Welcome To San Francisco Bay

John Bourgeois, Wetland Ecologist

Valley Water
Clean Water • Healthy Environment • Flood Protection

South Bay Salt Pond Restoration Project
Restoring the Wild Heart of the South Bay

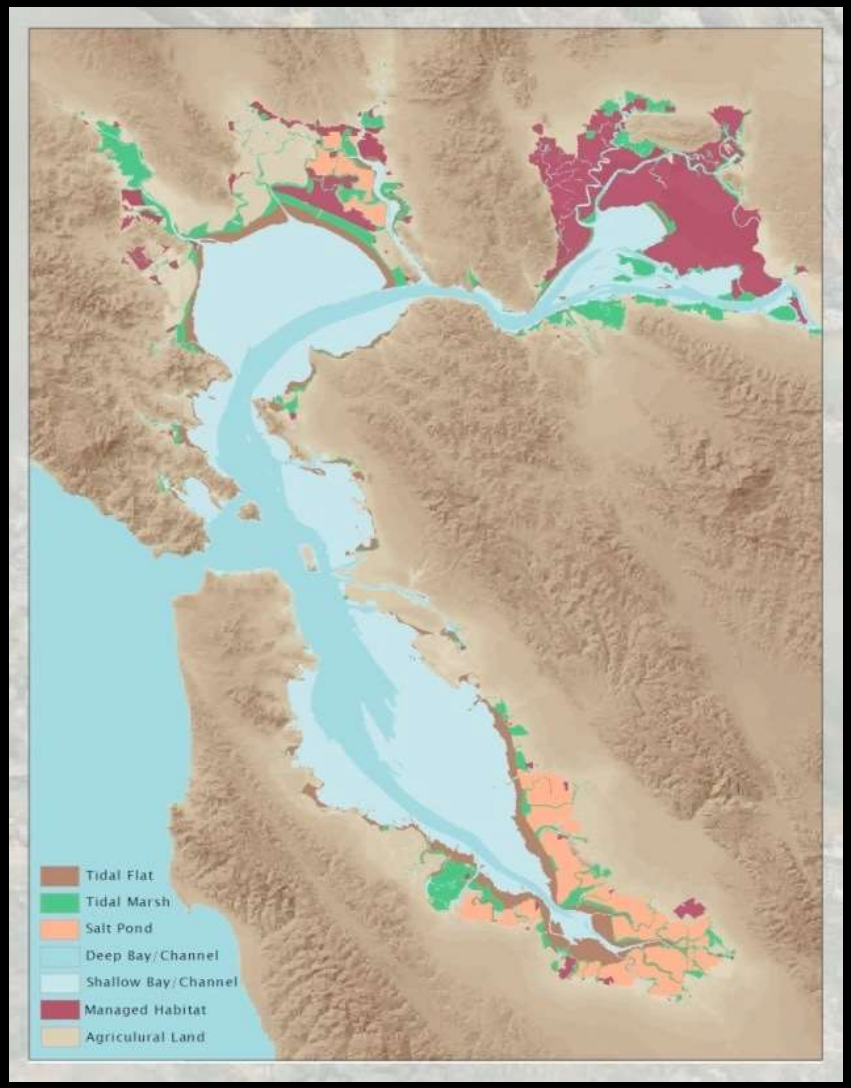
CHARG

"A good day's bag."


SOUTH BAY CIRCA 1850
Deep bay / channel
Shallow bay / channel
Tidal flat / intertidal channel
Beach
Tidal marshland with channels and pannes
Tidal marshland with less detail
Willow grove (sausal)
USGS topographic maps, circa 1900
19th-century landing
Creek
Ohlone shellmounds (approximate locations)
Tribal regions
1 : 62,500 SCALE
approximately 1 inch per mile
SOUTH BA
SALINAS BECOME SALT PONDS
Salt farming was originally a small-scale, traditional activity. First the Ohlone, then the Spanish, and later the Americans, harvested salt for local use and regional trade. The salinas (large natural salt ponds, including the famous Crystal Salt Pond, shown on map at left) were gradually subdivided and expanded, transforming a large marsh with scattered ponds (1857) into large ponds with fringing marsh (1996). The salt works of the late nineteenth century (1878 and 1896 images), demonstrate an intermediate level of management, with a mix of managed ponds and tidal marsh. The channel meander circled in red provides a common reference point between images.
1857
1896
1878
1996
LIFE BETWEEN TWO SLOU
When the South Pacific Coast Railroad crossed
Mud Sloughs in 1877, the railroad built bridges
sloughs. The bridges swung open to allow the
schooners carrying produce and goods to San
A small community called Drawbridge develope
acres, straddling both sides of the railroad tracks.
there were two hotels and almost 100 cabins bu
pilings, connected by wooden walkways. Besides
full-time residents, Drawbridge attracted weeke
hunters, fishermen, and boaters. The area is now
Don Edwards San Francisco Bay National Wildlife
ONVERSION TO SALT PONDS, 1850s to 1950s
1857 - 1896
1897 - 1931
1932 - 1951
1952 - 1960
San Lorenzo Creek
Haywards
Roberts' Landing
Hayward's Landing
Crystal Salt Pond
Mt. Eden Landing
Mt. Eden Creek
Alvarado
Union City
Alameda Creek
Coyote Point
Laguna Creek
Coyote Hill Creek
Angelo Slough
Steinberger Slough
Patterson's Landing
Mayhew's Landing
EX MISSION SAN JOSE
O'Neill Slough
West Point Slough
Beards Slough
Ravenswood Point
Ravenswood Slough
Corkscrew Slough
Plummer's Landing
Mowry's Landing
Dumbarton Pt.
Plummer Slough
Mowry Slough
SAN JOSE
Warm Springs Slough
Warm Springs Landing
Cooley's Landing
Mud Field Slough
San Francisquito Creek
Soto's Landing
Charleston Slough
Guadalupe Slough
Alviso Slough
Mtn. View Slough
Alviso
Wilson's / Clarke's Landing
Clarke's Landing
Artesian Slough
Big Slough
Rengstorff's Landing
Guth's Landing
Japel's Landing
Devils Slough
McCubbin's Landing
POSOLMI
RINCON DE SAN FRANCISQUITO


National Maritime Museum


Tidal Flat
Tidal Marsh
Salt Pond
Deep Bay/Channel
Shallow Bay/Channel

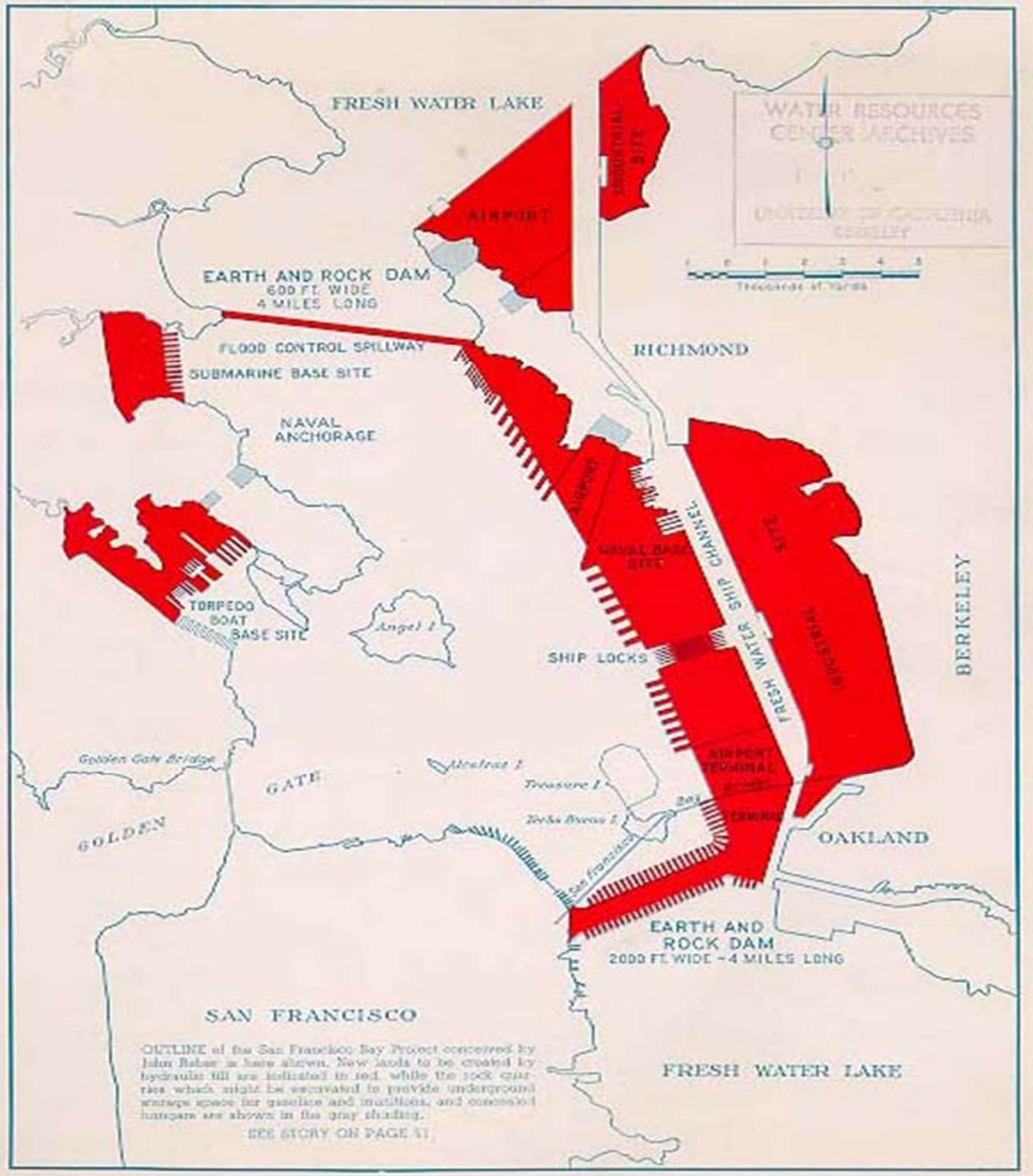

Tidal Flat
Tidal Marsh
Salt Pond
Deep Bay/Channel
Shallow Bay/Channel
Managed Habitat
Agricultural Land

~1850

~2000


UNCONTROLLED
BAY FILL CO.

SAN FRANCISCO BAY PROJECT - - THE REBER PLAN



OUTLINE of the San Francisco Bay Project conceived by John Reber is here shown. New lands to be created by hydraulic fill are indicated in red, while the rock quarries which might be excavated to provide underground storage space for gasoline and munitions, and concealed hangars are shown in the gray shading.

SEE STORY ON PAGE 51

Since 1961

SAVE THE BAY

Why Should I Care?

1995 San Jose Floods

Wetlands Provide:

- Fish and wildlife habitat
- Recreation/aesthetics


Chinook Salmon

The San Francisco Bay hosts millions of shorebirds and waterfowl during migration.

Aric Crabbe, BANG

~7.5 million people

Pelican Media

1995 San Jose Floods

Wetlands Provide:

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- Recreation/aesthetics
- Water quality improvement


Chinook Salmon

ESTUARY HEALTH SCORECARD 2019

INDICATOR	STATUS AND TREND	AT A GLANCE
FRESHWATER FLOW	ESTUARY	Freshwater flows in the Estuary have been highly altered, causing reductions in inter-annual and seasonal variability, and peak-flows. Freshwater flows into the Estuary in recent years reflect chronic artificial drought conditions, in sharp contrast to unimpaired flows.
TIDAL MARSH	BAY, DELTA	Tidal marsh acreage throughout the Estuary has declined significantly from the historical amount, but restoration efforts are bringing back this critical ecosystem and associated benefits. Projects in the Bay are making extensive contributions to tidal marsh area, while efforts in the Delta are beginning to make progress towards regional goals.
FISH	BAY, DELTA	The condition of fish communities varies across the Estuary. In the lower Estuary, fish communities are abundant, diverse, and dominated by native species. However, in the brackish and freshwater upper Estuary, native fish communities are in poor condition. Based on long-term monitoring data, native fish communities across the Bay are declining. In San Francisco and San Pablo Bays, this long-term data set is from sampling only the offshore areas of the Bay and may not reflect benefits to fish populations from recent wetland restoration.
BENEFICIAL FLOODS	BAY, DELTA	The frequency, magnitude, and duration of floodplain inundation in both the Bay and the Delta are too low to support healthy estuarine habitats and sustain important ecological processes. While conditions have been variable over time, they have, in general, remained poor in the Delta and have declined in the Bay.
URBAN WATER USE	BAY, DELTA	In both the Bay and Delta, total and per-capita urban water use have declined over the last several decades, despite growing populations. More efficient urban water use means that both regions met and exceeded benchmarks for per-capita use and drought-reduction targets. The regions have modestly increased water use since the end of the drought but still maintained improvements over their 2020 benchmarks for reductions in per-capita use.

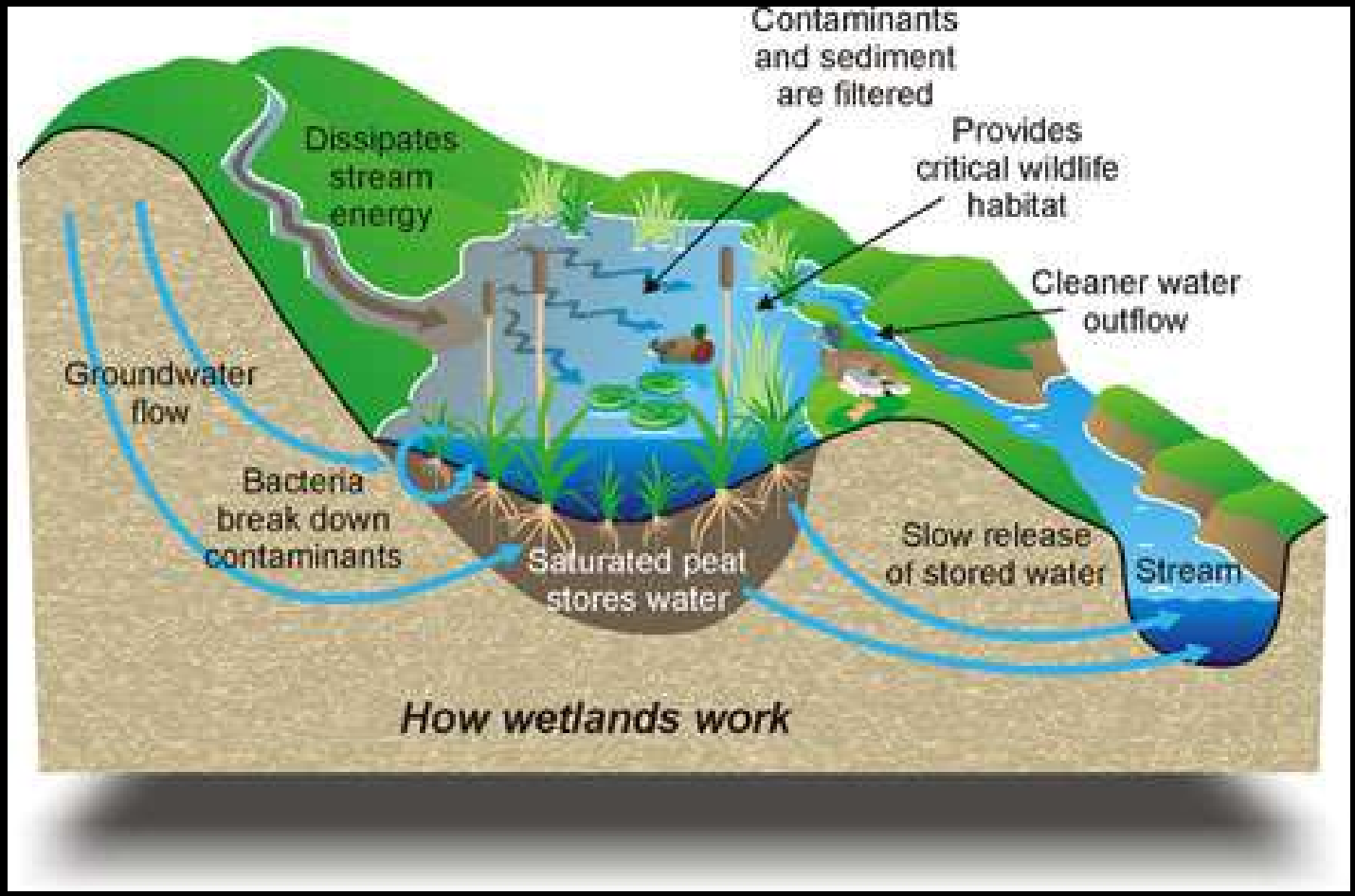
LEGEND

STATUS: Good, Fair, Poor

TREND: Improving, No Change, Declining, Mixed

SFEI: State of the Estuary, 2019 Update

Wetlands Help Filter Contaminants



- Source: Utah State University

1995 San Jose Floods

Wetlands Provide:

- Fish and wildlife habitat
- Recreation/aesthetics
- Water quality improvement
- Flood storage
- Shoreline protection


Chinook Salmon

Source: U.S. Army Corps of Engineers Digital Visual Library

Houston, 2017

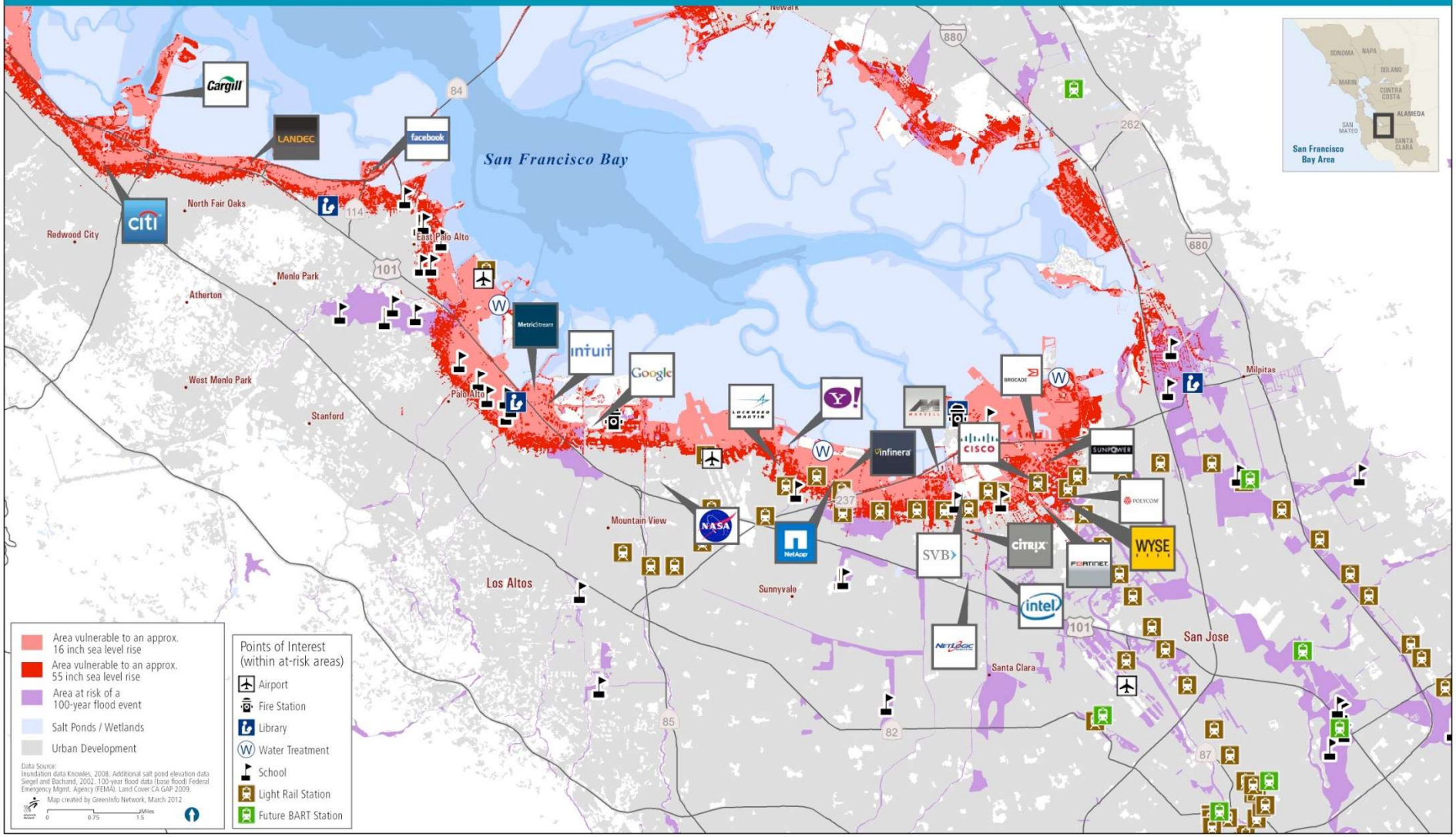
Sandy, 2012

Katrina, 2005

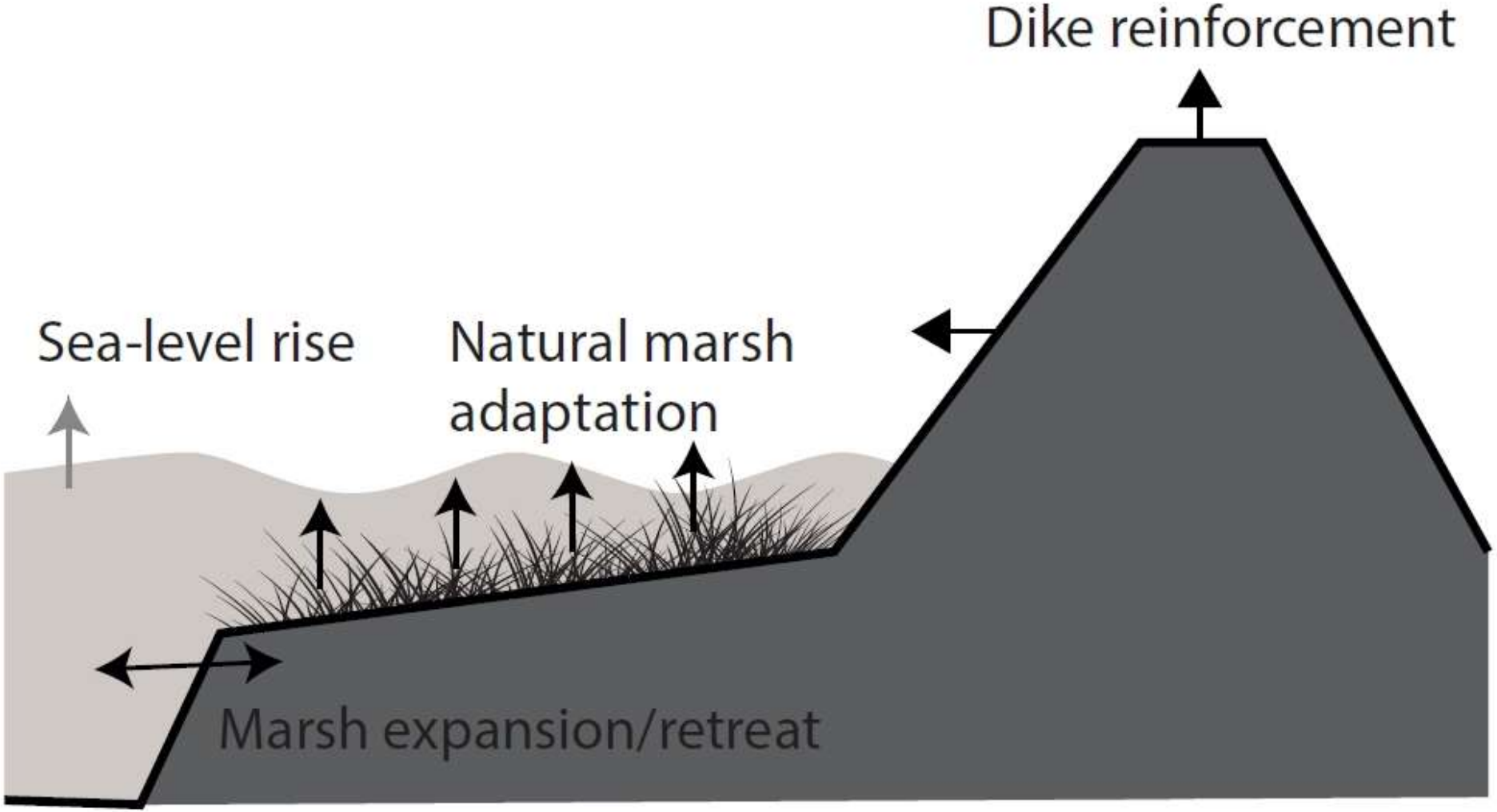
San Jose, 1983

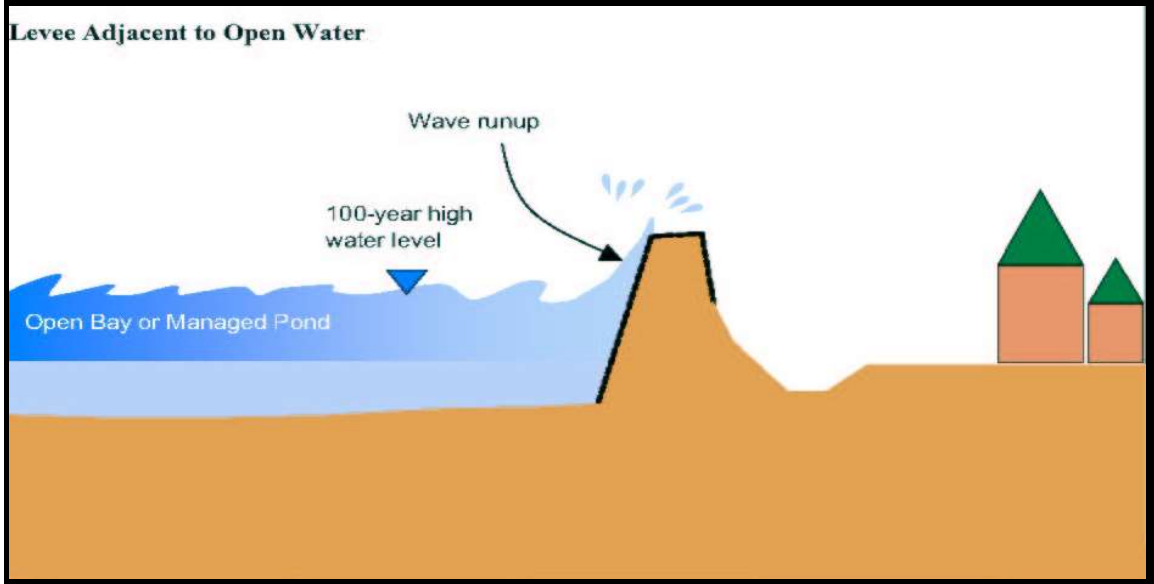
Flood Risk and Sea Level Rise – South Bay

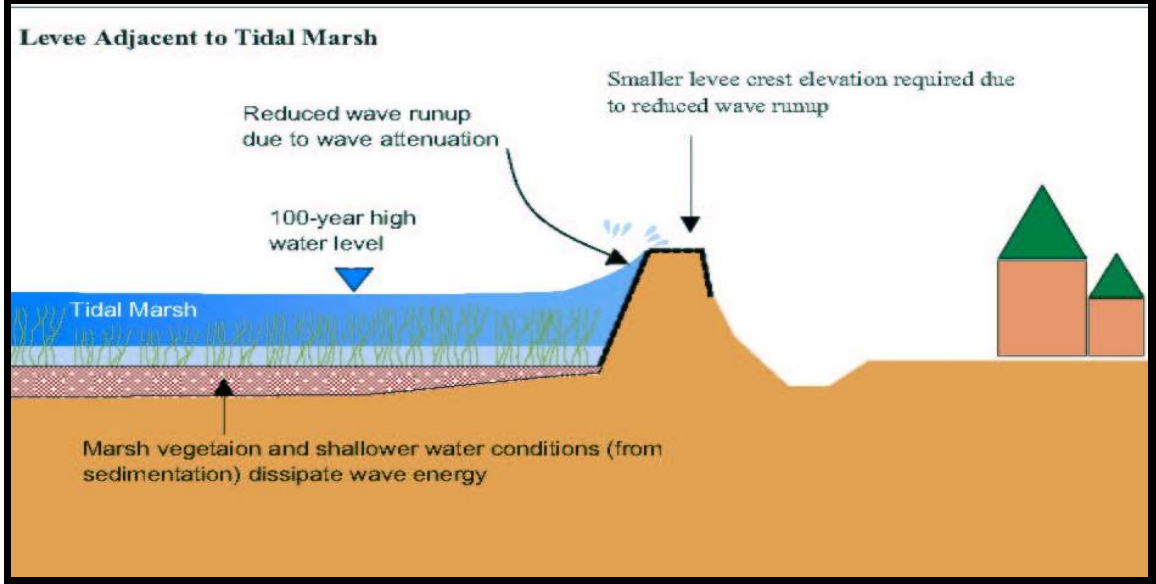
Economic Impact, San Francisco Bay Area



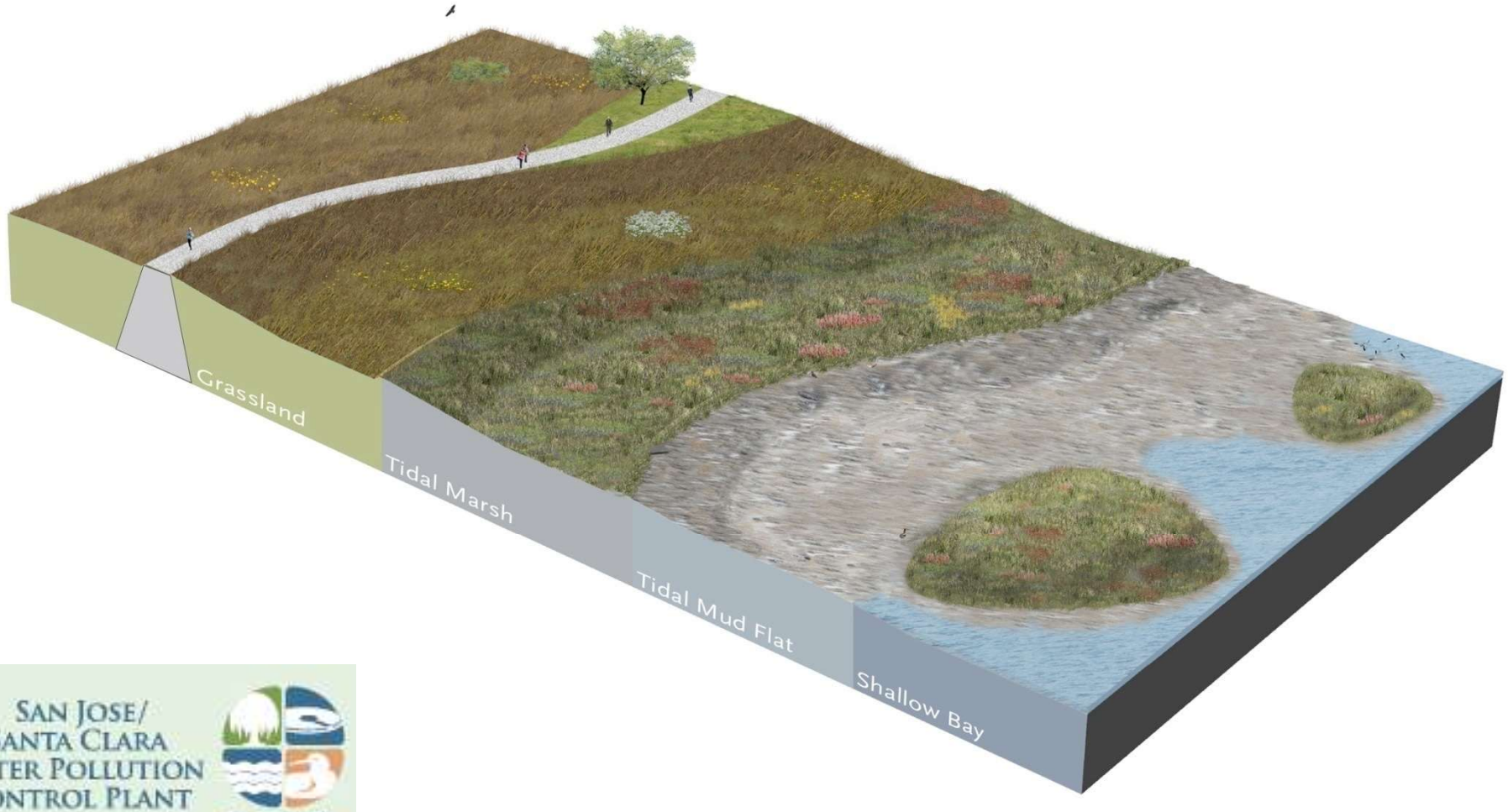
Marshes Can Grow




Levee Adjacent to Open Water
Wave runup
100-year high water level
Open Bay or Managed Pond


Levee Adjacent to Tidal Marsh
Smaller levee crest elevation required due to reduced wave runup
Reduced wave runup due to wave attenuation
100-year high water level
Tidal Marsh
Marsh vegetaion and shallower water conditions (from sedimentation) dissipate wave energy

“horizontal levee”



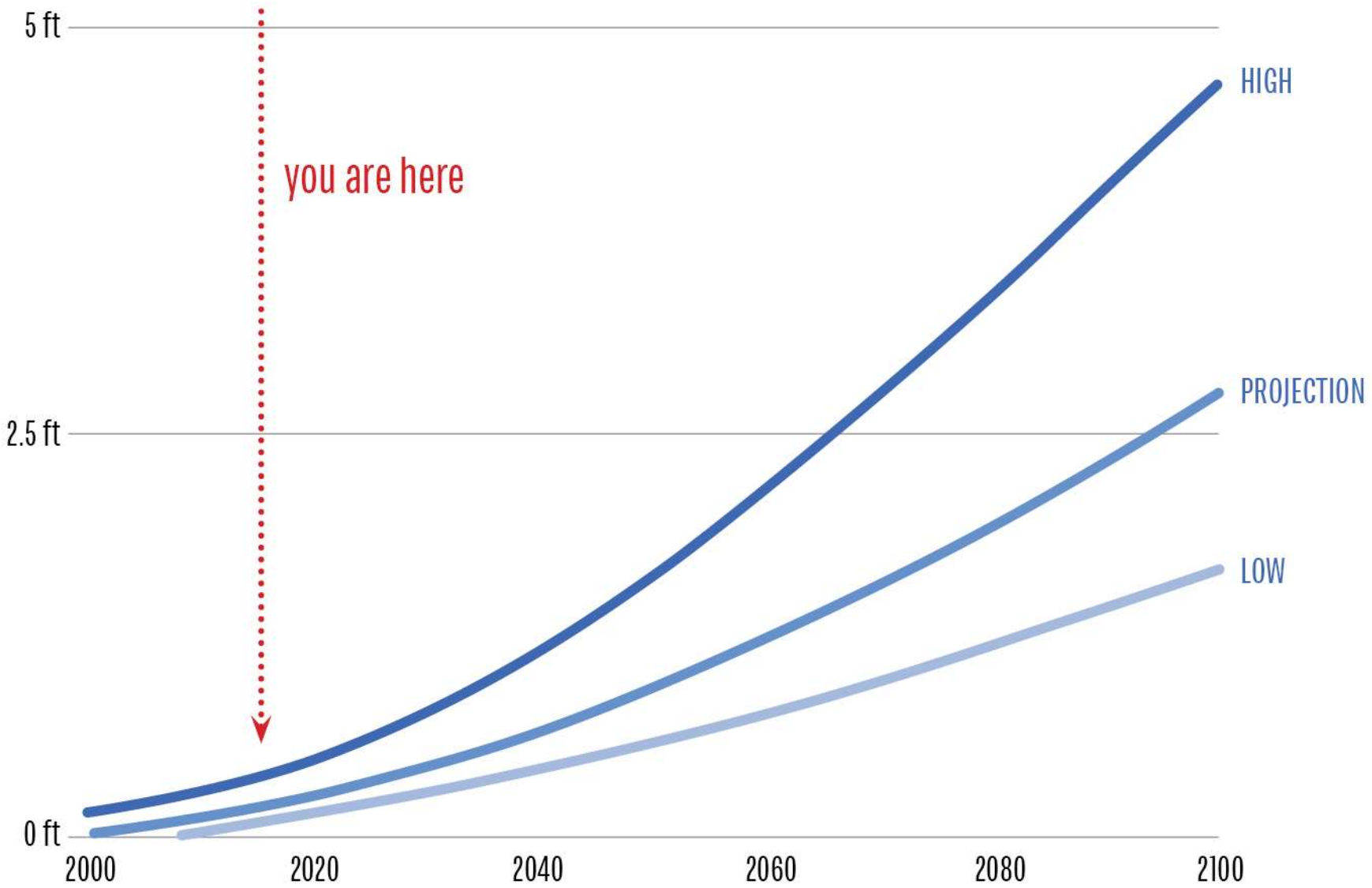
SAN JOSE/
SANTA CLARA
WATER POLLUTION
CONTROL PLANT

Plant Master Plan

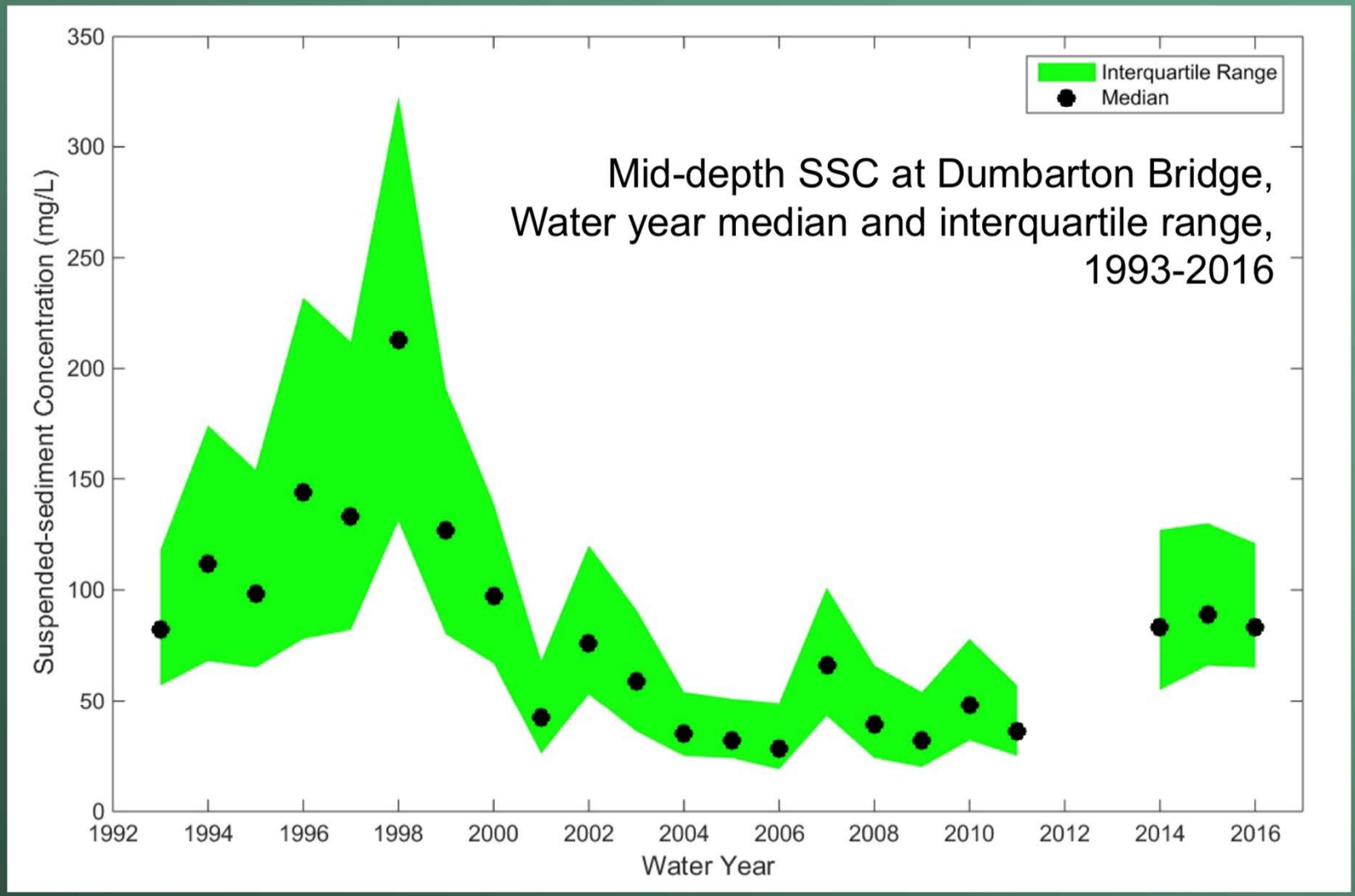
Challenges

SEA LEVEL *rise* FOR CALIFORNIA

Courtesy NRC 2012

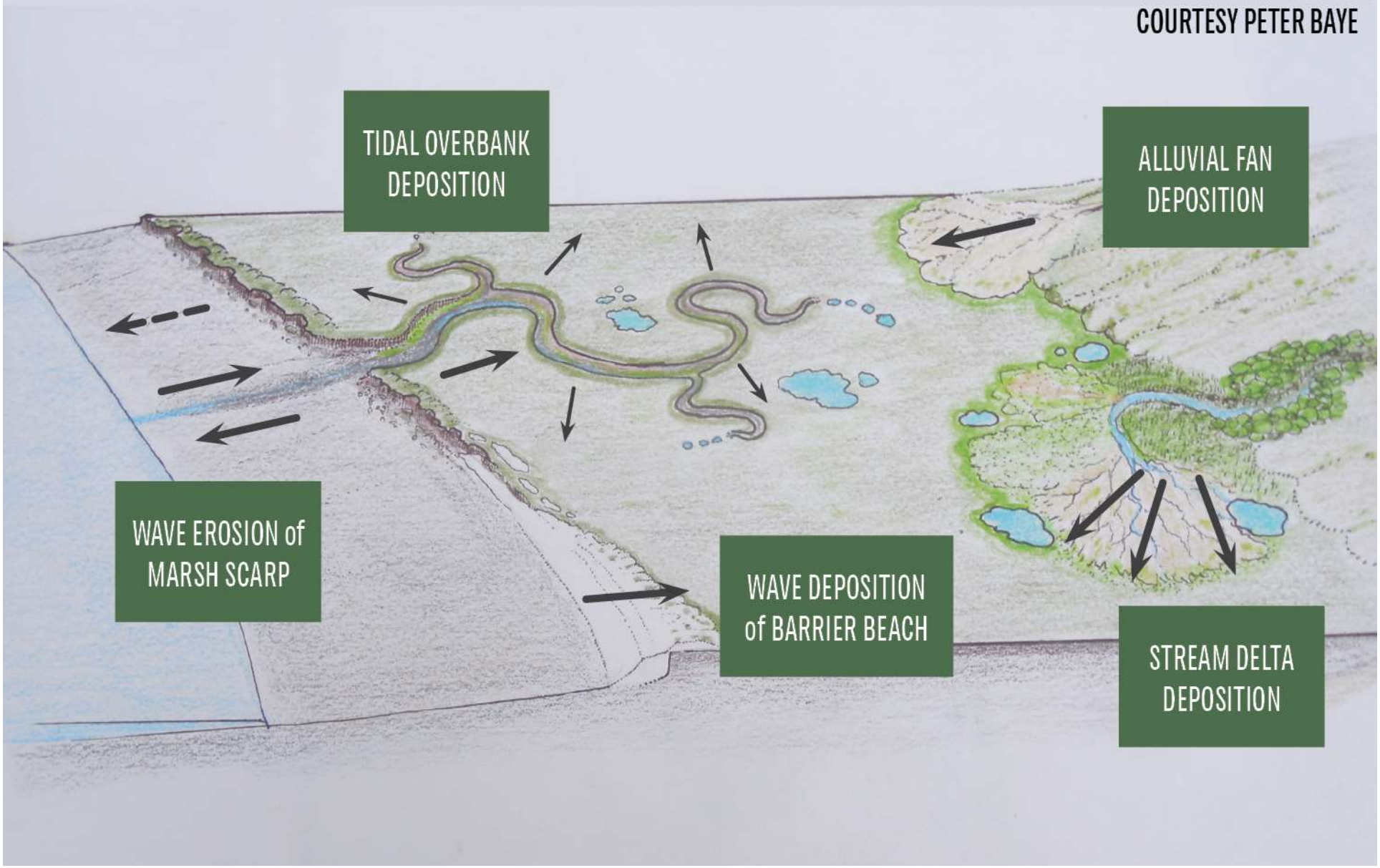


Dumbarton Bridge concentration



* 2012-2013 data gap due to bridge construction

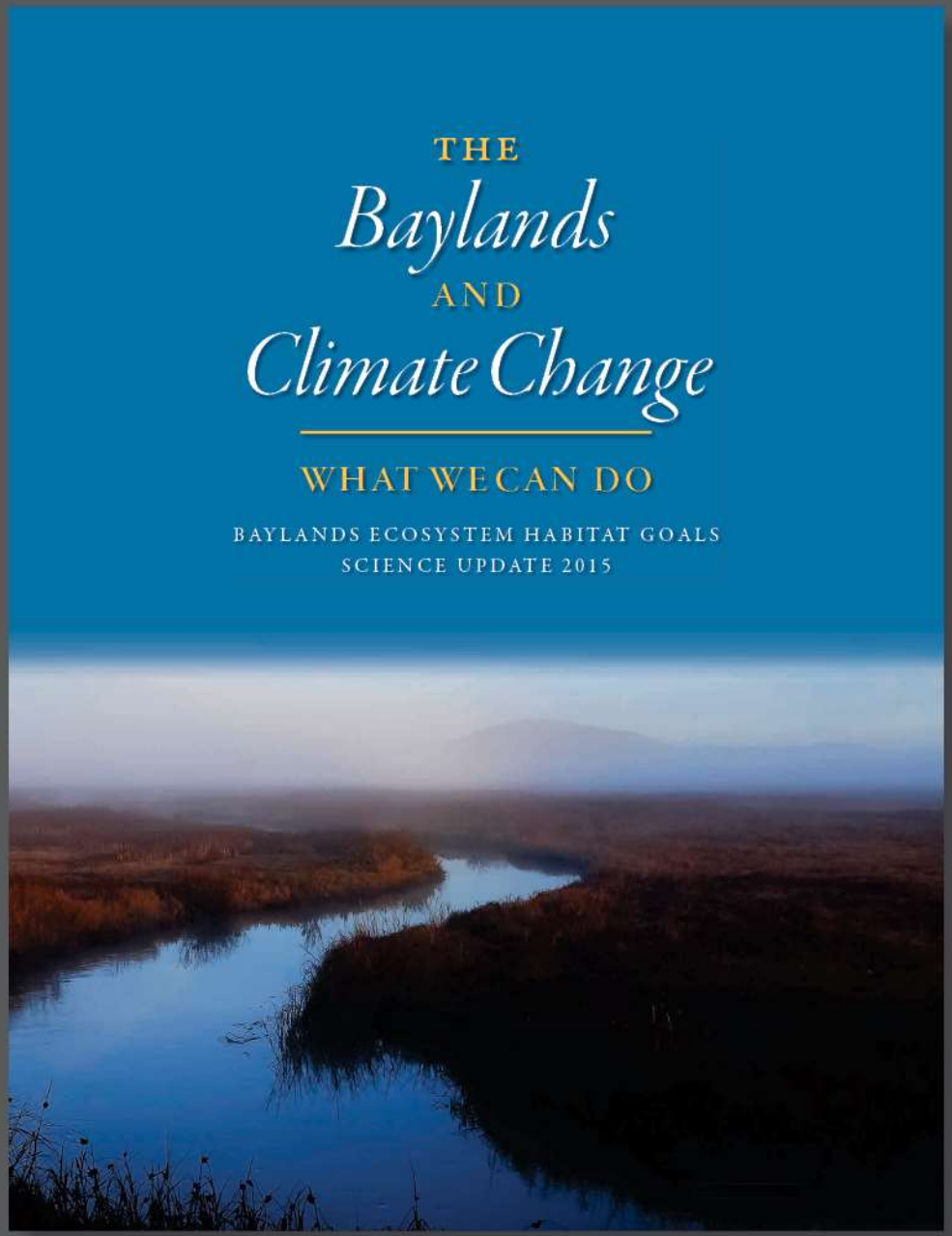
MEANS RESTORING *PROCESSES* NOT JUST PLACES



Innovation

Rethinking Policies To Fit A Changing Reality

Rethinking Policies To Fit A Changing Reality



State of California
Coastal Conservancy

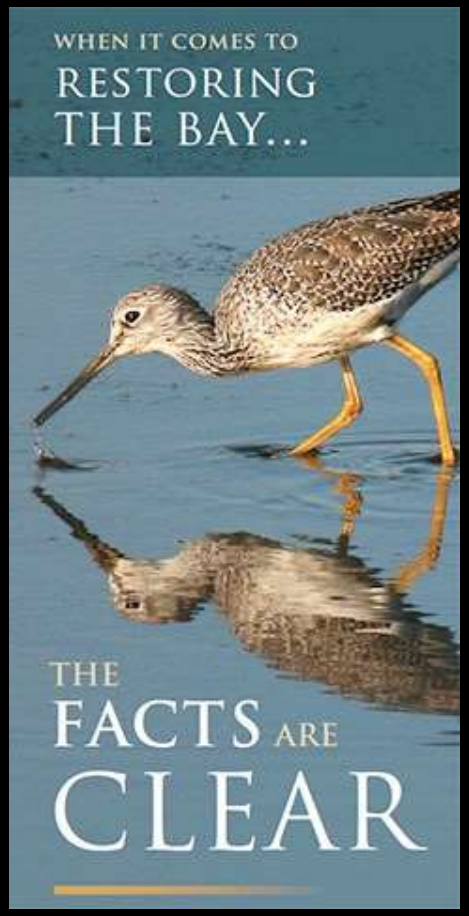
BAY AREA ECOSYSTEMS CLIMATE CHANGE CONSORTIUM

WHAT WE CAN DO

- *Restore complete systems, including processes*
- *Restore soon, in areas marshes are likely to persist*
- *Plan for the Baylands to migrate*

Investment

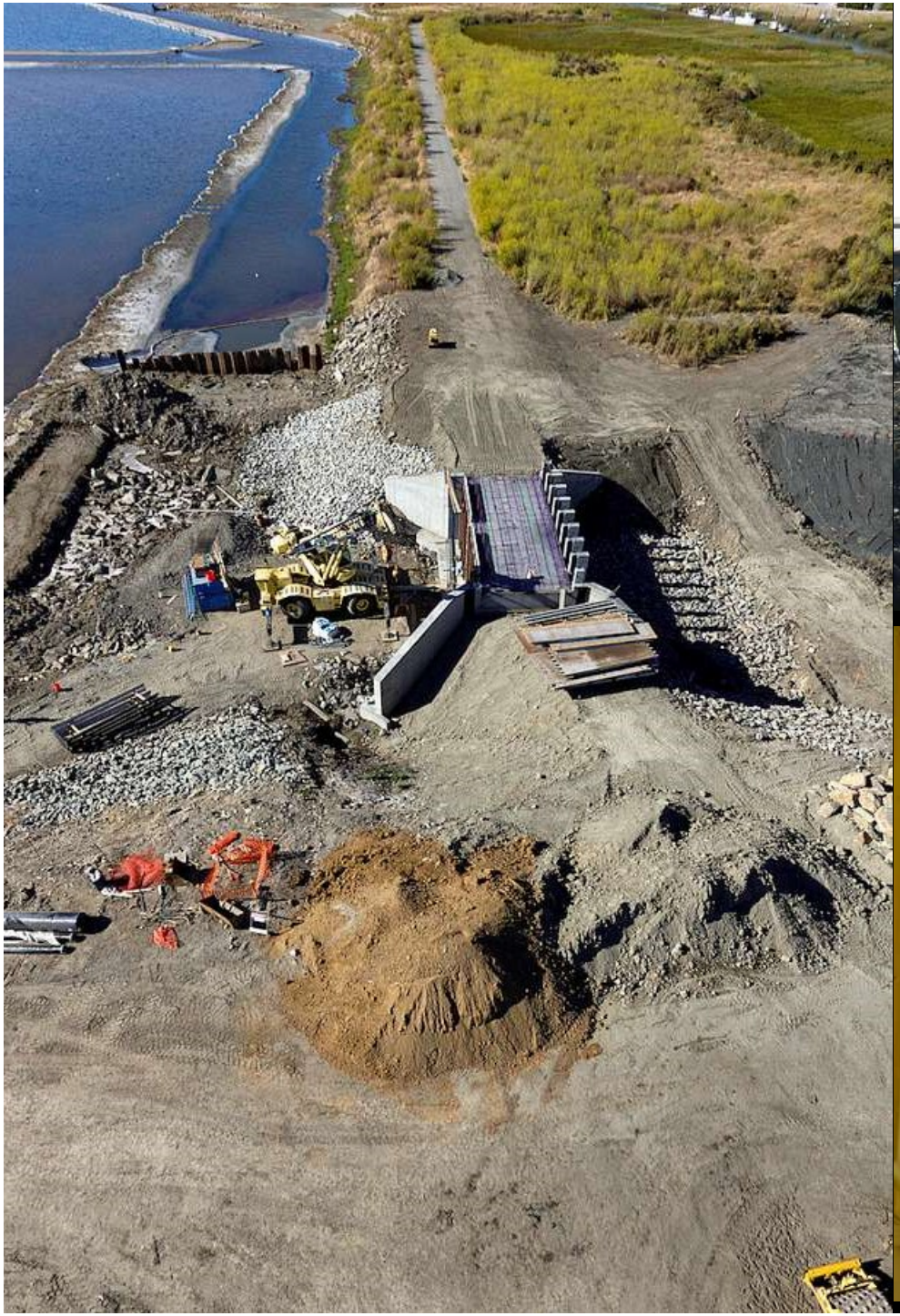
San Francisco Bay Restoration Authority



YES on AA

CLEAN AND HEALTHY BAY

- $12/year parcel tax
- $500 million over 20 years
- Passed with >70% approval



Partnerships

Partnerships

South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

Coastal Conservancy

Resources Agency California Department Fish & Game

U.S. Fish & Wildlife Service

Santa Clara Valley Water District

Alameda County Flood Control & Water Conservation District

East Bay Regional Park District

USGS science for a changing world

Water Boards

Cargill

United States Environmental Protection Agency

bcdc

National Oceanic and Atmospheric Administration NOAA U.S. Department of Commerce

San Francisco Bay Bird Observatory

The Bay Institute

SFEI

Point Blue Conservation science for a healthy planet.

SAVE THE BAY

USF

Stanford University

San José State University

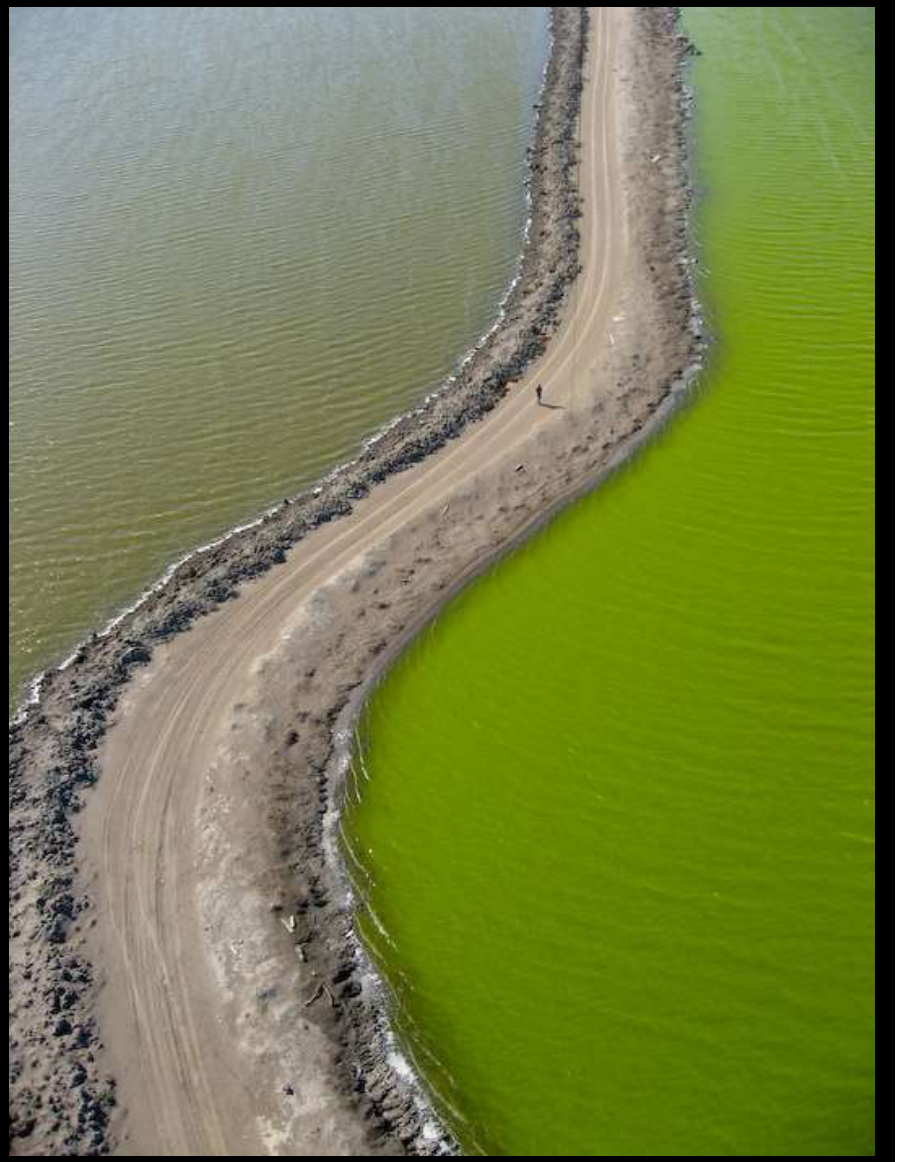
University of California Davis

Ducks Unlimited

AECOM URS

Audubon California

San Francisco Bay Joint Venture



LEAP, Nate Kauffman

Thank you!

-John Bourgeois, Valley Water, jbourgeois@valleywater.org

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