

Presented by: Janelle Kellman

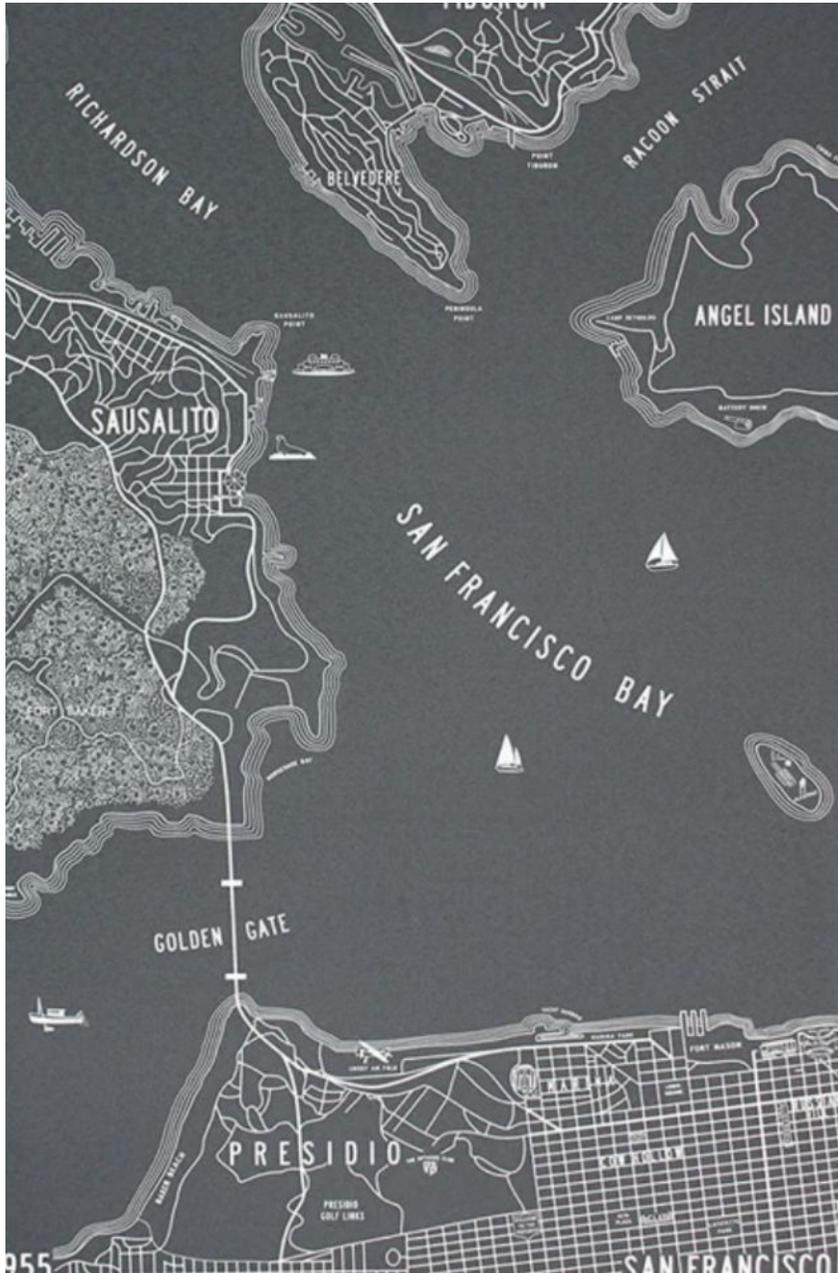
Former Mayor,
City of Sausalito



Founder,
Center for Sea Rise
Solutions



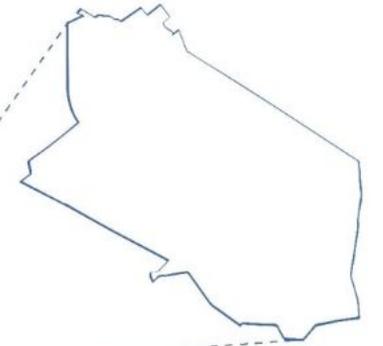
The floating home communities are crucial assets that demand a resilient adaptation strategy along the Sausalito shoreline.



California



Marin County



Sausalito



1868 - Bustling Transportation Hub



Pre-WWII - Tidal Marshes



WWII - Marinship



Today - Working Waterfront



Vision

- Make Sausalito and its key infrastructure points more resilient in the face of immediate and long-term threats of sea level rise,
- Reduce risk by providing proactive measures, and
- Prioritize nature-based solutions whenever possible



PRESSING CHALLENGES FACING SAUSALITO



Sea Level Rise



Local Scenarios



Mapping Confidence



Marsh Migration

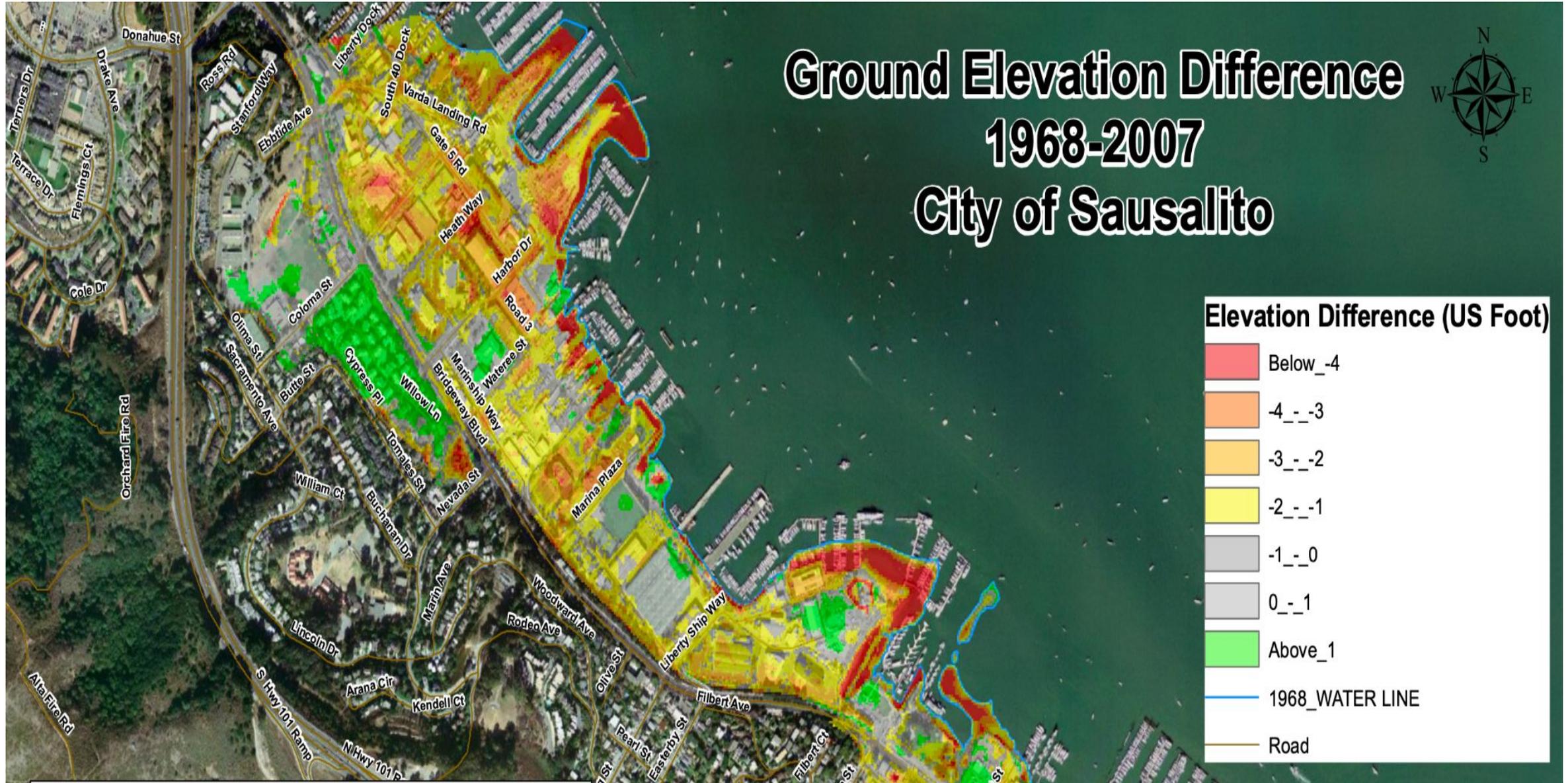


Vulnerability



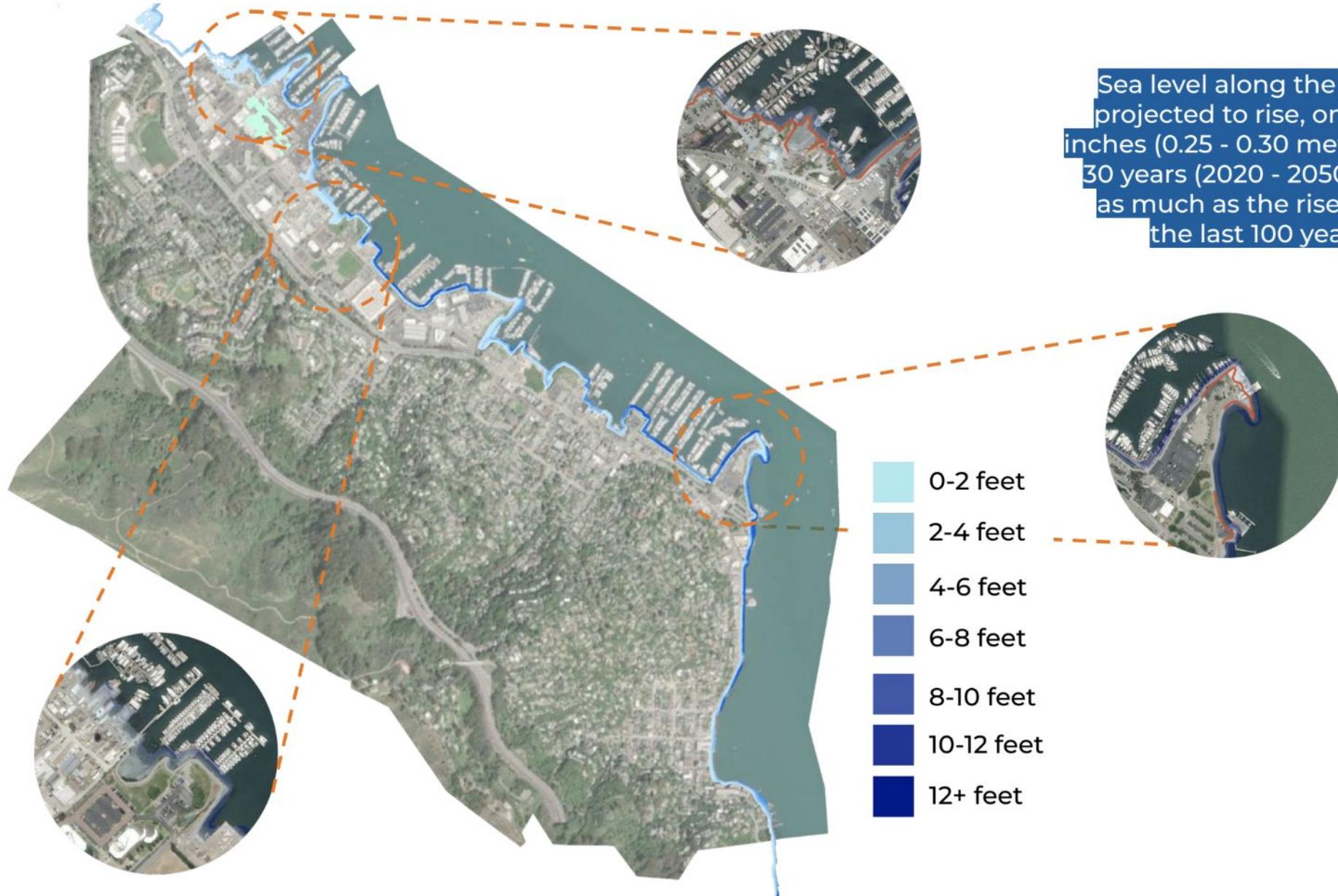
High Tide Flooding







Sea level along the U.S. coastline is projected to rise, on average, 10 - 12 inches (0.25 - 0.30 meters) in the next 30 years (2020 - 2050), which will be as much as the rise measured over the last 100 years (1920 - 2020).
-NOAA





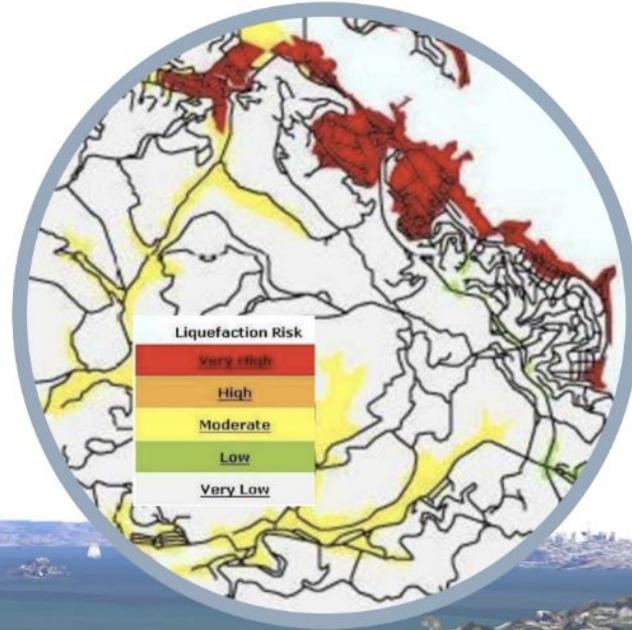
Sausalito March 2023

**Key roadways threatened
by storm surge**





"The soil in Marin County is saturated"
- ABC7 News Meteorologist Mike Nicco

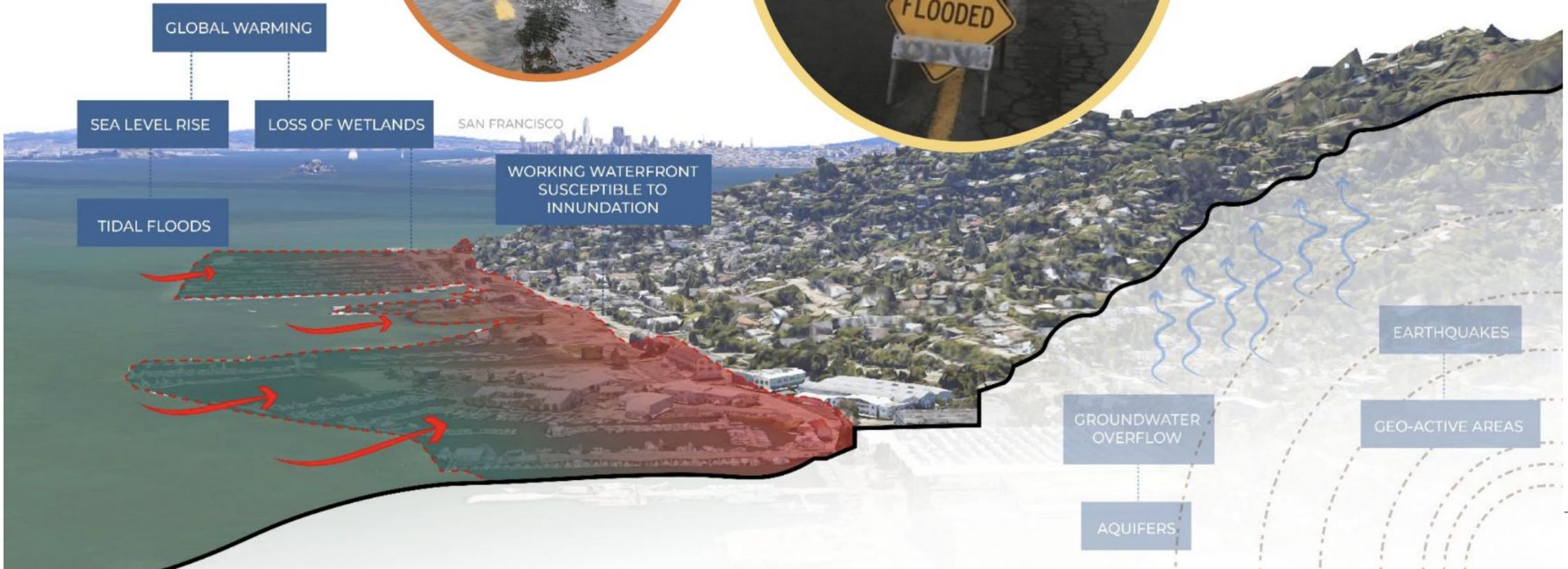


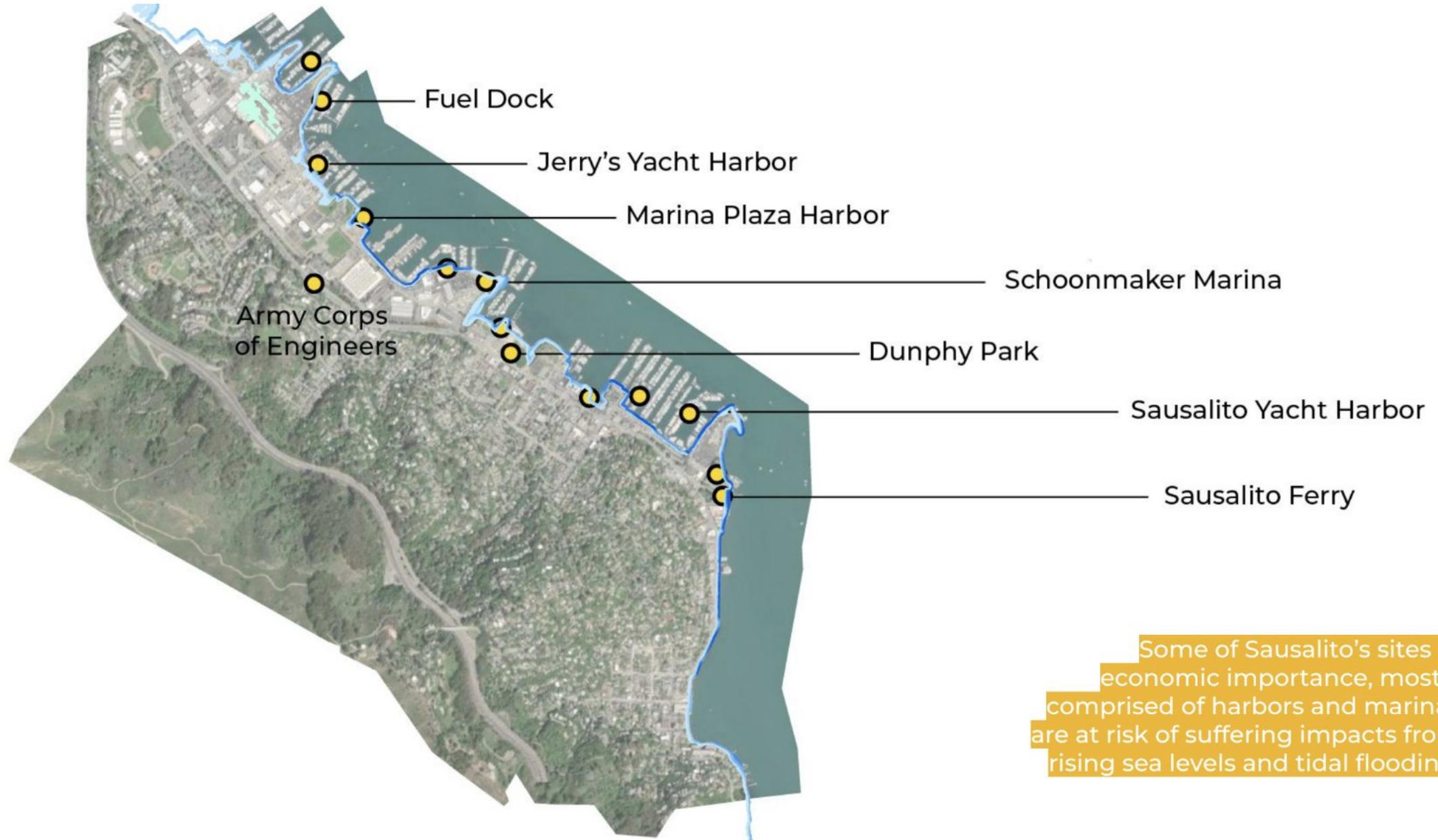
"The sewer pipes are susceptible to increasing water infiltration"
- Sausalito Gov.





Sea Level Rise Prediction
for Sausalito:
0.5 - 0.8ft by 2030
1.1 - 1.9ft by 2050
2.4 - 6.9ft by 2100





Some of Sausalito's sites of economic importance, mostly comprised of harbors and marinas are at risk of suffering impacts from rising sea levels and tidal flooding.



Critical infrastructure is at risk of climate-related and human induced disasters, such as high tides, heavy rain and mudslides.



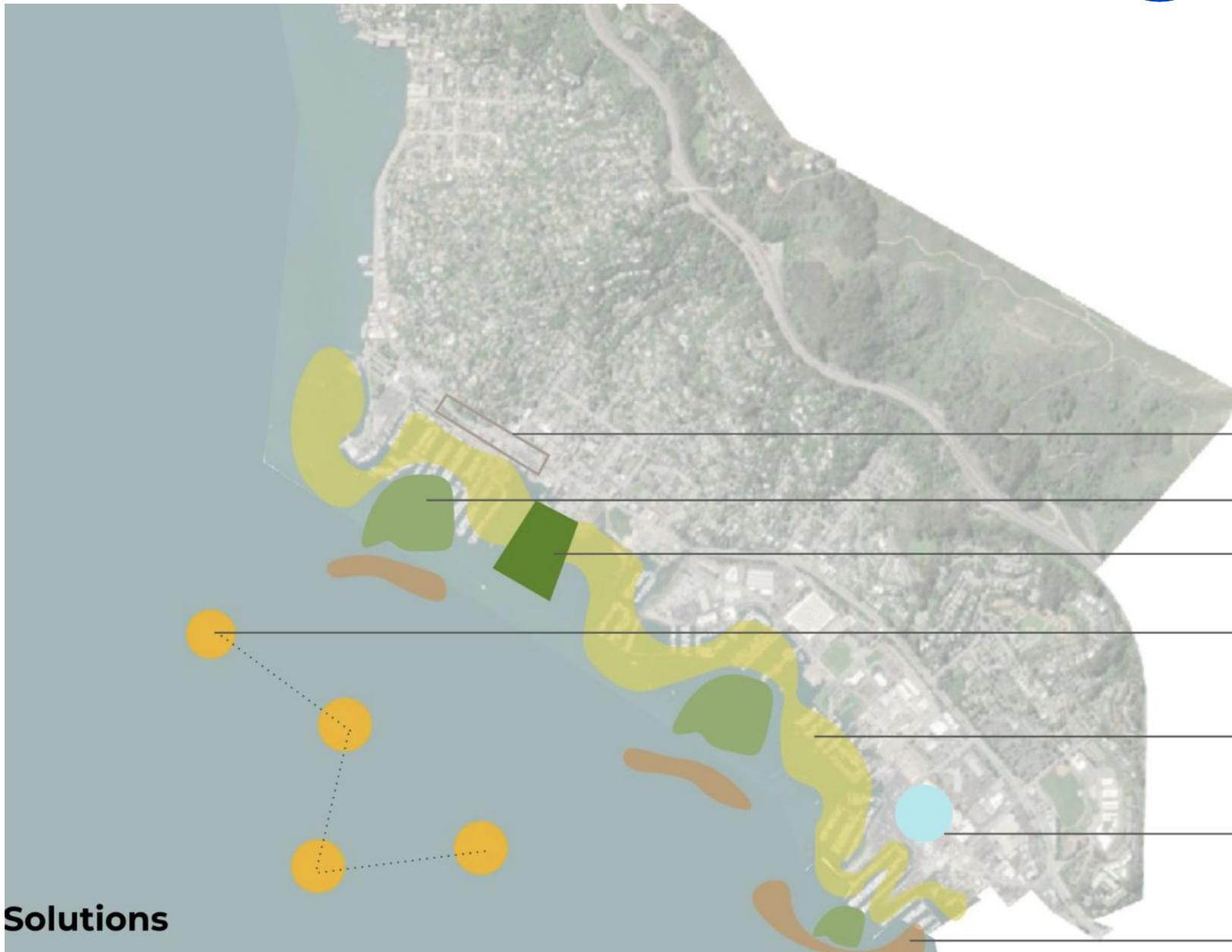
- Walking Path
- Bike Lane
- Roads
- Bridgeway Pr.
- Transit Stops





Let's innovate!

nature-based solutions



Strategic Road Elevation

Tidal Marsh Restoration
with Aquaculture

Absorptive Landscape

Offshore Wind Farms
with seaweed farms

Research Centers +
Working Waterfront

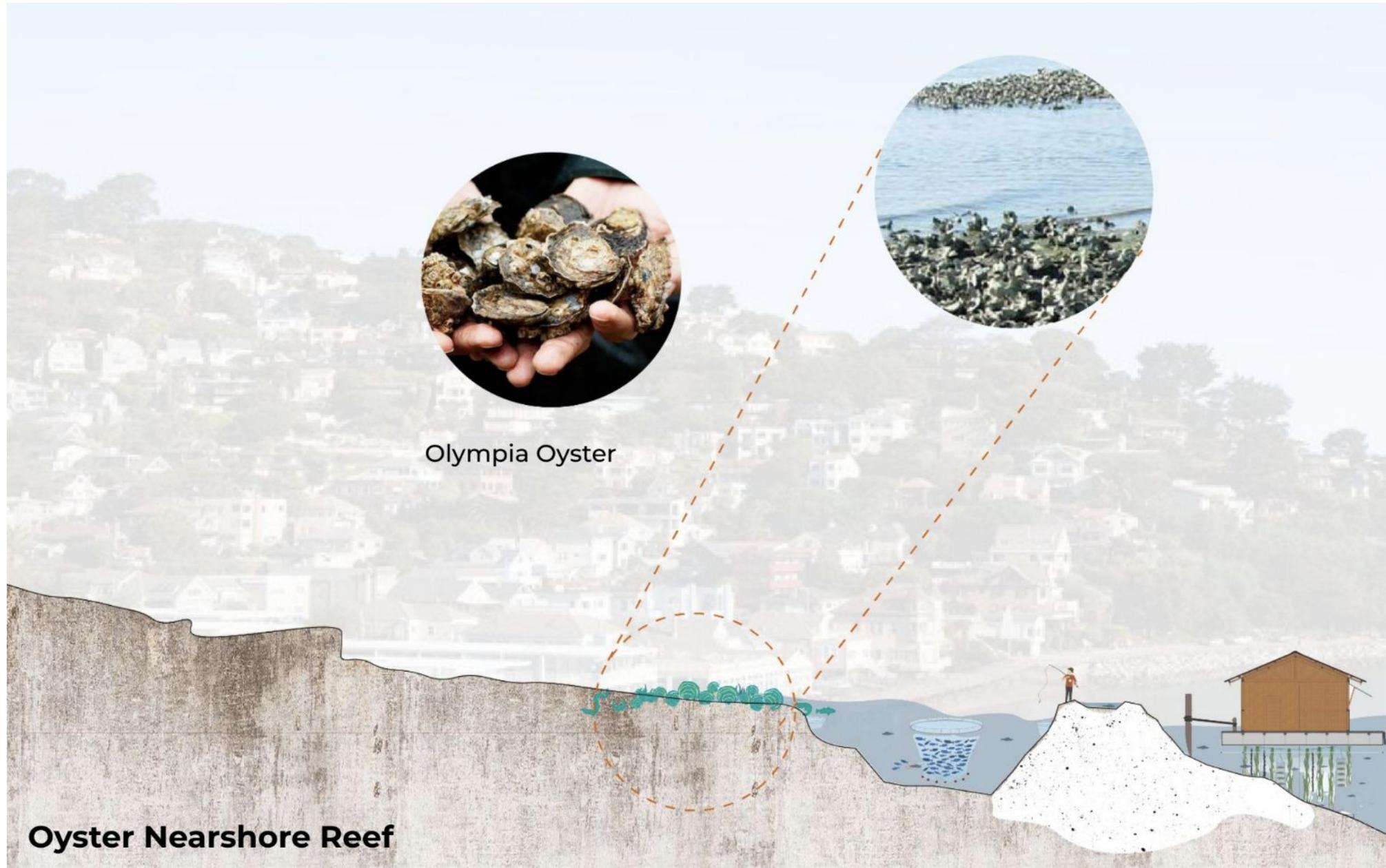
Flooding Pool Tidal
Marsh Restoration

Island Barriers

Solutions



Barrier Island



Dunphy Park, Sausalito



Adding oyster reefs and eelgrass beds to reduce wave action and slow erosion

Daylighting Willow Creek:



WILLOW CREEK REACH ACADEMY STREAM DAYLIGHTING PROJECT



Willow Creek flows from its source, above Hwy 101, to the edge of Richardson Bay, running primarily underground in concrete culverts. **The Willow Creek Restoration Plan** is part of a phased process of “infrastructure renewal”, consistent with a shared community vision.



We'd like to use sediment, buuuuut...

- One of our biggest challenges is likely to be sourcing and transporting material for nature based solutions.
- From a funding perspective, uncertainty regarding sourcing and transport will dramatically increase costs.
- **Identifying locations where Sausalito can stockpile sediments should be part of our SLR adaptation strategy.** Everything from dredging to basement digs can be a source of clean sediment.

Solution: Partner for Sediment

- Build dredge material storage and transport into plans for the entire project from early on.
- Find a place to store material with a relatively low cost to transport the stored material to project sites.
- **Let's partner:** Who wants to explore approaches for project owners to source and stockpile material for beneficial reuse separately and prior to construction bidding?? This could greatly reduce the uncertainty in material availability, costs associated with haul distance, and streamline contractor bidding.



Questions for You

Ecological Impacts

How are projects addressing the temporary impacts to water quality and aquatic species (due to turbidity) from placement of sediment on mudflats or tidal marshes (e.g. thin lift placement)?

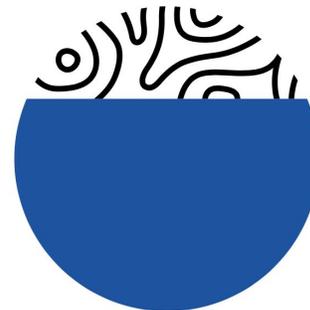
Permitted Projects

Any examples of projects that have acquired permits in SF Bay for this sort of work? How can we better work with BCDC and the Army Corps of Engineers?

Enviro Protection

What sort of environmental protection measures were used?

Thank You!



Center for
**SEA RISE
SOLUTIONS**

Let's innovate!

Promoting nature-based
solutions



OYSTER REEFS

- Made of up many individual oysters.
- Provide homes for many organisms.
- Protect shorelines from erosion.
- Found at parks with coastal estuaries.

*e.g., “Green” infrastructure
involves nature-based
adaptations primarily to
prevent shoreline erosion
through grasses/oyster beds,
wetlands conversion, levees
with wetlands transition zone*



Center for
**SEA RISE
SOLUTIONS**



City of
SAUSALITO



Bay Area 2100 Sea Level... ▼

Inundation

- 2100/4.9 FT RISE PLUS 20-YEAR STORM

PG&E

- A** SUBSTATION

Civic & Infrastructure

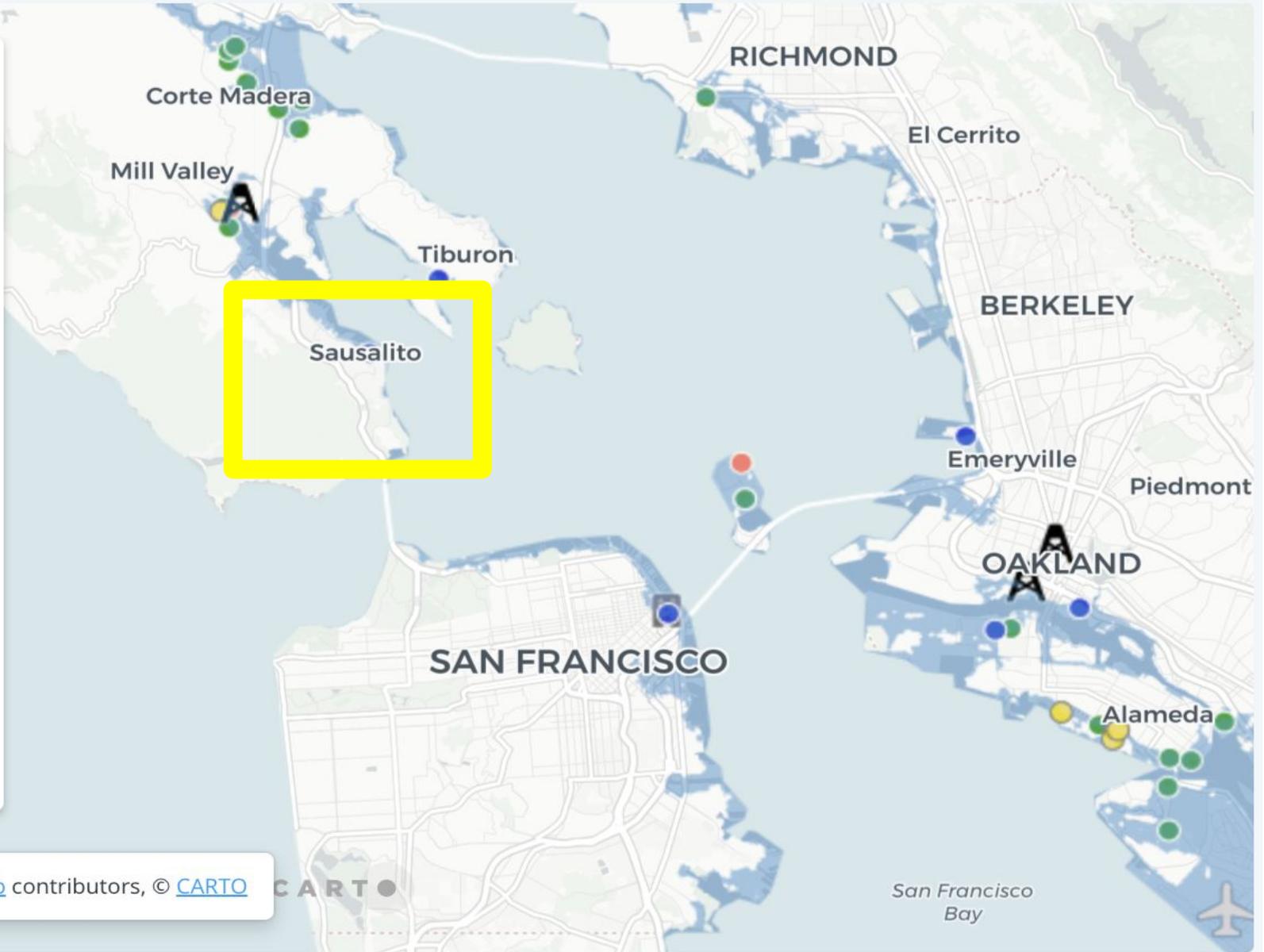
- SEWAGE TREATMENT PLANTS
- HOSPITALS
- FIRE STATIONS
- SCHOOLS

Airport

- ✈ RUNWAY

Tech Company

- 🏢 OFFICES



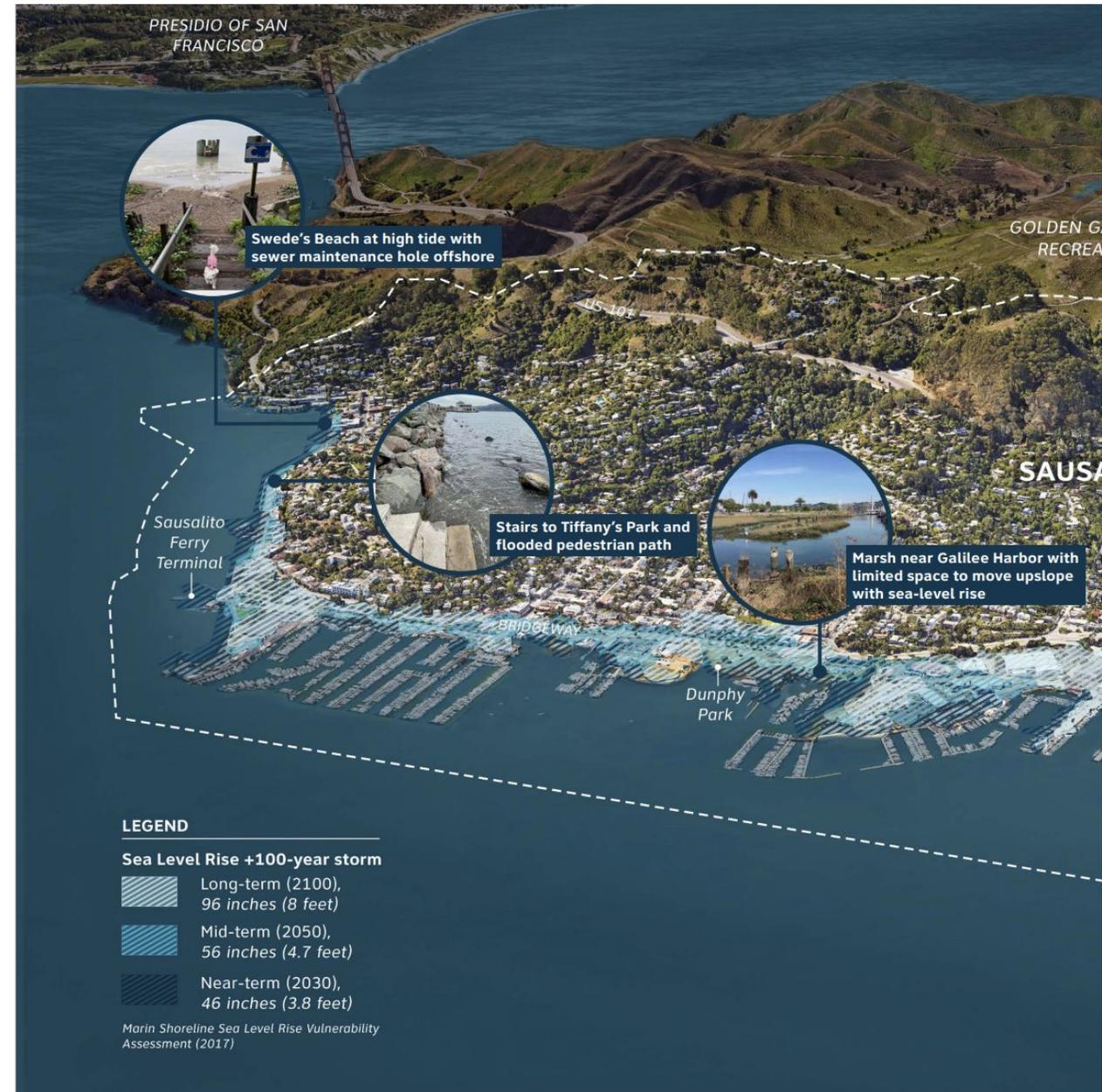
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Sausalito Today

Infrastructure impacts:

Destructive flooding and erosion will destroy homes, businesses, roads, sewer systems, stormwater drainage, and other infrastructure.





Sausalito Today

Flooding Conditions city-wide

