

OCTOBER 5, 2010

A PRESENTATION of the Regional Monitoring Program for Water Quality in the San Francisco Estuary



LINKAGES BETWEEN WATERSHEDS AND THE BAY: PAST, PRESENT, AND FUTURE



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Watershed Inputs to the Bay

- Water chemistry
 - OM, nutrients, contaminants, etc.
- Sediment
 - different geologic sources, coarse vs. fine
- Freshwater
 - volume, timing – hydrograph
- Biology
 - juvenile steelhead, wetland birds, etc.

What controls those inputs?

- Climate
- Geology and topography
- Drainage network
- Wetlands
- Land use
- Vegetation cover

What controls those inputs?

- Climate
- Geology and topography
- **Drainage network**
- **Wetlands**
- **Land use**
- **Vegetation cover**



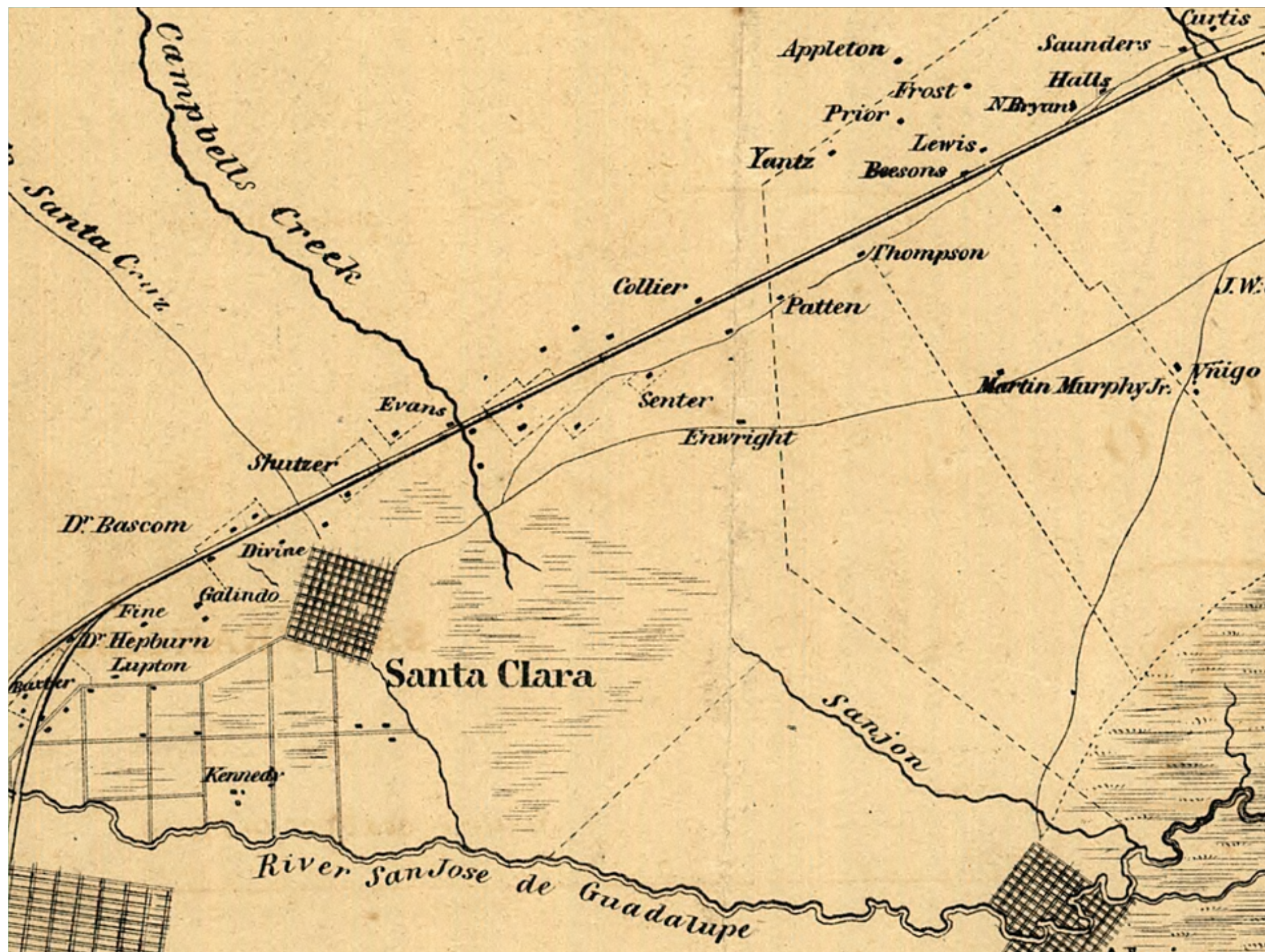
1800

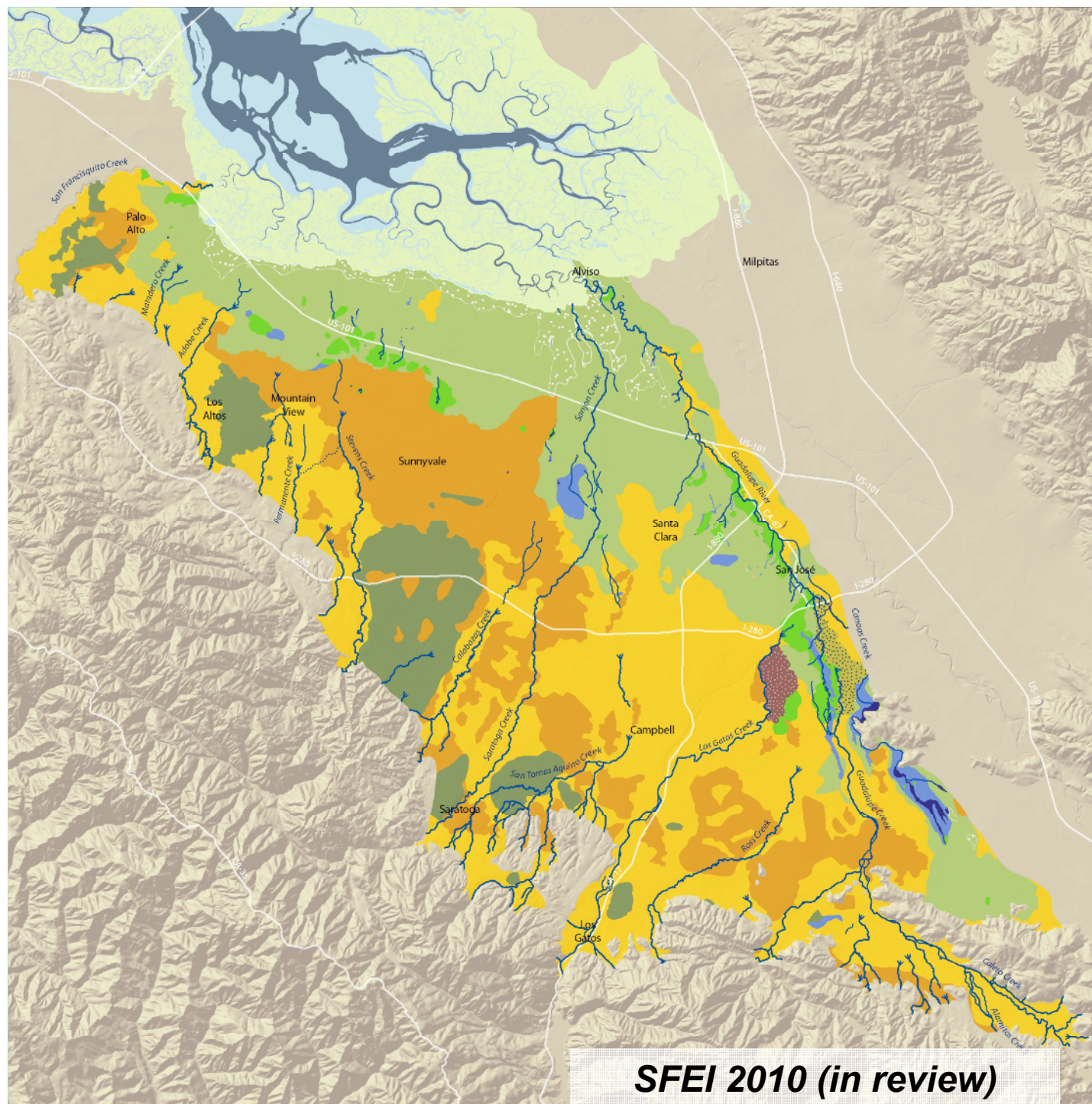


SANTA CRUZ MOUNTAINS

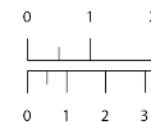


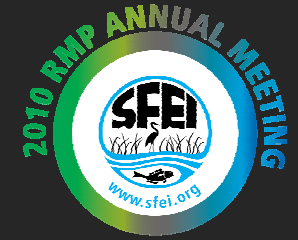
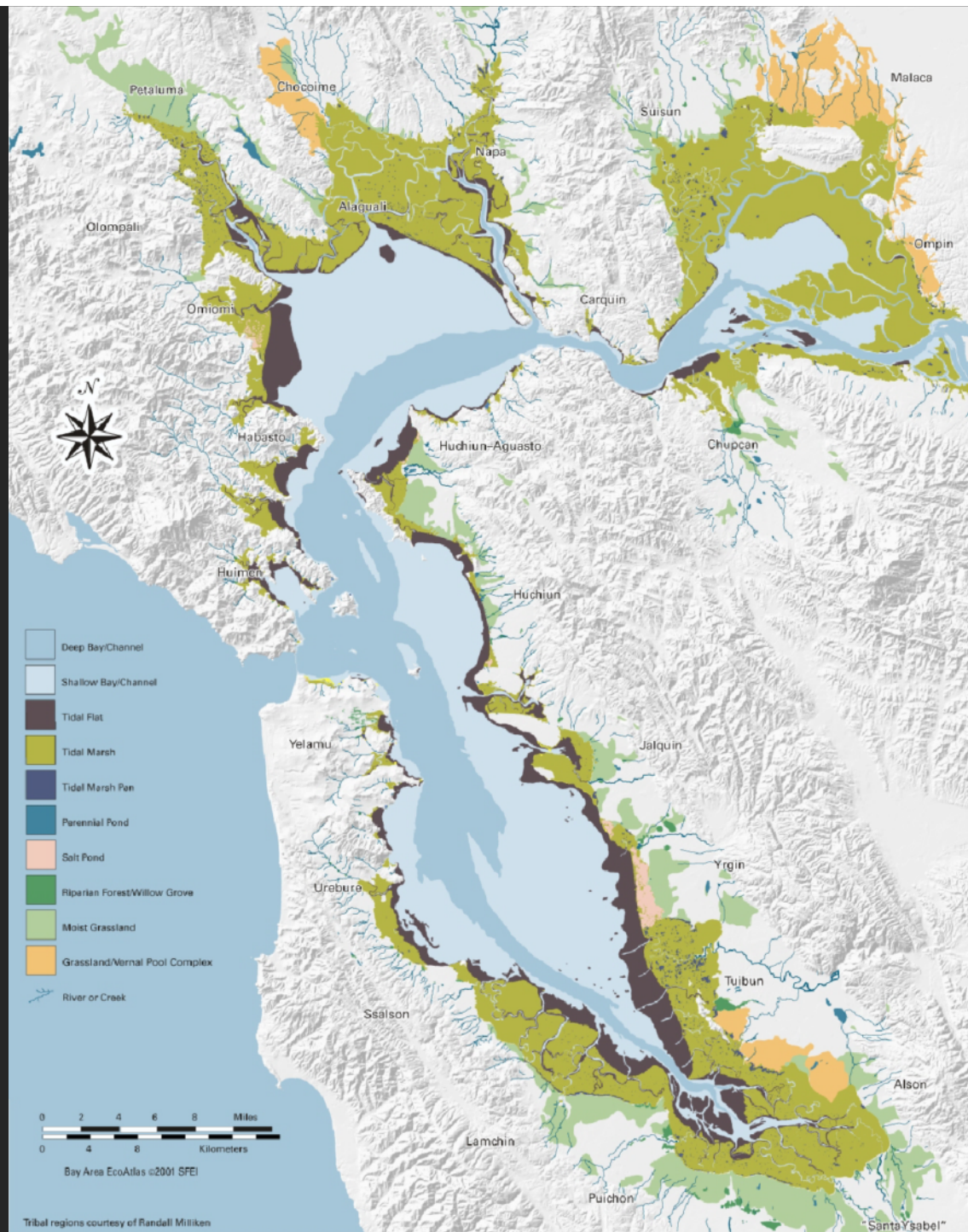
98-688756





- Subtidal Water
- Tidal Flat
- Tidal Panne
- Tidal Marsh
- Alkali Meadow
- Wet Meadow
- Valley Freshwater Marsh
- Perennial Freshwater Pond
- Willow Grove
- Sycamore Grove
- Wild Rose Thicket
- Box Elder Grove
- Oak Savanna
- Oak Woodland
- Chaparral

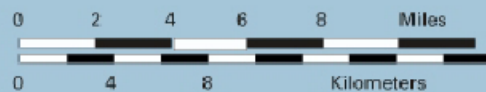




Tribal regions courtesy of Randall Milliken

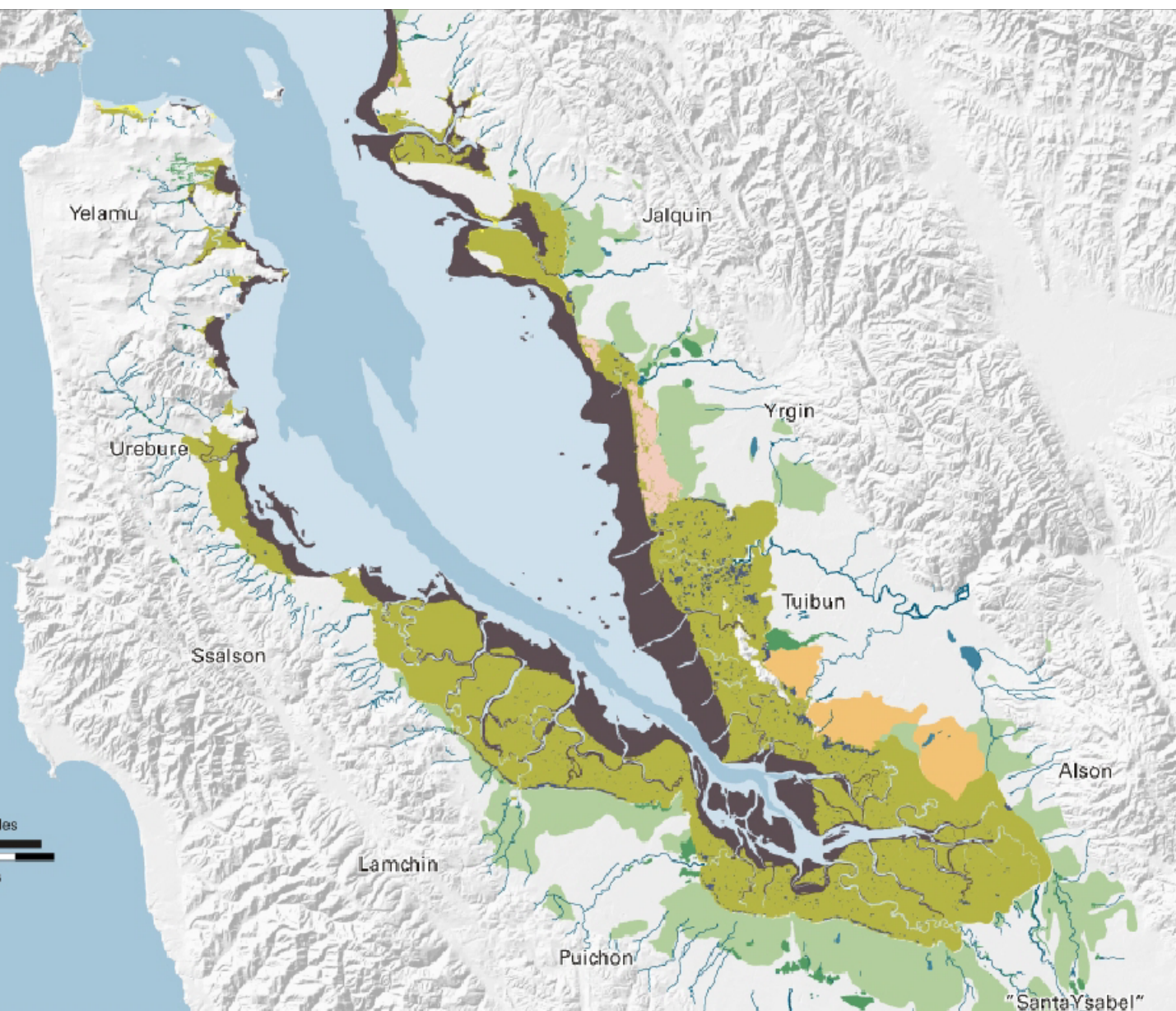
"Santa Ysabel"

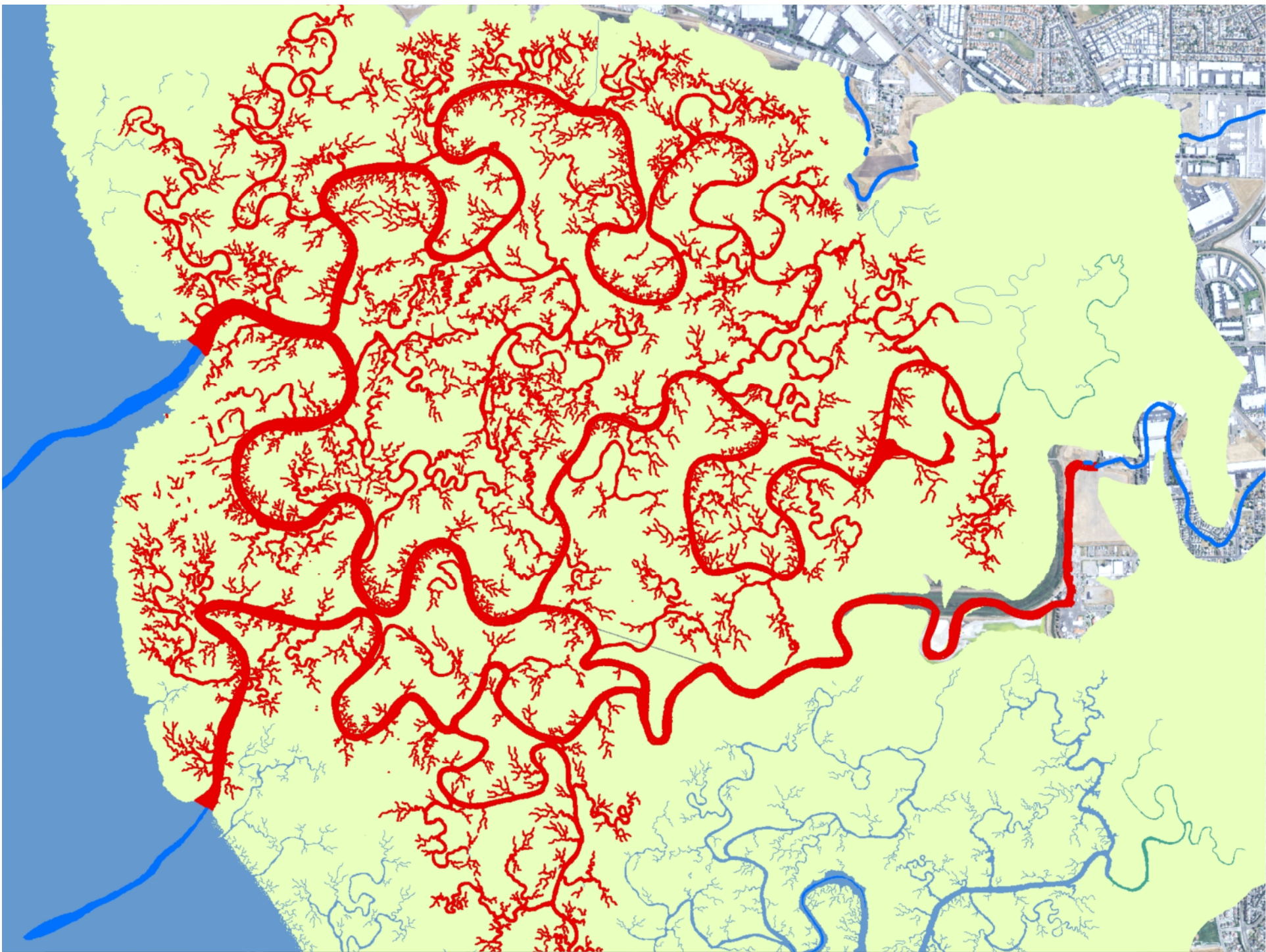
-  Deep Bay/Channel
-  Shallow Bay/Channel
-  Tidal Flat
-  Tidal Marsh
-  Tidal Marsh Pan
-  Perennial Pond
-  Salt Pond
-  Riparian Forest/Willow Grove
-  Moist Grassland
-  Grassland/Vernal Pool Complex
-  River or Creek



Bay Area EcoAtlas ©2001 SFEI

Tribal regions courtesy of Randall Milliken

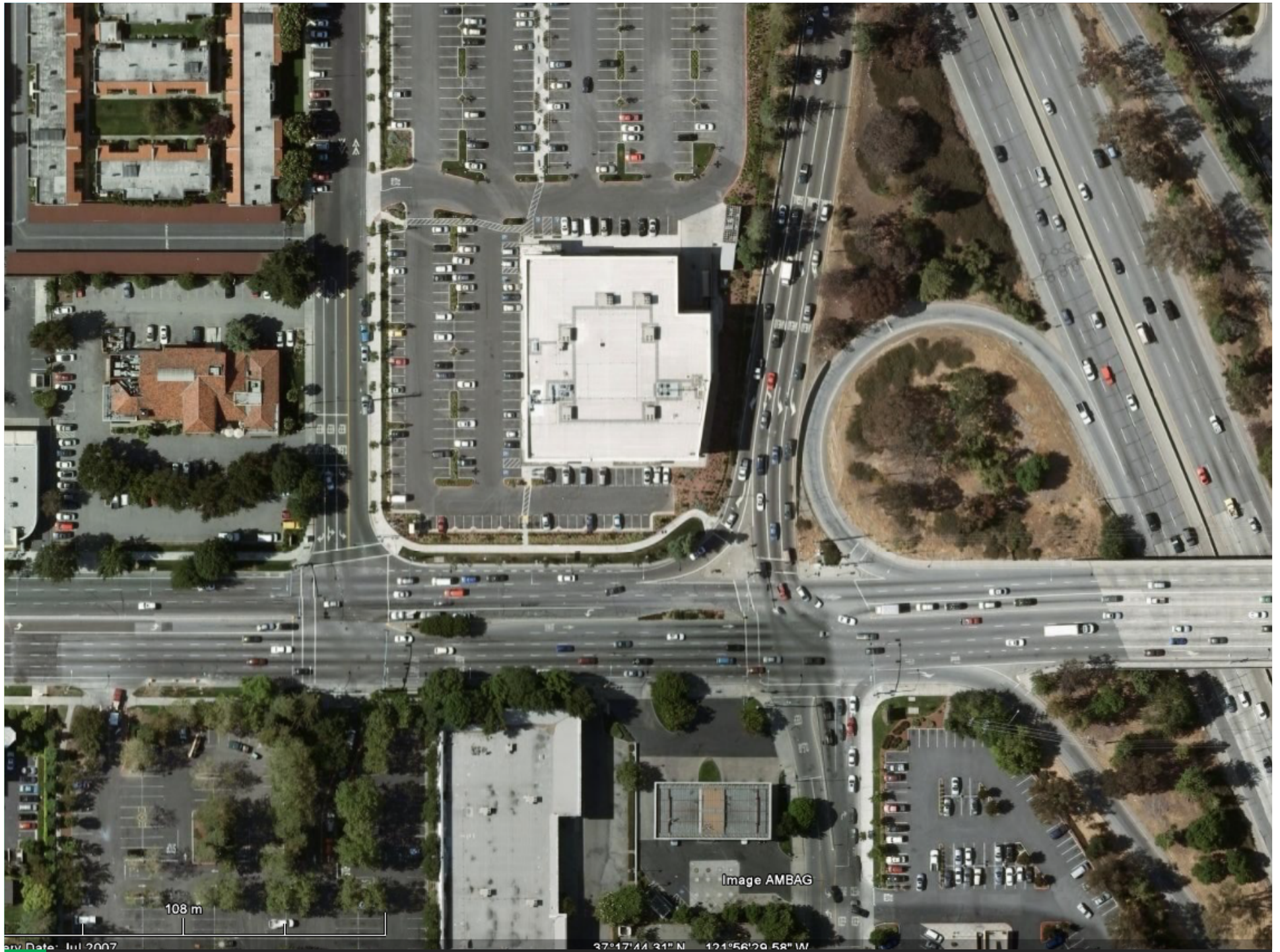






2010





Fluvial channel network change

Historical Coyote Creek Drainage Network



San Jose



1800:
“disconnected”
system

Fluvial channel network change

Modern Coyote Creek Drainage Network

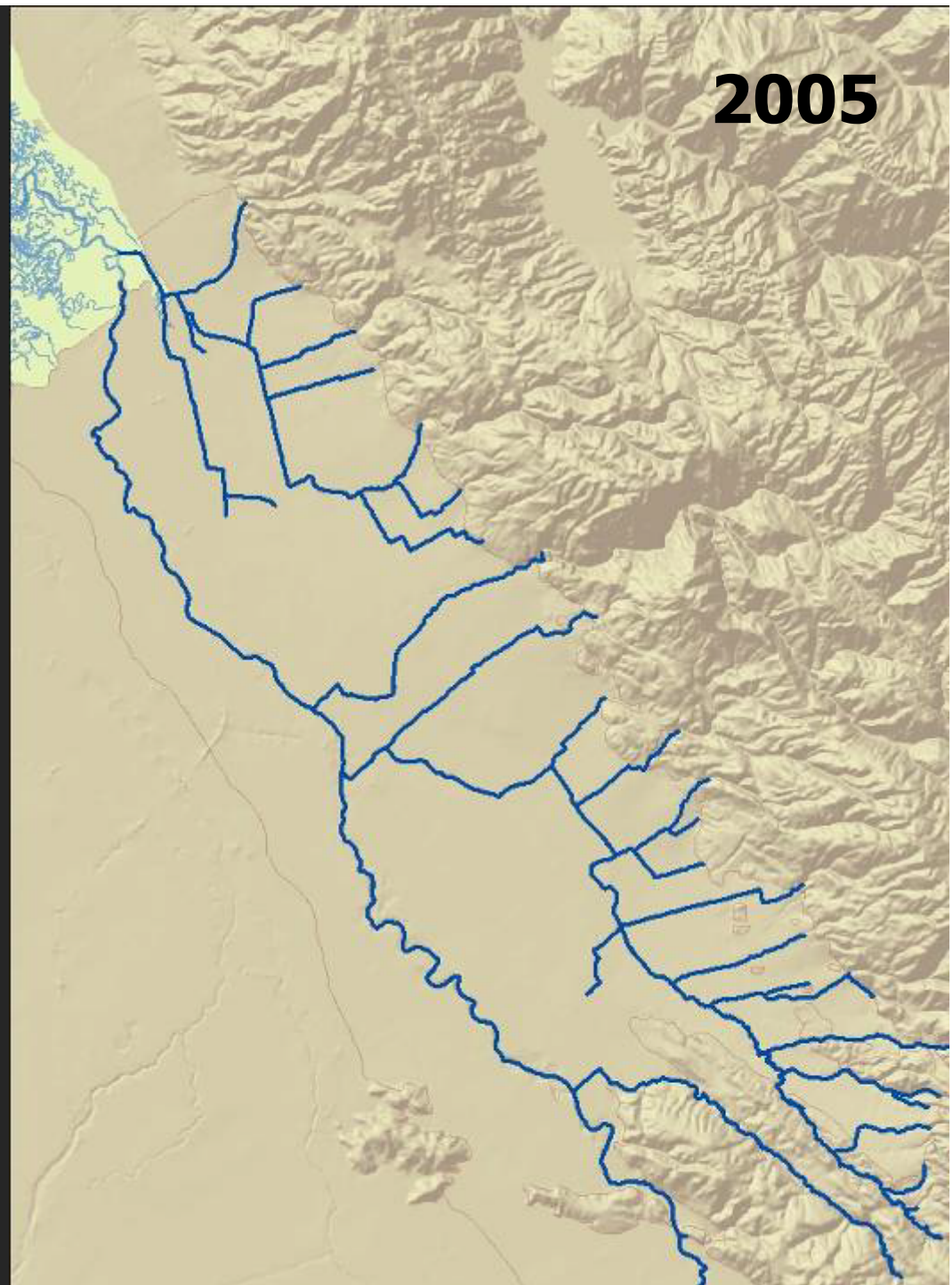
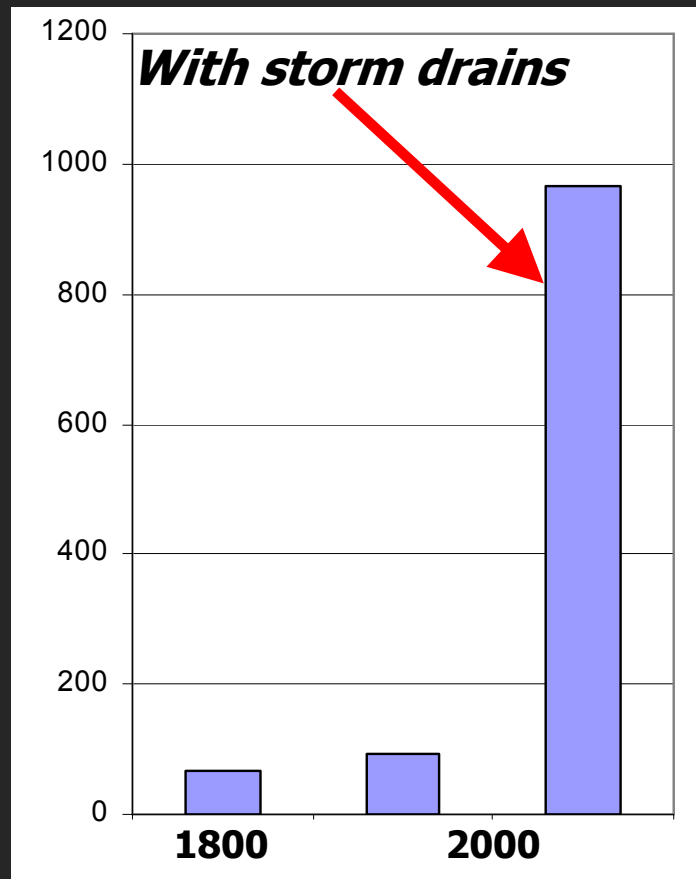


San Jose



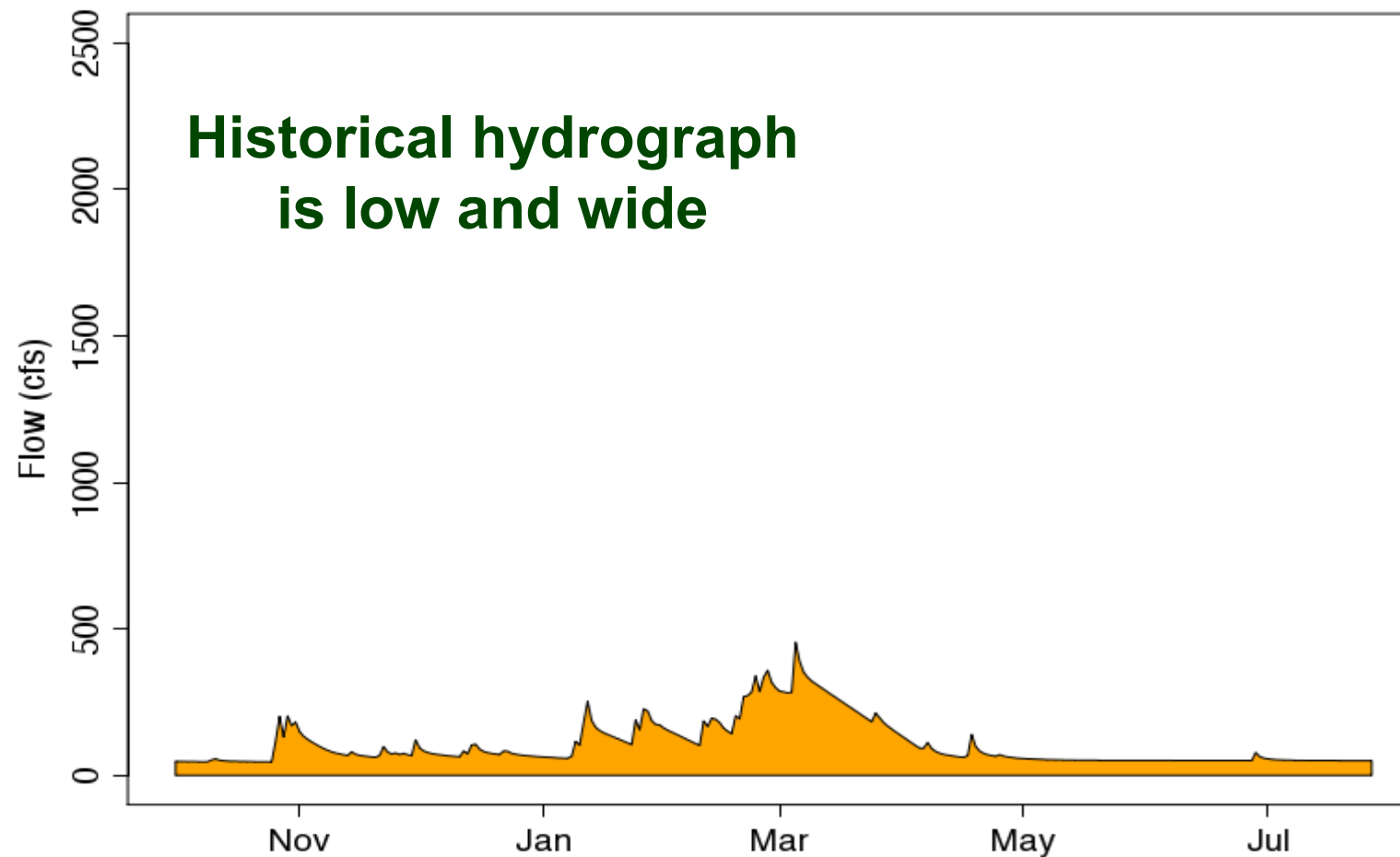
2005:
“increased
connectivity”

***Miles of valley floor channel
tributary to Coyote Creek***



[illegible]

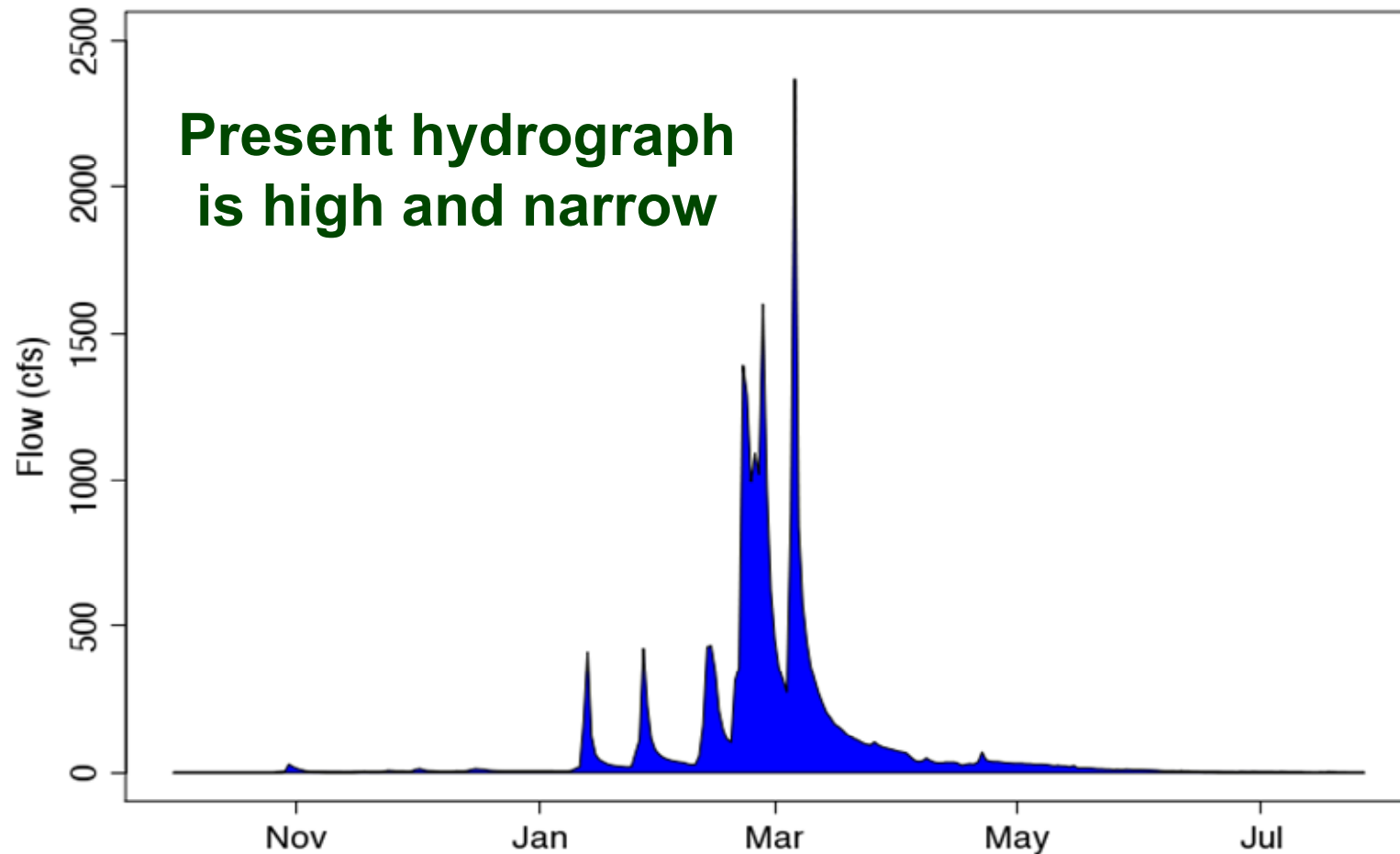
Napa River hydrograph



Yr 2000 rain on Yr 1700 landscape

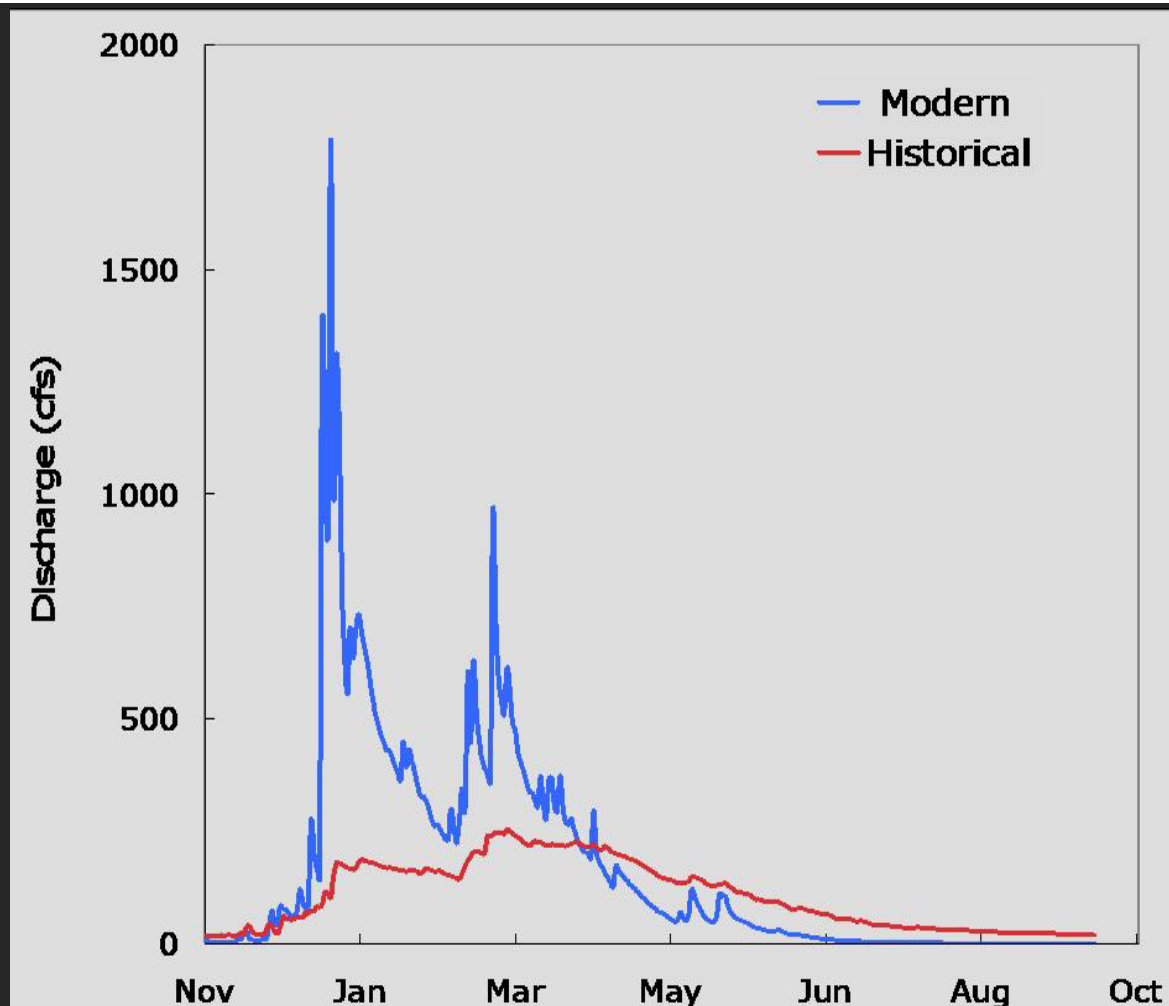
(SFEI 2010)

Napa River hydrograph



Yr 2000 rain on Yr 2009 landscape

(SFEI 2010)



Flashy hydrograph (despite large dams)

- incision
- fine sediment/coarse sediment imbalance
- less dry-season flow





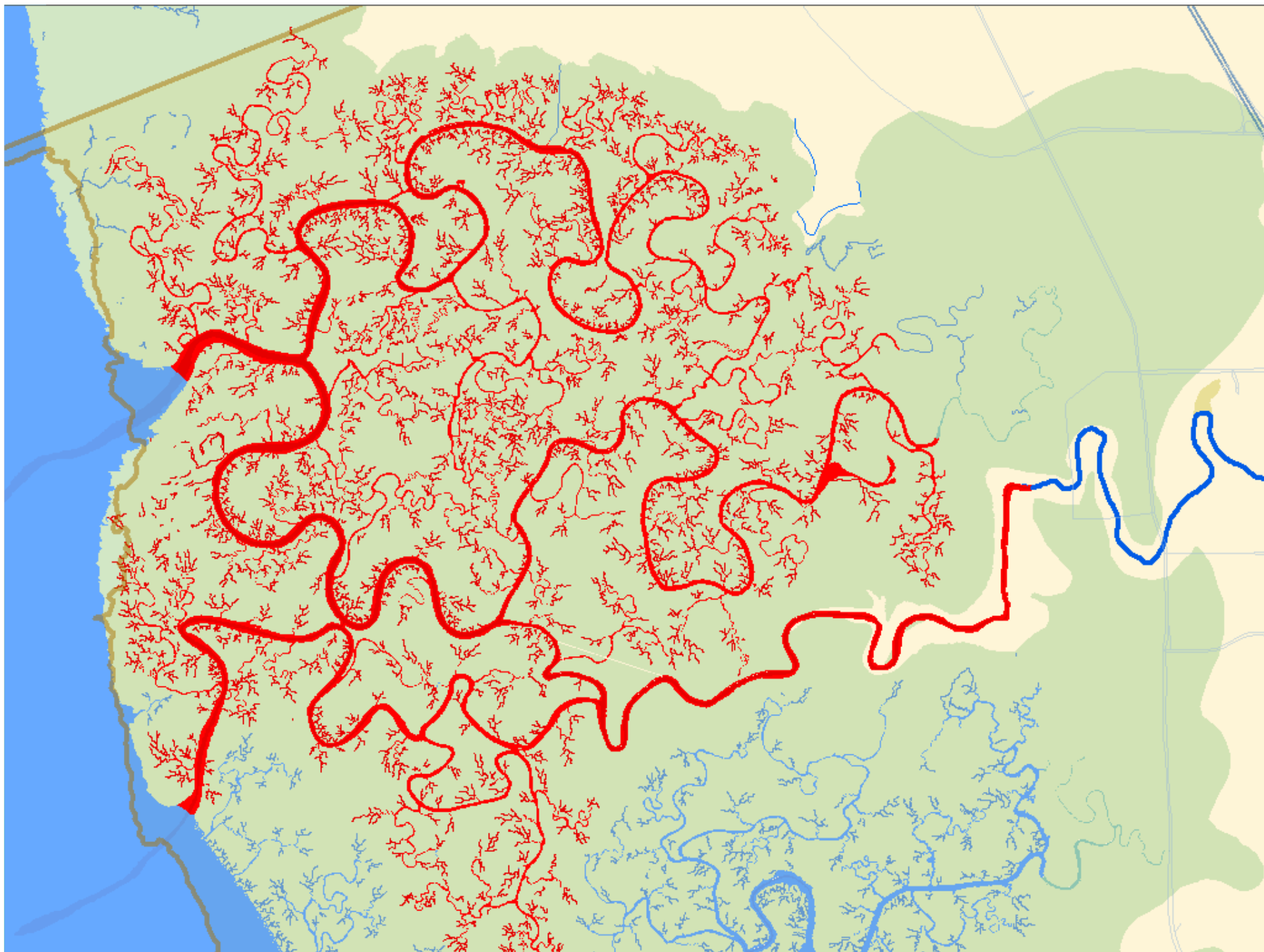
2050?

Redesign of the fluvial-tidal interface





Courtesy
PWA

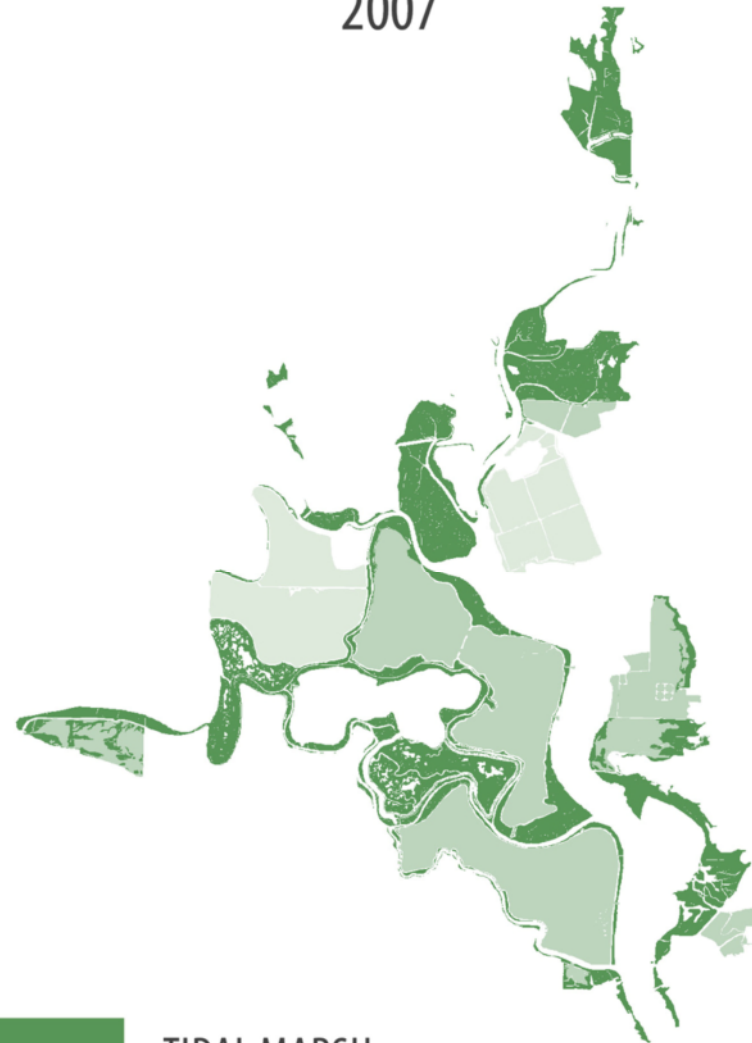




Restoration of tidal marshlands



2007



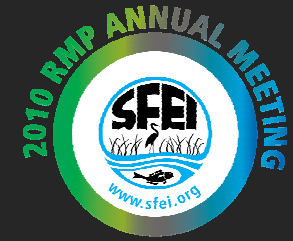
TIDAL MARSH

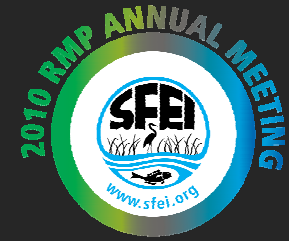


TIDAL MARSH (IN PROGRESS)



TIDAL MARSH (PLANNED)





Increased runoff retention

- LID

- IRWMP

- urban forestry

- groundwater recharge

- floodplain and wetland restoration

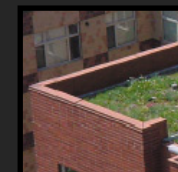
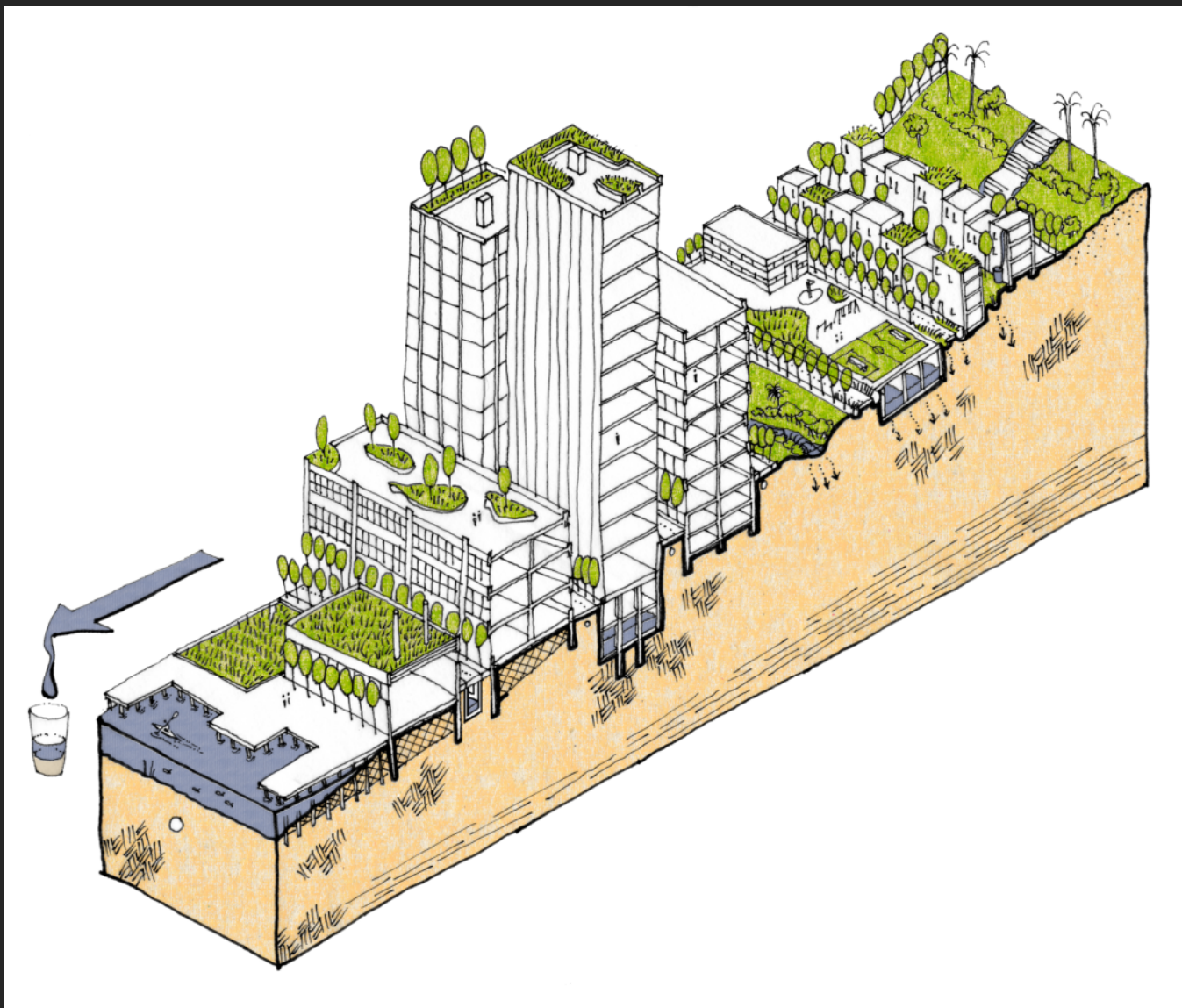
1916



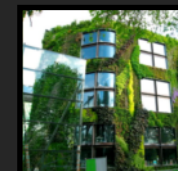
2007



Low Impact Design (LID)



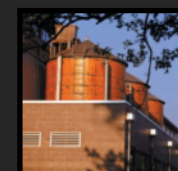
Intensive
eco-roof



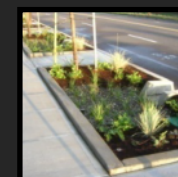
Rain
screen



Permeable
paving



Downspout
disconnect &
cistern



In-street
planter

Courtesy SFPUC







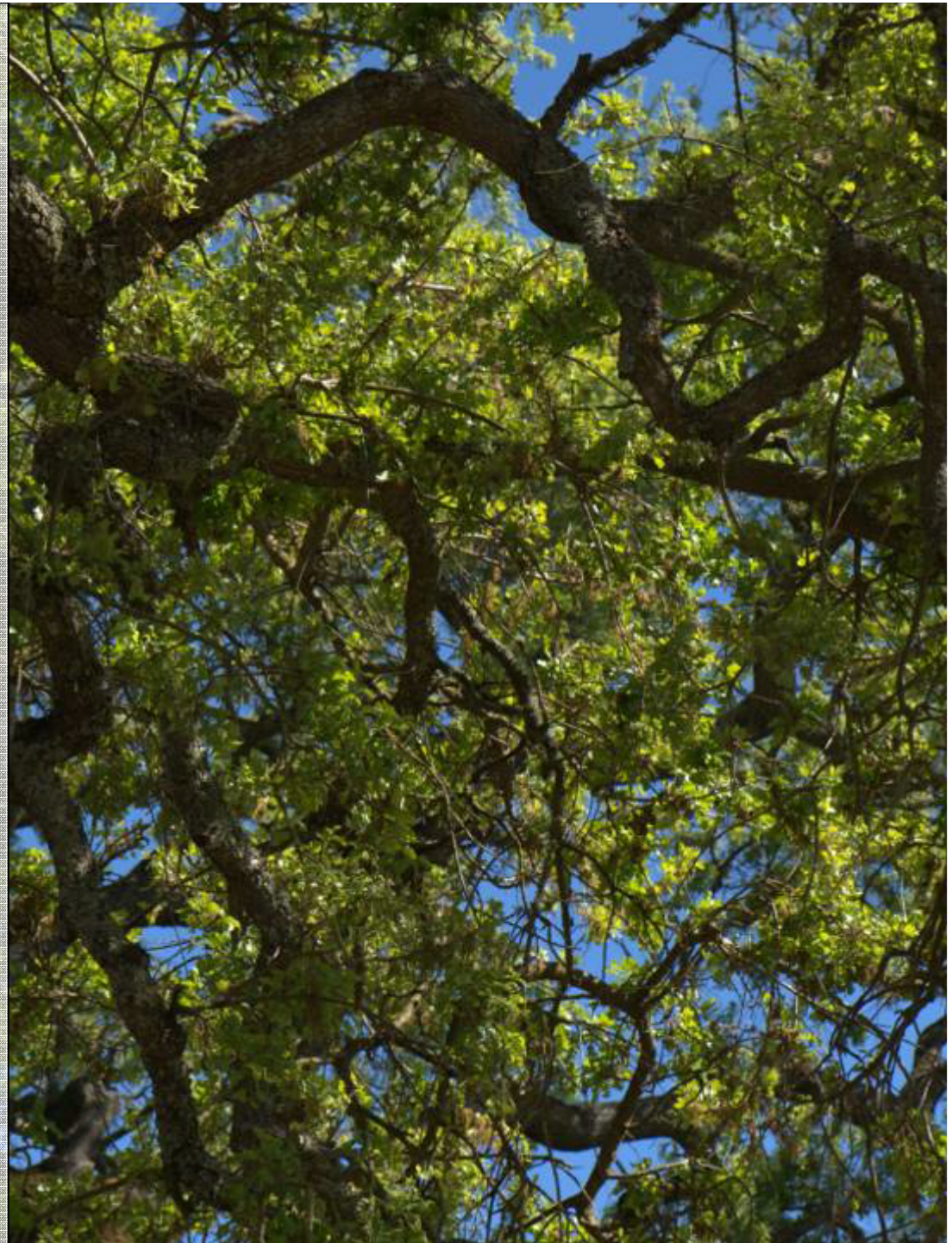
E.J. Peiker

Pacific pallid bat



scienceblogs.com

Acorn woodpecker







SFEI LID Assessment

7 projects presently underway:

- **Green Infill-Clean Stormwater**
(SFEP/Daly City)
- **El Cerrito Green Street Pilot**
(SFEP/City of El Cerrito)
- **North Richmond Pump Station**
(SFEP/Contra Costa County)
- **Newcomb Ave Model-Block**
(SFEP/City of San Francisco)
- **Fitzgerald Mar. Res. LID Assessment**
(County San Mateo/P84)
- **Statewide LID Monitoring Framework**
(SCCWRP/State Board)
- **Regional Site Suitability for LID/Green Infrastructure**
(SWRCB)





Streaming 1000000 100%



21st Century Watershed Design

- **Delivering the right sediment to the right places: where? how? clean?**
- **Retaining runoff, recharging GW, reducing flood peaks: where? how? clean?**
- **How should strategies differ within very different small tributaries?**
- **What are the cumulative effects? How do we monitor them?**



THANK YOU

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