

An aerial photograph of the San Francisco skyline at sunset. The sky is a warm orange and yellow. The Transamerica Pyramid is prominent in the center. Other skyscrapers are visible on either side. In the foreground, the city's waterfront is visible, including the Embarcadero and the Port of San Francisco building.

Port of San Francisco Waterfront Resilience Program

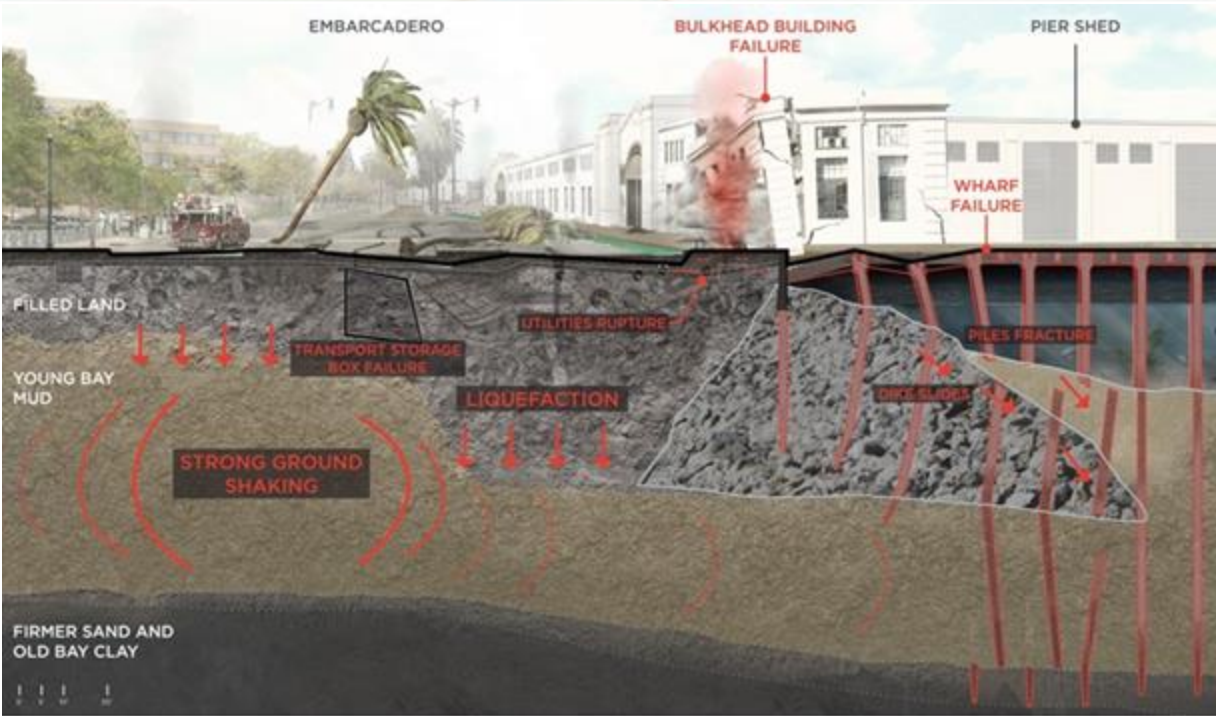
2025 Storms, Flooding and Sea Level Rise Defense
Conference

November 19, 2025



The Dual Risks of Earthquake and Sea Level Rise Cannot Be Ignored

The 150-year-old historic seawall must be replaced



Up to **40,000** people could be at risk on Port property if an earthquake occurs during the day

San Francisco's waterfront faces urgent flood risks **today**

Rising Seas

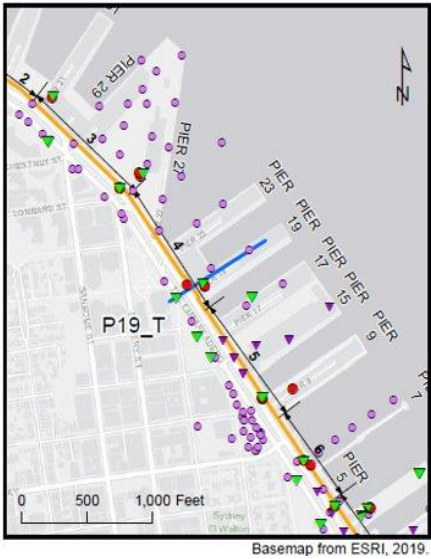
Potential Sea Level Rise by 2100

Over 6% of San Francisco's land area is subject to flooding due to sea level rise by end of century.

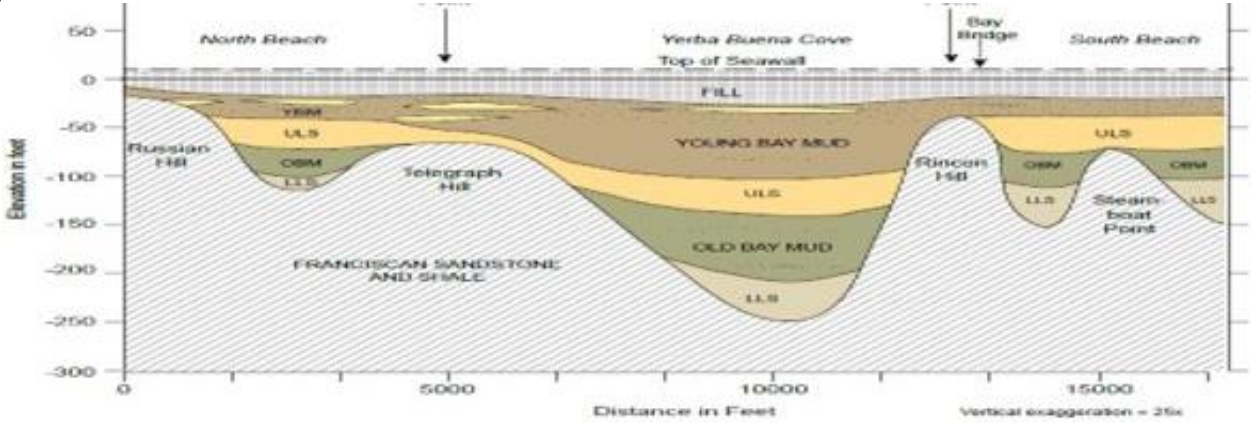
By 2050, damages could impact up to 500 buildings and assets, including BART and Muni.

By 2140, damages could amount up to **\$23 billion**, impacting 23,000 residents and 3,400 jobs.

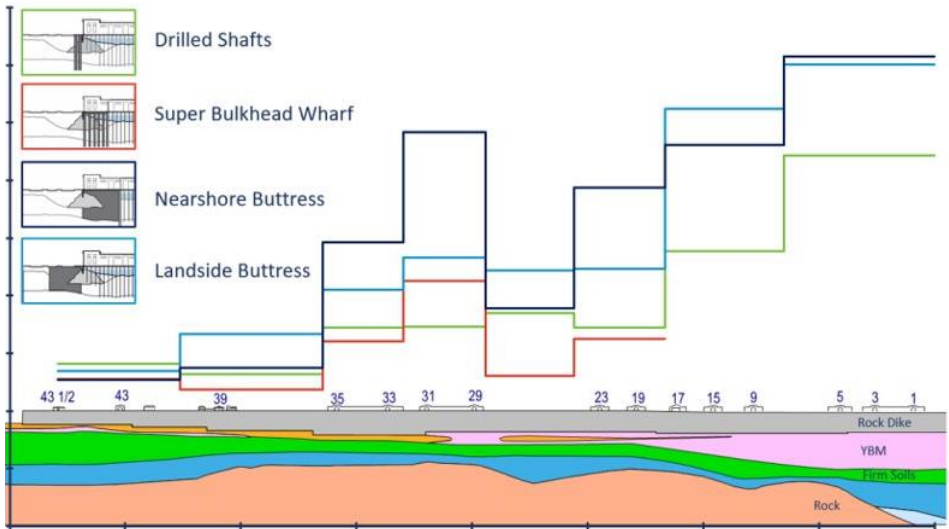
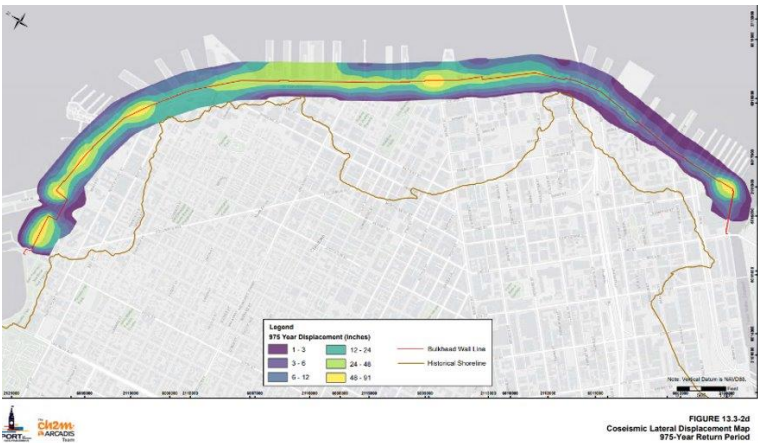
Earthquake Risk: In Depth Engineering (2019-2023)



Embarcadero Geotechnical Analysis



Shoreline Stability & Liquefaction Analysis



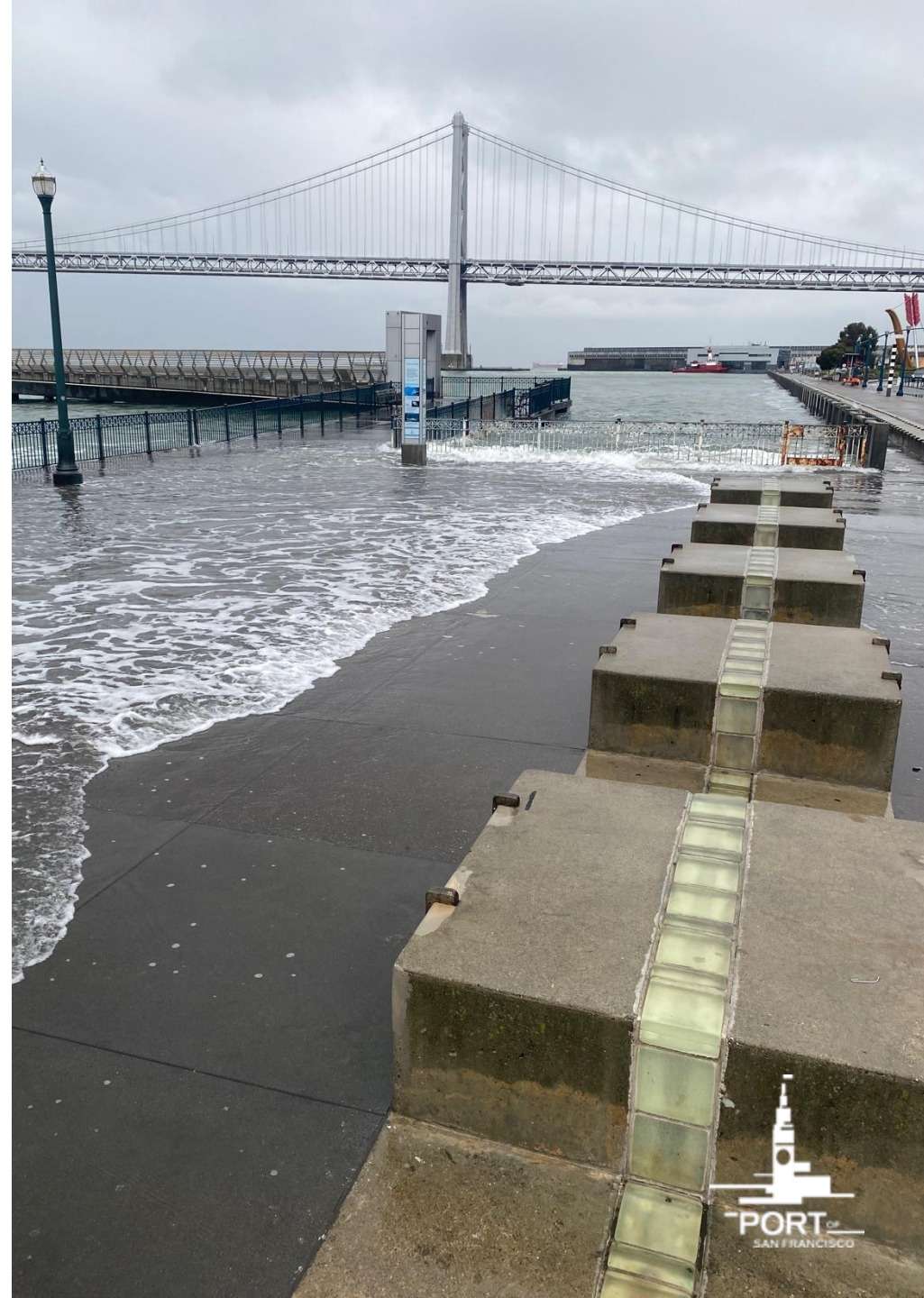
Seismic Measures Development

Coastal Flood Risk: What is the Flood Study?

- The Flood Study is a partnership between the **U.S. Army Corps of Engineers** (USACE) and the **City of San Francisco**, with the **Port** as lead agency.
- The **Flood Study** analyzes **coastal flood risk** and **sea level rise** to the San Francisco waterfront and recommends how to adapt the Port's 7.5-mile waterfront over the next 100 years.
- The **Recommended Plan** will inform subsequent stages of funding and design to develop targeted construction projects.
- In 2024, the proposed solutions are estimated to cost **\$13.5 billion** and, if approved by Congress, the Federal government may pay up to **65% of the cost**.

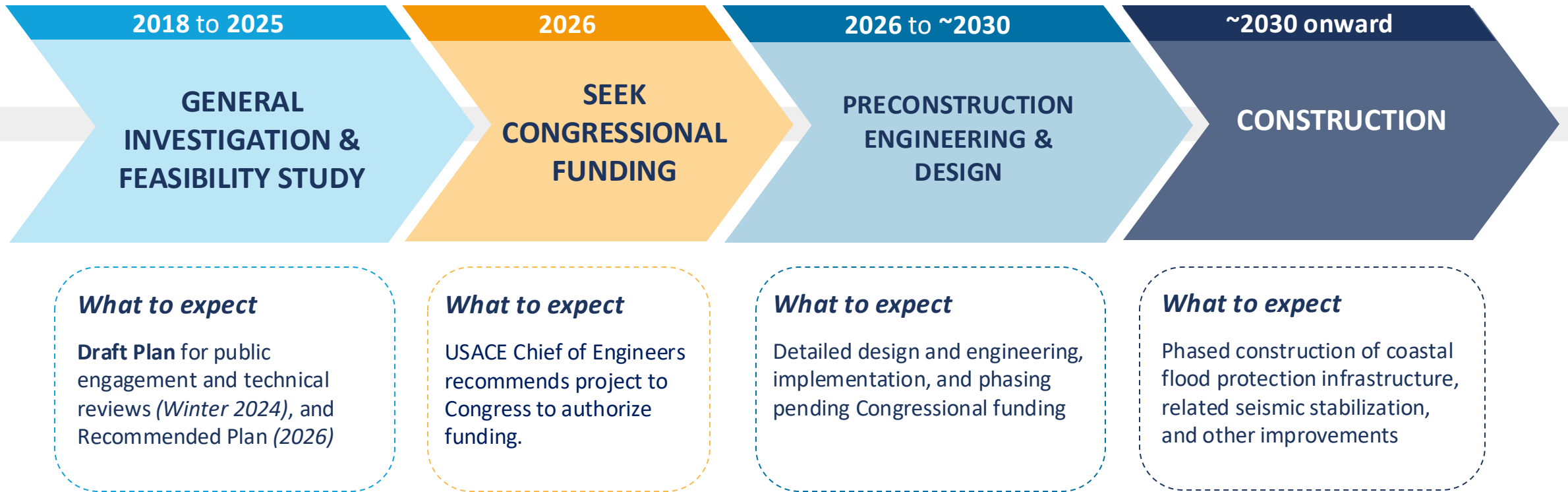


US Army Corps
of Engineers®



Where are we in the Flood Study process?

We are here
Recommended Plan



The Recommended Plan

Waterfront-wide
stormwater management
adaptations related to
coastal flood defenses

Floodproof piers
and select
buildings

Raise and rebuild
wharves and Ferry
Plaza and BART
protection

Raise the shoreline
with seismically
resilient structures

Incorporate nature
based features,
such as creek
enhancements

Port buildings to be
moved or elevated

FISHERMAN'S WHARF
(REACH 1)

EMBARCADERO
(REACH 2)

SOUTH BEACH/MISSION BAY
(REACH 3)

ISLAIS CREEK/BAYVIEW
(REACH 4)



US Army Corps
of Engineers®

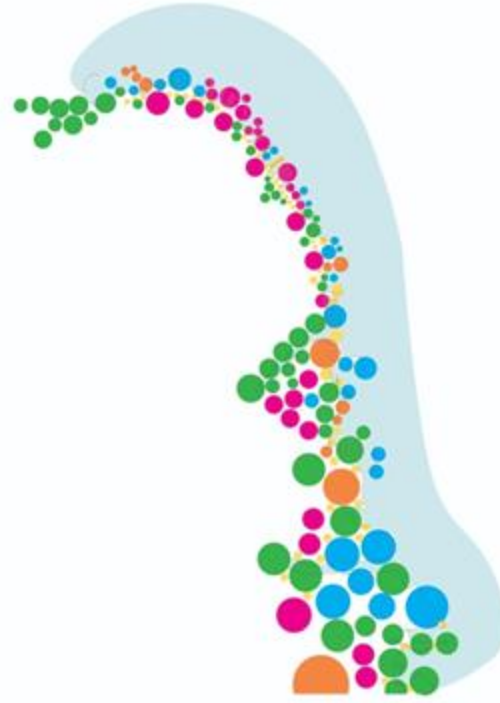


From Risk to Resilience in San Francisco

A once-in-a-century opportunity to build:



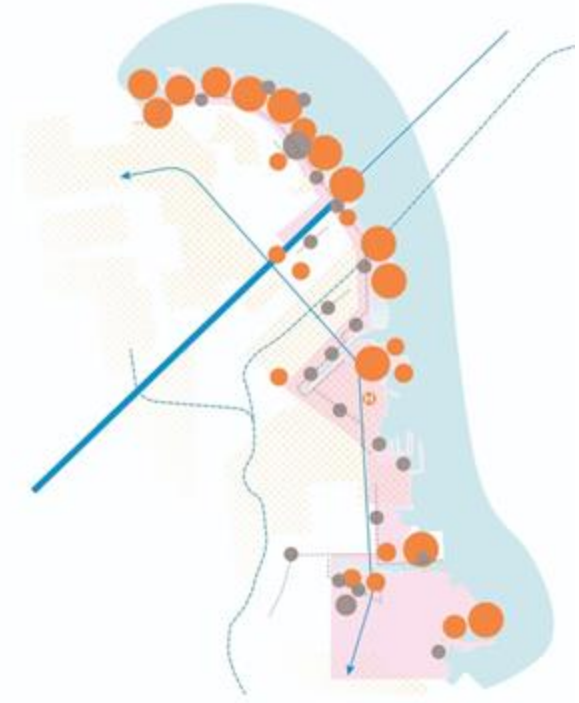
An ecologically
resilient
waterfront



A diverse waterfront
that honors our
city's history



A connected and
accessible
waterfront



A waterfront that
serves the needs of
the community

Step 1

Future USACE Recommended Plan Design Approach System Considerations: Transportation

EMBARCADERO CONNECTIVITY PLAN

- **Protect, coordinate, connect, and improve transportation** through end of century
- Builds on the **SF Flood Study Recommended Plan**
- **Determine mobility needs and define transportation program** for Embarcadero and adjacent corridors

Led by SFMTA in partnership with Port, SF Public Works, and SF Planning. Supported by \$1.3M in Caltrans funds

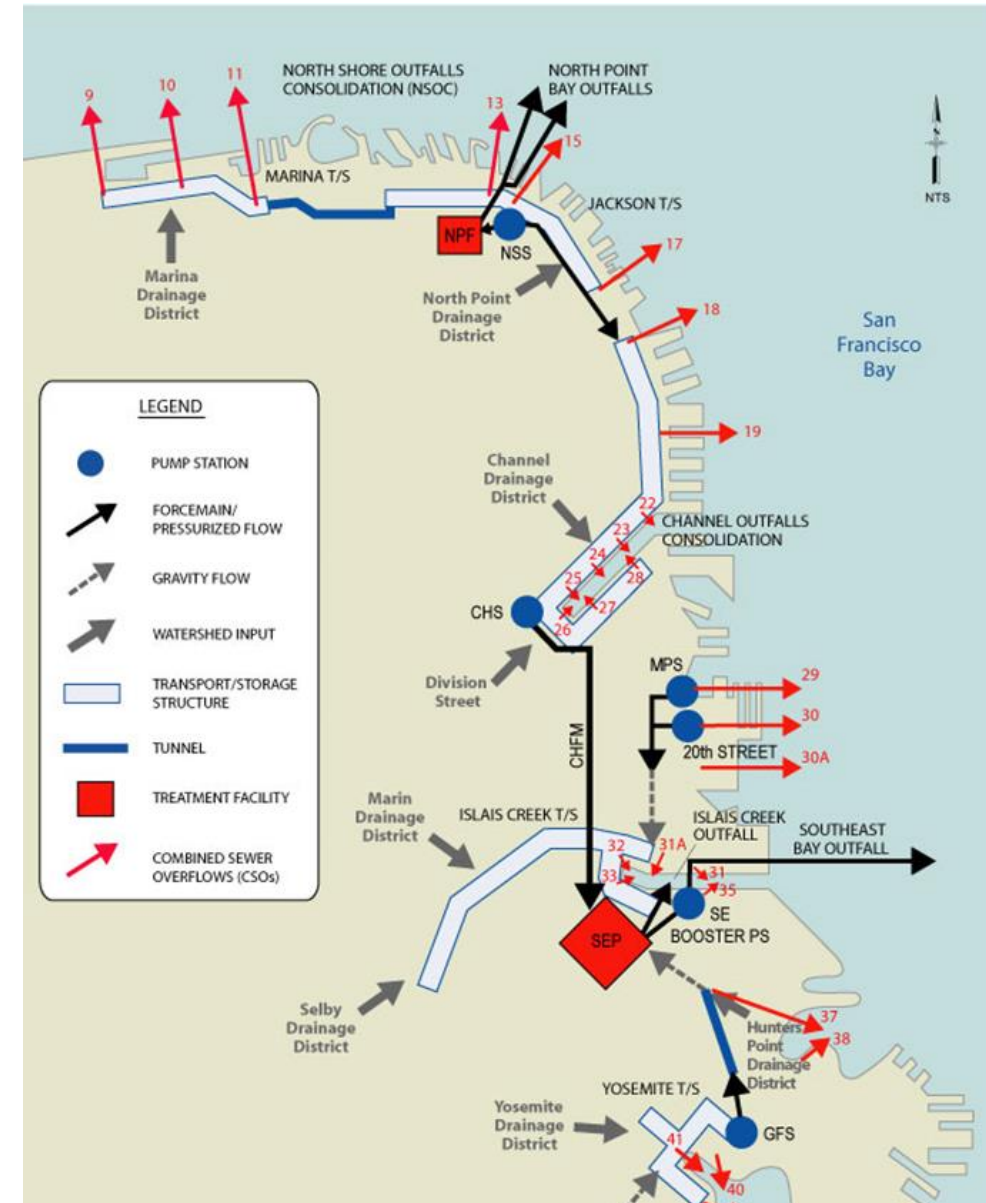


Step 1

Future USACE Recommended Plan Design Approach System Considerations: Interior Drainage

- **Characterize and model interior drainage systems** as they relate to sea level rise and the Recommended Plan
- Develop **strategies for interior drainage features**, including green and grey infrastructure solutions
- **Locate and design interior drainage solutions** into the planning and design areas

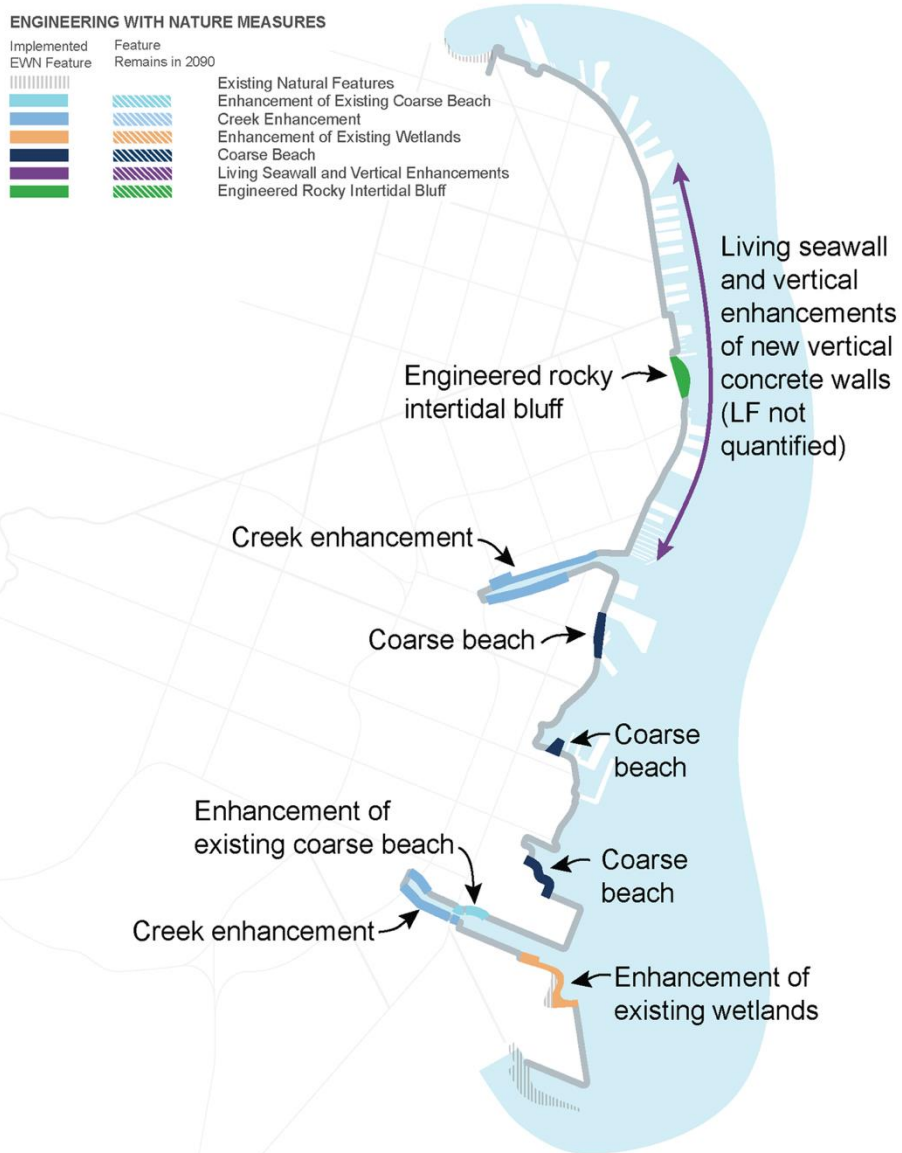
Partnership between the Port, SFPUC, and SF Public Works



Step 1

Future USACE Recommended Plan Design Approach

Opportunity to build a new relationship between the city and natural systems



Step 2

Future USACE Recommended Plan Design Approach: Waterfront Design Framework

Opportunities to *redevelop piers* and/or *improve connections to the Bay*

Coordination with **park** and **plaza redesign**

USACE Flood Study
Project Area

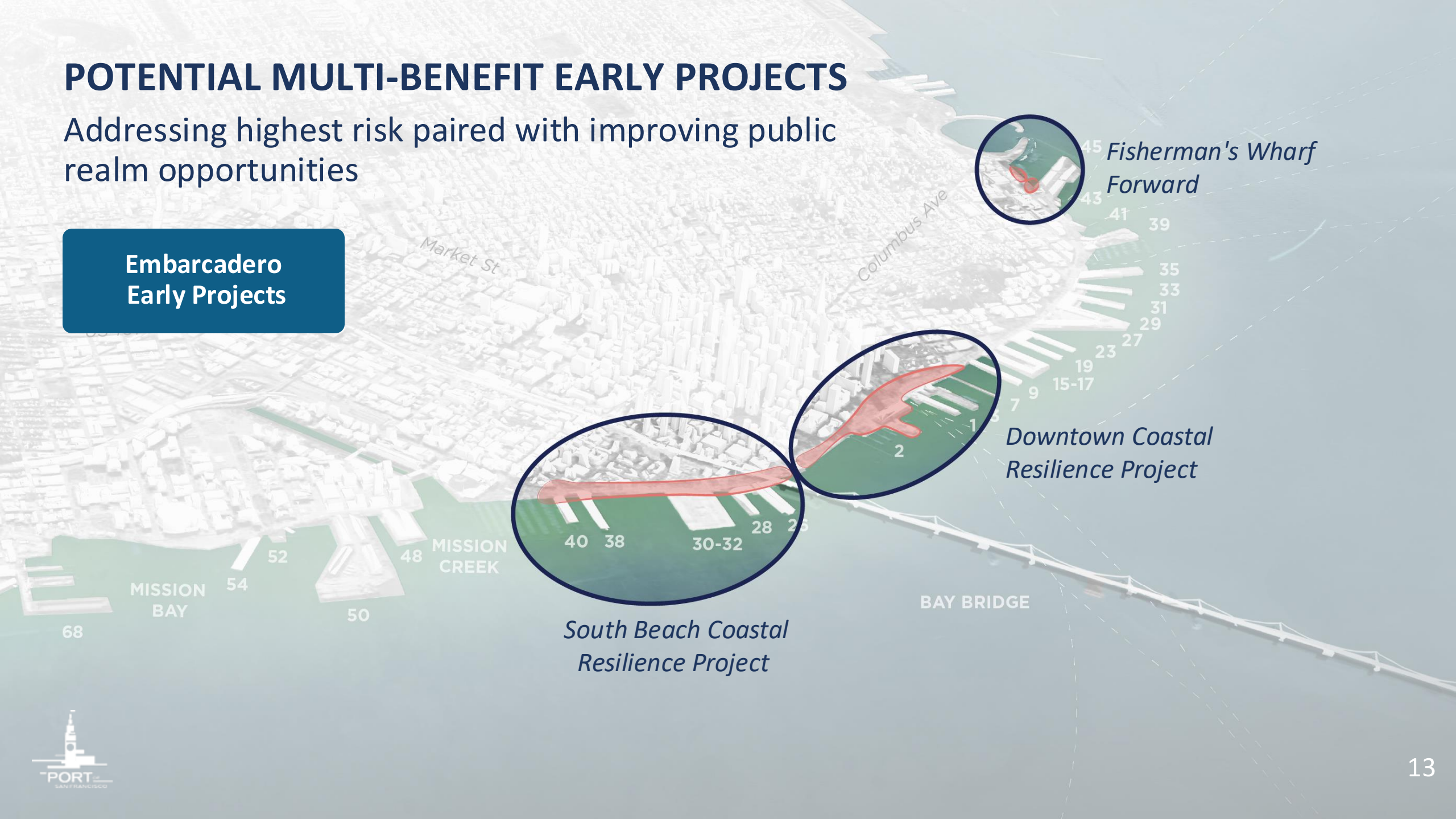
Nature based shoreline feature
at Rincon Park

Continue to *explore bayward moves*
such as coarse beach at Rincon

POTENTIAL MULTI-BENEFIT EARLY PROJECTS

Addressing highest risk paired with improving public realm opportunities

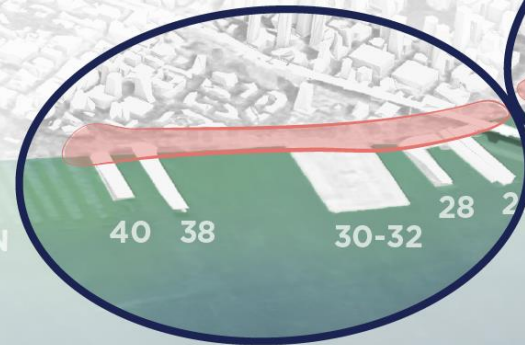
Embarcadero Early Projects



Fisherman's Wharf Forward



Downtown Coastal Resilience Project



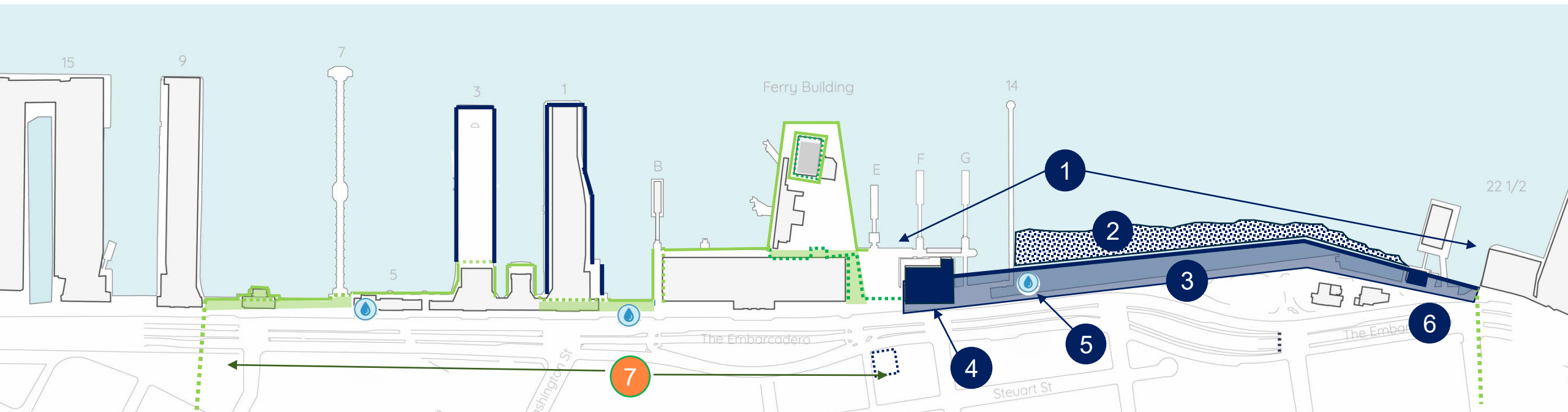
South Beach Coastal Resilience Project

POTENTIAL EARLY PROJECT – USACE RECOMMENDED PLAN IMPLEMENTATION

DOWNTOWN COASTAL RESILIENCE PROJECT

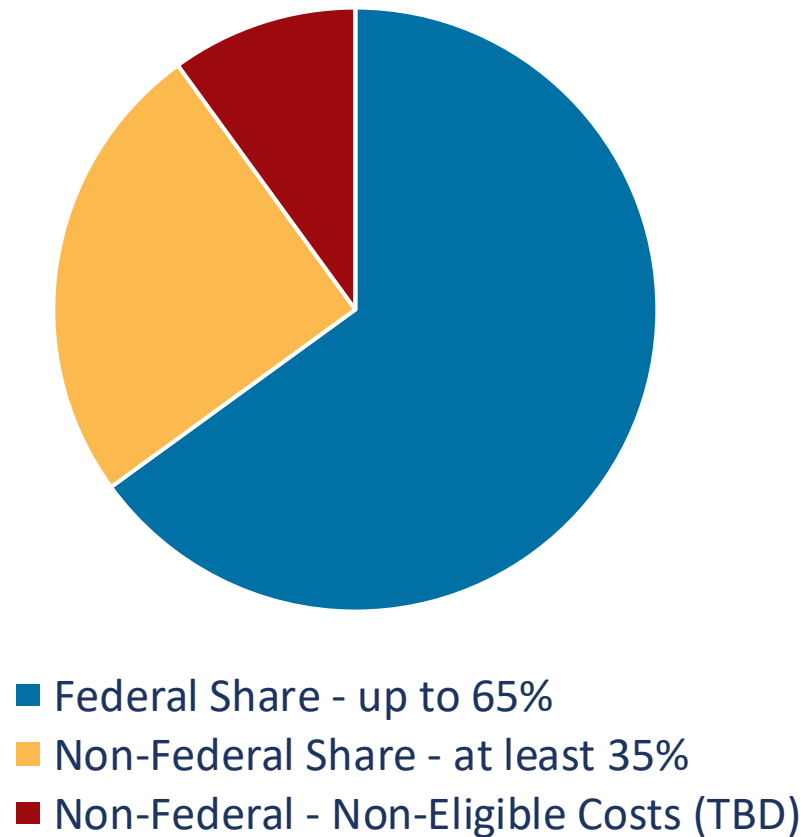


1. New Raised Seawall
2. Nature-Based Shoreline feature
3. Rincon Park enhancement
4. Seismically stable, rehabilitated Agriculture Building
5. Improved Interior drainage
6. Elevated Pier 22.5 Historic Fire Station
7. Interim flood protection



Project Costs and Responsibilities

Funding Breakdown



- \$13.5B initial cost estimate – up to 65% federal (~\$8.8B) / 35% non-federal (~\$4.7B)
- Non-federal sponsor responsibilities:
 - cost-share eligible (such as utility relocation)
 - not cost-share eligible (such as contaminated site clean-up)
- “Betterments” to the Recommended Plan are 100% the responsibility of the non-federal sponsor
- Non-Federal sources include:
 - State
 - Local
 - Private
 - Provision of land or easements (in-kind credit)



This is a once in a generation opportunity to **reshape the public realm, protect key city infrastructure** such as BART and Muni, **maintain maritime and historic resources**, and create a **safer and more resilient waterfront** for all.

The work over the past 7 years has **set the stage for potential multi-billion investment** over the next 20 years, potentially starting with **3 highly visible areas**, phased and delivered incrementally over time



Thank you

