0005149-S7) (take coverage under the Programmatic Biological and Conference Opinion (PBO) for the California Statewide Programmatic Restoration Effort)
 - SWRCB Water Quality Certification for Small Habitat Restoration Projects (WDID# 2 CW451131)
- Pending:
 - CDFW Restoration Management Permit
 - BCDC Major Permit Amendment
 - City of Palo Alto Building Permit and Parks Improvement Ordinance

Proposed Construction Activities

PHASE	ACTIVITY	START DATE	WORK DAYS
1	Mobilization, Staging Area Clearing & Grubbing: Mobilize equipment to site. Clear and grub within Levee Area and preparation of Staging Area. Establish temporary construction fencing.	July 2024	20
2	Effluent Line Installation (Harbor Road & Embarcadero Road): Install traffic control and bike/pedestrian detours. Cut utility trench and install effluent wastewater line. Restore pavement in kind.	August 2024	12
3	Renzel Marsh Pump Replacement: Install new pump and appurtenances in effluent junction box. Install programmable logic controller (PLC) at effluent junction box. Demolish existing pump in administration building.	August to September 2024	20
4	Levee Area Demolition & Earthwork: Salvage topsoil. Excavate levee berm keyway and treatment zone to subgrade. Remove existing berm and stockpile material onsite. Construct levee berm and treatment zone. Demolish existing culvert and W4 Line. Install culvert and headwalls.	September 1 to November 2024	60
5	Levee Area Effluent Line & Distribution Trench Installation: Install effluent line along levee berm crest. Construct distribution trenches, laterals and appurtenances.	October 2024	6
6	Trail and Site Infrastructure: Construct pedestrian pathways, permanent fencing, and signage.	November 2024	5
7	Site Cleanup, Seeding and Planting: Remove temporary construction facilities and restore staging area. Seed levee area, install temporary irrigation on transition slopes, install native plantings.	November to December 2024	12
Note: 1. Estimated start date and work days are approximate. Phases 2 and 3 may be completed concurrently or after phase 4, pending construction start date. Phases are anticipated to overlap.			



Project Contacts

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