



## City Council Staff Report

**From: City Manager**

**Report Type: CONSENT CALENDAR**

**Lead Department: Public Works**

**Meeting Date: January 22, 2024**

Report #:2303-1230

### **TITLE**

Adoption of an Ordinance Authorizing the Improvements to the Palo Alto Baylands as Part of the Horizontal Levee Pilot Project and Approval of a Cooperative Agreement with the Association of Bay Area Governments to Construct the Horizontal Levee Pilot Project (WQ-22001); CEQA – exempt under Section 15133

### **RECOMMENDATION**

Staff recommends that Council:

- 1) Accept the Recommendation from the Parks and Recreation Commission to adopt a Park Improvement Ordinance authorizing improvements to the Palo Alto Baylands as part of the Horizontal Levee Pilot Project; and
- 2) Approve and authorize the City Manager or their designee to execute an agreement between the Association of Bay Area Governments and the City for implementation and construction of the Horizontal Levee Pilot Project (WQ-22001)

### **EXECUTIVE SUMMARY**

Horizontal levees are a green, nature-based, multi-beneficial alternative to traditional greyscape solutions (e.g., rip rap, sheet piling) for wave attenuation on the bayside of flood control levees. Since 2017, the City has been working in collaboration with the Association of Bay Area Governments (ABAG – host agency for the San Francisco Estuary Partnership) to design and eventually construct the Palo Alto Horizontal Levee Pilot Project (WQ-22001) on the east side of Harbor Road near Byxbee Park. The Project requires Council approval and adoption of a Park Improvement Ordinance (Attachment A) because the Project seeks to substantially alter a City park. The Project will:

- construct a berm and horizontal levee along a portion of existing, poor-quality upland habitat adjacent to Harbor Marsh within the Palo Alto Baylands Nature Preserve;
- install various native plants on the Project site to restore diverse transitional habitats including freshwater marsh, wet meadow, and riparian scrub;

- install an underground pipeline to transport treated wastewater along Embarcadero and Harbor Roads to the horizontal levee for native plant irrigation;
- realign a portion of the Marsh Front Trail as required to accommodate the horizontal levee and reconnect habitats; and
- install educational signage and provide opportunities for public participation in community science activities.

The proposed Cooperative Agreement (Attachment B) would establish ABAG and the City's responsibilities to bring the Project to completion through any unforeseen obstacles, delays, cost overruns, or unpredicted circumstances that affect the Project scope, budget, or timeline. Through implementation of the Cooperative Agreement, ABAG will fund construction management and construction via grants that have been awarded to them; the City would oversee change orders and budget overruns, assist with public outreach, obtain and pay for required construction permits, implement the Monitoring and Adaptive Management Plan, and once constructed, own and operate the Project.

## **BACKGROUND**

Horizontal levees are a nature-based alternative to traditional greyscape solutions (e.g., rip rap, sheet piling) for wave attenuation on the bayside of flood control levees (Figure 1). Horizontal levees utilize treated wastewater to irrigate a gently sloping, vegetated ecotone slope that provides wave attenuation as well as refugia, transitional habitat between tidal wetlands and terrestrial uplands, sea level rise adaptation, and polishing treatment of treated wastewater. A unique aspect to horizontal levees is their use of treated wastewater to irrigate the ecotone slope. Other ecotone slopes that have been built in the area utilize passive irrigation or potable water for irrigation of the vegetated area.

Unlike much of the shoreline along the San Francisco Bay, the Palo Alto shoreline, while highly developed and altered, continues to sustain tidal marsh. The Palo Alto Baylands shoreline is comprised of low levees and a closed landfill. Directly behind these levees are City assets that are critical infrastructure, including the City's Regional Water Quality Control Plant (RWQCP), airport, the Palo Alto Flood Basin, roads, and light commercial development. Potential flooding of City infrastructure, buildings, and other development west of Highway 101 is limited by the existing levees. However, these levees are not engineered to meet Federal Emergency Management Agency (FEMA) accreditation standards, and in many locations do not provide 100-year flood protection. To improve shoreline flood protection, the San Francisquito Creek Joint Powers Authority evaluated possible new levee alignments and improvements via the Strategy to Advance Flood Protection, Ecosystems and Recreation (SAFER) study. This study is now under consideration by United States Army Corps of Engineers as part of the South San Francisco Bay Shoreline Feasibility Study Phase II (Valley Water coordinates regional partners and discussion for this effort).

An emerging regional goal and best practice for levee improvement is to incorporate nature based solutions, such as horizontal levees, to provide flood protection that can evolve in the future, restore Bay habitats, and enhance public access. Since design considerations for horizontal levees are still early in their development, a permanent pilot project was pursued to answer outstanding questions about permitting requirements, construction costs, and site-specific design parameters (e.g., plant palletes). Information from Palo Alto's Horizontal Levee Pilot Project will inform the design for potential additional future horizontal levees around Palo Alto and the greater Bay Area.

Since 2017, the City of Palo Alto has collaborated with ABAG –the host entity for the San Francisco Estuary Partnership– to evaluate and design a permanent horizontal levee pilot project within the Palo Alto Baylands with the following objectives:

1. Be on the leading edge of integrating habitat enhancement with sea level rise adaptation and novel wastewater treatment approaches around the San Francisco Bay;
2. Integrate a horizontal levee on the bayfront of a traditional flood control levee to provide wave attenuation;
3. Adapt to sea level rise by providing a vegetated transitional slope that will build organic soils and support sediment accretion and accumulation to allow for future tidal marsh migration;
4. Improve habitat along the perimeter of Harbor Marsh for native species;
5. Provide polishing treatment to treated wastewater; and
6. Maintain and provide opportunities for compatible low-impact recreation and social infrastructure.

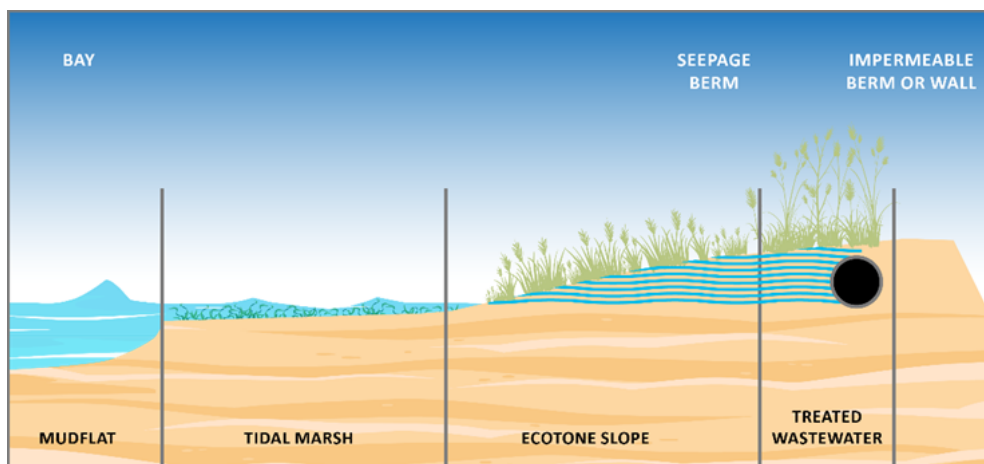


Figure 1: Illustration of a horizontal levee system.

## ANALYSIS

The Project will:

- construct a berm and horizontal levee along a portion of existing, poor-quality upland habitat adjacent to Harbor Marsh within the Palo Alto Baylands Nature Preserve;
- install various native plants on the Project site to restore diverse transitional habitats including freshwater marsh, wet meadow, and riparian scrub;
- install an underground pipeline to transport treated wastewater along Embarcadero and Harbor Roads to the horizontal levee for native plant irrigation;
- realign a portion of the Marsh Front Trail as required to accommodate the horizontal levee and reconnect habitats; and
- install educational signage and provide opportunities for public participation in community science activities.

The Project will require temporary rerouting of a portion of the Trail and temporary traffic restrictions to a portion of Harbor Road to accommodate construction; complete trail and road closures are not anticipated.

The Municipal Code requires the Council to adopt an ordinance approving any substantial building, construction, reconstruction or development on City park lands. Staff presented the proposed ordinance (Attachment A) to the Parks and Recreation Commission on March 28, 2023, which voted unanimously to recommend the proposed ordinance for approval.

Through the proposed Cooperative Agreement between ABAG and the City for the Palo Alto Horizontal Levee Pilot Project Construction (Attachment B), Project implementation and construction responsibilities will be divided accordingly:

- 1) ABAG will use grant funding it obtained to provide Project construction, construction management, and related permit compliance;
- 2) the City will actively participate during project construction and provide oversight of change orders and budget overruns, assist with public outreach, obtain and pay for required construction permits, implement the Monitoring and Adaptive Management Plan, and once constructed own and operate the Project.

The proposed Cooperative Agreement serves to establish ABAG's and the City's responsibilities to bring the Project to completion through any unforeseen obstacles, delays, cost overruns, or unpredicted circumstances that affect the Project scope, budget, or timeline.

### **FISCAL/RESOURCE IMPACT**

The Project is included in the City's Capital Improvement Budget as Project Number WQ-22001. The total Project cost is estimated at \$4.7 million, including design, construction, and post-construction monitoring. The total available funding amount, including grants and City contributions, is \$5.5 million, which is 17 percent more than estimated costs to account for unforeseen costs during bidding or construction. The Project team has secured \$4.5 million from numerous grants that have funded the majority of total Project costs. Grantors include the

California Coastal Conservancy and the United States Environmental Protection Agency. Grants were awarded to and are administered by ABAG. The City serves as a vested stakeholder and is required to provide \$4.8 million in matching local funds by leveraging multiple Capital Improvement Projects already occurring at the Regional Water Quality Control Plant. In addition, the City expects to contribute a total of \$1 million to the Project in direct payments for permitting, environmental review, community outreach, and monitoring studies which are paid for by the Wastewater Treatment Fund; to date the City has spent approximately \$0.4 million as direct payments with the remainder anticipated to be spent on required post-construction monitoring.

The proposed Cooperative Agreement acknowledges that ABAG's sole source of financial resources to fund the Project is through the awarded grants and that ABAG has no separate financial resources to contribute to Project costs. The City acknowledges and agrees in the proposed Cooperative Agreement that the City, not ABAG, is responsible for any Project costs that exceed the available grant funding. Should actual construction costs exceed the available grant funding, ABAG agrees to work in good faith with the City to identify additional funds to cover Project costs and that the City, at its sole discretion, has the right to modify the Project based upon availability of additional funding.

## **STAKEHOLDER ENGAGEMENT**

Since the beginning of the project in 2017, staff has conducted more than 20 stakeholder engagement activities including several community events (e.g., bioblitzes to tally pre-project animal and plant species) and specific presentations to local non-governmental organizations. In addition, the project team elicited feedback from the Parks and Recreation Commission throughout the design phases, at the November 27, 2018<sup>1</sup>, February 25, 2020<sup>2</sup>, and July 28, 2022<sup>3</sup> meetings. Most recently, staff took the draft Park Improvement Ordinance to the March 28, 2023 Parks and Recreation Commission meeting where it was unanimously recommended for Council to adopt and approve<sup>4</sup>. Stakeholder engagement will continue during construction

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<sup>1</sup> Parks and Recreation Commission, November 27, 2018; Agenda Item # V.3, <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/parks-and-recreation-commission/agendas-minutes/2018-agenda-and-minutes/park-and-recreation-commission-report-horizontal-levee-11-27-2018.pdf?t=65128.09>

<sup>2</sup> Parks and Recreation Commission, February 25, 2020; Agenda Item # V.5, [https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/parks-and-recreation-commission/agendas-minutes/2020-agenda-and-minutes/prc-staff-report\\_pahlpp\\_feb2020\\_v2.pdf](https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/parks-and-recreation-commission/agendas-minutes/2020-agenda-and-minutes/prc-staff-report_pahlpp_feb2020_v2.pdf)

<sup>3</sup> Parks and Recreation Commission, July 28, 2022; Agenda Item # 7, [https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/parks-and-recreation-commission/agendas-minutes/2022-agendas-and-minutes/07.2022/prc-staff-report\\_pahlpp\\_jul2022.pdf](https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/parks-and-recreation-commission/agendas-minutes/2022-agendas-and-minutes/07.2022/prc-staff-report_pahlpp_jul2022.pdf)

<sup>4</sup> Parks and Recreation Commission, March 28, 2023; Agenda Item # 3, <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/parks-and-recreation-commission/agendas-minutes/2023-agendas-and-minutes/3-mar/horizontal-levee-project-pio-prc-03.28.23.pdf>

and after through strategic partnerships with local non-governmental organizations including Save the Bay, Nuestra Casa, the Association of Ramaytush Ohlone, and Environmental Volunteers. These activities will include community planting, photo-point monitoring, educational signage, and community science activities.

#### **ENVIRONMENTAL REVIEW**

This project is exempt from review under the California Environmental Quality Act (CEQA) under section 15133 of the CEQA Guidelines (small habitat restoration).

In addition, the City and ABAG will obtain permits/permit coverage determinations from the United States Army Corps of Engineers and the United States Fish and Wildlife Service.

#### **ATTACHMENTS**

Attachment A: Park Improvement Ordinance for Horizontal Levee Pilot Project Improvements

Attachment B: DRAFT Cooperative Agreement

#### **APPROVED BY:**

Brad Eggleston, Director Public Works/City Engineer