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Executive Summary

On November 6, 2018, the citizens of San Francisco passed Proposition A with 82.7% voter approval, authorizing a $425 million General Obligation Bond known as the Embarcadero Seawall Earthquake Safety Bond (Seawall Bond) to support the Waterfront Resilience Program (Resilience Program; WRP)[1].

The WRP has a total estimated cost of up to $5 billion with a 30-year implementation timeline. The $425 million Seawall Bond will partially fund the WRP, including funding improvements for earthquake safety of the Embarcadero Seawall, near-term flood protection improvements, and planning for additional long-term resilience.

Prior to the approval of the Seawall Bond, in June 2018, the United Stated Army Corps of Engineers (USACE) awarded San Francisco a “new start” study appropriation to commence a General Investigation

[1] WRP was previously named the San Francisco Seawall Earthquake and Disaster Prevention Program. For clarity, this report uses the current WRP name.

feasibility study, which would consider and recommend potential project alternatives to reduce coastal flood risk along the San Francisco waterfront (the Flood Resiliency Study). A waiver was approved in November 2021, increasing he study time from 36 to 86 months and increased the study cost from $6 million to $16 million.

In February 2019, Executive Director Elaine Forbes formed the Port's Waterfront Resilience Program. The Waterfront Resilience Program includes the Seawall Program, the Flood Resiliency Study and related resilience planning and implementation efforts for the Port's entire 7 ½ miles of waterfront property.

On March 12, 2019, the Port Commission approved Resolution 19-08, authorizing the first issuance of the Seawall Bond for up to $50.0 million, including issuance costs, to support the planning and preliminary design phases of the Seawall Program. After a delay due to a legal challenge that ultimately was appealed to the California Supreme Court – which denied review of an appellate decision in favor of the City – Bonds were issued pursuant to Resolution No. 323-19 and Resolution No. 324-19, both adopted by the Board of Supervisors on July 16, 2019, and approved by the Mayor on July 26, 2019. On June 2, 2020, the City issued $49.7 million in taxable general obligation bonds at an interest rate of 0.7% and a final maturity date of June 15, 2021.

This first bond sale supported management, planning and overall program development, and partially funded preliminary design of early projects of the Embarcadero Seawall Program. Specifics of this work include site surveys, comprehensive geotechnical investigation and laboratory testing of soils, earthquake risk assessment of the seawall and associated infrastructure, seismic and flood risk assessment including sea level rise, alternatives development and evaluation (conceptual level design, engineering, cost estimating, constructability), advancing environmental analysis (NEPA/CEQA) and permitting, advancing preliminary design of Seawall Bond projects, and extensive stakeholder and community engagement.

This work also included bond-funded matching funds for the Flood Resiliency Study with USACE. The $16 million Flood Resiliency Study is cost shared 50/50 with USACE and will analyze flood risks to the Port's entire jurisdiction from Fisherman's Wharf to Heron's Head Park.

The Port has identified 23 Embarcadero Early Projects based on its extensive risk assessment work, including the Embarcadero Seawall Multi-Hazard Risk Assessment and the joint Disaster Response Exercise conducted with the Department of Emergency Management. These projects were evaluated and prioritized using criteria developed with community input. Embarcadero Early Projects respond to community priorities by:

- **Prioritizing** life safety and emergency response.
- **Enhancing** and sustaining economic and ecological opportunities.
- **Supporting** an adaptable and equitable waterfront.
- **Ensuring** public access to the waterfront and historic places.
- **Protecting** and preserving historic and maritime resources.

In late 2022, the Port developed scopes of work and budgets for a second bond sale to fund the advancement of the Program. In January 2023, the Port requested approval from the Port Commission and Board of Supervisors of a second bond sale and corresponding appropriation of $42.0 million, which includes cost of issuance, accountability, and General Obligation Bond Oversight Committee (GOBOC)

costs. This bond sale was approved by the Port Commission (Resolution No. 23-05), San Francisco Board of Supervisors (Resolution No. 031-23), and signed Mayor London Breed on February 09, 2023.

This second bond sale will support the preliminary and final design phases of projects to reduce life safety, disaster response and early flood risks (Embarcadero Early Projects), continued work on strategies to reduce coastal and combined flood risk (Waterfront Adaptation Strategies or Strategies), and ongoing efforts to advance the San Francisco Waterfront Coastal Flood Study General Investigation (Flood Study) with the United States Army Corps of Engineers (USACE) and the San Francisco Waterfront Storm Risk Management Study General Investigation (Flood Study) with USACE. The Flood Study is cost shared 50/50 with USACE and will analyze flood risks to the Port's entire jurisdiction from Fisherman's Wharf to Heron's Head Park. The Port will appropriate non-bond funding to support Flood Study work in areas beyond the scope of the Embarcadero Seawall.

Please refer to the following report for further details. Visit the Waterfront Resilience Program website at https://sfport.com/wrp for a link to this Annual Report and future reports.

Waterfront Resilience Program Summary

The State of California constructed the Embarcadero Seawall a century ago to create a deep water port in San Francisco. Construction of the Seawall included landside fill that created over 500 acres of new land between San Francisco Bay and 1st Street. The Seawall sustains three miles of San Francisco waterfront, stretching from Fisherman's Wharf to Mission Creek and supports historic piers, wharves, and buildings, including the Ferry Building. It underpins the historic Embarcadero Promenade, iconic tourist destinations, recreation and park facilities, restaurants, and local businesses, bringing an estimated 24 million people to the waterfront annually. The Seawall also supports key utility networks and infrastructure for the BART, Muni, and ferry transportation networks. Additionally, the Seawall serves as a critical area for emergency response and recovery and provides flood protection to downtown San Francisco. All told, the Seawall enables $24.6 billion of economic activity and protects $102.1 billion of property value.

In 2015, the Port established the Waterfront Resilience Program to ensure that the entire 7½ mile waterfront, and its important regional and citywide assets, are resilient in the face of hazards such as earthquakes, flooding, and sea level rise due to climate change. The Resilience Program includes several initiatives to increase the resilience of the waterfront:

- **Embarcadero Seawall Program:** A City sponsored effort, that the Port is entrusted to implement, to reduce seismic and flood risk along the waterfront from Fisherman's Wharf to Mission Creek. In November 2018, voters of the City and County of San Francisco voted overwhelmingly to support Proposition A, the San Francisco bond initiative to provide $425 million to upgrade and repair a portion of the 100-year-old Embarcadero Seawall. The overall repair is estimated to cost up to $5 billion; this figure will be revised when the Program team produces cost estimates. The Port presented 23 Proposition A funded Embarcadero Early Project recommendations to the Port Commission in December 2021. The total rough order of magnitude estimate to deliver all projects ranges from $650 million to $3 billion. The WRP has completed the needs assessment reports for six Embarcadero Early Projects and is commencing

alternatives analysis. The second issuance of the Seawall Bond will fund the planning and predesign phases of nine Embarcadero Early Projects and final design of three projects to be selected in 2023.

- **USACE / Port of San Francisco Waterfront Flood Resiliency Study:** USACE awarded the Port of San Francisco a "New Start" in 2018 which authorized a General Investigation of flood risk along the San Francisco Bay waterfront. As a result, the Port and USACE are studying flood risk along San Francisco's bayside shoreline, from Aquatic Park to Heron's Head Park. The approximately seven-year USACE Flood Resiliency Study will identify vulnerabilities and recommend strategies to reduce current and future flood risks for consideration for federal investment and implementation at a funding ratio of 2/3 federal, 1/3 local.

- **Waterfront Adaptation Strategies:** The WRP has developed Draft Waterfront Adaptation Strategies in partnership with multiple City departments (Office of Resilience and Capital Planning, San Francisco Municipal Transportation Agency, San Francisco Planning Department, San Francisco Public Utilities Commission, and San Francisco Public Works) and with the USACE. The Draft Waterfront Adaptation Strategies are different ways for the City to create a resilient, sustainable, and equitable waterfront for the next 100 years. The Strategies are options to reduce flood and seismic risk along the Port's entire waterfront jurisdiction, from Heron's Head Park to Fisherman's Wharf, through a combination of phased large and small projects, new policies, such as flood defenses, structure elevation, floodproofing, city infrastructure adaptations (e.g., wastewater and stormwater management, transportation system), flood-resilient building codes, and land use changes.

- **Other resilience work:** In addition to these efforts, the Resilience Program has supported other areas of work to make the 7 ½ mile waterfront more resilient:

    - A Floodproofing the Piers study assessed the options available to adapt the piers to be resilient to elevated sea levels.
    - The Southern Waterfront Seismic Vulnerability Study will use existing geotechnical information in the Port's Southern Waterfront to assess earthquake risk to Port facilities in the area.
    - The Islais Creek Adaptation Study, a joint effort by the Port, the San Francisco Municipal Transportation Agency and City Planning, examined sea level rise and flood risk in the Islais Creek/Bayview neighborhood, with a focus on transportation assets.
    - The Resilience Program also represents the Port with participation in citywide and regional adaptation and resilience efforts led by others.

The Port has appropriated non-bond funding to support work in areas beyond the scope of the Embarcadero Seawall and the Army Corps of Engineers Flood Resiliency Study.

Waterfront Resilience Program Status

The Waterfront Resilience Program is currently in its Preliminary Design phase. Through work done to date, the Resilience Program developed adaptation strategies for geographic areas along the entire 7.5

miles of waterfront in the Port's jurisdiction, including options for future coastal flood defenses that can be advanced through the USACE Flood Study.
In 2022, the Program team undertook advanced planning with City Departments and the USACE to develop adaptation strategies that will create a locally preferred plan for future coastal flood defenses that protect multiple, interdependent critical infrastructure systems from earthquakes and flooding.

The Strategies are a combination of construction projects and policy changes that will guide decisions about:

- Where, when, and how high to build flood defenses
- How and when to adapt key buildings and infrastructure to ensure continued operations of the Port harbor and of City services
- How to incorporate nature-based and ecological features
- Recommendations for policy changes that will best defend public and private lands, preserve, and grow housing and jobs, and create recreational opportunities, waterfront access, and improved Bay habitat

On October 11th, 2022, the Port presented the Draft Waterfront Adaptation Strategies to the Port Commission. The Draft Strategies underwent public review in Fall of 2022 and are now being analyzed and compared to develop a Draft Waterfront Adaptation Plan ("Draft Plan"). The WRP and USACE teams will refine the plan and conduct environmental review (NEPA/CEQA) and additional public outreach and engagement. The Draft Plan will go through local and USACE review and approvals to create a Final Waterfront Adaptation Plan ("Recommended Plan") by Flood Study completion in 2025.

Provided that the plan meets federal requirements that the benefits of the plan exceed its costs, USACE will present the Final Plan to the U.S. Congress for potential federal funding. If Congress approves the Final Plan, Congress will fund up to 65% of the resulting project, providing potentially billions of dollars in federal investment in San Francisco's waterfront.

The Final Plan recommended to Congress in 2025 may differ from the Port and the City's preferences to address a higher rate of sea level rise and include additional community and seismic benefits (which collectively will inform a "Locally Preferred Plan"). The additional cost of these benefits will not be cost-shared with USACE – San Francisco will need to identify funding for 100% of the cost differential between the Recommended Plan and a Locally Preferred Plan.

Embarcadero Early Projects

From strategies devised for the Northern Waterfront (South Beach, Ferry Building, Northeast Waterfront, Fisherman's Wharf), the Program team has developed a list of 23 Embarcadero Early Projects that will:

• reduce life safety risks identified during the Embarcadero Seawall Multi-Hazard Risk Assessment (MHRA),

• reduce disaster response risks identified through the Port-San Francisco Department of Emergency Management sponsored disaster response task conducted in August 2021, and

• Address existing high-consequence flood risks identified through the Flood Study.

These projects were identified through a northern waterfront adaptation strategy planning process over the course of 2020-21; the Embarcadero Early Projects were developed to respond to the unique conditions and analysis of earthquake and flood hazards analysis in each of the areas that define the Northern Waterfront.

The Port is recommending 16 Embarcadero Early Projects to advance through the Seawall Bond, with plans to advance the remaining projects by pursuing additional funding sources and partnerships. Through December 2022, the WRP has completed the needs assessment reports and commenced alternatives analysis for the following six projects:

- Wharf J9 Replacement & Resilient Shoreline Project
- Pier 15 Bulkhead Wall & Wharf Earthquake Safety Retrofit Project
- Pier 9 Bulkhead Wall & Wharf Earthquake Safety Retrofit Project
- Ferry Building Seawall & Substructure Earthquake Reliability Project
- Downtown Coastal Resilience Project (formerly the Pier 5 to 22½ Near Term Coastal Flood Risk Reduction Project)

(Above: Blue = Proposition A Predesign; Green = Advance through Geographic Strategy; Purple = Coordination with Long-Term Tenants, Capital Programs and City Agencies)

The initial cost estimates for delivering all 23 Embarcadero Early Projects range from $650 million to $3 billion and represents more projects than can be delivered solely with Seawall Bond funding. Project budgets will be developed as projects advance through predesign, providing information for determining which Embarcadero Early Projects get funded first. By using the Seawall Bond to fund a portion of this advanced planning, project definition, and predesign of projects, the Port will position the Program to leverage other public and private sources of funding.

Embarcadero Early Projects include efforts to strengthen the Embarcadero Seawall in targeted areas. In some cases, these are interim fixes, and in others they are a first step toward future adaptation.

Creating a resilient Embarcadero will take several decades, but these projects are an important first step as the Port develops resilience strategies for the entire 7.5 miles of waterfront.

Community and Stakeholder Engagement

The Draft Waterfront Adaptation Strategies development process builds off 5+ years of public outreach and engagement. Since 2017, the Port has connected with tens of thousands of people through robust community and stakeholder engagement efforts to advance work on the Embarcadero Seawall Program and Waterfront Resilience Program. This engagement has included outreach to community members, businesses and merchants, advisory committees, non-profit groups and others. Community input has helped the WRP develop its guiding vision, principles, goals, and evaluation criteria. The community has also shared what waterfront assets are key priorities as the WRP takes action to reduce seismic and flood risks.

In developing the Draft Strategies for public review, the Port conducted additional outreach and engagement, including a city-wide survey and focus groups with leaders of community-based organizations ("CBOs") and Port Advisory Committee members. The survey presented five examples of how other cities made changes to address the flood risks they faced. The survey reached nearly 1,000 people across the waterfront and city and feedback indicated an openness to explore the many types of adaptation approaches (including more transformative options), a desire to preserve and expand the connection between the City and the waterfront, and concerns about feasibility, cost, and disruption impacts. Community members were interested in learning specifics about where along the waterfront each precedent could/would be used.

The Port held five focus group meetings since mid-August to get feedback on the Draft Adaptation Strategies along with how best to communicate such complex material. Feedback from focus group attendees was integral to updating our communications strategies, including simplifying content, clarifying what happens in 2040 and 2090, and focusing on each Strategy's challenges and opportunities. Key themes that arose from the survey and focus groups were consistent with WRP community feedback to-date, including:

- Increasing space for open space/parks/diversity of uses
- Prioritizing nature/habitat
- Prioritizing accessibility to the waterfront
- Limiting disconnection with the waterfront
- Mitigating displacement/equity concerns
- Aesthetic concerns

Additional key themes for future communications and engagement include:

- Feasibility (political, geographical, maintenance and otherwise)
- Clarifications on cost and length of construction time and disruption to neighborhoods
- Exploration of workforce impacts and job creation possibilities
- City-wide response to sea level rise – communicating what happens beyond the Port's jurisdiction

In fall of 2022, the Port invited public feedback on the Draft Strategies to inform development of the Draft Plan. The goals for this phase of outreach were:

- Share the Draft Strategies through accessible and inviting language, graphics/illustrations, and presentations to communicate waterfront hazards. Show how community feedback to date has informed the development of the Draft Strategies and present the range of options for addressing risks.
- Gather public input on key components of the Draft Strategies to help guide the Planning Team's work in developing Revised Draft Strategies, in combination with technical evaluation, by Spring 2023, and the Draft Plan by Summer 2023.
- Prioritize outreach in the Central and Southern Waterfront neighborhoods (zip codes 94107, 94110, 94124, 94134) as well as to historically underrepresented groups.
- Continue engagement of CBOs who have been part of previous WRP outreach while also encouraging participation from those who may be sharing input for the first time.

The Port engaged the public using a variety of traditional and innovative public outreach and engagement methods, including:

- Digital Survey via StoryMaps
- Community Workshops (digital and in-person)
- CBO Presentations via Focus Group Participants
- Walking Tours
- Waterfront Community Mixer in District 10
- Community Partner Feedback Conversations
- A public education campaign via earned media, social media, community presentations, and web content.

Draft Waterfront Adaptation Strategies

The Port, working with City agencies and USACE, have developed seven Draft Waterfront Adaptation Strategies (Alternatives). Each strategy varies in how it is applied to different parts of the waterfront. The Draft Strategies include:

- Strategy A NO ACTION: Takes no actions to reduce flood risks beyond projects that are already approved.
- Strategy B NONSTRUCTURAL OPTION: Moves people and assets away from the risk, uses nonstructural measures (such as floodproofing) to reduce risks, and allows water to go where it wants rather than constructing traditional structural solutions.
- Strategy C LOWER SEA LEVEL RISE: Adapts the shoreline to withstand 1.5' of sea level rise by 2040 using a combination of structural and nonstructural measures.
- Strategy D LOWER SEA LEVEL RISE - ADAPTABLE: Adapts the shoreline to withstand 1.5' of sea level rise by 2040, with the possibility of building higher by 2090. • Strategy E HOLD THE LINE: Preserves a waterfront that looks and functions much as it does today by adapting the shoreline.
- Strategy F MANAGE THE WATER: Creates an active system for managing flooding by heavily relying on machinery.

- Strategy G ALIGN WITH WATERSHEDS: Advances shoreline adaptation while working with natural inland flooding patterns to floodproof some buildings and infrastructure and move others away from highest risk areas.

The seven Draft Waterfront Adaptation Strategies use different approaches to reduce the flood risk and increase flood resilience, while managing the complex combination of coastal, stormwater, and rising groundwater hazards. While each strategy is different, all strategies aim to:

- Reduce the risks from sea level rise and coastal flooding
- Improve life safety outcomes and the City's disaster response capabilities
- Bring other public benefits
- Consider storm surge and wave action associated with extreme storms

The Draft Strategies represent different approaches to addressing the same risks and to identify a cost-effective approach to risk reduction. The intent is not to choose one - rather, it is to use the best ideas from all of them to create a Draft Waterfront Adaptation Plan.

The Port and USACE have gathered public feedback on the Draft Strategies that was collected in late 2022 and are further evaluating all these strategies to understand their costs and benefits. Each will be developed to a greater level of design and engineering detail to more accurately capture the benefits and cost of each strategy.

Budget, Funding, Expenditures

The Seawall Bond 2018 budget is $425,000,000 and the total appropriation through December 2022 is $49,675,000. The following is a summary of the budget and appropriation per component:

Components	Original Budget*	General Obligation Bond**				Encumbrance + Expenditures / Budget	Encumbrance + Expenditures / Appropriation
		Appropriations	Expenditures	Encumbrances	Balance		
Seawall Program Labor	18,800,00	5,900,000	6,000,000		(100,000)	31.9%	101.7%
United States Army Corps of Engineers (Flood Study)	8,900,00	8,900,000	4,100,000		4,800,000	46.1%	46.1%
Planning / Engineering / Preliminary Design (Embarcadero Early Projects)	37,500,000	32,400,000	27,700,000	3,750,000	950,000	83.9%	97.1%
Detailed Design (Embarcadero Early Projects)	46,600,000					0.0%	0.0%
Other City Depts / Gov Agencies	1,900,000	1,000,000	300,000		700,000	15.8%	30.0%
Design Support during Construction (Embarcadero Early Projects)	8,400,000					0.0%	0.0%
Pilot Projects	40,000,000	600,000	500,000	50,000	50,000	1.4%	91.7%
Construction (Embarcadero Early Projects)	262,900,000					0.0%	0.0%
Oversight, Accountability & Cost of Issuance	-	875,000	875,000			-	100.0%
Unappropriated Bond Sale Funds	-					0.0%	0.0%
TOTAL	**425,000,000**	**49,675,000**	**39,475,000**	**3,800,000**	**6,400,000**	**10.2%**	**87.1%**

* Subject to change based on program schedule and needs

** Appropriations, Expenditures, Encumbrances and Balance are based on F$P amounts through December 2022.

The Accountability reports for the bond sales will be available on the Waterfront Resilience Program website at https://sfport.com/wrp/library

Expenditures and Encumbrances

As of December 2022, the Seawall Bond 2018 expenditures and encumbrances are $39,475,000 and $3,800,000, respectively. The expenditures represent 87.1% of the total current appropriations.

Attachment 1 – Contact Information

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Attachment 2 – Schedule

Program Scopes of Work	2023				2024				2025	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
EMBARCADERO EARLY PROJECTS										
Program Management of Project Delivery	**Program Management - Delivery of Projects**									
Pre-Design (Multiple Projects)	**Pre-Design of Embarcadero Early Projects**									
Detailed Design & Environmental (TBD)			**Detailed Design & Environmental**							
Bid/Award of Construction Contracts (TBD)							**Bid/Award**			
Construction (TBD)								**Construction**		

Projects that advance to Detailed Design and Construction to be determined at completion of Pre-Design