



YOSEMITE SLOUGH NEIGHBORHOOD ADAPTATION STRATEGY

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ACKNOWLEDGEMENTS

ACKNOWLEDGEMENT TO THE RAMAYTUSH OHLONE

The San Francisco Planning Department acknowledges that we are on the unceded ancestral homeland of the Ramaytush Ohlone, who are the original inhabitants of the San Francisco Peninsula. As the indigenous stewards of this land and in accordance with their traditions, the Ramaytush Ohlone have never ceded, lost, nor forgotten their responsibilities as the caretakers of this place, as well as for all peoples who reside in their traditional territory. As guests, we recognize that we benefit from living and working on their traditional homeland. We wish to pay our respects by acknowledging the Ancestors, Elders, and Relatives of the Ramaytush Ohlone community and by affirming their sovereign rights as First Peoples.

ACKNOWLEDGEMENT TO THE ADAPTATION PLANNING GRANT PROGRAM

The Yosemite Slough Neighborhood Adaptation Strategy is supported by the Adaptation Planning Grant Program (APGP). This grant provides funding to help fill planning needs, providing communities with the resources to identify climate resilience priorities, and supporting the development of climate resilience projects across the state.

APGP is part of the Integrated Climate Adaptation and Resiliency Program (ICARP) housed within the Governor's Office of Land Use and Climate Innovation. ICARP advances statewide climate adaptation and resilience by coordinating investments, partnerships, and climate science to ensure people, natural systems, and the built environment are protected, prepared, and thrive in the face of climate change.

Learn more: <https://lci.ca.gov/climate/icarp/>

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GLOSSARY

Climate adaptation: Adjustment or preparation of natural, built, or social systems to new or changing climate conditions and climate variability which moderate harm or provide beneficial opportunities.

Climate change: A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

Coastal hazard: An event or physical condition that exposes coastal areas to risk of property damage, injuries or loss of life, and/or environmental damage. Coastal hazards include sea level rise, storm surge, coastal flooding, tsunamis, hurricanes, and algal blooms. For Yosemite Slough Neighborhood Adaptation Strategy, coastal hazards refer to sea level rise, storm surge, and coastal flooding.

Exposure: The nature and degree to which natural, built, or social systems are subjected to sea level rise inundation and storm surge, coastal flooding, or inland flooding.

Freeboard: Freeboard is the vertical distance between the design water surface elevation and the top of a protective structure.

Greenhouse gases: Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

King tide: The highest predicted high tide of the year at a coastal location. King tides occur once or twice every year when the orbits and alignment of the Earth, moon, and sun combine to produce the greatest tidal effects of the year.

Nature-based solutions: A subset of climate adaptation actions that leverage nature or natural processes to reduce risks from hazards. These solutions can include working with existing natural ecosystems or implementing natural components, such as live vegetation or natural soils, as a substitute for hard-engineered infrastructure.

Permanent inundation: Permanent inundation occurs when an area is exposed to regular daily tidal inundation. Maritime facilities, natural areas, shoreline protection features, and outfalls may be exposed to permanent inundation.

Public asset: An asset that is owned, operated, and maintained by a public agency or City department, such as roads and highways, airports, water and sewage systems, government offices, libraries, and community centers.

Resilience: The capacity of a system and its component parts to cope with hazardous shocks and stresses in a timely and efficient manner by responding, adapting, and transforming in ways that restore, maintain, and improve its essential functions, structures, and identity while retaining the capacity for growth and change.

Risk: The potential for temporarily and permanently losing something of value associated with the natural, built, or social environment. Values (e.g., level of service, economic health, physical health, social status, governance) can be gained or lost under a range of sea level rise and storm surge impacts. Risk can also describe the likelihood of an event with uncertainty occurring.

Sea level rise: Increase to the height of sea level, both globally and locally, due to a change in ocean volume as a result of a change in the mass of water in the ocean (e.g., due to melt of glaciers and ice sheets), changes in ocean volume as a result of changes in ocean water density (e.g., expansion under warmer conditions), changes in the shape of the ocean basins, and changes in Earth's gravitational and rotational fields, as well as local subsidence or uplift of the land.

Social vulnerability: Characteristics of individuals and households that affect their ability to prepare for, respond to, and recover from a disaster.

Storm surge: The temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions (e.g., low atmospheric pressure and/or strong winds). The height of a storm surge event is the difference between the observed sea level and the sea level that is expected based on regular tidal variations.

Temporary flooding: Temporary flooding caused by storm events or extreme tides are generally short in duration (i.e., hours to days) but can have long-lasting consequences.

Vulnerability: The degree to which an asset, someone, or something is susceptible to, or unable to cope with, a hazard. Vulnerability is a function of exposure, sensitivity to hazards, and capacity to adapt to changes.

ABBREVIATIONS & ACRONYMS

Bay	San Francisco Bay	State Parks	California State Parks
BCDC	San Francisco Bay Conservation and Development Commission	Strategy	Yosemite Slough Neighborhood Adaptation Strategy
BVHP	Bayview Hunters Point	SWEL	Stillwater elevation
CIP	Capital Improvement Plan	SWRCB	California State Water Resources Control Board
City	City and County of San Francisco	TAC	Technical Advisory Committee
CSD	Combined Sewer Discharge	U.S.	United States
DTSC	California Department of Toxic Substances Control	USACE	United States Army Corps of Engineers
EI	Environmental Infrastructure	WRP	Waterfront Resilience Program
EPA	United States Environmental Protection Agency	YSNAS	Yosemite Slough Neighborhood Adaptation Strategy
FEMA	Federal Emergency Management Agency	%	Percent
Flood Study	San Francisco Coastal Waterfront Flood Study	\$	Dollars
GO	General Obligation		
ICSMAS	Islais Creek Southeast Mobility and Adaptation Strategy		
IPCC	Intergovernmental Panel on Climate Change		
K	Thousands		
M	Millions		
Measure AA	San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Measure		
MIPS	Management, Information, and Professional Services		
MTC	Metropolitan Transportation Commission		
NAVD88	North American Vertical Datum of 1988		
Navy	United States Navy		
NPL	National Priorities List		
OEHHA	California Office of Environmental Health Hazard Assessment		
OPC	California Ocean Protection Council		
PDR	Production, Distribution, and Repair		
Port	Port of San Francisco		
PUMA	Public Use Microdata Area		
RSAP	Regional Shoreline Adaptation Plan		
SB	California Senate Bill		
SFMTA	San Francisco Municipal Transportation Agency		
SFPUC	San Francisco Public Utilities Commission		
Slough	Yosemite Slough		
SRA	State Recreation Area		
SLRVCA	San Francisco Sea Level Rise Vulnerability and Consequences Assessment		

EXECUTIVE SUMMARY

For the local businesses and 1,300 San Franciscans who live along the shoreline of the Yosemite Slough and in the immediate neighborhood, occasional flooding is already a neighborhood nuisance. These flood risks will increase sharply with rising sea levels in the coming decades. The Yosemite Slough—a shallow, 1,600-foot-long intertidal channel—flows through the Candlestick Point State Recreation Area and into the neighborhood, which is one of the areas of San Francisco most vulnerable to coastal flooding. Current San Francisco Bay shoreline projections estimate that sea levels could rise by about 1 foot by 2050 and at least 3 to 6 feet by 2100.¹

Without significant action to reduce risks, this sea level rise will lead to permanent inundation of streets along the Slough shoreline, as well as temporary flooding of buildings and bus routes further inland during extreme coastal floods.

This Yosemite Slough Neighborhood Adaptation Strategy (YSNAS, Strategy) characterizes these risks and outlines adaptation measures to protect residents and critical infrastructure, build community planning capacity, and increase access to open space, amongst other goals.

¹ California Ocean Protection Council, State of California Sea Level Rise Guidance: 2024 Science & Policy Update.

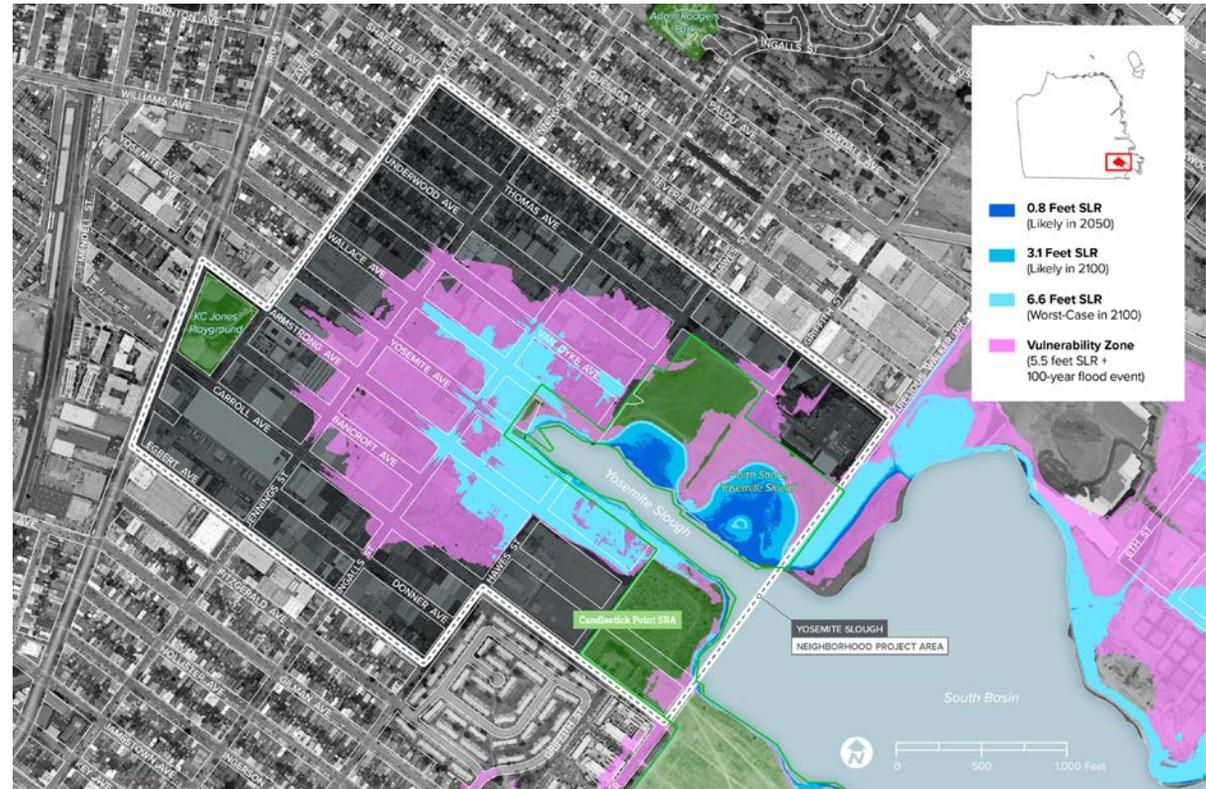


FIGURE ES-1. YSNAS PROJECT AREA

The Strategy is intended to inform future planning efforts in the YSNAS project area (Figure ES-1) by estimating current and projected hazards, identifying neighborhood assets at risk, and surfacing community priorities that will inform future investments to address sea level rise and other climate-driven changes.

SETTING & CONTEXT

Yosemite Slough lies in the Bayview Hunters Point (BVHP) neighborhood and is surrounded by industrial businesses and homes. During World War 2, Hunters Point, directly north of the Slough, transformed into a major shipyard serving the United States Navy. The shipyard attracted thousands of African American workers from southern

states. Discriminatory housing practices segregated the African American community, limiting housing opportunities in other neighborhoods.

Environmental contamination from the Hunters Point Naval Shipyard and other industrial uses continues to negatively affect community members’ health long after the shipyard closed. Rising sea levels and associated rising groundwater levels are expected to exacerbate contamination risks by transporting pollutants from soil or buried waste, underscoring the urgent need to address coastal hazards.

Multiple federal and state agencies, including California State Parks (State Parks) and U.S. Environmental Protection Agency (EPA), are conducting restoration and remediation activities in Yosemite Slough. **Figure ES-2** depicts the Slough in 2025.

Several waterfront resilience efforts are underway or planned across San Francisco (shown in **Figure ES-3**), including a Citywide Shoreline Adaptation Plan, anticipated to begin in 2026. Before launching this citywide effort, the City prioritized areas like the YSNAS project area and nearby Islais Creek for more in-depth preliminary planning, which has enabled greater community engagement, feedback, and capacity building than is usually possible in citywide processes.

This detailed YSNAS represents the City’s commitment to understanding environmental hazards in the BVHP neighborhood, incorporating community priorities, and better positioning the neighborhood for future funding and comprehensive coverage in the citywide plan.

FIGURE ES-2. PHOTOS OF YOSEMITE SLOUGH



Yosemite Slough looking east towards Hunters Point Shipyard (left and right)

Photo credit: SF Planning

FIGURE ES-3. EXISTING SEA LEVEL RISE PLANNING EFFORTS



STRATEGY GOALS

The adaptation measures proposed in YSNAS aim to provide multiple ecological and social benefits alongside reducing flood risk. 5 overarching goals guide this strategy, which were developed by the City in partnership with community members:

GOAL 1: Adapt buildings, homes, and infrastructure to improve neighborhood safety, preparedness, livability, and economic vibrancy.

GOAL 2: Collaborate with existing remediation and restoration efforts to improve shoreline health through nature-based measures.

GOAL 3: Build community capacity for flood risk planning and adaptation, value and address the BVHP neighborhood's diverse needs and perspectives.

GOAL 4: Improve the resilience of transportation infrastructure and focus on protecting pedestrian, bicycle, and transit facilities in the YSNAS project area.

GOAL 5: Improve access to open space, recreation, and the shoreline.

YSNAS starts a long-term adaptation process for Yosemite Slough. The City will continue to engage community members and coordinate with other public agencies throughout the larger shoreline planning process to ensure the Strategy meets these goals as it moves toward implementation.

PUBLIC & STAKEHOLDER ENGAGEMENT

A robust community engagement process throughout 2024 and 2025 shaped YSNAS. The YSNAS project team hosted public workshops, walking tours, and focus groups; briefed community stakeholders; presented at community events; and worked closely with a group of Community Ambassadors to elevate community voices and priorities.

Key themes from public and stakeholder engagement included:

- Importance of addressing contamination in the YSNAS project area
- Participants preferred adaptation measures that would protect open space; improve water, air, and soil quality; and improve public health
- Participants wanted solutions that could adapt to changing projections and are easier to maintain
- Participants valued their local institutions, businesses, and fellow residents, and expressed concerns about the displacement that could accompany increased investment

The Strategy's community asset descriptions, proposed adaptation measures, and implementation considerations reflect the detailed and wide-ranging feedback that community members provided. For instance, the clear community preference for nature-based solutions increased scoring for adaptation measures with environmental benefits. The YSNAS project team is grateful to the many community members who provided input to the process, as the Strategy could not exist without it.

YOSEMITE SLOUGH NEIGHBORHOOD ADAPTATION STRATEGY

YSNAS presents a suite of conceptual adaptation measures that could reduce the impacts of projected sea level rise. The proposed adaptation measures are shaped by specific shoreline conditions, the level of expected flood protection required, and community input (Figure ES-4).

The Strategy also proposes multiple adaptation options in several locations, ranging from traditional gray infrastructure to more heavily nature-based solutions. For example, on the Slough's south and northwest shores, the Strategy explores both seawalls ("hard" or gray infrastructure) and ecotone levees (a nature-based alternative). Adaptation measures can also be revised to increase the levels of flood protection if expected sea level rise tracks toward higher projections for 2050 and/or 2100.

FIGURE ES-4. POTENTIAL LOCATIONS FOR SEA LEVEL RISE ADAPTATION MEASURES



Seawalls and Living Seawalls

Seawalls could be constructed with the option to add additional height to adapt to higher-than-projected future storm surges or sea level rise. Seawalls are hardened, vertical barriers to prevent the sea from encroaching on or eroding the land. If sea levels rise high enough to expose the lower part of the seawall consistently to tides, it could be converted into a “living” seawall by adding textured surfaces and substrates that support marine life. More coordination around nature-based solutions would be needed with State Parks, as a seawall does not align with the State Parks General Plan.²



Photo credit: Smithsonian Environmental Research Center

Ecotone Levees

Ecotone levees provide a “greener” alternative to more traditional seawalls. An ecotone levee combines an engineered levee or berm with a shallow, graded slope that provides a gradual transition from wetland to upland habitat. The levee height could be modified to provide additional protection, if needed. In addition to supporting biodiversity, an ecotone levee could provide additional open space and shoreline access for the community and provide ecological, recreational, and aesthetic benefits. However, because more space is required for an ecotone levee than a seawall, construction would impact properties adjacent to the shoreline and could require moving public infrastructure.



Photo credit: Julian Meisler, Sonoma Land Trust

Ecotone Slope Enhancement

An ecotone slope enhancement at the “head” of the Slough could provide additional habitat benefits and support a more gradual transition from wetland to upland habitats. As sea levels rise, wetlands could migrate inland. Ground elevations at the head of the slough are high enough to prevent coastal waters from overtopping the existing slope and flooding inland areas. The ecotone slope enhancement would increase biodiversity, provide open space, and increase wetland resilience.



Photo credit: Ellen Plane, San Francisco Estuary Institute

Wetlands Restoration

Restoring wetlands along the southeastern Slough shoreline could improve ecological conditions, increase habitat connectivity, provide natural flood protection and wave energy dissipation, and enhance biodiversity. The wetlands could include elements that enhance recreation opportunities, such as filling gaps in the San Francisco Bay Trail.



Photo credit: SF Planning

2. California State Parks Foundation, “Using Nature-Based Solutions to Build Climate-Resilient State Parks.” https://www.parks.ca.gov/pages/21299/files/CPSRA_GP_EIR201301.pdf

IMPLEMENTATION CONSIDERATIONS

Several current efforts will influence the selection, design, and implementation of adaptation measures at Yosemite Slough. YSNAS must align with EPA-led remediation of Yosemite Slough and associated development; collaborate with State Parks on various restoration and access initiatives, including at Candlestick Point SRA; and coordinate with the San Francisco Public Utilities Commission regarding adjacent water infrastructure. YSNAS must also integrate stormwater management into adaptation considerations. (Currently, YSNAS focuses on shoreline protection and does not yet fully consider how projects may interact with existing and planned runoff management.)

YSNAS implementation will also require significant additional funding, likely from multiple sources. Potential funding sources could include the City's General Obligation (GO) bonds; the San Francisco Bay Restoration Authority's Measure AA; state-level Proposition 4, Proposition 68, California Senate Bill (SB) 1 grants; and federal assistance through U.S. Army Corps of Engineers or Federal Emergency Management Agency.

The changing landscape of adjacent planning and public works efforts, ongoing funding needs, and neighborhood developments mean YSNAS will remain an evolving strategy. It is not intended to represent a final adaptation plan: rather, adaptation measures can be elevated from the Strategy and moved toward execution as local conditions, funding availability, and updated sea level rise projections allow.

NEXT STEPS

This Strategy establishes a strong foundation for the additional planning and execution work ahead. In partnership with Community Ambassadors and local stakeholders, the YSNAS process strengthened community capacity, surfaced neighborhood priorities, and developed a suite of conceptual adaptation measures. Next steps to advance this work include:

- Incorporate findings from the YSNAS into the Citywide Shoreline Adaptation Plan, which is anticipated to begin planning efforts in 2026 (in compliance with SB 272)
- Pursue funding for future outreach, engineering, and design efforts to advance the viable adaptation concepts described in the Strategy, in coordination with federal, state, and local stakeholders
- Develop a long-term adaptation plan in response to progress on remediation efforts, updated sea level forecasts, and other shifts in YSNAS project area conditions

1. INTRODUCTION



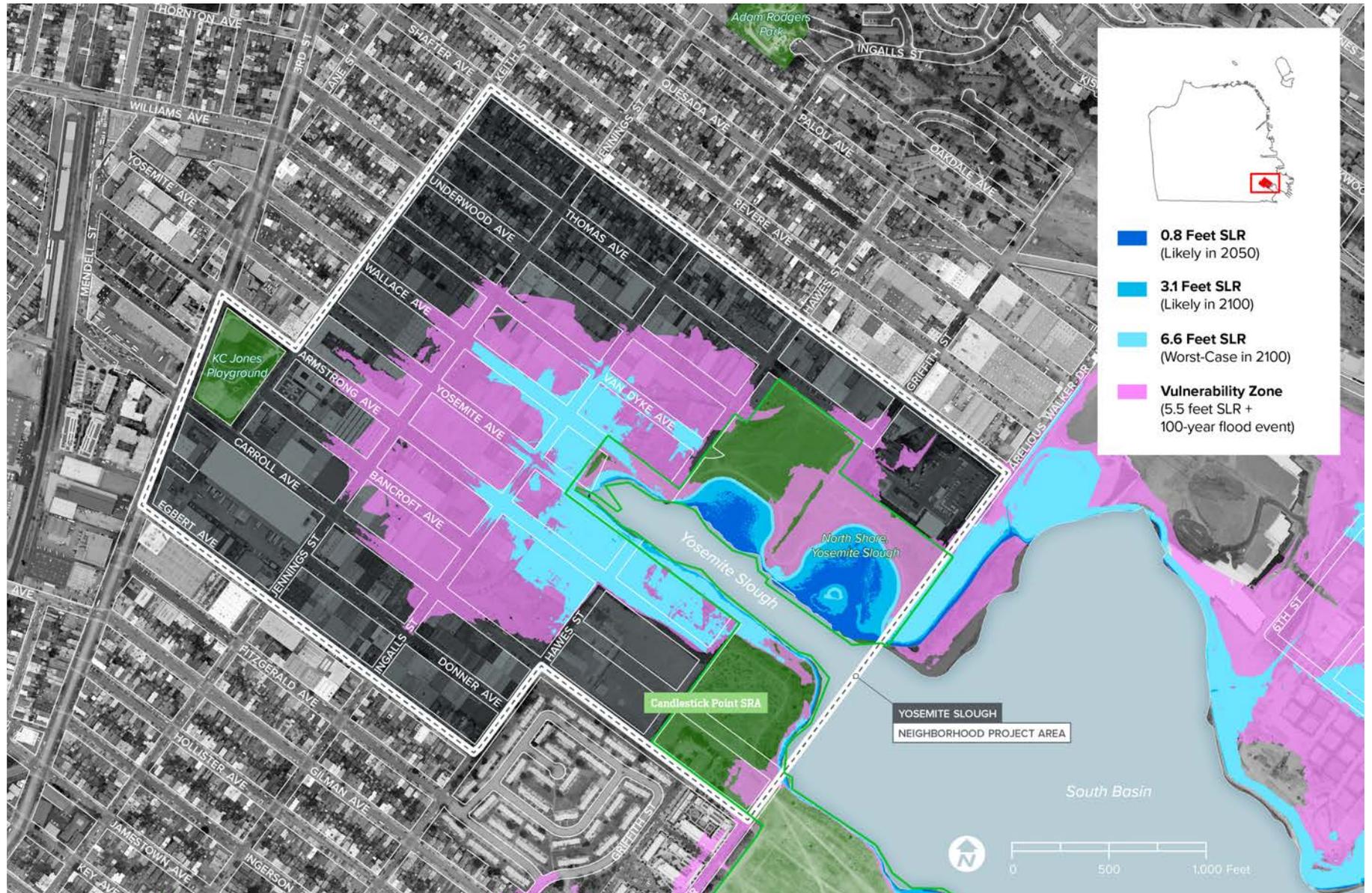


FIGURE 1. YSNAS PROJECT AREA

The Yosemite Slough Neighborhood Adaptation Strategy (YSNAS, Strategy) presents potential sea level rise adaptation measures that could provide multiple benefits to the neighborhood surrounding Yosemite Slough (Slough).

Yosemite Slough is a shallow, 1,600-foot-long, intertidal channel nestled in the shoreline of Candlestick Point State Recreation Area (SRA) in the Bayview Hunters Point (BVHP) neighborhood in San Francisco. The Slough is a wetland along the City and County of San Francisco's (City) waterfront (Figure 1). With almost 1 foot of sea level rise projected to occur over the next 25 years and 3 to 6 feet of sea level rise projected to occur by 2100, the neighborhood surrounding Yosemite Slough faces increased risks from coastal flooding. Without adaptation measures, streets and local businesses will be frequently flooded, and emergency and critical services may be disrupted. Legacy contamination from heavy industry could spread with rising waters, putting community members at greater health risk.

YSNAS is the first major step in filling a gap in sea level rise adaptation planning along the City's shoreline and creating a neighborhood adaptation plan at Yosemite Slough (Figure 2). Figure 3 shows the location of the YSNAS project area as it relates to the San Francisco



FIGURE 2. EXISTING SEA LEVEL RISE PLANNING EFFORTS

Coastal Waterfront Flood Study (Flood Study) led by the Port of San Francisco (Port) and United States (U.S.) Army Corps of Engineers (USACE). The Flood Study aims to defend the 7.5 miles of waterfront between Aquatic Park and Heron's Head Park from seismic risks and flood hazards expected between 2040 and 2140. The rest of the shoreline south of Heron's Head Park is in the jurisdic-

tion of multiple agencies, including the U.S. Navy (Navy), California State Parks (State Parks), San Francisco Bay Conservation and Development Commission (BCDC), and the City.

Starting in 2026, the City will initiate a Citywide shoreline adaptation plan to stitch together adaptation measures along the

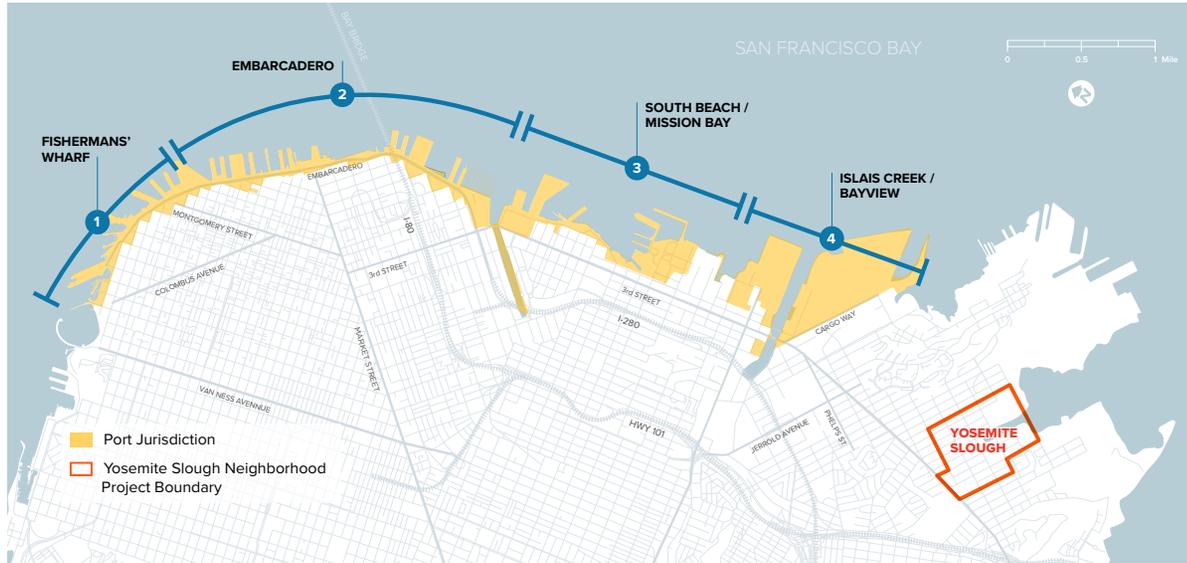


FIGURE 3. SAN FRANCISCO WATERFRONT FLOOD STUDY AREA (PORT AND USACE)

entire San Francisco shoreline. Citywide shoreline adaptation plan development is anticipated to take 2 years to seek compliance with California Senate Bill (SB) 272.³ The development of YSNAS created an early opportunity to build community capacity and identify neighborhood-specific concepts that will help inform this effort.

The BVHP neighborhood has faced decades of injustices and environmental pollution from heavy industrial activity, such as ship repair, waste management, and manufac-

turing. YSNAS is an opportunity to listen to community needs, address past harms, and build upon decades of environmental justice advocacy led by community members and community-based organizations. Organizations like Greenaction for Health and Environmental Justice and Literacy for Environmental Justice have empowered residents through community science initiatives and education programs to address contamination from Hunters Point Shipyard, emissions from the Southeast Treatment Plant, and other toxic sources.

To ensure community voices were being heard, the YSNAS team intentionally engaged residents, local businesses, and community organizations to establish priorities and build community capacity around coastal flooding.

YSNAS begins the adaptation planning effort by identifying a menu of conceptual measures to adapt to 3.1 feet of sea level rise by 2100. The Strategy is the product of input from numerous BVHP neighborhood leaders, youth, residents, and workers who are deeply rooted and invested in the community. Although YSNAS consists of conceptual measures, it represents a process guided by community goals, priorities and input. Significant funding, remediation of the Slough, and additional coordination with State Parks, the United States Environmental Protection Agency (EPA), and other affected parties will be necessary before these conceptual adaptation measures are advanced further. However, as in other San Francisco Bay communities⁴, YSNAS is a significant first step to the City’s efforts to secure funding, state and federal partnerships, and detailed designs to realize a resilient vision for the neighborhood surrounding Yosemite Slough.

3 LegiScan, “California SB272 | 2023-2024 | Regular Session.”

4 North Richmond, Sunnyvale

1.1 GOALS & OBJECTIVES

To guide this adaptation planning effort, the YSNAS expands on goals and objectives established in previous Bayview resilience efforts. Community members, Community Ambassadors, and Technical Advisory Committee (TAC) members then provided input to refine the goals and objectives, ensuring that they aligned with the project scope and community priorities.

GOAL 1: Adapt buildings, homes, and infrastructure to improve neighborhood safety, preparedness, livability, and economic vibrancy.



- » Protect critical infrastructure, homes, and local businesses from flooding.
- » Develop a cost-effective framework for addressing uncertain flood risks, such as a flexible adaptation approach.
- » Support a sustainable local economy by engaging workers and industries in the design, implementation, operation, and maintenance of adaptation measures.

GOAL 2: Collaborate with existing remediation and restoration efforts to improve shoreline health through nature-based measures.



- » Align or integrate adaptation measures with ongoing and planned restoration efforts.
- » Ensure remediation efforts improve shoreline health.
- » Prioritize nature-based solutions and green infrastructure.

GOAL 3: Build community capacity for flood risk planning and adaptation, value and address the BVHP community's diverse needs and perspectives.



- » Act on community voices to demonstrate they are being heard.

- » Engage across generations, focusing on youth, to build long-term planning, understanding, and stewardship.
- » Enhance existing community-based organizations' capacity and recruit community ambassadors for valuable input.

GOAL 4: Improve the resilience of transportation infrastructure and focus on protecting pedestrian, bicycle, and transit facilities in the project area.



- » Align with the Bayview Community Based Transportation Plan⁵ and San Francisco's Bike and Rolling Plan⁶ by improving pedestrian and bicycle connections and striving for resident safety in the neighborhood.
- » Ensure access is maintained to local businesses, community facilities, and organizations.

GOAL 5: Improve access to open space, recreation, and the shoreline.



- » Support State Parks in constructing public access infrastructure in the Yosemite Slough portion of Candlestick Point SRA.
- » Address community needs regarding safety around and access to public park facilities.
- » Improve connections to parks and open space.

⁵ SFMTA, Bayview Community Based Transportation Plan Final Plan.

⁶ SFMTA, San Francisco's Bike and Rolling Plan.

1.2 DOCUMENT ORGANIZATION

This strategy document establishes the adaptation context and existing conditions before progressing to the proposed adaptation measures, their potential implementation, and next steps. The document is organized as follows:

- **Section 1** provides an overview of YSNAS and its goals.
- **Section 2** identifies policy and planning drivers for YSNAS.
- **Section 3** summarizes Yosemite Slough's topography, natural environment, contamination issues, and the BVHP neighborhood's history, land use, and local infrastructure.
- **Section 4** presents an overview of outreach efforts and community input that shaped Strategy outcomes.
- **Section 5** describes sea level rise and inland flooding projections and their impacts in the project area.
- **Section 6** presents an overview of community-vetted adaptation measures that could be implemented to protect against sea level rise and inland flooding.
- **Section 7** describes the implementation considerations and next steps for adaptation in the project area.

2. SUMMARY OF RELEVANT PLANS & POLICY



The State of California and local agencies in the Bay Area are undertaking multiple efforts to address the impacts of sea level rise along the ocean and San Francisco Bay (Bay) shorelines. YSNAS builds on and aligns with these ongoing efforts.

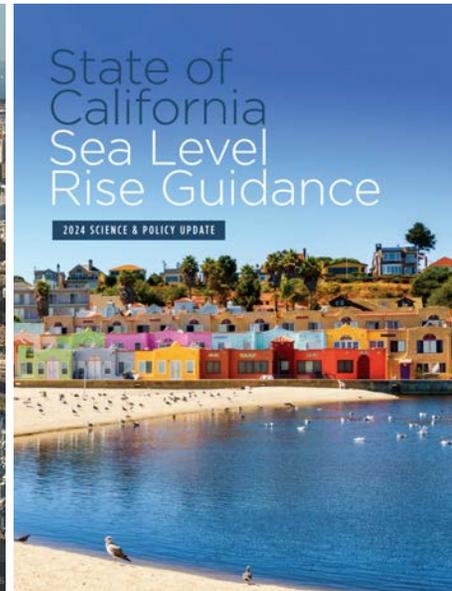
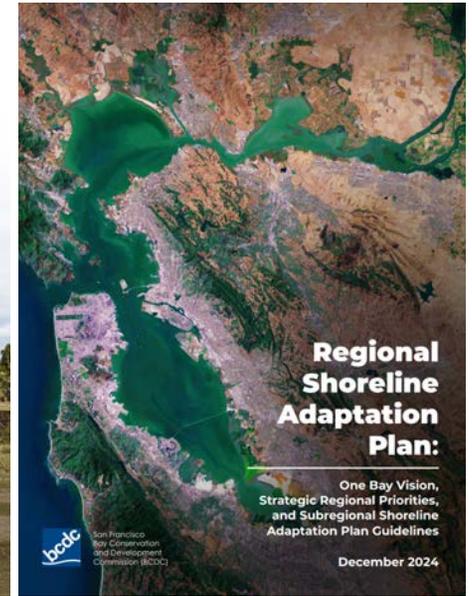
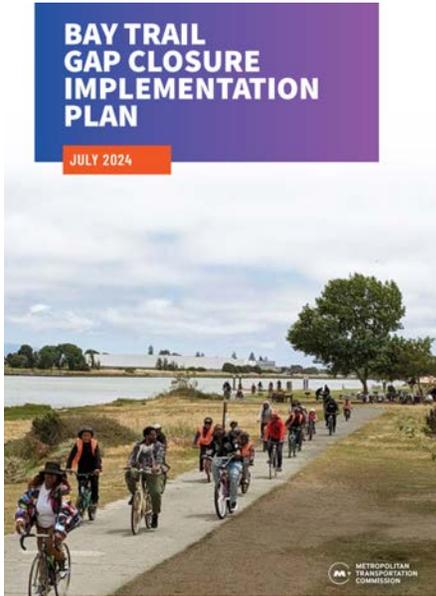
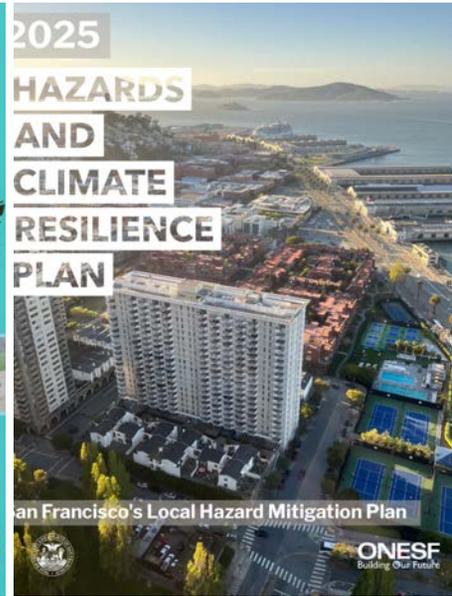
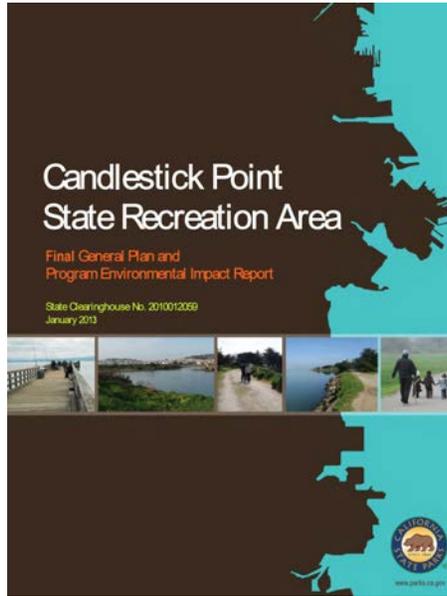
Sea level rise is a slow-moving, chronic threat that requires forward-looking planning and adaptation efforts to understand future sea levels and integrate them into measures and development efforts along shorelines. The California Ocean Protection Council (OPC) State of California Sea Level Rise Guidance, which was updated with the best available science in 2024, has supported sea level rise adaptation planning and decision-making in California since 2010.

California SB 272, passed in 2023, requires all coastal local governments to develop sea level rise plans by 2034. SB 272 incentivizes local governments to approve and integrate their sea level rise plans into regional planning frameworks and capital improvement plans.

BCDC developed the Regional Shoreline Adaptation Plan (RSAP) to provide guidance for local jurisdictions developing subregional sea level rise adaptation plans, aligning adaptation efforts in the Bay Area.

The RSAP's Coastal Flood Hazards and Sea Level Rise Scenarios Standard identifies required sea level rise scenarios for adaptation planning that align with the OPC's sea level rise guidance. The RSAP's Adaptation Strategy Standards provide a framework for selecting strategies to be included in formal plans. Strategies should maximize the benefits of shoreline uses and Baylands habitats; improve community health, economic development, infrastructure, and housing needs; and ensure there are paths to respond to changing risks over time. Several of these objectives, particularly shoreline use and adaptability, were integrated with the YSNAS project goals and the adaptation measures identification process.

Table 1 summarizes the multiple policies, plans and programs that inform sea level rise planning.



Sample covers of policy and plan documents relevant to sea level rise adaptation at Yosemite Slough

TABLE 1. EXISTING POLICIES, PLANS, AND PROGRAMS

Summary table of policies, plans, and programs relevant to sea level rise adaptation at Yosemite Slough

Document Name and Author	Geography	Summary	Relation to YSNAS
<p>2025 Updated Candlestick Point-Hunters Point Phase 2 (Bayview Hunters Point Redevelopment Plan & Hunters Point Shipyard Redevelopment Plan)</p> <p>San Francisco Office of Community Investment and Infrastructure</p>	Neighborhood	The redevelopment plan aims to develop market-rate and affordable housing, parks and open space, commercial and office space, and a waterfront district for the Candlestick Point and Hunters Point areas.	The redevelopment plan includes several criteria for accommodating sea level rise along the shoreline, in open spaces, and development areas. Sea level rise adaptation in Yosemite Slough must account for transformations in existing land use and inland stormwater flow, additional community assets, and new residents, and local businesses.
<p>2025 Hazards and Climate Resilience Plan</p> <p>San Francisco Office of Resilience and Capital Planning</p>	City	This Federal Emergency Management Agency (FEMA)-approved local hazard mitigation plan also serves as the implementation roadmap for much of the San Francisco General Plan's Safety & Resilience Element. Covering the period from 2025 to 2030, the plan addresses coastal flood risk by advancing sea level rise capital planning, studies on sea level rise and contamination, and nature-based shoreline adaptation measures as core resilience strategies.	Developing an adaptation plan for Yosemite Slough is included as an action in the Hazards and Climate Resilience Plan.
<p>2025 Updated San Francisco Guidance on Incorporating Sea Level Rise into Capital Planning</p> <p>San Francisco Capital Planning Committee</p>	City	The guidance provides directions to City departments on how to incorporate sea level rise into new construction, capital improvement, and maintenance projects. The guidance includes sea level rise projections up to 2100.	Alignment with the guidance will ensure public infrastructure adaptation projects in the Yosemite Slough are resilient, including adaptation measures proposed in YSNAS.

Document Name and Author	Geography	Summary	Relation to YSNAS
<p>2024 Bay Trail Gap Closure Implementation Plan Metropolitan Transportation Commission</p>	Regional	The plan sets priorities for future work to complete the vision for the Bay Trail as a continuous, 500-mile trail around San Francisco Bay and San Pablo Bay.	A proposed Bay Trail segment around Yosemite Slough is identified in this plan as a high-priority project. Advancing it would help close existing mobility gaps and expand access to open space for the BVHP community.
<p>2024 Regional Shoreline Adaptation Plan San Francisco Bay Conservation & Development Commission</p>	Regional	The document provides coordinated, actionable guidance and standards for how local governments in the Bay Area should develop subregional sea level rise adaptation plans and ensure long-term resilience of their communities, infrastructure, and ecosystems. The RSAP covers a planning horizon between present-day (2026) and 2100.	YSNAS can be incorporated into RSAP and regional sea level rise planning.
<p>2024 Updated State of California Sea Level Rise Guidance California Sea Level Rise Science Task Force, California Ocean Protection Council, California Ocean Science Trust</p>	State	The guidance provides statewide direction for state and local decision-makers to incorporate best available science on sea level rise into planning, design, permitting, investments, and other decisions.	The data establishes sea level rise projections for San Francisco for 2050 and 2100, which are used for planning in YSNAS.
<p>2024 San Francisco Waterfront Coastal Flood Study Final Integrated Feasibility Report and Environmental Impact Statement USACE, Port</p>	City	The study investigates the feasibility of managing tidal and fluvial flooding and sea level rise along 7.5 miles of the Port's jurisdiction along the San Francisco Waterfront, from Aquatic Park to Heron's Head Park.	Findings from the study are highly relevant to understanding coastal hazard risks in San Francisco that can be applied to Yosemite Slough.

Document Name and Author	Geography	Summary	Relation to YSNAS
<p>2023 San Francisco General Plan Environmental Justice Framework San Francisco Planning Department</p>	<p>City</p>	<p>The framework integrates policy priorities in the General Plan that guides City agencies and other stakeholders in advancing health in Environmental Justice Communities.</p>	<p>The framework has identified the BVHP neighborhood as an Environmental Justice Community, establishing the importance of building community capacity and prioritizing participation from community members in the adaptation planning process.</p>
<p>2022 San Francisco General Plan Safety and Resilience Element San Francisco Planning Department</p>	<p>City</p>	<p>The element aims to facilitate safety from natural and human hazards, achieve racial and social equity, and strengthen community resilience.</p>	<p>The Safety and Resilience Element’s policies include evaluation of flooding risks, development of shoreline adaptation strategies with neighborhood-specific analysis, and prioritization of nature-based solutions against sea level rise. Policies prioritize Environmental Justice Communities and areas discussed in the Sea Level Rise Vulnerability and Consequences Assessment —both designations apply to the project area.</p>
<p>2021 Islais Creek Southeast Mobility and Adaptation Strategy (ICSMAS) San Francisco Planning Department, Port, SFPUC</p>	<p>Neighborhood</p>	<p>The strategy covers a planning horizon from 2021 to 2080 and includes strategies to protect transportation infrastructure, enhance shoreline access and habitat, and promote community resiliency in Islais Creek, which lies north of the project area.</p>	<p>The ICSMAS scope, process, and community priorities informed YSNAS.</p>

Document Name and Author	Geography	Summary	Relation to YSNAS
2021 U.S. Environmental Protection Agency Yosemite Slough Action Memorandum EPA	Neighborhood	The memorandum identifies a contaminated sediment cleanup plan for the Yosemite Slough. The cleanup plan was refined in 2021 and may be subject to change based on additional studies.	Contamination is a critical adaptation constraint. Sea level rise adaptation measures should coordinate with and complement remediation efforts. The remediation timeline impacts the timeline of implementing concepts in the YSNAS.
2020 Bayview Community Based Transportation Plan San Francisco Municipal Transportation Agency (SFMTA)	Neighborhood	The plan seeks to improve physical mobility for existing residents and businesses.	YSNAS identified priority transportation projects in the project area that may be at risk to future coastal hazards.
2020 San Francisco Sea Level Rise Vulnerability and Consequences Assessment (SLRVCA) San Francisco Planning Department	City	The assessment describes the vulnerability of public infrastructure to sea level rise and coastal flooding between 2020 and 2100, and informs how the City develops, prioritizes, invests, and implements adaptation strategies.	Yosemite Slough is considered a “low-lying area” in the Sea Level Rise Vulnerability Zone. The SLRVCA assessed vulnerabilities in the BVHP using projections from the State of California 2013 Sea Level Rise Guidance.
2016 Sea Level Rise Action Plan Sea Level Rise Coordinating Committee	City	The plan calls on City departments to work together to understand impacts of rising sea levels and to develop strategies to protect against current and future hazards up to 2100.	The plan’s Sea Level Rise Action Framework initiated the Sea Level Rise Vulnerability and Consequences Assessment and aligns sea level rise planning throughout the City.

Document Name and Author	Geography	Summary	Relation to YSNAS
<p>2013 Candlestick Point State Recreation Area General Plan and Program Environmental Impact Report</p> <p>State Parks</p>	Neighborhood	<p>The plan and report establish a vision for Candlestick Point SRA and lays groundwork for restoration and development. The plan intends to restore the area under State Park jurisdiction around Yosemite Slough to tidal marsh and grassland or coastal shrub habitat. Access points and recreational facilities may be added, and the Bay Trail may be extended through Yosemite Slough. The plan also focuses on implementing sea level rise adaptation strategies along the park's shoreline.</p>	<p>Several conceptual adaptation measures proposed in YSNAS, such as wetlands restoration or ecotone slope enhancement, align with State Parks' plans for Candlestick Point SRA. Other measures do not align with the General Plan or require more coordination with State Parks.</p>
<p>2012 Candlestick Point State Recreation Area Restoration and Public Access Project</p> <p>State Parks, State Parks Foundation</p>	Neighborhood	<p>The project aims to restore the Yosemite Slough portion of the Candlestick Point SRA for public use and access. The wetlands restoration on the northwest side of the Slough was completed in 2012. Phase 2, which focuses on building park access infrastructure, is still in progress. Phase 2A, which was completed in 2021, added a park entrance, signage, parking, underground utilities, and a pedestrian/bicyclist connection to the Bay Trail. Phase 3 intends to restore 11 waterfront acres on the south side of the Slough.</p>	<p>Additional coordination with State Parks will be needed to align YSNAS recommendations with Phase 3 as south shoreline adaptation measures are implemented.</p>
<p>2010 Bayview Hunters Point Area Plan</p> <p>San Francisco Planning Department</p>	Neighborhood	<p>This plan guides future development of the district. The plan seeks to improve the local economy, harmonize industrial and housing land uses, and address contamination.</p>	<p>The project area is located in the district and aligns with the plan's objectives for improving environmental quality and open space access.</p>

3. YOSEMITE SLOUGH SETTING & CONTEXT



This section describes the existing conditions in the project area, including a description of the project area, physical and ecological conditions, community characteristics and vulnerabilities, land uses, utility infrastructure, and legacy contamination.

3.1 PROJECT AREA

Yosemite Slough is a shallow, 1,600-foot-long, intertidal channel in the Candlestick Point SRA (Figure 4). The immediate shoreline is under the jurisdiction of State Parks. The Hunters Point Shipyard lies to the northeast of the Slough, and the remainder of the Candlestick Point SRA lies to the southeast (Figure 5). The Slough's muddy channel is exposed during low tide and submerged below 5 to 6 feet of water during high tide. Much of Yosemite Slough is fenced off from public access due to environmental contamination issues (described further in Section 3.7).⁷

The YSNAS project area in the BVHP neighborhood includes approximately 1 mile of shoreline around Yosemite Slough and approximately 0.3 square miles of natural State Parks land, industrial areas, and residences, shown in Figure 5. The neighborhood has been developed up to the edge of the Slough's fenced-off boundaries, with commercial establishments and warehouse buildings situated closest to the Slough and residential streets set several blocks inland (Figure 6). The YSNAS project area boundaries are Shafter Avenue to the north, Keith Street and 3rd Street to the west, and Egbert Avenue and Carroll Avenue to the south (Figure 5). These boundaries were guided by the City's Sea Level Rise Vulnerability Zone, which identifies the low-lying areas most at risk from projected end-of-century sea level rise.

FIGURE 4. PHOTOS OF YOSEMITE SLOUGH



Yosemite Slough looking east towards Hunters Point Shipyard (top and bottom)

Photo credit: SF Planning

⁷ US Environmental Protection Agency, "Yosemite Slough Site Community Update."

FIGURE 5. YSNAS PROJECT AREA



3.2 PHYSICAL & ECOLOGICAL CONDITIONS

Understanding the historical and present-day environmental conditions is essential for developing effective strategies to address sea level rise. The natural features at the Slough have been shaped over time by natural processes and human interventions. The historical conditions provide an understanding of the area's vulnerabilities and highlight opportunities for solutions that can restore some of the Slough's natural functions.

3.2.1 Historical Landscape

In the early to mid-1800s, Yosemite Creek flowed eastward through a coastal prairie before reaching the tidal marshes and mudflats of the Bay. Within the Yosemite Creek watershed grasslands covered rocky slopes interspersed with seeps, springs, and occasional patches of wet meadow. Small patches of coast live oak, intermixed with other small trees, shrubs and chaparral, grew on the slopes of the Bayview Hills. Other than these small oak groves, the Yosemite Creek watershed was largely treeless. Prior to urban development, historical tidal marsh extended as far southwest as Donner Avenue, as far west as Bayview K.C. Jones Playground on Keith Street, and as far north as Underwood Avenue. Marsh-fringing beaches were present along some of the marsh edges in the area, and there was a tidal lagoon behind the marsh-fringing beach in the vicinity of the present-day Griffith Pump Station.

FIGURE 6. NEIGHBORHOOD DEVELOPMENT AROUND YOSEMITE SLOUGH



Source: WRA Environmental Consultants (top), SF Planning (middle, bottom)

From the early 19th century through the mid-20th century, placement of fill material (e.g., soil, concrete, rubble) in marshes and mudflats drastically transformed the Bayland landscape at the mouth of Yosemite Creek (Figure 7 and Figure 8). Urban development moved steadily bayward through the decades, filling the Bay and transforming the wide marsh plain and mudflat into the narrow channel.

In 1940, Bay fill and development in the area accelerated when the Navy acquired the drydock facilities at Hunters Point Naval Shipyard, which allowed for vessels to float in and rest on a dry platform for construction and maintenance. The remaining wetlands in the area were filled in with construction debris, waste materials, soil, and crushed bedrock to create more land, which further narrowed Yosemite Slough (Figure 9).

By 1965, all the tidal marshes and much of the mudflat at the mouth of Yosemite Creek had been filled. Since then, a wetland restoration project on the north shore of Yosemite Slough, described in Section 3.2.2, has returned 3 acres of formerly filled Baylands to tidal marsh. The acreages of historical and modern Bayland habitats are shown in Table 2.

FIGURE 7. HISTORIC PHOTO FROM 1920 OF DEVELOPMENT NEAR YOSEMITE SLOUGH



1920 photo of scattered development encroaches on the Baylands at the mouth of Yosemite Creek, from a view looking west across Yosemite Slough

FIGURE 8. HISTORIC PHOTO FROM 1920 OF YOSEMITE SLOUGH



1920 photo of historical marsh-fringing beach with posts in the water identifying a proposed channel for Bay fill placement, from a view looking north across Yosemite Slough.

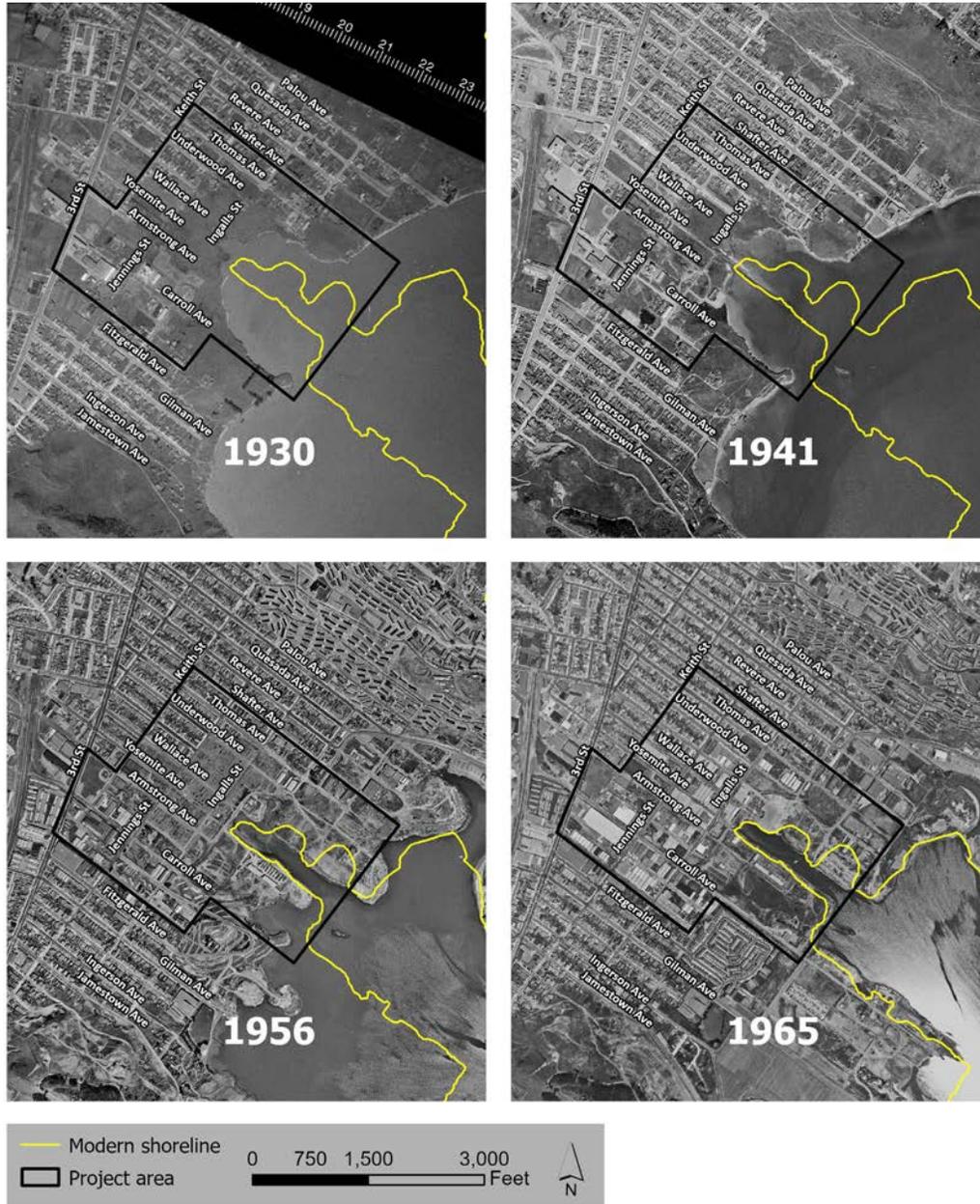


FIGURE 9.
YOSEMITE SLOUGH FILL AND DEVELOPMENT OVER TIME

Aerial images over the course of the 20th century show the progression of fill and development into the tidal marshes and mudflats at the mouth of Yosemite Creek

Aerial imagery source: UCSB FrameFinder

TABLE 2.
HISTORICAL AND MODERN BAYLAND HABITATS IN THE YSNAS PROJECT AREA

Habitat type	Early-mid 1800s	2020
Tidal marsh	75 acres	3 acres
Tidal flat (mudflat)	54 acres	14 acres
Beach	Less than 1 acre	Less than 1 acre

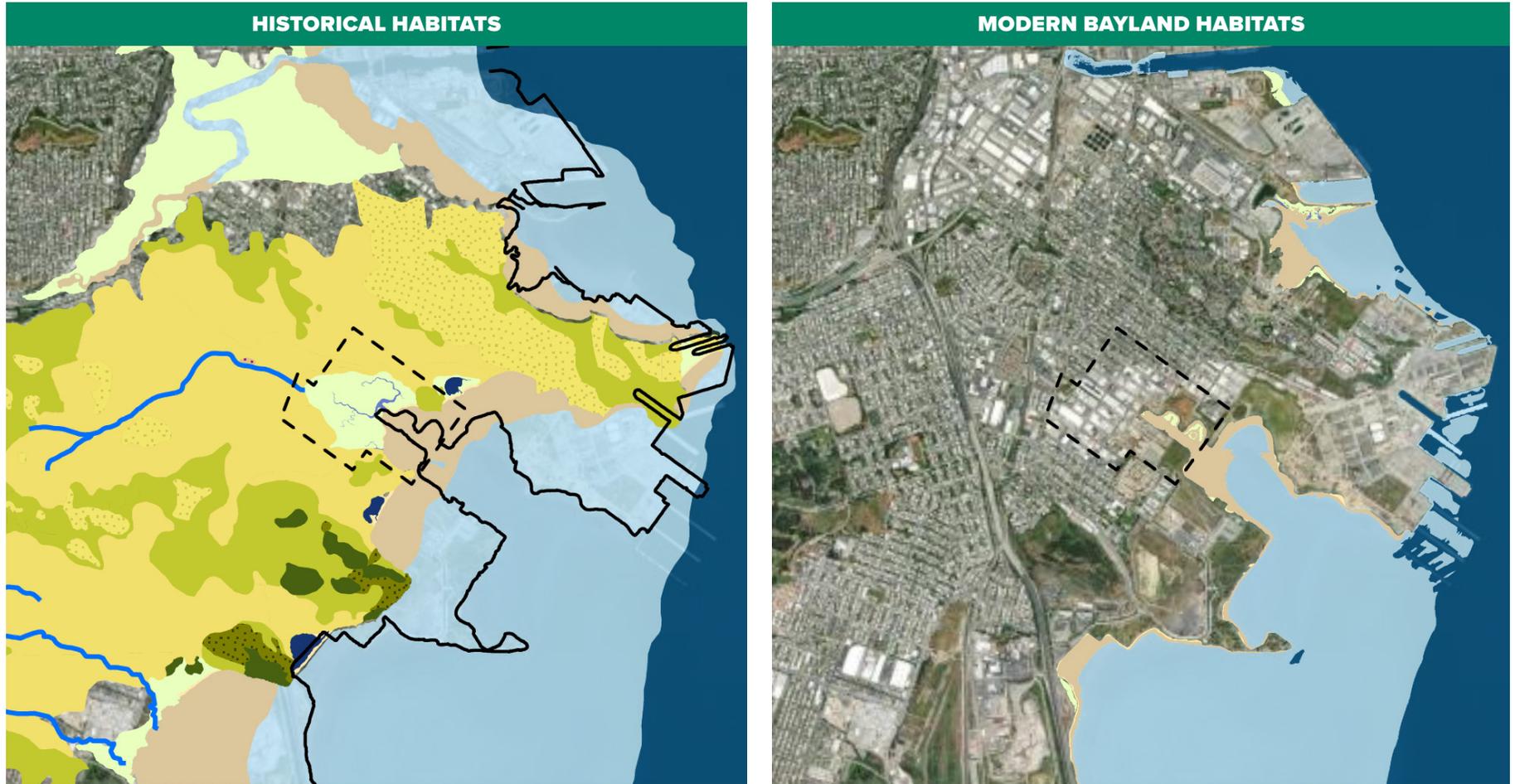


FIGURE 10. BAYLAND HABITAT OVER TIME

Historical Bayland habitats in the early-mid 1800s (left), versus modern Bayland habitats in 2020 (right) at Yosemite Slough

Source: Historical mapping created as part of the Next Generation Urban Greening project (SFEI 2022), modern Bayland habitats from the Baylands Habitat Map 2020 project (Wetlands Regional Monitoring Program)

- [- - -] YSNAS Project Area
 - Modern shoreline
 - Historical creeks
- | | |
|--|---|
| <p>Historical upland habitats</p> <ul style="list-style-type: none"> Stabilized dune/dune scrub/grassland Coastal prairie Serpentine grassland Foothill grassland Serpentine maritime chaparral Coast live oak woodland | <p>Bayland habitats</p> <ul style="list-style-type: none"> Beach Tidal marsh Tidal slough Saltwater lagoon Shallow Water Tidal Flat Deep Water |
|--|---|

3.2.2 Present-day Landscape

Both Bayland and upland habitats have been transformed by urban development and the legacy of industrial uses. In 2026, the Yosemite Creek watershed is highly urbanized, and its hydrology and ecology have been significantly altered from their natural conditions (Figure 10). Rainwater falling in the Yosemite Creek watershed runs through underground culverts and pipes to a SFPUC pump station (Griffith Pump Station) and from there to the Southeast Treatment Plant. Stormwater no longer flows from the watershed into the Slough, except during rare combined sewer discharge events, when intense storms cause the sewer system to reach capacity, requiring water to be discharged directly to the Slough.

In recent years, State Parks, the State Parks Foundation, and Literacy for Environmental Justice have partnered on the Yosemite Slough Restoration and Public Access project. Completed in 2012,

Phase 1 restored 7 acres of wetlands on the north side of the Slough. The project replaced buildings and roads with 2 small bays and an island bird sanctuary (Figure 11, Figure 12). The restored habitat includes thousands of native plants and will protect inland areas from up to 3 feet of sea level rise.⁸

Phase 2 of the project was designed to improve visitor access to the site and is broken into two sub-phases. Completed in 2021, Phase 2A (Figure 13) includes pedestrian ramps, parking facilities, water and electricity infrastructure, and a new entrance plaza. The project provides an example for how other sections of the Yosemite Slough shoreline could be reimagined to provide habitat and flood protection benefits.

⁸ California State Parks Foundation. "Yosemite Slough Restoration and Public Access Project." <https://www.calparks.org/what-were-doing/park-funding/yosemite-slough>

FIGURE 11. PHASE 1 OF THE YOSEMITE SLOUGH RESTORATION AND PUBLIC ACCESS PROJECT



Before (top) and after (bottom) Phase 1 of the Yosemite Slough Restoration and Public Access Project, with the full restoration area outlined in light blue on the top

Source: WRA Environmental Consultants (above), Google Earth (below)



FIGURE 12. RESTORED WETLANDS ON THE NORTH SIDE OF YOSEMITE SLOUGH, LOOKING WEST

Photo credit: SF Planning

FIGURE 13. PHASE 2A OF THE YOSEMITE SLOUGH RESTORATION AND PUBLIC ACCESS PROJECT



Looking south across the Slough, towards the Alice Griffith Apartments, after completion of Phase 2A of Yosemite Slough Wetlands Restoration and Public Access Project

Photo credit: SF Planning

3.3 COMMUNITY

The BVHP neighborhood has a deep history of industrial activity and is currently one of the last industrial, blue-collar neighborhoods in the City. In 2018, the San Francisco Board of Supervisors designated the BVHP neighborhood as an African American Arts and Cultural District, which aims to promote the neighborhood's cultural assets and strengthen its diverse community. This section further discusses the BVHP neighborhood's social demographics, economy, and valued community assets from public engagement.

3.3.1 Demographics & Social Vulnerability

As of 2020, there are approximately 1,300 residents in the YSNAS project area. Although this number represents about 3% of the total population of the BVHP community, the impacts of sea level rise to local infrastructure, local businesses, and green spaces are far-reaching, with implications for the BVHP neighborhood and the City.

The BVHP neighborhood has long been one of San Francisco's most diverse neighborhoods. From the early 1900s until 1938, fishermen, predominantly Chinese shrimpers and fishermen, occupied the area. During World War 2, the fishermen were forced out, and blue-collar workers, many of whom were African American migrants from the Jim Crow South, moved to the neighborhood to work for the Navy at the shipyard. However, by 1949, the shipyard workforce had declined from its wartime peak of 18,235 to 6,000, severely impacting the local economy and residents' livelihoods.⁹

Over the next few decades, redlining and urban renewal displaced people from the predominantly African American neighborhoods of the Fillmore and the Western Addition to the BVHP neighborhood. While the Citywide African American population declined, the BVHP neighborhood saw an increase in African American residents. While the African American population has declined over the past decades, it remains concentrated in BVHP. By 2017, one-fifth of San Francisco's African American community resided in this area.¹⁰

The BVHP neighborhood is one of many neighborhoods in the U.S. where discriminatory housing practices pushed low-income residents and people of color into areas disproportionately affected by environmental pollution, including contamination. Decades of industrial practices have contaminated the soil and water (further discussed in [Section 3.7](#)). Communities in the BVHP neighborhood are also exposed to high levels of air and noise pollution, leading to high asthma rates and other health risks.¹¹

The City has designated the BVHP neighborhood as an Environmental Justice Community using CalEnviroScreen, a state mapping tool that identifies California communities most affected by pollution, and local data. This designation means that the neighborhood is in the top one-third of cumulative environmental and socioeconomic burdens across the city, as depicted in [Figure 14](#). The City defines environmental justice as the equitable distribution of environmental benefits and elimination of environmental burdens to promote healthy communities where everyone can thrive. The San Francisco General Plan's Environmental Justice Framework established environmental justice as a foundational City goal, which means that Environmental Justice Communities like the BVHP

9 City and County of San Francisco, Sea Level Rise Vulnerability and Consequences Assessment.

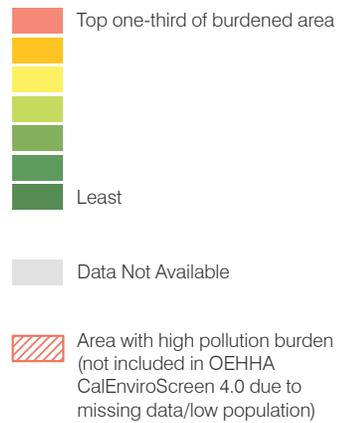
10 California State Parks, Candlestick Point State Recreation Area: Final General Plan and Program Environmental Impact Report.

11 McElroy et al., "Bayview Hunters Point."

FIGURE 14.
ENVIRONMENTAL JUSTICE
BURDEN IN THE CITY OF
SAN FRANCISCO

Source: CCSF

Environmental Justice Burden



NOTE: This map was created to meet the requirements of CA Senate Bill 1000. The legislation requires that municipalities identify where "Disadvantaged Communities" are located, defined as areas facing elevated pollution burden coupled with a high incidence of low-income residents. This map is based on OEHHA's CalEnviroScreen 4.0 Map, modified to incorporate additional local data on pollution burden and socioeconomic disadvantage.

JANUARY 2023

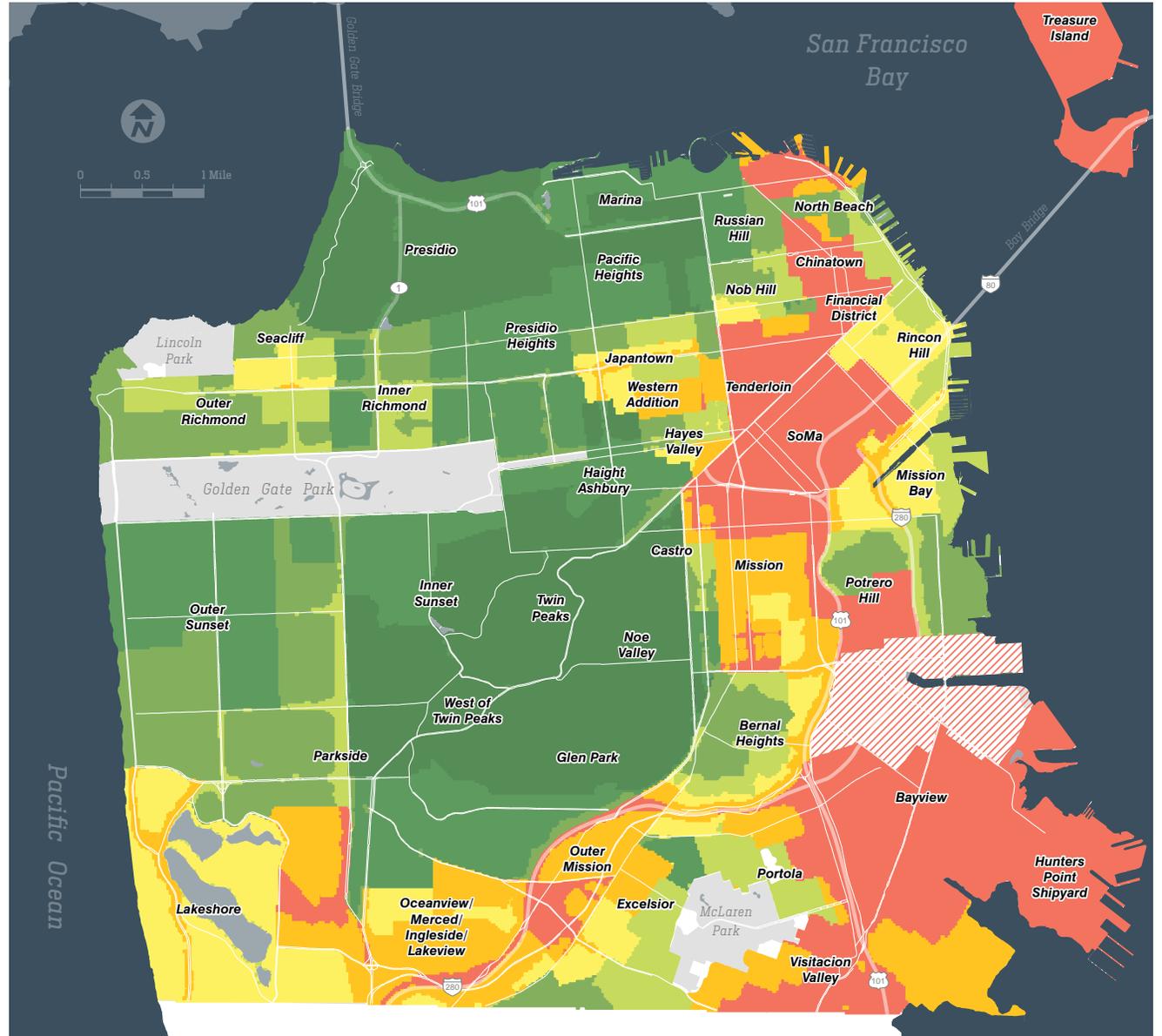
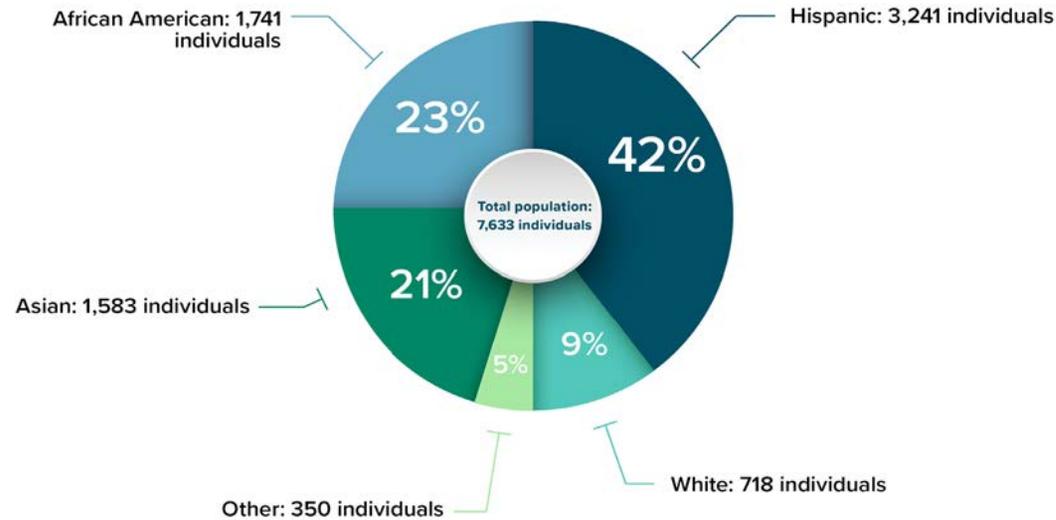


FIGURE 15.
RACIAL DEMOGRAPHICS IN
THE BVHP NEIGHBORHOOD



neighborhood are prioritized for specific policies and resources that can help address past harms and equitably improve community health outcomes.

In 2023, the poverty rate in the BVHP neighborhood was 18.8%, well above the city average of 12%.¹² Relative to the rest of San Francisco, the BVHP neighborhood also has higher social vulnerability, crime, unemployment, and hospitalization rates. Social vulnerability refers to demographic and socioeconomic factors that negatively affect communities, such as language fluency, racial and minority status, education levels, access to health, and housing conditions.¹³ Although residents in the BVHP neighborhood are predominantly renters, the area also has higher numbers of Black home owner-

ship compared to the rest of the City.¹⁴ This means that the overall community is more at risk of rent burden and displacement than the rest of San Francisco's population.

In 2023, 63.3% of households reportedly spoke a language other than English at home as their primary language.¹⁵ Based on CalEnviroScreen, most of the population is Hispanic (42%), followed by African American (23%), and Asian (21%) (Figure 15). Approximately 74% of the population is between 10 and 64 years of age, about 12% of the population is under 10 years of age, and 12% of the population is over 65 years of age.¹⁶ Table 3 shows BVHP neighborhood household, income, age, and housing demographics. As sea level

12 City and County of San Francisco, "Poverty in San Francisco". <https://www.sf.gov/data--poverty-san-francisco>

13 CDC, "Social Vulnerability Index."

14 Fukumori et al., "Black Communities and the Bay Area's Housing Crisis."

15 Data is based on the BVHP Population United Microdata Area (PUMA), which is a geographic area used by the US Census Bureau for statistical purposes. The BVHP PUMA includes portions of Visitacion Valley, Excelsior District, and Crocker-Amazon.

16 California Office of Environmental Health Hazard Assessment, "CalEnviroScreen 4.0 Results."

TABLE 3. BVHP HOUSEHOLD INCOME, AGE, AND HOUSING DEMOGRAPHICS.

Bayview Hunters Point Public Use Microdata Area (PUMA) for household income, age, and housing demographics

Household Income Level	BVHP Percentage of Population (in 2023)*	City of San Francisco Percentage of Population (in 2023)*
< \$50,000	29%	24%
\$50,000 - \$100,000	20%	18%
\$100,000 - \$200,000	26%	24%
\$200,000 <	25%	34%

* Data is based on the BVHP PUMA, which is a geographic area used by the U.S. Census Bureau for statistical purposes. The BVHP PUMA includes portions of Visitacion Valley, Excelsior District, and Crocker-Amazon.

Note that the margin of error is at least 10% of the total value.

Housing Statistics	BVHP Percentage of Housing Units (in 2023)*	City of San Francisco Percentage of Housing Units (in 2023)*
Single unit structure	74%	31%
Multi-unit structure	26%	68%
Occupied units	95%	89%
Vacant units	5%	11%
Owner-occupied units	59%	37%

* Data is based on the BVHP PUMA

Age Range	BVHP Percentage of Population (in 2023)*	City of San Francisco Percentage of Population (in 2023)*
0-20 years	21%	16%
20-29 years	8%	14%
30-39 years	11%	20%
40-49 years	18%	14%
50-59 years	13%	13%
60-69 years	15%	12%
70 < years	13%	13%

* Data is based on the BVHP PUMA

rise adaptation moves forward, it is important that the environmental injustices, systemic racism, and history of neglect and marginalization in the community continue to be addressed.

3.3.2 Economy

The BVHP community plays a vital role in the City’s economy today and is home to many minority and women-owned businesses.¹⁷ Over a quarter of the neighborhood’s properties are dedicated to industrial uses such as light manufacturing, warehousing, fleet parking, and auto repair.¹⁸ The industrial sector is the largest employer in the neighborhood, providing nearly 15,000 jobs.¹⁹

Economic growth remains a priority for BVHP. The Bayview Hunters Point Area Plan aims to stimulate a variety of businesses and jobs, while ensuring compatibility between industrial, residential and natural areas.²⁰ These priorities are rooted in documents like the 2002 Bayview Revitalization Plan and inform recent efforts like the African American Arts & Cultural District. The non-profit organization Economic Development on Third supports local businesses and envisions a thriving commercial district along Third Street.

Significant future development also prioritizes jobs and economic activity. The design of the future Candlestick Point development was recently updated with an additional 2 million gross square

17 City and County of San Francisco, Sea Level Rise Vulnerability and Consequences Assessment.

18 US Environmental Protection Agency, “Yosemite Slough Site Community Update.”

19 City and County of San Francisco, “Bayview Hunters Point Area Plan.”

20 City and County of San Francisco, “Bayview Hunters Point Area Plan.”

feet of research and development space, to attract life science, office, and other job-creating uses (further discussed in [Section 3.4.2](#)).²¹ Additionally, the recently approved “SF Gateway” project would include approximately 1.65 million gross square feet of flexible production, distribution, and repair (PDR) space.^{22,23} It also includes community benefits to support local workforce, streetscape improvements, rooftop solar arrays and ground floor space for local producers.

3.3.3 Community Assets

Community assets are places, facilities, and services that are essential or important to community well-being, economy, and character. Residents rely on assets for travel, health and wellness, spirituality, emergency services and first response, and community building. During public engagement, community members identified assets in the broader BVHP neighborhood, 16 of which are in the project area and shown in [Table 4](#). Community members also felt that the shoreline and wetlands were natural assets for the neighborhood. Many other community assets, such as Young Community Developers, Third Street Youth Center and Clinic, and Alice Griffith Apartments, were identified but are not located in the project area.

21 Office of Community Investment and Infrastructure, “Hunters Point Shipyard Phase 2 Candlestick Point.”

22 Prologis, “SF Gateway | Prologis.”

23 San Francisco Planning, “SF Gateway – 749 Toland Street.”

TABLE 4. COMMUNITY AND TRANSPORTATION FACILITIES WITHIN THE YSNAS PROJECT AREA**PUBLIC SAFETY**

- **Fire Department Training Facility (planned):** The San Francisco Fire Department is relocating training facilities to a new 8-acre site at 1236 Carroll Avenue.
- **Fire Station #17:** Located at 1295 Shafter Avenue. Built in 1960 and remodeled in 1996. Provides coverage for the Islais Creek and BVHP neighborhood.

HEALTH AND HUMAN SERVICES

- **Southeast Health Center:** Located at 2401 Keith Street. Although additional private medical clinics are available, this center is the only City-owned and operated affordable healthcare center in the area.

COMMUNITY RESOURCES

- **United Council of Human Services – Mother Brown’s Kitchen:** A local nonprofit that provides food, case management, and housing services to unhoused people in the BVHP community.

OPEN SPACE AND PARKS

- **Bayview K.C. Jones Playground:** The park features an expanded playground, walking path, baseball field, lawn area for gathering, and adjacent Martin Luther King Junior Pool.

- **Candlestick Point SRA:** The 252-acre park offers walking trails, open lawns, and piers that support recreational opportunities such as fishing. Candlestick Point is a popular entry point for windsurfing on the bay.
- **Birding Spot in Candlestick Point SRA:** A popular spot for bird watching located on the north side wetlands of the Yosemite Slough Restoration Project.
- **Candlestick Point SRA Community Garden, Literacy for Environmental Justice Native Plant Nursery:** A community garden and nursery located at 1150 Carroll Avenue that serves as a hub for volunteers and educational programming.

UTILITIES

- **Griffith Pump Station:** Serves the lower Yosemite and Sunnysdale drainage basins with a pumping capacity of 120 million gallons per day.

SFMTA FACILITIES

- **1538 Yosemite:** Used primarily as a paint shop. There is no redundancy for the paint shop within SFMTA system.
- **1508 Bancroft:** Used primarily for street signage, temporary signage, and parking meter shops. There is no redundancy for the sign and meter shop within SFMTA system.

TRANSIT

- **Muni Light Rail (T-Third Line):** Launched in 2007, the T-Third Line connects the BVHP and Visitacion Valley neighborhoods to Chinatown, Union Square, Mission Bay, SoMa, and Dogpatch. Nearly 20,000 people ride the T-Third Line every day.
- **23 Monterey Bus:** Operates between the San Francisco Zoo and the BVHP neighborhood.
- **29 Sunset Bus:** Operates between the Richmond and Sunset districts and the BVHP neighborhood. It is one of SFMTA’s cross-town bus routes.
- **54 Felton Bus:** Operates between the Ingleside, Oceanview, Excelsior, Portola, and BVHP neighborhoods to Daly City Bay Area Rapid Transit and other transit connections.

TRAILS

- **Bay Trail (planned):** A planned 500-mile walking and bicycling path around the entire San Francisco Bay. Within San Francisco, there are 14.4 miles of Bay Trail spine. A number of connecting trails feed into the Bay Trail, for additional connectivity.

3.4 LAND USE

Understanding past, present, and future land use can help identify challenges and opportunities for adaptation. Historical land use changes have altered drainage patterns and increased exposure to flooding and contamination. YSNAS aims to align with plans for future development, including the expansion of job centers, housing, and green space in the Bayview and at Candlestick Point.

3.4.1 Historical & Present-Day Land Use

Indigenous peoples first inhabited the BVHP area, utilizing the region’s natural resources for thousands of years. The Spanish arrived in 1775, claiming the land and converting it into cattle-grazing pastures. This practice continued when the area was under Mexico’s jurisdiction from 1822 to 1846.²⁴ During the Gold Rush, which began in 1848, the area began to develop with industrial and residential uses in patterns that continued well into the 20th century (Figure 16). The BVHP neighborhood’s northern area was known as “Butchertown” due to the concentration of beef, cattle, hog, and sheep slaughterhouses. The deep water just off the shore also presented an opportunity for wharf development and drydock facilities to flourish along the waterfront. During World War 2, Hunters Point Naval Shipyard, steel production, and wartime activities transformed the BVHP area into an industrial center. Much of the remaining natural area was turned into residential housing for dockworkers.²⁵

FIGURE 16. HISTORIC PHOTOS FROM 1920 OF YOSEMITE SLOUGH



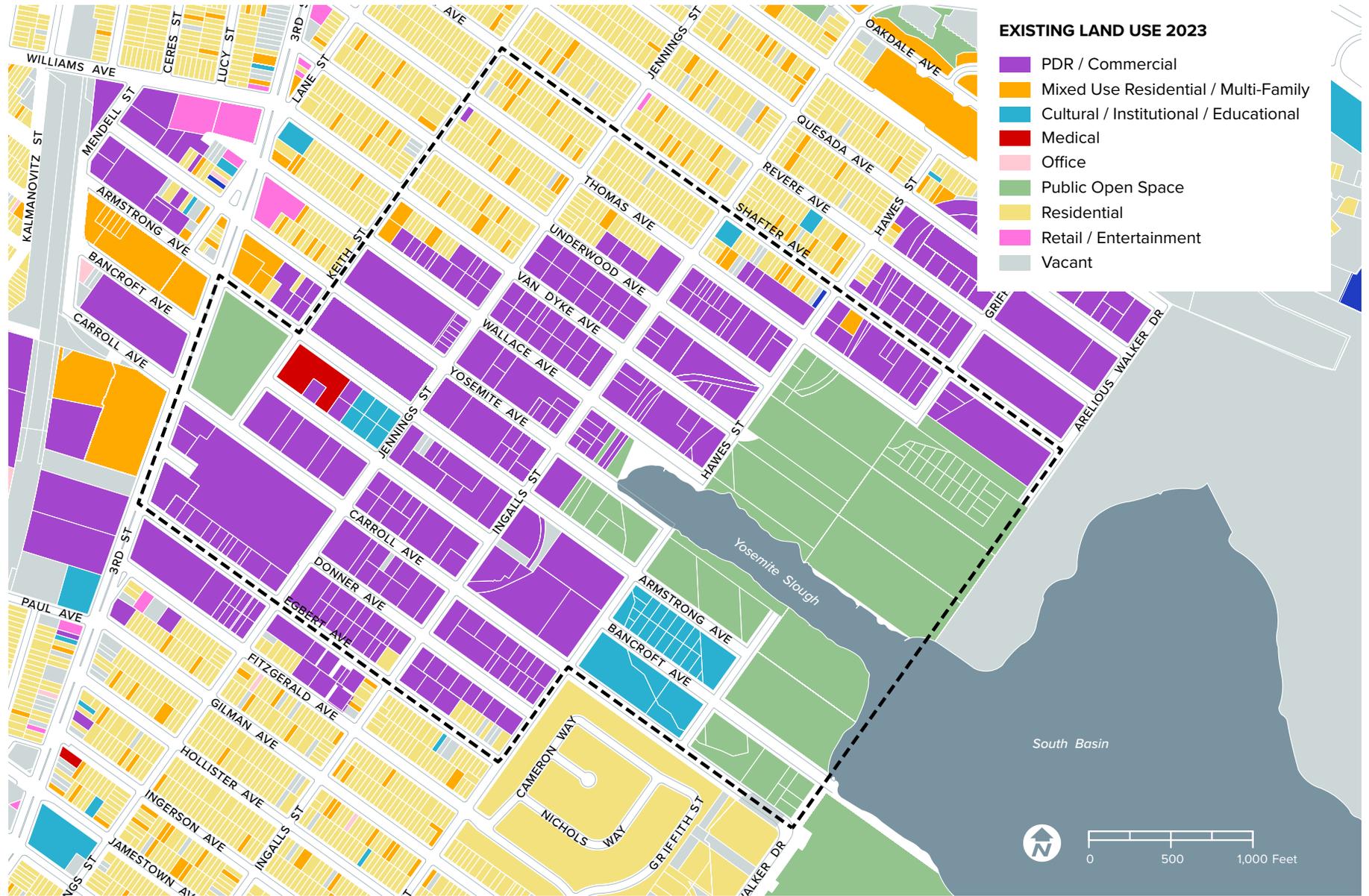
View looking west across Yosemite Slough from Hunters Point (top) and view looking north across Yosemite Slough (bottom) in 1920

Source: OpenSFHistory

²⁴ Bayview Hunters Point Project Area Committee, Bayview Hunters Point Community Revitalization Concept Plan.

²⁵ Bayview Hunters Point Project Area Committee, Bayview Hunters Point Community Revitalization Concept Plan.

FIGURE 17. EXISTING LAND USE IN THE YSNAS PROJECT AREA



Land use in the YSNAS project area is primarily open space and industrial, with several residential blocks in the northern portion (Figure 17). Several building suppliers, building services, and general contractors are in the area. Food producers, light manufacturers, fabricators and auto repair shops also populate the neighborhood. Several sites near the Slough are open yards used to store or distribute aggregate, metal, roofing supplies and excavators (Figure 18, Figure 19).²⁶

The neighborhood includes a mix of open space, community uses, and public facilities. The open space surrounding the aquatic portion of the Slough is part of the Candlestick Point SRA and includes the SRA headquarters and a native plant nursery operated by Literacy for Environmental Justice. K.C. Jones Park and the Martin Luther King Jr. Pool also provide open space and recreation in the area. Other public facilities include SFMTA buildings, Griffith Pump Station, and San Francisco Fire Station #17.

The Alice Griffith apartments are just outside of the YSNAS project area at Carroll Avenue and Arelious Walker Drive. Completed in 2018, they consist of 337 affordable housing units, indoor and outdoor community spaces, a fitness center, and play areas.

FIGURE 18. YOSEMITE AVENUE



Yosemite Avenue as of August 2025, facing southeast (top and bottom)

Photo credit: SF Planning

²⁶ City and County of San Francisco, "Map of San Francisco Land Use - 2023 | DataSF."

FIGURE 19. ARMSTRONG AVENUE

Armstrong Avenue as of August 2025, facing east (top) and west (bottom)

Photo credit: SF Planning

3.4.2 Planned Land Use & Development

Looking into the future, several plans for neighborhood development will change the land use and topography in the YSNAS project area.

The Candlestick Point-Hunters Point Shipyard Phase 2 Redevelopment Plan, would create two new waterfront neighborhoods along the shoreline surrounding Hunters Point and just south of Yosemite Slough. The initiative will provide 693 acres of new housing, commercial space, retail space, and offices and 340 acres of parks and open space, shown in [Figure 20](#). If the project ultimately constructs all 10,000 proposed residential units, the BVHP neighborhood's population is projected to double, potentially increasing the number of residents exposed to sea level rise impacts if no adaptive measures are implemented.²⁷ The timing of this project is uncertain and dependent on full completion of clean-up activities at the Hunters Point Shipyard.

As of 2025, the San Francisco Fire Department is proposing to build a training facility on an approximately 8-acre, former-industrial site at 1236 Carroll Avenue, adjacent to Yosemite Slough's south shoreline. This proposed development is in the YSNAS project area.²⁸

State Parks completed a General Plan for the Candlestick Point SRA in 2013. The preferred alternative includes several planning zones and natural areas, including tidal marsh zones and coastal shrub zones around Yosemite Slough ([Figure 21](#)).

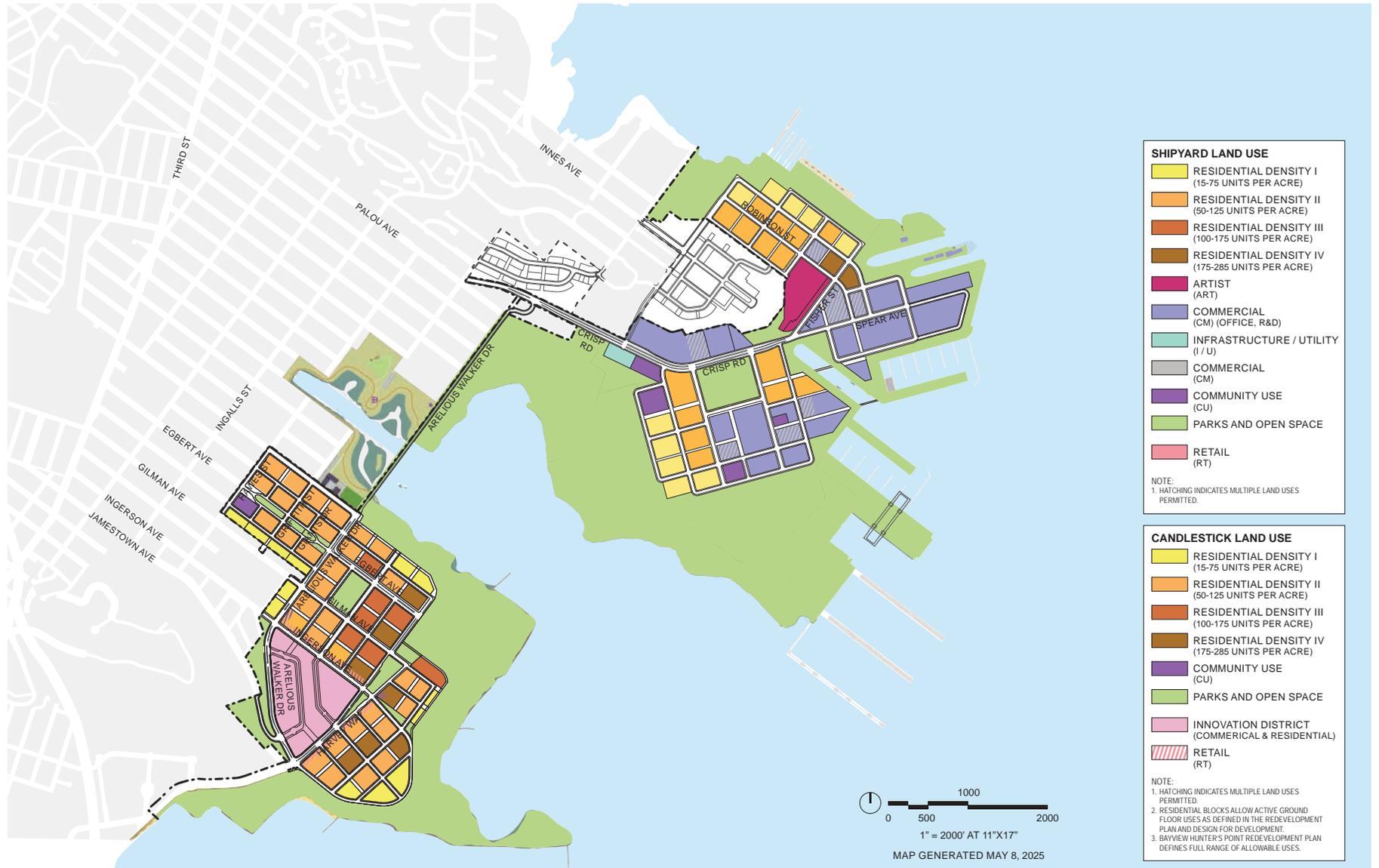
Further outside of the project area, the SF Gateway Project at 749 Toland Avenue was approved by the San Francisco Board of Supervisors in 2025. It would include approximately 1.65 million gross square feet of production, distribution, repair, and other uses. There is no timeline for construction as of early 2026.²⁹

27 City and County of San Francisco, Sea Level Rise Vulnerability and Consequences Assessment.

28 San Francisco Fire Training Facility, "Conceptual Design Presentation."

29 Nguyen, "Prologis' SF Gateway Project Gets Thumbs up from City Planners."

FIGURE 20. CANDLESTICK POINT-HUNTERS POINT SHIPYARD PHASE 2 REDEVELOPMENT PLAN, PLANNED LAND USE



Source: San Francisco Office of Community Investment and Infrastructure

FIGURE 21. CANDLESTICK POINT GENERAL PLAN PREFERRED ALTERNATIVE



Source: State Parks

3.5 UTILITY INFRASTRUCTURE

The Bayview South Hunters Point neighborhood includes 9.5 miles of shoreline from India Basin Shoreline Park to the county line. Just over 7 miles of the shoreline consists of hardened structures such as piers, seawalls, and wharves.³⁰ The YSNAS project area includes approximately 1 mile of the shoreline.

SFPUC operates and maintains three combined sewer discharge (CSD) outfall structures (i.e., Griffith, Yosemite, and Fitch) (Figure 22), a below-grade transport/storage box that occupies 0.1 miles of shoreline in the Slough's southwest corner, and the Griffith Pump Station in the YSNAS project area. The Griffith Pump Station pumps wastewater or stormwater from the transport/storage box to the Southeast Treatment Plant under all weather conditions.

FIGURE 22. PHOTOS OF SFPUC OUTFALLS



SFPUC outfalls: Fitch (left) and Griffith (right)

Photo credit: SFPUC

3.6 TRANSPORTATION

Nearby to the project area, the T-Third Muni Metro line and the 15 Bayview Hunters Point Express bus provide access to downtown San Francisco via the Third Street corridor. Other transit lines include the 23 Monterey, 29 Sunset, and 54 Felton (Figure 23).

Although several bus routes and light rail lines serve the project area, the BVHP neighborhood remains geographically isolated with limited connections to the rest of the City, leading many residents to rely heavily on cars. Streets are generally wide, provide perpendicular street parking, and have 12-15 feet of sidewalks. Some sidewalks are occupied by parked cars or active loading. Key intersections have crosswalks and curb ramps, but additional pedestrian and bicycle infrastructure is still needed (Figure 24).

In 2025, the SFMTA approved the Bayview Community Pathway, which is designed to be a safe, low-stress neighborhood route parallel to Third Street. Keith Street from Underwood Avenue to Carroll Avenue is the southernmost segment of the Pathway.

The BVHP neighborhood contains 34 miles of unaccepted streets, the most of any neighborhood and representing about a quarter of all unaccepted streets in San Francisco.³¹ Unaccepted streets are public rights-of-way that were never adopted as City or state roads, which leaves property owners in charge of repairs and maintenance. Unaccepted streets in the YSNAS project area include Hawes Street, Armstrong Avenue, and Wallace Avenue.

30 City and County of San Francisco, Sea Level Rise Vulnerability and Consequences Assessment.

31 Newman and Waldron, "San Francisco's Forgotten Roads."

Connections to green spaces and the shoreline, such as the proposed Bay Trail (Figure 25), are also important features in the local transportation systems. Keith Street and Carroll Avenue are also part of the Green Connections network, which aims to connect people to parks, open spaces, and the waterfront through pedestrian safety designs, green infrastructure, wildlife habitat and opportunities for public art. Currently, formal access to the Slough is limited to one pedestrian entryway at the north side of the Slough.

FIGURE 23. THE MUNI 54 FELTON



Photo credit: SFMTA

FIGURE 25. THE BAY TRAIL IN THE YSNAS PROJECT AREA (2024)



Source: MTC Bay Trail Interactive Map

FIGURE 24. PHOTOS OF BVHP NEIGHBORHOOD ROADS AND SIDEWALKS



Photo credit: SF Planning

3.7 LEGACY CONTAMINATION

Since the mid-1860s, the BVHP neighborhood has been dominated by industrial activity, including shipbuilding and repair, rope and steel manufacturing, junk yards, and auto wrecking.³²

The Hunters Point Shipyard and its associated Naval Radiological Defense Laboratory operated adjacent to the Slough from 1941 to 1974, and 1946 to 1969, respectively. As a result of legacy contamination from heavy industrial activities, Hunters Point Shipyard was declared an EPA Superfund site. Yosemite Slough is not currently listed or proposed for listing on the National Priorities List, which is synonymous with being a Superfund site, but EPA is using the Superfund program to guide its cleanup.

3.7.1 Current Contamination & Remediation Programs

EPA's Superfund program is responsible for cleaning up or regulating the nation's most contaminated lands, with a goal of protecting public health and the environment. The average concentration of polychlorinated biphenyls in the top layer of mud at Yosemite Slough is 42 times greater than the remediation goal at 6,212 parts per billion. EPA is coordinating cleanup efforts to prevent cross contamination during remediation efforts (Figure 26).³³

Remediation programs relevant to the Yosemite Slough and BVHP neighborhood include:

- **Yosemite Creek Sediment Site:** EPA proposed a cleanup plan in 2013 that involves removing contaminated mud and replacing

it with clean materials, along with long-term monitoring of the site. This alternative was selected because it offered the best opportunity to achieve sediment cleanup goals while minimizing the short-term impacts to the ecology of Yosemite Slough and the local community. This plan was amended in 2021 after further study. EPA anticipates additional community outreach for the effort in 2026.

- **Hunters Point Naval Shipyard Superfund Site Parcel F:** In 2018, the Navy put forth a proposed cleanup plan for Hunters Point Naval Shipyard Parcel F. Parcel F consists of 443 acres that surround the shipyard and is located immediately east of the Yosemite Creek Sediment Site. In 2024, the Navy, EPA, the California Department of Toxic Substances Control (DTSC), and the San Francisco Bay Regional Water Quality Control Board signed a Record of Decision that selected the contamination remedy for Parcel F. The remedy includes a combination of capping, dredging and treating, and monitored natural recovery of sediments.³⁴
- **DTSC Sites:** DTSC manages 6 contaminated industrial and commercial sites that handle hazardous waste and substances, as seen in Figure 27.
- **SWRCB Sites:** The California State Water Resources Control Board (SWRCB) manages 33 contaminated sites, most of which are already cleaned up, as seen in Figure 27.

32 City and County of San Francisco, "Bayview Hunters Point Area Plan."

33 US Environmental Protection Agency, "YOSEMITE CREEK SEDIMENT Site Profile."

34 Pound, "Former Hunters Point NS, Final Record of Decision (ROD), Parcel F - September 2024."

FIGURE 26. YOSEMITE CREEK SEDIMENT SITE



EPA proposed remedy for Yosemite Creek Sediment Site

Source: EPA

FIGURE 27. CONTAMINATION IN THE BVHP NEIGHBORHOOD



DTSC and SWRCB contaminated sites in the BVHP neighborhood

4. ENGAGEMENT & FEEDBACK



For over 18 months, the YSNAS project team reached out to residents, local business owners, and community leaders to build community capacity and incorporate diverse community perspectives into the Strategy (Figure 28).

Principles from the City’s Environmental Justice Framework³⁵ were used to elevate and incorporate community voices into the Strategy. Engagement activities included partnering closely with a group of Community Ambassadors; convening a technical advisory committee of City staff; hosting public workshops, walking tours, and focus groups; providing stakeholder briefings; attending community events; and door-to-door outreach to local businesses.

FIGURE 28. ENGAGEMENT ACTIVITY SUMMARY



35 City and County of San Francisco, "Environmental Justice Framework And General Plan Policies."

4.1 OUTREACH PHASES

The engagement process with community members and City stakeholders (Figure 29) was structured around 3 phases:

- **Phase #1** built community capacity for sea level rise adaptation, set the context for adaptation around Yosemite Slough, shaped YSNAS goals, and identified community assets in the project area.
- **Phase #2** sought feedback on a comprehensive list of adaptation measures to establish community priorities and desired co-benefits and narrow the list of potential measures.
- **Phase #3** sought input on tradeoffs between potential adaptation measures, identified implementation priorities, and created a baseline for next steps.

4.2 ENGAGEMENT ACTIVITIES

Community Ambassadors

The YSNAS team recruited BVHP community advocates and leaders to establish a group of 9 Community Ambassadors. The Community Ambassadors met quarterly with the YSNAS team to provide feedback about the public outreach and engagement process, adaptation alternatives and strategies, and opportunities for community input and influence.

FIGURE 29.
WHO WAS INVOLVED?



Technical Advisory Committee (TAC)

The YSNAS team convened a group of 10 City staff from multiple departments to serve as subject-matter experts in topics such as climate adaptation, flood mitigation, public health, environmental justice, City processes, and on-going or planned projects in the BVHP neighborhood. The TAC met quarterly and provided feedback on all aspects of the Strategy including the engagement materials and technical analyses.

FIGURE 30. TIMELINE OF CITY-HOSTED ENGAGEMENT EVENTS



Walking Tour
March 22, 2025



Public Workshop
May 13, 2025



Focus Groups
October, 2025

1

2

3

4

5

6

Public Workshop
November 13, 2024



Walking Tour
March 29, 2025



Public Workshop
September 16, 2025



Tabling & Canvassing

The YSNAS team hosted an engagement table or was a guest speaker at 11 public community events and conducted door-to-door outreach at local businesses, homes, and local institutions throughout the project area. These efforts aimed to increase awareness of the project, gather input on community assets and concerns related to sea level rise, and encourage participation in more in-depth engagement opportunities.

Storytelling Video

The YSNAS team collaborated with BAYCAT, a media production company based in BVHP that empowers low-income youth and young people of color through education and employment, to produce a storytelling video. The video, [Preparing Bayview for Rising Tides](#), is published on Youtube and features local environmental justice advocates and technical experts who explore the history of Yosemite Slough, share community aspirations for environmental justice, and emphasize the need for action to protect the neighborhood from sea level rise. It was promoted via social media, the project newsletter, and the project website.

Walking Tours

The YSNAS team hosted two walking tours of the BVHP neighborhood and shoreline in the Candlestick Point SRA in the second phase of outreach. Each tour was guided by YSNAS staff, State Parks, State Parks Foundation, community leaders, local business owners, and technical experts and had between 30 and 50 participants ([Figure 30](#), [Figure 31](#)). The guides discussed the historical ecology of Yosemite Slough, previous wetlands restoration projects, projected sea level rise, lived experiences, and both past and present planning efforts. The walking tours also provided opportunities for participants to share their experiences, priorities, and concerns.

FIGURE 31. YOSEMITE SLOUGH WALKING TOURS ON MARCH 22, 2025 (TOP) AND MARCH 29, 2025 (BOTTOM)



Photo credit: SF Planning

Public Workshops

The YSNAS team hosted 3 public workshops, aligned with each phase of outreach (Figure 30, Figure 32). There were approximately 30 to 40 attendees at each workshop, consisting of community members, leaders, and advocates. The workshops began with a project overview presentation; then, participants rotated through facilitated small group activities where they could provide feedback on specific subjects and were encouraged to engage in discussion.

Focus Groups

The YSNAS team hosted 3 focus groups in the third phase of outreach to reach stakeholders that were not as active in the other public engagement opportunities. The groups—youth and young

adults aged 16 to 23 years old, Alice Griffith Apartment residents (Figure 33), and project area local business owners—each had 6 to 10 participants and were provided a small stipend for participation. The participants engaged in a structured, in-depth discussion and were asked to compare adaptation measure tradeoffs, identify which measure features mattered most, and share their preferences for adaptation.

Citizen Advisory Committee Briefings

The YSNAS team provided a presentation about the project at 9 citizen advisory committee meetings, such as at the San Francisco Youth Commission and the Bayview Citizen Advisory Committee.

FIGURE 32.
NOVEMBER 13, 2024, PUBLIC WORKSHOP



Photo credit: SF Planning

FIGURE 33.
FOCUS GROUP WITH ALICE GRIFFITH APARTMENT RESIDENTS



Photo credit: SF Planning

4.3 KEY FEEDBACK THEMES

The YSNAS team heard a range of opinions because engagement activities reached a wide range of stakeholders through multiple formats. The themes below reflect what emerged consistently across outreach phases, participant groups, and event types.

- Participants value and want to protect the existing institutions, non-profits, and local businesses in their neighborhood.
- Participants emphasized the importance of leveraging local knowledge and strengths, contracting locally for implementation, and continuing engagement across demographic groups, particularly with youth.
- Participants emphasized the need for streamlined interjurisdictional coordination to avoid delays and ensure adaptation projects are implemented efficiently. They expressed strong interest in seeing agencies work together proactively, maintain clear roles and responsibilities, and prioritize action.
- Participants preferred adaptation measures that:
 - » Improve water, air, and soil quality, and ultimately improve public health;
 - » Are adaptable to increased sea level rise projections;
 - » Improve access to open space, hiking, and walking trails;
 - » Improve the aesthetics of the shoreline through placemaking; and are easier to maintain.
- Participants were concerned about:
 - » Ongoing impact on public health due to existing Bay, groundwater, and soil contamination and restricted access to Candlestick Point SRA at Yosemite Slough;
 - » Illegal dumping along the shoreline and in the neighborhood; and
 - » Direct resident and local business displacement with strategy implementation.
- Participants differed in opinions about:
 - » Investment in the neighborhood—some were concerned that it could lead to gentrification and the displacement of people and local businesses, while others wanted the most investment and transformation for the betterment of the neighborhood.
 - » What scenario to plan for such as existing local businesses, housing, and shoreline activities in the project area, or the future of the neighborhood that will see an increase in nearby housing and a shift towards high tech manufacturing.
 - » Whether a living seawall or ecotone levee was better for the neighborhood, considering an ecotone levee would require changes in land use along the north and south shorelines.

For more detailed information about YSNAS outreach and engagement, see [Appendix A. Engagement and Feedback Summary](#).

5. INUNDATION EXPOSURE



The Bay Area, like many coastal regions, faces compounding risks because of sea level rise. As water levels increase, direct coastal flooding from storm surge and king tides is expected to occur more often. Rising seas also contribute to indirect flooding, as higher ocean levels push up shallow groundwater beneath the surface. When groundwater rises, it can infiltrate basements, sewer, and stormwater systems, and eventually reach the surface as localized flooding. YSNAS focuses on the risks from direct coastal flooding and storm-related inland flooding and how these hazards may affect community assets and the surrounding neighborhood.

5.1 SEA LEVEL RISE

This section summarizes future sea level rise and storm exposure through 2100.

5.1.1 Historical Sea Level Rise & Projections

Since the Industrial Revolution (mid-1700s to mid-1800s), warmer temperatures as a result of greenhouse gas emissions have melted glaciers and led to expansion of water volume as ocean temperatures increase, leading to sea level rise globally.⁴² From 1900 to 2000, sea levels rose 8 inches along the Bay shoreline. The rate of sea level rise is projected to accelerate as the atmosphere warms.

The City's Guidance for Incorporating Sea Level Rise into Capital Planning (2025) provides a framework for incorporating sea level rise projections into new construction, capital improvement, and maintenance projects. The guidance includes projections from the OPC 2024 Sea Level Rise Guidance, which is based on emission warming scenarios used in the Intergovernmental Panel on Climate Change's 6th Assessment Report.³⁶

The OPC Guidance estimates that San Francisco will experience approximately 0.8 feet of sea level rise by 2050 and 3.1 to 6.6 feet of sea level rise by 2100 (Figure 34).⁴⁴ The end-of-century projections have a wider range due to uncertainty regarding future global warming and socioeconomic (global climate policy and economic development) pathways.

When considering water levels and their associated impacts, it is important to understand that higher water levels can be reached with not only sea level rise, but also combinations of sea level rise, high tides, and coastal storm surge. For example, the water levels associated with 2 feet of sea level rise may also be attained by 1 foot of sea level rise and a king tide.

42 National Oceanic and Atmospheric Administration, "Climate Change: Global Sea Level."

43 City and County of San Francisco. Guidance for Incorporating Sea Level Rise Into Capital Planning. 2025. https://onesanfrancisco.org/sites/default/files/inline-files/2025_San_Francisco_SLR_Guidance_0.pdf.

44 California Ocean Protection Council, State of California Sea Level Rise Guidance: 2024 Science & Policy Update.

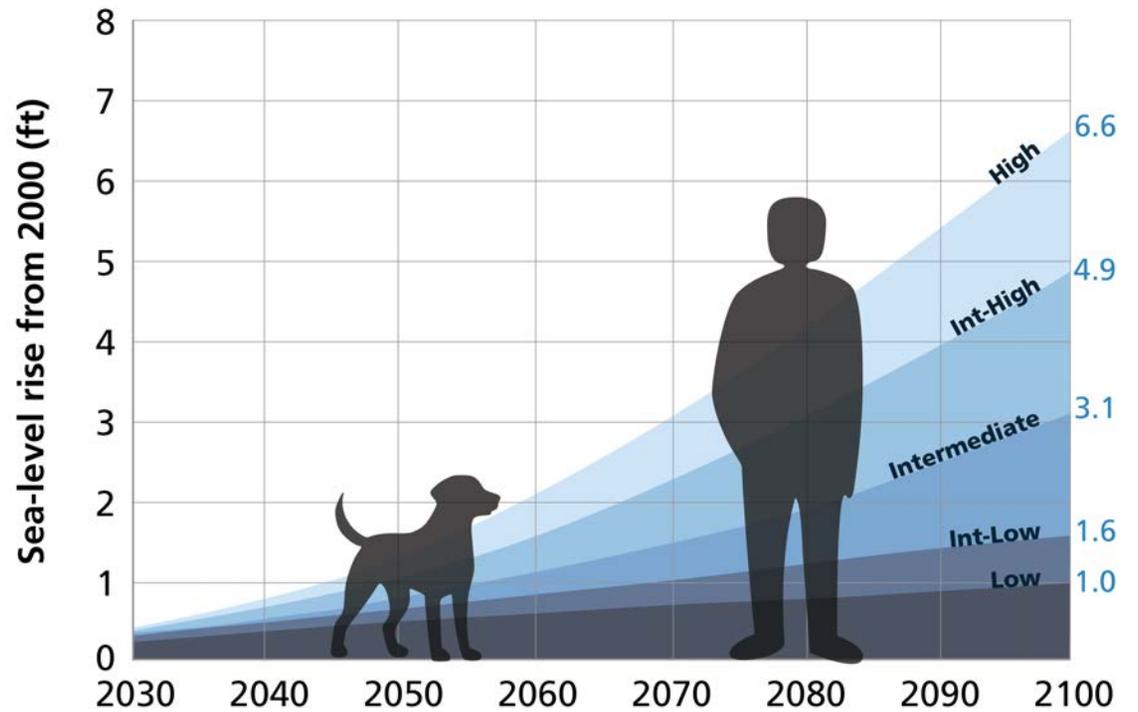
45 Moffatt & Nichol, Candlestick Point/Hunters Point Development Project Initial Shoreline Assessment.

Inundation is the process of submerging land under water. The extent of flooding can be exacerbated during oceanic processes like El Niño, which occur every 2 to 7 years and last 9 to 12 months, and can elevate tide levels by up to 1 foot.

Permanent inundation occurs when an area is flooded by high-tides, long-term sea level rise, or subsidence (ground sinking). In contrast, temporary flooding refers to areas flooded by short-term, episodic events typically driven by storms. The 1% annual coastal flood event represents temporary flooding from storm surge with a 1% probability of occurring during each year. These temporary storm surges generally add 0.5 to 3 feet to water elevation levels, and occur over a period of hours to days. However, waves at Yosemite Slough are driven by local winds and tend to have small wave heights.⁴⁵

As sea levels rise, the reach of temporary flooding during the 1% annual coastal flood event will extend farther inland. Temporary flooding in the following scenarios are modeled as combination of projected amount of sea level rise and its associated 1% annual coastal flood event.

FIGURE 34.
SEA LEVEL RISE PROJECTIONS FOR CALIFORNIA FROM OPC



5.1.2 Neighborhood Impacts With No Adaptation Action

As sea levels rise, there is an increased risk of shoreline overtopping and flooding for facilities adjacent to the Slough. Areas that were built on filled wetlands are at higher risk of flooding, groundwater rise, and soil liquefaction.³⁶ YSNAS analyzes hazard impacts across 4 scenarios of sea level rise (i.e., 0.8, 3.1, 4.9, and 6.6 feet) for both permanent inundation and temporary flooding conditions. The following sections, and [Appendix B. No Action Memorandum](#), describe projected impacts to the YSNAS project area in the absence of adaptation actions that would prevent flooding adaptation actions that would prevent flooding.

The City's Sea Level Rise Vulnerability and Consequences Assessment identified City-owned assets that would be affected by coastal hazards across various scenarios, including assets in the BVHP neighborhood. The assessment estimates that 5.5 feet of sea level rise, anticipated towards the end of the century, would impact approximately 700 residents and 90 businesses in the vicinity of Yosemite Slough.³⁷ Deeper waters could also result in larger waves that cause erosion and damage to shoreline infrastructure.³⁸

36 US Geological Survey, "What Is Liquefaction?"

37 City and County of San Francisco, Sea Level Rise Vulnerability and Consequences Assessment.

38 Although a hydrodynamic study completed in 2022 found minimal erosion and deposition effects in Yosemite Slough during modeled storm events for the 10-, 50- and 100-year storms (otherwise known as storms that have a 20%, 10%, and 1% chance of occurring during each year, respectively), the water level in the model was based on a real-world, 10-year storm that occurred in 2008 and did not consider sea level rise.

Sea level rise can cause existing soil contamination to move in new directions, with the potential to negatively affect community and ecosystem health. Groundwater rise at contaminated sites could cause contaminants to move upward toward the ground surface. In some cases, contaminated groundwater could emerge above the ground surface.^{39, 40} The lighter fresh water will rise, causing groundwater emergence if it floods the surface.⁴¹ There are 2 DTSC sites and 15 SWRCB sites in the project area that could be exposed to emergent groundwater issues under varying sea level rise scenarios.⁴²

Sea level rise also threatens the natural environment around Yosemite Slough. Though tidal wetlands can adapt to rising sea levels by accreting sediment and migrating inland, the shoreline in the project area has limited ability to migrate because of development adjacent to the shoreline.

39 Marcantonio et al., "Toxicity Travels in a Changing Climate."

40 Najarkolaie et al., "Short-Term and Long-Term Inundation Risk Insights for Contaminated Sites in the US."

41 Naval Facilities Engineering Systems Command Southwest, Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard.

42 California Department of Toxic Substance Control, "EnviroStor."

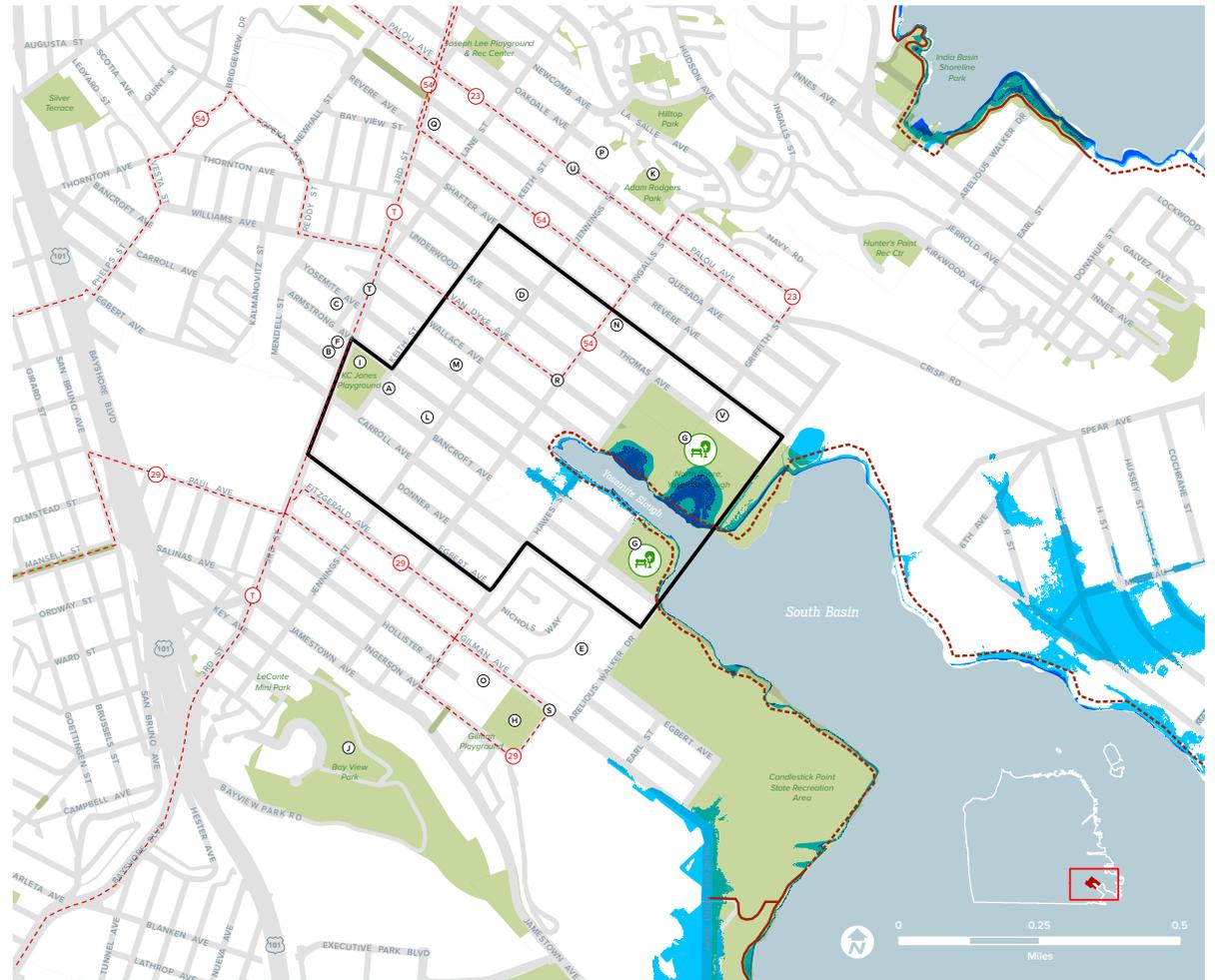
5.1.2.1 2050: 0.8 feet of sea level rise (Intermediate Scenario)

In the absence of adaptation actions, 0.8 feet of sea level rise would permanently inundate parts of Candlestick Point SRA's restored tidal marsh on the Slough's northern shoreline (darker blue, Figure 35). Planned segments of the Bay Trail would be inundated along the northern shoreline.

Temporary flooding (lighter blue, Figure 35) would overtop the northern and southern Yosemite Slough shorelines, impacting more of the SRA as well as industrial parcels on the southern shoreline. Sections of local streets, including Armstrong Avenue, Hawes Street, and Yosemite Avenue would experience temporary flooding.

Planned segments of the Bay Trail will be flooded along the southern shoreline and additional planned segments will be temporarily flooded along the northern shoreline if built at existing grade.

FIGURE 35. COMMUNITY FACILITIES EXPOSED TO 0.8 FEET OF SEA LEVEL RISE



- | | | | |
|--|---|--|--|
| <p>HEALTH & HUMAN SERVICES</p> <ul style="list-style-type: none"> Ⓐ Southeast Family Health Center Ⓑ Third Street Youth Center & Clinic Ⓒ Young Community Developers | <p>PARKS & OPEN SPACE</p> <ul style="list-style-type: none"> Ⓔ Candlestick Point State Recreation Area Ⓜ Gilman Playground Ⓝ MLK Jr Pool & K.C. Jones Park Ⓣ Bayview Park Ⓔ Adam Rodgers Park | <p>TRANSPORTATION</p> <ul style="list-style-type: none"> Ⓒ Muni Bus Line 54 Ⓜ Muni Bus Line 29 Ⓣ Muni T-Third Light Rail Ⓣ Muni Bus Line 23 | <p>0.8 ft Sea Level Rise</p> <ul style="list-style-type: none"> Ⓜ 0.8 ft Sea Level Rise + the 1% annual coastal flood (expected in 2050) |
| <p>HOUSING</p> <ul style="list-style-type: none"> Ⓒ Residential Area North of Slough Ⓒ Alice Griffith Apartments Ⓒ Armstrong Place Senior Housing | <p>PUBLIC SAFETY & INFRASTRUCTURE</p> <ul style="list-style-type: none"> Ⓣ SFMTA Paint and Sign Facility Ⓜ SFMTA Paint Facility Ⓣ Fire Station #17 | <p>UTILITIES</p> <ul style="list-style-type: none"> Ⓜ Griffith Pump Station | <ul style="list-style-type: none"> ▭ Yosemite Slough Project Area ■ Open Space and Parks - - - Bay Trail - - - Muni Bus Routes |

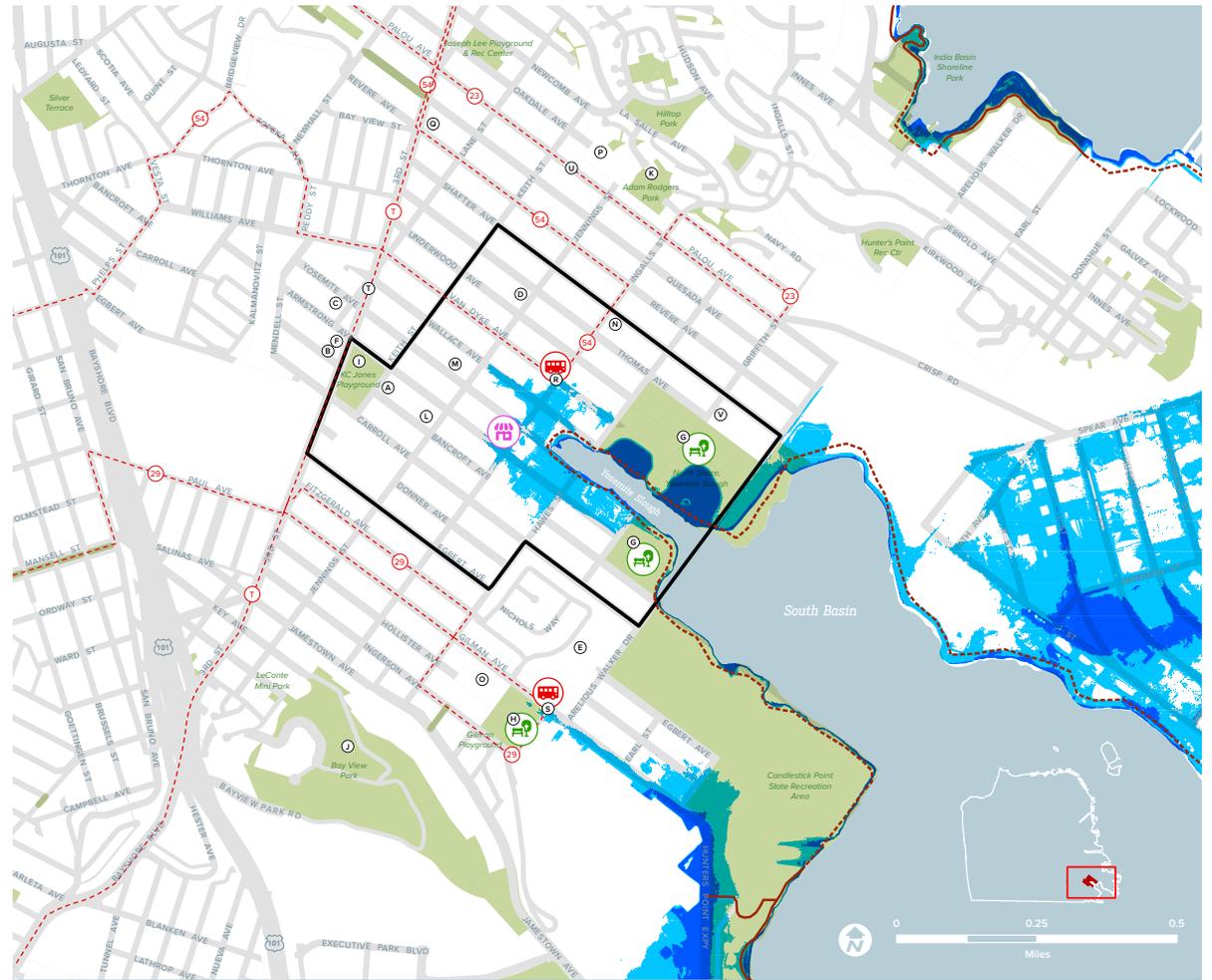
5.1.2.2 2100: 3.1 feet of sea level rise (Intermediate Scenario)

With 3.1 feet of sea level rise and no adaptation action, permanent inundation (darker blue, **Figure 36**) impacts the intersections of Yosemite Avenue and Hawes Street along the southern shoreline, becoming inaccessible. The entire area of the Candlestick Point SRA restored tidal marsh (north of Yosemite Slough) will be inundated, and the birding spot north of the restored tidal marsh could become inaccessible due to daily tidal inundation.

Temporarily flooded parcels (lighter blue, **Figure 36**) include vacant lots, office parcels, retail and entertainment parcels, and 2 industrial parcels. Flooded local businesses could experience operational disruptions.

Sections of local streets, including Armstrong Avenue, Hawes Street, Van Dyke Avenue, Wallace Avenue, and Yosemite Avenue, will experience temporary flooding between Ingalls Street and Yosemite Slough. On Wallace Avenue in particular, temporary flooding could extend as far inland as Jennings Street. The Muni 54 Felton and 29 Sunset bus routes and their respective stops (2 stops on the 54 Felton, 1 stop on the 29 Sunset) could be impacted by temporary flooding.

FIGURE 36. COMMUNITY FACILITIES EXPOSED TO 3.1 OF FEET SEA LEVEL RISE



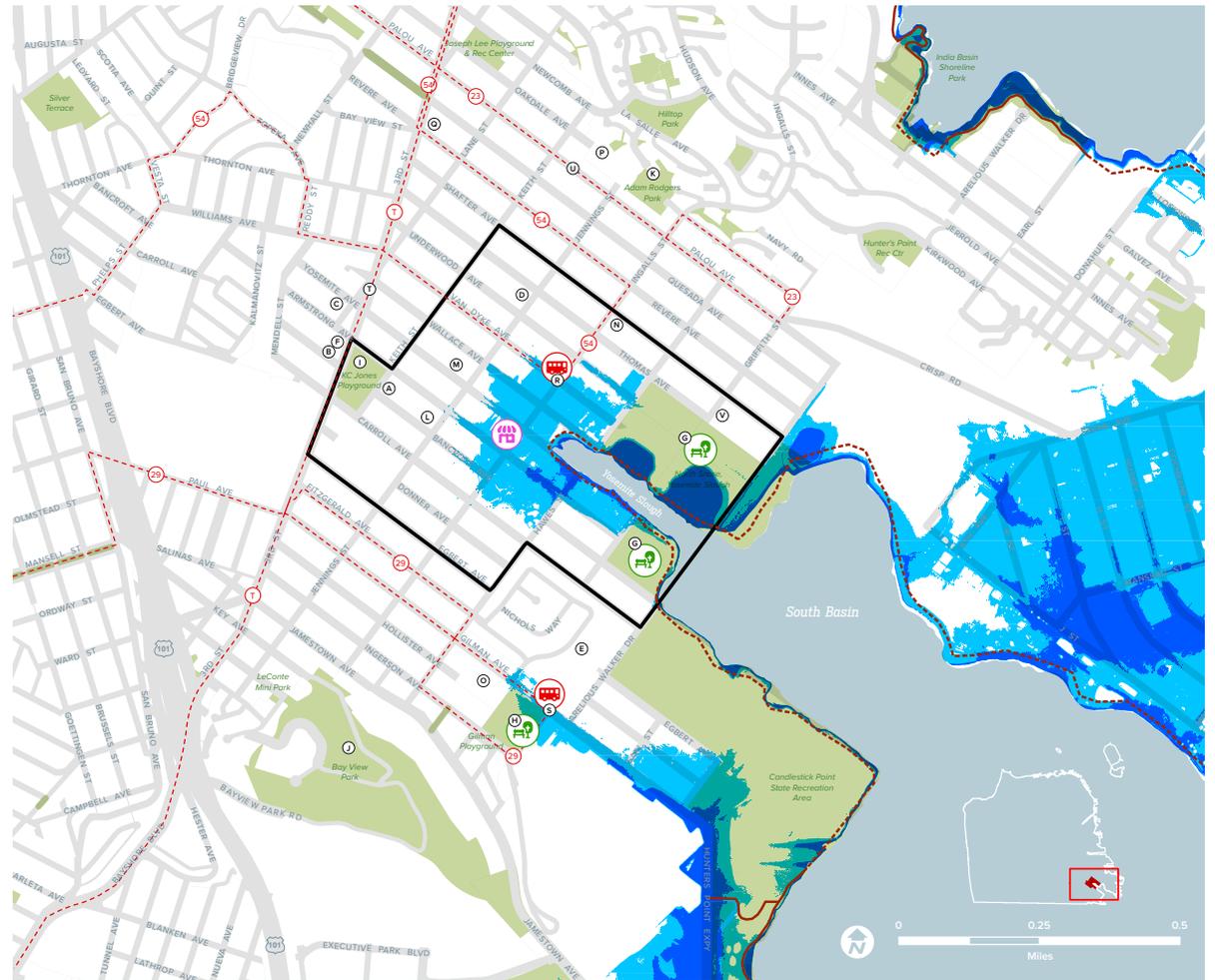
- | | | | |
|--|--|--|--|
| <p>HEALTH & HUMAN SERVICES</p> <ul style="list-style-type: none"> Ⓐ Southeast Family Health Center Ⓔ Third Street Youth Center & Clinic Ⓒ Young Community Developers | <p>PARKS & OPEN SPACE</p> <ul style="list-style-type: none"> Ⓒ Candlestick Point State Recreation Area Ⓓ Gillman Playground Ⓘ MLK Jr Pool & K.C. Jones Park Ⓓ Bayview Park Ⓒ Adam Rodgers Park | <p>TRANSPORTATION</p> <ul style="list-style-type: none"> Ⓔ Muni Bus Line 54 Ⓔ Muni Bus Line 29 Ⓙ Muni T-Third Light Rail Ⓙ Muni Bus Line 23 | <p>3.1 ft Sea Level Rise</p> <p>3.1 ft Sea Level Rise + the 1% annual coastal flood (expected in 2100 under a Likely scenario)</p> |
| <p>HOUSING</p> <ul style="list-style-type: none"> Ⓒ Residential Area North of Slough Ⓒ Alice Griffith Apartments Ⓒ Armstrong Place Senior Housing | <p>PUBLIC SAFETY & INFRASTRUCTURE</p> <ul style="list-style-type: none"> Ⓙ SFMTA Paint and Sign Facility Ⓙ SFMTA Paint Facility Ⓙ Fire Station #17 | <p>UTILITIES</p> <ul style="list-style-type: none"> Ⓙ Griffith Pump Station | <p>Yosemite Slough Project Area</p> <p>Open Space and Parks</p> <p>Bay Trail</p> <p>Muni Bus Routes</p> |

5.1.2.3 2100: 4.9 feet of sea level rise (Intermediate-High Scenario)

With 4.9 feet of sea level rise and no adaptation action (darker blue, Figure 37), permanent inundation resembles temporary flooding for 3.1 feet of sea level rise, but will be 1.8 feet deeper. Sections of local streets, including Armstrong Avenue, Wallace Avenue, and Yosemite Avenue, will be permanently inundated. Access to Yosemite Slough will be available via Carroll Avenue and Quesada Avenue. If the Bay Trail is constructed as planned, certain segments could be inaccessible due to daily tidal inundation.

Temporary flooding (lighter blue, Figure 37) impacts the 5-street radius around Yosemite Slough bounded by Bancroft Avenue and Underwood Avenue, extending inland as far as Jennings Street. Additional segments of the Muni 54 Felton and 29 Sunset bus routes, bus stop on the 29 Sunset, vacant lots, office parcels, retail and entertainment parcels, and industrial parcels would be temporarily flooded.

FIGURE 37. COMMUNITY FACILITIES EXPOSED TO 4.9 FEET OF SEA LEVEL RISE



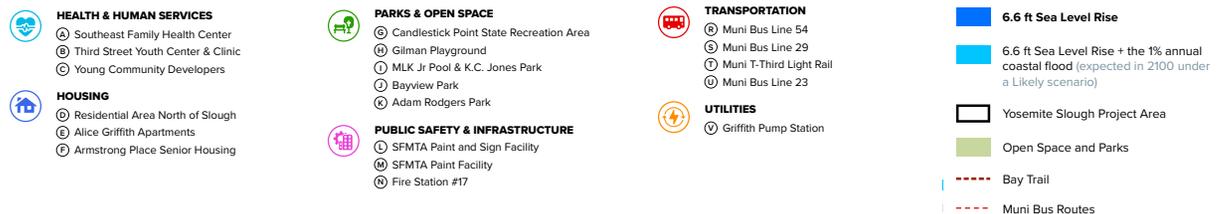
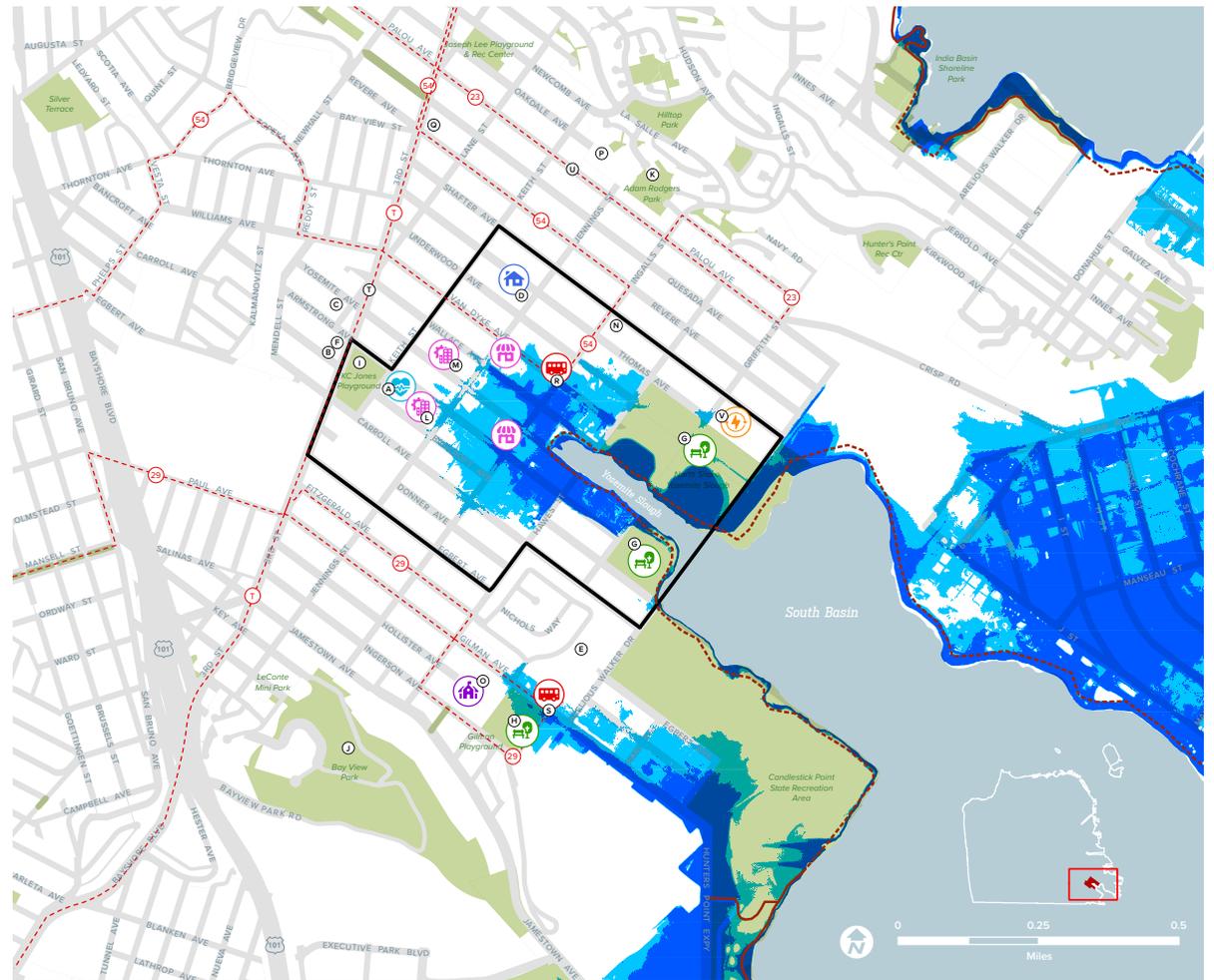
<p>HEALTH & HUMAN SERVICES</p> <ul style="list-style-type: none"> Ⓐ Southeast Family Health Center Ⓑ Third Street Youth Center & Clinic Ⓒ Young Community Developers 	<p>PARKS & OPEN SPACE</p> <ul style="list-style-type: none"> Ⓔ Candlestick Point State Recreation Area Ⓜ Gilman Playground Ⓝ MLK Jr Pool & K.C. Jones Park Ⓛ Bay View Park Ⓓ Adam Rodgers Park 	<p>TRANSPORTATION</p> <ul style="list-style-type: none"> Ⓒ Muni Bus Line 54 Ⓓ Muni Bus Line 29 Ⓣ Muni T-Third Light Rail Ⓜ Muni Bus Line 23 	<p>4.9 ft Sea Level Rise</p> <p>4.9 ft Sea Level Rise + the 1% annual coastal flood (expected in 2100 under a Likely scenario)</p>
<p>HOUSING</p> <ul style="list-style-type: none"> Ⓔ Residential Area North of Slough Ⓒ Alice Griffith Apartments Ⓒ Armstrong Place Senior Housing 	<p>PUBLIC SAFETY & INFRASTRUCTURE</p> <ul style="list-style-type: none"> Ⓣ SFMTA Paint and Sign Facility Ⓜ SFMTA Paint Facility Ⓓ Fire Station #17 	<p>UTILITIES</p> <ul style="list-style-type: none"> Ⓜ Griffith Pump Station 	<p>Yosemite Slough Project Area</p> <p>Open Space and Parks</p> <p>Bay Trail</p> <p>Muni Bus Routes</p>

5.1.2.4 2100: 6.6 feet of sea level rise (High Scenario)

With 6.6 feet of sea level rise and no adaptation action, the extent of permanent inundation (darker blue, Figure 38) resembles the extent of temporary flooding reach under the 4.9 feet of sea level rise scenario, except flood depths are deeper. If adaptation actions are not taken, permanent inundation will impact all local streets bounded by Bancroft Avenue, Jennings Street, and Van Dyke Avenue, inhibiting direct access to Third Street. Several vacant lots, office, industrial, retail and entertainment, and 1 residential parcel are projected to be permanently inundated. Armstrong and Wallace Avenues will be inundated, preventing direct access to Yosemite Slough.

With no adaptation actions and 6.6 feet of sea level rise, temporary flooding from the 1% annual coastal flood event (lighter blue, Figure 38) renders Yosemite Slough inaccessible from all sides. Temporarily flooded parcels include vacant lots, office, retail and entertainment, industrial, and 2 residential parcels. Flooding could also reach as far as the Southeast Family Health Center, affecting residents' access to health services and requiring them to seek healthcare farther from home. Although Fire Station #17, located at the intersection of Shafter Avenue and Ingalls Street, will not be directly

FIGURE 38. COMMUNITY FACILITIES EXPOSED TO 6.6 FEET OF SEA LEVEL RISE



inundated, responders may not be able to travel southbound, which means emergency services may be delayed during flooding events.

Residents and workers would not have access to local streets, from Carroll Avenue to Underwood Avenue and from Hawes Street to Jennings Street, under temporary flooding conditions. These conditions could result in temporary isolation from Third Street and disruptions to short-distance mobility. Two additional bus stops on the Muni 54 Felton are impacted by temporary flooding, which means transit users would need to walk further or through a flooded area to reach the nearest bus stop.

Temporary flooding in this scenario could also impact the Griffith Pump Station, affecting wastewater and stormwater service for both lower Yosemite and Sunnydale drainage basins.

Furthermore, the 1508 Bancroft facility, which serves as the (SFMTA's) only sign and meter shop, also faces temporary flooding. The 1508 Bancroft facility operates in coordination with the 1538 Yosemite facility, which serves as the SFMTA's only paint shop. As a result, the SFMTA may experience delays in signage and meter repairs, which could impact system-wide transportation needs.

5.2 INLAND FLOODING

This section summarizes past, present, and future inland flooding in the YSNAS project area. Climate change is expected to increase the intensity of storms, exacerbating flood risk in the low-lying portions of the neighborhood surrounding the Slough. During extreme storms in the past, low-lying areas in the BVHP neighborhood have repeatedly experienced submerged roads caused by flash flooding during heavy precipitation events.^{43, 44} As more rain falls in a given time period, the capacity of stormwater infrastructure designed to accommodate current amounts of rainfall may be exceeded, leading to localized flooding.

Figure 39 shows areas and properties expected to experience stormwater flooding of at least 6 inches during a storm with a 1% chance of occurring each year based on the SFPUC's 100-Year Storm Flood Risk Map.

More intense storms could exacerbate flood risk in the neighborhood when combined with storm surge. Figure 40 and Figure 41 show combined hazard mapping with 1 foot and 3.4 feet of sea level rise and the 1% annual coastal flood event.

Inland flooding damages buildings, impedes travel, and can impact critical assets such as wastewater and power infrastructure (Figure 42). Understanding where stormwater runoff contributes to neighborhood flooding—such as locations reported through the City's 311 app (Figure 43)—is essential to ensuring that coastal flood protection measures do not inadvertently block drainage pathways or trap water on land. Section 7.1.1 discusses considerations related to stormwater management when implementing adaptation measures in the Yosemite Slough neighborhood.

43 Charnock, "Record-Breaking Storm Puts San Francisco Cars Underwater, Showing City's Unique Vulnerability to Flash Flooding."

44 Harrington, "San Francisco Sees Mudslides, Flooded Homes."

FIGURE 39. SFPUC 100-YEAR STORM ELEVATIONS AND RISK ZONES

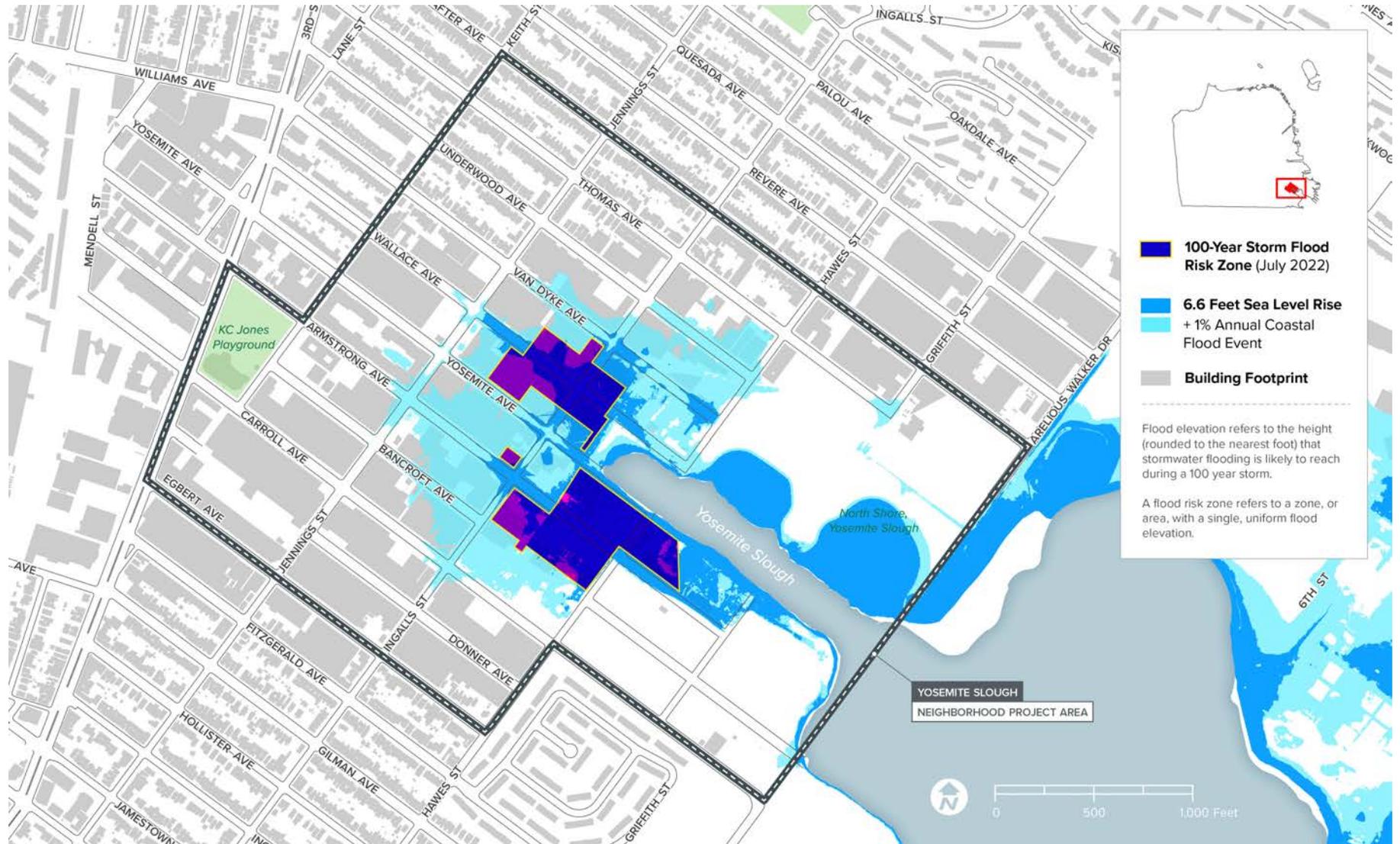


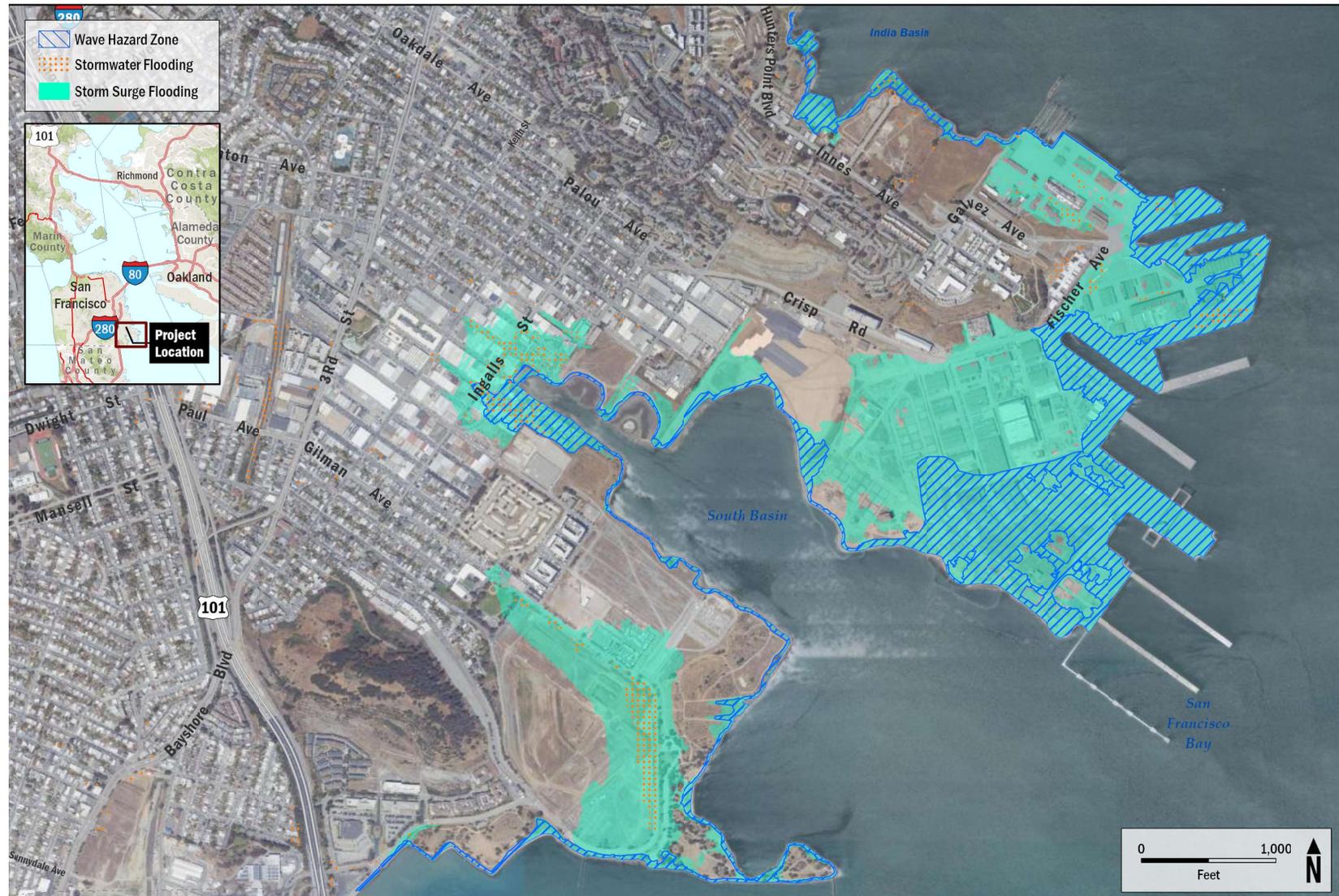
FIGURE 40. MAP OF COASTAL HAZARDS FOR 1 FOOT OF SEA LEVEL RISE AND 100-YEAR STORM SURGE



Stormwater, storm surge, and wave hazard mapping for 1 foot of sea level rise + 100-year storm scenario

Source: San Francisco Southeast Waterfront Combined Flood Hazard Analysis and Mapping

FIGURE 41. MAP OF COASTAL HAZARDS FOR 3.4 FEET OF SEA LEVEL RISE AND 100-YEAR STORM SURGE



Stormwater, storm surge, and wave hazard mapping for 3.4 feet sea level rise + 100-year storm scenario

Source: San Francisco Southeast Waterfront Combined Flood Hazard Analysis and Mapping

6. ADAPTATION STRATEGY



This section presents adaptation measures that reflect community priorities and provide a practical starting point for protecting the YSNAS project area from sea level rise and flooding impacts. Measures were selected based on technical feasibility, effectiveness, co-benefits, and community and stakeholder input. Each adaptation measure was designed to meet at least one, if not several, community-vetted goals (as discussed in Section 1.1). Community members consistently prioritized nature-based solutions, which informed several green measures that address flooding, enhance habitat, and improve livability.

6.1 SEA LEVEL RISE GUIDANCE & RECOMMENDED DESIGN ELEVATION

Determining the appropriate height for sea level rise protection structures is critical to ensuring long-term shoreline resilience. Shoreline protection structures must be designed to accommodate projected sea level rise and provide a safety margin to account for uncertainties in flood modeling, storm surge, and other dynamic coastal processes. Establishing design elevations based on regulatory standards and regionally adopted scenarios helps prevent under-design, which could lead to costly failures, and over-design, which could result in unnecessary expenditures.

6.1.1 Sea Level Rise Scenario Selection

As described in Section 5.1, YSNAS uses the sea level rise projections from the 2024 OPC Sea Level Rise Guidance. Specifically, YSNAS focuses on 3.1 feet of sea level rise and its associated 1% annual chance coastal flood event as the preliminary scenario for design elevation.

6.1.2 Design Elevation

In addition to accounting for sea level rise, design elevations should comply with FEMA standards for accredited flood protec-

tion structures⁴⁵ under Title 44 of the Code of Federal Regulations (CFR)⁴⁶ Part 65.10 for Flood Protection Levees. FEMA's National Flood Insurance Program establishes requirements for the vertical distance between the design stillwater elevation (SWEL)⁴⁷ and the top of a protective structure—known as freeboard—to ensure reliability. Freeboard provides a safety margin for uncertainties and is mandatory for FEMA accreditation.

For accredited coastal protection structures, FEMA requires that the minimum design elevation must be the greater of:

- 2 feet above the 1% annual chance coastal SWEL, or
- 1 foot above the maximum wave runup limit.⁴⁸

45 "Accreditation" is a specific technical term that indicates FEMA's formal recognition that a flood protection system meets the minimum requirements to be shown as providing flood protection from the 1% annual chance (i.e., "100-year") flood as shown on a Flood Insurance Rate Map. FEMA's requirements for accreditation of flood protection structures are outlined in Title 44 CFR Part 65.10. FEMA. (2025). 44 C.F.R. § 65.10 — Mapping of areas protected by levee systems. Retrieved November 26, 2025, from <https://www.ecfr.gov/current/title-44/part-65/section-65.10> <https://www.ecfr.gov/current/title-44/part-65/section-65.10>

46 Federal Emergency Management Agency. (2025). Title 44 CFR Part 65.10 — Mapping of areas protected by levee systems. Retrieved November 26, 2025, from <https://www.ecfr.gov/current/title-44/part-65/section-65.10> <https://www.ecfr.gov/current/title-44/part-65/section-65.10>

47 The stillwater elevation (SWEL) is the projected water level due to the combination of astronomical tides and storm surge, excluding the effects of waves. The 1% annual chance (i.e., 100-year) SWEL has a 1% chance of being equaled or exceeded in any given year.

48 FEMA, Coastal Structures Guidance for Flood Risk Analysis and Mapping.

Due to the sheltered nature of Yosemite Slough’s shoreline, the design elevations presented here consider only the SWEL and not the effects of waves. Wave effects (such as wave runup and overtopping) must be evaluated for more exposed segments along the Bay’s shoreline. Protective shoreline features developed as part of YSNAS adopt a design water level equal to the 1% annual chance (i.e., 100-year) coastal SWEL. The shoreline protection measures at Yosemite Slough will be designed to accommodate projected sea level rise and meet FEMA freeboard requirements.

Figure 44 shows recommended design elevations for adaptation structures relative to the North American Vertical Datum of 1988 (NAVD88) and the SWEL. Design elevations are calculated as follows:

Structure Design Elevation = 1% annual chance SWEL (Height above ground in NAVD88) + Sea Level Rise (3.1 feet or 6.6 feet) + Freeboard (2 feet)

Based on this calculation, future protection measures will need to be built to approximately 15 feet NAVD88 to account for 3.1 feet of sea level rise (2100 Intermediate Scenario) and FEMA freeboard criteria. At the south shoreline, protection measures will need to be built 5 to 7 feet above current ground elevation, as the ground elevation of the land adjacent to the south shoreline is approximately 8 to 10 feet NAVD88 as shown in Figure 44. FEMA-accredited shoreline protective structures must also demonstrate that the freeboard will be maintained with anticipated soil settlement over time; however, settlement was not factored into establishing design elevations for YSNAS. Any additional considerations for settlement in the design and construction of any proposed shoreline features would need be evaluated further in future design phases.

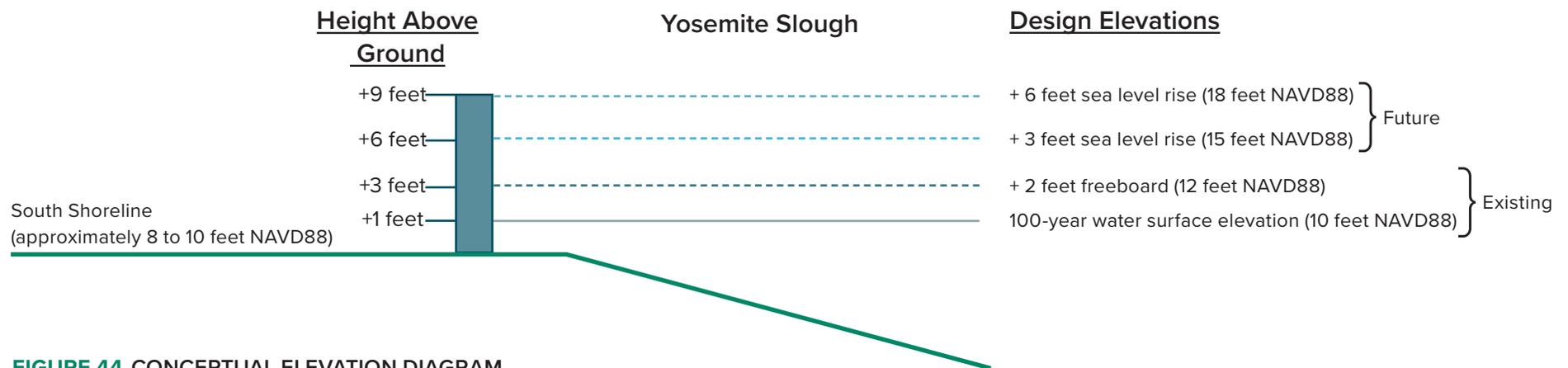


FIGURE 44. CONCEPTUAL ELEVATION DIAGRAM

Conceptual elevation diagram showing estimated recommended design elevations for south shoreline adaptation measures

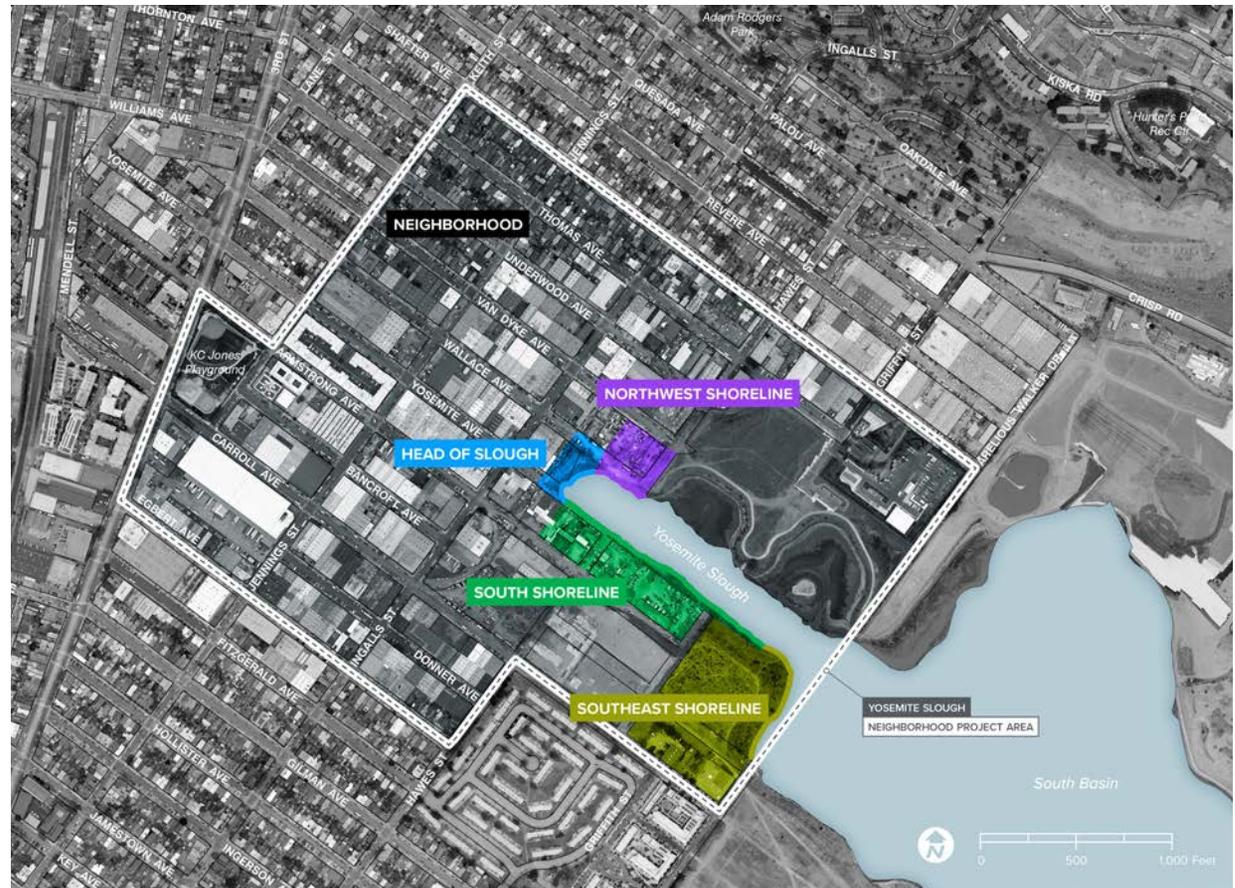
6.2 SITE-SPECIFIC CONDITIONS & CONSIDERATIONS

Site conditions such as elevation, topography, land use, and existing shoreline protection vary around Yosemite Slough.

Figure 45 shows the conditions and adaptation measures subdivided into 4 unique areas: the south shoreline, northwest shoreline, head of the Slough, and southeast shoreline. While the YSNAS has taken several site considerations into account, site-specific details are still subject to change.

The northeast shoreline currently benefits from sea level rise adaptation measures that have already been implemented. As part of Phase 1 of State Parks' Yosemite Slough Restoration and Public Access Project, the shoreline was graded to accommodate up to 3 feet of sea level rise and to withstand storm surge associated with the 1% annual chance coastal flood event. Understanding existing protections along the shoreline helped the YSNAS team identify gaps where future adaptation measures may be needed.

FIGURE 45. POTENTIAL LOCATIONS FOR SEA LEVEL RISE ADAPTATION MEASURES



6.2.1 South Shoreline

Flooding along the south shoreline would impact the embankment, parts of Yosemite Avenue, and adjacent parcels. Yosemite Avenue is narrow, unpaved, and considered an unaccepted street along the south shoreline. It does not extend east of Hawes Street. Several industrial businesses are located between Yosemite Avenue and Armstrong Avenue. The immediate shoreline is part of the Candlestick Point SRA. The parcels beyond the shoreline are privately-owned and under the jurisdiction of the City. The south shoreline also includes a SFPUC wastewater-stormwater transport storage box that terminates at a CSD outfall located where the extension of Arelious Walker Drive would meet the Bay.

Dimensions: The south shoreline's ground elevation is approximately 8 to 10 feet NAVD88 at the top of the existing embankment. The area beyond the south shoreline, starting at the top of the embankment and extending south across Yosemite Avenue to Armstrong Avenue, covers approximately 11 acres and measures roughly 1,050 feet in length and 250 feet in width. Yosemite Avenue is about 35 to 40 feet wide and terminates at Hawes Street. The elevation increases slightly from the edge of the embankment to Armstrong Avenue, to approximately 10 to 12 feet NAVD88.

Inundation Timeline: The south shoreline is projected to experience overtopping along the embankment with 0.8 feet of sea level rise and the 1% annual chance coastal flood event. With 3.1 feet of sea level rise, the embankment and portions of Hawes Street would be permanently inundated. With 3.1 feet of sea level rise and the 1% annual chance coastal flood event, flooding would extend multiple blocks into the neighborhood, to Bancroft Avenue.

Contamination: The DTSC has documented contamination at 3 sites near the south shoreline.⁴⁹ Any projects along the south shoreline would require sediment testing and mitigation as appropriate.

6.2.2 Northwest Shoreline

A narrow segment of the north shoreline, referred to as the northwest shoreline, connects the restored wetlands on the northeast shoreline to the head of the Slough. State Parks owns this segment of the north shoreline, though an industrial business sits directly north of it. A SFPUC transport/storage box runs under the Slough and cuts across the northwest shoreline to meet the restored wetlands area. A CSD outfall, directly in line with Griffith Street, is situated between the restored wetland's two bays. The northwest shoreline will require protection from sea level rise because it is not graded appropriately.

Dimensions: This section is approximately 350 feet long, with ground elevations of 10 to 13 feet NAVD88 at the embankment crest. The width from the top of the embankment to the adjacent property is about 10 to 15 feet, leaving little space for adaptation measures.

Inundation Timeline: The northwest shoreline does not experience inundation with 0.8 feet of sea level rise, even during the 1% annual chance coastal flood event. However, with 3.1 feet of sea level rise and the 1% annual chance coastal flood event, the embankment will be overtopped, and flooding is projected to extend out in the neighborhood to Van Dyke Avenue. Because the embankment is at a higher elevation, sea level rise and the 1% chance annual coastal flood event are not expected to lead to flooding until between 2050

49 California Department of Toxic Substance Control, "EnviroStor."

and 2100, so shoreline protection measures can be implemented later than at the south shoreline.

Contamination: The Yosemite Slough Restoration and Public Access Project identified contaminated soil adjacent to the northwest shoreline. Measures requiring soil removal or grading along the northwest shoreline should undergo additional testing and mitigation.⁵⁰ Unlike the south shoreline, the north shoreline has no former DTSC sites.

6.2.3 Head of the Slough

The head of the Slough encompasses the embankment and natural area between the northwest and south shorelines. Directly behind the head of the Slough, between Yosemite Avenue, Ingalls Street, and Wallace Avenue, are several industrial businesses. This area is owned by State Parks. The SFPUC transport storage box that runs along the south shoreline cuts across the southern edge of the area.

Dimensions: This area encompasses approximately 0.6 acres, with ground elevations rising from 4 feet NAVD88 at the Slough edge to approximately 10 to 12 feet NAVD88 at the top of the embankment. The elevation from the edge of the embankment to the neighborhood increases to 14 feet NAVD88 across approximately 120 feet. The head of the Slough is approximately 240 feet wide.

Inundation Timeline: The site's elevation of 14 feet NAVD88 at its highest point provides sufficient protection against 3.1 feet of sea level rise. Because adaptation measures in this Strategy are designed to accommodate up to 3.1 feet of sea level rise, no additional elevation would be required at the embankment. However, with 4.9 feet of sea level rise and the 1% annual chance coastal flood

event, additional measures would be required to protect against projected overtopping of the area.

Contamination: Because this site is directly adjacent to a federal contaminated site, additional contamination may exist in the soil in this area.

6.2.4 Southeast Shoreline

The southeast shoreline joins the Slough shoreline with Candlestick Point SRA's South Basin shoreline. The area is flat and consists mainly of shrubs and non-native grasses. The Candlestick Point State Park Office, community garden, and native plant nursery sit south of the site. There is a CSD outfall on the Bayward-facing side of the site where the extension of Arelious Walker Drive would meet the Bay, described in [Section 3.5](#).

Dimensions: This site spans approximately 7.5 acres and is roughly square in shape, measuring about 475 feet by 525 feet (not including the Candlestick Point State Park Office and garden). Elevation increases from 4 feet NAVD88 at the Slough edge to 16 feet NAVD88 at the top of the embankment, with the remainder of the site ranging between 17 and 25 feet NAVD88.

Inundation Timeline: Overtopping is projected with 3.1 feet of sea level rise and the 1% annual chance coastal flood event. With 6.6 feet of sea level rise, the top of the embankment is permanently flooded, but there would be minimal flooding of the rest of the site.

Contamination: Additional contamination may exist in the soil in this area.

⁵⁰ California Coastal Conservancy. 2008. Yosemite Slough Wetland Restoration North Side Implementation – Augmentation. https://scc.ca.gov/webmaster/ftp/pdf/sccbb/2008/0812/0812Board03A_Yosemite_Slough.pdf

6.3 POTENTIAL ADAPTATION MEASURES

The Strategy identifies potential adaptation measures to protect against the 1% annual chance coastal flood event and 3.1 feet of sea level rise, which is the likely amount of sea level rise expected by 2100. The measures could be adapted to protect against higher sea levels if necessary. Each measure is effective on its own and tailored to the locations identified in [Section 6.2](#). However, they are most effective at protecting the entire project area when implemented together. The measures described here need to be paired with strategies to manage inland flooding from stormwater and groundwater rise. Those strategies will be addressed in more detail in the City's Shoreline Adaptation Plan.

Measures were selected based on coastal adaptation plans from throughout the Bay Area, such as the WRP, the Islais Creek Adaptation Strategy, and other projects on the Bay Adapt Currents Platform. The measures ranged from nature-based ("green") to traditional engineering ("gray") as well as hybrid solutions.

6.3.1 Potential Measures at the South and Northwest Shorelines

This section proposes two different adaptation approaches for the south and northwest shorelines at Yosemite Slough. Both approaches have significant constraints that require refinement to meet jurisdictional and feasibility requirements. These approaches represent bookends of a range of possible adaptation measures along the shorelines. One approach uses traditional gray infrastructure while the other is a nature-based solution. Additional planning and design are needed to refine these adaptation measures and determine how to best integrate them with landowner priorities and infrastructure requirements.

6.3.1.1 Seawalls and Living Seawalls

A seawall is a vertical concrete, steel, or stone structure that serves as a physical barrier against tides and waves ([Figure 46](#)). Seawalls are suitable for urbanized areas because they have small footprints compared to other adaptation measures. Seawalls can be designed for future additions, in order to adapt to higher sea levels or more severe storm surge ([Figure 47](#)). However, seawalls can disrupt natural coastal processes, such as sediment transport and shoreline/habitat migration. More coordination around nature-based solutions would be needed with State Parks, as a seawall does not align with the State Parks General Plan.

If sea levels rise high enough to expose the lower part of the seawall to the tides, the wall could be converted to a "living" seawall by adding textures (e.g., grooves, ledges) and substrates (i.e., concrete mixtures of varying chemical compositions) that create new surfaces that allow sea life to attach and live on the surface ([Figure 48](#), [Figure 49](#)). These textures can be included in the original seawall design or attached as panels in the future. San Francisco is piloting a living seawall along the Embarcadero that has delivered promising early results after 2 years, with researchers identifying several oysters, seaweed, and crab species on the wall's substrates ([Figure 50](#)).⁵¹

Seawalls could be built along the south and northwest shorelines of the Slough ([Figure 51](#)). At the south shoreline, a seawall would be 5 to 7 feet above the existing ground surface, with a crest elevation of approximately 15 feet NAVD88. A seawall of this height would protect against 3.1 feet of sea level rise and meet FEMA requirements with 2 feet of freeboard, as depicted in [Figure 52](#). At the northwest shoreline a seawall about 2 to 5 feet above the ground or at 15 feet NAVD88, could provide the same level of protection.

51 Port of San Francisco 2025

The seawall would be shorter at the northwest shoreline because its ground elevation is higher.

A seawall would take at least 5 years to implement, a time period that includes additional outreach, planning, design, permitting, and construction. The process of adding textured panels to turn the seawall into a living seawall would take place around 2050 when sea levels have risen and the wall is exposed more consistently to tides (Table 5). Habitat establishment of sea life would take an additional 1 to 2 years.

FIGURE 46. PHOTO OF SEAWALL



Traditional concrete seawall along the San Francisco Embarcadero

Source: WRA Environmental Consultants

FIGURE 47. SEAWALL CONCEPT DIAGRAM

Seawall cross-sectional diagram for 3.1 feet of sea level rise. Concept drawing only. Not for engineering purposes.



Vertical axis is exaggerated ~approximately 2.5 times.
 MHHW = Mean Higher High Water, the average of the higher of the two daily high tides (i.e. high tide level)

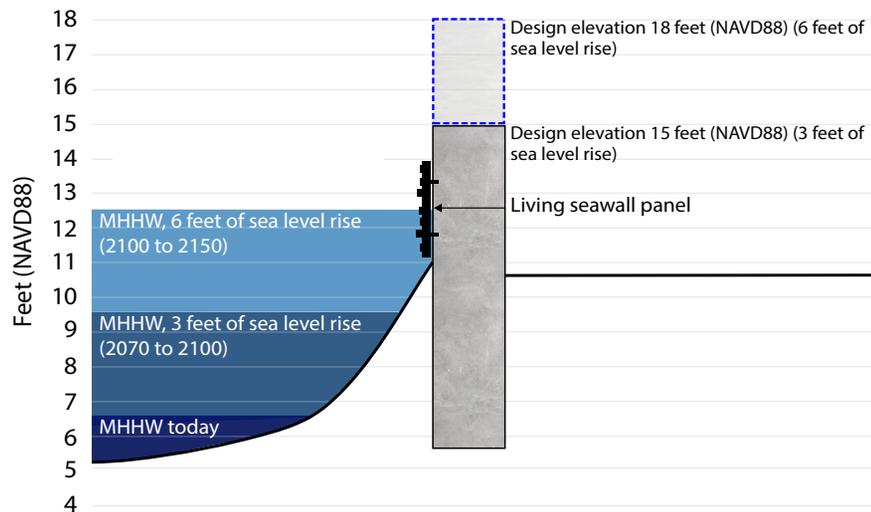
FIGURE 48. TEXTURED SUBSTRATES ON LIVING SEAWALL



Source: Living Seawalls Sydney Institute of Marine Science and Reef Design Lab (left), City of Seattle (right)

FIGURE 49. DIAGRAM OF TEXTURED SUBSTRATES

Textured substrates can be added to the face of the seawall, contributing a "living" element to the adaptation



Concept drawing only. Not for engineering purposes. Vertical axis is exaggerated approximately 2.5 times

MHHW = Mean Higher High Water, the average of higher of two daily high tides (i.e. high tide level)

FIGURE 50. LIVING SEAWALL PILOT IN SAN FRANCISCO

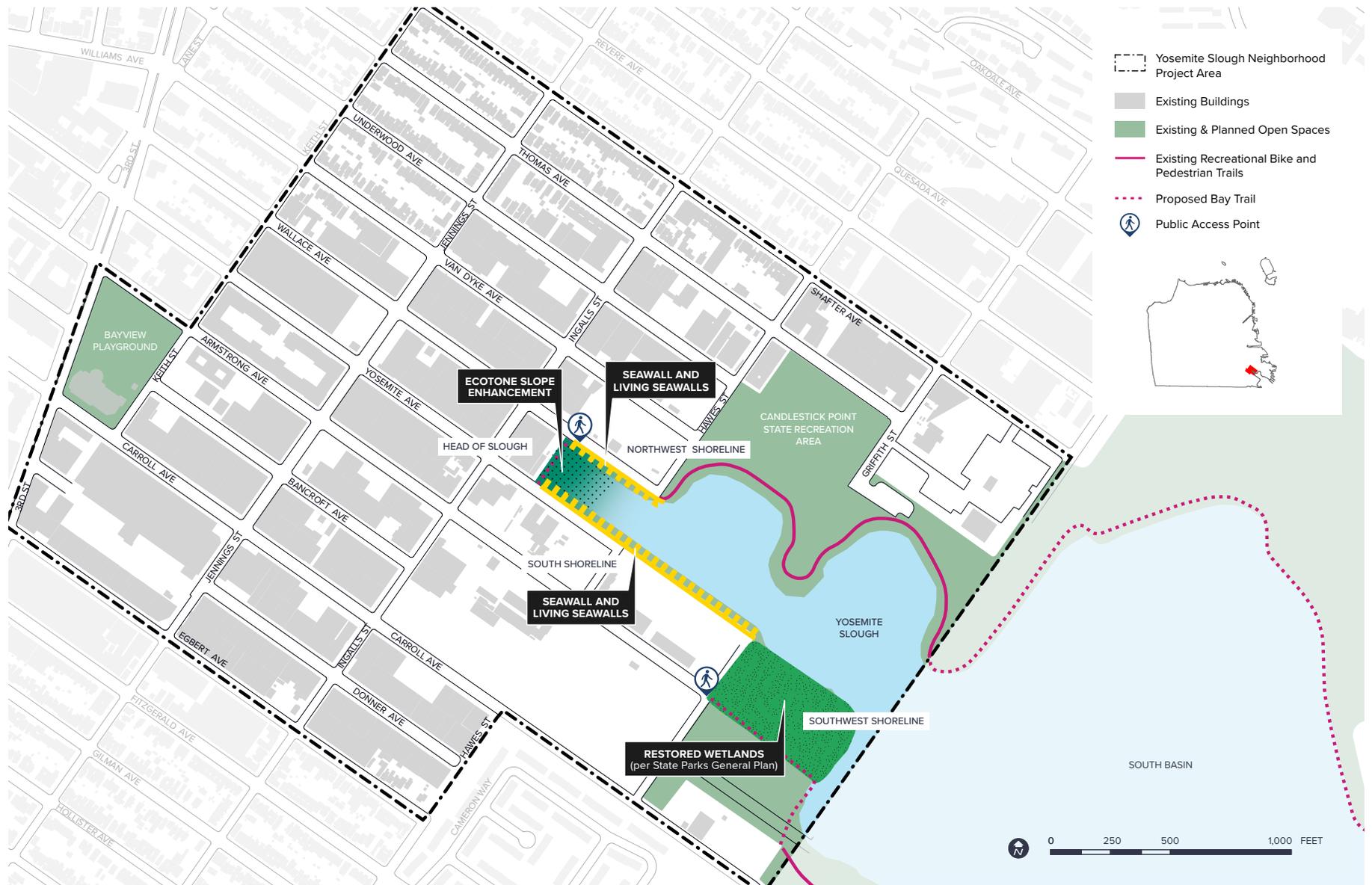


Source: Smithsonian Environmental Research Center

Implementation considerations for a seawall include:

- Further seismic, geotechnical, or soil assessments are essential to determining the feasibility of constructing a seawall. Soil characteristics and seismic risks affect how deep below ground the seawall's foundation would extend. As previously noted, a seawall along the south shoreline must be at least 5 to 7 feet tall to provide adequate protection from projected sea level rise. However, this required height may be constrained by subsurface conditions and seismic safety requirements.
- The design of the seawall must account for existing wastewater infrastructure (including existing CSD structures) and stormwater drainage to prevent build up of stormwater and/or emergent groundwater behind the wall during storms.
- Construction activities should consider impacts to shoreline access and local streets that serve residents and businesses.
- Construction activities should also avoid disturbing EPA's planned contamination remedy. Prior to design, sediment testing should be conducted. If contamination is present, additional contamination studies will need to be conducted to inform a remediation plan.

FIGURE 51. PLAN VIEW OF POTENTIAL LIVING SEAWALL IMPLEMENTATION



Many community members expressed interest in a seawall because it could preserve existing land uses and building access; and a living seawall could create habitat for sea life. However, they also raised concerns that a seawall may not improve water quality or provide shoreline access as effectively as an ecotone levee.

To provide continuous and multi-hazard flood protection along the Yosemite Slough shoreline, the seawall can be paired with improved stormwater management in the neighborhood, an ecotone slope enhancement along the head of the Slough and/or wetland restoration in the southeast shoreline. It is important to note that the seawall cannot be paired with an ecotone levee in the same location.

TABLE 5. IMPLEMENTATION DETAILS FOR SEAWALL ON THE SOUTH AND NORTHWEST SHORELINES

Implementation Details	South Shoreline	Northwest Shoreline
Recommended Implementation Timing	2035 to 2050 (mid-century)	2050 to 2070 (late-century)
Sea Level Rise Protection	3.1 feet of sea level rise and adaptable to higher levels of sea level rise	3.1 feet of sea level rise and adaptable to higher levels of sea level rise
Design Life	50 to 100 years	50 to 100 years
Estimated Construction Costs*	\$12.3M to \$34.3M	\$3.2M to \$9.8M
Estimated Operations & Maintenance Costs	\$10k to \$20k annually	\$10k to \$20k annually

* Construction costs do not account for the costs associated with remediation, planning, design, or permitting of measures. All construction costs are based on the 2021 MTC Sea Level Rise Framework Archetype Costs. Source: MTC, "SLR Framework Activity Archetype Costs Spreadsheet."

6.3.1.2 Ecotone Levees

Ecotone levees are proposed as a nature-based alternative to the seawall along the south and northwest shorelines. An ecotone levee is a shallow, gently sloped structure that provides a gradual transition from wetland to upland habitat while physically protecting the shoreline from flooding, as shown in [Figure 52](#). An engineered levee core, berm, or seawall at the back of the levee serves to stabilize the structure. Ecotone levee slopes typically have a horizontal to vertical ratio of 10:1 to 30:1.

The ecotone levee provides a softer transition from Bayland to upland habitats than a seawall, providing refuge for wildlife and important transition zone habitat that is lacking throughout San Francisco Bay. Similar to the seawall, the ecotone levee could be adapted to provide a higher level of flood protection by extending the engineered levee core base ([Figure 53](#)). The ecotone levee could be designed to include a narrow bench of tidal marsh where it meets the Slough.

In addition to supporting biodiversity, the ecotone levee could provide additional open space and shoreline access for the community. Ecotone levees can be designed to treat stormwater if they include a subsurface seepage slope; this possibility could be investigated closer to the design stage. The Bay Trail could be aligned atop the ecotone levee and connect with the other trails in the project area.

Because the ecotone levee must be designed at a much gentler slope (a minimum of 10:1) than the vertical seawall, it would take up more space and impact adjacent properties and access. The ecotone levee would require more earthwork over a larger footprint than the seawall, which could mean more remediation is required if the soil is found to be contaminated ([Figure 54](#)).

After additional community outreach, implementing an ecotone levee along the south and northwest shorelines would take, at a minimum, 7 years, including planning, design, permitting, remediation, and construction. Establishment of habitat would take longer and may require more maintenance (e.g., invasive vegetation removal) in the first 3 to 5 years to ensure habitat is properly developed (Table 6).

Implementation considerations for an ecotone levee include:

- Further seismic, geotechnical, and soil assessments are essential to determining the feasibility of constructing an ecotone levee.

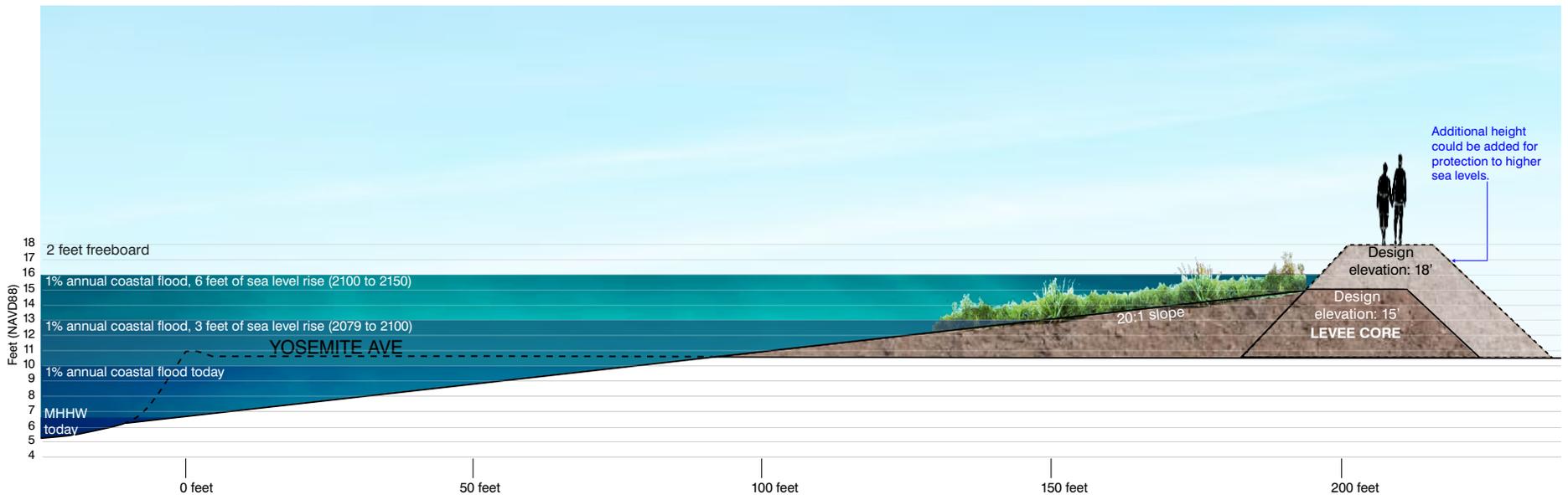
FIGURE 52. ECOTONE LEVEE AT THE SEARS POINT RESTORATION PROJECT



Photo credit: Julian Meisler, Sonoma Land Trust

FIGURE 53. ECOTONE LEVEE CONCEPT DIAGRAM

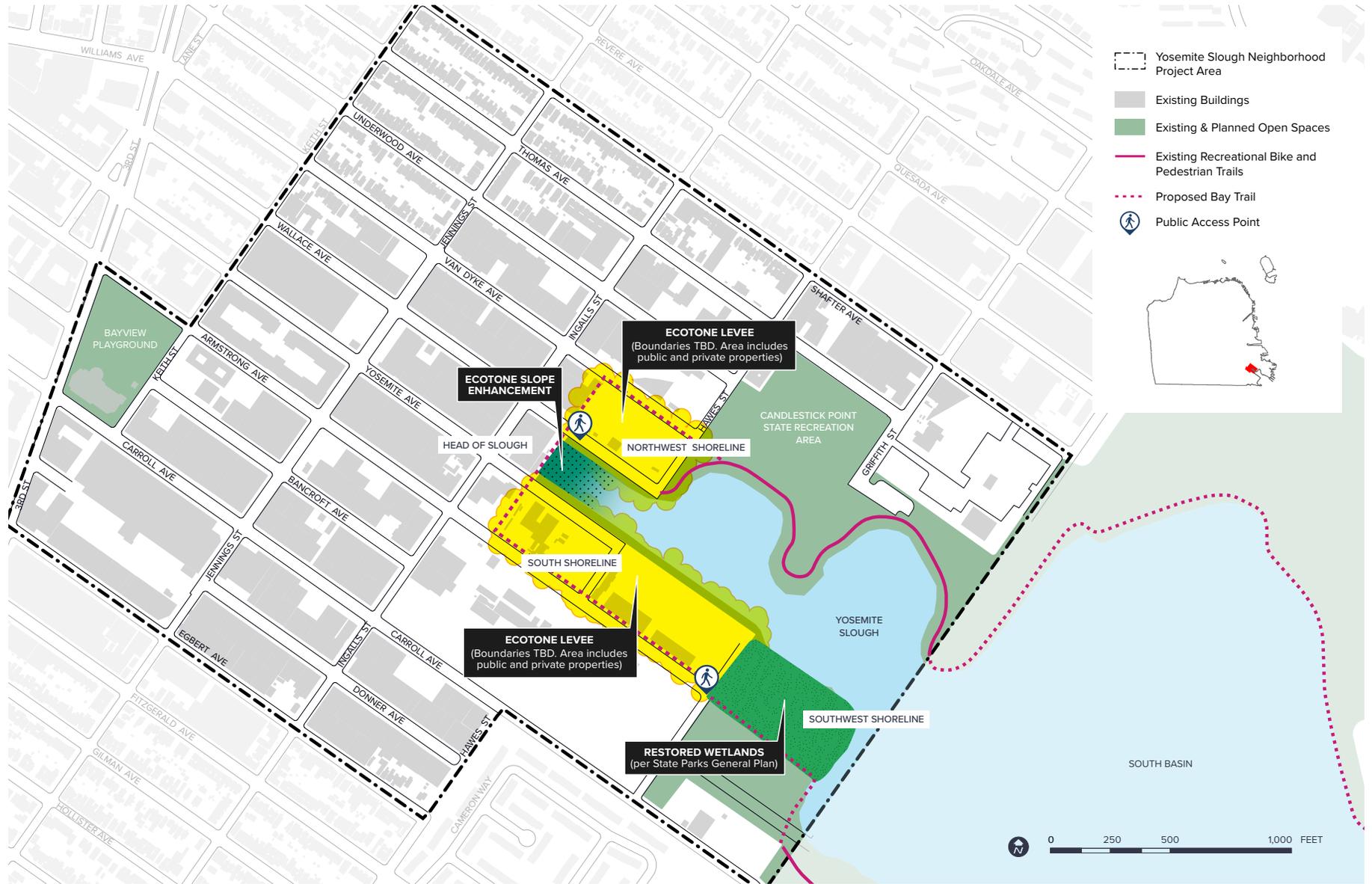
Ecotone levee cross-sectional diagram for 3 feet of sea level rise. Concept drawing only. Not for engineering purposes.



Vertical axis is exaggerated ~approximately 2.5 times.

MHHW = Mean Higher High Water, the average of the higher of the two daily high tides (i.e. high tide level)

FIGURE 54. PLAN VIEW OF POTENTIAL ECOTONE LEVEL IMPLEMENTATION



- Constructing an ecotone levee in this area would require close coordination with SFPUC to assess potential impacts to existing stormwater and wastewater infrastructure. To construct along the full south shoreline, both the CSD and the storage/transport box would need to be relocated, as they currently sit above the elevation where the levee slope would be graded. Relocating the CSD and storage/transport box would add significant expenses, and is likely not feasible. Alternatively, the location of the ecotone levee could be shifted to avoid the storage/transport box. For instance, the ecotone levee could be limited to the area east of the storage/transport box (east of Hawes Street) and paired with a narrower protection structure (e.g., seawall) along Yosemite Avenue where the storage/transport box is located. The location of the ecotone levee could also be shifted Bayward, though this would require Bay fill.
- Construction activities should consider impacts to shoreline access and local streets that serve residents and businesses.
- Construction activities must align with EPA's planned contamination remedy. Prior to design, sediment testing in the potential ecotone levee implementation site should be conducted. If contamination is present, additional contamination studies will need to be conducted to inform a remediation plan.
- All shoreline planting efforts should be coordinated with the San Francisco Estuary Invasive Spartina Project to ensure they do not facilitate the spread of invasive and hybrid cordgrass.

Many community members routinely expressed a desire for nature-based solutions and reacted positively to the ecotone levee because it would provide ecosystem services, create habitat, expand green space, and enhance shoreline access. However, community members were also concerned about the potential impacts to adja-

TABLE 6. IMPLEMENTATION DETAILS FOR ECOTONE LEVEE ON THE SOUTH AND NORTHWEST SHORELINES

Implementation Details	South Shoreline	Northwest Shoreline
Recommended Implementation Timing	2035 to 2050 (mid-century)	2050 to 2070 (late-century)
Sea Level Rise Protection	3.1 feet of sea level rise and adaptable to higher levels of sea level rise	3.1 feet of sea level rise and adaptable to higher levels of sea level rise
Design Life	50 to 100 years	50 to 100 years
Estimated Construction Costs*	\$18.3M to \$32.2M	\$4.6M to \$8M
Estimated Operations & Maintenance Costs	first 2 to 5 years: \$10k to \$50k annually following years: \$5k to \$10k annually	first 2 to 5 years: \$5k to \$10k annually following years: \$2k to \$5k annually

* Construction costs do not account for the costs associated with remediation, planning, design, or permitting of measures. All construction costs are based on the 2021 MTC Sea Level Rise Framework Archetype Costs. Source: MTC, "SLR Framework Activity Archetype Costs Spreadsheet."

cent properties. To ensure complete flood protection, the ecotone levee must be paired with improved stormwater management. The ecotone levee's habitat benefits could be optimized if paired with ecotone slope enhancement (as discussed in [Section 6.3.2](#)) or wetlands restoration (as discussed in [Section 6.3.3](#)) It is important to note that the ecotone levee cannot be paired with the seawall in the same location, but they could be adjacent to each other.

Management of inland flooding, including from stronger storms and emergent groundwater, must be considered in the design of the ecotone levee. Inland flooding management will require close coordination with SFPUC to ensure that the design of the ecotone levee is integrated with the existing sewer system and any required improvements to ensure adequate storage and transport capacity.

6.3.2 Ecotone Slope Enhancement at the Head of the Slough

The area referred to as the “head of the Slough” covers approximately 0.6 acres at the westernmost edge of Yosemite Slough. This site features an existing graded slope with elevations ranging from 4 feet to approximately 13 to 16 feet NAVD88, transitioning from the low-lying edge of the Slough to higher upland terrain (Figure 55).

Given the existing topography, the recommended intervention for this area is an ecotone slope enhancement, which involves the removal of invasive vegetation and establishment of appropriate native vegetation to create a gradual transition between intertidal and upland ecological zones. Ecotone slope enhancement supports biodiversity and improves open space in the community (Figure 56). If soils are appropriate, this approach can also facilitate the migration of marshes upland in response to sea level rise, contributing to long-term climate resilience. Depending on soil conditions, soil placement and grading may be necessary to improve conditions for marsh migration.

The ecotone slope will be planted with appropriate species based on elevation with respect to the tides. Specific plant palettes and recommended enhancement actions will be determined at a later phase of design. Though planting will not be undertaken in the intertidal zone, close coordination with the San Francisco Estuary Invasive Spartina Project is recommended. Possible planting zones include:

- Upper slope (closest to land): Drought-tolerant native transition zone vegetation, including grasses, shrubs, and forbs; and
- Lower slope: High marsh species that provide structure and cover for marsh wildlife, such as marsh gumplant (*Grindelia stricta*).

Community members expressed positive feedback for ecotone slope enhancement because it is a lower cost measure, utilizes

FIGURE 55. HEAD OF YOSEMITE SLOUGH



Photo credit: SF Planning

TABLE 7. IMPLEMENTATION DETAILS FOR ECOTONE SLOPE ENHANCEMENT AT HEAD OF SLOUGH

Implementation	Details
Recommended Implementation Timing	2026 to 2050 (mid-century)
Sea Level Rise Protection	3.1 feet of sea level rise
Design Life	Once established, can be maintained in perpetuity
Estimated Construction Costs*	\$23.3k to \$31.7k
Estimated Operations & Maintenance Costs	First 2 to 5 years: \$10k to \$50k annually Following years: \$5k to \$10k annually Includes vegetation management, invasive species control, ecological assessments, sediment and debris removal

* Construction costs do not account for the costs associated with planning, design, or permitting of measures. All construction costs are based on the MTC Sea Level Rise Framework Archetype Costs. Source: MTC, “SLR Framework Activity Archetype Costs Spreadsheet.”

FIGURE 56.
ECOTONE SLOPE AT RICHMOND HOFFMAN MARSH BAY TRAIL



Photo credit: Ellen Plane, San Francisco Estuary Institute

existing topography, is low maintenance once established, and provides opportunities for neighborhood participation in wetland restoration. The design of the enhancement measure must account for existing and planned wetland areas and access points for community members. An elevated boardwalk or trail through the head of the Slough could fill a gap in the Bay Trail, connecting the restored wetlands in the north to the southern shoreline and heart of Candlestick Point SRA.

The ecotone slope enhancement can be paired with all of the other potential measures in YSNAS, including either the seawall or ecotone levee.

6.3.3 Restoring Wetlands at the Southeast Shoreline

The southeast shoreline site has high enough elevation at the top of the embankment to prevent flooding with 3.1 feet of sea level rise and the 1% annual chance coastal flood event. As such, the measure recommended here focuses on improving ecological conditions and

FIGURE 57.
RESTORED WETLANDS ON THE NORTH SIDE OF YOSEMITE SLOUGH



Photo credit: SF Planning

habitat connectivity. The 2013 State Parks General Plan identifies this area for grassland and coastal shrub surrounded by restored tidal marsh, (as shown in [Figure 21](#)).

As with the restoration project on the northern shoreline ([Figure 57](#)), grading the slope and planting native species could transform the southeast shoreline into even more natural habitat. In addition to providing habitat, restoring wetlands can include elements that enhance recreation opportunities, such as a segment of the planned Bay Trail or a dedicated pedestrian access point.

Restoring wetlands would take 3 to 5 years to complete planning, design, permitting, and construction. Plant establishment would take several more years as tidal action is restored and wetlands evolve ([Table 8](#)). Implementation considerations for restoring wetlands along the southeast shoreline include the following:

- Prior to design, sediment testing in the area should be conducted to ensure contamination from previous industrial activity will not

be exposed during the restoration process. If contamination is present, additional contamination studies will need to be conducted to inform a remediation plan before restoration begins.

- Access to restored wetlands must be planned carefully to ensure habitats are not disturbed. Access can be accomplished using elevated boardwalks, depicted in Figure 58, or clearly established footpaths.
- All shoreline planting efforts should be coordinated with the Invasive Spartina Project to ensure they do not facilitate the spread of invasive and hybrid cordgrass.
- Design must consider maintenance access for utility infrastructure, particularly the existing CSD structure at the end of Arelious Walker Drive.

Many residents had positive reactions to restoration because it creates habitat, enhances access, is low-cost relative to other measures, and has potential to provide opportunities for neighborhood involvement in planting and maintenance. However, some members of the public are concerned that contamination at Yosemite Slough would make restoration infeasible and that funding options are too limited. Wetlands restoration at the southeast shoreline can be paired with all of the other potential measures in this document. Wetlands restoration connected to an ecotone levee and ecotone enhancement at the head of the Slough would create a ring of connected wetlands and uplands around the Slough, providing valuable habitat for marsh and upland wildlife. The earlier wetlands are restored at this site, the more time they will have to establish before the threat of significantly higher sea levels after 2050.

FIGURE 58. ELEVATED BOARDWALK AT ARROWHEAD MARSH, OAKLAND



Photo credit: Ellen Plane, San Francisco Estuary Institute

TABLE 8. WETLANDS RESTORATION IMPLEMENTATION DETAILS AT THE SOUTHEAST SHORELINE

Implementation	Details
Recommended Implementation Timing	2026 to 2050 (mid-century)
Sea Level Rise Protection	Not applicable
Design Life	Once established, can be maintained in perpetuity
Estimated Construction Costs*	\$270k to \$375k
Estimated Operations & Maintenance Costs	First 2 to 5 years: \$10k to \$50k annually Following years: \$5k to \$10k annually Includes vegetation management, invasive species control, ecological assessments, sediment and debris removal

* Construction costs do not account for the costs associated with planning, design, or permitting of measures. All construction costs are based on the 2021 MTC Sea Level Rise Framework Archetype Costs. *Source: MTC 2023, Sea Level Rise Adaptation Funding and Investment Framework: Estimating Activity Archetype Costs Spreadsheet*

7. NEXT STEPS



YSNAS marks the first step towards creating, funding, implementing the Yosemite Slough Neighborhood Adaptation Strategy.

7.1 IMPLEMENTATION CONSIDERATIONS

Several current efforts will influence the selection, design, and implementation of adaptation measures, including EPA-led remediation of Yosemite Slough, surrounding development activity, and State Parks' ongoing restoration and access improvements at Candlestick Point SRA. Other critical considerations include integrating stormwater management into design and securing sustainable funding sources to cover construction, maintenance, and adaptive management over time.

Figure 59 depicts the hypothetical minimum implementation timeline for the proposed adaptation measures, assuming that there are no significant delays across implementation phases.

FIGURE 59. HYPOTHETICAL IMPLEMENTATION TIMELINE FOR YSNAS ADAPTATION MEASURES

Hypothetical implementation timeline for YSNAS adaptation measures accounts for lead time (includes planning, design, permitting, and construction) and timing of flood protection needed based on recommended design elevation and OPC sea level rise scenario

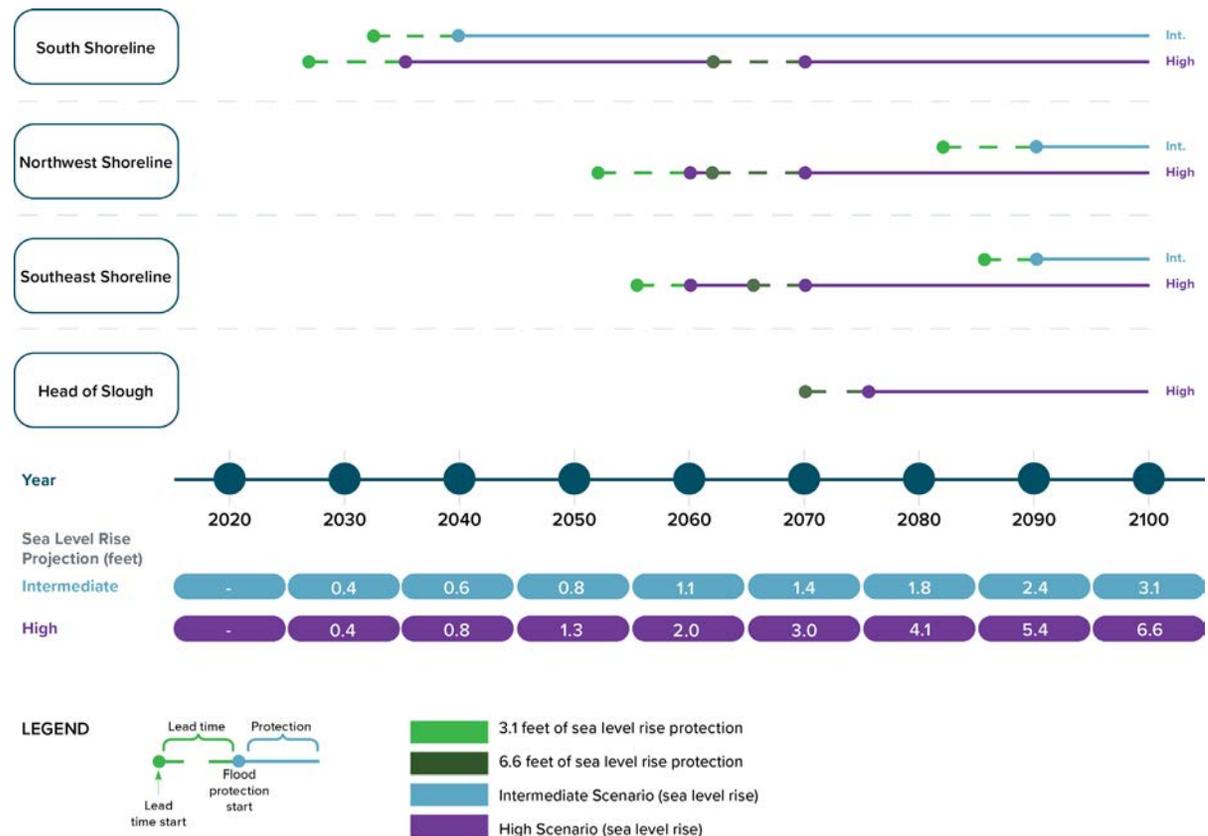




FIGURE 60. PHOTOS OF GREEN STORMWATER INFRASTRUCTURE IN SAN FRANCISCO

Photo credit: SFPUC

7.1.1 Stormwater Management in the Neighborhood

Although this Strategy focuses on shoreline protection measures, inland flooding from extreme precipitation-driven events is also a challenge in the YSNAS project area. Storm events are projected to become even more extreme and frequent, increasing the impacts of combined flooding in low lying areas. Stormwater systems can serve as a critical first line of defense against inland flooding by preventing or redirecting excess runoff.

Stormwater management can include natural “green” measures, such as bioretention planters or rain gardens (Figure 60). Traditional “gray” measures, such as enlarging stormwater detention boxes, resizing pipes, adding pump capacity, and grading impermeable surfaces to direct water toward storm drains. Community feedback strongly favored green stormwater solutions, however, green infrastructure is more effective higher in the watershed and where the water table is not as close to the surface, such as McLaren Park. There, the Upper Yosemite Creek Daylighting Project at McLaren Park will improve flooding downstream by uncovering previously buried creeks and constructing rain gardens to capture runoff.⁵²

Implementing shoreline protection measures in the project area must also account for rising groundwater, which can reduce soil infiltration, increase infiltration into cracked sewer pipes, and cause additional surface flooding due to emergent groundwater.

Planning and siting stormwater measures require hydrologic assessments, geotechnical and seismic risk evaluations, and analysis of shallow groundwater depths. When integrated effectively, stormwater management can complement shoreline protection strategies and create opportunities for co-benefits such as increased street tree coverage.

⁵² SFPUC, “Upper Yosemite Creek Daylighting Project Factsheet.”

7.1.2 Contaminated Site Cleanup

As of November 2025, the proposed cleanup for the Slough includes dredging contaminated sediment in the Slough and capping it with clean material. The remediation timeline's complexity and uncertainty mean that adaptation measures need to be carefully designed and constructed in continuous coordination with EPA. Any adaptation measure adjacent to the Slough would require soil testing, in compliance with appropriate federal, state, and local law. The testing process and any required mitigative or remedial actions could affect project timelines, particularly for ecotone levee construction.

7.1.3 Ownership & Decision-Making Authority

Sea level rise adaptation in the project area requires strong collaboration among multiple agencies, property owners, and community stakeholders. Decision-making authority lies with numerous local, state, and federal agencies. For example, State Parks manages Candlestick Point SRA and the Slough's shoreline, while EPA oversees the cleanup of contaminated sediment in the Slough. The City, through SFPUC, operates and maintains water, stormwater, and wastewater infrastructure which may have to be altered to accommodate adaptation measures. Additionally, potential impacts to private property must be assessed and addressed in consultation with property owners before projects are proposed.

7.1.4 Permitting & Approval

Adaptation projects must go through multiple permitting and approval processes before they can break ground. Multiple state and federal agencies have regulatory and permitting jurisdiction over potential projects including BCDC, USACE, San Francisco Bay Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife. Additionally, projects may need to coordinate with EPA and DTSC if the project physically interfaces with the Slough's sediment, or contamination is found. Projects will require review under the California Environmental Quality Act and coordination with the San Francisco Planning Department, the Department of Public Health, and other City agencies.

7.1.5 Funding

Funding adaptation measures will likely come from a variety of sources. The City's amended Capital Improvement Plan (CIP) anticipates allocating \$350 million towards a Waterfront and Climate Safety General Obligation (GO) bond in 2028 to advance climate resilience and infrastructure safety. The CIP also states that \$250 million will be allocated to the Parks and Open Space GO bond in 2028.⁵³ If these GO bonds receive voter approval, adaptation measures that fall into these bond categories could be eligible to receive funding. Additionally, nearby capital projects, such as parks or sewer infrastructure, could be leveraged to build adaptation measures or secure matching funding. City grants for private property owners, such as the SFPUC Green Infrastructure Grant Program, may also benefit the project area.

⁵³ Office of Resilience and Capital Planning, Capital Plan 2024 - Executive Summary: General Obligation Bonds.

Regional funding sources may also support the adaptation strategy. For example, San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Measure (Measure AA) has funded over \$159 million dollars in restoration projects across the Bay.⁵⁴ Adaptation measures in Yosemite Slough may be competitive for Measure AA funding because they benefit future generations, ecosystems, and economically disadvantaged communities and focus on flood protection. Measure AA funding lasts until 2037 and generates approximately \$25 million annually.

Several state sources provide funding for resilience and adaptation. In 2024, California voters approved Proposition 4, a \$10 billion bond that funds environmental and climate projects. At least 40% of Proposition 4 funding must benefit disadvantaged communities such as BVHP. The bond also increases the statewide coastal resilience budget from \$662 million to \$1.9 billion, further supporting adaptation measures like those within YSNAS.

The OPC also offers funding through competitive and discretionary grants. To date, SB 1 and Proposition 68 grant programs, facilitated by OPC, have supported sea level rise adaptation and coastal protection initiatives across the state.

In addition to financing the design and construction of adaptation measures, ongoing funding for operations and maintenance will be necessary to maximize their impact.

Work done in YSNAS sets the foundation for a formal adaptation plan in the BVHP neighborhood and integration into the Citywide Shoreline Adaptation Plan. Once approved by BCDC, measures in the Plan can be prioritized for resilience funding.

The USACE may be a technical and funding partner through its Environmental Infrastructure (EI) programs, which provide federal assistance for the design and construction of water-related infrastructure in publicly owned and operated facilities across the U.S. Eligible projects can secure a cost-share agreement in which the USACE pays 75% of the total project cost. Under some EI authorities, a 90% federal cost share may be authorized for projects benefiting economically disadvantaged communities.⁵⁵

In addition to financing the design and construction of adaptation measures, ongoing funding for operations and maintenance will be necessary to maximize their impact.

YSNAS overall, or even individual measures, will likely require multiple funding sources. The ultimate funding will not only depend on the strength of any one proposal, but also project readiness, bond and grant schedules and the timing of adjacent projects.

54 San Francisco Bay Restoration Authority, "Overview."

55 Congress.gov, "Overview of U.S. Army Corps of Engineers Environmental Infrastructure (EI) Assistance."

7.2 NEXT STEPS

Working alongside Community Ambassadors and local stakeholders, the YSNAS process strengthened community capacity, surfaced neighborhood priorities, and developed a suite of conceptual adaptation measures. As a result, the BVHP neighborhood is now better positioned to secure funding for the analysis, design, outreach, and agency coordination required to address rising sea levels. The City's immediate next step is to initiate a Shoreline Adaptation Plan for the entire City, in compliance with SB 272. The YSNAS process afforded a deeper level of community engagement than would otherwise be possible through this Citywide process, which is anticipated to begin in 2026. YSNAS will be incorporated in the Shoreline Adaptation Plan with the intent of making the neighborhood more eligible for state funding.

As of early 2026, EPA is developing a community involvement plan for the proposed remediation of the Yosemite Slough site. The City will continue to coordinate future adaptation measures with EPA.

In parallel, the City will pursue funding (as discussed in [Section 7.1](#)) for future outreach, engineering studies, designs, or policies that can advance viable adaptation concepts in the Strategy and support City coordination with EPA, State Parks, State Parks Foundation, and BCDC.

As conditions in the project area shift, soil investigations progress, and sea levels continue to rise, the long-term plan for Yosemite Slough will adapt in response. Future phases will advance site-specific concepts, refine design details, and pursue funding for implementation. Even so, this Strategy establishes a strong foundation for the work ahead. It represents an essential first step toward addressing community priorities and shaping a resilient waterfront for Bayview and the broader San Francisco shoreline.

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APPENDIX A. ENGAGEMENT AND FEEDBACK SUMMARY



HELLO
my name is
Oscar



A.1 INTRODUCTION

Outreach and engagement were essential in the development of the Yosemite Slough Neighborhood Adaptation Strategy (YSNAS, Strategy), supporting its goals of building community capacity for flood risk planning and incorporating the Bayview Hunters Point (BVHP) community's diverse needs and perspectives. Over the course of 1.5 years (Figure A-1), the YSNAS team conducted extensive outreach to residents, local business owners, and community leaders in the YSNAS project area, as well as technical experts. This process helped refine the technical analysis and was guided by principles from the City and County of San Francisco's (City) Environmental Justice Framework, which emphasized elevating community voices through active listening and relationship-building with local organizations.

Engagement activities included working closely with a group of Community Ambassadors and a Technical Advisory Committee (TAC); hosting public workshops, walking tours, and focus groups; providing stakeholder briefings; attending community events; and conducting door-to-door outreach to local businesses. These efforts created multiple opportunities for community input throughout the Strategy's development.

Engagement events and activities were organized around several key objectives:

- Identifying valued and critical assets and resources for residents and local businesses in the YSNAS project area.
- Understanding vulnerabilities and consequences of flooding in the neighborhood.
- Soliciting input on adaptation goals that will address community needs for racial and social equity, public health, open space, economic opportunities, climate resilience, and other key community needs.

This appendix provides more detailed information on the range of engagement activities conducted for YSNAS.

FIGURE A-1. TIMELINE OF OUTREACH AND ENGAGEMENT EFFORTS

Stakeholder Activity		2024						2025											
		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Community Ambassadors		●			●		●				●			●				●	
Technical Advisory Committee				●			●				●			●				●	
Storytelling Campaign: Preparing Bayview for Rising Tides										●									
Public Workshops					●							●					●		
Walking Tours										●	●								
Focus Groups	Youth																		●
	Alice Griffith																		●
	Local Businesses																		●
Public Events	The Park Market			●															
	Fall Fest & India Basin Waterfront Park Opening				●														
	Winter Wonderland						●												
	Umoja Health Access Point Block Party									●									
	Climate Action Youth Summit											●							
	Resilient Alice Griffith																	●	●
	Black Cuisine Festival											●							
	Neighborhood Beautification Day												●						
	Candlestick Point State Recreation Area Kite Day																	●	
	Resilient Bayview Community Climate Change Summit and Resource Fair																		●
Citizen Advisory Committee	Alice Griffith Tenants Association					●						●							
	Youth Commission						●												
	Southeast Community Facility Commission									●			●						
	Bayview Citizen Advisory Committee						●					●							
	Southeast Community Facility Commission									●			●						

A.2 ONLINE CONTENT

The YSNAS project webpage hosted on the San Francisco Planning Department (SF Planning) domain laid out the outreach and engagement timeline (Figure A-2). The webpage included resources for the public to learn about the project, such as a tab of Frequently Asked Questions (FAQs), a map of the Project Area, and a Project Timeline. The FAQs were provided in English, Spanish, and Chinese. The webpage also had a feature for visitors to subscribe to a project newsletter for periodic updates.



FIGURE A-2.
SCREENSHOT OF THE YSNAS WEBPAGE ON SF PLANNING DOMAIN

A.3 COMMUNITY AMBASSADORS

The YSNAS team sought counsel from Community Ambassadors throughout the YSNAS development process (Table A-1). Early meetings focused on shaping goals for YSNAS to align with community priorities, while the latter meetings focused on refining and expanding the YSNAS team's outreach efforts and reviewing the proposed adaptation measures. These discussions helped the YSNAS team incorporate broader perspectives, such as the importance of addressing contamination in the YSNAS project area, ensuring intentional outreach, preventing gentrification and displacement, and protecting against rising groundwater. Community Ambassadors are individuals who provided subject matter expertise and shared lived experiences about the BVHP neighborhood, community advocacy, and environmental justice conditions in the YSNAS project area. Community Ambassadors, listed in Table A-1, played a vital role throughout the development of YSNAS, including:

- Providing feedback on the public outreach and engagement process, adaptation alternatives and strategies, and opportunities for community input and influence.
- Coordinating relevant community-led efforts and supplying climate adaptation, environmental justice, racial and social equity, and public health concerns.
- Providing stakeholder introductions, and other resources to the YSNAS team.

The Community Ambassadors met quarterly with the YSNAS team to provide input throughout the Strategy's development and are summarized below.

TABLE A-1. ROSTER OF COMMUNITY AMBASSADORS

Name	Organization
David Eisenberg	Micro-Tracers, Inc. & Anresco
Zach Eisenberg	Micro-Tracers, Inc. & Anresco
Kurt Grimes	A. Philip Randolph Institute San Francisco
Haley Gonzales	California State Parks Foundation
Arieann Harrison	Marie Harrison Community Foundation, Inc.
Neal Hatten	Bayview Senior Services
Shirletha Holmes-Boxx	Greenaction for Health and Environmental Justice
Sara Moncado	Association of Ramaytush Ohlone
Karen Pierce	Bayview Hunters Point Community Advocates

Meeting #1, July 23, 2024

This meeting launched the Community Ambassador group by defining roles and responsibilities and providing an overview of the YSNAS project.

Community Ambassadors expressed strong interest in the project but also shared concerns about how the community would be informed about progress, how adaptation project construction can support the local economy, whether displacement would occur, as well as desire for groundwater and stormwater study results to be shared.

Meeting #2, October 9, 2024

This meeting sought to ground-truth the YSNAS team's understanding of existing conditions and refine the YSNAS team's communication strategy on sea level rise risks and climate adaptation opportunities. The Community Ambassadors brought up concerns that coastal sea level rise adaptation projects could inhibit water flows during storms, exacerbating neighborhood flooding. The Community Ambassadors also generated high-level statements on community values that were used for one of the interactive station activities in Public Workshop #1.

Meeting #3, January 15, 2025

Community Ambassadors continued to provide feedback on how the YSNAS team could better communicate sea level rise risks and suggested other opportunities for outreach. The Community Ambassadors also discussed their concerns and experiences with local flooding at Alice Griffith Apartments and in the BVHP neighborhood.

Meeting #4, April 23, 2025

This meeting summarized and reviewed community engagement to-date and refined the engagement plan for Public Workshop #2. Community Ambassadors reviewed the YSNAS team's conceptual adaptation strategies and discussed adaptation constraints and opportunities.

Community Ambassadors expressed concern about remediation timelines at both the Hunters Point and Yosemite Slough sites, how the contaminated soil would be processed once it was removed, and how stormwater flooding currently does not drain easily from the neighborhood. This discussion was key in grounding the YSNAS team's understanding of community frustrations with contamination cleanup and anchored adaptation implementation timelines around cleanup progress.

Meeting #5, July 30, 2025

This meeting provided an opportunity for Community Ambassadors to review the feedback from Public Workshop #2 and TAC about potential adaptation measures. Community Ambassadors reiterated the importance of water and soil remediation, explored the topic of property acquisition and local business relocation, and expressed interest in incorporating shoreline access elements into sea level rise adaptation measures. These inputs highlighted the community's focus on shoreline health and access, the structural longevity of the implemented measures, and long-term planning of the local economy.

Meeting #6, November 12, 2025

This meeting provided an opportunity for Community Ambassadors to review the adaptation strategy and offer feedback about the overall engagement process with their group.

A.4 TECHNICAL ADVISORY COMMITTEE

The YSNAS team convened a group of City staff from multiple departments quarterly to serve as subject-matter experts in topics such as climate adaptation, flood mitigation, public health, environmental justice, City processes, and on-going or planned projects in the BVHP neighborhood. City staff and departments involved in the TAC include:

- Ryan Casey, Nnenna Okoye (Department of Public Health);
- Tim Doherty (Municipal Transportation Agency);
- Lila Hussain (Office of Community Investment and Infrastructure);
- Alex Morrison (Office of Resilience and Capital Planning);
- Luiz Barata (Port of San Francisco);
- Will Logsdon (Public Utilities Commission);
- Nick Bear, Anthony Esterbrooks (Public Works); and
- Kerstin Kalchmayr (Recreation and Parks).

The TAC met 5 times, approximately once per quarter, to provide input during project milestones and deliverables. These meetings focused on the technical aspects of adaptation, such as discussing stormwater adaptation considerations in the project area, reviewing hazard exposure mapping findings, identifying prospective sites along the Slough shoreline for adaptation measures, evaluating the proposed adaptation measures' implementation feasibility, and reviewing the final Strategy. Overall, the TAC supported YSNAS by:

- Providing input and feedback to technical analyses, technical memo, and the draft and final YSNAS;
- Coordinating with related efforts, including city, state, or federal projects; and
- Supporting outreach efforts.

TAC Meeting #1, October 10, 2024

This first meeting launched the TAC, reviewed roles and responsibilities, and provided an overview of YSNAS. The group discussed key items and opportunities for coordination across City departments and recommended specific community leaders and decision-makers for engagement.

TAC Meeting #2, January 9, 2025

This meeting served to redefine the YSNAS project scope and summarized several recent outreach events, such as Public Workshop #1. The group also discussed general stormwater adaptation in the context of coastal defenses, identified potential limits with green infrastructure in the YSNAS project area, and solicited capital projects or agency priorities that could align with stormwater management measures.

TAC Meeting #3, April 24, 2025

This meeting focused on a discussion of findings from hazard exposure mapping for YSNAS community assets, concepts of adaptation measures, and varying implementation alternatives that ranged from green infrastructure to gray infrastructure adaptation projects. This established a foundational understanding of the adaptation measures that would be presented to the community in Public Workshop #2 and ensured TAC members could provide consistent technical support during the event.

TAC Meeting #4, July 24, 2025

This meeting built upon the previous discussion of adaptation measures by identifying sites around the Slough shoreline for adaptation, as well as evaluating potential adaptation measures against the YSNAS team's evaluation criteria. The group reviewed known site constraints and discussed additional implementation considerations or misalignments with City department work. This meeting also provided opportunities for the TAC to prepare for Public Workshop #3 and upcoming Focus Groups.

TAC Meeting #5, November 11, 2025

This meeting provided opportunities for the TAC to review and provide feedback on the final strategy.

A.5 TABLING & CANVASSING

The YSNAS team hosted an engagement table or was a guest speaker at 11 public community events targeting the BVHP neighborhood. These efforts aimed to increase awareness of the project, gather input about community assets and concerns related to sea level rise, and encourage participation in more in-depth engagement opportunities ([Figure A-3](#) and [Figure A-4](#)). The timeline of public community events attended is detailed in [Table A-2](#).

The team conducted extensive outreach throughout the project area, engaging with local businesses, residents, and institutions. This outreach included 2 rounds of door-to-door outreach to 20 businesses, supplemented by email communications that reached over 50 additional businesses and built connections with neighborhood business leaders. For residents, canvassing included: distributing flyers at local institutions such as the Southeast Family Health Center, and going door-to-door to homes in the area.

FIGURE A-3. PUBLIC EVENT TABLING



Photo credit: SF Planning



FIGURE A-4.
EXAMPLE OF AN INTERACTIVE BOARD USED DURING PUBLIC EVENTS

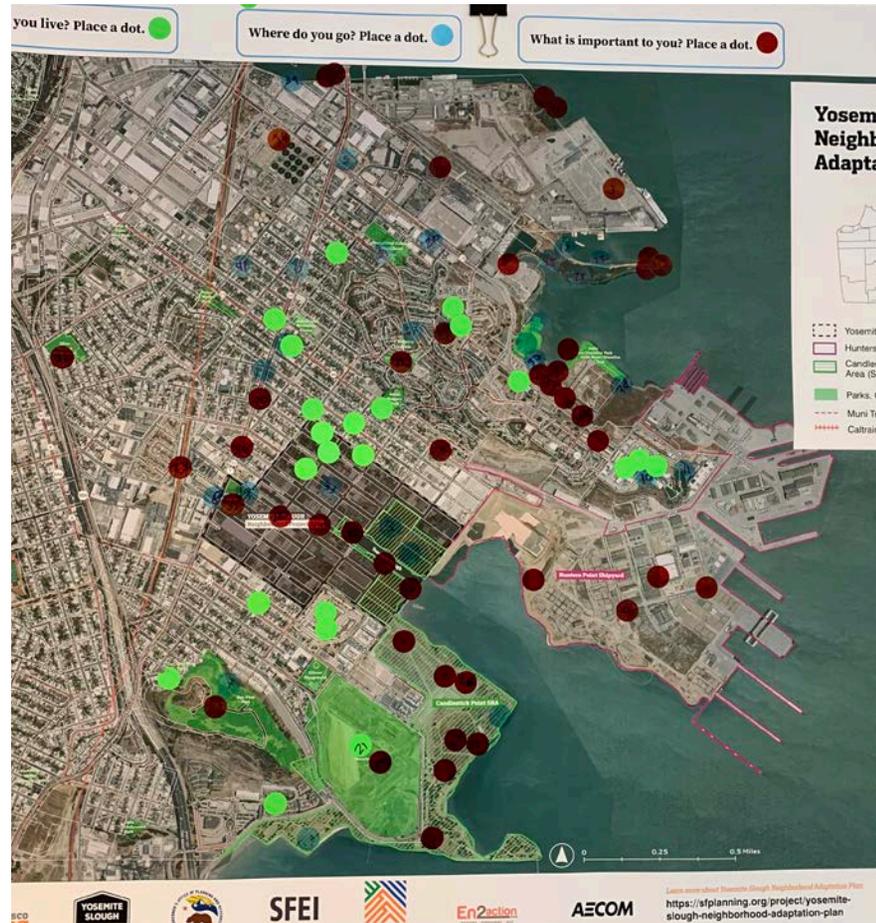


Photo credit: SF Planning

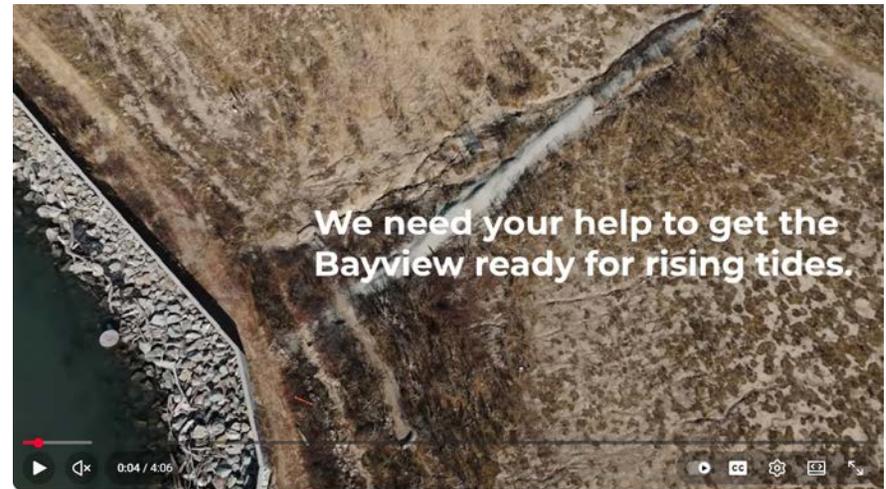
TABLE A-2.
COMMUNITY EVENTS ATTENDED FOR THE STRATEGY'S OUTREACH

Date	Event Name
September 28, 2024	The Park Market
October 19, 2024	Fall Fest & India Basin Waterfront Park Opening
December 14, 2024	Winter Wonderland
March 16, 2025	Umoja Health Access Point Block Party
April 18, 2025	Climate Action Youth Summit
April 26, 2025	Black Cuisine Festival
May 10, 2025	Neighborhood Beautification Day
September 6, 2025	Kite Day at Candlestick Point State Recreation Area
October 16, 2025	Resilient Bayview Community Climate Change Summit and Resource Fair
October 23, 2025, November 6, 2025	Resilient Alice Griffith

A.6 STORYTELLING VIDEO

The YSNAS team collaborated with BAYCAT, a media production company based in BVHP that empowers low-income youth, young people of color, and young women in the Bay Area through education and employment, to produce a storytelling video (Figure A-5). The video features local environmental justice advocates and technical experts who explore the history of Yosemite Slough, share community aspirations for environmental justice, and emphasize the need for action to protect the neighborhood from sea level rise. It was promoted via social media, the project newsletter, and the project website, and the SF Planning Instagram page.

FIGURE A-5. ONLINE VIDEO SUMMARIZING THE HISTORY OF YOSEMITE SLOUGH AND THE YSNAS PROJECT



Preparing Bayview for Rising Tides [🌐](#) | Yosemite Slough Neighborhood Adaptation Plan

A.7 WALKING TOURS

The YSNAS team hosted 2 walking tours of the Yosemite Slough neighborhood and shoreline in Candlestick Point State Recreation Area (SRA) in the second phase of outreach. Participants included residents, local business owners and workers, community members, environmental advocates, youth, park users, and staff from local and regional government agencies, among others. The tours were held on Saturdays to encourage maximum attendance from the public; approximately 30 participants attended on March 22, 2025, and approximately 50 participants attended on March 29, 2025. Each tour was approximately 90 minutes long, involved 2 miles of walking along the neighborhood and the shoreline as shown in [Figure A-6](#).

Representatives from California State Parks, California State Parks Foundation, and San Francisco Estuary Institute, acted as tour guides, sharing information about Candlestick Point SRA, public infrastructure, and restoration efforts along the shoreline. Several Community Ambassadors who grew up in the neighborhood or owned local businesses also spoke about the unique characteristics and issues of the local neighborhood against the context of flooding events. Finally, participants heard from technical experts and City staff on sea level rise projections, potential adaptation solutions, and ongoing community investments ([Figure A-6](#)).

Throughout the tours, community members were able to ask questions, share their lived experiences in the neighborhood and priorities and hopes for the neighborhood. Key insights revealed the need to focus on the community's knowledge and strengths, the community's desire to improve access to Candlestick Point SRA via the Yosemite Slough, and the need for additional engagement with local industry.



FIGURE A-6. MARCH 29, 2025 WALKING TOUR

Photo credit: SF Planning

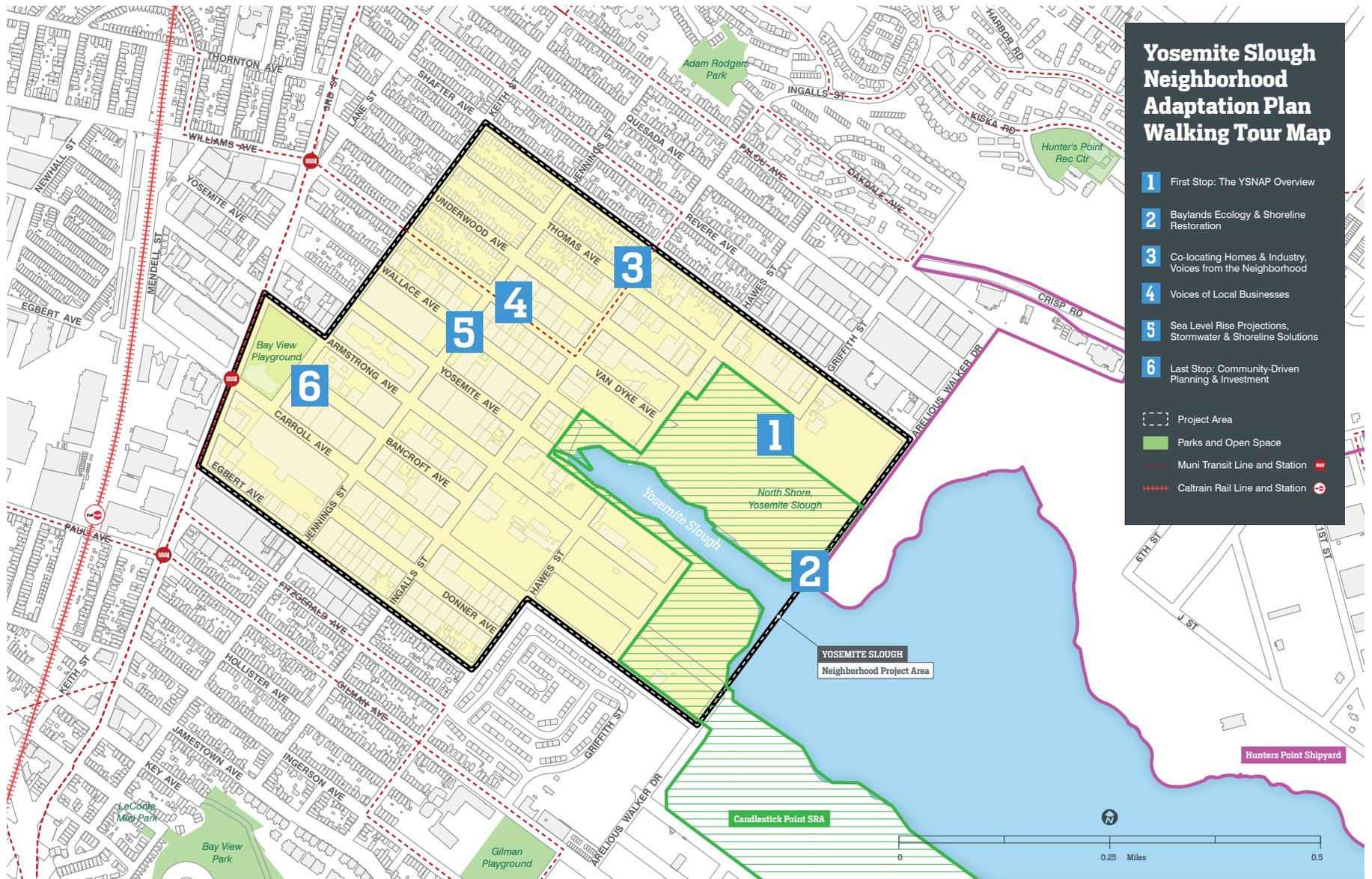


FIGURE A-7. MAP OF THE STOPS TAKEN ON THE WALKING TOURS IN MARCH 2025

A.8 PUBLIC WORKSHOPS

The project hosted 3 public workshops on the evenings of November 13, 2024; May 13, 2025; and September 16, 2025 at the Southeast Community Center. Each workshop had between 30 and 40 participants. They were dedicated to communicating project progress and asking for preferences and feedback from the BVHP community. Feedback from workshop attendees informed the subsequent phases of Strategy and refined the YSNAS team’s understanding of community needs.

Workshop #1, November 13, 2024:

Public Workshop #1 attendees learned about the YSNAS project and related sea level rise adaptation efforts and were asked to identify community assets, provide feedback on draft project goals, and share their hopes and concerns related to adaptation. Interactive boards, as shown in [Figure A-8](#), were used in the workshop’s small-group activities.

Participants identified all of the draft goals as “Important” or “Very Important”, with particular support for protecting existing buildings, homes, and infrastructure; nature-based strategies; and improving access to the shoreline. In general, participants wanted adaptation strategies to be nature-based, aesthetically beautiful, cost-effective, and low-maintenance. Participants also wanted strategy co-benefits to support employment opportunities for residents and address concerns about water contamination, groundwater rise, and storm-water flooding.

Summary of public feedback on draft community goals (“How important are these goals?”):

- Conduct a transparent public engagement process to address the diverse needs and perspectives in the BVHP community (Very Important = 18).
- Build community capacity for flood risk planning and adaptation (Very Important = 16).
- Support a sustainable economy that benefits local residents, workers, and industries (Very Important = 16).
- Adapt buildings, homes, and infrastructure to ensure neighborhood safety, preparedness, and livability (Very Important = 22).
- Improve shoreline health through nature-based strategies (Very Important = 22, Important = 1).
- Improve access to open space, recreation and the shoreline (Very Important = 21).
- Improve pedestrian, bicycle, and transit flood resilience and connections to/from the BVHP neighborhood, City and Bay Area (Very Important = 16, Important = 5).
- Identify initial cultural goals (Very Important = 11).

TABLE A-3. TABLE OF TRANSPORTATION AND COMMUNITY-IDENTIFIED VALUED ASSETS FROM PUBLIC ENGAGEMENT

Category	Assets	Total
COMMUNITY		
Commercial Facilities	<ul style="list-style-type: none"> ▪ Anresco Laboratories: Founded in 1943 and located at 1375 Van Dyke Avenue. Family-owned business providing analytical food testing services, including heavy metal, microbiological, and pesticide residue testing. ▪ Frank Grizzly's: Located at 5698 Third Street. Locally owned food pop-up and restaurant serving California-Mexican inspired foods. ▪ Laughing Monk Brewing: Founded in 2013 and located at 1439 Egbert Avenue. The neighborhood alehouse offers house made brews and supports projects from community gardens to public art. ▪ P G Molinari & Sons: Founded in 1896 and located at 1401 Yosemite Street since 1962. The last fifth generation family-owned Italian Salame and sausage maker in San Francisco. 	4
Community Resources	<ul style="list-style-type: none"> ▪ Armstrong Place Senior Housing: Offers 116 affordable studio and one-bedroom apartments for families with at least one member 62 or older. Twenty-three apartments are set aside for formerly unhoused seniors through the San Francisco Direct Access to Housing Program. ▪ Young Community Developers: Serves San Francisco's most marginalized and under-resourced residents. They provide education, training and career development opportunities designed to empower residents of all ages in achieving economic mobility. ▪ United Council of Human Services – Mother Brown's Kitchen: A local nonprofit that provides food, case management, and housing services to unhoused people in the BVHP community. 	2
Fire Department Facilities	<ul style="list-style-type: none"> ▪ Fire Department Training Facility (planned): The San Francisco Fire Department is relocating training facilities from Treasure Island and 2310 Folsom Street to a new 8-acre site at 1236 Carroll Avenue. ▪ Fire Station #17: Located at 1295 Shafter Avenue. Built in 1960 and remodeled in 1996. Station #17 is part of the 10th Battalion that provides coverage for the Islais Creek and BVHP neighborhood. 	2

Category	Assets	Total
<p>Health and Human Services</p>	<ul style="list-style-type: none"> ▪ Southeast Health Center: Located at 2401 Keith Street. Full-service health clinic. Although additional private medical clinics are available, this is the only City-owned and operated affordable healthcare center in the area. ▪ Third Street Youth Center and Clinic: Located at 1728 Bancroft Avenue. A community-based nonprofit serving young people ages 12-27 living across San Francisco. Opened in 2005, the center reaches more than 1,500 young people every year, providing health care, therapy, housing services, and leadership programs. 	<p>2</p>
<p>Open Space and Parks</p>	<ul style="list-style-type: none"> ▪ Bayview K.C. Jones Playground: The park features an expanded playground with installed adult fitness equipment, walking path, baseball field, lawn area for gathering along Keith Street, and adjacent Martin Luther King Junior Pool. ▪ Bayview Park: The park is approximately 47 acres located on Bayview Hill. Bayview Park supports a diverse assemblage of plants and animals. A paved road serves as the main trail that loops through the park, beginning and ending at the eastern end of Key Avenue. ▪ Candlestick Point State Recreation Area (Candlestick Point SRA): The 252-acre park offers walking trails, open lawns and piers that support recreational opportunities from fishing to windsurfing. Candlestick Point is a popular entry point for windsurfing on the bay. ▪ Birding Spot in Candlestick Point SRA: Located on the north side wetlands of the Yosemite Slough Restoration Project, this location is a popular spot for bird watching. ▪ Gilman Playground: The park is approximately 224,000 square feet and includes playfields, picnic areas, a basketball court, a children’s play area, a clubhouse, and restrooms. The clubhouse functions as a community recreation center with a community room and kitchen. ▪ Hillpoint Park: The first major open space of the transformation of the 500-acre Hunters Point Shipyard. The park is located 90 feet above the Shipyard featuring views of the Bay and a large community lawn. ▪ Candlestick Point SRA Community Garden, Literacy for Environmental Justice Native Plant Nursery: A community garden and nursery located at 1150 Carroll Avenue that serves as a hub for volunteers and educational programming. 	<p>6</p>

Category	Assets	Total
Police Dept. Facilities	<ul style="list-style-type: none"> ▪ Hunters Point Shipyard Building 606: The Police Department operates a crime laboratory with approximately 41 personnel stationed at this location. 	1
School	<ul style="list-style-type: none"> ▪ Bret Harte Elementary School: Public school for grades pre-K to 5th for BVHP students. All students have access to instructional programs, materials, cross-curricular activities, arts education and field trips. 	1
Utilities	<ul style="list-style-type: none"> ▪ Griffith Pump Station: Serves the lower Yosemite and Sunnydale drainage basins with a pumping capacity of 120 million gallons per day. In dry and wet weather, the Griffith pump station conveys wastewater and/or combined wastewater and stormwater flows to the Hunters Point tunnel via two force mains. 	1
TRANSPORTATION		
Transit Facilities	<ul style="list-style-type: none"> ▪ 1538 Yosemite: Used primarily as a paint shop that operates in association with the field operations at 1508 Bancroft. There is no redundancy for the paint shop within SFMTA system. ▪ 1508 Bancroft: Used primarily for street signage, temporary signage, and parking meter shops. There is no redundancy for the sign and meter shop within SFMTA's system. 	2
Transit	<ul style="list-style-type: none"> ▪ Muni Light Rail (T-Third Line): Launched in 2007, the T-Third Line connects the BVHP and Visitacion Valley neighborhoods to Chinatown, Union Square, Mission Bay, SoMa, and Dogpatch. Nearly 20,000 people ride T-Third every day. ▪ 23 Monterey bus: Operates between the San Francisco Zoo and the BVHP neighborhood. ▪ 29 Sunset bus: Operates between the Richmond and Sunset districts and the BVHP neighborhood. It is one of SFMTA's cross-town bus routes. ▪ 54 Felton bus: Operates between the Ingleside, Oceanview, Excelsior, Portola, and BVHP neighborhoods to Daly City Bay Area Rapid Transit and other transit connections. 	4

Category	Assets	Total
<p>Trails</p>	<ul style="list-style-type: none"> ▪ Bay Trail (planned): A planned 500-mile walking and bicycling path around the entire San Francisco Bay. In San Francisco, there are 14.4 miles of Bay Trail spine. A number of connecting trails feed into the Bay Trail, for additional connectivity. ▪ Green Connections: Increases access to parks, open space, and the waterfront by using a network of “green connectors” – City streets that will be upgraded over the next 20 years to make is safer to travel to parks by walking and bicycling. 	<p>2</p>
<p>Roadways ⁶⁶</p>	<ul style="list-style-type: none"> ▪ Major Arterials: Cross-town thoroughfares that link districts in the City and distribute traffic from and to the freeways. Routes generally of Citywide significance and of varying capacity. Third Street is the only major arterial in the project area. ▪ Local Streets: Streets intended for access to residential and other land uses, rather than through traffic. Considered of lowest capacity. All streets from Gilman Avenue to Shafter Avenue, and from Griffith Street to Keith Street are local streets. 	<p>4</p>

66 Only roadway classes present in the immediate project area are summarized. Roadway classifications and further details are available in the Sea Level Rise Vulnerability and Consequences Assessment, Chapter 5: Transportation City and County of San Francisco, Sea Level Rise Vulnerability and Consequence Assessment.

Workshop #2, May 13, 2025:

Public Workshop #2 attendees were provided a summary of outreach to that date and initial findings from asset and hazard exposure mapping. Attendees engaged in small group discussions around the preliminary list of potential adaptation strategies, comparing trade-offs between the strategies and confirming the final list of community assets. Participants added feedback onto boards, as shown in Table A-4, and depicted in Figure A-9.

During the interactive activity, community members expressed positive feedback for nature-based adaptation projects that could protect against both coastal and stormwater flooding, are easy to maintain and adaptable over time, and could support better public health outcomes. Across most adaptation measures, the discussion focused heavily on how the measure would interact with the Slough’s contaminated soil, opportunities for community members to get involved or interact with the measure, engineering characteristics (such as materials composition and integrity of measure over time), and how the measure could inadvertently negatively impact surrounding assets. Public input was integrated into the comprehensive adaptation measures evaluation process, which generated the shortlist of potential measures included in the YSNAS.

Public Workshop #3, September 16, 2025:

Public Workshop #3 attendees were given an update about past outreach and technical analysis and then asked to provide feedback to share their priorities and preferences, and compare tradeoffs for the final list of adaptation measures. Two potential adaptation scenarios, differentiated by their south shoreline protection measure, were presented: Scenario 1 would implement the living seawall, while Scenario 2 would implement the ecotone levee.

FIGURE A-9. EXAMPLE OF HOW BOARDS WERE UTILIZED IN PUBLIC WORKSHOP #2

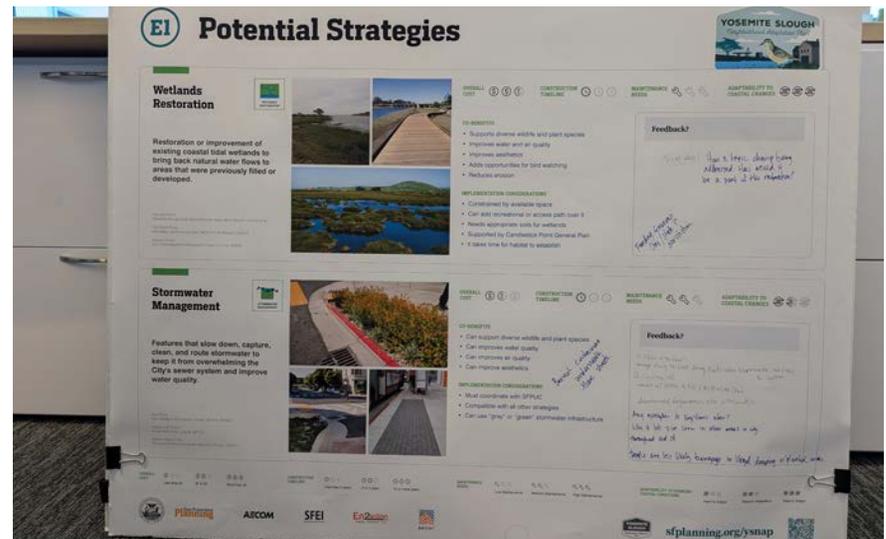
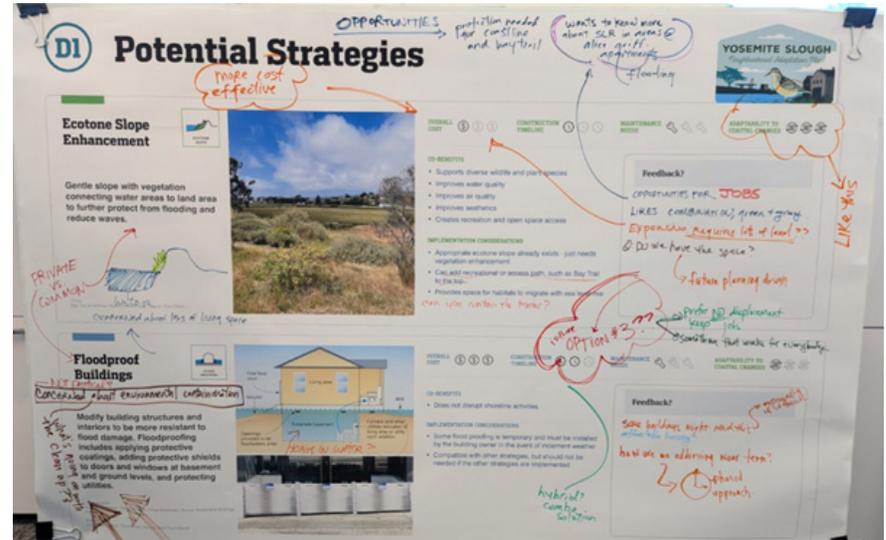


Photo credit: SF Planning

Feedback (as seen in [Figure A-10](#)) from the interactive boards is below.

Participants evaluated tradeoffs between the two scenarios and preferred the following:

- A scenario that was “complex and transformational” over “simple and straightforward”, with some respondents opting for an in-between scenario;
- A scenario that “improves water and wildlife habitat” over one that “maintains the existing shoreline”, with some respondents opting for an in-between scenario;
- A scenario that “creates access points, biking, and walking trails” over one that “maintains current access points and pathways”.
- A scenario that “creates more open space” over one that “maintains existing land uses”.

Participants were asked to identify which 3 features of the adaptation measures they thought were the most important, and the top responses are as follows:

- Cleaning contaminated areas;
- Improving shoreline habitat;
- Building dedicated access points to the water; and
- Being adaptable to future coastal flood projections.

Other ideas and concerns from discussions included:

- The potential negative impact of a living seawall on open space, shoreline access opportunities, and community aesthetics;
- The potential negative impact of an ecotone levee on displacement of businesses and cascading implications for residential displacement or gentrification, which draw on the neighborhood’s history of conflicting messaging and action from government bodies;
- The durability, design life, and maintenance capacity (the who, what, and how often will maintenance be conducted) of both the living seawall and ecotone levee;
- The need to factor in future adaptability (i.e., increasing height) and maintenance costs beyond initial construction costs for adaptation measures;
- The need to address stormwater and ensure adaptation measures did not inhibit neighborhood drainage; and
- The opportunity to blend both living seawall and ecotone levee elements into a novel adaptation measure.

TABLE A-4. SUMMARY OF THEMES REGARDING SEA LEVEL RISE ADAPTATION MEASURES FROM PUBLIC WORKSHOP #2

Measure	Questions and Concerns	Overall Reactions and Feedback
Living Seawall	How can a walking path/access be integrated? How does saltwater impact the seawall?	Neutral reactions.
Ecological Armoring	None	Positive reactions
Levee	What materials are a levee made of? Are the materials locally dredged?	Negative reactions due to concerns of failure and associations with New Orleans levees
Vegetated Terrace	None	Positive reactions for implementation wherever possible
Ecotone Levee	Will soil testing be done before construction?	Positive reactions due to nature-based characteristics and potential for biodiversity, access, and recreation
Ecotone Slope Enhancement	What does this mean for Slough access and foot traffic? Is there sufficient space, or will residents and buildings need to be relocated? How does this differ from an ecotone levee?	Positive reactions due to low cost and low maintenance aspects, opportunity for community involvement
Floodproof Buildings	Who is responsible for financing this measure? What kinds of buildings can be floodproofed? Will this impact buildings' flood insurance?	Positive reactions due to the immediate need for floodproofing
Wetlands Restoration	Who is responsible for financing this measure? Will this be effective against sea level rise? How will differing jurisdictional boundaries affect implementation?	Mixed reactions Support for the multiple benefits it provides, but many concerns are present
Stormwater Management	How can stormwater management be implemented along Third Street or more strategic locations?	Positive reactions
Raise Roads	What does the lifespan look like? Will this impact the flooding of local buildings?	Mixed reactions Support for implementation at key locations, but many concerns are present

A.9 FOCUS GROUPS

Three focus groups were hosted in October 2025 with 6 youth (ages 16 to 23 years old), 10 residents of the Alice Griffith apartments (ages 40 years old and older) and 6 project area businesses (e.g., construction, graphics, chemical testing, own/manage industrial buildings) to understand community members' relationships with the Yosemite Slough shoreline and to gain additional input on potential adaptation measures. Participants evaluated tradeoffs between the 2 scenarios and preferred the following:

- A scenario that was “complex and transformational” over “simple and straightforward”, with some respondents opting for an in-between scenario.
- A scenario that “improves water quality and wildlife habitat” over “maintains existing shoreline activities with some respondents opting for an in-between scenario.
- A scenario that “creates access points, biking, and walking trail” over “maintains current access points and roadways” with some respondents opting for an in-between scenario.
- A scenario that “creates more open space” over “maintains existing land uses”, with some respondents opting for an in-between scenario.

There were several variations across focus groups. Alice Griffith participants tended to prefer an adaptation scenario that was complex and transformational, while youth participants tended to

prefer a simple and straightforward scenario. Alice Griffith participants also tended to prefer a scenario that improved water quality and wildlife habitat, created access points, biking, walking trails, and open space. On the other hand, local business and youth participants had a more distributed mix of opinions between improving water quality and habitat and maintaining existing shoreline activities, between creating access points and maintaining current access points, and between creating more open space and maintaining current land uses.

Participants were each asked to identify which 3 features of the adaptation measures they thought were the most important, and the top responses are as follows:

- Cleaning contaminated areas (14 votes)
- Being adaptable to future coastal flood projections (13 votes)
- Maintain current business activity (8 votes)
- Building dedicated access points to the water (7 votes)
- Improving shoreline habitat (7 votes)

The focus group discussions ([Figure A-11](#)) revealed that although most participants felt that contamination cleanup was important, this was favored most strongly (number of votes proportional to participants) by Alice Griffith residents. Other trends include that all local business owner participants felt it was important to maintain current local business activities and all youth participants felt adaptability to future coastal flood projections was important.

Key discussion takeaways from the youth:

- Safety, illegal dumping, and environmental contamination were major concerns.
- The aesthetics of the adaptation measures are important especially in the case of the seawall, where beautification suggestions such as murals, lookout points and benches were suggested.
- They would like improved access to the Slough because accessibility had prevented most attendees from visiting, despite living within walking distance.

Key discussion takeaways from Alice Griffith residents:

- Contamination remediation was the most important issue, followed by improving shoreline habitat.
- They would like improved access to the Slough because accessibility had prevented most attendees from visiting, despite living within walking distance.
- They were interested in learning more about the materials used in the proposed adaptation measures and their durability.
- Some attendees were concerned about the potential need for local businesses to relocate with implementation of the adaptation measures.

Key discussion takeaways from local business owners:

- Emphasis on the need to plan for the future, not just the present. They noted the area's deteriorating buildings and infrastructure while there is new interest in the area from high-end manufacturing. Some envisioned a transformation similar to Dogpatch over the next 50 years.

- They valued restoring the area's last wetland but also stressed the importance of preserving local business activity.
- Production, distribution, and repair zoning is essential for their businesses as they need to be able to receive heavy truck deliveries and use certain chemicals, for example. They would like to continue business in San Francisco but may leave if they need to expand due to rising costs and lack of alternatives.
- Some attendees expressed concern that investments, particularly with the ecotone levee, could lead to local business displacement. They saw potential to align this project with nearby efforts (e.g., development at Hunters Point Shipyard and Candlestick Point) to achieve shared goals and secure funding, while acknowledging jurisdictional complexities.

When planning for sea level rise, what matters most to you? Place an X in up to 3 boxes to show which features are most important.

 Building dedicated access points to the water	 Maintain current business activity	 Improving shoreline habitat
 Being adaptable to future coastal flood projections	 Cleaning contaminated areas	 Minimizes operations and maintenance costs
 Minimizing costs for design and construction	 Minimizing construction impacts	 Other: _____

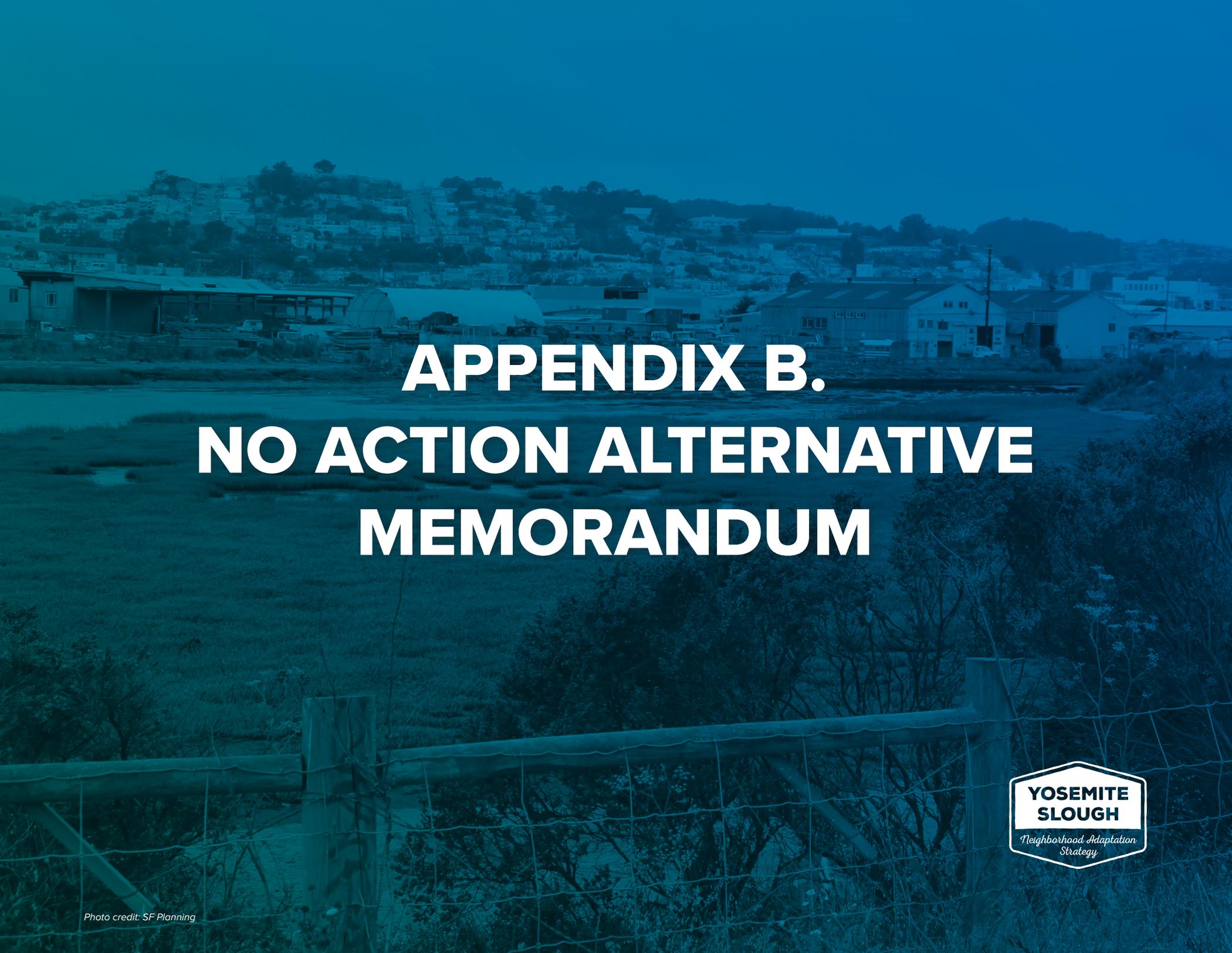
FIGURE A-11.
INTERACTIVE
ACTIVITY
WORKSHEET FOR
FOCUS GROUPS

A.10 CITIZEN ADVISORY COMMITTEE MEETINGS

The YSNAS team presented at public hearings and community meetings. These audiences are generally considered decision-makers and/or influential and organized groups in the neighborhood. Presentations were typically 10 to 15 minutes long and allowed time for discussion afterwards. Citizen advisory committee meetings focused specifically on outreach approach, discussing and confirming community values and goals, and encouraging attendance for upcoming outreach events. A timeline of citizen advisory committee meetings attended is detailed in [Table A-55](#).

TABLE A-5. SCHEDULE OF CITIZEN ADVISORY COMMITTEE MEETINGS ATTENDED

Date	Group Engaged
November 4, 2024	Alice Griffith Tenants Association
December 2, 2024	Youth Commission
December 4, 2024	Bayview Citizen Advisory Committee
February 28, 2025	Literacy for Environmental Justice
March 10, 2025	Southeast Community Facility Commission
May 5, 2025	Alice Griffith Tenants Association
May 7, 2025	Bayview Citizen Advisory Committee
June 25, 2025	Southeast Community Facility Commission
November 5, 2025	Bayview Hunters Point Coordinating Council



APPENDIX B. NO ACTION ALTERNATIVE MEMORANDUM



B.1. INTRODUCTION

The Yosemite Slough Neighborhood Adaptation Strategy (YSNAS) presents conceptual adaptation measures that could defend the low-lying Bayview Hunters Point neighborhood from existing and future coastal flooding driven by sea level rise (SLR). Assessing benefits of the adaptation measures, such as flood risk reduction benefits for local businesses and residents requires an understanding of the “No Action Alternative.” The No Action Alternative assumes the City and County of San Francisco (City) and local and state agencies implement few or no adaptation measures or policies over the coming century. The neighborhood could experience increased flooding over time, including disruption and damage, and would slowly retreat from the area due to repetitive flood losses instead of implementing measures to reduce flood risks. Although this worst-case scenario is unlikely, it provides a standard baseline for comparing potential “With Action Alternatives” that mitigate flood risks over time and provide other complimentary community benefits.

This memorandum describes the potential impacts to the Yosemite Slough neighborhood under the No Action Alternative. This memorandum summarizes:

- SLR science and potential future coastal flooding scenarios;
- Assets and land uses within the Yosemite Slough neighborhood; and,
- Descriptions of the projected coastal flooding and inundation and the accompanying community and social impacts under four future SLR projections.

This assessment is consistent with the latest state guidance from the

California Ocean Protection Council (OPC 2024) and the San Francisco Bay Conservation and Development Commission (BCDC) Regional Shoreline Adaptation Plan (RSAP) Guidance (BCDC 2024).

B.2. SEA LEVEL RISE AND COASTAL FLOODING

SLR refers to an increase in the average surface elevation of the sea caused by an increase in the volume of the world’s oceans driven by two main factors: 1) the warming of ocean waters and 2) the melting of glaciers and ice sheets located on land due to rising air temperatures (NRC 2012). The 2024 State of California Sea Level Rise Guidance indicates that sea levels could rise by about 1.3 to 11.7 feet by 2100 across five potential SLR projections: Low, Intermediate Low, Intermediate, Intermediate High, and High (Table B-1, (OPC 2024)). Based on current observational trends and observation-based projections, SLR at the Presidio tide gauge on the San Francisco shoreline is trending along the Intermediate SLR projection (Sweet et al. 2022; Collini et al. 2022).

TABLE B-1. SEA LEVEL RISE PROJECTIONS (FEET) FOR SAN FRANCISCO

Year	Low	Int-Low	Intermediate	Int-High	High
2050	0.5	0.6	0.8	1.0	1.3
2100	1.0	1.6	3.1	4.8	6.5
2120	1.1	2.0	4.4	6.4	9.0
2130	1.2	2.2	4.9	7.0	9.9
2150	1.3	2.6	6.0	8.1	11.7

Note: Table B-1 presents median values of SLR in feet from 2050 to 2150 for five scenarios (Low to High), with 2000 as the baseline year.

Source: (OPC 2024)

BCDC’s RSAP Guidance recommends the use of four SLR scenarios for adaptation planning (BCDC 2024). In the near-term (2050), RSAP recommends using the Intermediate scenario (Table B-2), in line with observed SLR trends. In the long-term (2100), RSAP recommends evaluating a range of future projections from Intermediate to High (Table B-2). This range captures the uncertainties in future greenhouse gas emissions and rapid ice sheet melting. However, SLR will continue beyond 2100. This range also represents future SLR through 2150 if current trends continue on the Intermediate projection.

TABLE B-2. REGIONAL SHORELINE ADAPTATION PLANNING GUIDANCE SEA LEVEL RISE SCENARIOS

	Scenario	Year (SLR Projection)	SLR Amount
Permanent Inundation	1	2050 (Intermediate)	0.8 feet of SLR
	2	2100 (Intermediate)	3.1 feet of SLR
	3	2100 (Int-High)	4.9 feet of SLR
	4	2100 (High)	6.6 feet of SLR
Temporary Flooding	1	2050 (Intermediate)	0.8 feet of SLR + 1% coastal flood event
	2	2100 (Intermediate)	3.1 feet of SLR + 1% coastal flood event
	3	2100 (Int-High)	4.9 feet of SLR + 1% coastal flood event
	4	2100 (High)	6.6 feet of SLR + 1% coastal flood event

Note: SLR amounts are relative to mean higher high water (MHHW) with 2000 as the baseline year. The 1% coastal flood event is equal to the 1% annual chance extreme water level, in the absence of wave hazards.

Source: (BCDC 2024)

RSAP Guidance recommends consideration of high tide flooding (a.k.a. sunny day flooding), where rising sea levels cause low-lying areas to flood every day during high tides. High tide flooding represents *permanent* inundation where Bay waters are reclaiming currently dry land as sea levels rise. RSAP also recommends consideration of the 1% annual chance extreme water level elevation (1% coastal flood event). In San Francisco Bay, extreme water levels (e.g., extreme tides) occur due to oceanic processes (El Niño conditions) and meteorological (storm) conditions such as low atmospheric pressure and high winds. Coastal flooding represents *temporary* flooding, and flood waters will recede when coastal water levels decrease. However, ponded water may remain in localized depressions with limited drainage capacity.

B.3. SAN FRANCISCO DIGITAL ELEVATION MODEL

To date, SLR planning in the City has relied on BCDC’s Adapting to Rising Tides (ART) sea level rise inundation maps. However, these inundation maps were developed using a 2010 digital elevation model (DEM, a.k.a., ground surface model) (Vandever et al. 2017). Over the past fifteen years, San Francisco’s shoreline has undergone significant changes and redevelopment, which are not captured in the ART mapping. In the Yosemite Slough neighborhood, this includes the Yosemite Slough Restoration and Public Access project¹ as well as other inland redevelopment.

The United States Geological Survey (USGS) released an updated DEM based on 2023 LiDAR data (USGS 2023; NOAA OCM Partners 2025). Updated SLR inundation maps, consistent with the scenarios in Table B-2, were created to support YSNAS. The updated maps

¹ California State Parks Foundation, 2025. <https://www.calparks.org/what-were-doing/park-funding/yosemite-slough>

provide a more accurate representation of the Yosemite Slough shoreline, the elevations of inland areas, and the projected inundation extents with future SLR and coastal flooding. The No Action SLR exposure analysis used the updated mapping.

B.4. YOSEMITE SLOUGH NEIGHBORHOOD

The Yosemite Slough neighborhood is one of San Francisco’s last blue collar and industrial areas. It is home to several minority-, women- and family-owned small businesses, local food and beverage facilities, auto repair shops, and warehouses. These facilities and businesses provide jobs for residents and support the local economy. The Yosemite Slough neighborhood also forms part of the greater African American Arts and Cultural Heritage District, contributing to the cultural vibrancy of the neighborhood and the City (City and County of San Francisco 2025a).

The Third Street corridor, including the T-Third Light Rail Line, is the primary north-south transportation route for Yosemite Slough residents. Residents use the corridor to commute to work or school and to get across the City. The corridor is also home to many community-serving facilities, such as the Third Street Youth Center, Armstrong Place Senior Housing complex, and the Anna E. Waden Branch Library.

ASSETS

Assets are places, facilities, and services that are essential to the community (e.g., roadways, utilities, schools, health centers, emergency response facilities), as well as places that are important

to community well-being, culture, character, and social cohesion – the places people care about. Residents rely on assets for travel, health and wellness, spirituality, emergency services and first response, and community building. Community members identified assets they care about in the neighborhood during an in-person meeting, Public Workshop #1.

Through community outreach, 27 assets within the Yosemite Slough neighborhood² were identified for consideration within the No Action assessment. Assets are organized as community assets (19) and transportation assets (8) (see [Table B-3](#)). Community assets include commercial facilities (e.g., P G Molinari & Sons), community resources (e.g., Young Community Developers), fire departments, health and human services (e.g., Southeast Health Center), open space and parks, police departments, schools and utilities (see [Figure B-1](#)). Transportation assets include San Francisco Municipal Transportation Agency’s (SFMTA) facilities, Muni light rail (T-Third line) and Muni bus routes, the planned San Francisco Bay Trail (Bay Trail), the Green Connections Network, and roadways (major arterials and local streets) (see [Figure B-2](#)).

LAND USE

Existing land use in the Yosemite Slough neighborhood includes open space, vacant lots, commercial offices, and industrial zones ([Figure B-3](#)) (City and County of San Francisco 2024). Residential areas exist outside of the project boundary. For the purpose of this assessment, land use is considered in terms of exposure only.

² Identified assets are located within, or adjacent to, the project boundary (Figure B-1).

TABLE B-3. YOSEMITE SLOUGH ASSETS IDENTIFIED DURING COMMUNITY OUTREACH

Category	Type	Assets
Community	COMMERCIAL FACILITIES	
	<ul style="list-style-type: none"> • Anresco Laboratories: Founded in 1943 and located at 1375 Van Dyke Avenue. Family-owned business providing analytical food testing services, including heavy metal, microbiological, and pesticide residue testing. • Frank Grizzly's: Located at 5698 Third Street. Locally owned food pop-up and restaurant serving fresh California-Mexican inspired foods. • Laughing Monk Brewing: Founded in 2013 and located at 1439 Egbert Avenue. The neighborhood alehouse offers house made brews and supports projects from community gardens to public art. • P G Molinari & Sons: Founded in 1896 and located at 1401 Yosemite Street since 1962. The last fifth generation family-owned Italian Salame and sausage maker in San Francisco, known for their homemade recipe and brand. • Local businesses: Several production, distribution, repair and other businesses are located in the study area and could be exposed in similar ways to the commercial assets identified above. 	4
	COMMUNITY RESOURCES	
	<ul style="list-style-type: none"> • Armstrong Place Senior Housing: Offers 116 affordable studio and one-bedroom apartments for families with at least one member 62 or older. Twenty-three apartments are set aside for formerly unhoused seniors through the San Francisco Direct Access to Housing Program. • Young Community Developers: Serves San Francisco's most marginalized and under-resourced residents. They provide education, training and career development opportunities designed to empower residents of all ages in achieving economic mobility. 	2
FIRE DEPARTMENT FACILITIES		
<ul style="list-style-type: none"> • Fire Department Training Facility (planned): The San Francisco Fire Department is relocating training facilities from Treasure Island and 2310 Folsom Street to a new 8-acre site at 1236 Carroll Avenue. The new Division of Training campus is a state-of-the-art training environment serving the recruitment and in-service training needs of the fire department. • Fire Station #17: Located at 1295 Shafter Avenue. Built in 1960 and remodeled in 1996. Station #17 is part of the 10th Battalion that provides coverage for the Islais Creek and Bayview Hunters Point neighborhood. 	2	
HEALTH AND HUMAN SERVICES		
<ul style="list-style-type: none"> • Southeast Health Center: Located at 2401 Keith Street. Full-service health clinic. Although additional private medical clinics are available, this is the only City-owned and operated affordable healthcare center in the area. 	2	

Category	Type	Assets
	<ul style="list-style-type: none"> • Third Street Youth Center and Clinic: Located at 1728 Bancroft Avenue. A community-based nonprofit serving young people ages 12-27 living across San Francisco. Opened in 2005, the center reaches more than 1,500 young people every year, providing health care, therapy, housing services, and leadership programs. 	
	<p>OPEN SPACE AND PARKS</p> <ul style="list-style-type: none"> • Bayview K.C. Jones Playground: The park features an expanded playground with installed adult fitness equipment, walking path, baseball field, lawn area for gathering along Keith Street, and adjacent Martin Luther King Junior Pool. • Bayview Park: The park is approximately 47 acres located on Bayview Hill. Bayview Park supports a diverse assemblage of plants and animals. A paved road serves as the main trail that loops through the park, beginning and ending at the eastern end of Key Avenue. • Birding Spot: Located on the north side wetlands of the Yosemite Slough Restoration Project, this location is a popular spot for bird watching. • Candlestick Point State Recreation Area (CPSRA): The 252-acre park offers walking trails, open lawns and piers that support recreational opportunities from fishing to windsurfing. Candlestick Point is a popular entry point for windsurfing on the bay. • Gilman Playground: The park is approximately 224,000 square feet and includes playfields, picnic areas, a basketball court, a children’s play area, a clubhouse, and restrooms. The clubhouse functions as a community recreation center with a community room and kitchen. • Hillpoint Park: The first major open space of the transformation of the 500-acre Hunters Point Shipyard. The park is located 90 feet above the Shipyard featuring views of the Bay and a large community lawn. 	6
	<p>POLICE DEPARTMENT FACILITIES</p> <ul style="list-style-type: none"> • Hunters Point Shipyard Building 606: The Police Department operates a crime laboratory with approximately 41 personnel stationed at this location. 	1
	<p>SCHOOL</p> <ul style="list-style-type: none"> • Bret Harte Elementary School: Public school for grades pre-K to 5th for Bayview students. All students have access to instructional programs, materials, cross-curricular activities, arts education, and field trips. 	1
	<p>UTILITIES</p> <ul style="list-style-type: none"> • Griffith Pump Station: Serves the lower Yosemite and Sunnysdale drainage basins with a pumping capacity of 120 million gallons per day. In dry and wet weather, the Griffith pump station conveys wastewater and/or combined wastewater and stormwater flows to the Hunters Point tunnel via two force mains. 	1

Category	Type	Assets
Transportation	<p>FACILITIES</p> <ul style="list-style-type: none"> • 1538 Yosemite: Used primarily as a paint shop that operates in association with the field operations at 1508 Bancroft. There is no redundancy for the paint shop within SFMTA system. • 1508 Bancroft: Used primarily for street signage, temporary signage, and parking meter shops. There is no redundancy for the sign and meter shop within SFMTA's system. 	2
	<p>TRANSIT</p> <ul style="list-style-type: none"> • Muni Light Rail (T-Third Line): Launched in 2007, the T-Third Line connects the Bayview Hunters Point and Visitacion Valley neighborhoods to Chinatown, Union Square, Mission Bay, SoMa, and Dogpatch. Nearly 20,000 people ride T-Third every day. • 23 Monterey: Operates between the SF Zoo and the Bayview Hunters Point neighborhood. • 29 Sunset: Operates between the Richmond and Sunset districts and the Bayview Hunters Point neighborhood. It is one of SFMTA's cross-town bus routes. • 54 Felton: Operates between the Ingleside, Oceanview, Excelsior, Portola, and Bayview Hunters Point neighborhoods to Daly City Bay Area Rapid Transit (BART) and other transit connections. 	4
	<p>TRAILS</p> <ul style="list-style-type: none"> • Bay Trail (planned): A planned 500-mile walking and bicycling path around the entire San Francisco Bay. Within San Francisco, there are 14.4 miles of Bay Trail spine. A number of connecting trails feed into the Bay Trail, for additional connectivity. • Green Connections: Increases access to parks, open space, and the waterfront by using a network of “green connectors” – City streets that will be upgraded over the next 20 years to make is safer to travel to parks by walking and biking. 	2
	<p>ROADWAYS³</p> <ul style="list-style-type: none"> • Major Arterials: Cross-town thoroughfares that link districts within the City and distribute traffic from and to the freeways. Routes generally of citywide significance and of varying capacity. Third Street is the only major arterial in the project area. • Local Streets: Streets intended for access to residential and other land uses, rather than through traffic. Considered of lowest capacity. All streets from Gilman Avenue to Shafter Avenue, and from Griffith Street to Keith Street are local streets. 	N/A
Total		27

³ Only roadway classes present in the immediate project area are summarized. Roadway classifications and further details are available in the Sea Level Rise Vulnerability and Consequences Assessment, Chapter 5: Transportation (City and County of San Francisco 2020).

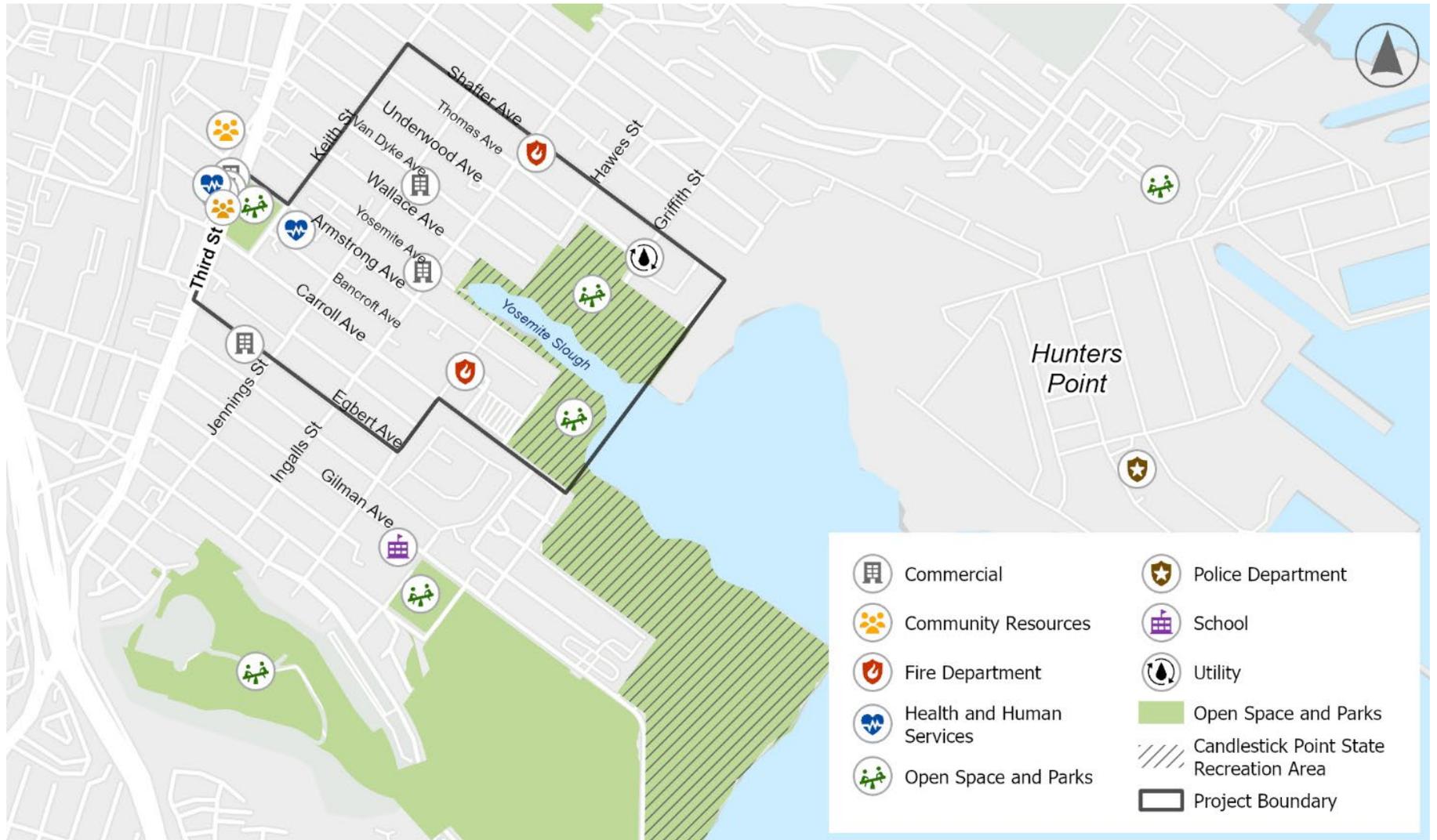


FIGURE B-1. YOSEMITE SLOUGH COMMUNITY ASSETS

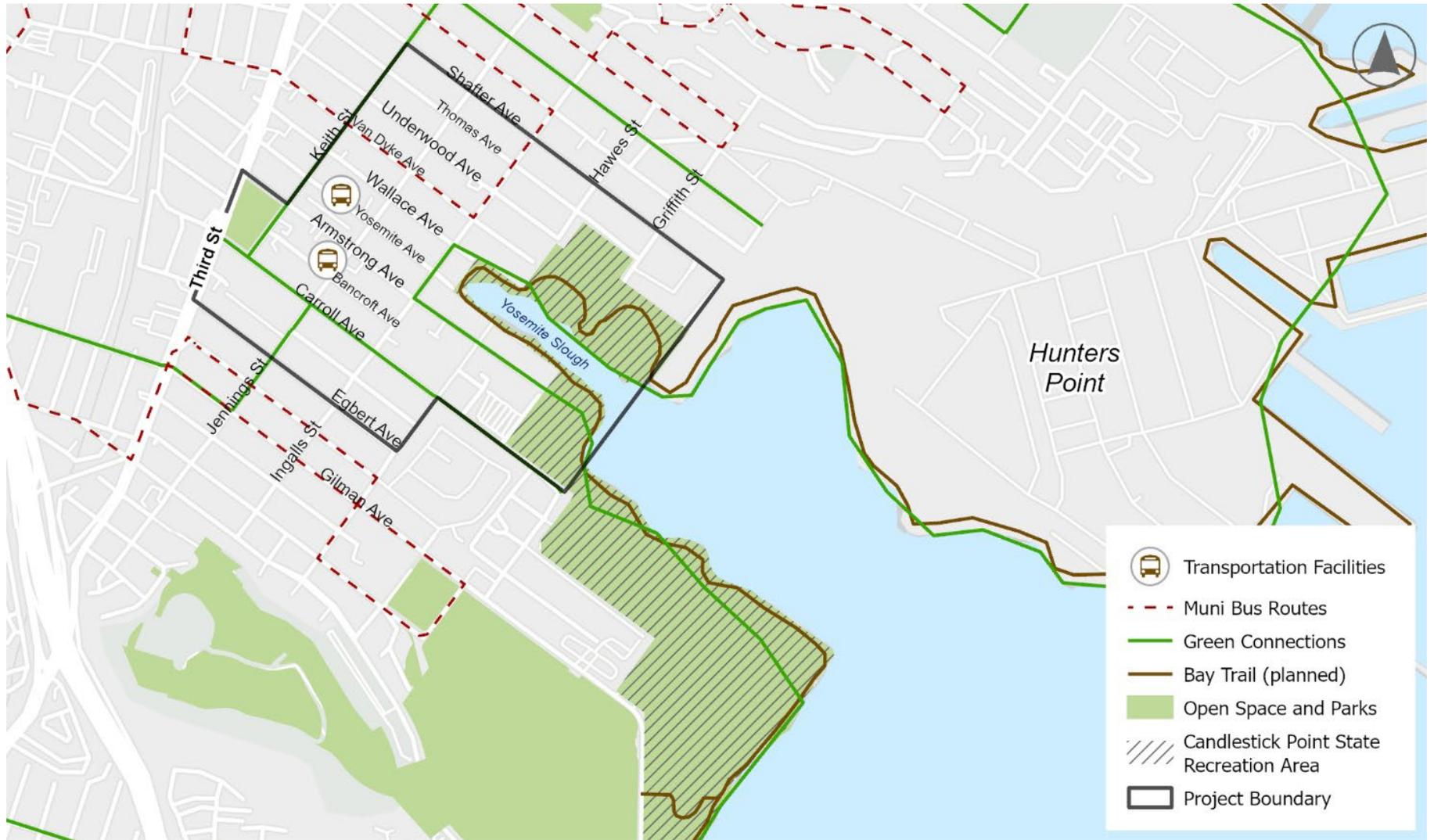


FIGURE B-2. YOSEMITE SLOUGH TRANSPORTATION ASSETS



FIGURE B-3.
EXISTING
LAND USE

B.5. NO ACTION ALTERNATIVE

The City analyzed four SLR scenarios for both permanent and temporary flooding (Table B-2). The sections below describe the projected inundation extents and potential exposure of Yosemite Slough assets and land uses for each of the four SLR scenarios. Impacts to the community identified assets (Table B-3) are presented for illustrative purposes; however, other assets within the project boundary of similar type and/or location may experience similar impacts. The impacts to residents in the surrounding community are also discussed.

SCENARIO 1: 0.8 FEET SLR (2050 INTERMEDIATE)

PERMANENT INUNDATION

With 0.8 feet of SLR, permanent inundation (darker blue, Figure B-4) is concentrated along the northern Yosemite Slough shoreline and impacts the following assets and land uses:

- **Planned Bay Trail:** Planned segments are inundated along the northern shoreline⁴.
- **Green Connections:** Segments of the network are inundated along the northern shoreline.
- **Open Space and Parks:** Portions of the CPSRA restored tidal marsh (north of Yosemite Slough) are inundated.
- **Land Use:** Inundated parcels include open space (CPSRA).

TEMPORARY FLOODING

With 0.8 feet of SLR, the 1% coastal flood event (lighter blue, Figure B-4) could overtop the northern and southern Yosemite Slough shorelines and cause temporary flood impacts on the following assets and land uses:

- **Roadways:** Sections of local streets, including Armstrong Avenue, Hawes Street, and Yosemite Avenue experience temporary flooding.
- **Planned Bay Trail:** Planned segments are flooded along the southern shoreline and additional planned segments are flooded along the northern shoreline.
- **Green Connections:** Segments of the network are flooded along the southern and additional segments are flooded along the northern shoreline.
- **Open Space and Parks:** The CPSRA experiences some temporary flooding along the northern and southern shorelines as well as one birding spot north of the restored tidal marsh area.
- **Land Use:** Temporarily flooded parcels include open space (CPSRA) and part of one office parcel surrounding Yosemite Slough.

⁴ Constructed (existing) Bay Trail segments adjacent to the two restored tidal marsh bays are not exposed to permanent inundation under this scenario.

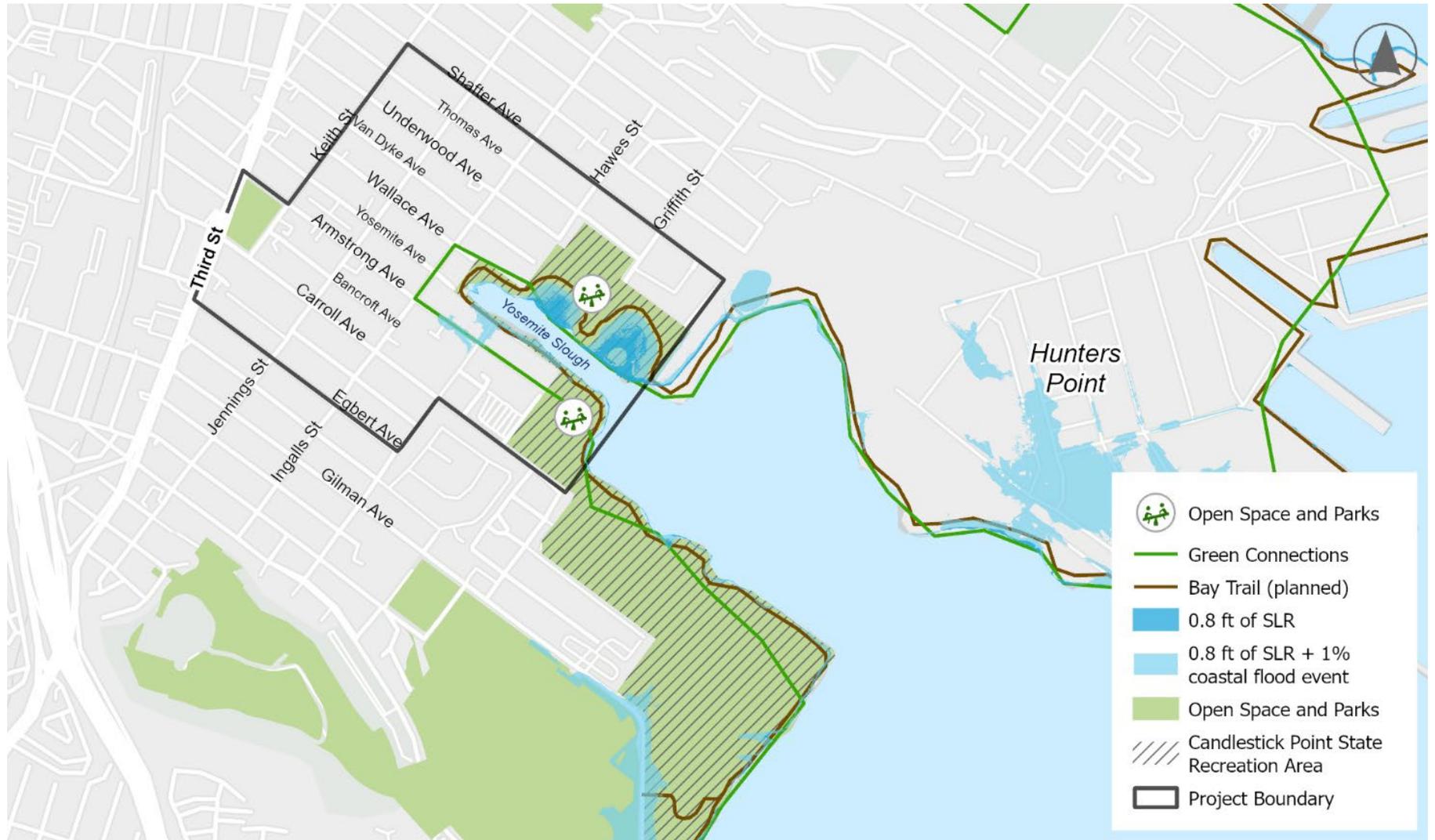


FIGURE B-4. SCENARIO 1: EXPOSED COMMUNITY AND TRANSPORTATION ASSETS WITH 0.8 FEET OF SEA LEVEL RISE

Note: Along the bay shoreline, the planned Bay Trail alignment and Green Connections alignment are intended to represent the same alignment. Differences in the alignments shown for the planned Bay Trail and Green Connections are representative of differences in the source data. When constructed, both alignments would occupy the same footprint.

SCENARIO 2: 3.1 FEET SLR (2100 INTERMEDIATE)

PERMANENT INUNDATION

With 3.1 feet of SLR, permanent inundation (darker blue, [Figure B-5](#)) impacts the following assets and land uses (in addition to those assets impacted in Scenario 1):

- **Roadways:** The intersection of local streets Yosemite Avenue and Hawes Street is permanently inundated along the southern Yosemite Slough shoreline becoming inaccessible.
- **Planned Bay Trail:** Additional planned segments are inundated along the northern shoreline.
- **Green Connections:** Additional segments of the network are inundated along the northern shoreline.
- **Open Space and Parks:** The entire area of the CPSRA restored tidal marsh (north of Yosemite Slough) is inundated and the birding spot north of the restored tidal marsh area could become inaccessible due to daily tidal inundation.
- **Land Use:** Inundated parcels include additional open space (CPSRA).

TEMPORARY FLOODING

With 3.1 feet of SLR, the 1% coastal flood event (lighter blue, [Figure B-5](#)) could cause temporary flood impacts on the following assets and land uses (in addition to those assets impacted in Scenario 1):

- **Commercial Facilities:** Temporary flooding impacts P G Molinari & Sons (local business) and nearby businesses on Van Dyke, Wallace, Yosemite, Armstrong Avenues, and Griffith, Hawes, and Ingalls Streets. For example, P G Molinari & Sons could close for a few days to weeks, depending on the depth of flooding. Flooding

could cause operational disruption to food and goods production, services, equipment, and vehicles at several local businesses, causing inventory and income loss.

- **Transit:** The Muni 54 Felton and 29 Sunset bus routes are impacted by temporary flooding. Buses can be moved out of flooded areas and bus routes can be rerouted to avoid areas of flooding. Three bus stops would be impacted (two on the 54 line, and one on the 29 line). SFMTA may need to reroute service on Van Dyke and Gilman Avenues, respectively. Transit dependent residents could experience disruption during 1% coastal flood events.
- **Roadways:** Sections of local streets including, Van Dyke Avenue, Wallace Avenue, Yosemite Avenue, and Armstrong Avenue, experience temporary flooding between Ingalls Street and Griffith Street. Temporary flooding on Wallace Avenue extends inland as far as Jennings Street. People located in these streets could experience short-distance delays. Including delayed access to Third Street (a major arterial) during a 1% coastal flood event.
- **Planned Bay Trail:** Additional planned segments are flooded along the northern and southern shorelines.
- **Green Connections:** Additional segments of the network are flooded along the northern and southern shorelines.
- **Open Space and Parks:** Additional areas of the CPSRA experience temporary flooding along the northern and southern shorelines.
- **Land Use:** Temporarily flooded parcels include open space (CPSRA), vacant lots, office parcels, retail and entertainment parcels and two industrial parcels.

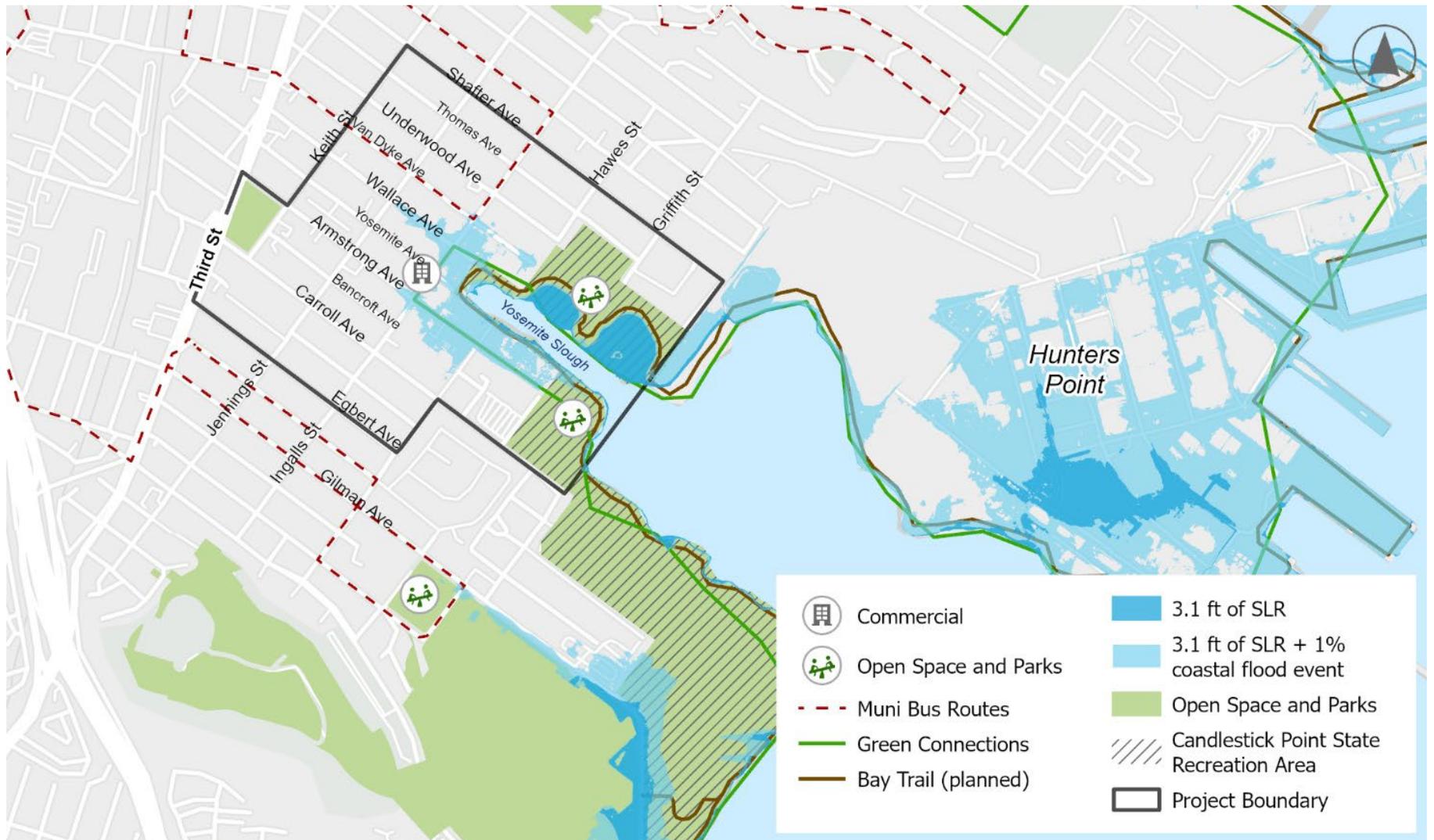


FIGURE B-5. SCENARIO 2: EXPOSED COMMUNITY AND TRANSPORTATION ASSETS WITH 3.1 FEET OF SEA LEVEL RISE

SCENARIO 3: 4.9 FEET SLR (2100 INTERMEDIATE-HIGH; 2130 INTERMEDIATE)

PERMANENT INUNDATION

With 4.9 feet of SLR, permanent inundation (darker blue, [Figure B-6](#)) resembles the extent of temporary flooding for 3.1 feet of sea level rise; however, flood depths would be about 1.8 feet deeper.

Permanent inundation impacts the following assets and land uses (in addition to those assets impacted in Scenario 2):

- **Commercial Facilities:** Local businesses on Wallace, Armstrong, and Yosemite Avenues. Daily tidal inundation could result in the complete closure of businesses.
- **Roadways:** Sections of local streets including Wallace Avenue, Armstrong Avenue, and Yosemite Avenue are permanently inundated. Alternative routes would not provide direct access to these streets (CCSF 2020).
- **Planned Bay Trail:** Additional planned segments are inundated along the northern and southern shoreline. If the Bay Trail is constructed as planned, segments could become inaccessible due to daily tidal inundation.
- **Green Connections:** Nearly all of the network along the northern shoreline surrounding Yosemite Slough is inundated. The network along Armstrong Avenue is also inundated. Remaining access to Yosemite Slough exists via Carroll Avenue and Quesada Avenue.
- **Land Use:** Inundated parcels include open space (CPSRA), vacant lots, office parcels, and one industrial parcel.

TEMPORARY FLOODING

With 4.9 feet of SLR, the 1% coastal flood event (lighter blue, [Figure](#)

[B-6](#)) could cause temporary flood impacts on the following assets and land uses (in addition to those assets impacted in Scenario 2):

- **Commercial Facilities:** Temporary flooding may affect local businesses along Underwood, Van Dyke, Wallace, Yosemite, Armstrong, and Bancroft Avenues, as well as Griffith, Hawes, Ingalls, and Jennings Streets. Depending on the type of business, flood impacts could disrupt food and goods production, services, equipment, and vehicles. These disruptions may lead to damaged inventory and reduced income for several local businesses.
- **Transit:** Additional segments of the 54 Felton and 29 Sunset bus routes are impacted by temporary flooding. This could impact one additional bus stop (29 line). Although the busses can be rerouted, people in the flooded area would need to walk further (potentially through a flooded area) to reach the nearest bus stop (CCSF 2020).
- **Roadways:** Temporary flooding extends inland to Jennings Street, bounded by Bancroft Avenue and Underwood Avenue. The five-street radius around Yosemite Slough could temporarily reduce mobility of residents and businesses.
- **Planned Bay Trail:** Additional planned segments are flooded along the northern and southern shorelines, including a portion of the built and existing segments around the two restored tidal marsh bays.
- **Green Connections:** Additional segments of the network are flooded along the northern and southern shorelines.
- **Open Space and Parks:** Gilman Playground experiences temporary flooding and additional areas of the CPSRA experience temporary flooding along the northern and southern shorelines.
- **Land Use:** Temporarily flooded parcels include open space (CPSRA and Gilman Playground), vacant lots, office parcels, retail and entertainment parcels and additional industrial parcels.

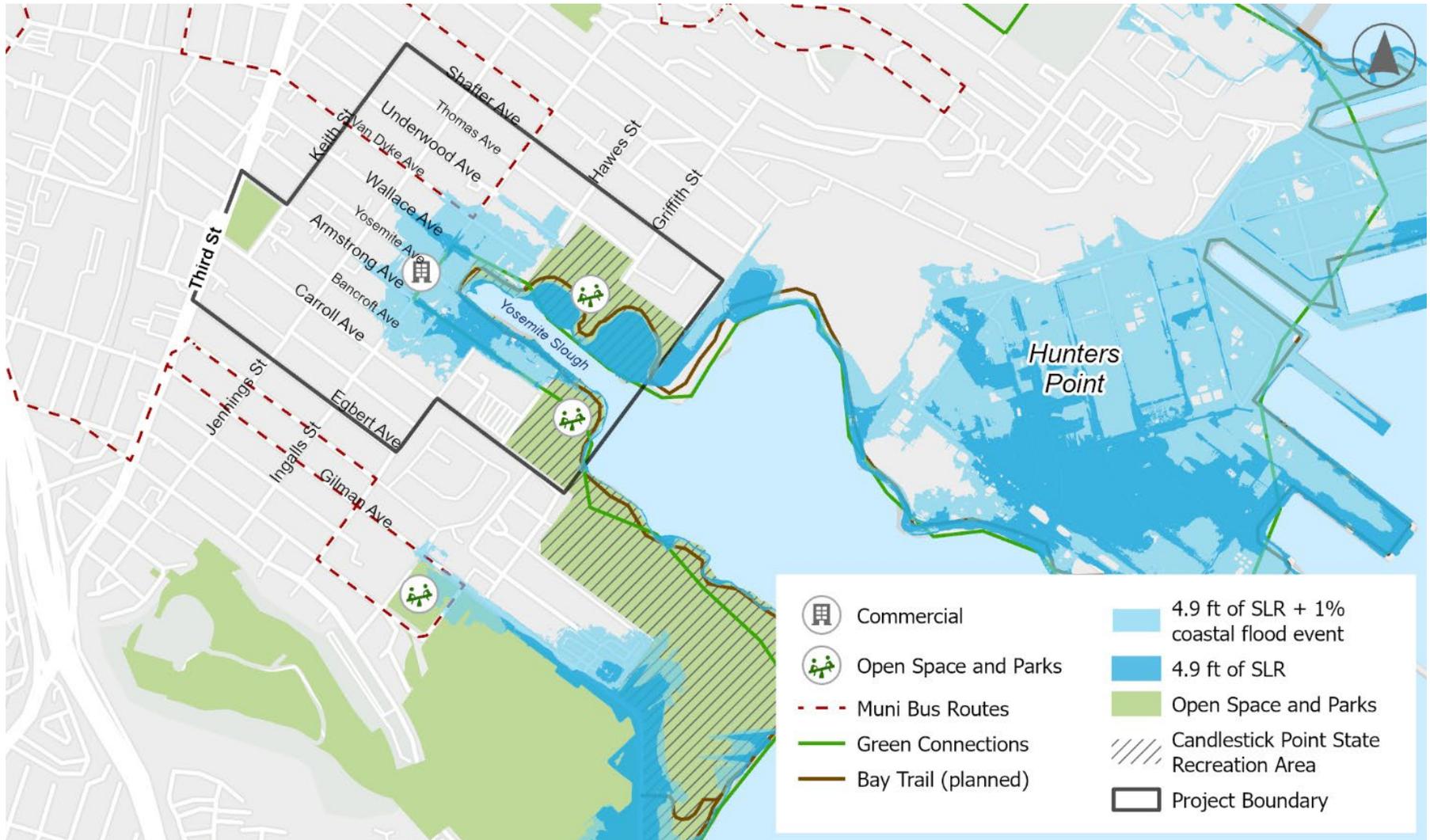


FIGURE B-6. SCENARIO 3: EXPOSED COMMUNITY AND TRANSPORTATION ASSETS WITH 4.9 FEET OF SEA LEVEL RISE

SCENARIO 4: 6.6 FEET SLR (2100 HIGH; 2120 INTERMEDIATE-HIGH; 2150 INTERMEDIATE)

PERMANENT INUNDATION

With 6.6 feet of SLR, permanent inundation (darker blue, [Figure B-7](#)) resembles temporary flooding for 4.9 feet of sea level rise; however, flood depths would be deeper under this scenario. Permanent inundation impacts the following assets and land uses (in addition to those assets impacted in Scenario 3):

- **Commercial Facilities:** P G Molinari & Sons (local business) experiences permanent inundation. Local businesses on Van Dyke, Wallace, Yosemite, Armstrong, and Bancroft Avenues, and Griffith, Hawes and Ingalls, and Jennings Streets may be subject to permanent inundation. Daily tidal inundation could result in the complete closure of local businesses.
- **Roadways:** All local streets bounded by Bancroft Avenue, Jennings Street and Van Dyke Avenue are permanently inundated. People located in these streets could be left stranded and businesses permanently closed. No direct access to Third Street is available.
- **Planned Bay Trail:** Nearly all of planned segments are inundated along the northern and southern shorelines,
- **Existing Bay Trail:** A portion of the constructed Bay Trail segments along the restored tidal marsh bays are inundated. The planned and constructed Bay Trail segments could lose access and connectivity to the southeast waterfront.
- **Green Connections:** Nearly all of the network surrounding Yosemite Slough is inundated. Direct access to and from Yosemite Slough could be completely lost from the network via Armstrong and Wallace Avenues.

- **Land Use:** Inundated parcels include open space (CPSRA and Gilman Playground), vacant lots, office parcels, industrial parcels, retail and entertainment parcels and one residential parcel.

TEMPORARY FLOODING

With 6.6 feet of SLR, the 1% coastal flood event (lighter blue, [Figure B-7](#)) could cause temporary flood impacts on the following assets and land uses (in addition to those assets impacted in Scenario 3):

- **Utilities:** Temporary flooding impacts the Griffith Pump Station (San Francisco Public Utilities Commission wastewater asset). If this pump station is flooded, wastewater and stormwater service could be impacted for both the lower Yosemite and Sunnydale drainage basins, resulting in the release of untreated wastewater on local streets (City and County of San Francisco 2020). Prolonged downtime of this pump station could have health impacts, particularly on the elderly, medically infirm, and young children (City and County of San Francisco 2020).
- **Transportation Facilities:** Temporary flooding impacts the 1508 Bancroft facility. Temporary flooding could cause delays and disruptions to field operations and appropriate signage systemwide. Without functioning facilities day-to-day transit service could be reduced throughout the City (City and County of San Francisco 2020). There is no redundancy for this facility in the SFMTA system, and it operates in coordination with the 1538 Yosemite facility (City and County of San Francisco 2020).
- **School:** Temporary flooding impacts Bret Heart Elementary School along Gilman Avenue. Flooding reaches the main entrance and could make it difficult for students to enter school safely. Afterschool and food assistance programs offered at this school could also be impacted; and parents and children that rely on these services for after-school care may either lose access to this service or require temporary bus service to another location for after-school care. The San Francisco

Recreation and Parks Department has other parks and recreation centers within its portfolio that could provide substitute or additional services during a flood event for families that rely on after-school or food assistance programs at schools.

- **Health and Human Services:** Temporary flooding could reach as far as the Southeast Family Health Center. Residents could lose access to critical health and non-emergency services and may need to seek health care further from home.
- **Fire Department Facilities:** Though not directly inundated, responders from Fire Station #17 located at the intersection of Shafter Avenue and Ingalls Street, may not be able to travel southbound along Ingalls Street due to temporary flooding. First response and emergency services within the flooded areas may be delayed.
- **Commercial Facilities:** Temporary flooding impacts Anresco Laboratories (local business) and nearby businesses particularly on Underwood, Van Dyke, Wallace, Yosemite, Armstrong, Bancroft, and Carroll Avenues, and Griffith, Hawes, Ingalls, and Jennings Streets. For example, Anresco Laboratories could close for a few days to weeks, depending on the depth of flooding. Temporary flooding could compromise, or delay food- and other material- testing performed by the laboratory. The industries that rely on lab results produced by Anresco Laboratories could be impacted. The potential release of hazardous materials may rise if hazardous materials come into contact with flooded waters. Depending on the industry type, flooding could cause operational disruption to food and goods production, services, equipment, and vehicles at local businesses, resulting in inventory damage and income loss.
- **Transit:** Two additional bus stops of the Muni 54 Felton bus routes are impacted by temporary flooding. Persons living or working in the flooded area would need to be able to walk further (potentially through a flooded area) to reach the nearest

bus stop (City and County of San Francisco 2020). Students that depend on the 29 bus line may experience difficulties getting to and from school as the primary bus stop on Gilman Avenue is flooded.

- **Roadways:** Yosemite Slough becomes completely inaccessible from all sides due to temporary flooding. Residents and workers alike have no access to local streets from Carroll Avenue to Underwood Avenue, and from Griffith Street to Jennings Street, as shown in Figure B-7. This could result in temporary isolation from Third Street and disruption to short-distance mobility.
- **Planned Bay Trail:** Additional planned segments are flooded along the northern and southern shorelines.
- **Existing Bay Trail:** Additional segments of the constructed Bay Trail are inundated on the northern shoreline.
- **Green Connections:** A new section of the network is flooded on Carroll Avenue. Nearly all of the network surrounding Yosemite Slough is flooded. Direct access to and from Yosemite Slough could be completely lost from the network via Armstrong and Wallace Avenues.
- **Open Space and Parks:** Approximately 50 percent of the Gilman playground is flooded.
- **Land Use:** Temporarily flooded parcels include open space (CPSRA and Gilman Playground), vacant lots, office parcels, retail and entertainment parcels, industrial parcels, and two residential parcels



FIGURE B-7. SCENARIO 4: EXPOSED COMMUNITY AND TRANSPORTATION ASSETS WITH 6.6 FEET OF SEA LEVEL RISE

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