

# Hwy 37 Adaptation to Rising Seas

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# Overview

- Hwy 37: State-wide Significance
  - Transportation, Flood, Climate Adaptation, Ecosystem Restore
- Existing Setting: Degradation of Tidal Marsh System and Public Ownership of Inland Marshes
- History of Hwy 37 Stakeholder Planning Process, 2011-present
- Studies of Shorelines by Road Ecology Center (UC Davis)
- Regulatory Considerations
- Forward Thinking

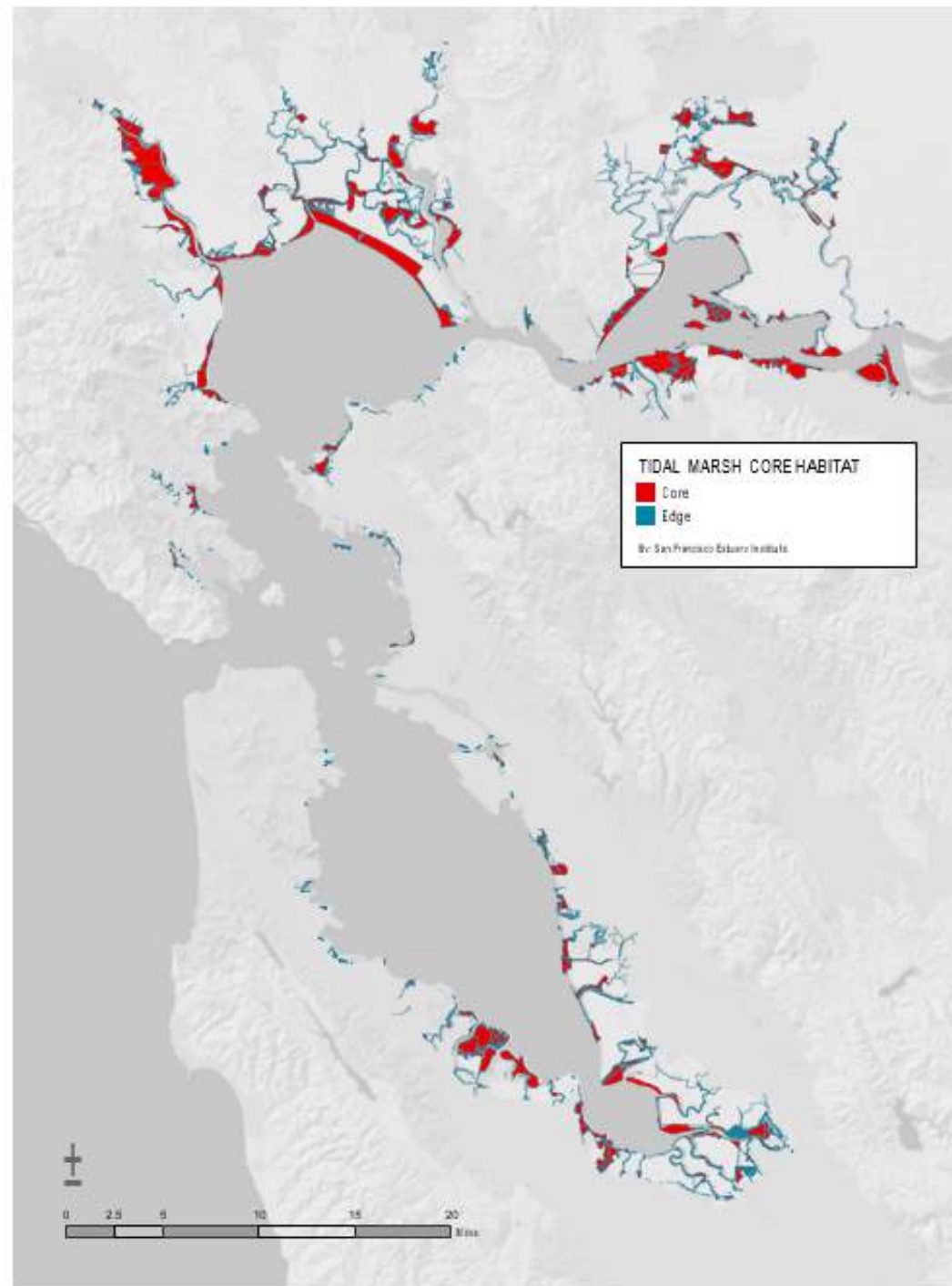






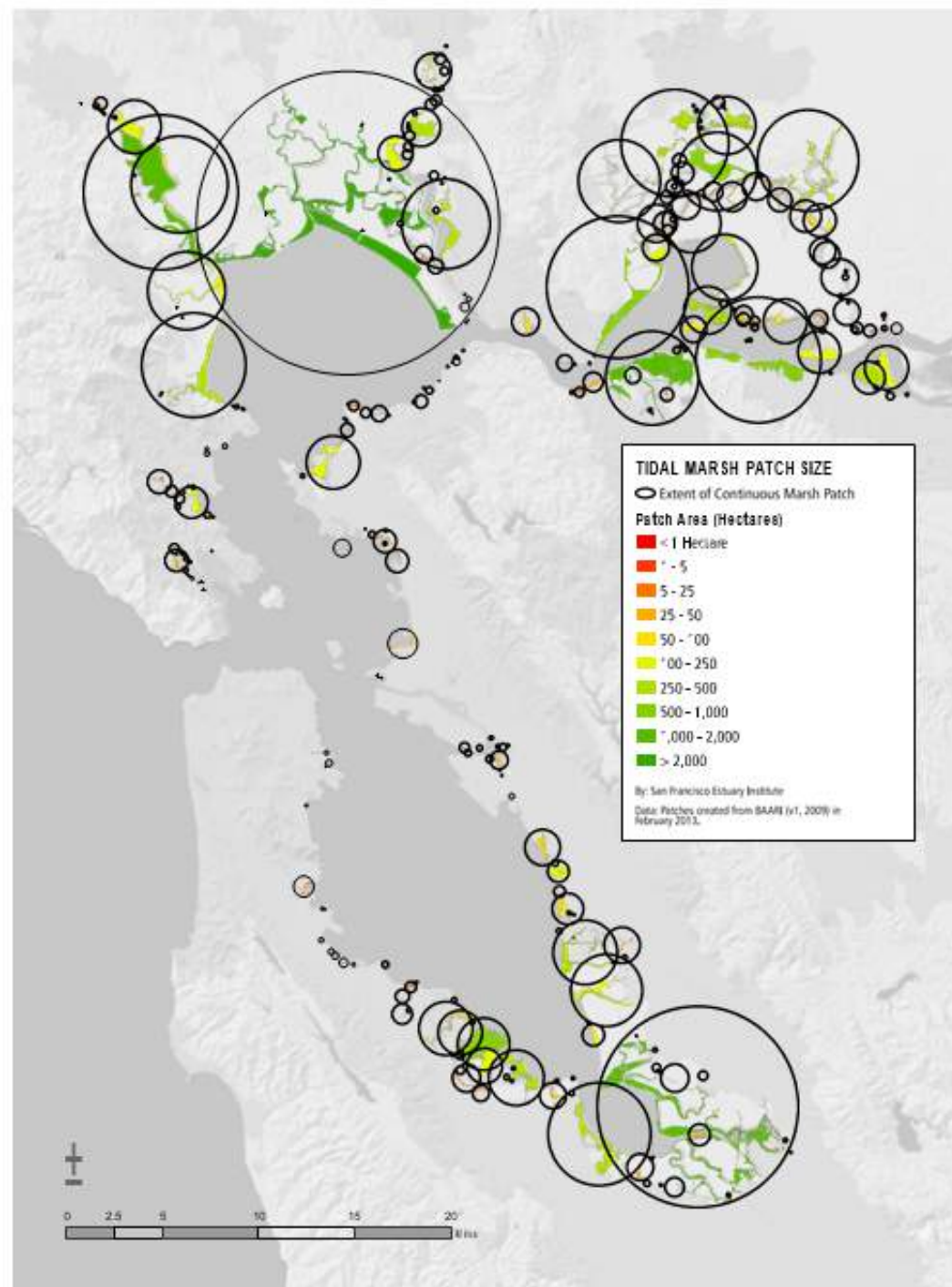
# Existing Setting: Degradation of Water Resources

- Water Quality Effects of Current Highway
  - Stagnation, pH (and Ammonia Toxicity), Low DO, Harmful Algal Blooms, Odors, Methylation of Mercury, Toxics, Lost Opportunities for Productivity
- Ecological Effects of Current Highway
  - Corridor interruption, lack of channel complexity and evolution
- Flood Effects of the Current Highway – barrier to flood attenuation
- What would the Water Do without a Highway?
  - High point that periodically floods, refreshing adjacent systems that are now isolated and degraded.
  - How can we mimic this in the design?
  - “Let Nature do the Heavy Lifting”



San Francisco Estuary  
Institute, 2009





San Francisco Estuary  
Institute, 2009



# Tidal Marshes have Value



# History – Caltrans/Road Ecology Center

2011 – 2016 (1.0)

Data, stakeholders, analyses, co-production, models, alternatives, discussion, economics, conceptual design

2016 – present (2.0)

Focus on 2 model alternatives, more modeling, more conceptual design, financing, discussion among electeds

Future? (3.0)

Focus on importance of tidal marshes, get better handle on time, resolve unknowns, return to stakeholder process



# In the news ... again & again



A screenshot of a web browser window displaying search results on the SFGATE website. The browser's address bar shows the URL 'www.sfgate.com/search?action=search&amp;firstRequest=1&amp;searchin:'. The page features a navigation menu with categories like LOCAL, NEWS, SPORTS, BUSINESS, A&amp;E, FOOD, LIVING, TRAVEL, REAL ESTATE, CARS, JOBS, CLASSIFIEDS, and CHRONICLE. The main content area lists several news articles related to Highway 37 flooding, including 'Highway 37 may finally stop flooding under new CHP plan', 'Highway 37 in Novato closed in both directions due to flooding', 'Highway 37 closed in Novato due to flooding', and 'Section of Hwy. 37 in Novato reopens week after flooding'. A 'MOST POPULAR' sidebar on the right lists various news items. At the bottom, there is a promotional banner for SFGATE's digital access and another article snippet titled 'In demand but increasingly swamped, Highway 37 has no easy fixes'.

# Critical infrastructure is eroding

## Tolay Lagoon/Hwy 37

This shows the approximate movement of the erosion front on the Tolay Lagoon levee (E end of lagoon) between 2/2013 and 1/2017.



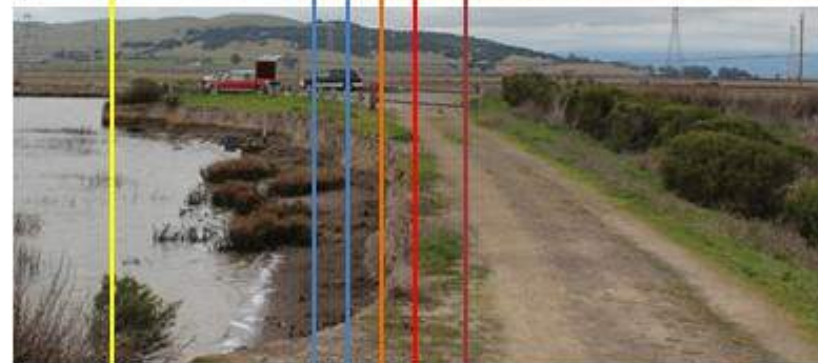
1/14/2017



11/10/2015



1/2/2015



2/5/2013



# We dodged a bullet

Elevation

24" flooding

36" (100 yr storm)

36" (100 yr storm)

Other areas

24" flooding

The screenshot shows the 'Highway 37 Online Maps' website. The browser address bar displays 'http://hwy37.ucdavis.edu/maps'. The website header includes navigation links for 'State Route 37', 'Meetings', 'Resources', 'Images', 'Maps', and 'About', along with 'Contact Us' and 'Log in' buttons. The main heading is 'Integrated Traffic, Infrastructure and Sea Level Rise Analysis Highway 37 Online Maps'. Below this, there is a 'Map Tips' section with several bullet points: 'Click on the plus (+) or minus (-) buttons—or use the mousewheel—to zoom in and zoom out of the map.', 'Click on the icon below the plus (+) and minus (-) buttons to use the map in full screen mode.', 'Change the map's base layer by moving your mouse over the square map icon in the lower left of the map. Choose one of the eight possible base layers by clicking on one of the squares when they are revealed.', 'Move your mouse over the "layers" icon in the upper right of the map to see a list of the additional or overlay layers you can add. Click on a section heading to reveal the possible layers you can choose', and 'The black rectangle (shown by default) represents the study area of this project.' A note follows: 'Note: This mapping interface provides the data produced during Phase II of the SR 37 Stewardship project. The data are not available for download directly from the website, due to the size of the spatial datasets (up to 2 GB). Please contact us if you see any issues or have specific questions about this map.' The main map area shows a topographic map with a color-coded flood analysis overlay. A legend on the left indicates elevation in feet, with a scale from 100 to -20. A red and orange line on the map indicates a specific area of concern. An inset photograph in the bottom right corner shows a residential area with significant flooding, with water reaching the roofs of houses under a cloudy sky.

State Route 37 Meetings Resources Images Maps About Contact Us Log in

## Integrated Traffic, Infrastructure and Sea Level Rise Analysis Highway 37 Online Maps

**Map Tips**

- Click on the plus (+) or minus (-) buttons—or use the mousewheel—to zoom in and zoom out of the map.
- Click on the icon below the plus (+) and minus (-) buttons to use the map in full screen mode.
- Change the map's *base layer* by moving your mouse over the square map icon in the lower left of the map. Choose one of the eight possible base layers by clicking on one of the squares when they are revealed.
- Move your mouse over the "layers" icon in the upper right of the map to see a list of the additional or *overlay layers* you can add. Click on a section heading to reveal the possible layers you can choose
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Please [contact us](#) if you see any issues or have specific questions about this map.

**Additional Information about the Maps**

**Overlay Layers**

1. LIDAR