



VC RESILIENT COASTAL ADAPTATION PROJECT

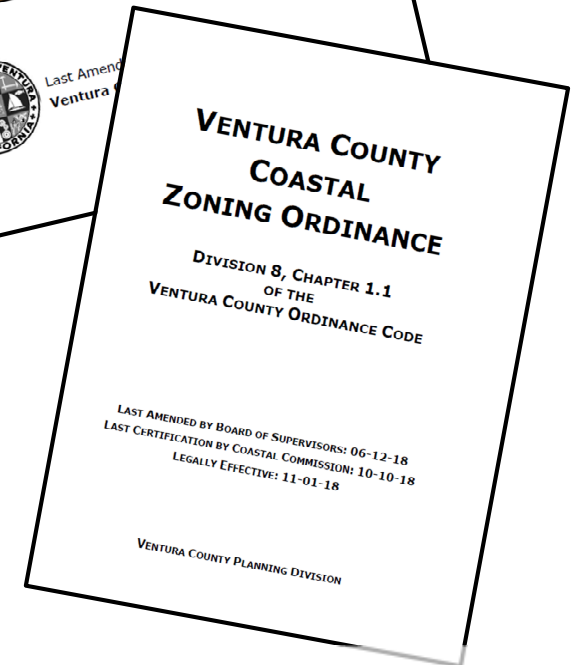
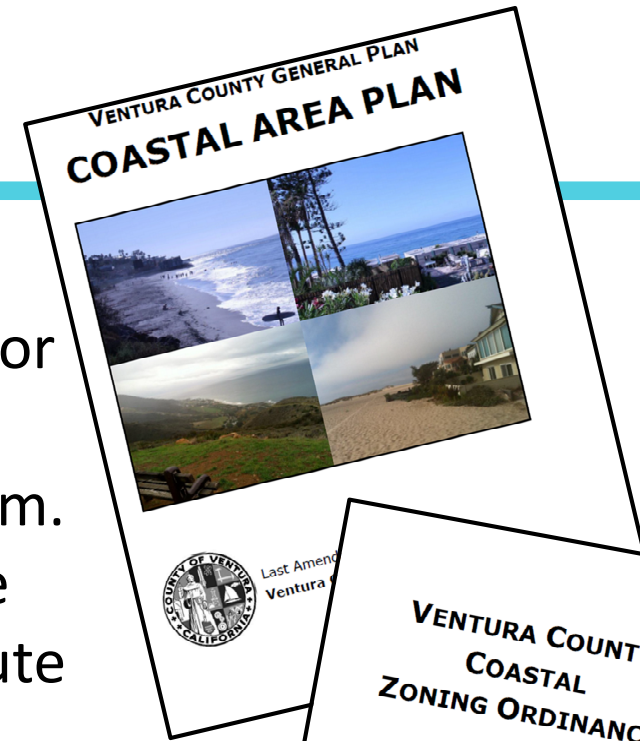


BEACON meeting, November 20, 2020

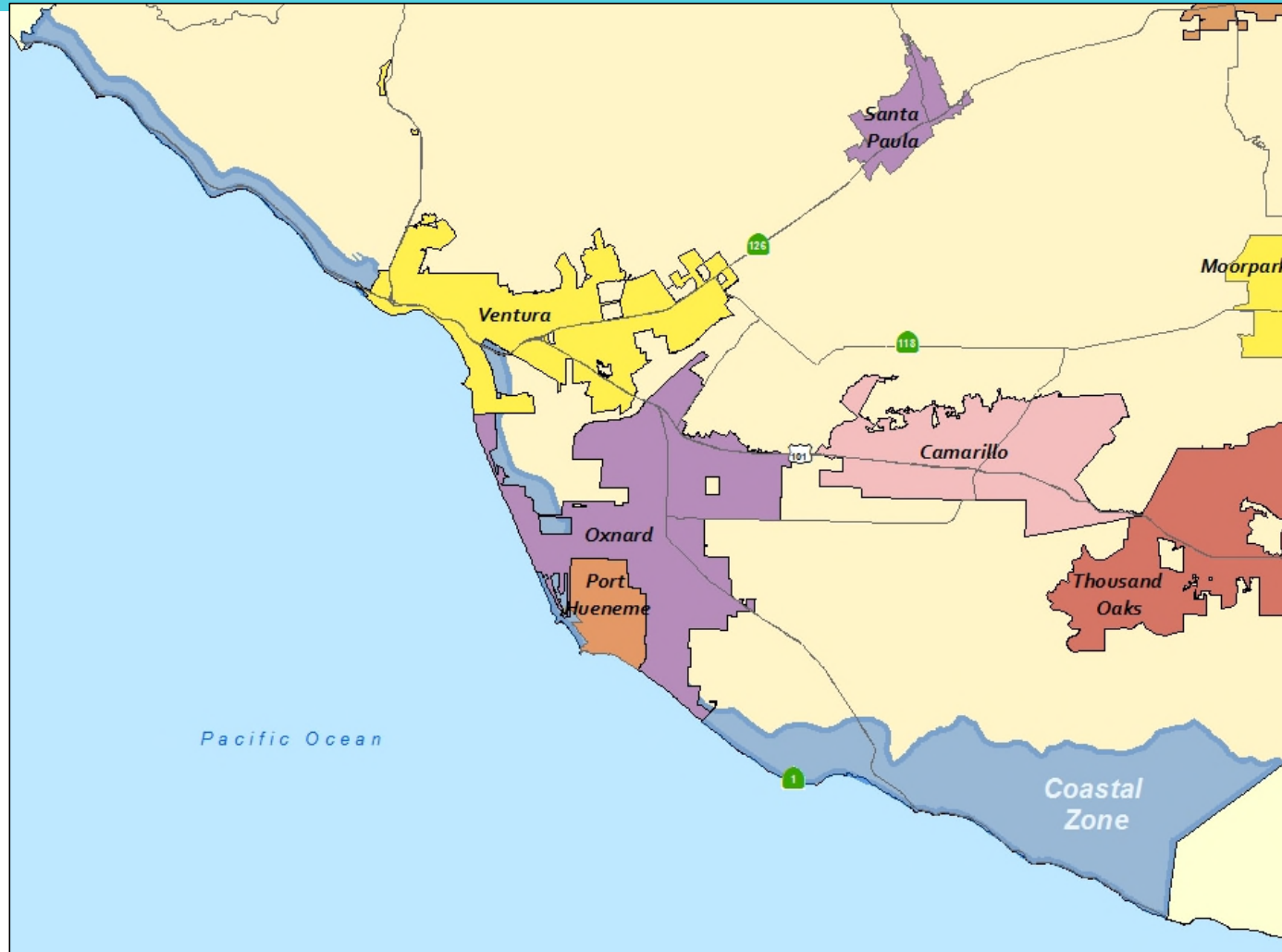
PLANNING CONTEXT



- In 1976, the California Legislature enacted the Coastal Act, which created a mandate for coastal jurisdictions to manage coastal resources through the Local Coastal Program.
- Ventura County's Coastal Area Plan and the Coastal Zoning Ordinance together constitute the "Local Coastal Program" (LCP) for the unincorporated portions of Ventura County's coastal zone.
- The Coastal Area Plan is also a subset of the General Plan



UNINCORPORATED COASTAL ZONE





VC RESILIENT PROJECT SCHEDULE

- Vulnerability Assessment, December, 2018
- Planning Commission Work Session, March 2019
- Adaptation Report, August 2019
- Board of Supervisors Work Session, September 2019
- *LCP Policy Development Underway*
- *Coastal Commission Staff Review, Winter 2021,*
- *Public Outreach, Spring 2021*
- *Planning Commission and Board of Supervisors Hearings*

Phases I and II were Funded through federal, State grants, as well as Board of Supervisors matching funds.

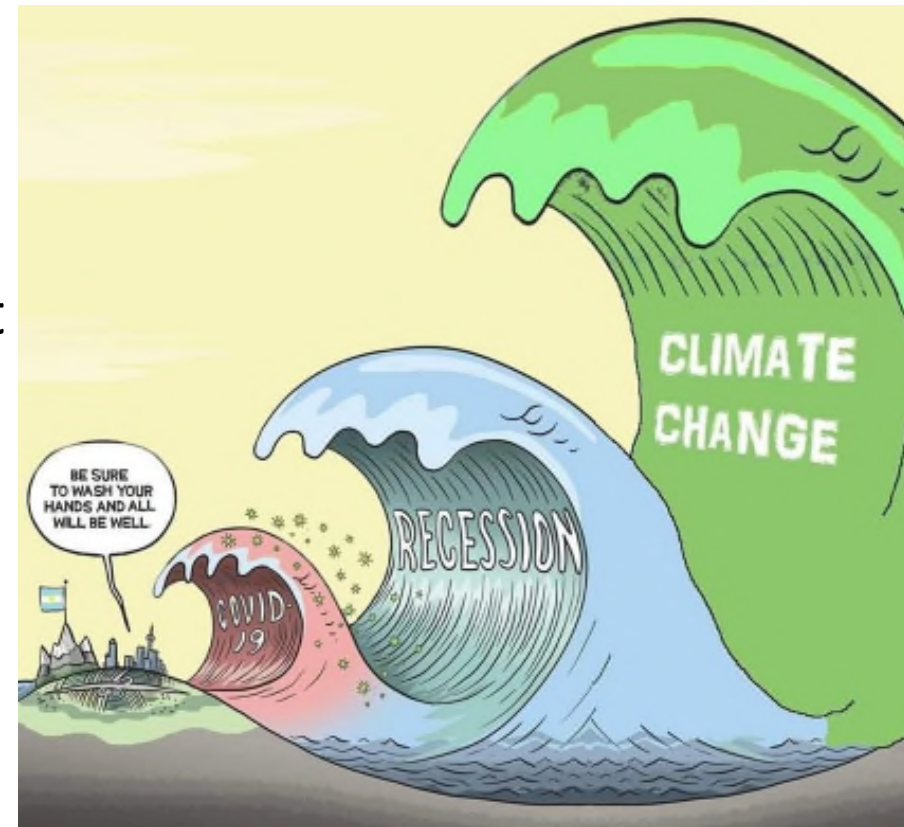


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WHY PLAN FOR SEA LEVEL RISE NOW?

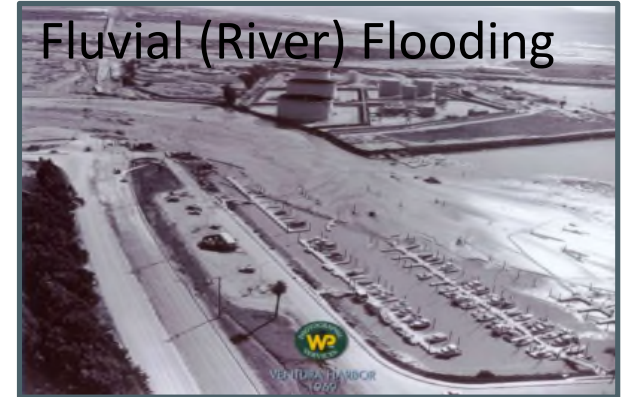
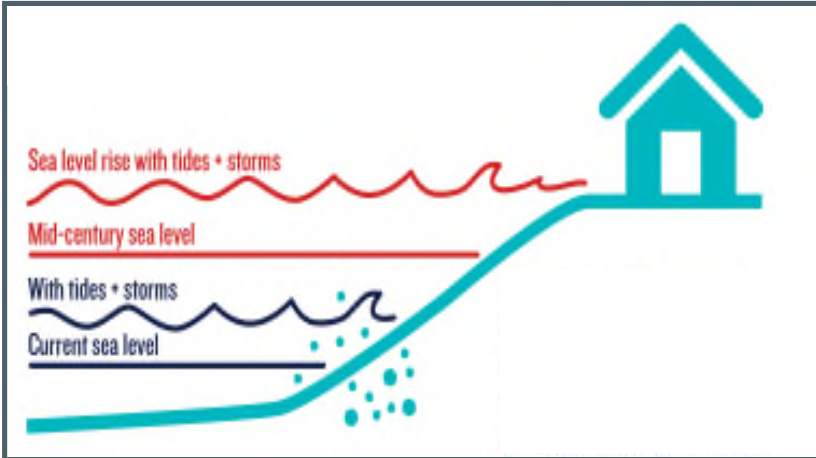


- Become sea level wise!
 - Preparation now may be less costly than waiting
 - The development “lifetime” of structures can exceed 75+ years
- Existing coastal hazards already pose a threat
 - Coastal erosion, high tides, and coastal storm events
 - Sea level rise adds increased wave heights
- Support long-term coastal resiliency
 - State mandate and guidance; grant funding



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SEA LEVEL RISE AND COASTAL HAZARDS TO EVALUATE



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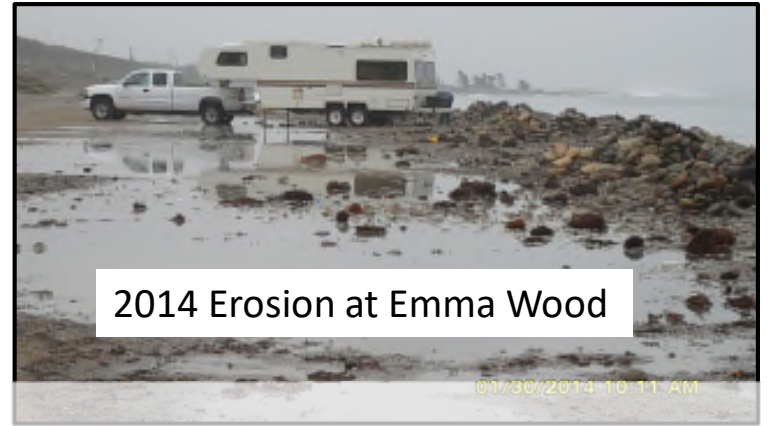
HISTORICAL COASTAL HAZARDS: N. COAST



2016 Flooding at Rincon Point



Storm Waves at Faria



2014 Erosion at Emma Wood

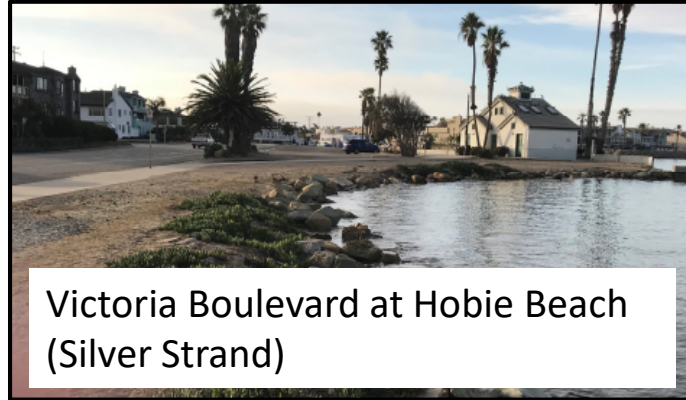


HISTORICAL COASTAL HAZARDS: C. COAST

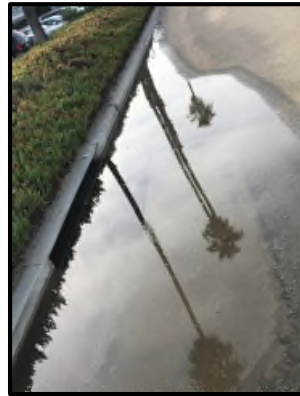


Flooding Near McGrath

Gonzales at Harbor, 1969



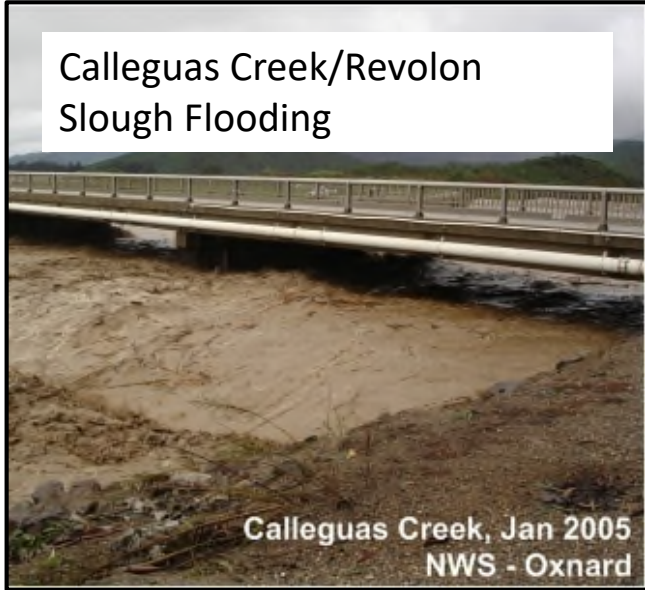
Victoria Boulevard at Hobie Beach
(Silver Strand)



2017 Storm Flooding at Ocean Dr. @
Los Feliz St. (Hollywood Beach)

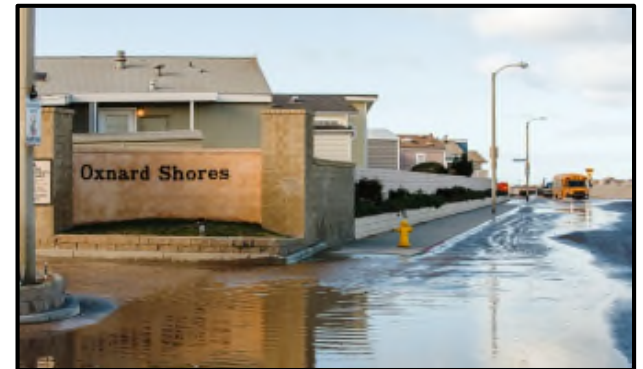


HISTORICAL COASTAL HAZARDS: S. COAST



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HISTORICAL COASTAL HAZARDS: NEIGHBORING JURISDICTIONS

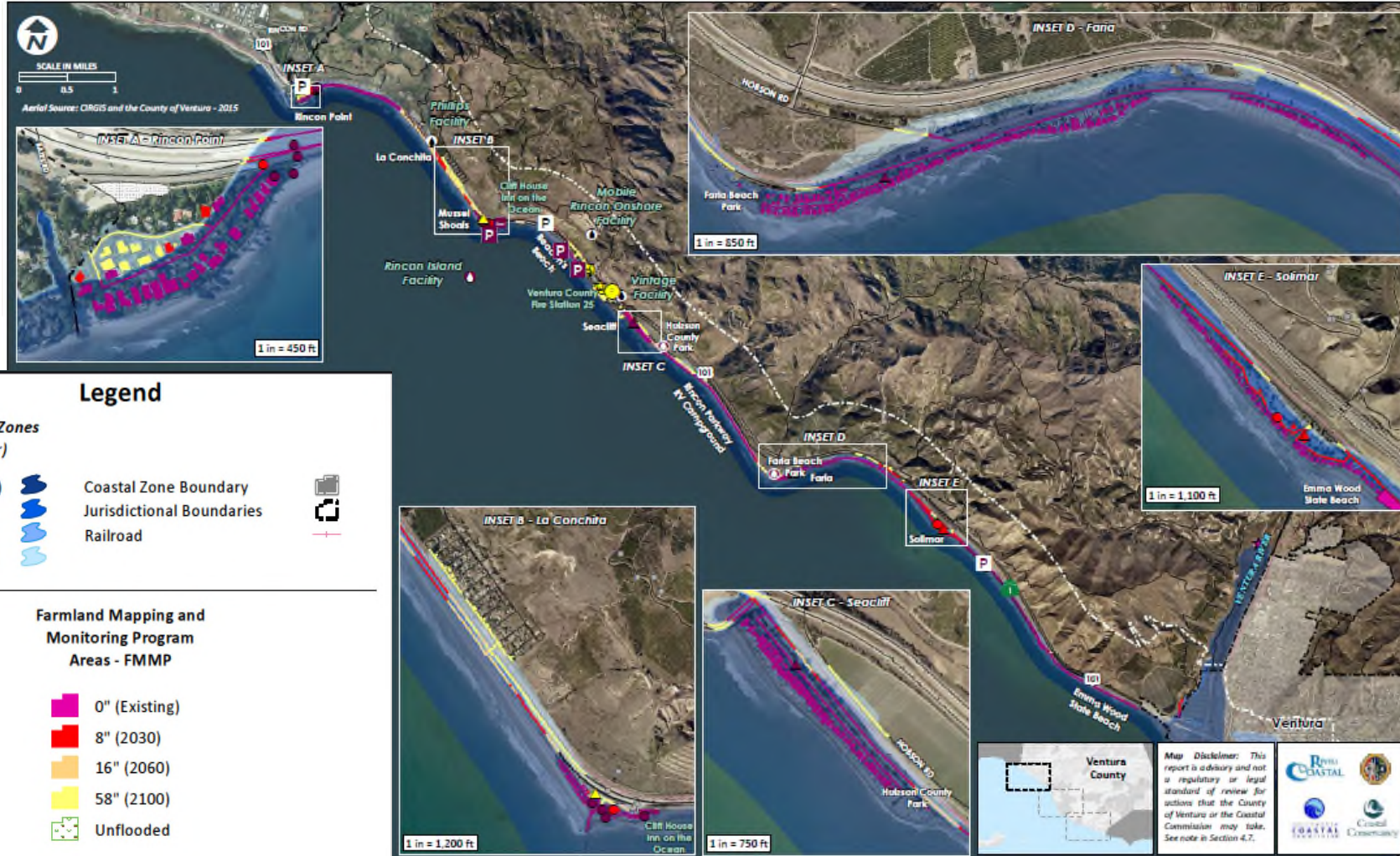


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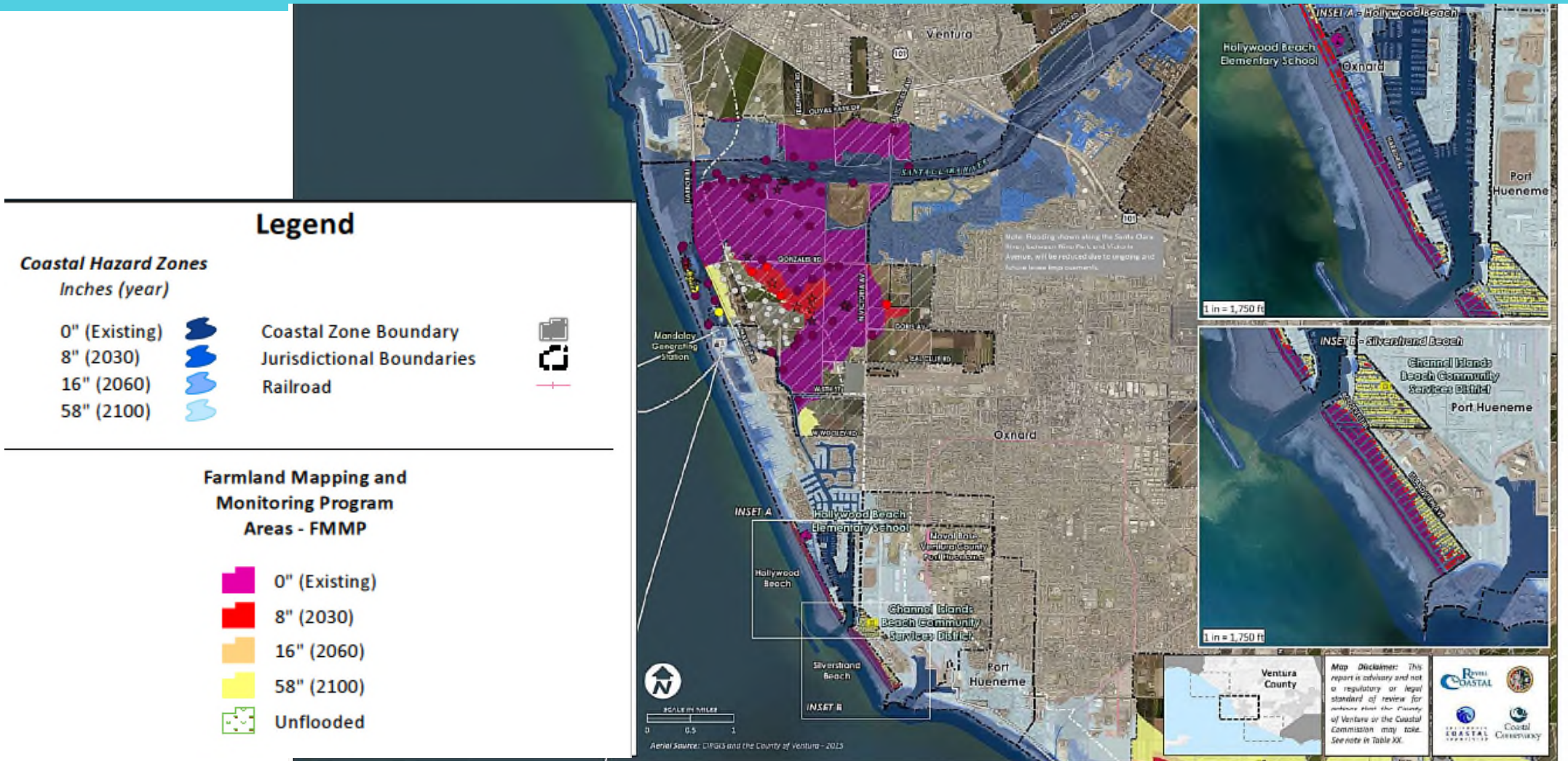
MAPPED VULNERABILITIES: N. COAST



Figure ES-1 Executive Summary: North Coast



MAPPED VULNERABILITIES: C. COAST



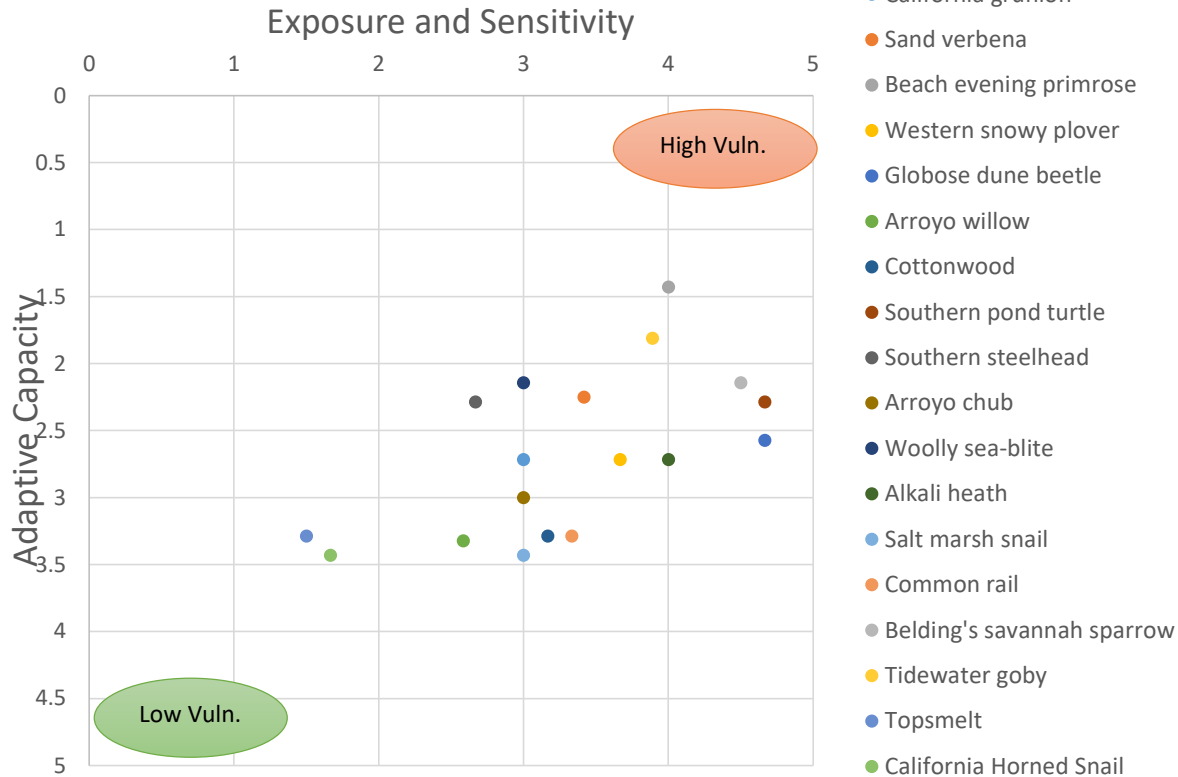
MAPPED VULNERABILITIES: S. COAST



VULNERABLE NATURAL RESOURCES



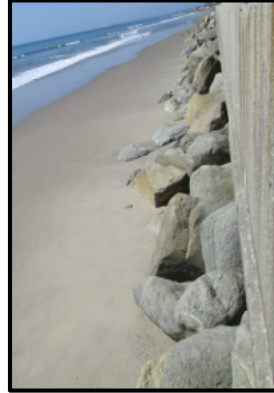
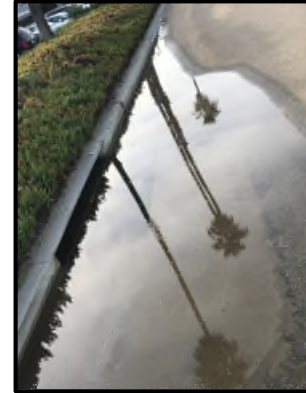
Southwestern pond turtle



Metrics	Score	Confidence
Sensitivity	4.5	High
Exposure	5	High
Adaptive Capacity	2.29	High
Vulnerability	3.06	High



HIGH PRIORITY PUBLIC-RELATED USES



ADAPTATION STRATEGIES



Wait and See



Accommodate



Hybrid



Protect



Inland Relocation



TYPES OF ADAPTATION



Natural: Existing features that form and change over time with the environment

Structural: Engineered systems designed to reduce flooding and erosion

Nature-Based: Engineered systems that mimic natural approaches

Regulatory: Includes policies and development standards



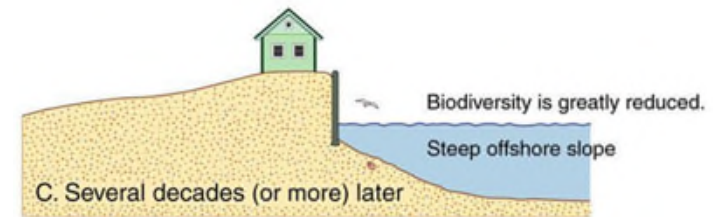
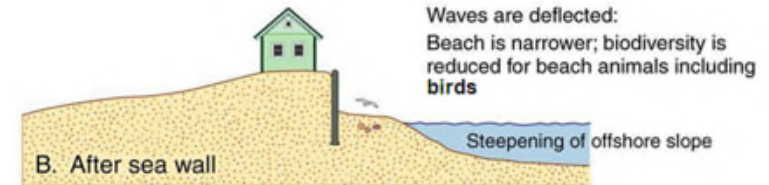
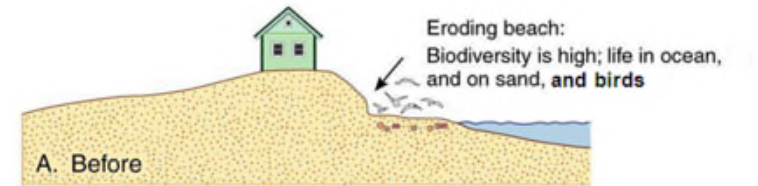
ADAPTATION - TRADEOFFS



- Construction Costs
- Escalating Maintenance Costs
- Ecology
- Recreation
- Views
- Aesthetics



Armor impacts beaches and views



ADAPTATION STRATEGIES: COUNTYWIDE



- Coastal Hazard Overlay Zone
- Real Estate Disclosures
- Standards to Elevate New Development
- Interjurisdictional Conservation Planning for Vulnerable Focal Species
- Adaptive Management Planning for Sensitive Habitats
- Voluntary Managed Retreat: Purchase with Lease Back, Easements
- Regulatory Mechanisms: Buffers, Repetitive Loss, Mitigation
- Sediment Management
- Opportunistic Sediment Placement
- Bridges, Roads, and other Major Infrastructure Design



ADAPTATION: NATURAL RESOURCES



Estuary Management Plans for Sea Level Rise :

- Stakeholders identify SLR adaptation and monitoring strategies
- Identify triggers for implementation of strategies/policies or management activities

Identified Estuaries:

Rincon Creek, Ventura and Santa Clara Rivers, Sycamore Creek:

Long term adaptive capacity:



Stakeholders for the Santa Clara River:

1. City of Oxnard
2. City of Ventura
3. Ventura County
 - Watershed Protection District
 - Vector Control Program
 - Planning Department
4. Chumash Nation Tribe
5. California State Parks
6. Adjacent Property Owners



7. Regional Water Quality Control Board
8. Groundwater Sustainability Agencies
9. California Department of Fish and Wildlife
10. US Fish and Wildlife
11. US Army Corps
12. California Coastal Commission
13. California Coastal Conservancy
14. Santa Clara River Watershed Committee and other organizations/coalitions

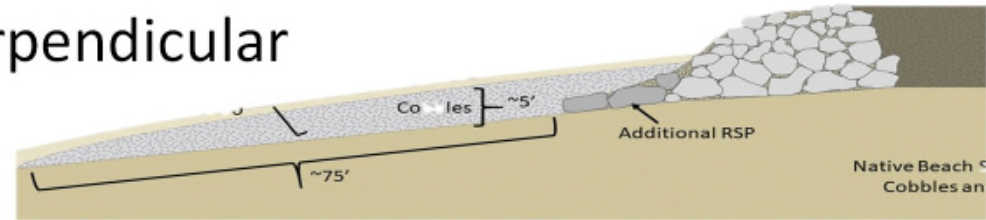


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ADAPTATION STRATEGIES: NORTH AND SOUTH COAST

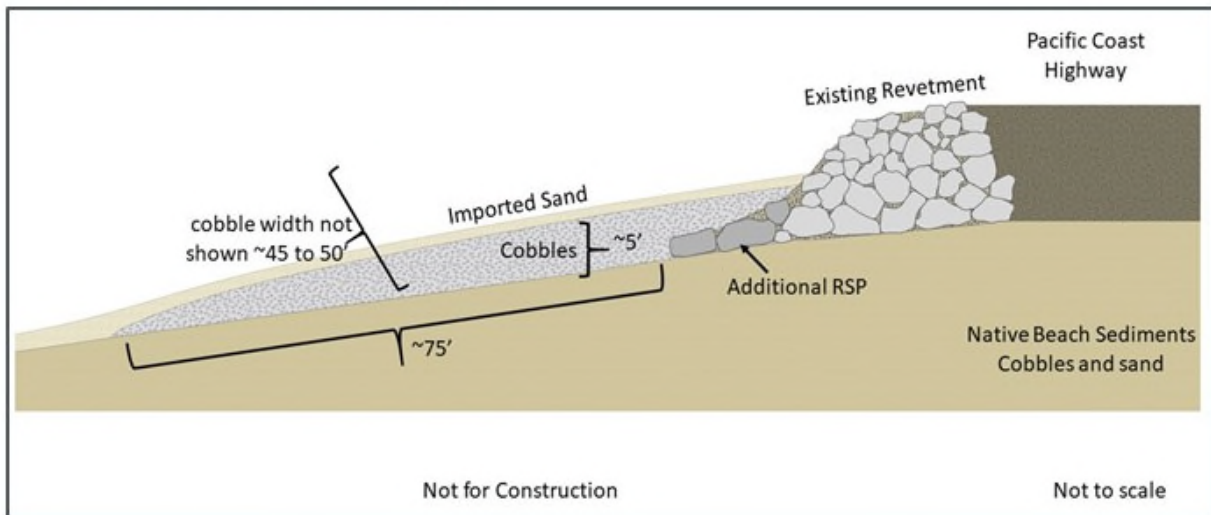


- Includes Countywide Strategies Listed Above
- Continued Use of Armor
- Standards for Bluff Setbacks
- Continued Use of Pilings
- Sand Retention with Non-Permanent Perpendicular Cross-Shore Features
- Sediment Bypassing Around Point Mugu
- Horizontal Levees (Ormond Beach and Revolon Slough/Calleguas Creek areas)



EPHEMERAL COBBLE GROIN

Innovative new sea level rise “Adaptation Strategy” specifically designed for narrow Ventura County beaches: Sand Retention with Non-Permanent Perpendicular Cross-Shore Features (i.e. Ephemeral Cobble Groin).



ADAPTATION STRATEGIES: CENTRAL COAST



- Includes Countywide Strategies Listed Above
- Re-Establish Native Coastal Dune Habitat
- Dredge Sediment for Beach
- Storm Drain Improvements for Streets at Hollywood Beach and Silverstrand Communities

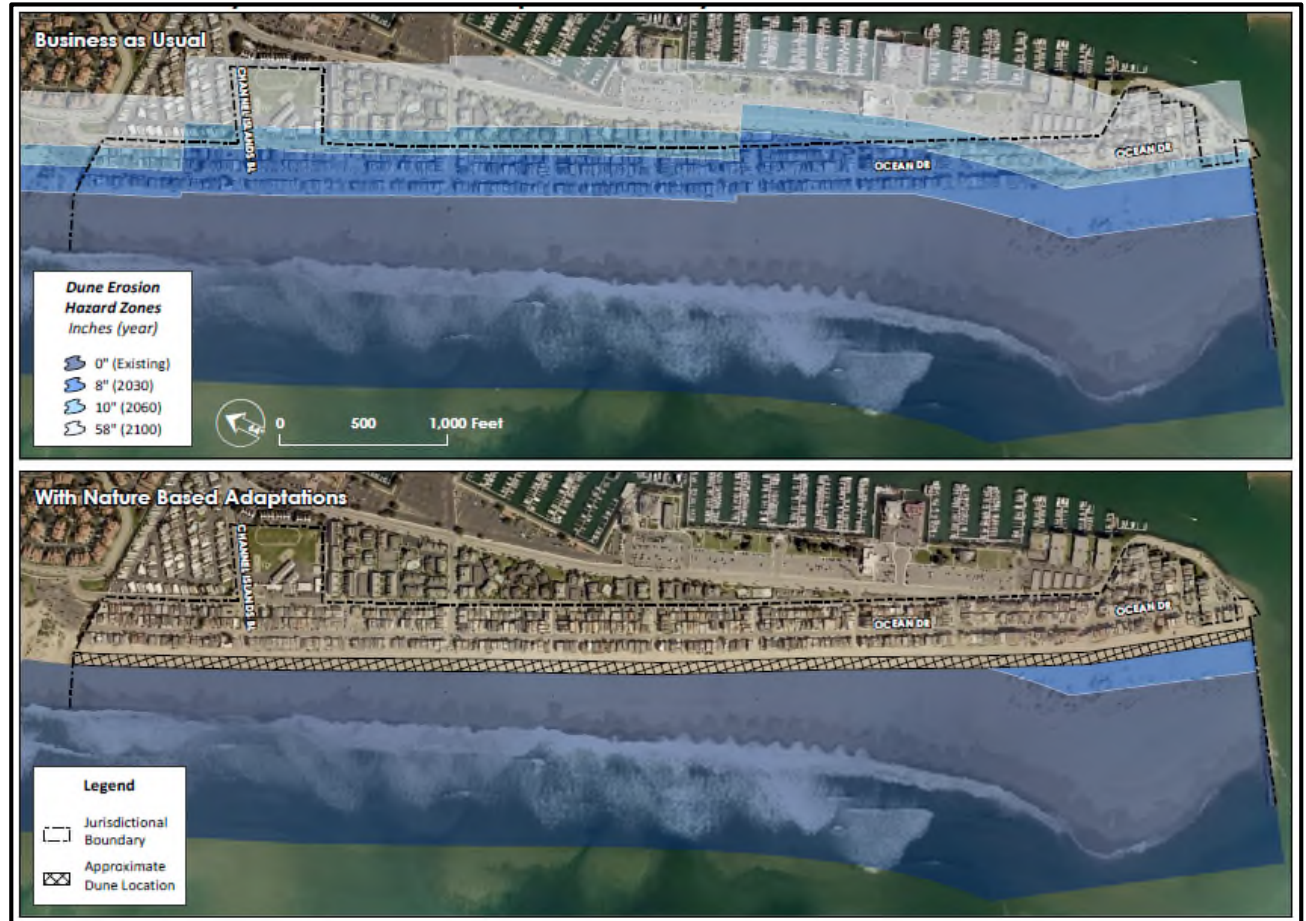
Map of Potential “Groundwater Daylighting” at Silverstrand



ECONOMIC ANALYSIS OF DUNES AT HOLLYWOOD BEACH



- \$2.1 to \$25.7 million to build and maintain dunes along Hollywood Beach for about 20 years
- \$41 to \$207 million in flood damages avoided
- \$368 to \$712 million in losses from erosion avoided
- Doesn't include storm clean-up costs



ADAPTATION PATHWAY EXAMPLE : HOLLYWOOD BEACH



Before year 2030 (8''):

- Conduct dune restoration near the Channel Islands Harbor jetty
- Improve drainage at Ocean Drive, inland of the dunes
- Begin requiring new development to be designed to accommodate flooding

Between years 2030 (8'') and 2060 (16''):

- If dune restoration is successful, extend along more shoreline, possibly in coordination with City of Oxnard
- Plan stormwater system improvements for local streets

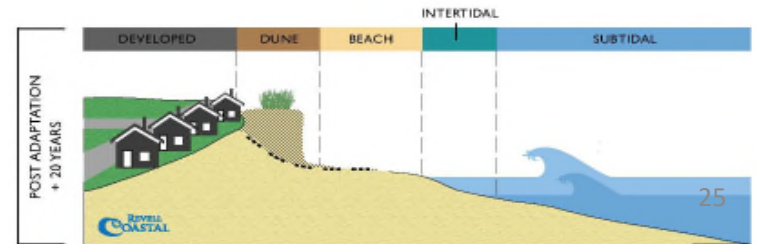
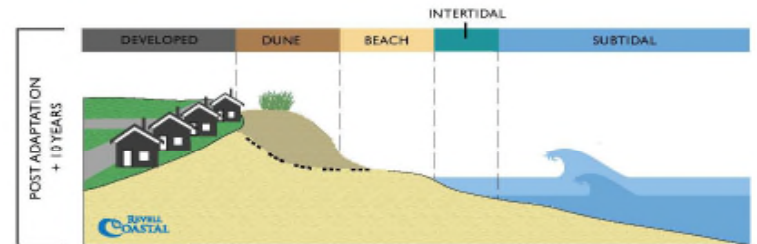
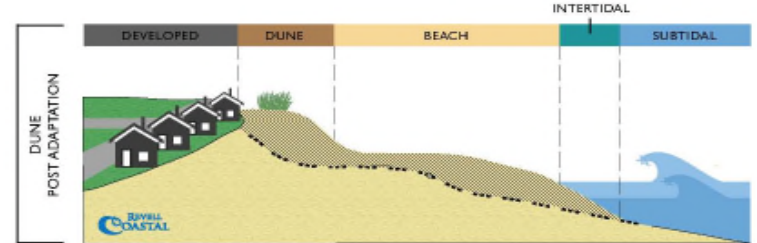
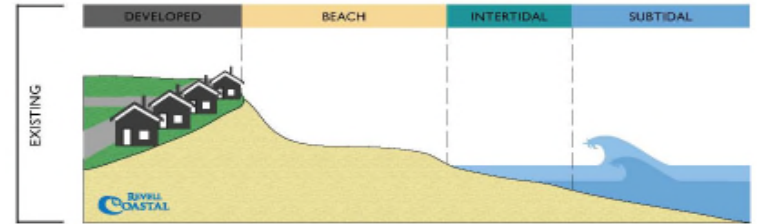
Between years 2060 (16'') and 2090 (or sooner if the dunes are eroded):

- Replace the restored dunes with cobble berm-based dunes
- Add storm drain system with pumps
- Implement Harbor Improvements

By approximately 2100 (5'):

- If erosion continues, review dredging practices
- Install perpendicular structures to retain sand, such as groins or cobble-berms

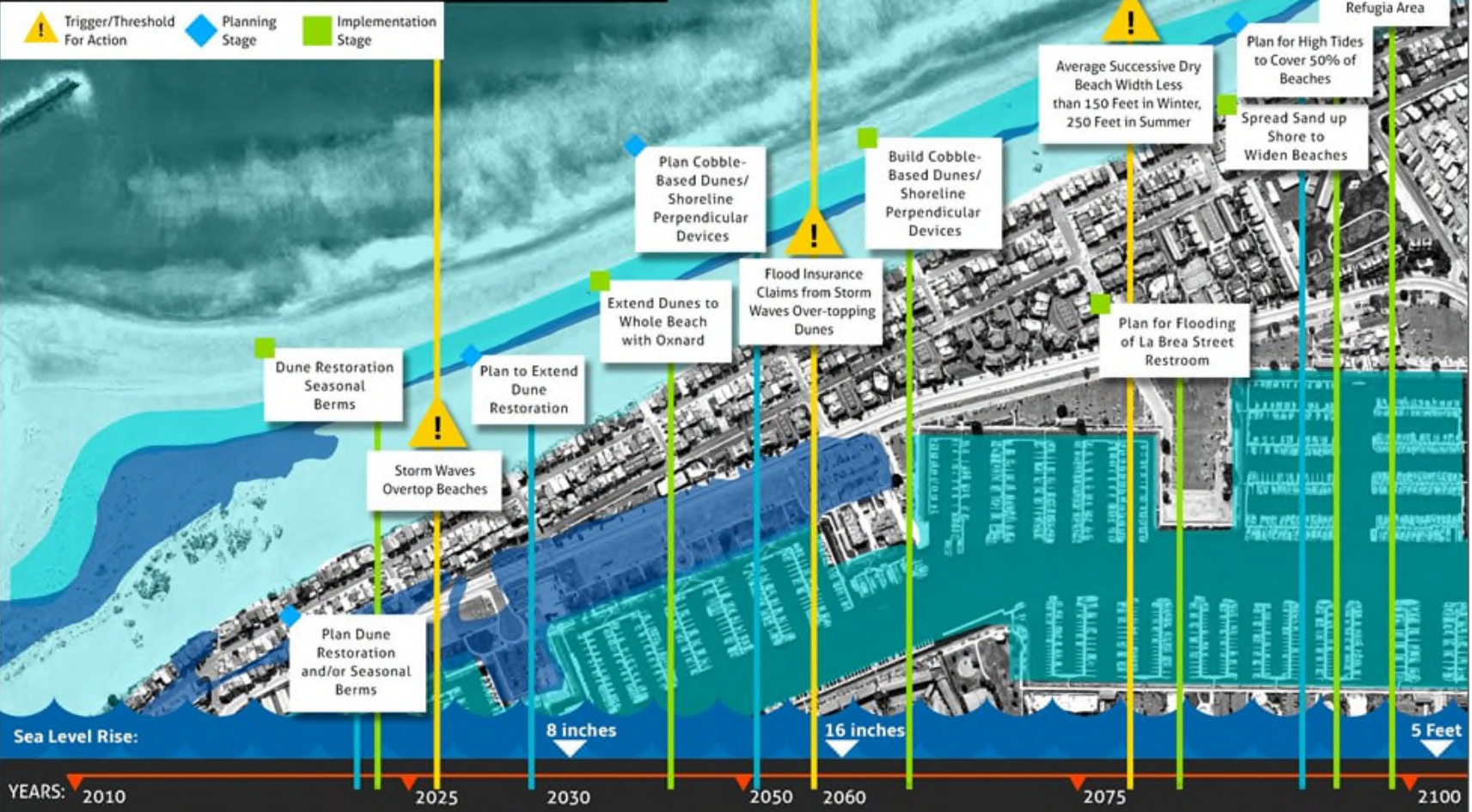
DUNE



ADAPTATION PATHWAY



Implementation Timeline Case Study: Hollywood Beach Sediment Management



MONITORING: COASTAL TRAIL



Coastal Trail,
July 2017



Coastal Trail,
January 2020

Coastal Storm Damage, October 2018





FIGURE 4.1-3: NORTH COAST
Segments N2 (partial) and N3 of the Coastal Trail

For details of segments, see Table below

LEGEND

- Existing Coastal Trail Components**
- Multi-modal
 - Bicycle Serving
 - Hiking/Walking
 - Seasonal/Tidal Walking
- Planned Coastal Trail Components**
- Multi-modal
 - Bicycle Serving
 - Hiking/Walking

GENERAL PLAN SUPPORTS ADAPTATION



2040 General Plan Update: Now Effective

PFS-C: The County shall conduct, and periodically update, Climate Change Impacts Monitoring reports to map locations of communication, energy, public service, transportation facilities, and infrastructure that are vulnerable to rising sea levels and coastal flooding.

PFS-D: Sea Level Adaptation Response Based on findings from the Climate Change Impacts Monitoring reports, *in cases where existing County facilities are found to be vulnerable to sea-level rise or coastal flooding, the County shall identify funding and create an action plan to protect, accommodate, or manage the retreat of County facilities to areas of higher elevation or reduced flood exposure. For facilities operated by other entities, the County shall work with these entities create an action plan to protect, to protect, accommodate, or manage the retreat of their facilities to areas of higher elevation or reduced flood exposure.*



GENERAL PLAN SUPPORTS BEACON



COS-2

To protect and conserve coastal beaches and sand dunes, proactively enhance coastal and marine resources, and respond to projected sea level rise.

COS-2.1

Beach Erosion

The County shall strive to minimize the risk from the damaging effects of coastal wave hazards and beach erosion and reduce the rate of beach erosion, when feasible. (MPSP, RDR, IGC)

COS-2.2



Beach Nourishment

The County shall support activities that trap or add sand through beach nourishment, dune restoration, and other adaptation strategies to enhance or create beaches in areas susceptible to sea-level rise and coastal flooding. (MPSP)

COS-2.3

Coastal Regional Sediment Action Committee

The County should work with the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), Ventura Port District, Channel Islands Harbor, cities, and the Navy to identify issues and establish common goals and objectives regarding sediment management, as well as to identify resources to meet defined goals. (IGC)





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Questions?

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