

*May 17, 2023*

*San Mateo County Harbor District Board of Commissioners*

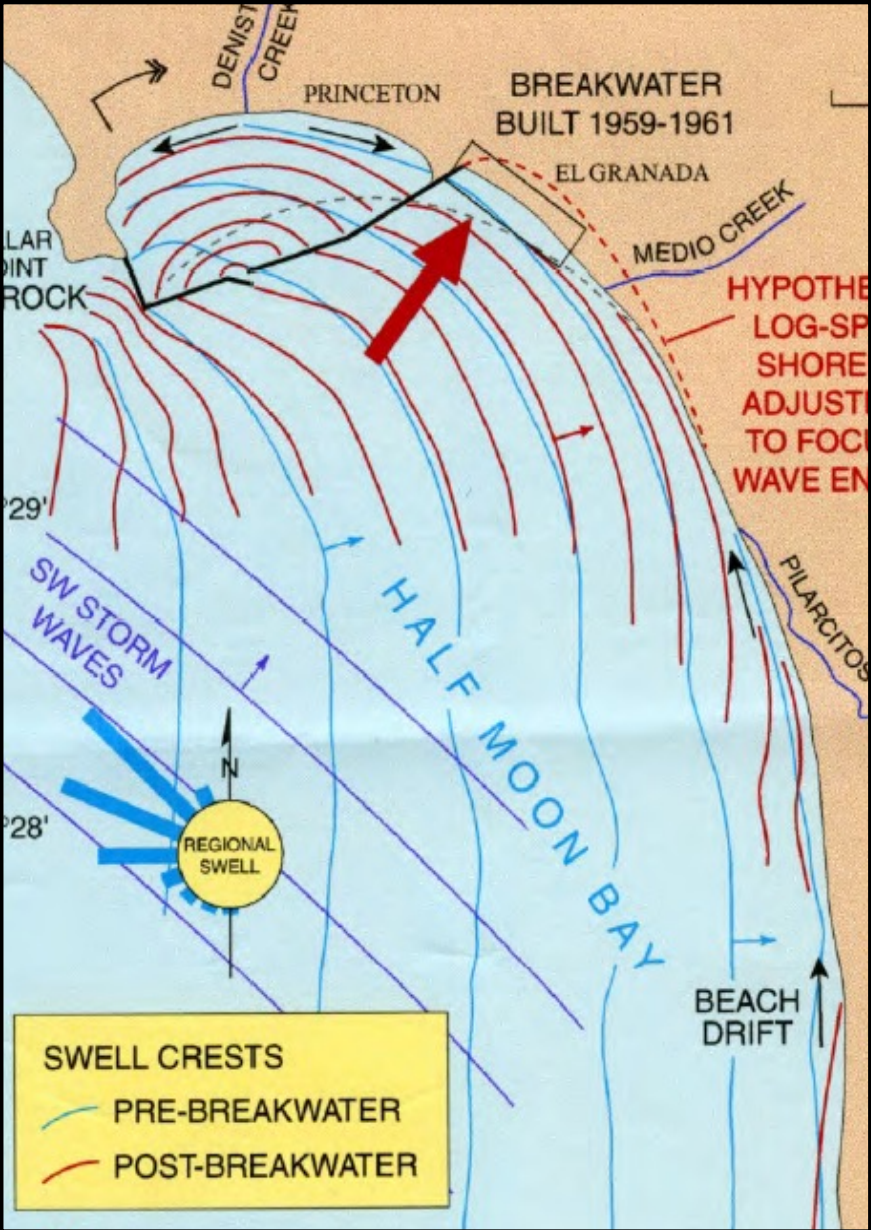
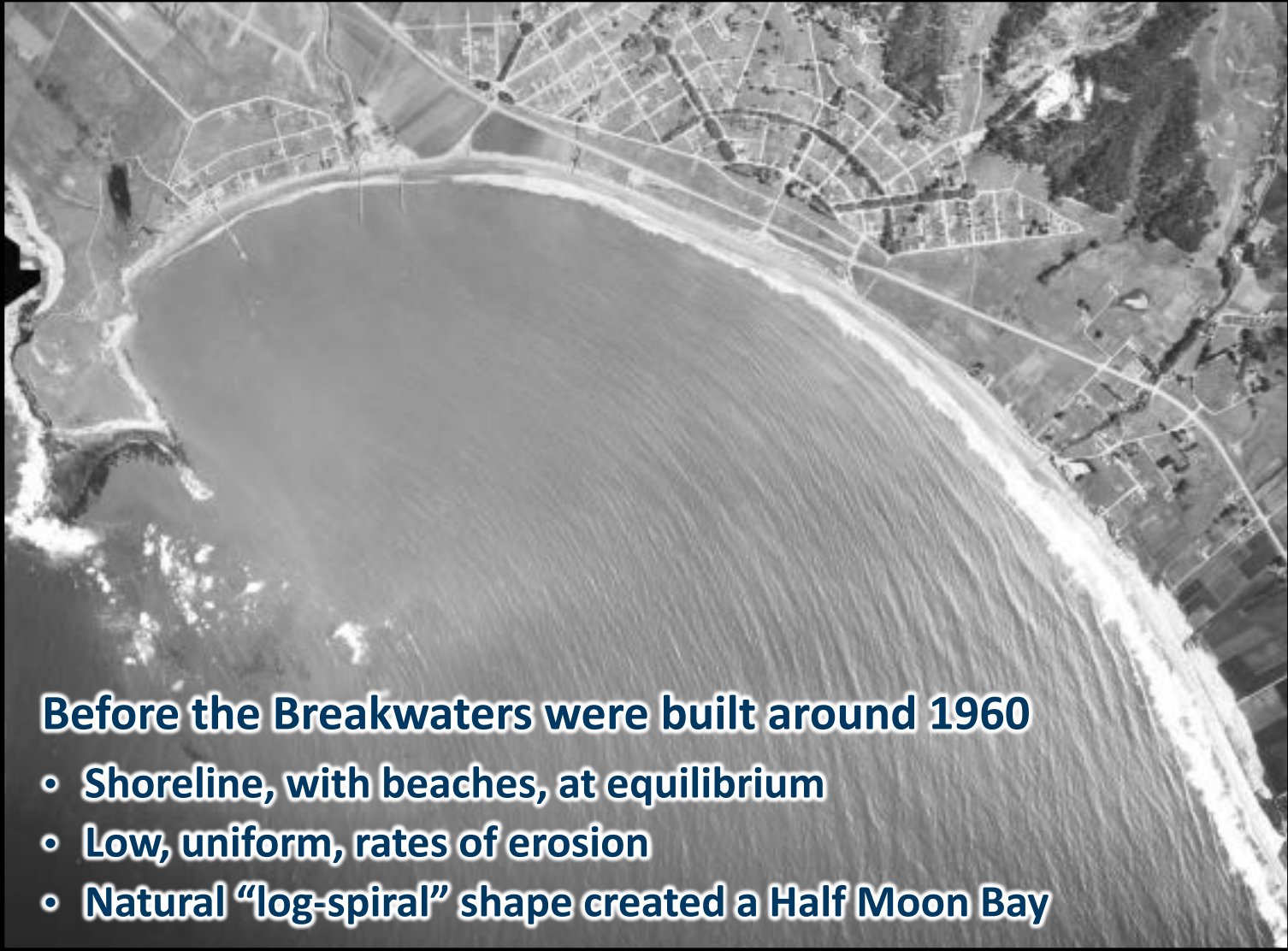
**San Mateo County Flood and Sea Level Rise Resiliency District**

**Pillar Point Harbor Shoreline Area Protection and Enhancement Study**

**Phase 1 – Initial Visioning**

**info@OneShoreline.org**

Since that time, accelerated, differential erosion has altered the “half moon” shape



## Princeton Shore

Development floods and has lost land, loss of beach and public access due to erosion and lack of sand



## Pillar Point Harbor

Flooding, plus too much sand impedes navigation



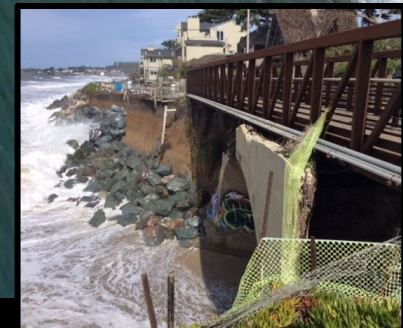
## Hwy. 1 and Surfer's Beach

Highway floods and is at risk, and loss of beach and public access, due to lack of sand caused by erosion and an altered creek



## Miramar / Mirada Road

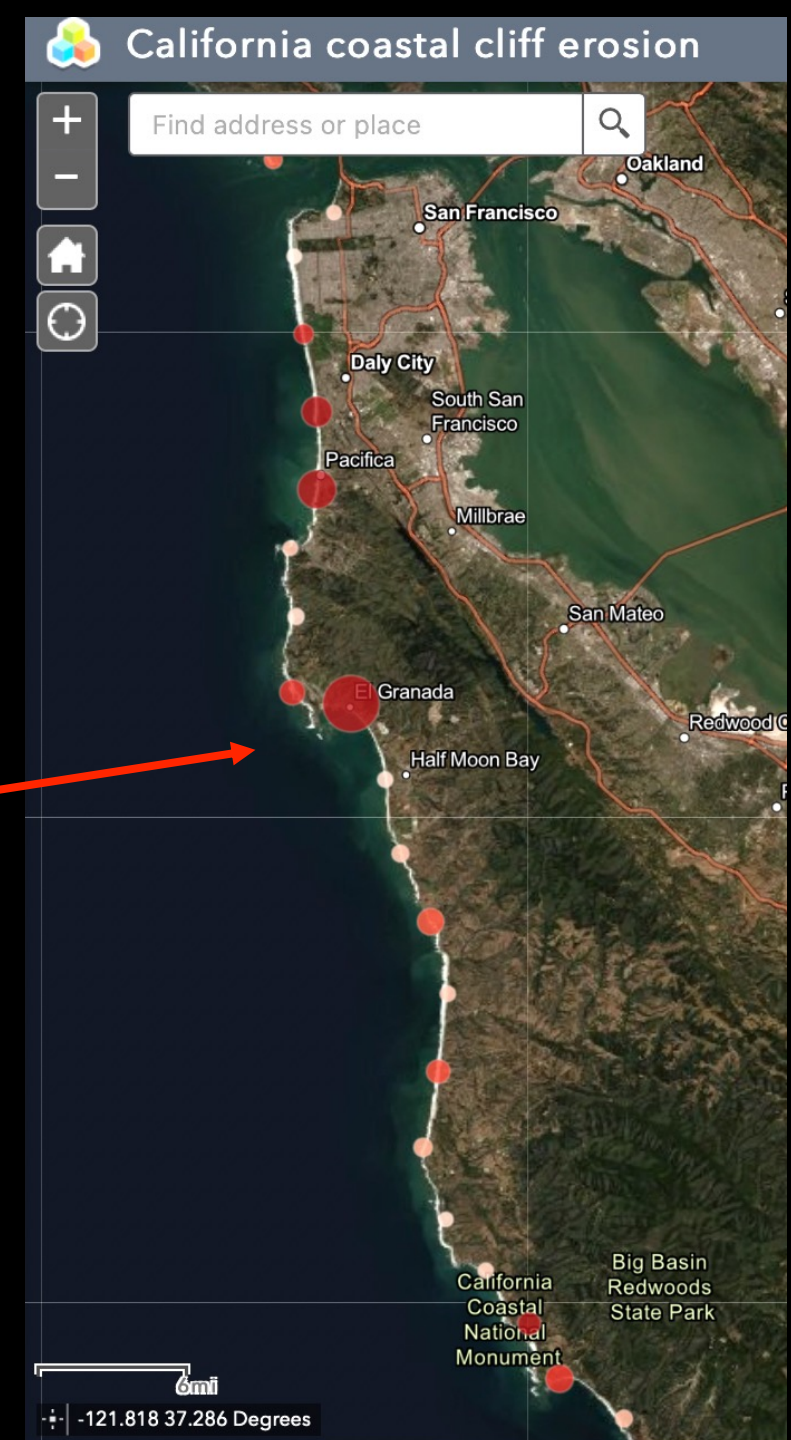
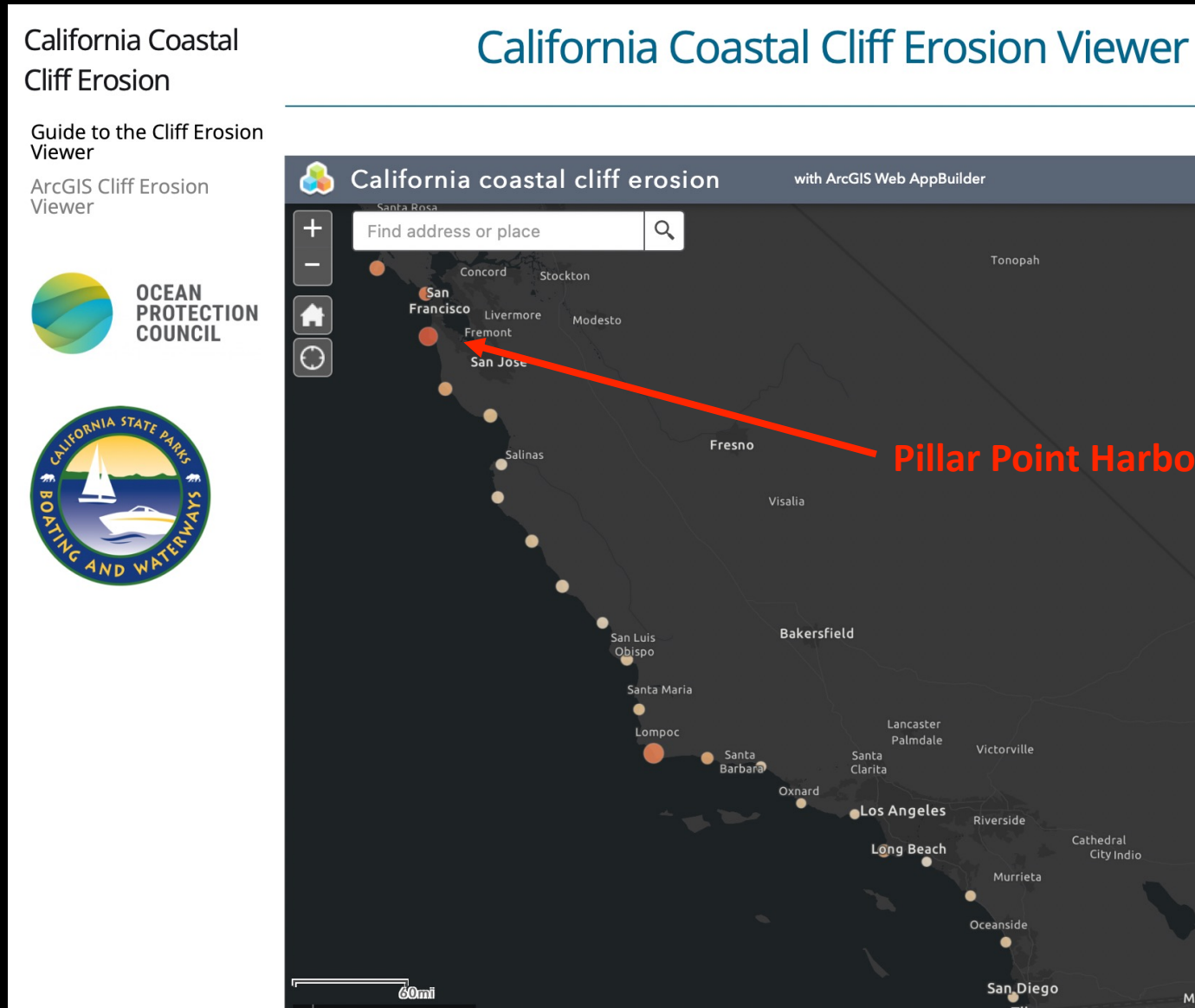
Waves cause flooding to development, roads, and a bridge, due to erosion and an altered creek, which also result in beach loss



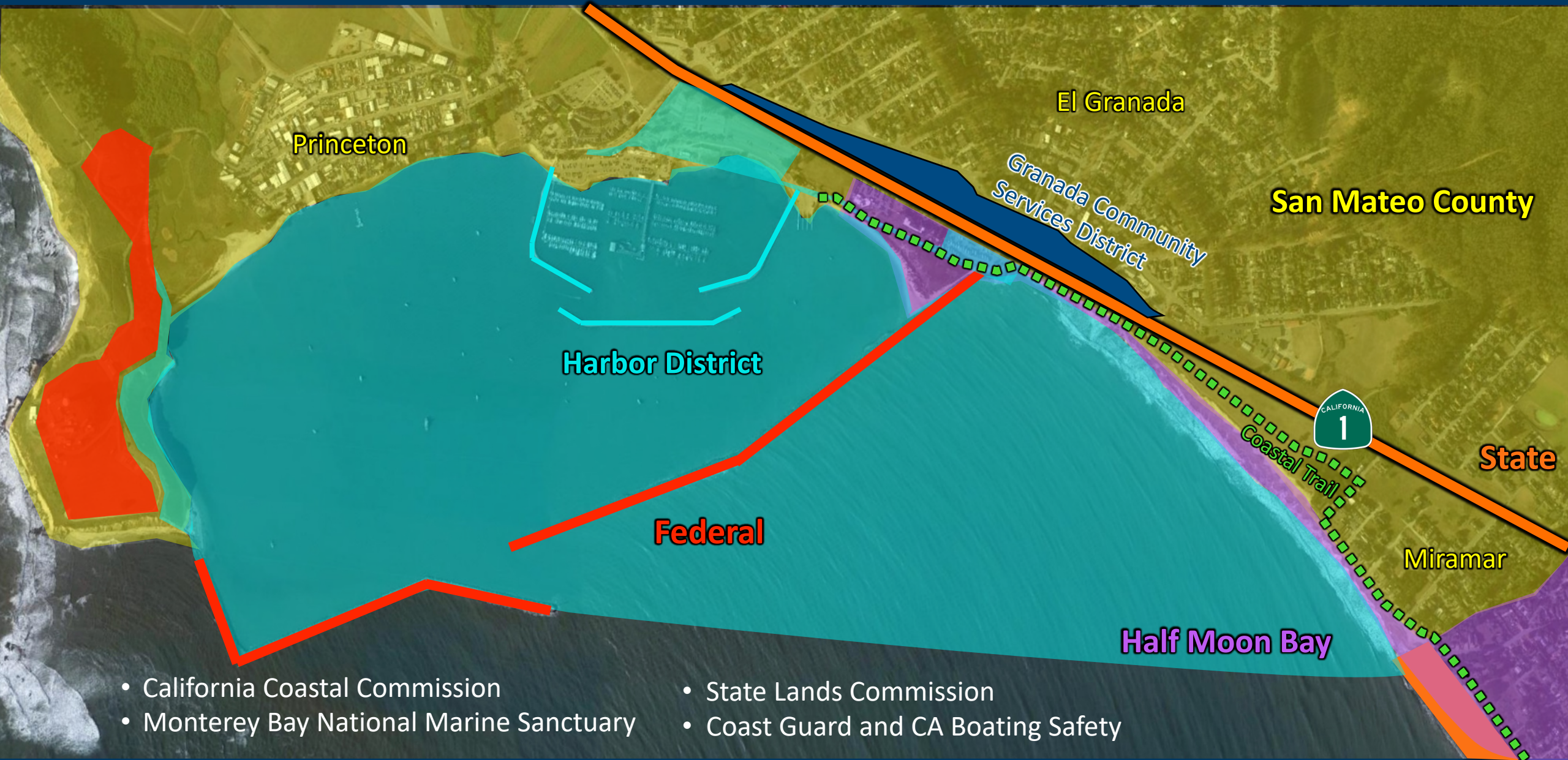
# Current Vulnerabilities

# The Pillar Point shoreline area in the context of California

August 2022 statewide study of Pacific Coast erosion risk by the Scripps Institute & UCSD



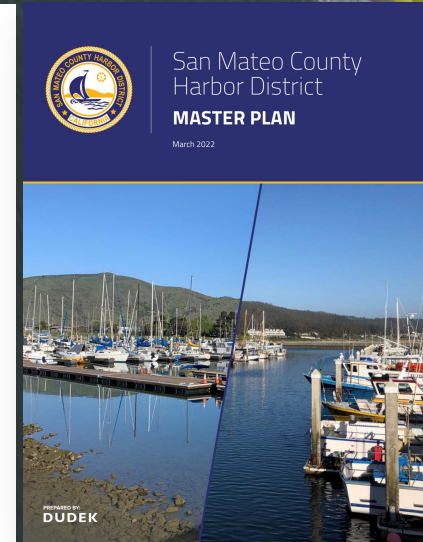
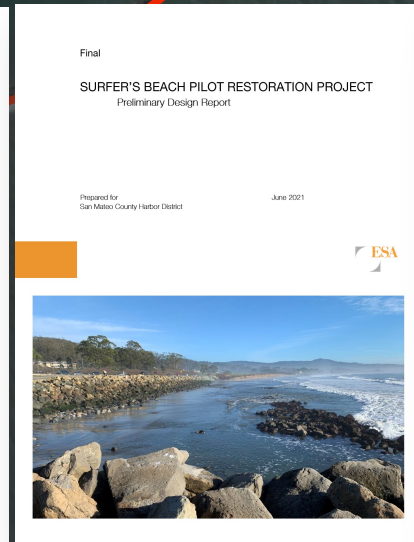
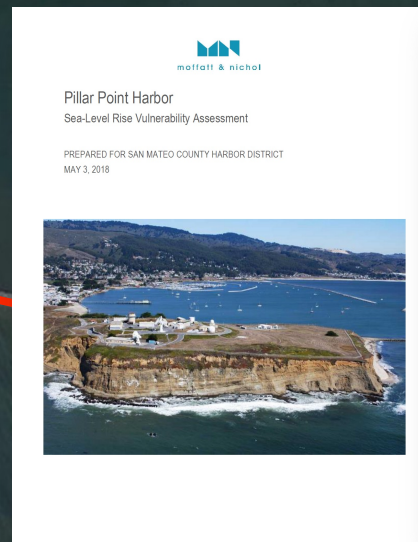
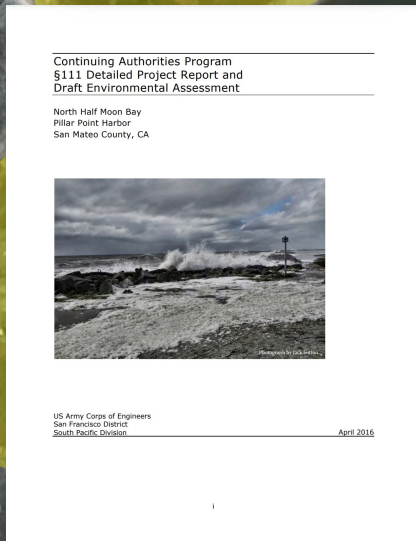
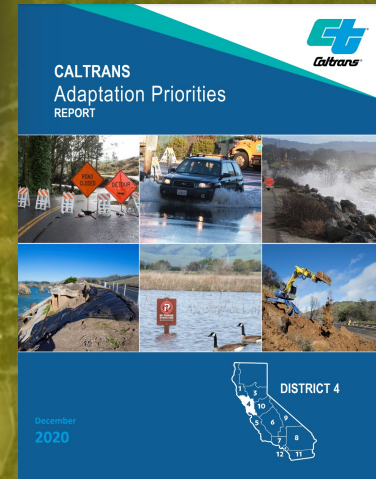
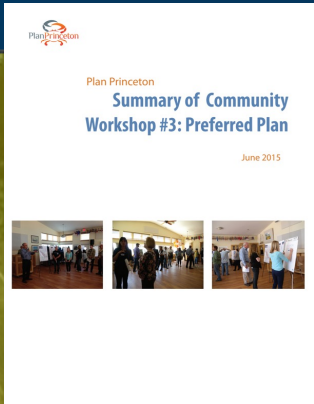
# Study Area has Multiple Jurisdictions and Key Stakeholders



- California Coastal Commission
- Monterey Bay National Marine Sanctuary

- State Lands Commission
- Coast Guard and CA Boating Safety

# Past/Current Studies and Projects



# Pillar Point Harbor Shoreline Area Protection and Enhancement Study

## Guiding Principles

- Multiple jurisdictions and key stakeholders share responsibility for an **adaptable regional solution** that...
- addresses **long-term future conditions** by...
- **working with nature** rather than fighting it, wherever possible.

## Performance Objectives

Sustain long-term viability of key assets, which may need to be modified:

**Built**

**Recreational**

**Ecological**



# *Without OneShoreline's* Guiding Principles, i.e. under the status quo, what might sea level rise protection look like?

**Breakwaters** rebuilt and raised, Harbor boat ramp, parking, and other facilities protected/raised

**Shoreline armoring / realignment** at Princeton

**Shoreline armoring / road realignment** at Highway 1

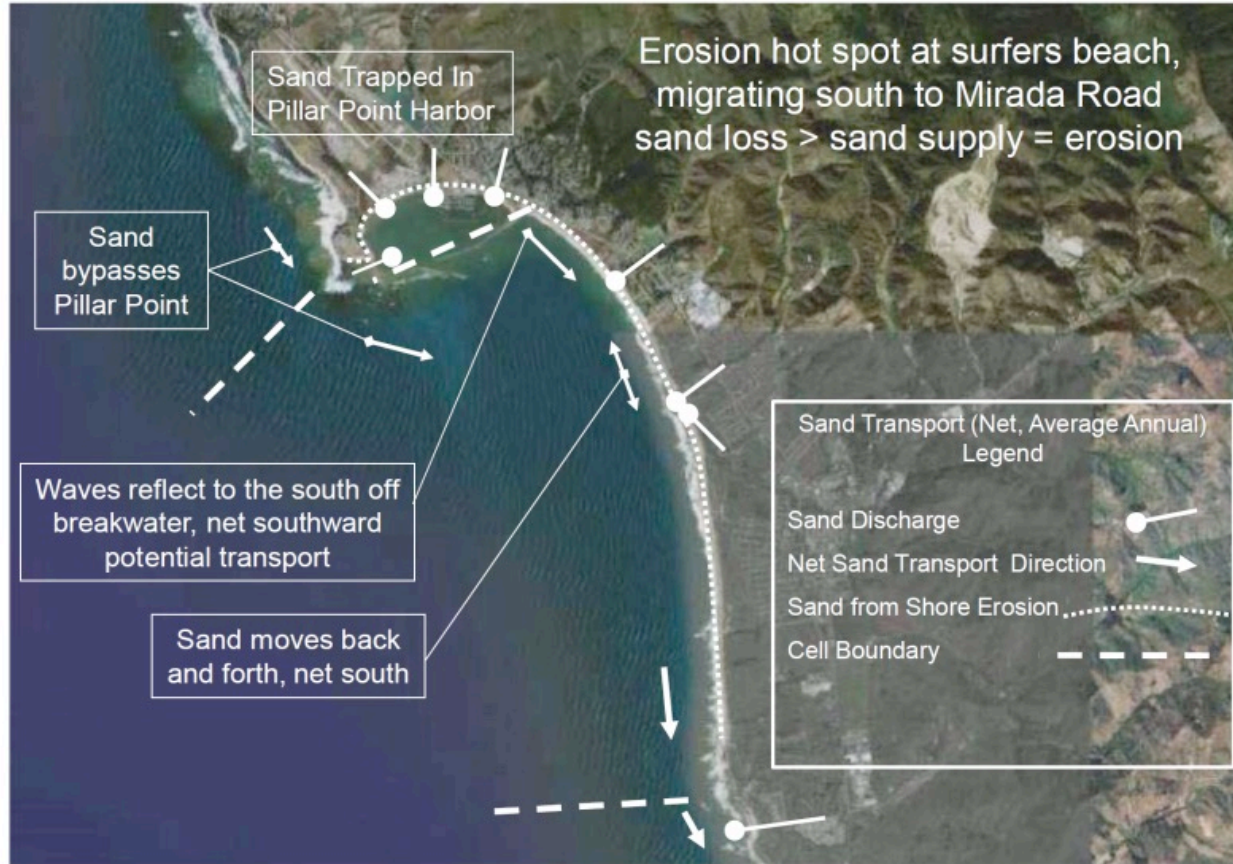
**Shoreline armoring / realignment** at Miramar and farther south





# Harbor Breakwater Effects: Sand Supply and Transport

## Half Moon Bay Littoral Cell



## Wave Reflection



## Erosion at Surfers Beach – Miramar results from the Harbor breakwaters

- (left) Sand trapped in Harbor reduces sand supply to Surfers Beach
- (above) Wave reflection from breakwater increases potential sand transport to south

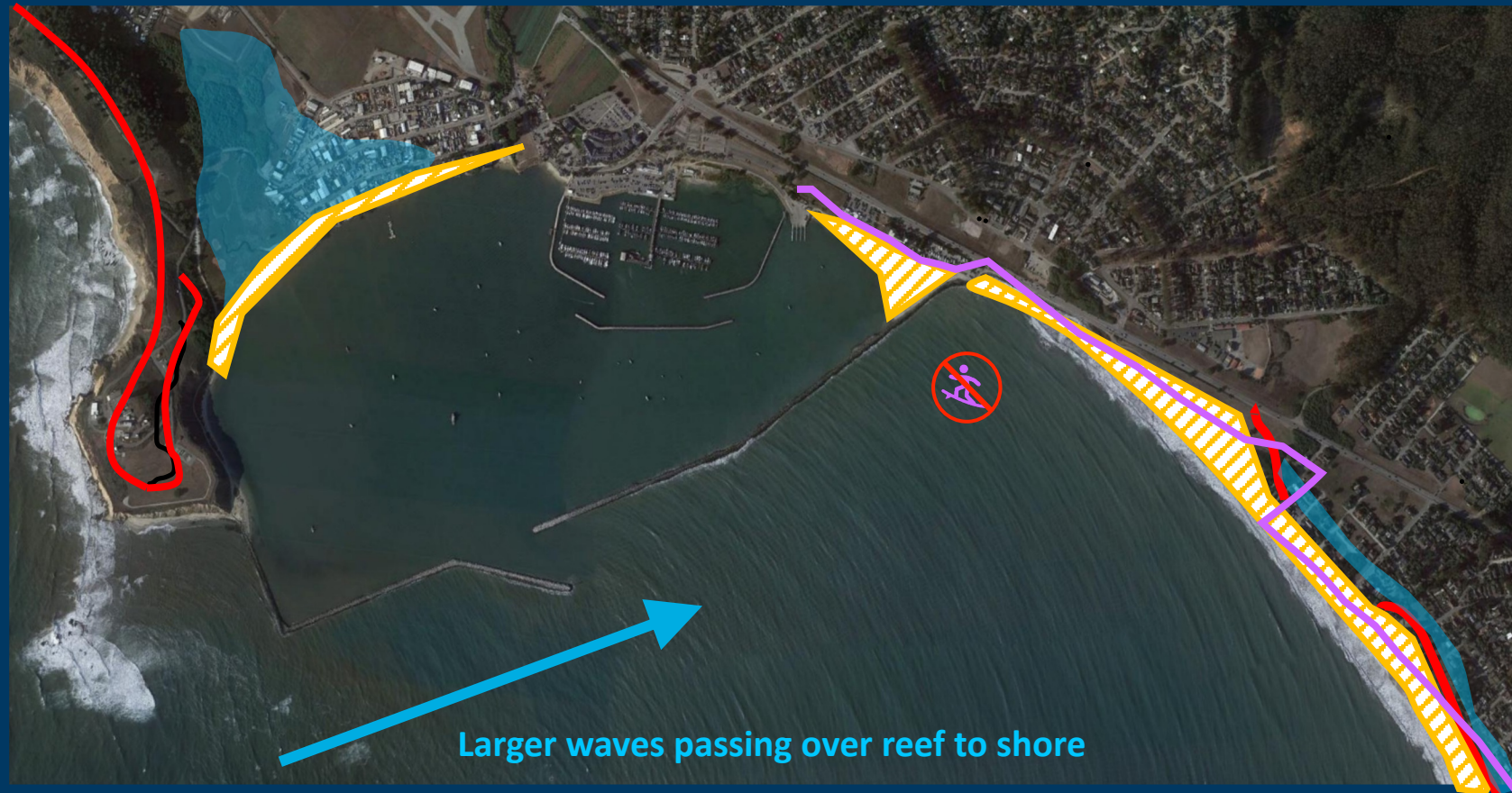
# What are the consequences of continuing the status quo approach?

**Flooding**

**Erosion**

**Loss of shoreline development, beaches, and bluff habitat**

**Loss of general public surfing resources and Coastal Trail access**



# With OneShoreline's Guiding Principles, what might sea level rise adaptation look like?

- 1 Outer breakwaters mostly removed
- 2 New west outer breakwater constructed with repurposed rock
- 3 Inner breakwaters upgraded and slightly realigned
- 4 Boat launch ramp relocated
- 5 Submerged rock reef constructed off Surfers Beach
- 6 Existing rock reef enhanced and raised
- 7 Optional: Deer Creek re-routed
- 8 If needed, raise / realign Highway 1 and Miramar shoreline area



# Based on current scientific understanding, what are the expected results of this approach with OneShoreline's Guiding Principles?

Sand bypassing increased along Harbor breakwaters

Harbor facilities protected

Wave patterns allows for replenishment on Princeton shoreline

Deer Creek does not inhibit Harbor operations and sustains beaches

Beaches restored, buying time to protect or relocate Hwy. 1 and Miramar

Rocky inter- and sub-tidal habitat breaks larger waves caused by sea level rise, maintains Surfers Beach and enhances surfing

Erosion still expected along headland



# A Path Forward in the Context of Local Coastal Plans

## California Coastal Commission (CCC)

- Retains permit jurisdiction over tidelands, submerged lands
- Delegates permit review to locals through LCP certification process
- May process consolidated permit for multiple jurisdictions

## Half Moon Bay Local Coastal Plan (LCP)

- Covers incorporated areas, including PPH waterfront
- Updated in 2020
- Includes policies calling for shoreline management plans and adaptation strategies

## County of San Mateo LCP

- Covers unincorporated areas, including PPH waterfront
- Updated in 2013
- Plan Princeton stalled out, but includes:
  - Present a managed shoreline strategy that protects the shoreline from erosion and provides improved public access to and along the coast.

*Thank you*



info@OneShoreline.org

