



# Visions of Butterflies and Mice - A Story in 3 Parts -



Part one - Francesca Demgen, Friends SPB NWR

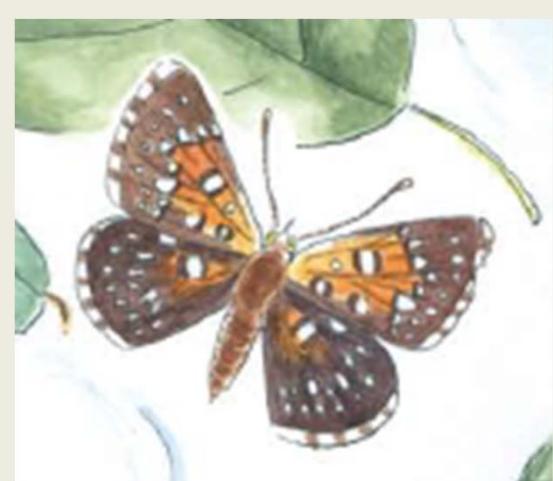
culture & critters: Keeping San Pablo Bay wild

Part two - Louis Terrazas, USFWS

Visions of Saving Butterflies with Sand

Part three - Matthew Bettelheim

Visioning the Message: Telling the Story to Children



# Introduction

Francesca Demgen

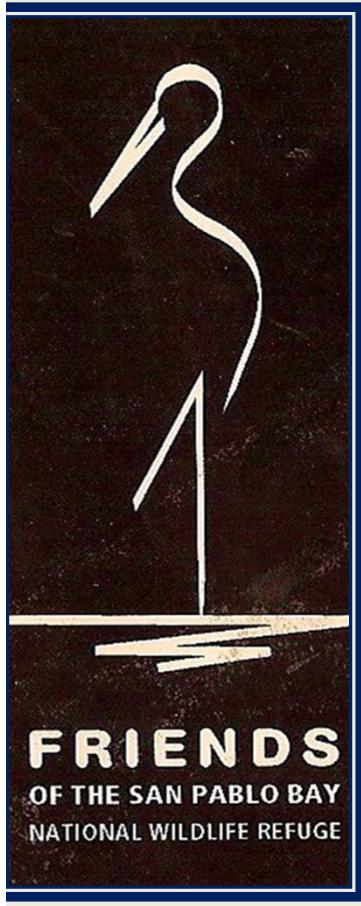
Friends of San Pablo Bay National  
Wildlife Refuge



## TOPICS

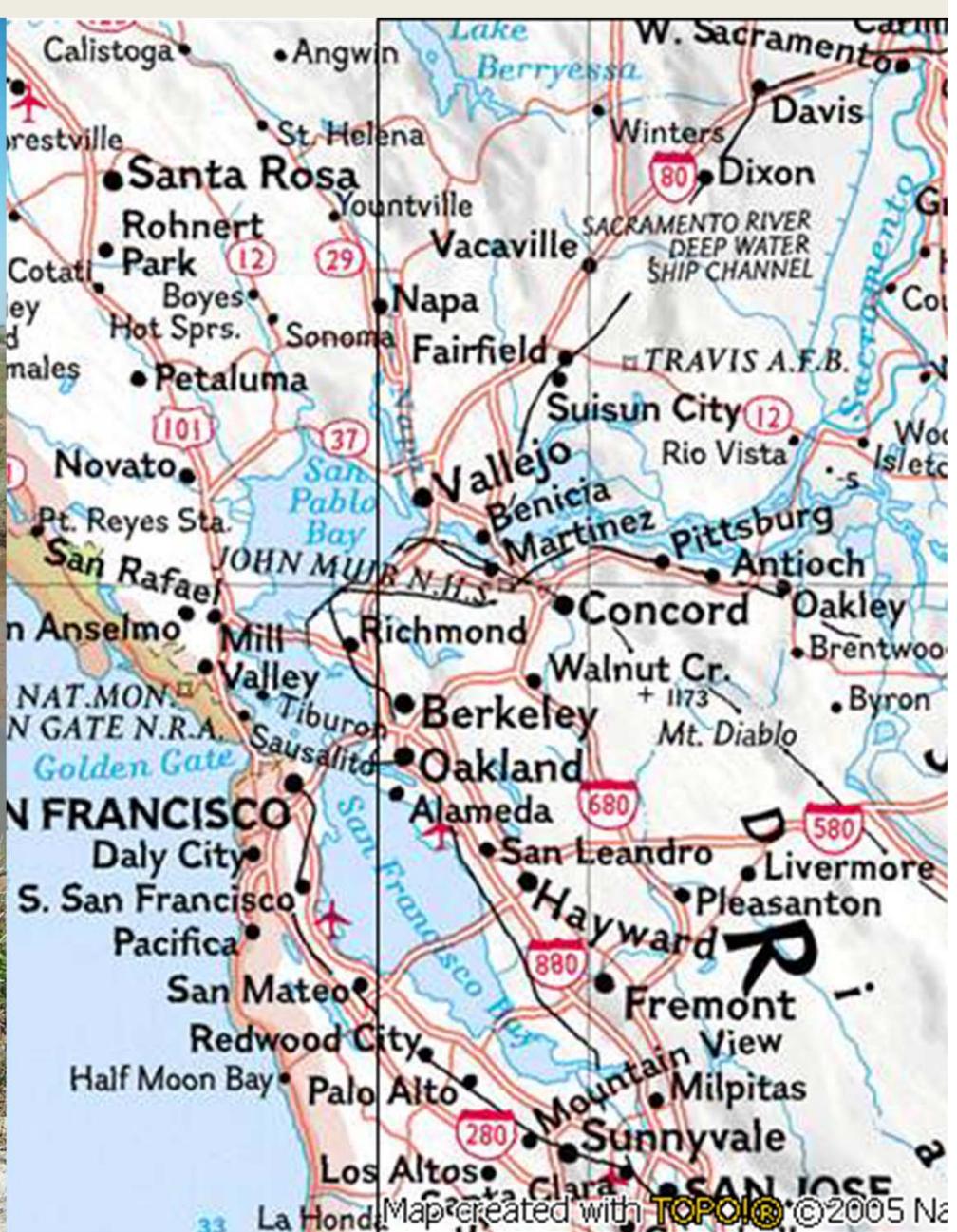
The development of the bay and its wetlands

Examples of how culture affects the bay and its wetlands





NATIONAL

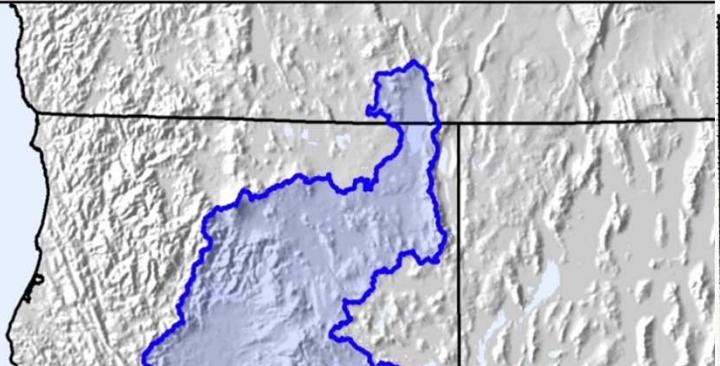


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# The Estuary

- The Estuary = fresh & salt
  - Sacramento River
  - San Joaquin River
  - 2/3 of California drains thru San Francisco Bay
- Napa River Watershed
  - 426 sq. mi.
  - 50 mi. long
  - 47 trib
  - Steelhead



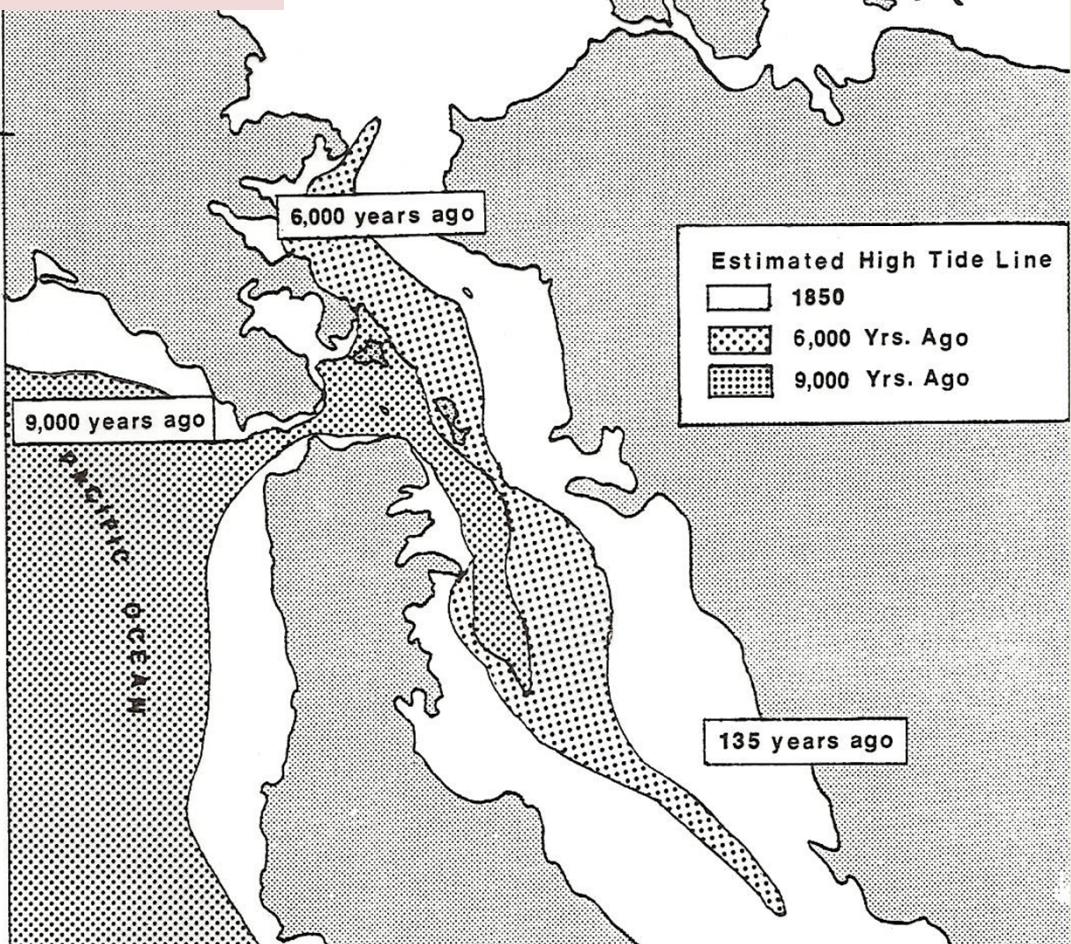
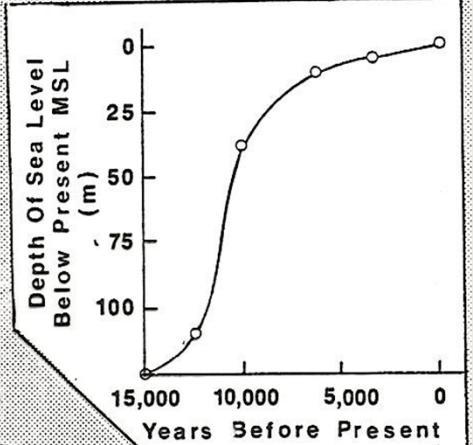
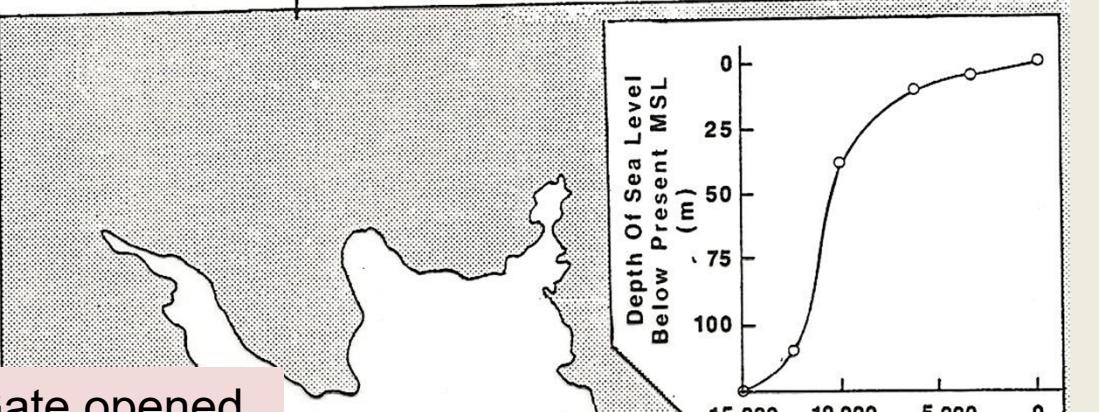


9K years ago Golden Gate opened  
~60% of CA now drains thru bay



15,000 years ago

- Valley drained thru Monterey
- Walk to Farallons
- Sea Level 125 ft below present

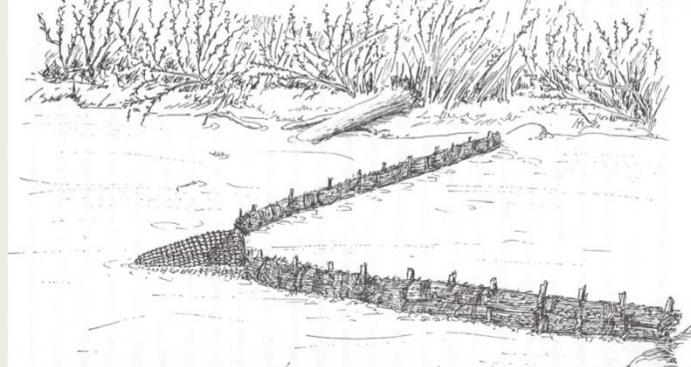


# North Bay land use over time

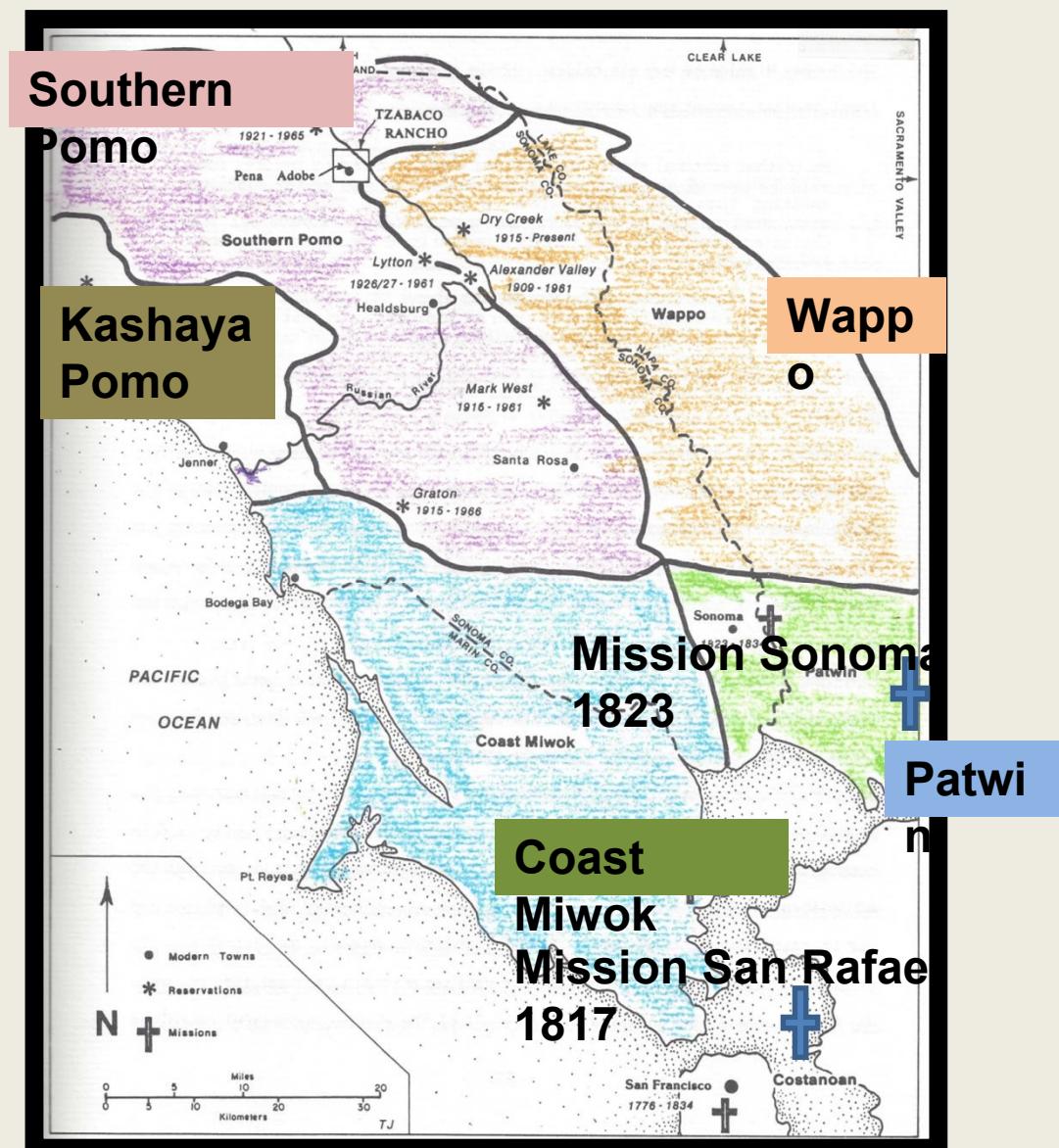
- For centuries pre-1850 Indigenous people
- Culture: Mare Island and Skaggs Island examples
- Physical changes

*The Indians' preservation of the land and its products for the 10,000 or more years of their undisputed occupancy was such that the white invaders wrested from them a garden, not the wilderness it salved their conscience to call it.*

(Kroeber and Heizer 1968:24, in USACE 1984)



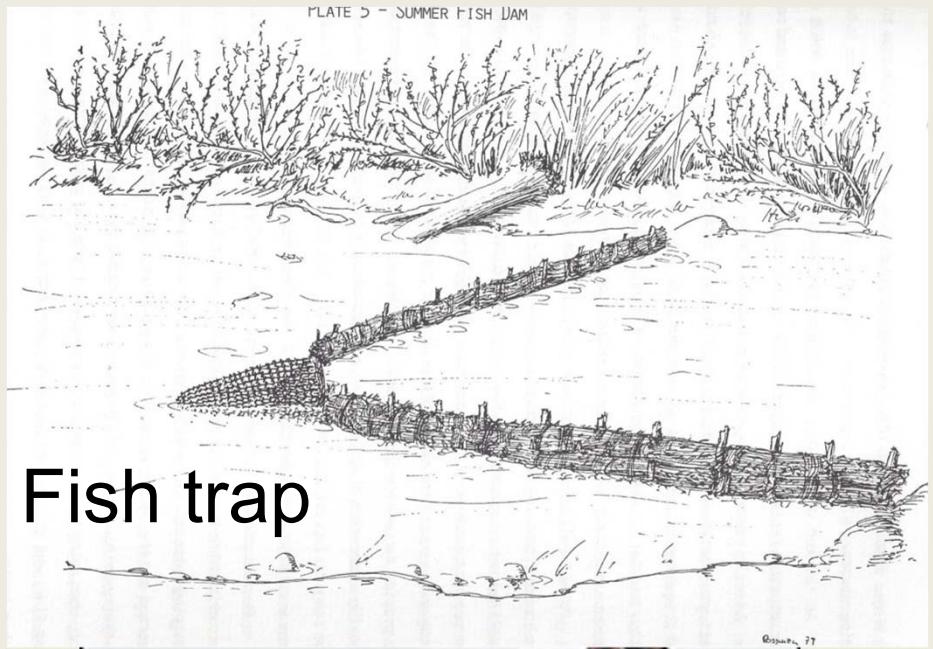
Fish trap

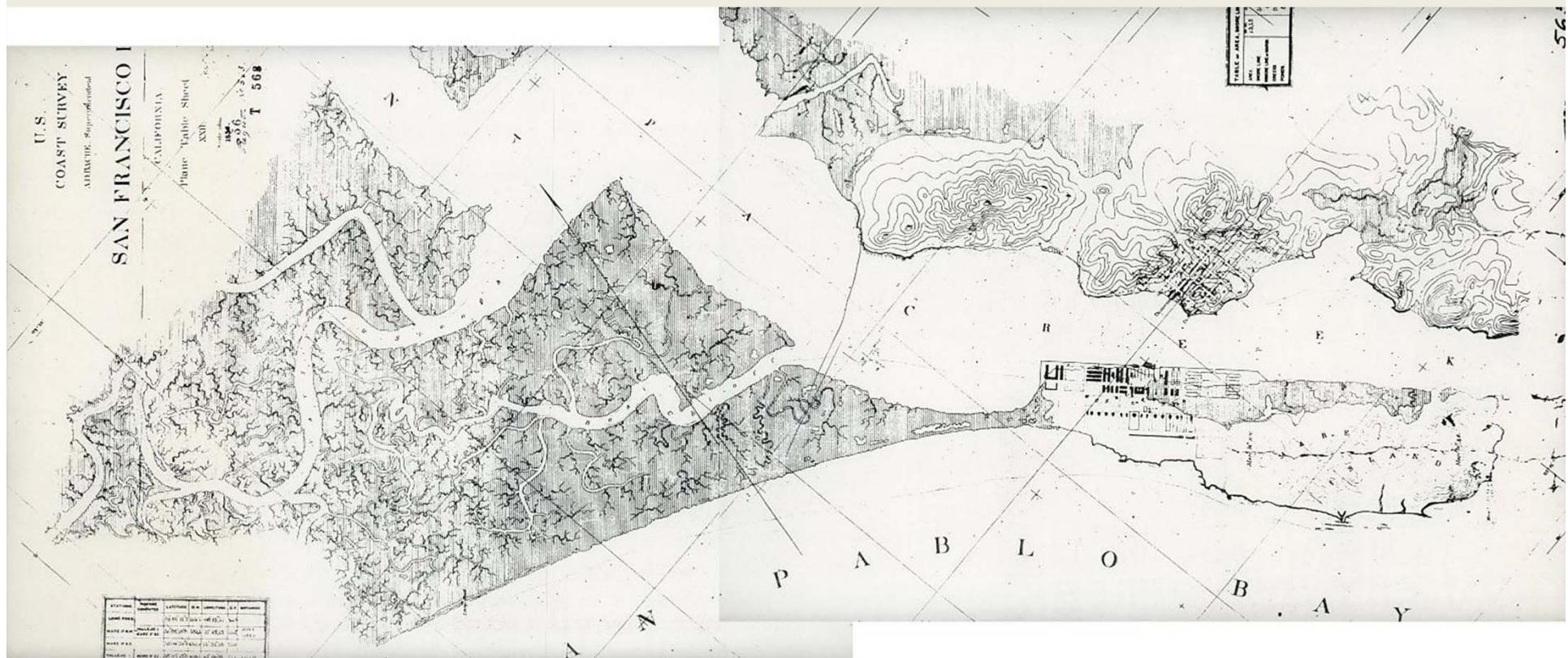


**Mission Dolores  
1776**

# Native Americans Harvested North Bay Wetlands

- Coast Miwok and Patwin
- Hunting: deer, elk, ducks and geese fishing
- Fishing: Steelhead runs in Napa River, Sonoma Creek and Petaluma River
- Basket making: tending plants to grow long rhizomes for baskets







Admiral and Mrs. Farragut  
1854 - 1858



# Pigeon Cote

- To 1904 then 1st wireless radio





# Hunting the Marsh

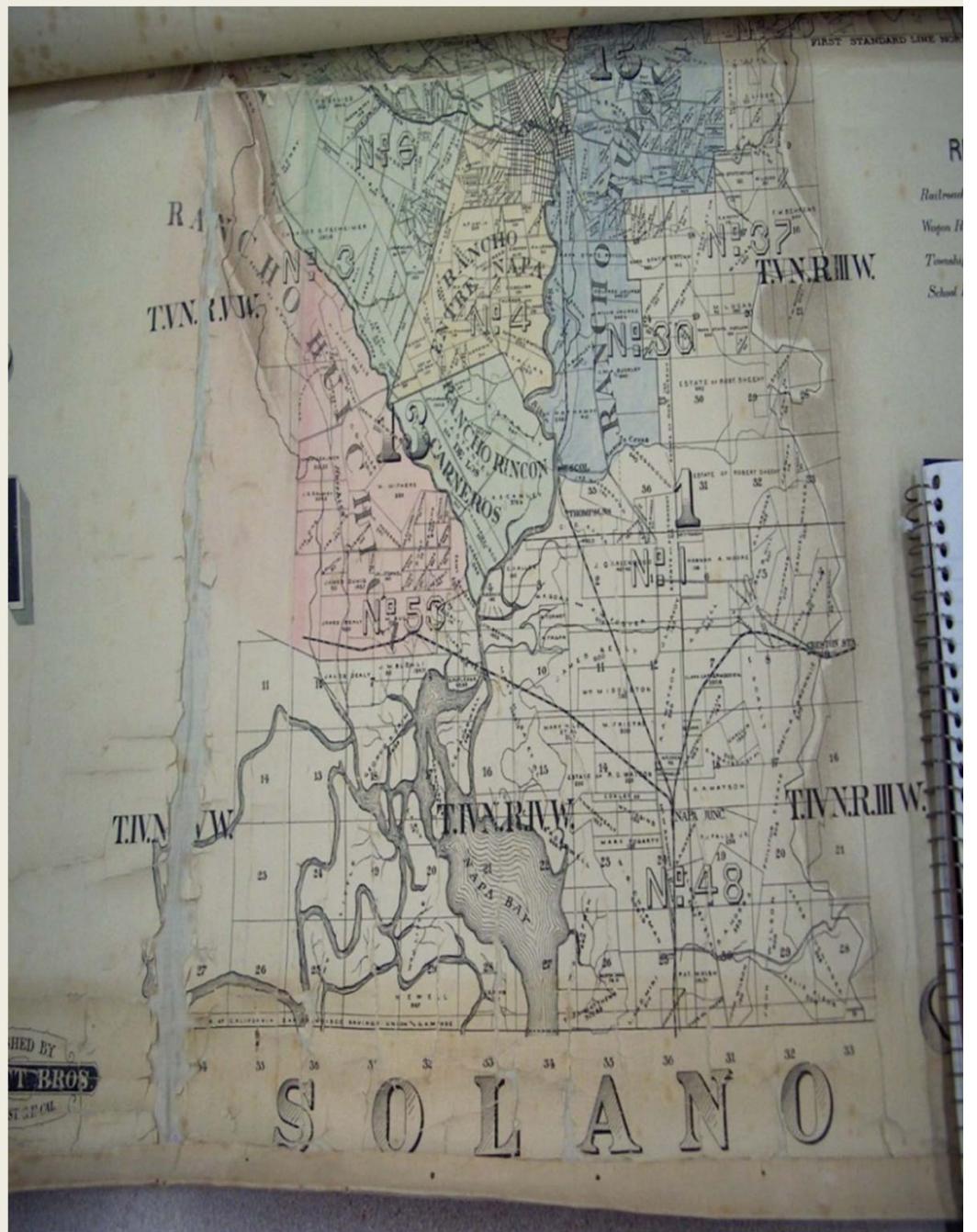
- For subsistence
- For restaurants
- Hunters paid \$1/duck

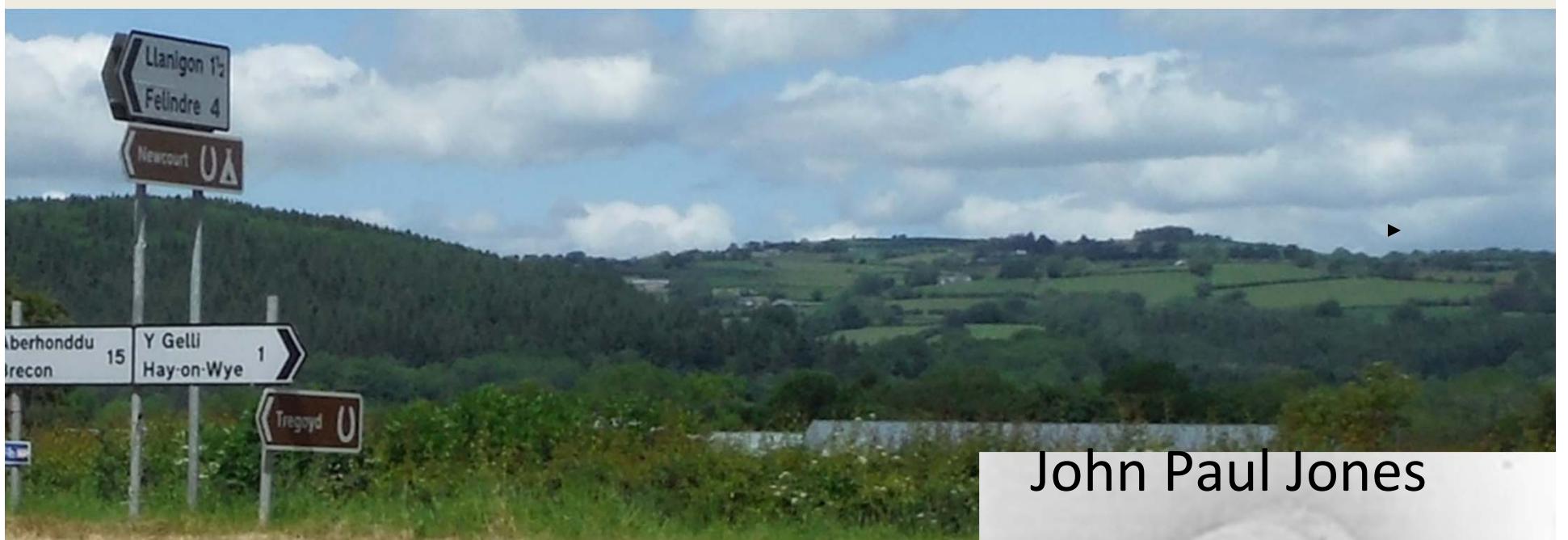


CENTRAL HOTEL	
WASHINGTON STREET	
SAN FRANCISCO.	
BY A. STAPLES	
BILL OF FAIR DINNER.	
SOUPS.	
Beef	25
Brown	25
Venison	25
Macaroni	25
Mutton	25
Vegetable	25
TO ORDER	
Boiled Steak	25
Elk Steak	25
Pork Steak	25
Veal Cutlet	25
Mutton Chop	25
Venison Steak	25
Curlew, Roast	25
Plover, Roast	30
Ham and Eggs	30
Fried Ham	30
Broiled Ham	30
Fried Eggs	30
Omelette	30
Pickled Clams	30
Pickled Oysters	30
Oyster Stew	30
BOILED.	
Mutton and Caper Sauce	50
Corn Beef	50
Ham	50
Tongue	50
ROAST.	
Beef	50
Pork	75
Pork and Beans	50
Venison	75
Cranberry Sauce	25
Mutton	50
Veal	50
Turkey	1.00
Chicken	1.00
Duck	1.00
VEGETABLES.	
Cucumbers	50
Beets	50
Squash	50
Pickles	50
Sweet Potatoes	50
Turnips	50
Mashed Potatoes	50
Radicchio	50
Beets, Turnips	50
Cabbage	50
FISH.	
Boiled Salmon	50
Boiled Mackerel	50
Boiled Tuna	50
Boiled Sturgeon	50
Boiled Codfish	50
Chowder	50
PUDDINGS.	
Onion	50
Mutton	50
Venison	50
PIES.	
Mutton	50
Elk	50
Veal	50
Beef	50
DESSERTS.	
Macaroni	50
Plum	50
Batter	50
Bread	50
Rice	50
Sago	50
PAstry.	
DESS.	

# Gold Rush Changed San Pablo Bay

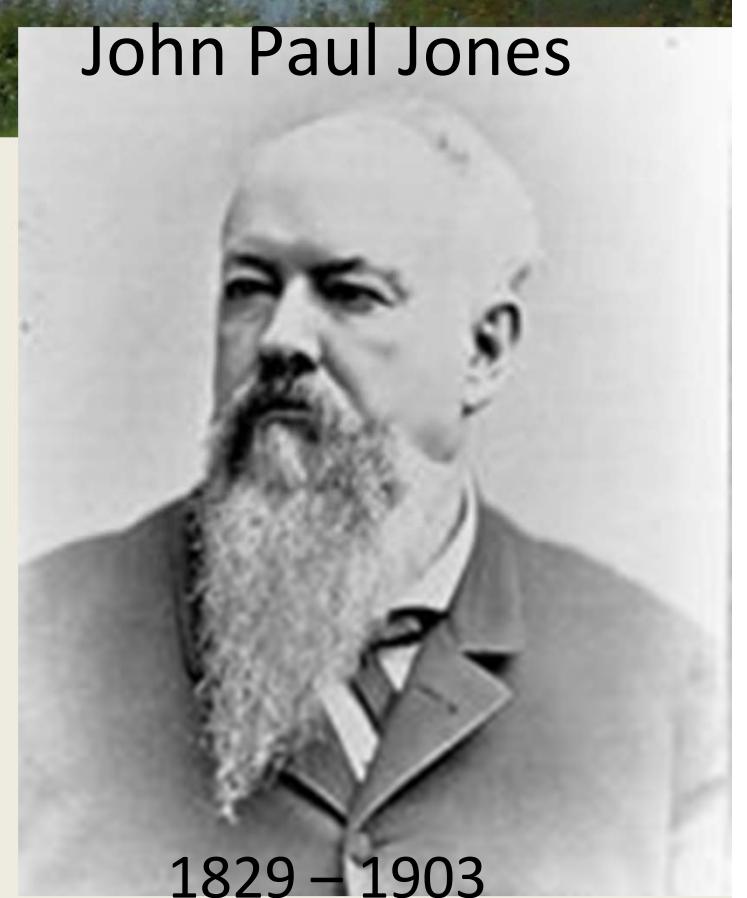
- Sediment decreased water depth, <6ft deep
- Water quality
  - Mercury for processing gold & silver
  - New Almaden Mine, South Bay
  - St. John's Mine,
    - Vallejo 1873-1940s
  - Residual mercury affects biota
- Beginning of “Reclamation”





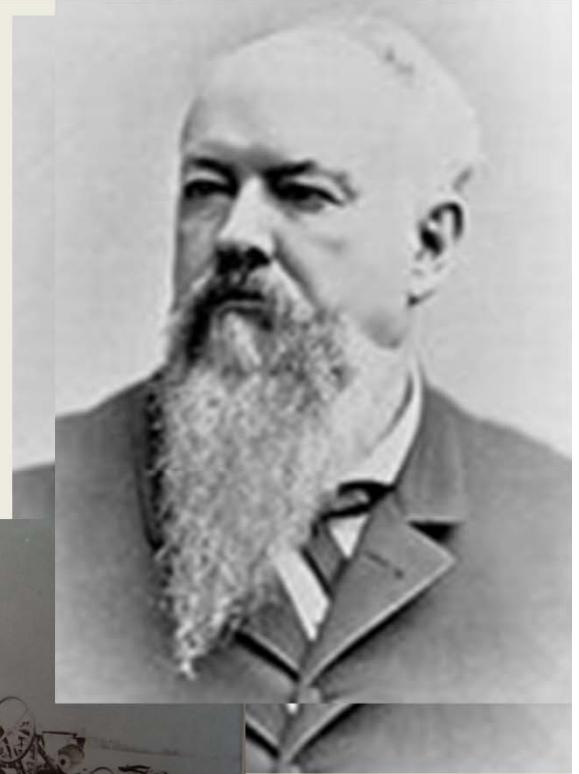
John Paul Jones

- 1851: Sailed from Wales, around the Horn, to San Francisco
- 1867 lost California Lt. Governor's race
- 1873 gold mines were cheap
- US Senator from Nevada
- Bought 10,400 ac, Camps 1-6 including Skaggs Island

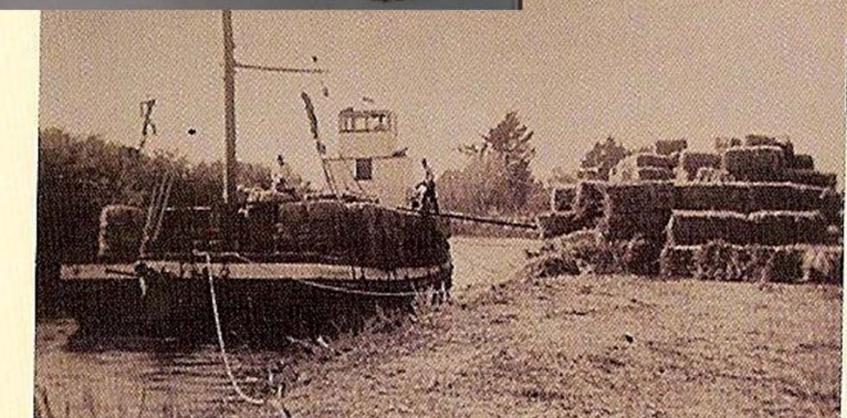


# Haying the North Bay

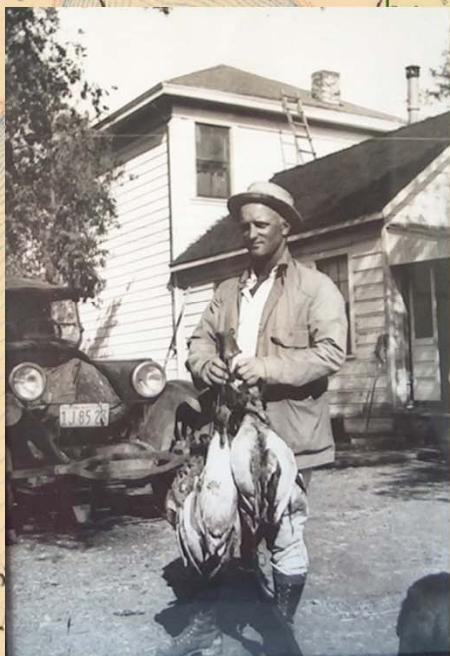
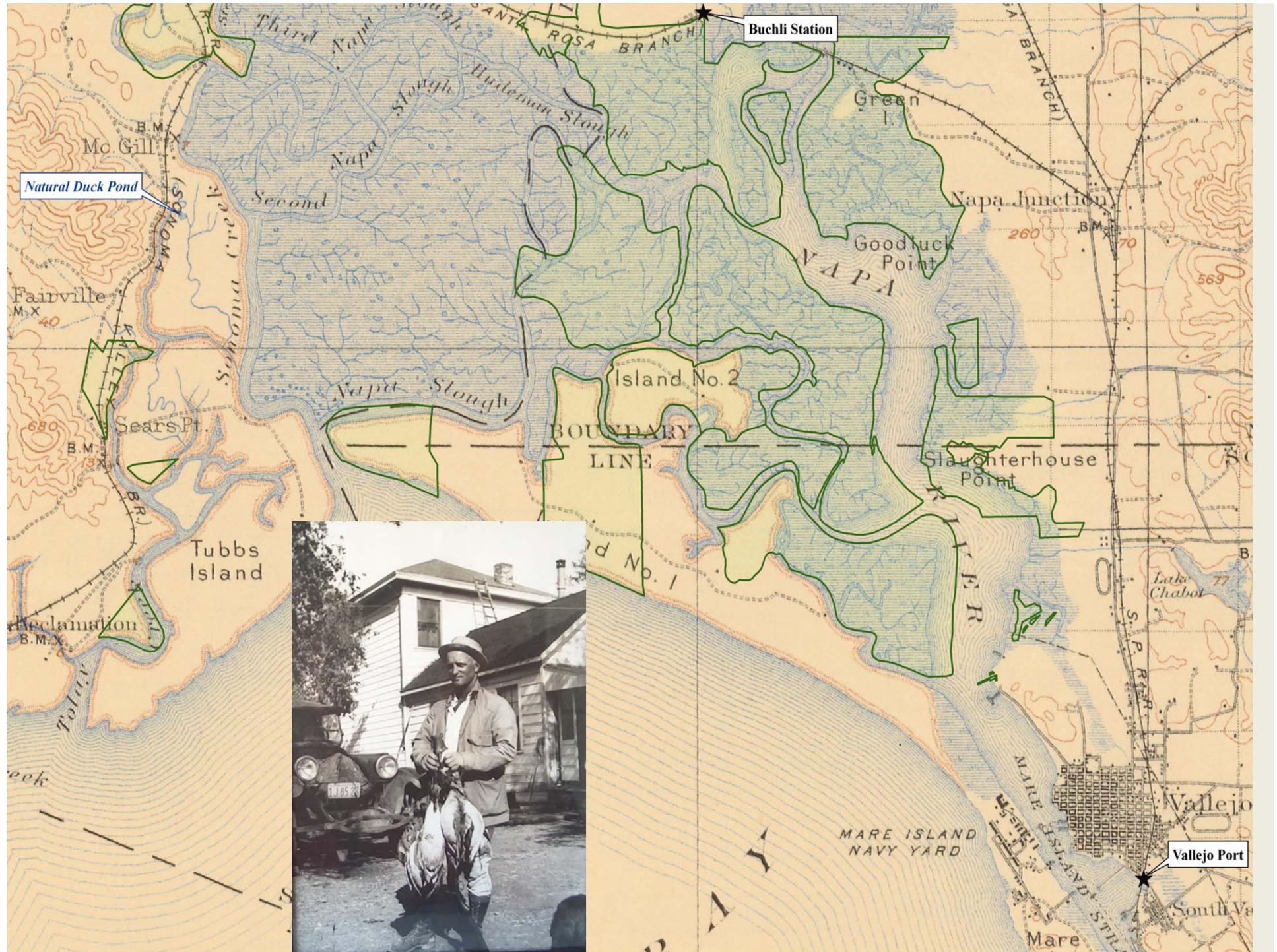
Post 1906 quake, 5 tons hay/month barged to City for horses hauling supplies to rebuild



- Bought 10,400 ac, Camps 1-6
- 1938 sold to MB Skaggs
- 1940 Navy issued “writ of taking”
- Hayed by Jones's grandson til 1965

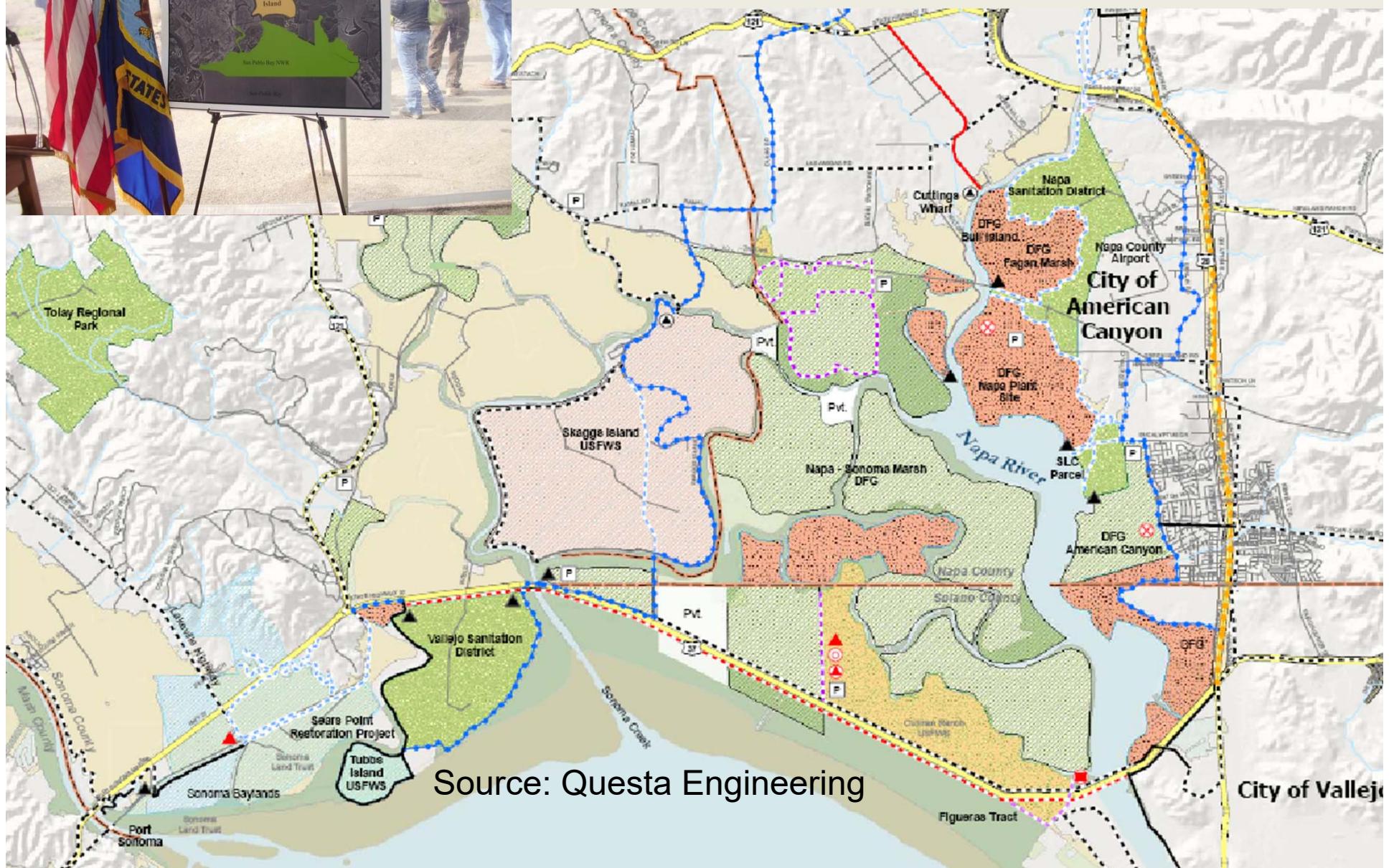


COURTESY SONOMA VALLEY HISTORICAL SOCIETY, GROSKOPF COLLECTION



# Skaggs Island

## 3,300 ac at the core

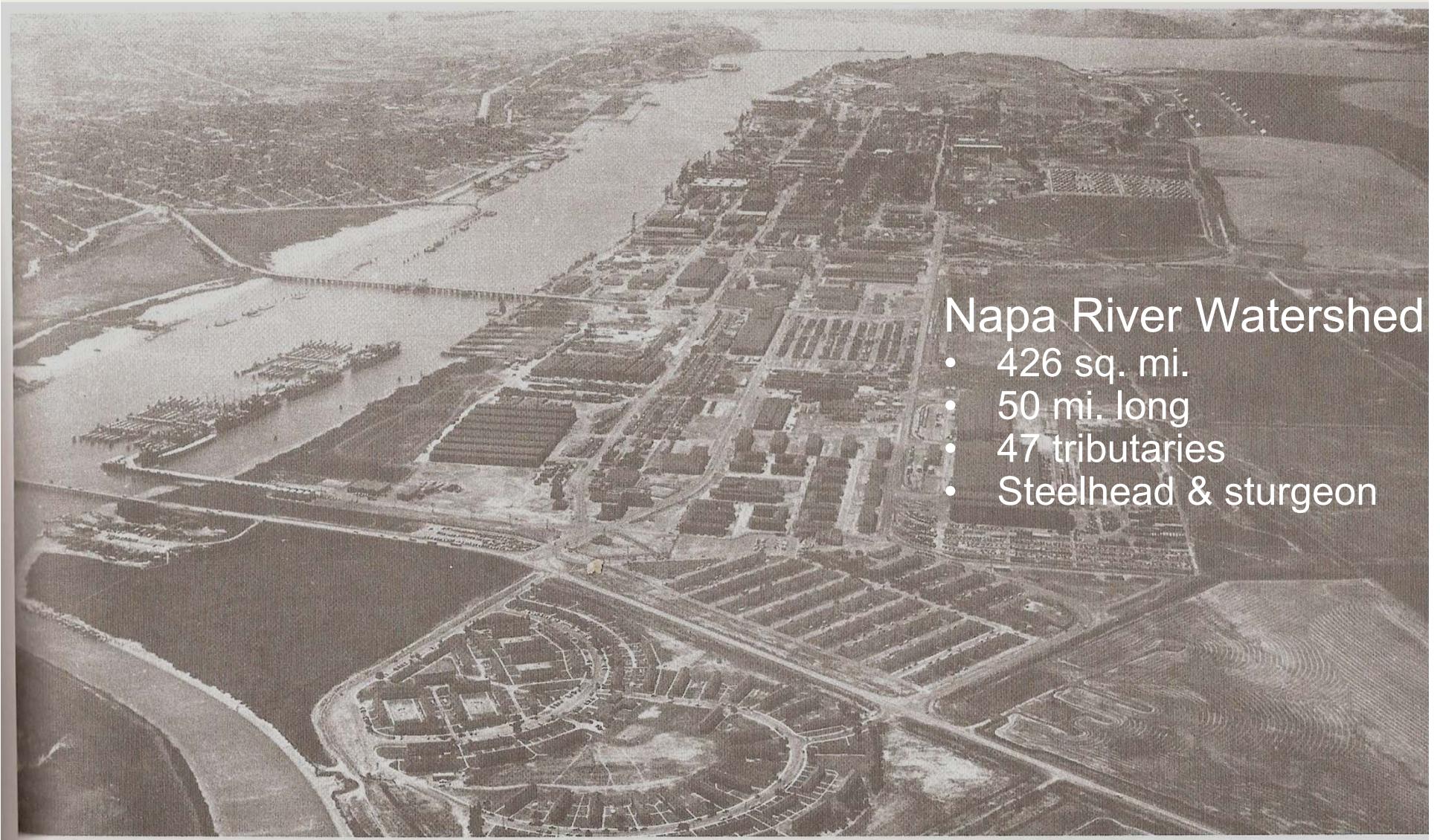


# Cattle & fish in the Strait

- **1837 Ewing Young herded 700+ cattle swim from Martinez to Benicia**
- **1880 10.8M lbs Salmon & steelhead caught Sacramento & San Joaquin Rivers**
- **1935 canneries: 5 Benicia, 1 Martinez, 1 Port Costa**



# 1954: Napa River didn't have walls

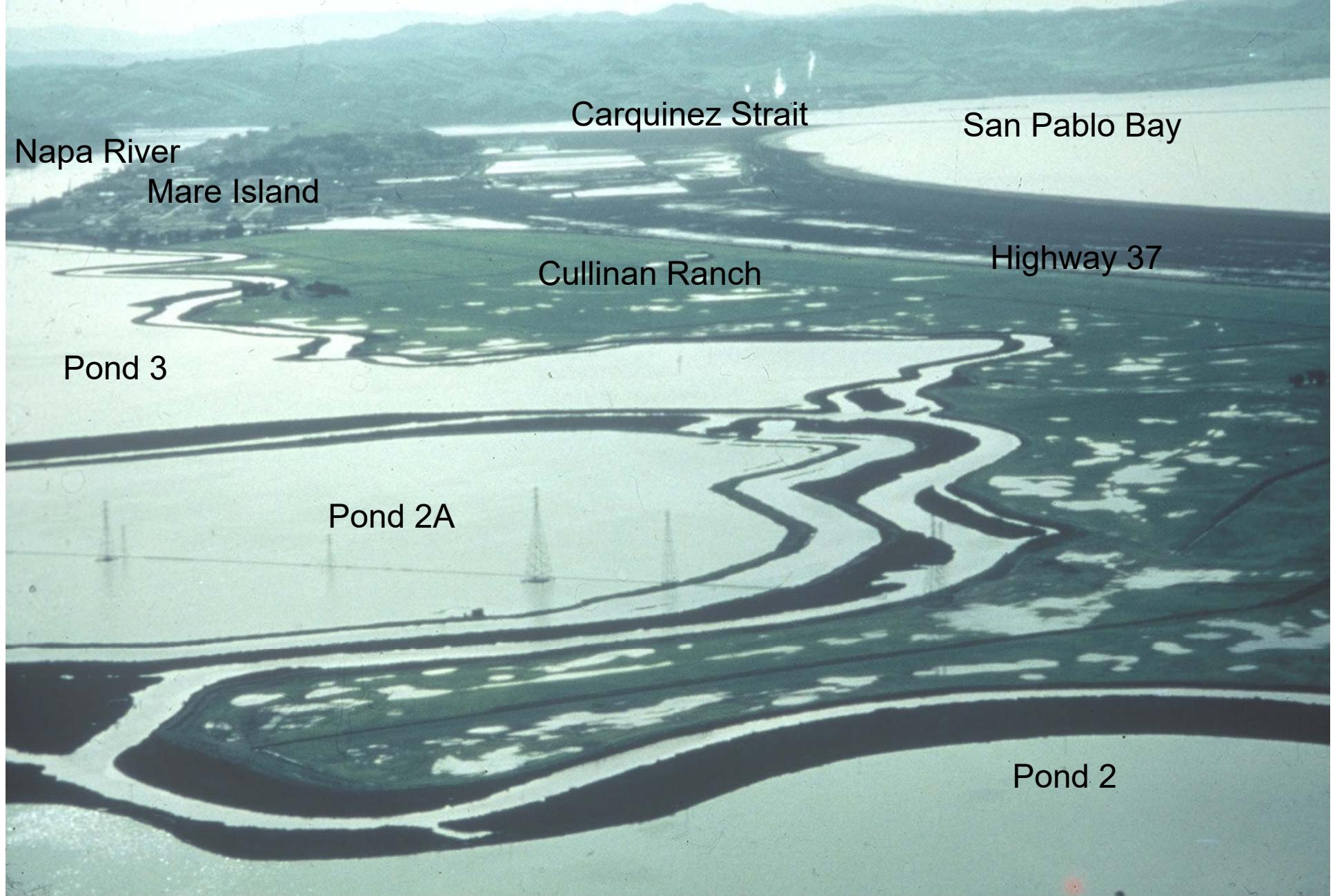


## Napa River Watershed

- 426 sq. mi.
- 50 mi. long
- 47 tributaries
- Steelhead & sturgeon

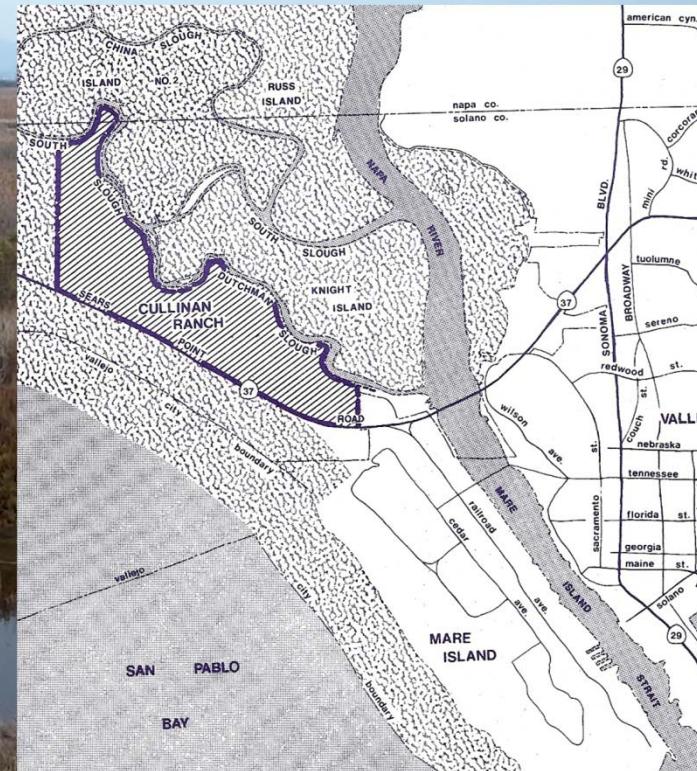


**Photo date: October 1983 (V. Gross)**



# Cullinan Ranch

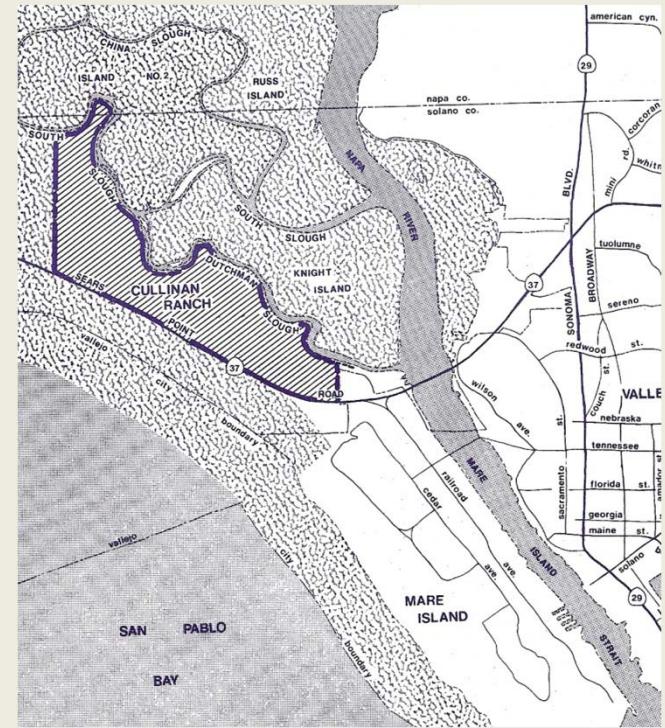
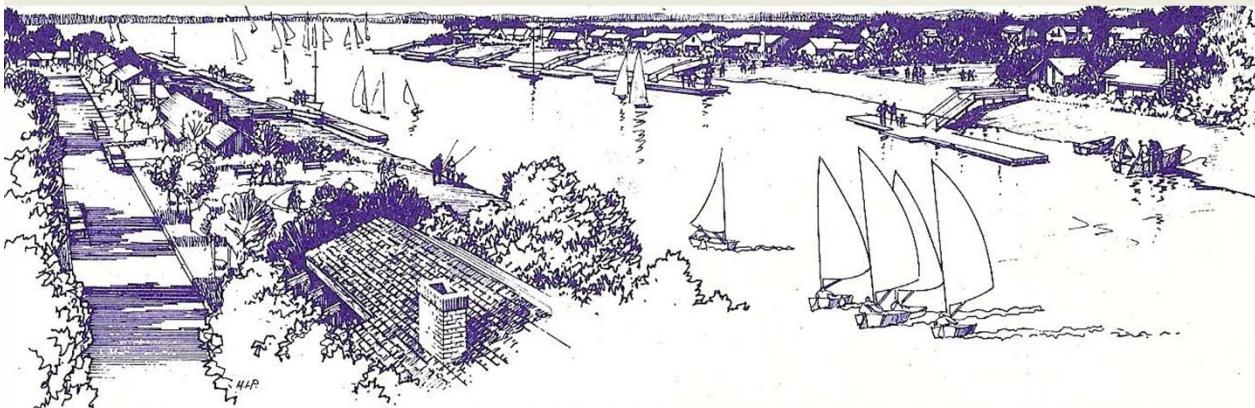
## From Oat Hay field to Wildlife Refuge



1,493 acres

# Cullinan Ranch

- If City services west of Napa River, then development to Novato
- COST
- 1991 \$7M Boxer to Refuge
- Full Circle
  - 40K acres wetland in North Bay, 1850s
  - 5K tons/month hay shipped to City 1906 earthquake
  - Hunters \$1/duck train & ferry



- **1982 begin EIR**
- **1,493 ac.**
- **3K homes, 1,500 condos**
- **1,700 berths**
- **60 ac business**

# Hydraulic Mining – What is it?



**Hydraulic mining, or hydraulicking, is a form of mining that uses high-pressure jets of water to dislodge rock material or move sediment. In the placer mining the resulting water-sediment slurry is directed through sluice boxes to remove the gold.**

# How Much Sediment was Removed?



**Example,  
Manzanita and  
American Mines in  
Yuba River  
Drainage**

**The greatest  
depth of  
excavation in the  
picture is 180 feet**

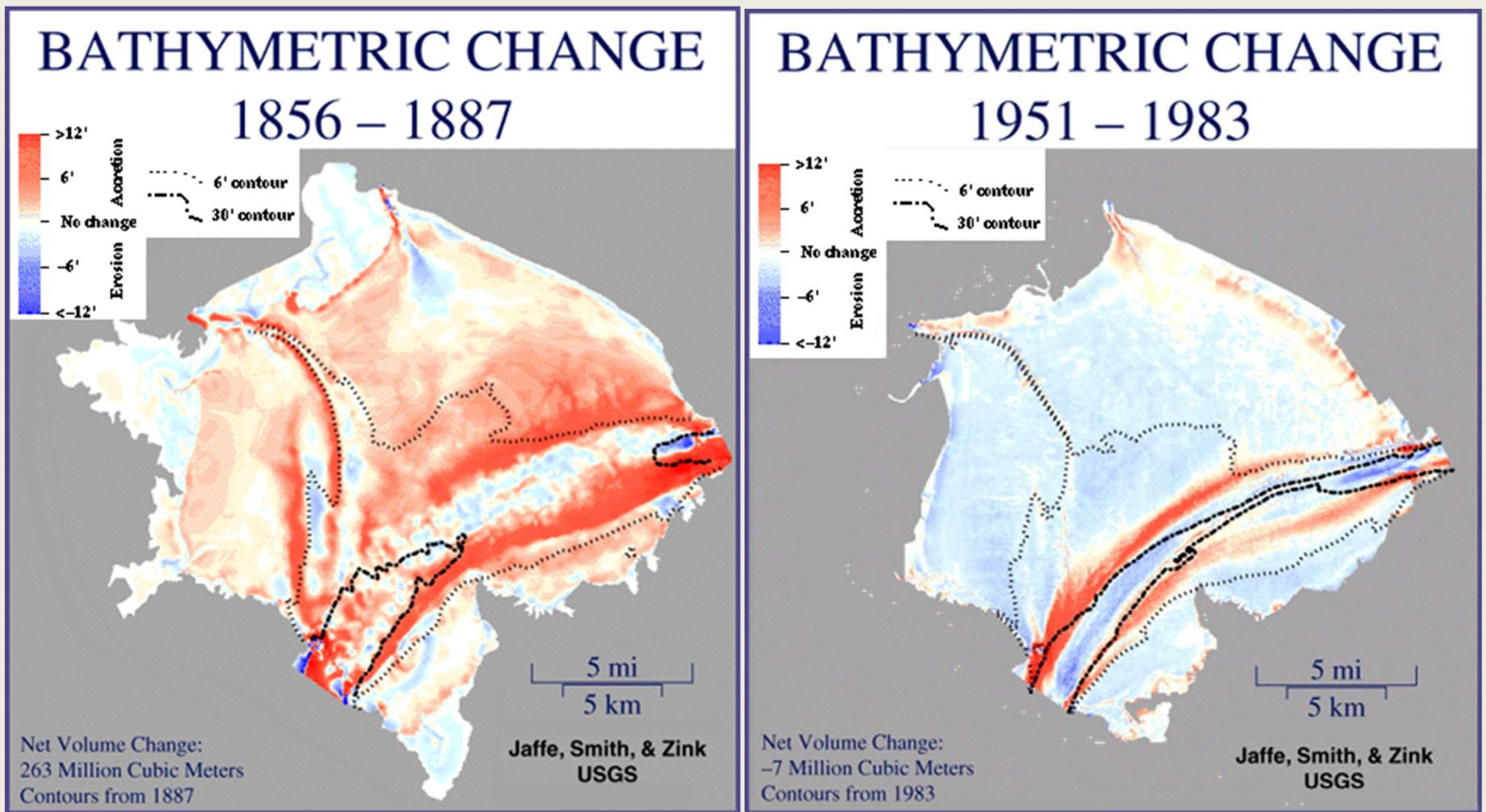
**The volume of  
material removed  
in area shown is  
about 13,000,000  
yds**

**Entire volume  
removed from  
Manzanita and  
American mines  
is 48,000,000 yds**

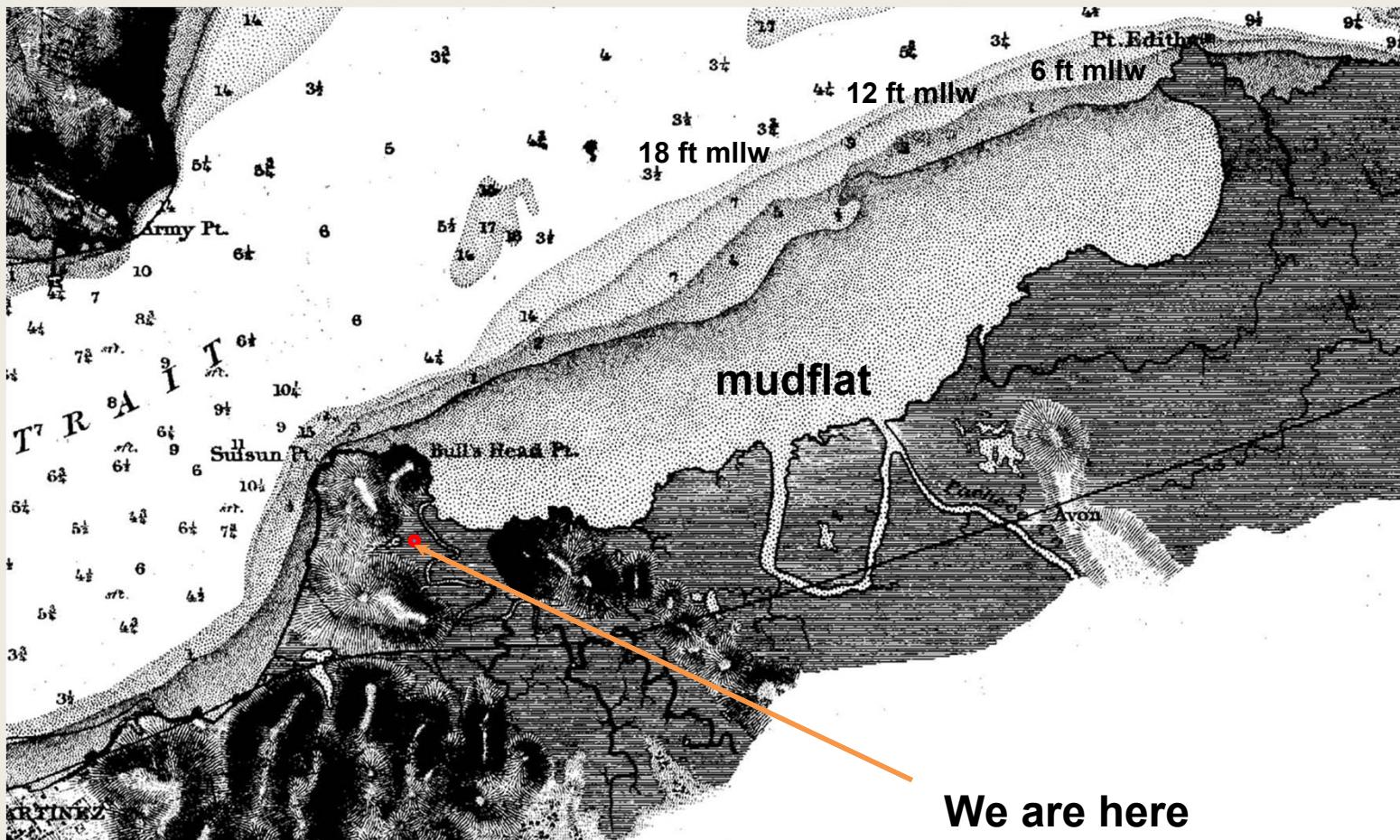
# Time Line for Hydraulic Mining

- Period 1853 – 1884
  - Approximately 1.6 billion cubic yards excavated
    - ✖ 8 x volume of Panama Canal excavation
  - By 1884, some 11 million ounces of gold (worth \$19.5 billion at today's prices (10/3/2012))
  - 8 million pounds of mercury released
- Eventually halted due to Federal Lawsuit
  - Judge Lorenzo Sawyer of the U.S. Circuit Court ruled that mining companies were not permitted to “mine in such a manner as to destroy or injure the property of others, even in the district or diggings where the local customs and usages of miners are sanctioned by the statutes.”<sup>16</sup>
- Period 1893 – 1953, licensed mining
  - Approximately 30 million yds excavated
  - Debris dams required to contain sediment

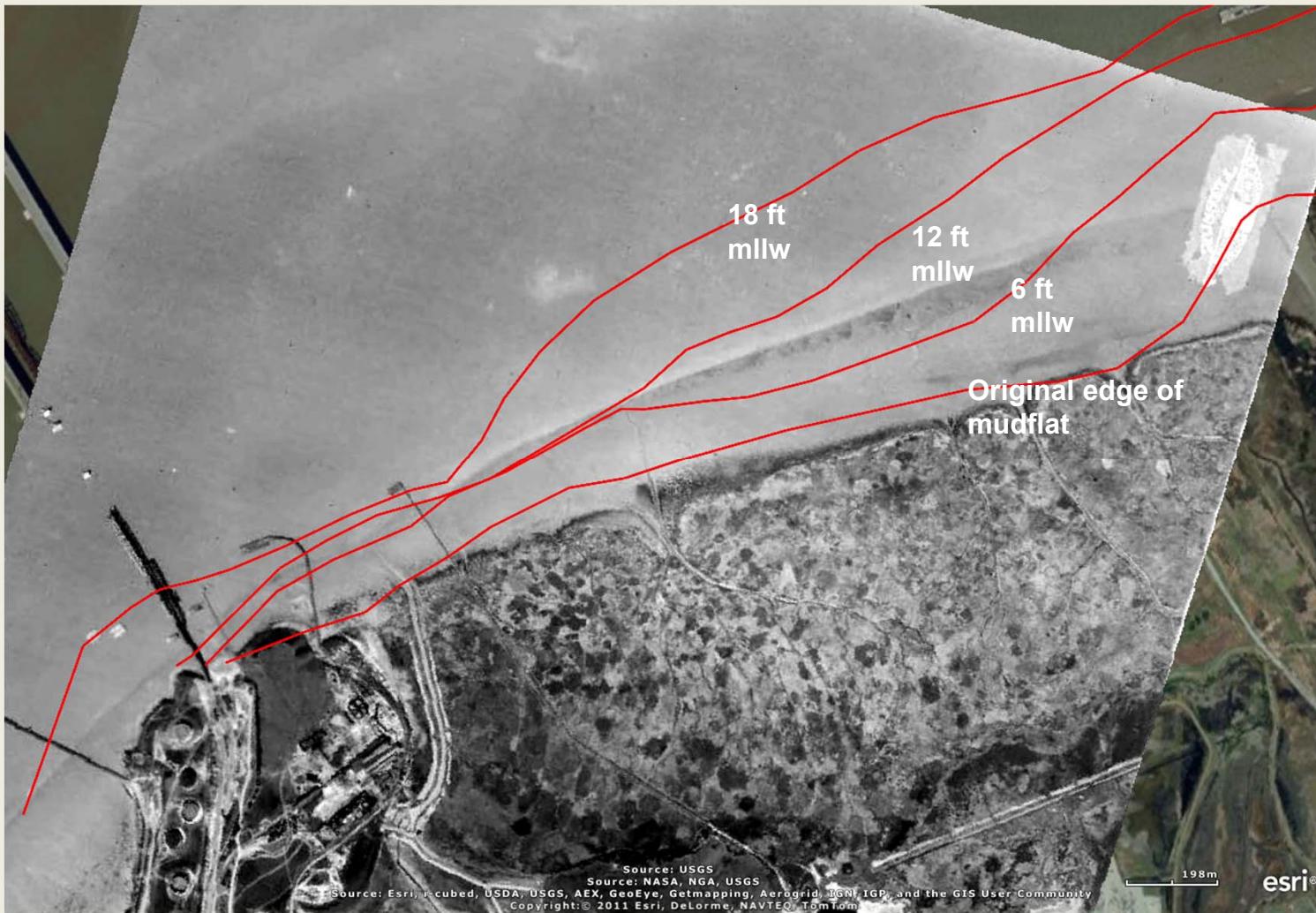
# Sedimentation in San Pablo Bay



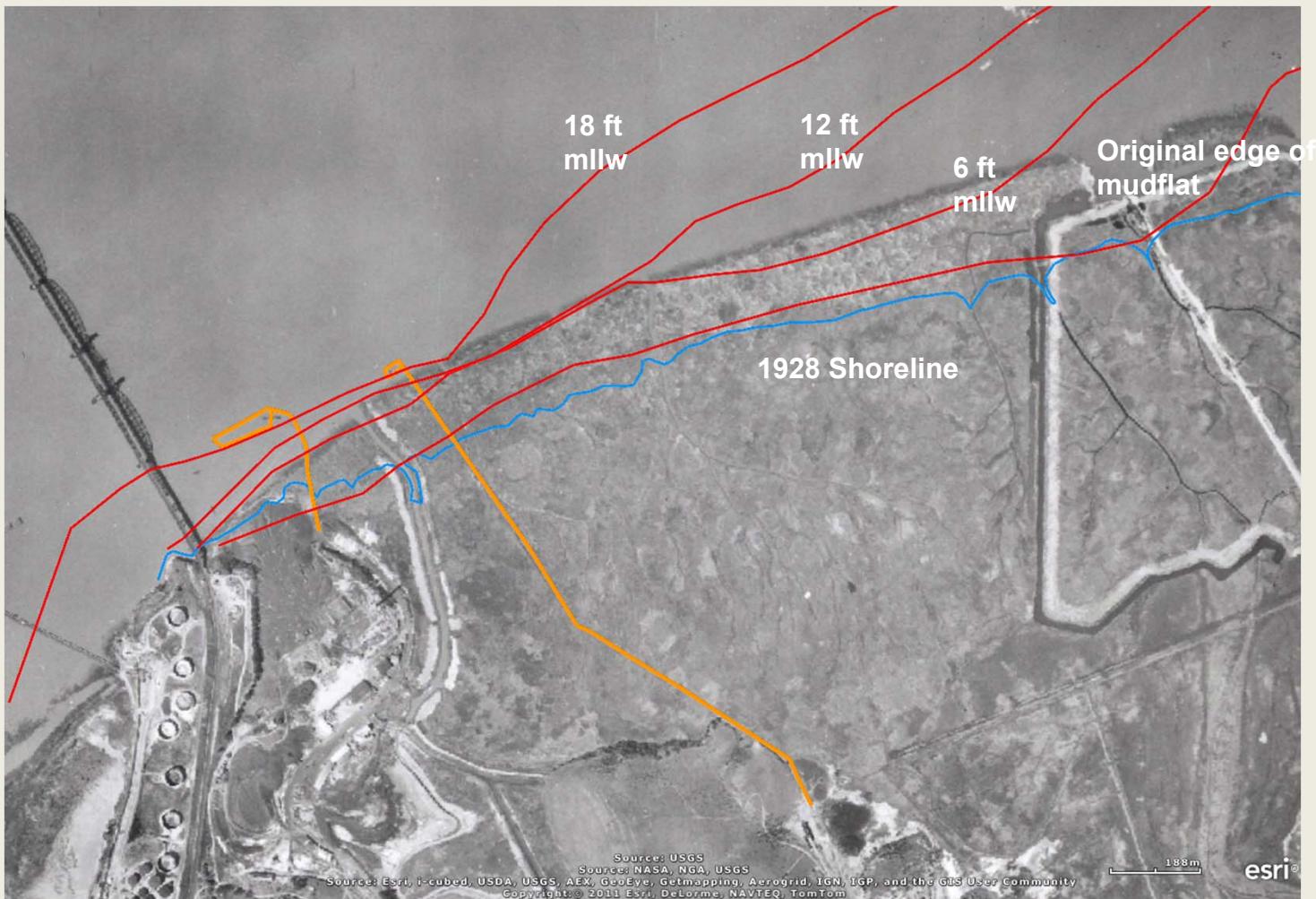
# In the Beginning...



# By 1928

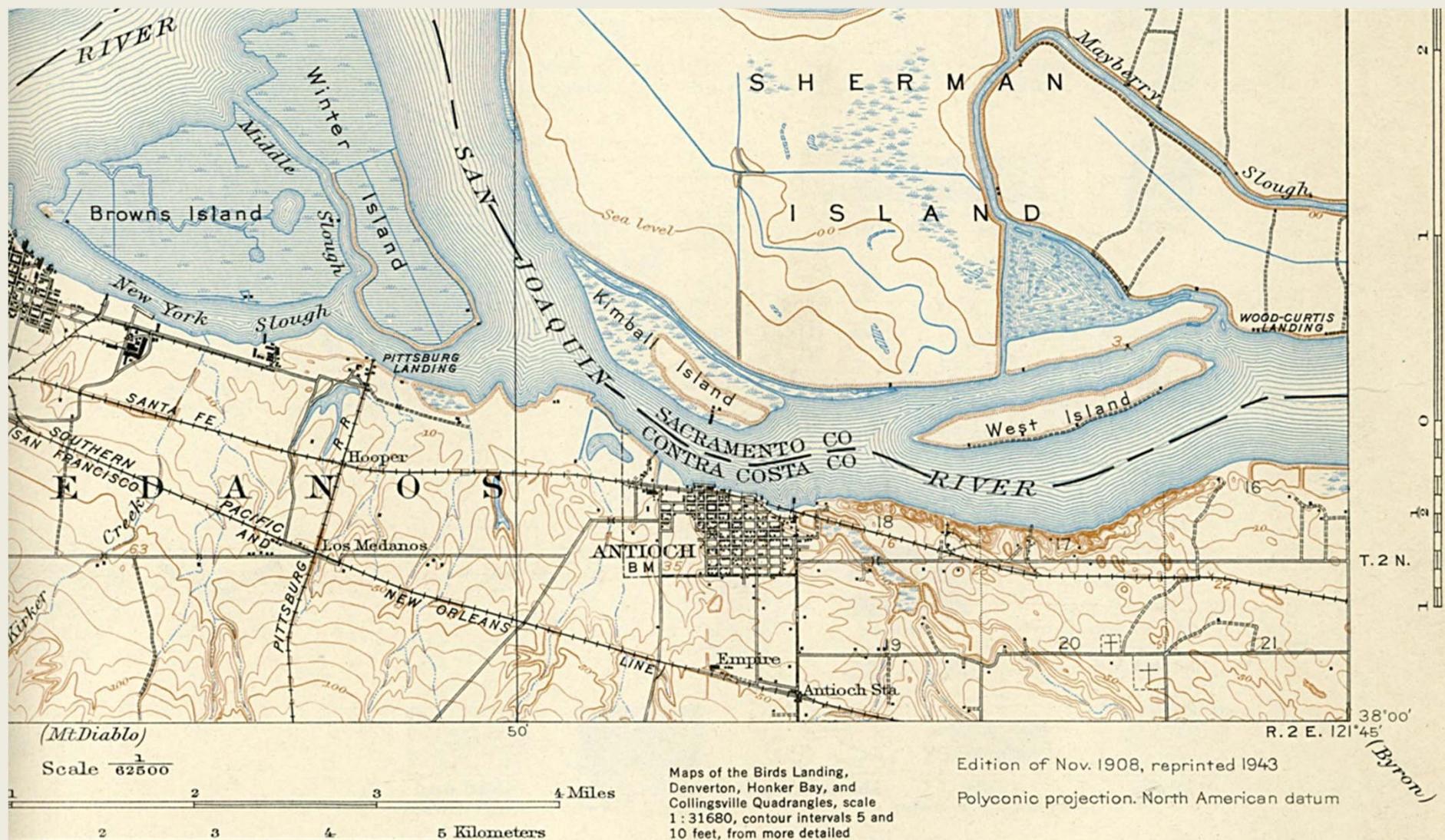


# By 1959 Maximum Extent of Marsh



# Present Day - 2012





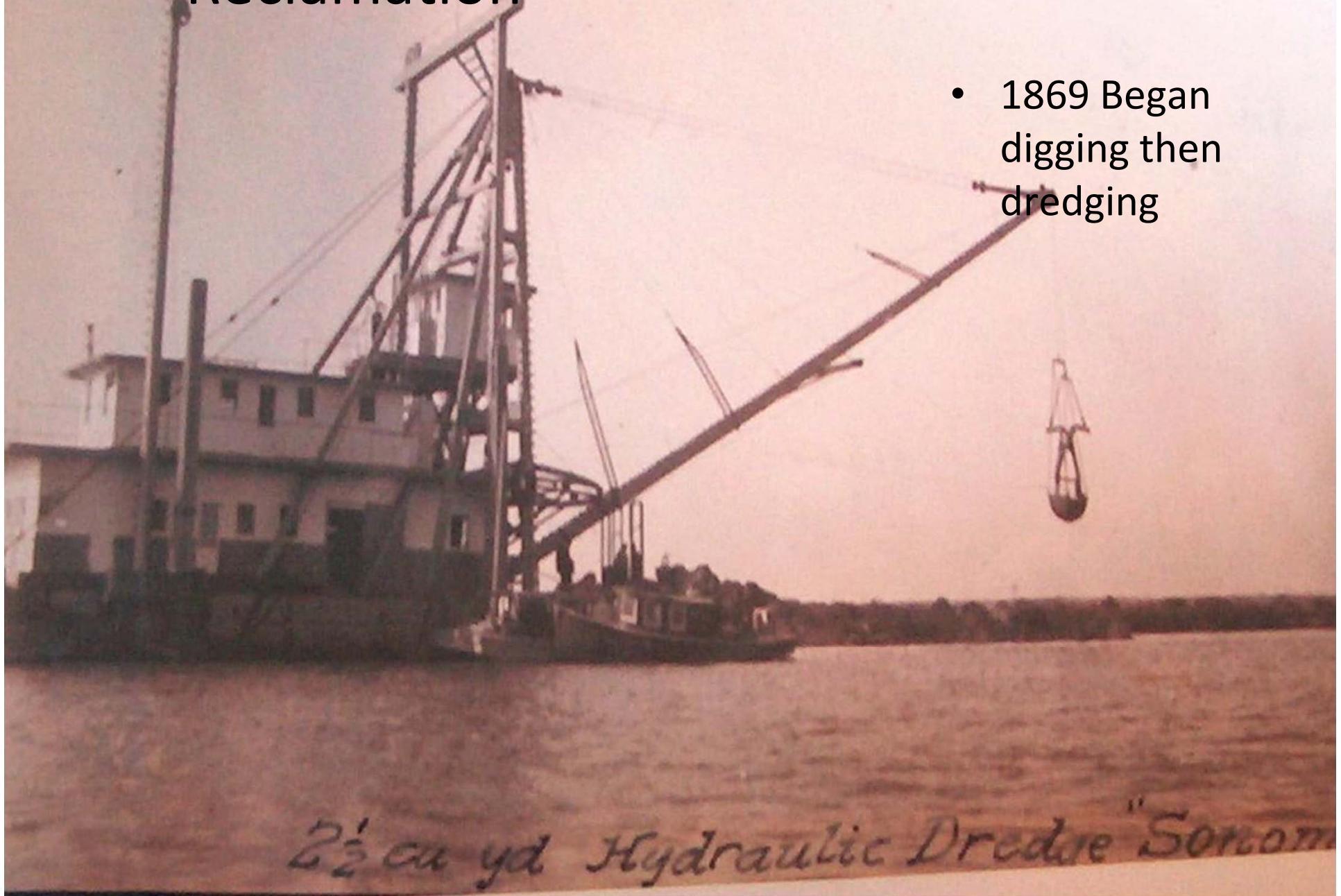
Edition of Nov. 1908, reprinted 1943

Polyconic projection. North American datum

CALIF.  
ANTIOCH

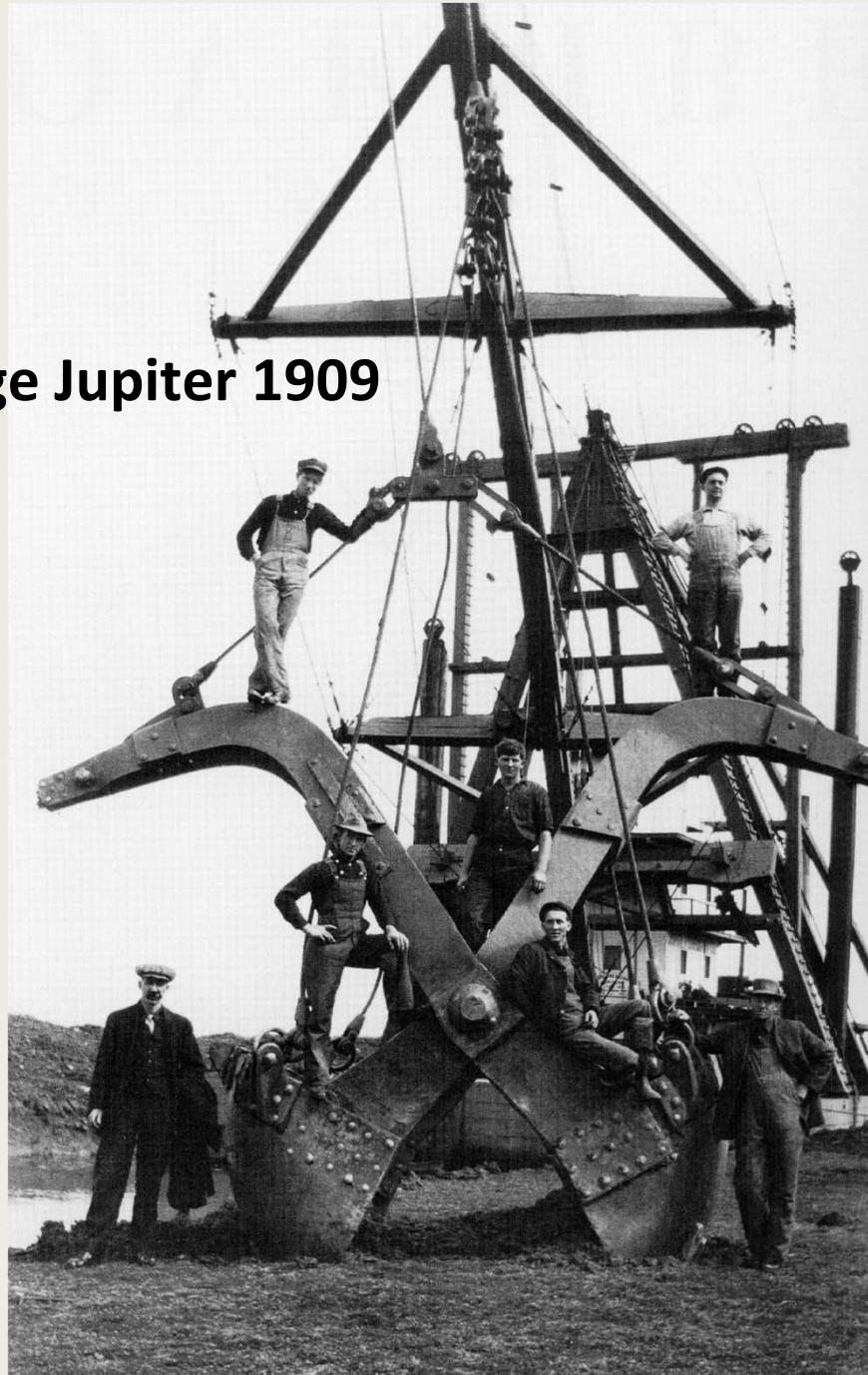
N3800-W12145/15

# Reclamation

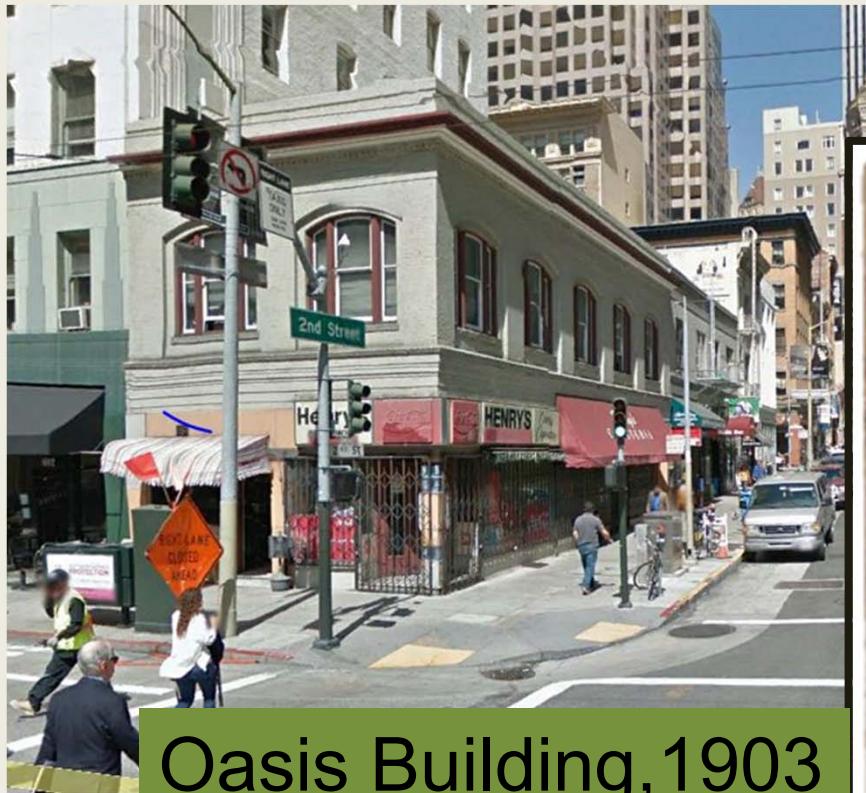


- 1869 Began digging then dredging

## Clamshell dredge Jupiter 1909



# Holland Sandstone Brick Yard (1903)



Oasis Building, 1903



Credits: Dan Mosier and Google Earth

- 42 acres of river front
- >1million bricks between 1903-07
- Sand mining after kiln fuel shortage

# Summary

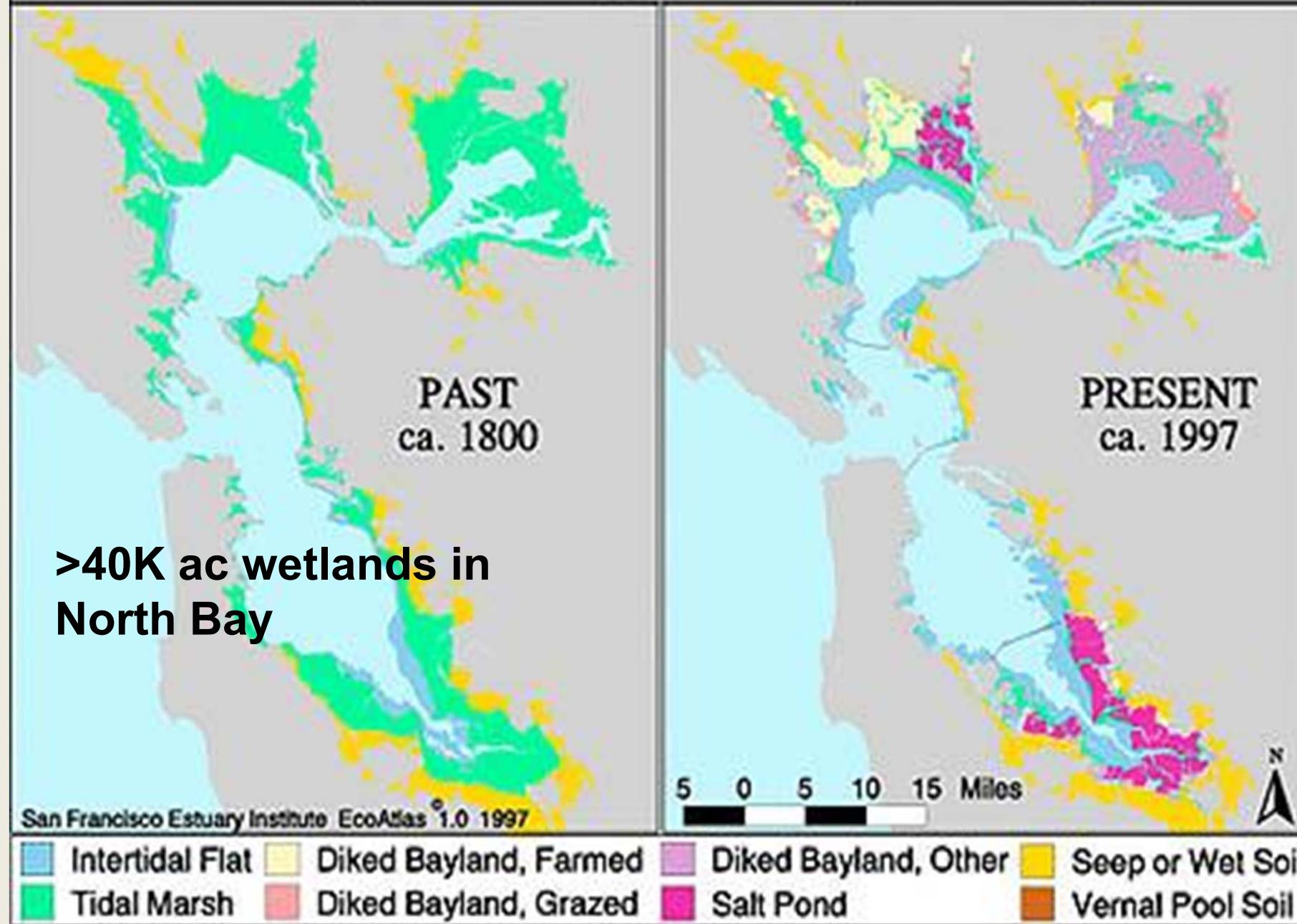
- Endangered species are indicators of habitat loss
- North Bay success story
- From 85% Bay's wetlands gone



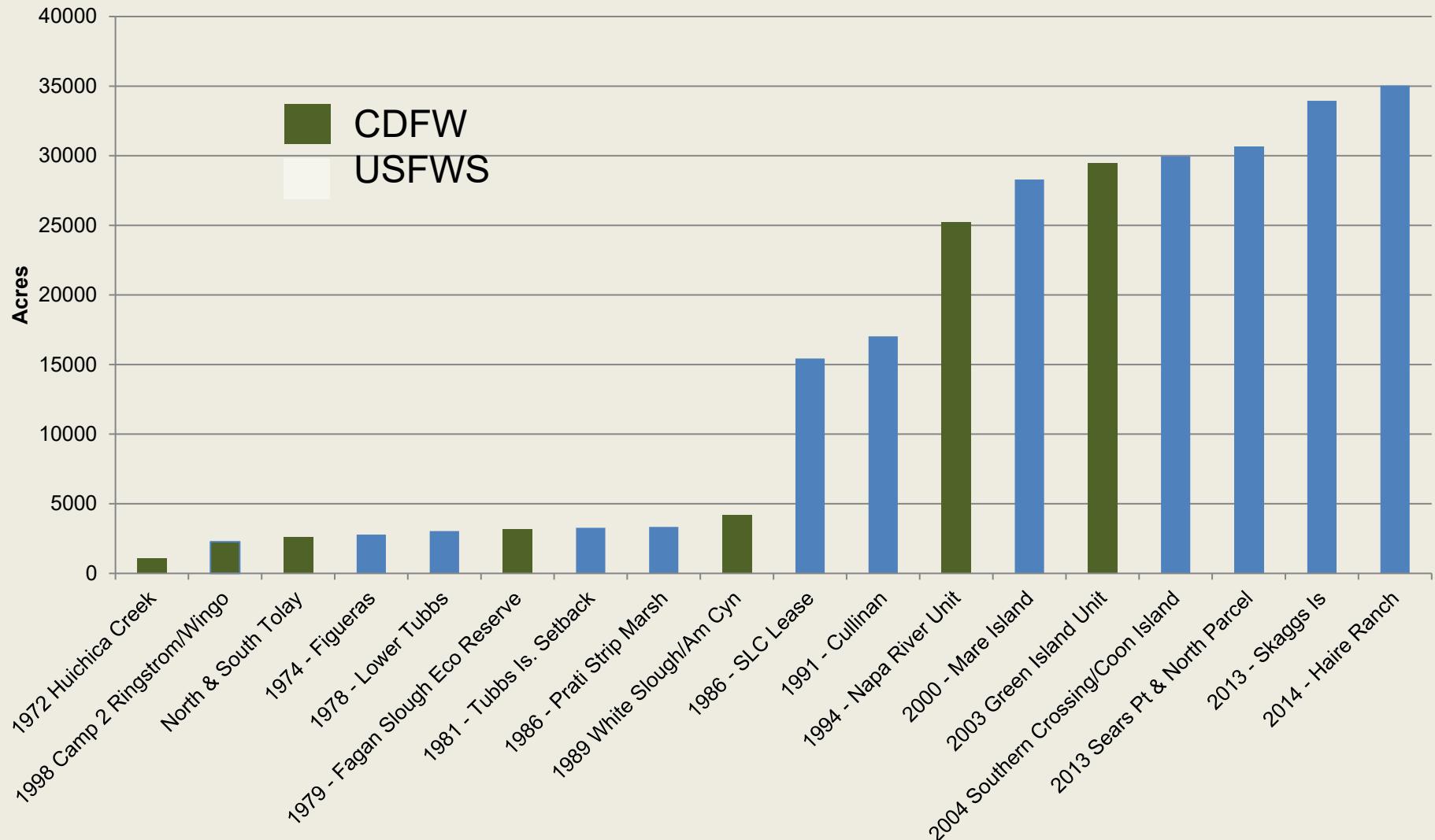
Salt Marsh Harvest Mouse (B. Peterson)



## Selected Major Habitat Types of the Baylands Ecosystem



35,038 acres (54.5 mi<sup>2</sup>), habitat acquired since 1972



# Thank you Working Together Works



# Thank you



Knowledge is Power  
\*\*\*\*\*

Shared Knowledge  
Catalyzes Change