

# Coastal Wetlands

Adaptation Benefits of  
Carbon Sequestration Projects

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# Paris Agreement on Climate

- Signed by 195 nations. California and subnational entities played a strong role.
- Goal to hold global temperatures below 2°C relative to pre-industrial levels with an ambitious target of 1.5°C.
- Sea-level will continue to gradually rise under this target, though the potential of catastrophic change are reduced.
- Elements:
  - Mitigation and adaptation needed
  - Inclusion of forests and soils
  - Country commitments to action
  - Financing and technical support to developing countries

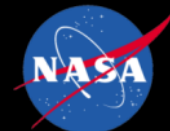
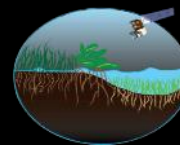


# Connecting the dots on blue carbon and other wetland ecosystems...

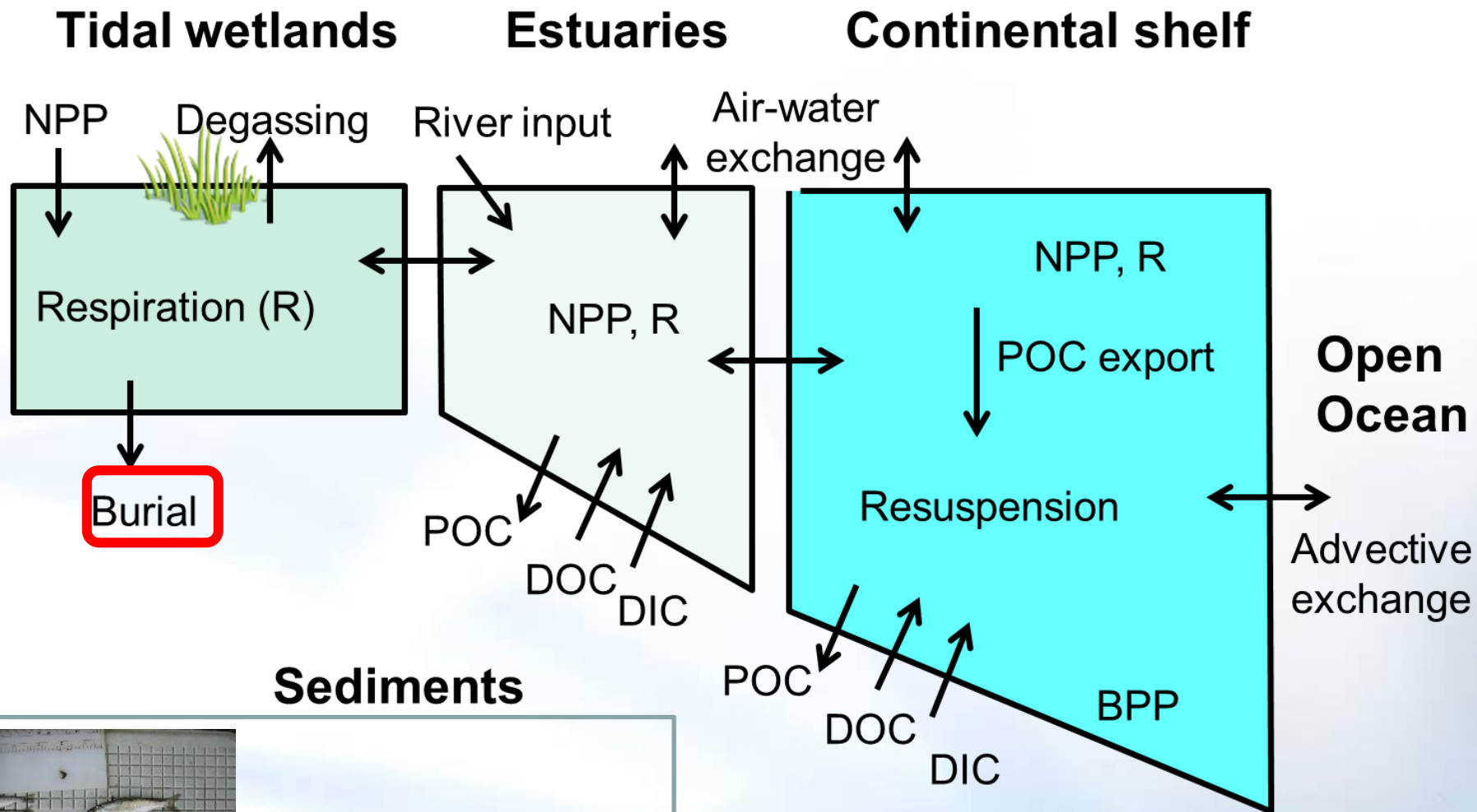
## Qwuloolt Wetland Restoration Project

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- An aerial photograph of a wetland restoration project. A winding waterway flows through a flat, green landscape. In the center, two orange excavators are working on a muddy bank. The sky is overcast and grey.
1. *Components of an integrated multi-use landscape*
  2. *Integral to landscape connectivity. carbon and water flows and storage*
  3. *Climate mitigation and adaptation*
  4. *Natural Infrastructure and flood risk reduction*
  5. *Sustainable livelihoods and economies*
  6. *Ameliorating local ocean acidification*

# Carbon fluxes and storage



## "Blue" Carbon Monitoring System

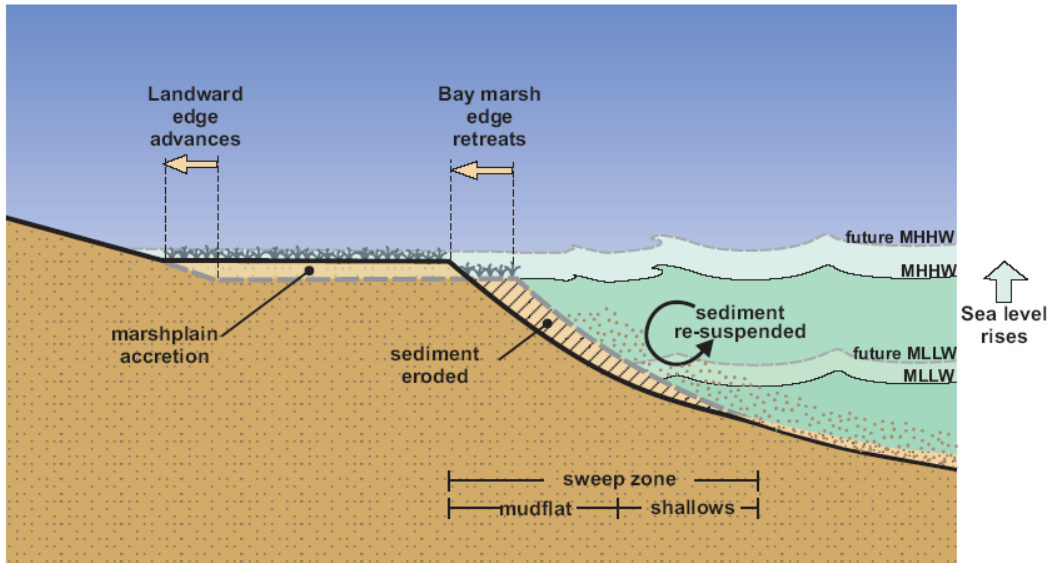


### Sediments



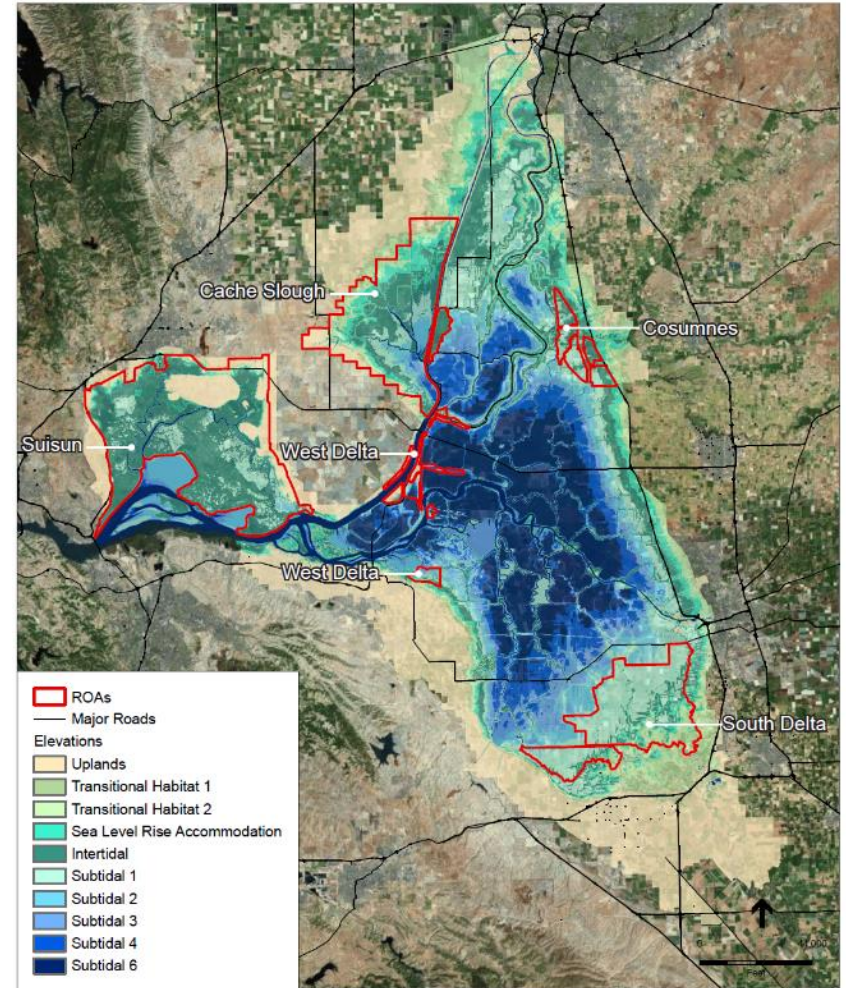
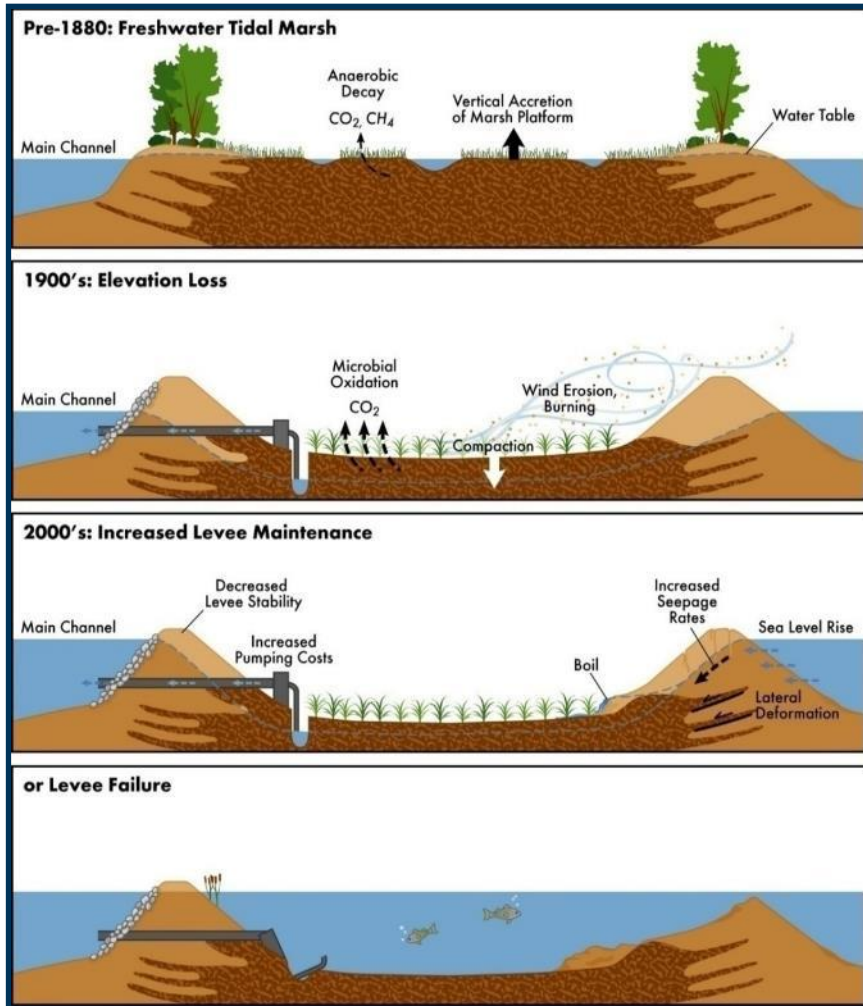
Photo: Jeff Opperman.  
Research by Carson Jeffres

# Moving Baselines



- Plan for Sea-Level Rise
- How to manage lands that will flood in the future?

# The Delta: A Landscape Looking for a Sustainable Future



SOURCE:

DWR 2007 LIDAR, ESA-PWA 2012

Bay Delta Science Conference,

Figure 1

Elevations and ROAs of Delta-Suisun Marsh Planning Area

# Carbon Capture Wetland Farm Bio-Sequestration

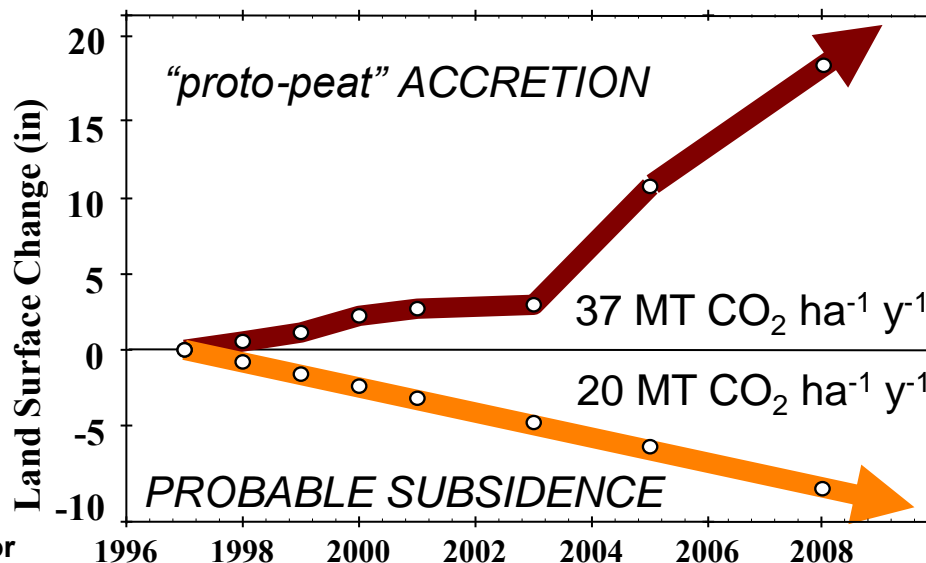
Stops peat oxidation and accretes “proto-peat” rapidly

Continuously submerged about 1 ft

Low oxygen conditions

Balance between plant growth and reduced decomposition

Average annual soil sequestration:  
1 kg C m<sup>-2</sup> yr<sup>-1</sup> in soil



U.S. Department of the Interior  
U.S. Geological Survey

Miller et al. 2008, SFEWS

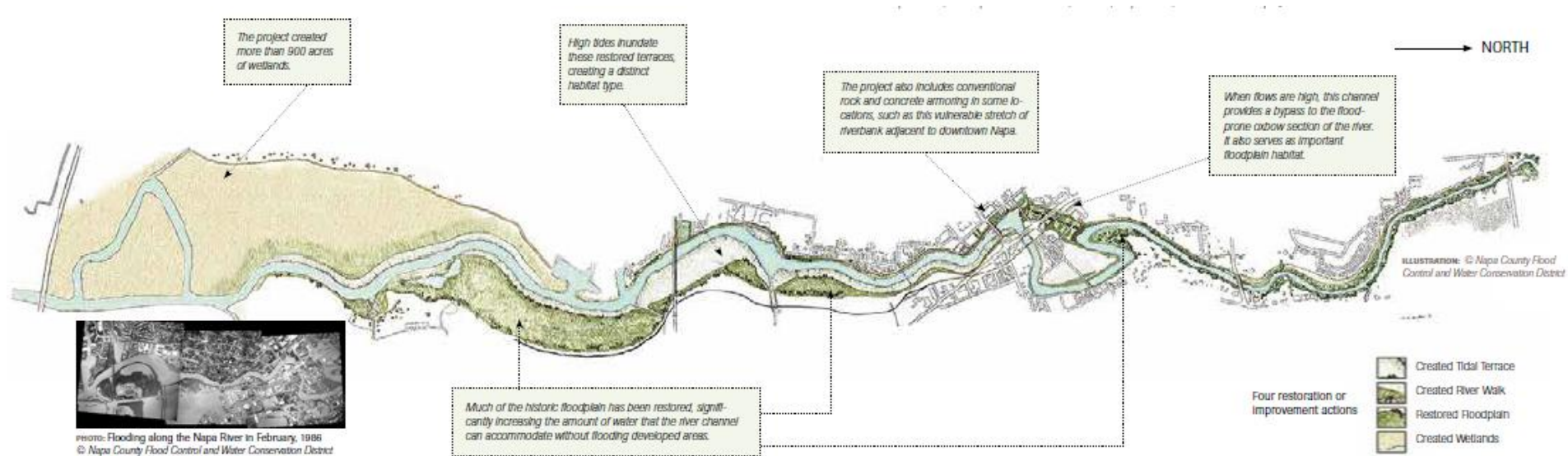
# Natural Infrastructure At All Scales



Liberty Island Conservation Bank

## Benefits:

- flood risk and cost reduction
- improved river ecosystem
- recovery of blue carbon ecosystems



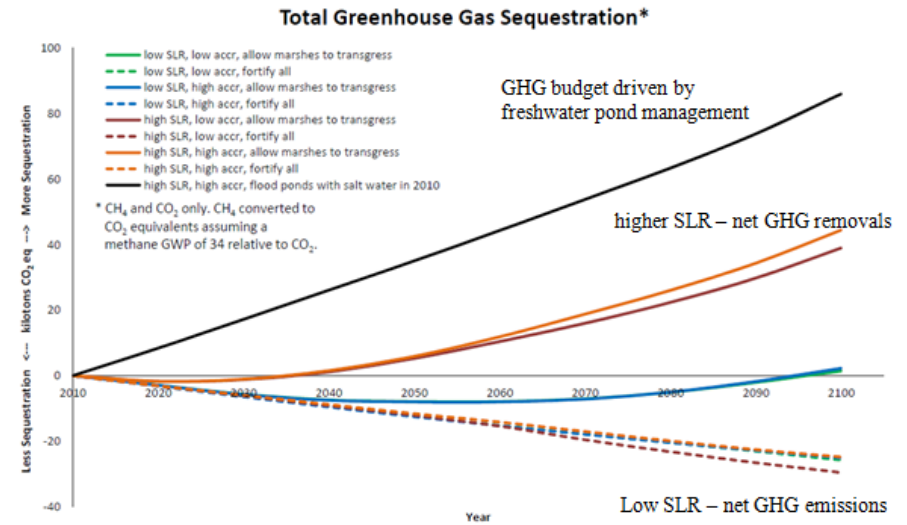
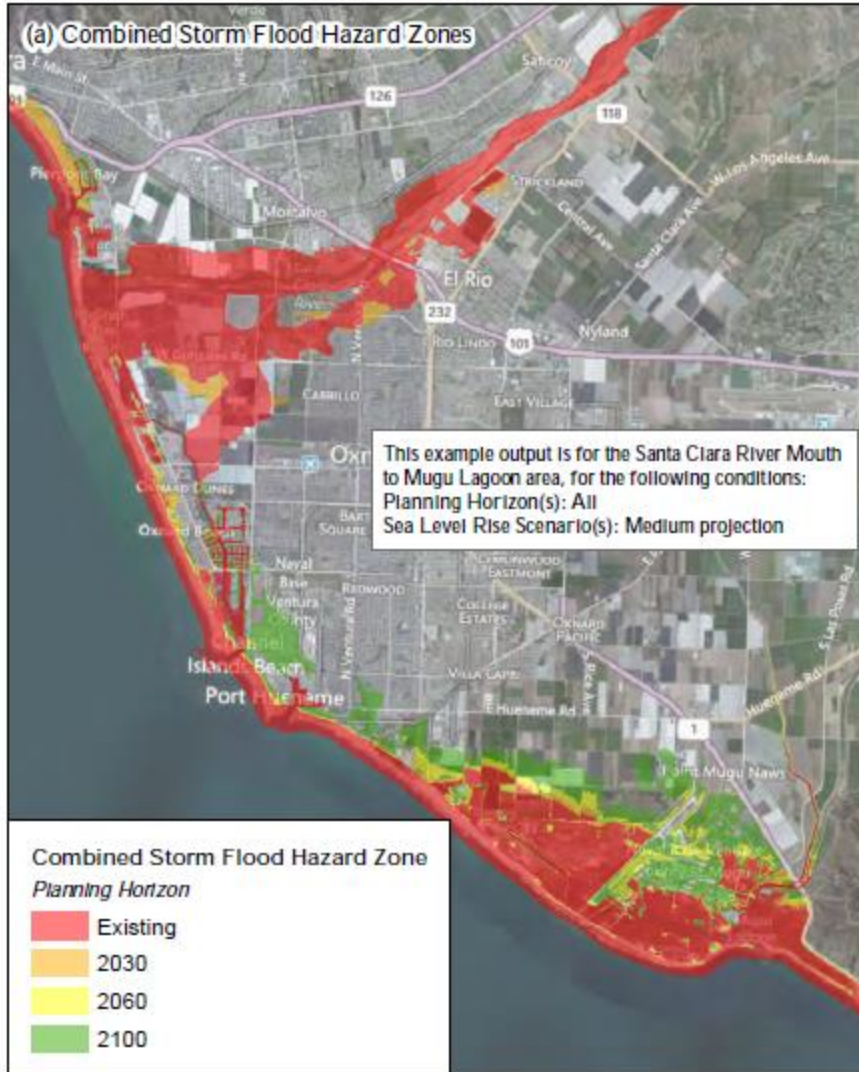
# Hamilton Wetland Restoration Project



- Beneficial use of 7 million cubic yards of dredged material
- Designed with resilience to SLR
- Habitat diversity and connectivity
- Living levees



# Ventura Coastal Resilience Project

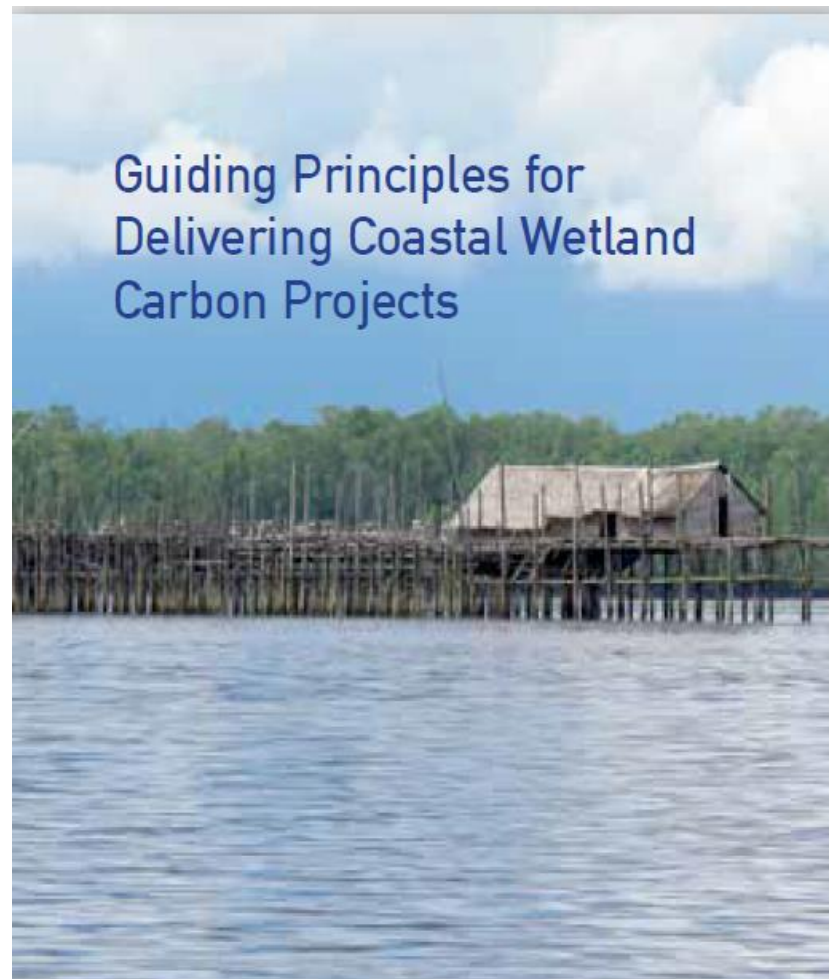


Model change in shoreline, flood risk  
 Develop management scenarios  
 AFOLU GHG assessment  
 Include wetland GHGs

1. Recognize value of wetland management
2. Establish examples of good practice
3. Achieve multi-use functional landscape
  
4. Adaptation to climate change
5. Incorporate GHG fluxes and storage

## Blue Carbon Interventions:

Policy adjustment  
Management actions  
Carbon finance projects



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