Coastal Impacts and Resilience at Naval Base Ventura County

Valerie Vartanian, NAVFAC

Environmental Division, NBVC

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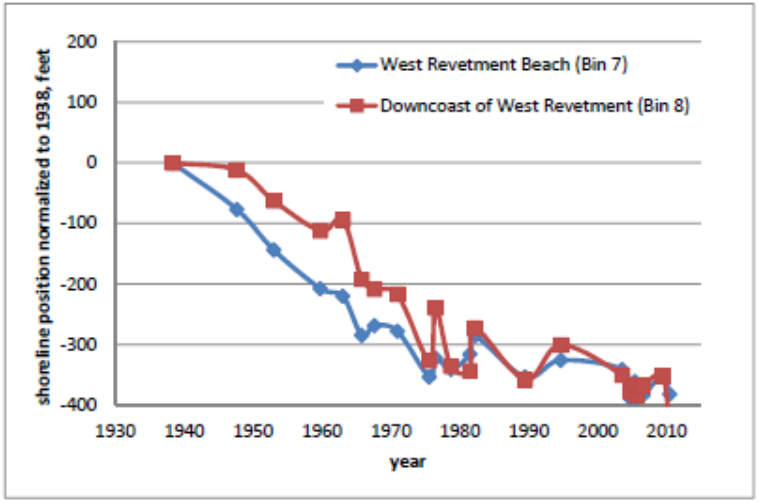
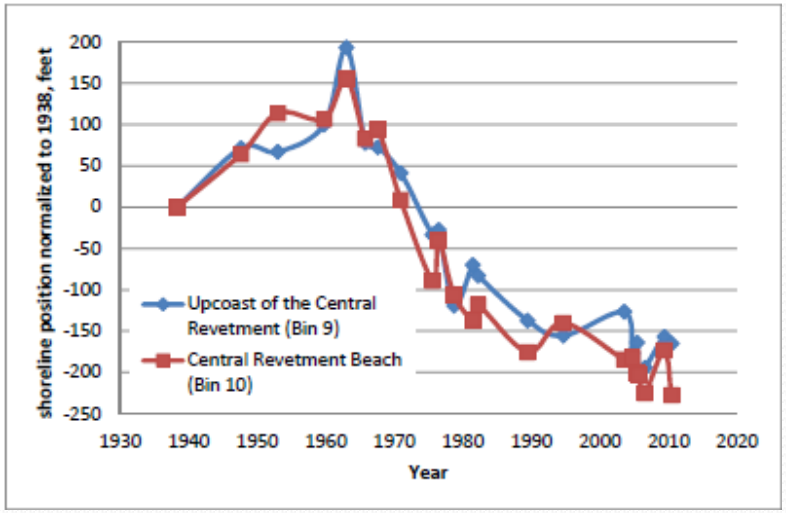
Naval Base Ventura County

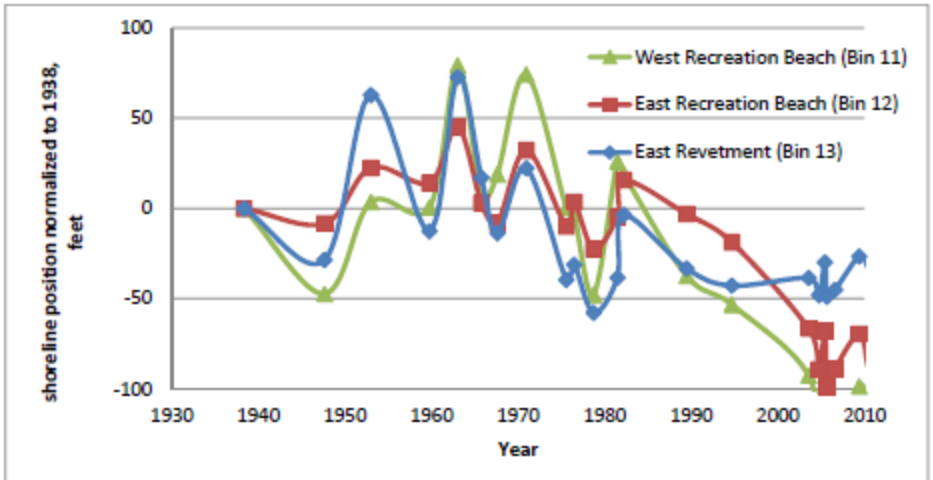
- How is the NBVC Point Mugu coastline changing?
- What are the impacts?
- NBVC resilience and adaptation strategies

Coastline Changes

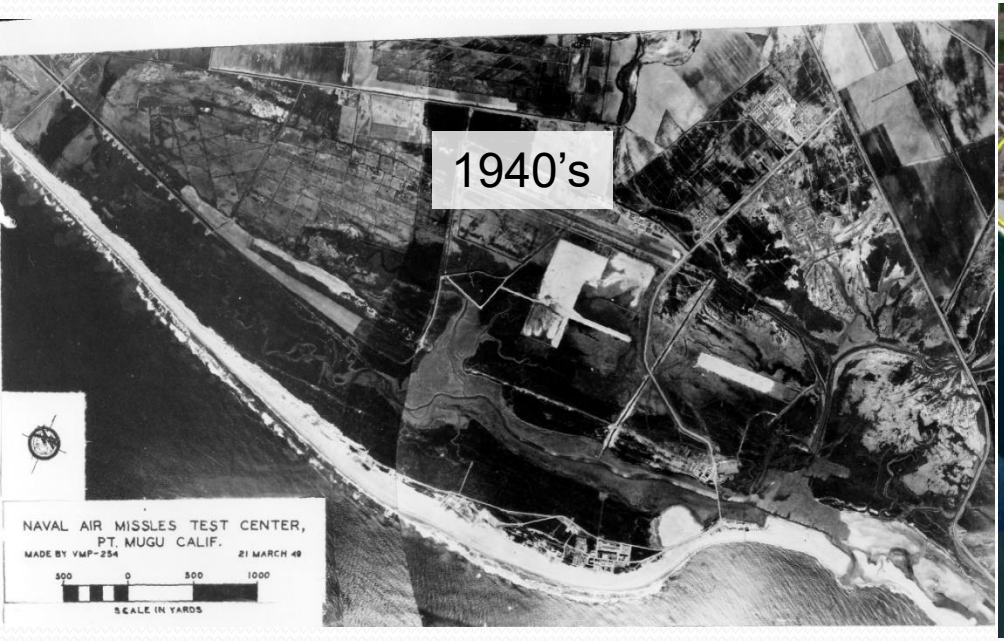
Disappearing Coastline

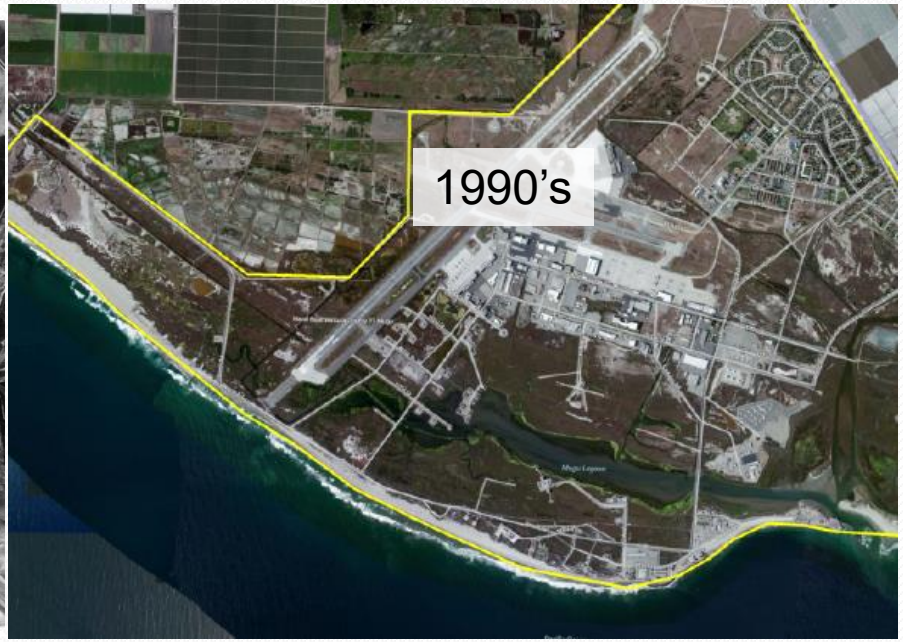




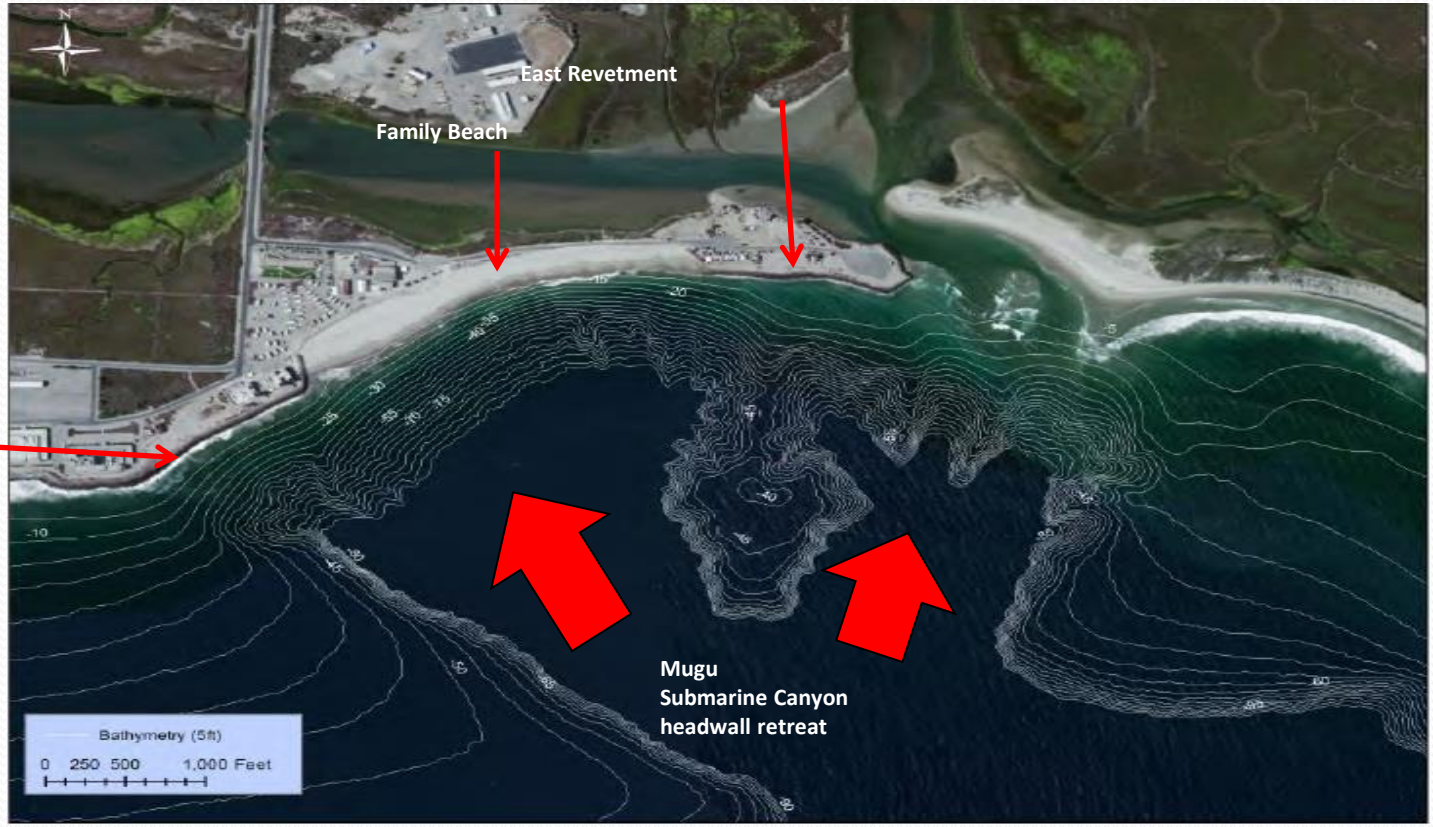


Then and Now


1940's
NAVAL AIR MISSLES TEST CENTER,
PT. MUGU CALIF.
MADE BY VMP-254
21 MARCH 49
500 0 500 1000
SCALE IN YARDS


1990's

Mugu Submarine Canyon



Impacts From Changes

NBVC Pt. Mugu - Impacts

Storm Events

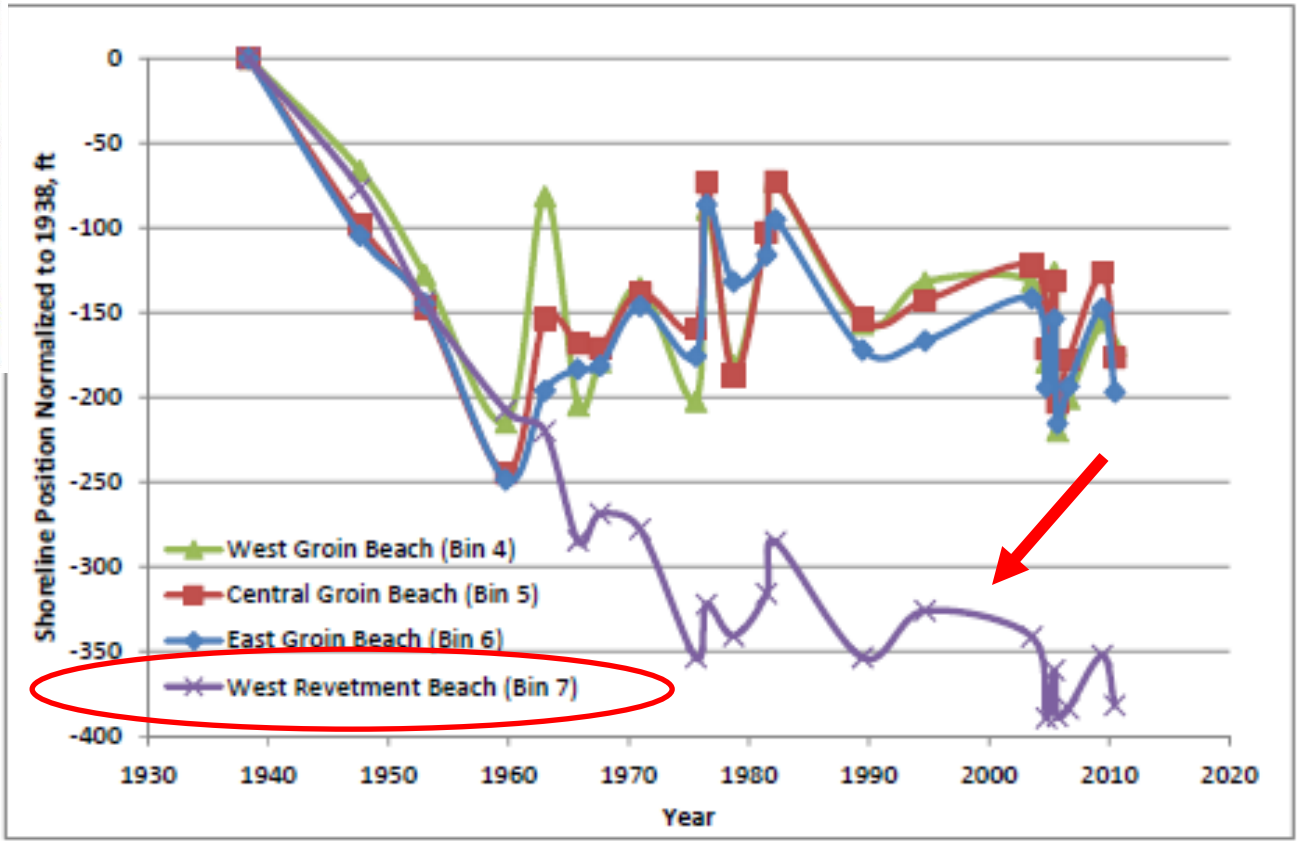
Flooding

Road Loss

Groin Field

Three groins (pink lines) constructed by the Navy in 1967 have stabilized the beach within and upcoast…

Down Coast from Groin Field

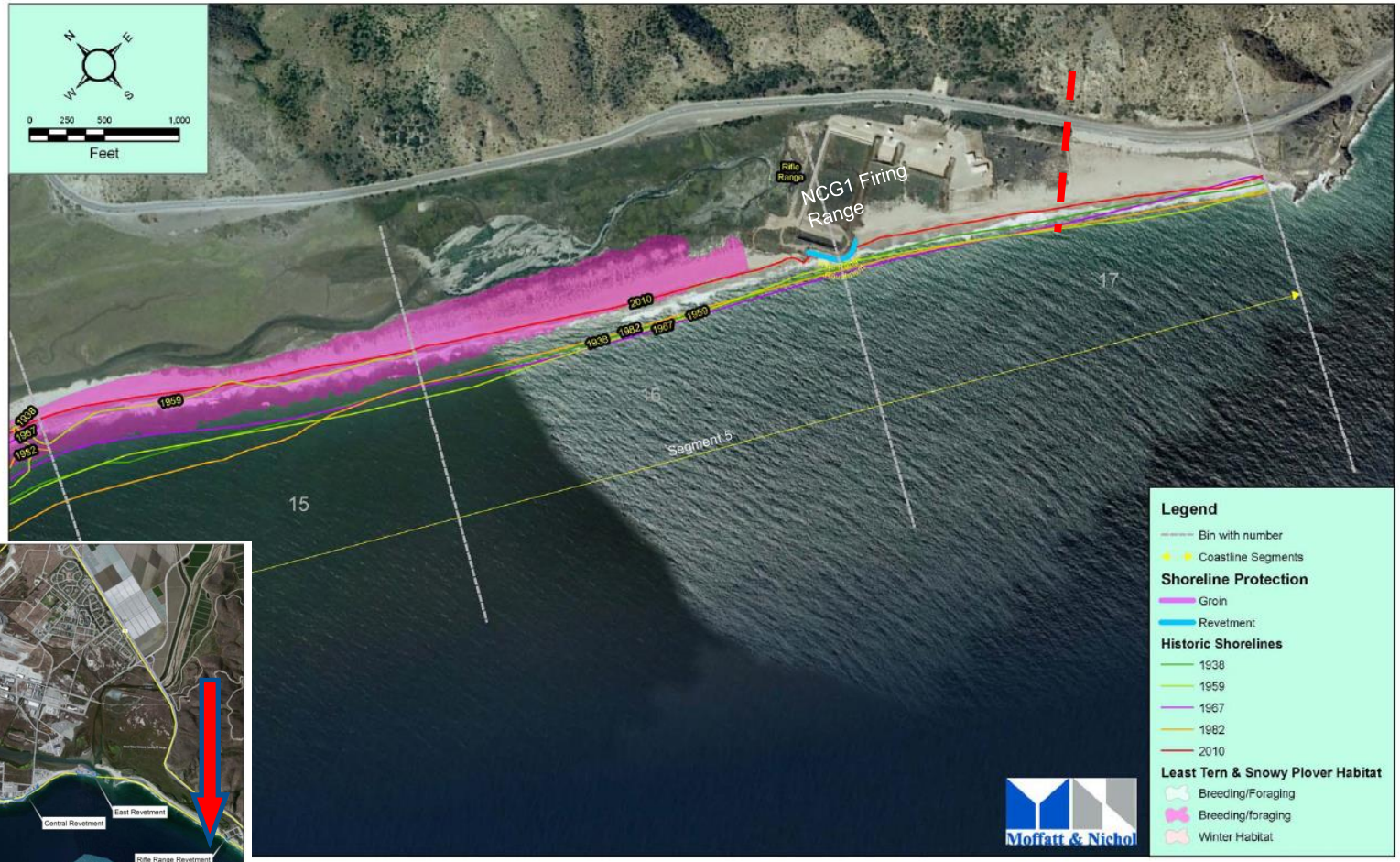


…however they also contributed to down coast shoreline retreat.

Central Revetment

Hurricane Marie Sep 2014

Firing Range



Sand Loss on Beach

Resilience and Adaptation

Shoreline Studies and Plans

- Scientific Studies: Shoreline Protection Study (2012) and Shoreline Protection Plan (2012) – Moffatt & Nichols
- Coastal erosion models, flood models
- Partnerships: The Nature Conservancy Coastal Resiliency Model & Support for Ormond Beach Restoration
- Adaptation/managed retreat plans
- REPI support for off base measures

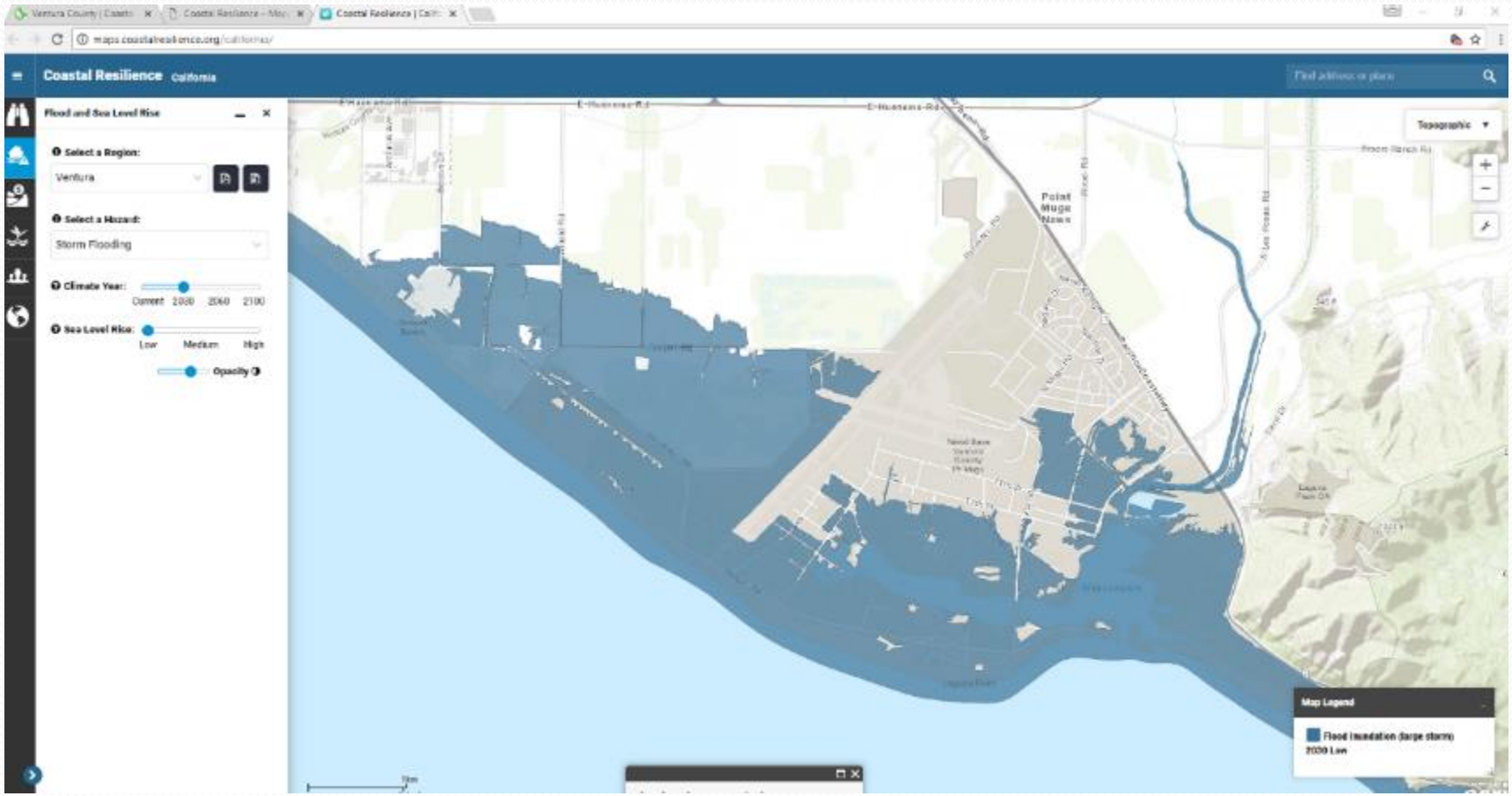
Programmatic Permits

Develop programmatic permits with the ACOE to take sand from areas where it accumulates on base and move it to retreating beaches.

Coastal Resilience Partnership

- TNC's California Coastal Resilience Project identified risk to NBVC from the impacts of climate change
- Memorandum of Agreement (MOA) executed in June 2016 to collaborate on development of a Coastal Resilience plan for NBVC
- MOA informs analysis and decision-making about infrastructure, facilities and natural resources management, including cost-benefit analysis
- Considers use of natural infrastructure, such as dunes and wetlands

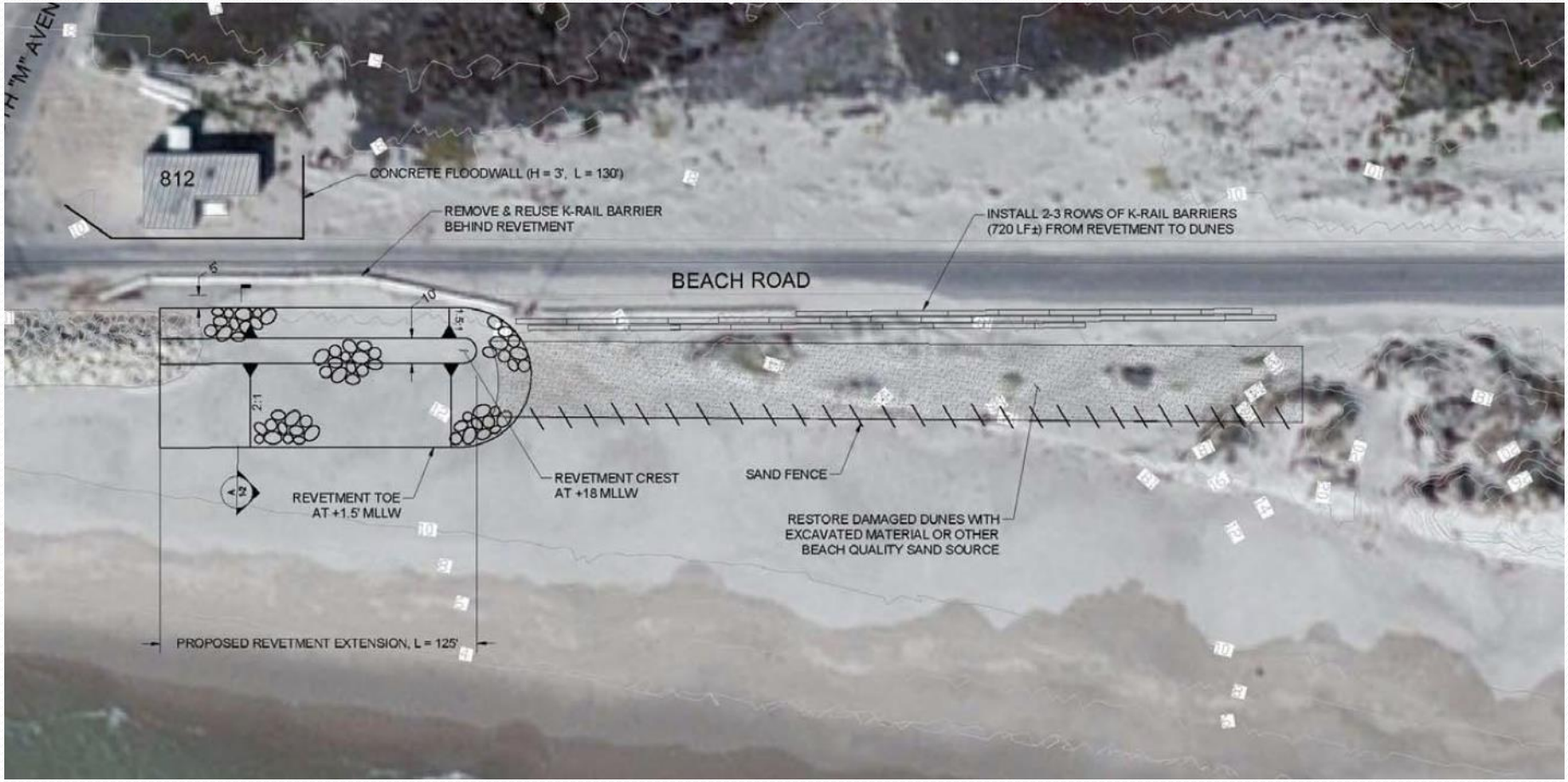
TNC's Coastal Resilience Project



Infrastructure Protection Strategies

1. *Do-Nothing* – the “No-Action” alternative
2. *Managed Retreat* – relocation of critical infrastructure landward from active shoreline erosion zone
3. *Shoreline Protective Devices* – rock revetment or seawall to hold the line against further shoreline retreat
4. *Sand Retention Structures* – groins, offshore breakwaters, and/or offshore reefs designed to retain sand on the shoreline
5. *Beach Nourishment* – artificially add sand back into a coastal system that is in a “sand deficit.”

Shoreline Protection – Hard Armoring



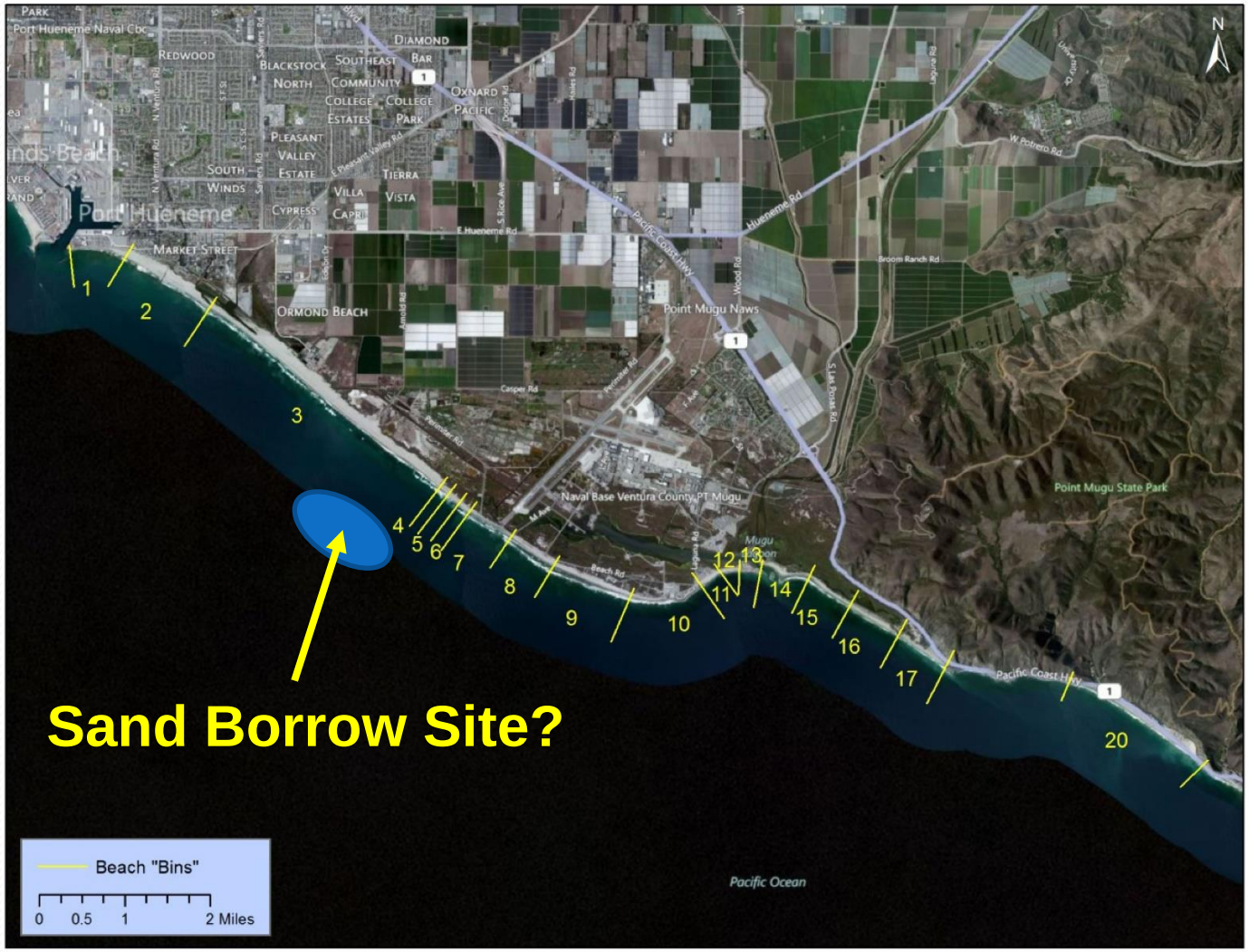
Soft Armoring

5’ x 4’ sand bags were buried in front of the scoured out section of Beach Road

So Far, So Good

Tidal Creek “Pre-storation”

Future


Sand Borrow Site?
Beach "Bins"
0 0.5 1 2 Miles
Pacific Ocean
Port Hueneme
Ormond Beach
Point Mugu Naws
Naval Base Ventura County PT Mugu
Point Mugu State Park
Market Street
Pacific Coast Hwy
1
2
3
4
5
6
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16
17
20

Summary

- It is expected that current environmental trends will continue
  - More intense storms
  - Continued loss of beach
- The greatest protection to the installation
  - Sand, sand, sand.....SAND
- The 3 major climate change impacts
  - Beach width, maintenance
  - Lagoon open water – sediment augmentation
  - Marsh migration