



SAN MATEO COUNTY NATURE BASED SHORELINE PROTECTION STRATEGIES

# Yosemite-Visitacion OLU

## Identifying Nature Based Solutions

SeaChange SMC released a Countywide Sea Level Rise Vulnerability Assessment in 2018 identifying San Mateo County’s key vulnerabilities. Communities throughout the County are identifying potential adaptation strategies for the shoreline. Nature based strategies provide multiple benefits, but there are questions about what strategies work in which locations throughout the bay and how they integrate with engineered strategies. This fact sheet summarizes the types of strategies identified through a stakeholder driven process. Local communities and stakeholders can use this information as high level guidance to spur cross-jurisdictional collaboration and to identify potential project areas and concepts for further evaluation.

## Types of Nature Based Solutions

Below are examples of nature based strategies. More information and details on adaptation strategies are available at: [www.resilience.sfei.org/](http://www.resilience.sfei.org/)

**Marsh:** wetlands affected by daily tides that can decrease wave energy and erosion.

**Mudflat:** a stretch of mud exposed at low tides that can protect marshes from erosion.

**Ecotone/Horizontal Levee:** a gently sloping upland, and marsh habitat supported by a flood levee on the shoreline.

**Nearshore Reef:** mix of oyster shell and baycrete to support subtidal habitat and reduce wave energy.

**Submerged Aquatic Vegetation:** underwater vegetation such as eelgrass that traps sediment and slows erosion.

## What are Operational Landscape Units (OLU)?

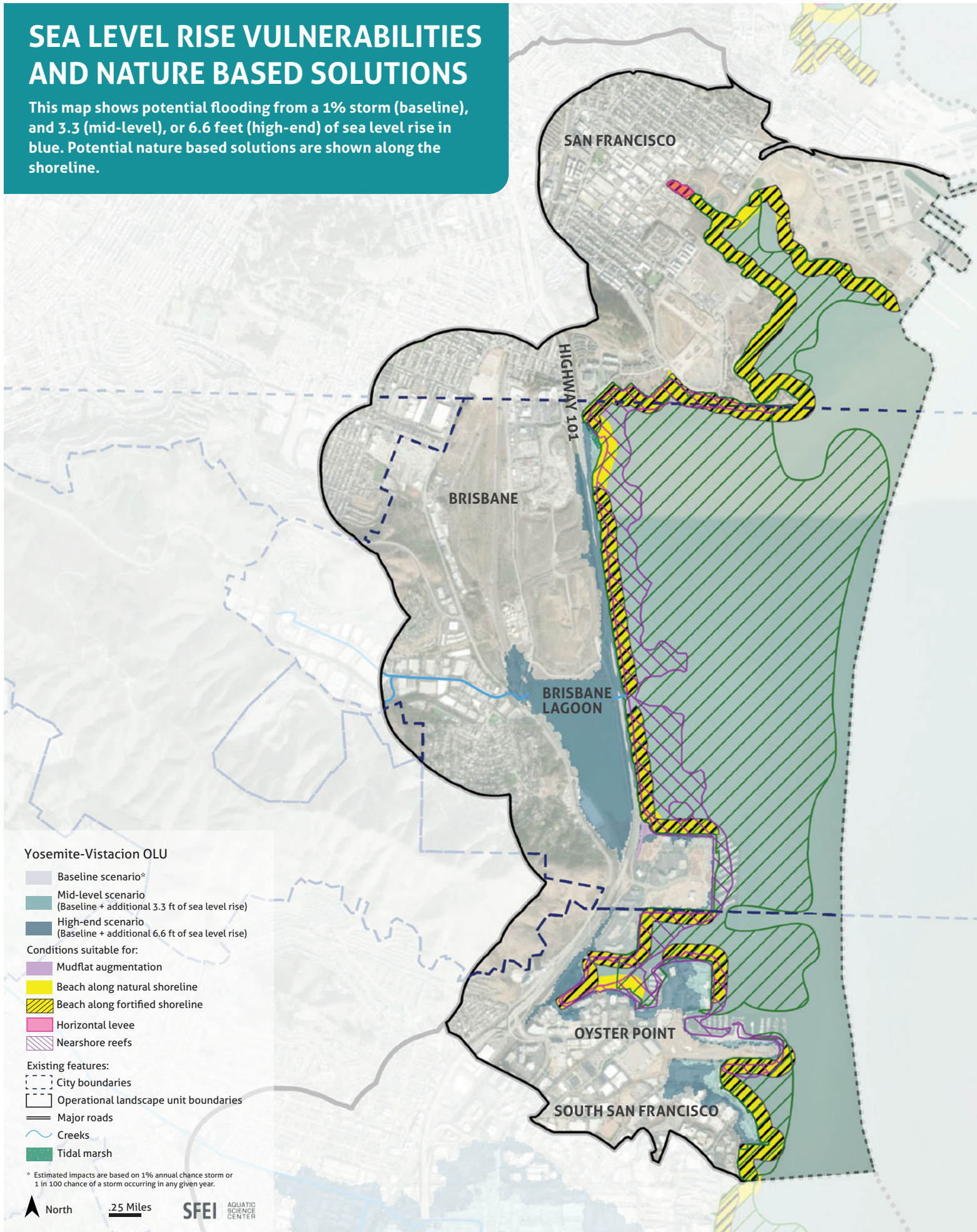
OLUs are areas of the shoreline extending from subtidal (i.e. areas that are always underwater, including during low tides) to inland areas. The geology, hydrology and climate are similar so that adaptation planning in this area benefits from being aligned. OLUs, like watersheds, span across jurisdictions.

## Yosemite-Vistacion OLU Summary

There are 5 OLUs in the County. The Yosemite-Vistacion OLU stretches along the shoreline between Candlestick Point Recreation Area and Oyster Point in South San Francisco. In San Mateo County, this OLU includes Brisbane and the north shoreline of South San Francisco. In the north the OLU crosses into San Francisco, emphasizing the need for multi-county coordination. Much of the land in this OLU is adjacent to San Bruno Mountain State and County Park, making adaptation particularly challenging.

# SEA LEVEL RISE VULNERABILITIES AND NATURE BASED SOLUTIONS

This map shows potential flooding from a 1% storm (baseline), and 3.3 (mid-level), or 6.6 feet (high-end) of sea level rise in blue. Potential nature based solutions are shown along the shoreline.



## Yosemite-Vistacion OLU

- Baseline scenario\*
- Mid-level scenario (Baseline + additional 3.3 ft of sea level rise)
- High-end scenario (Baseline + additional 6.6 ft of sea level rise)

### Conditions suitable for:

- Mudflat augmentation
- Beach along natural shoreline
- Beach along fortified shoreline
- Horizontal levee
- Nearshore reefs

### Existing features:

- City boundaries
- Operational landscape unit boundaries
- Major roads
- Creeks
- Tidal marsh

\* Estimated impacts are based on 1% annual chance storm or 1 in 100 chance of a storm occurring in any given year.



0.25 Miles

**Brisbane**  
**Vulnerabilities**

In the mid-level scenario, Highway 101 would begin to flood in some locations, and approximately 3 acres of wetlands and 1.3 miles of trails are flooded. The most vulnerable assets in Brisbane include a wastewater pump station, outfalls, wetlands, and trails.

**Nature Based Solutions**

Brisbane Lagoon itself is characterized as a polder, land protected by embankments, and tidal action could be restored by improving the culverts under Highway 101, creating opportunities for mudflats, marshes, and ecotone levees within the lagoon.

**OLU-Wide Nature Based Solutions**

Nearshore reefs, coarse beaches and eelgrass beds could be used to reduce wave action, trap sediment, and reduce erosion along the entire shoreline. A coarse composite beach along Highway 101 could be an alternative to riprap to provide a more natural shoreline, and would necessitate hybrid features such as groins or artificial headlands. Green stormwater infrastructure could continue to be implemented in the upper watershed to reduce fluvial flooding in the developed areas.



**South San Francisco**  
**Vulnerabilities**

The baseline scenario leads to some flooding of the Oyster Point parking lot. Key infrastructure in preventing and mitigating a flood, including levees and/or floodwalls and other built shoreline features, is vulnerable in South San Francisco in the mid-level scenario.

**Nature Based Solutions**

Where appropriate, nearshore reefs and eelgrass beds could be placed alongside the Oyster Point and Brisbane Marinas in addition to the existing levees.

**CO-BENEFITS**

Not only do nature based shoreline protection strategies protect from rising sea levels, but they support wildlife habitat, reduce erosion from waves, store extra carbon from the atmosphere, and reduce runoff of pollutants into the Bay.

Marshes no longer exist along the Yosemite-Visitacion OLU, however this area provides a wealth of recreation opportunities along its miles of shoreline and in parks and trails near the shore. Maintaining and restoring recreation while adapting to sea level rise could provide these benefits:



**Habitat**

Possible restoration efforts would add 106 acres of beach, bordering nearly the entire coastline of the OLU.



**Recreation**

Yosemite-Visitacion provides nearly half of the recreational visits in the county. The Bay Trail and Water Trail provide valuable recreation opportunities, and adaptation efforts can support this benefits through design that integrated these types of trails. Beach restoration could maintain recreation within the OLU in light of sea level rise.



# MOVING FORWARD ON REGIONAL SEA LEVEL RISE PLANNING



The Yosemite-Visitation OLU supports a number of outdoor recreational opportunities on land and in the water. Through partnerships and the actions below, the County will continue to support strategies to reduce risks from sea level rise that protect vulnerable communities, enhance the use of nature based approaches and address regional impacts.



**Partner**  
early and often with community-based organizations to develop culturally competent and participatory outreach and engagement strategies based on community needs.



**Develop and Coordinate**  
messaging and outreach to a variety of audiences including City Councils, sector-based organizations, regional organizations, and inland neighborhoods.



**Participate**  
in the Climate Ready SMC Collaborative, to learn and share information and best practices and engage community leaders in solving these multi-jurisdictional challenges.



**Evaluate**  
existing plans and policies to encourage cross-jurisdictional planning and implementation of nature based sea level rise adaptation projects, and assess necessary changes to land use regulations to support adaptation projects.



**Submit**  
joint applications through the Flood and Sea Level Rise Resiliency District to grant programs for projects that will address sea level rise across jurisdictions. Explore opportunities for restoration that would expand outward into the Bay.



**Monitor**  
existing and planned projects to inform future work and share with stakeholders, including updates to sea level rise risks based on planned and implemented adaptation projects.

Summaries of the other OLUs and workshops are available at [seachangesmc.org/current-efforts/nature-based-shoreline-protection-strategies/](https://seachangesmc.org/current-efforts/nature-based-shoreline-protection-strategies/)

