

2025 Water Resources Workshop



NAVIGATING RISING WATERS: SEA LEVEL AND GROUNDWATER IN THE BAY AREA



Dr. Meredith Williams

Advising Impact

PANELIST



Alyx Karpowicz

SF Bay Regional Water Quality
Control Board

PANELIST



Daniel Hamilton

City of Oakland

PANELIST



Scott Warner

BBJ Group

MODERATOR

Navigating Rising Waters: Sea Level and Groundwater in the Bay Area

Context and coordination

Meredith Williams, Advising Impact

Bay Planning Coalition

6 Nov 2025

A wide-angle photograph of a calm sea under a soft, hazy sky at sunset or sunrise. The sky transitions from a pale blue at the top to a warm orange and yellow near the horizon. Several large cargo ships are visible on the water, their decks illuminated with lights. The ships are scattered across the middle ground, with some appearing closer and larger than others. The water is a deep blue-grey, reflecting the light from the sky. In the far distance, a range of low mountains or hills is visible on the horizon. The overall mood is serene and expansive.

C A R G O

RICHARD MISRACH



Cap and Trade
Dollars at Work



Operational and Post-Closure Permitted Facilities

California Department of Toxic Substances Control



Legend



Operational Permitted Facilities



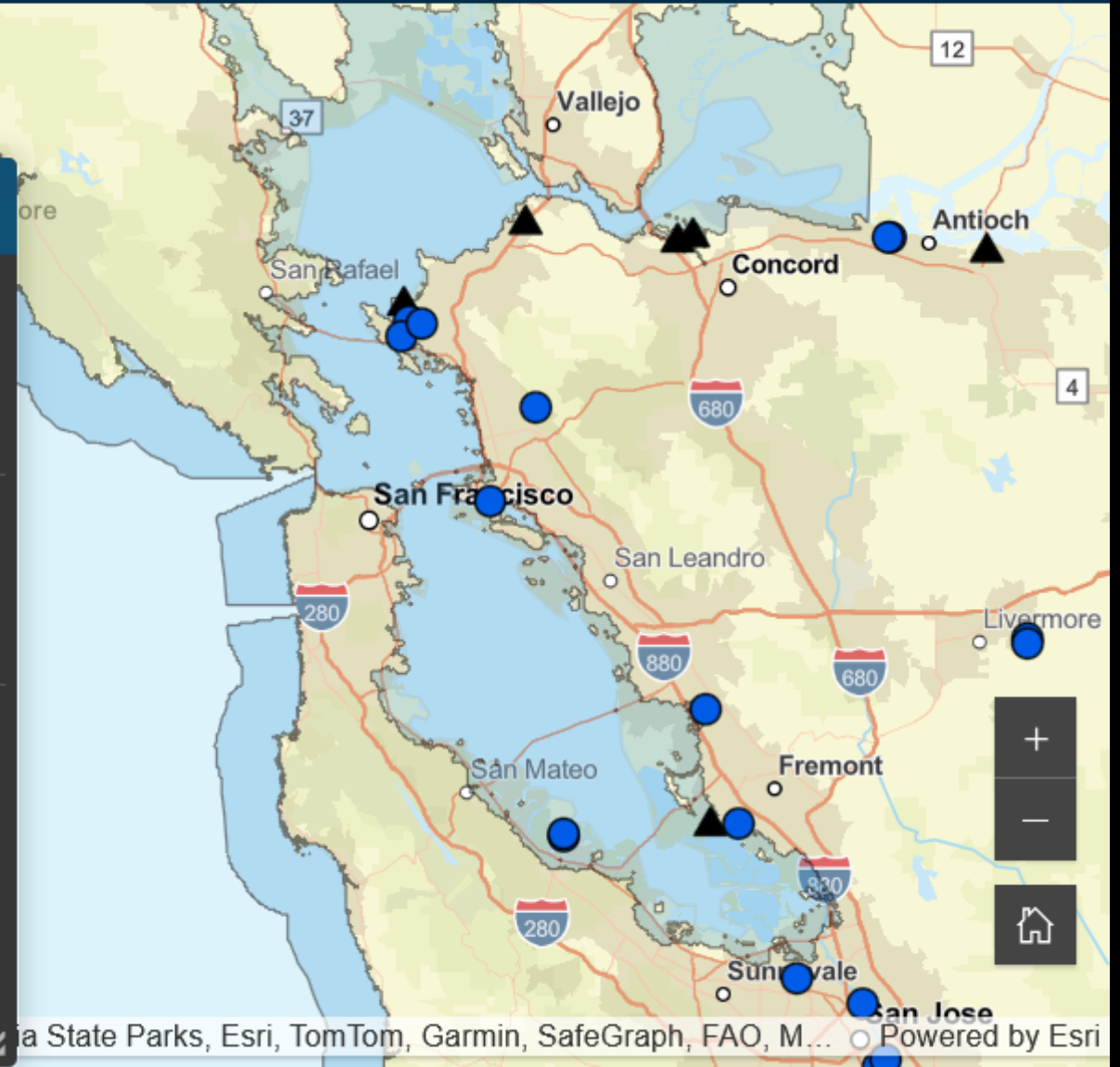
Post Closure Facilities

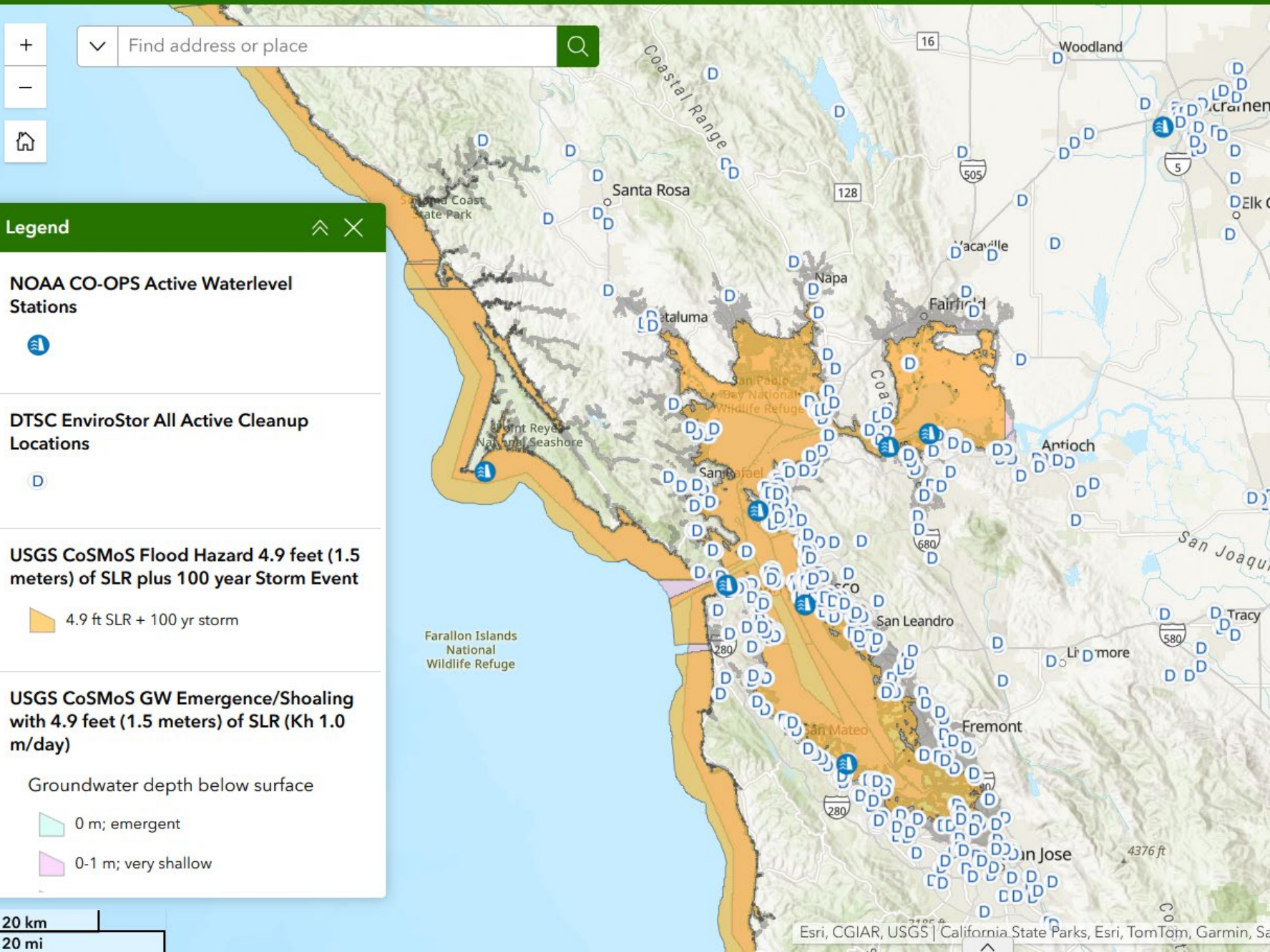


2 Meter Sea Level Rise in 100 Yr Storm Event



6.6 ft SLR + 100 yr storm





Legend



USGS CoSMoS Flood Hazard 4.9 feet (1.5 meters) of SLR plus 100 year Storm Event



4.9 ft SLR + 100 yr storm

USGS CoSMoS GW Emergence/Shoaling with 4.9 feet (1.5 meters) of SLR (Kh 1.0 m/day)

Groundwater depth below surface



0 m; emergent



0-1 m; very shallow



1-2 m; shallow



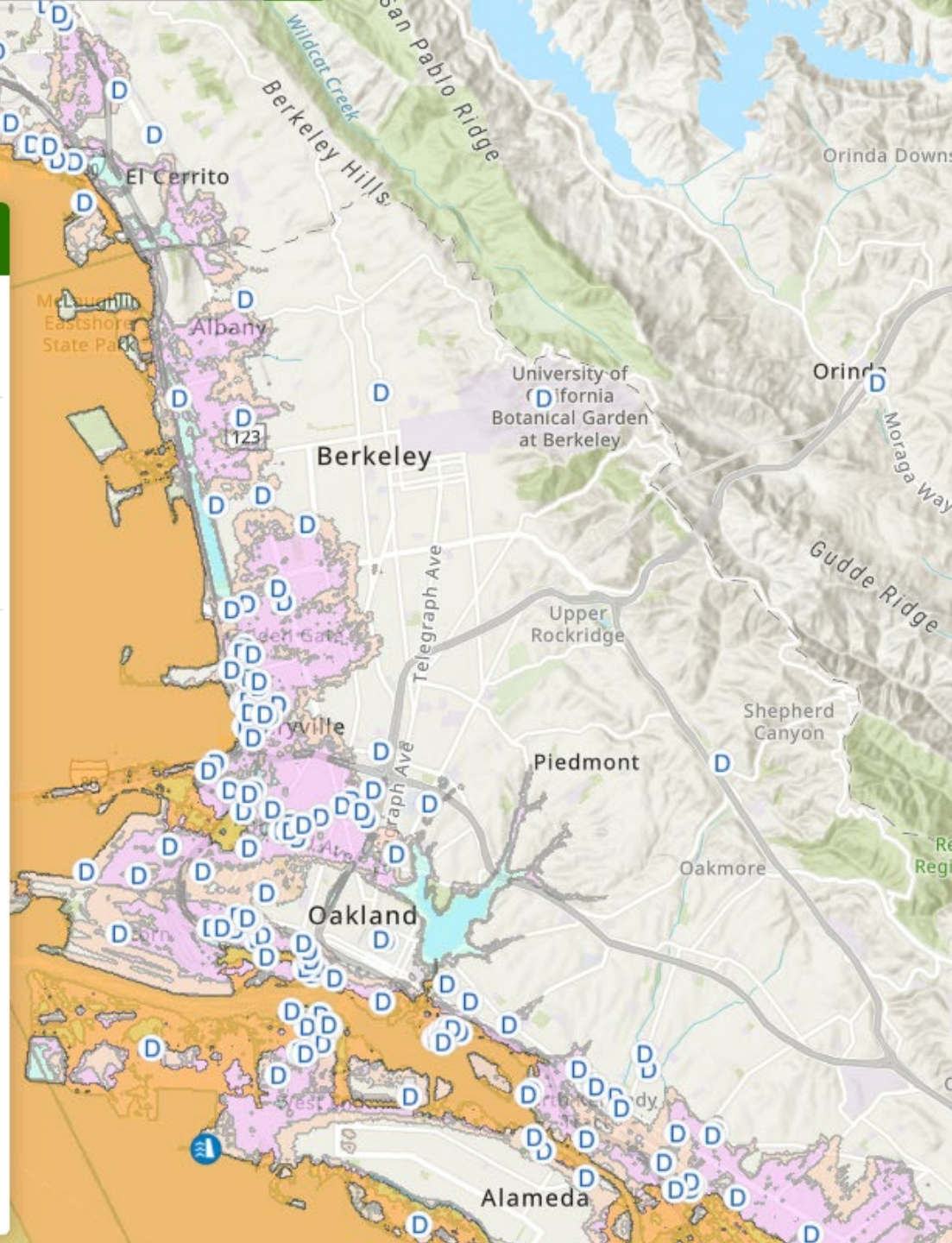
2-5 m; moderate



>5 m; deep



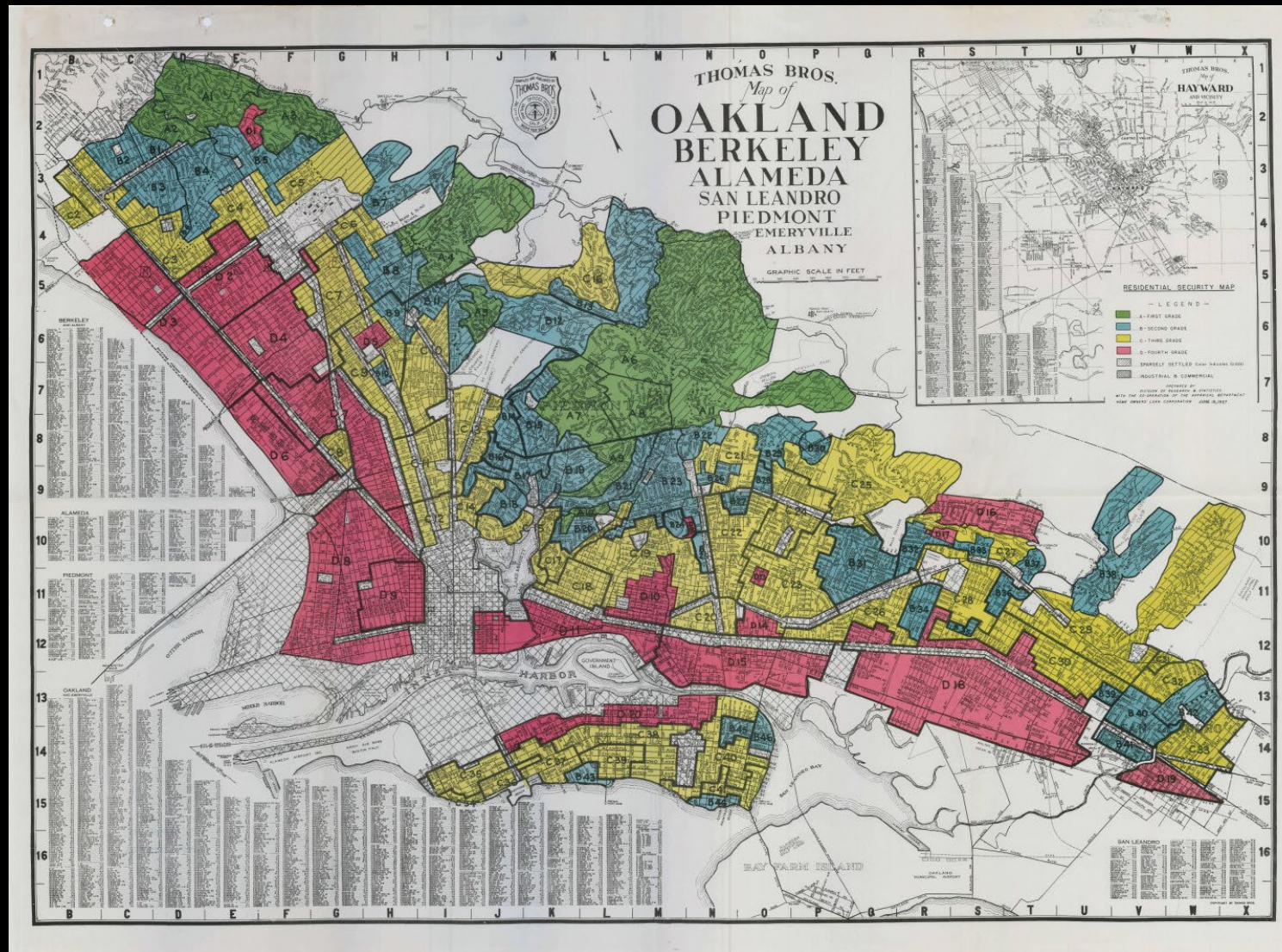
marine/tidal



Hazardous Waste Generators



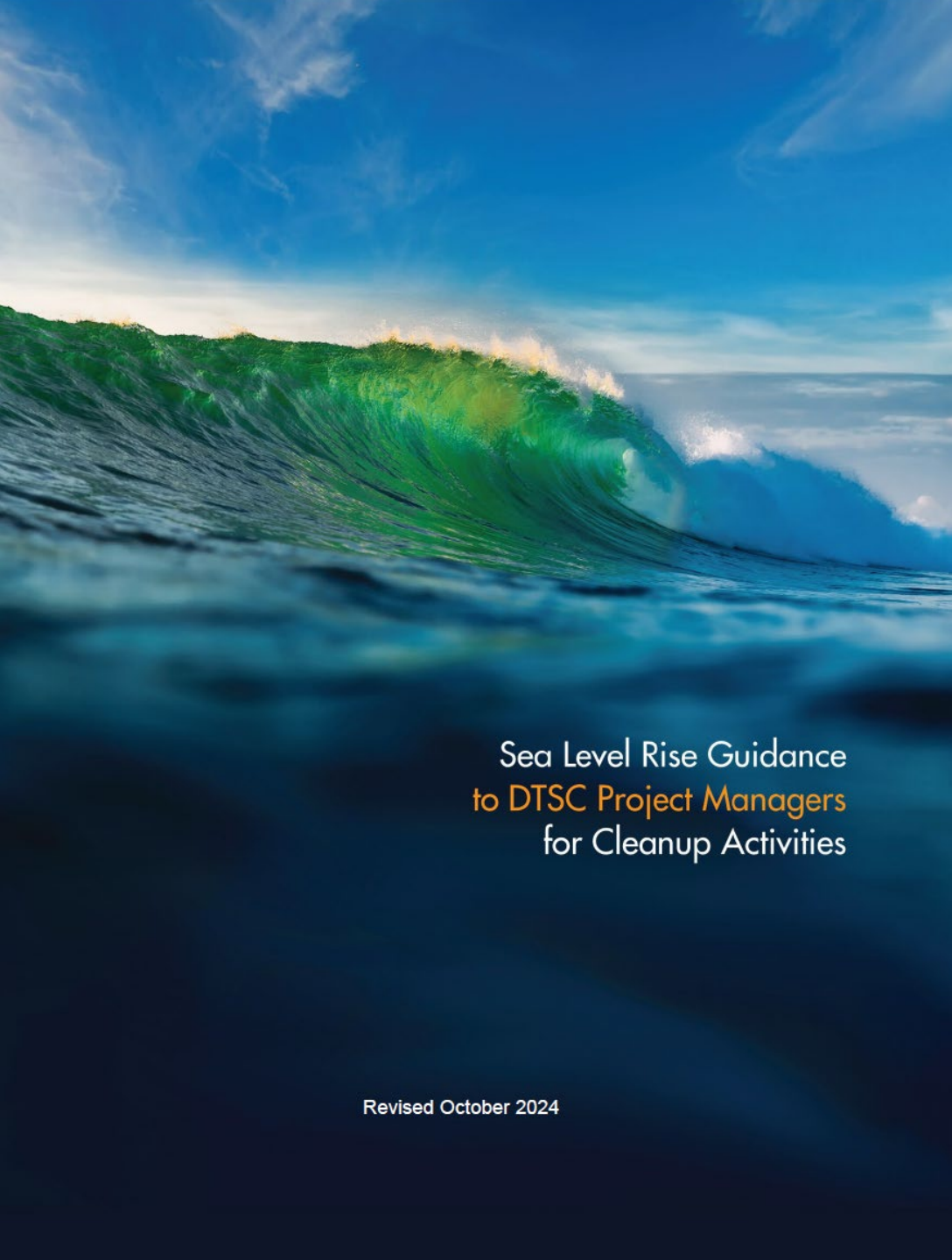
Historic redlining



State of California Sea Level Rise Guidance

2024 SCIENCE & POLICY UPDATE





Sea Level Rise Guidance
to DTSC Project Managers
for Cleanup Activities

Revised October 2024

Site Cleanup

- Consider SLR throughout the process
- Iterations
- 5 Sea Level Rise Scenarios (OPC)
- If vulnerable, adaptation plan required
- SLRVA
- Prioritization based on community vulnerability and equity
- 5 year review if contamination >unrestricted

Evolving understanding of GW – K. Hill

- VOC mobilization and vapor intrusion
- Water main impacts
- Earthquake risk
- Saltwater impacts on infrastructure
- >5,000 sites may be exposed to rising groundwater
 - 1,480 open sites
 - 3,817 closed sites that may contain residual contaminants

Zeneca-Campus Bay, Richmond

COMMUNITY

Is cleanup of toxic site in Richmond ‘falling short?’ An expert will discuss it on Tuesday

An independent technical expert working with the Richmond Shoreline Alliance will discuss how the cleanup of the former Zeneca site may be falling short.

By Richmondside Staff
July 3, 2025, 1:30 p.m.



The Richmond Shoreline Alliance occasionally gives in-person tours of an area of south Richmond that was contaminated due to 100 years of chemical dumping by a number of companies. Credit: David Buchner for Richmondside

The Richmond Shoreline Alliance is holding an online meeting on Tue., July 8, to discuss the status of environmental cleanup efforts at the former Zeneca site, a part of south Richmond's shoreline contaminated with pesticides and other dangerous substances.

KQED

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Sign In

CLIMATE CHANGE

State Regulators Scrutinize Climate Plan for Controversial Richmond Housing Development

LISTEN

By Ezra David Romero Jan 12, 2023 Updated Jan 9, 2024 Save Article



Richmond Confidential



Decisions

- Is there enough collaboration?
- How do we prioritize finite resources?
- Are we working rapidly enough to stay ahead of SLR/GWR?



Richard Misrach, Cargo Ships (November 14, 2023 6:56 am)

Resources

DTSC permitted sites

- <https://dtsc.ca.gov/dtscs-permits-protect-people-and-the-environment-from-climate-change-impacts-at-hazardous-waste-facilities/>

DTSC Site Mitigation SLR mapper

- <https://experience.arcgis.com/experience/e8b8b27b19a54d11b1079b3fbd88c7d6/>
- <https://experience.arcgis.com/experience/e8b8b27b19a54d11b1079b3fbd88c7d6/>

DTSC SLR Guidance

- https://dtsc.ca.gov/wp-content/uploads/sites/31/2024/10/SLR_Guidance_2024.pdf
- Emma Lasky, Kristina Hill. The impact of sea-level and groundwater rise on indoor exposure to volatile organic compounds near contaminated sites in the San Francisco Bay Area. ESS Open Archive. June 02, 2025.
- Hill, K., Hirschfeld, D., Lindquist, C., Cook, F., & Warner, S. (2023). Rising coastal groundwater as a result of sea-level rise will influence contaminated coastal sites and underground infrastructure. Earth's Future, 11, e2023EF003825.
<https://doi.org/10.1029/2023EF003825>

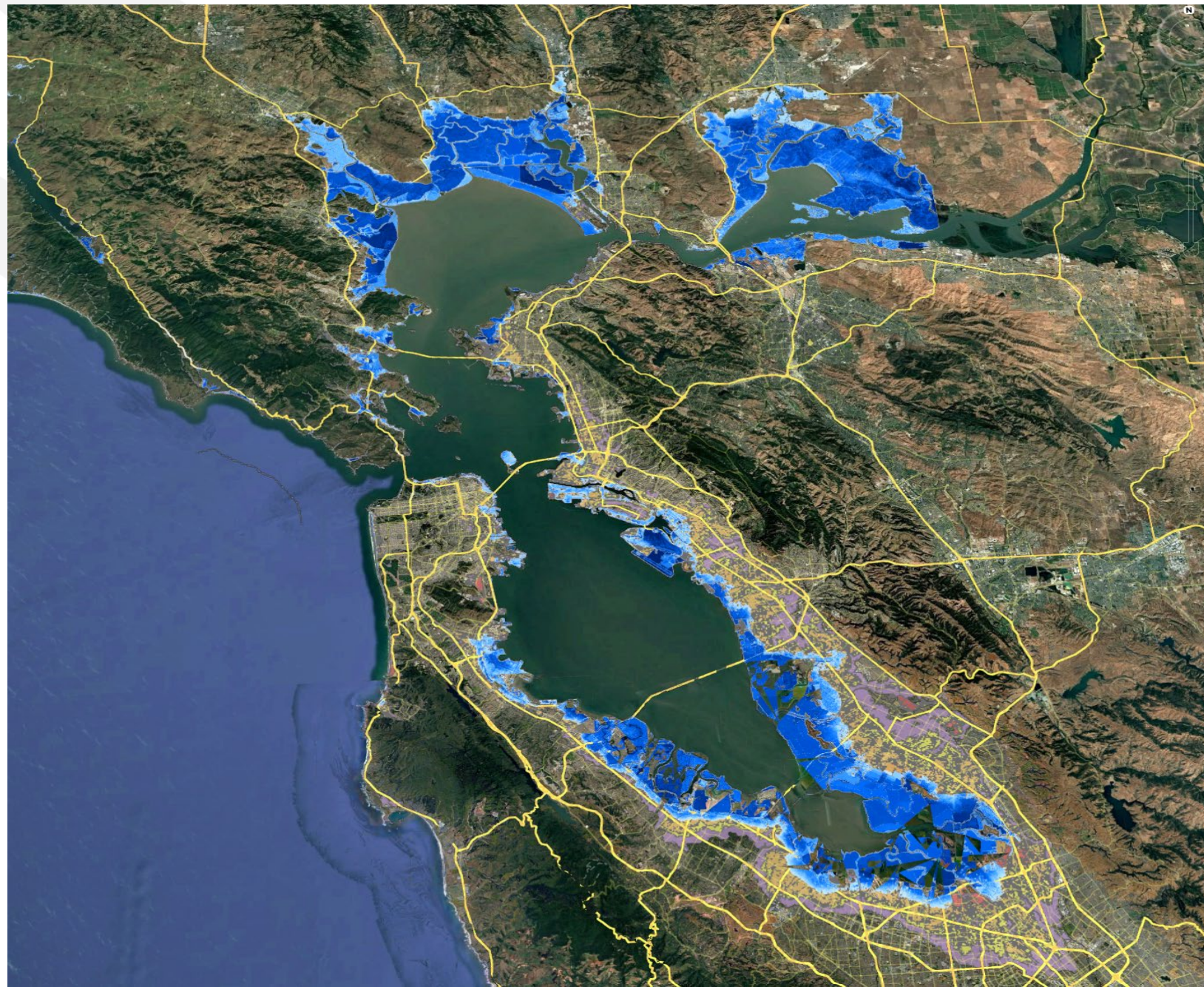
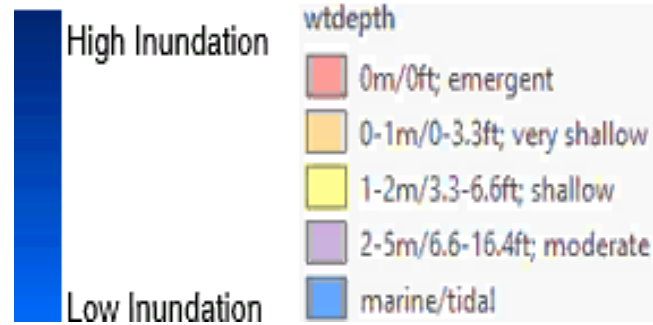
Regional Water Board's Sea Level and Groundwater Rise Considerations

November 6, 2025



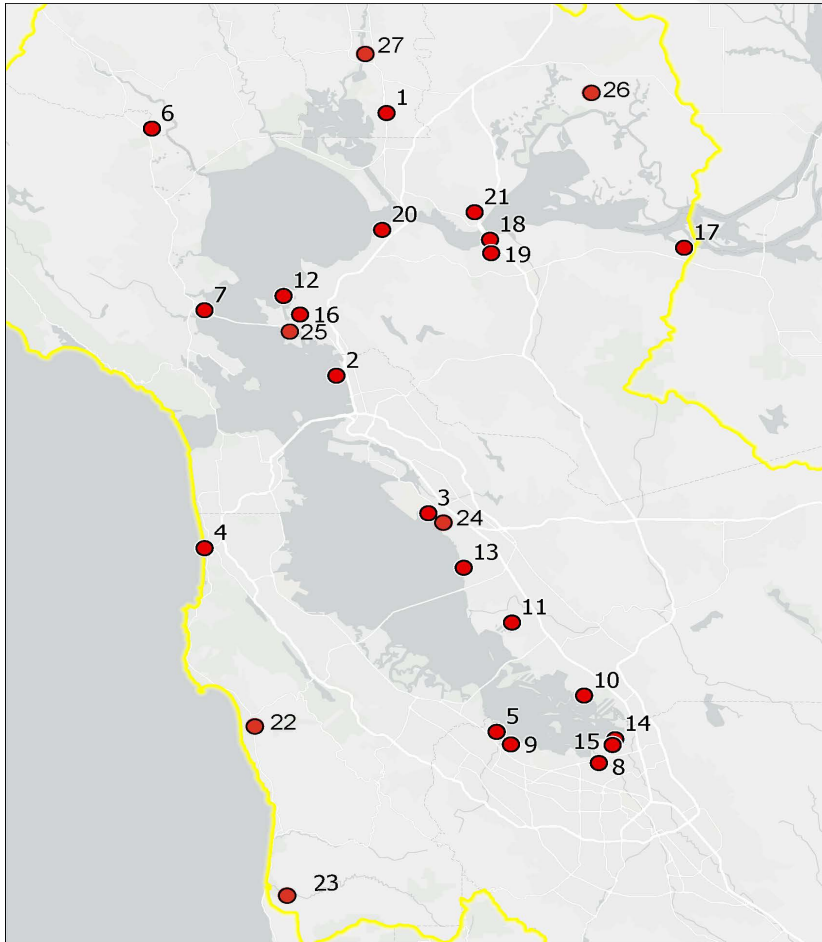
Alyx Karpowicz, P.G.

Sea Level and Groundwater Rise in Region 2

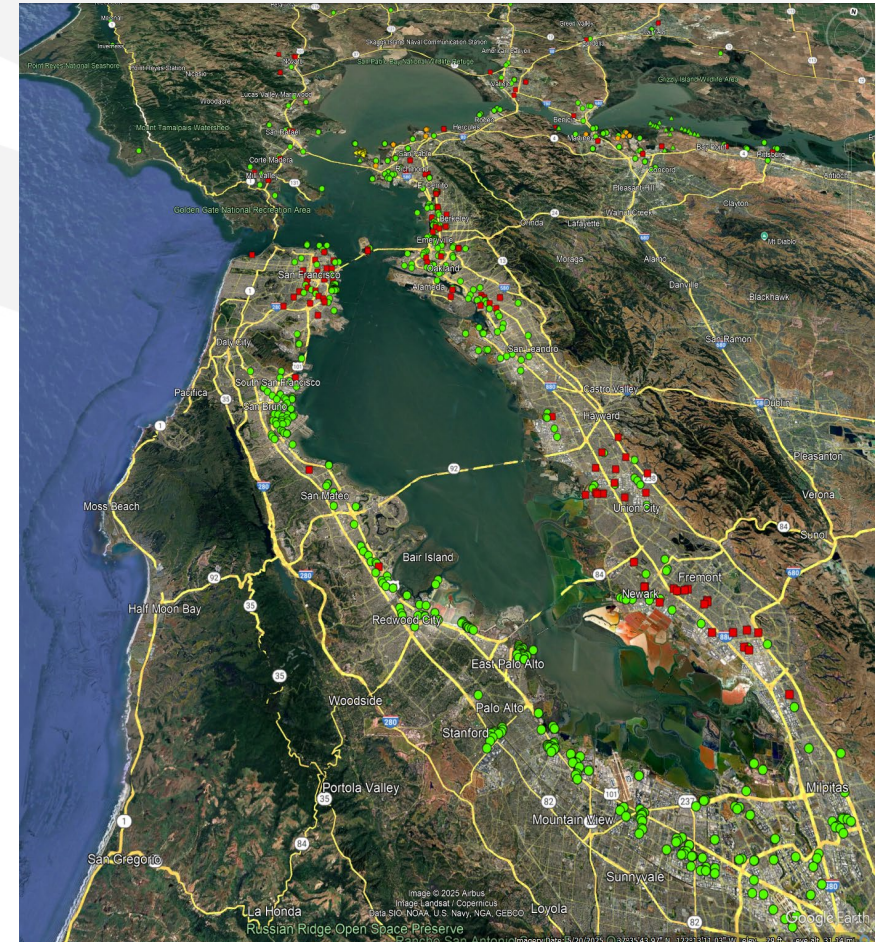


Vulnerability Assessments

Landfills/Waste Management Units



Cleanup Sites



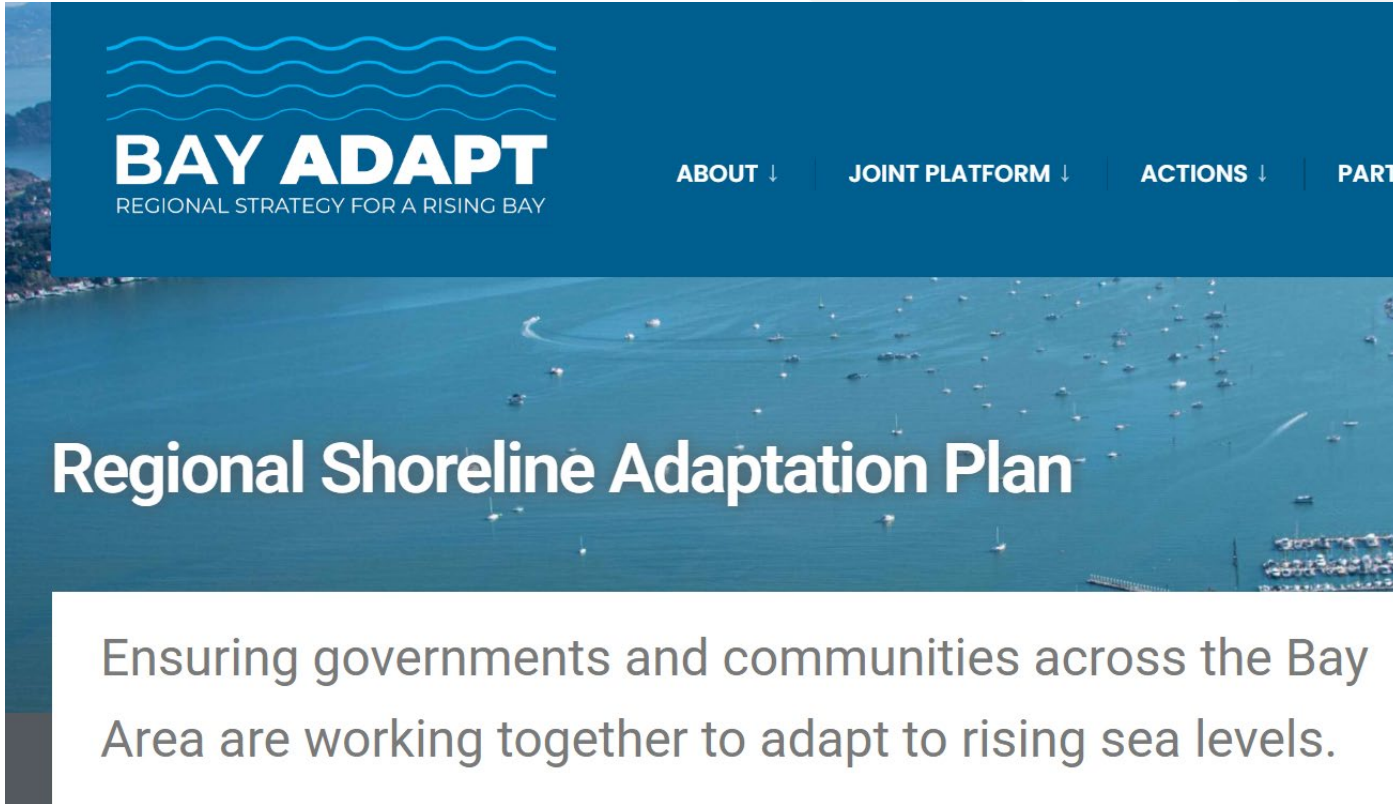
Considerations for a Vulnerability Assessment

- Site location
- Pollutant type and concentration
- Proximity to sensitive receptors
- Engineering remedies
- Long cleanup timeframes



Chevron Richmond Refinery

Science and Guidelines

The image shows the header of the Bay Adapt website. It features a blue background with white wavy lines at the top. The text "BAY ADAPT" is in large, bold, white letters, with "REGIONAL STRATEGY FOR A RISING BAY" in smaller white letters below it. To the right of the logo are four navigation links: "ABOUT", "JOINT PLATFORM", "ACTIONS", and "PARTNERS", each with a downward arrow. Below the navigation links is a large, high-resolution photograph of a bay filled with many small sailboats. The text "Regional Shoreline Adaptation Plan" is overlaid on the bottom left of the photograph in large, bold, white letters. Below the photograph, on a white background, is the text "Ensuring governments and communities across the Bay Area are working together to adapt to rising sea levels." in a dark gray font.

BAY ADAPT
REGIONAL STRATEGY FOR A RISING BAY

ABOUT ↓ JOINT PLATFORM ↓ ACTIONS ↓ PARTNERS ↓

Regional Shoreline Adaptation Plan

Ensuring governments and communities across the Bay Area are working together to adapt to rising sea levels.

The image shows the cover of a report titled "SHALLOW GROUNDWATER RESPONSE TO SEA-LEVEL RISE". The top half of the cover features a photograph of three cyclists riding on a paved path that is partially submerged in water, illustrating the impact of sea-level rise. The bottom half of the cover is a solid blue background with white text. The title "SHALLOW GROUNDWATER RESPONSE TO SEA-LEVEL RISE" is in large, bold, white letters, and the subtitle "Alameda, Marin, San Francisco, and San Mateo Counties" is in smaller white letters below it. At the bottom of the cover are the logos for "pathways CLIMATE INSTITUTE" and "SFEI AQUATIC SCIENCE CENTER".

SHALLOW GROUNDWATER RESPONSE TO SEA-LEVEL RISE
Alameda, Marin, San Francisco, and San Mateo Counties

 **pathways**
CLIMATE INSTITUTE

SFEI | **AQUATIC SCIENCE CENTER**
SAN FRANCISCO ESTUARY INSTITUTE & THE AQUATIC SCIENCE CENTER

Case Study (With a Plan)



What's next?



ADAPTION **OR**
ADAPTATION



2025

WATER RESOURCES WORKSHOP

WHEN

November 6, 2025

WHERE

EBMUD Offices - Oakland



SLR Influences at City Level

- SB 1000 (Environmental Justice)
- General Plans
- Specific Plans
- SB 272 (Regional Shoreline Adaptation Plan)
- Oakland Alameda Adaptation Committee

With a Lot of Information

- CA 5th Climate Change Assessment
- CA Sea Level Rise Guidance (2024)
- SF Bay Shoreline Adaptation Atlas
- SB 272 Guidelines
- RSAP Atlas
- Sea Level Rise and Flood Strategy (Save the Bay)
- Sea Level Rise Technical Report (NOAA)
- Sea Level Rise Policy Guidance (CA Coastal Commission)
- Global and Regional Sea Level Rise Scenarios for Coastal Communities (NOAA)

Sea Level Rise and Toxics



OAKLAND
PRELIMINARY
**SEA LEVEL RISE
ROAD MAP**
Fall 2017

