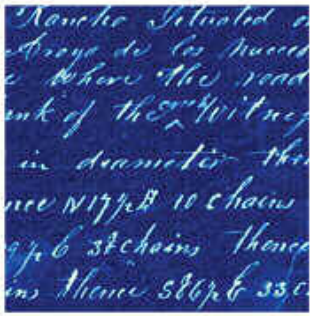









Historical Ecology of Alameda Creek: recent findings

Alameda Creek Watershed Council
October 28, 2010

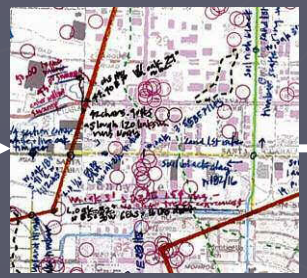
Robin Grossinger
San Francisco Estuary Institute

Steps in the Alameda Creek Historical Ecology study

Collection

Complete

- over 400 textual docs collected
- over 1500 PLS points collected
- over 500 photographs collected
- 20 source institutions visited



Compilation

Complete

- compiled text from 400 documents
- orthorectified 200+ air photos
- georeferenced 100+ historical map
- compiled on 5 basemaps

Synthesis

In progress

- synthesized 4 out of 5 basemaps
- created geodatabase of historical vegetation and channels

Analysis

In progress

- provided interim data to team
- used historical data to inform levee design

Reporting

In progress

- preliminary report notes

Two Goals for Today's Talk

- Begin developing big-picture framework for watershed vision
- Start sharing information about particular places of interest

Functional reaches

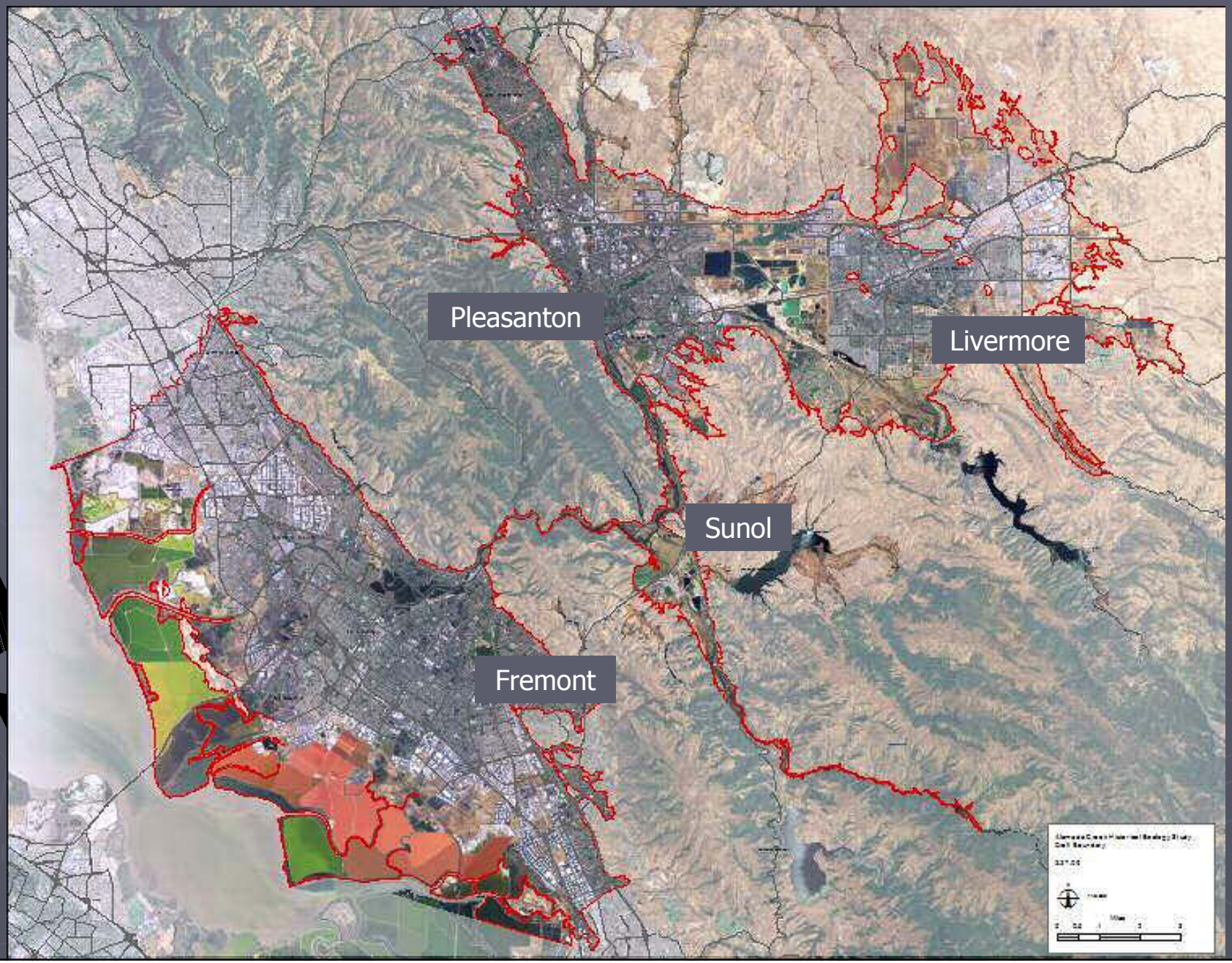
- Heterogeneous in structure and function

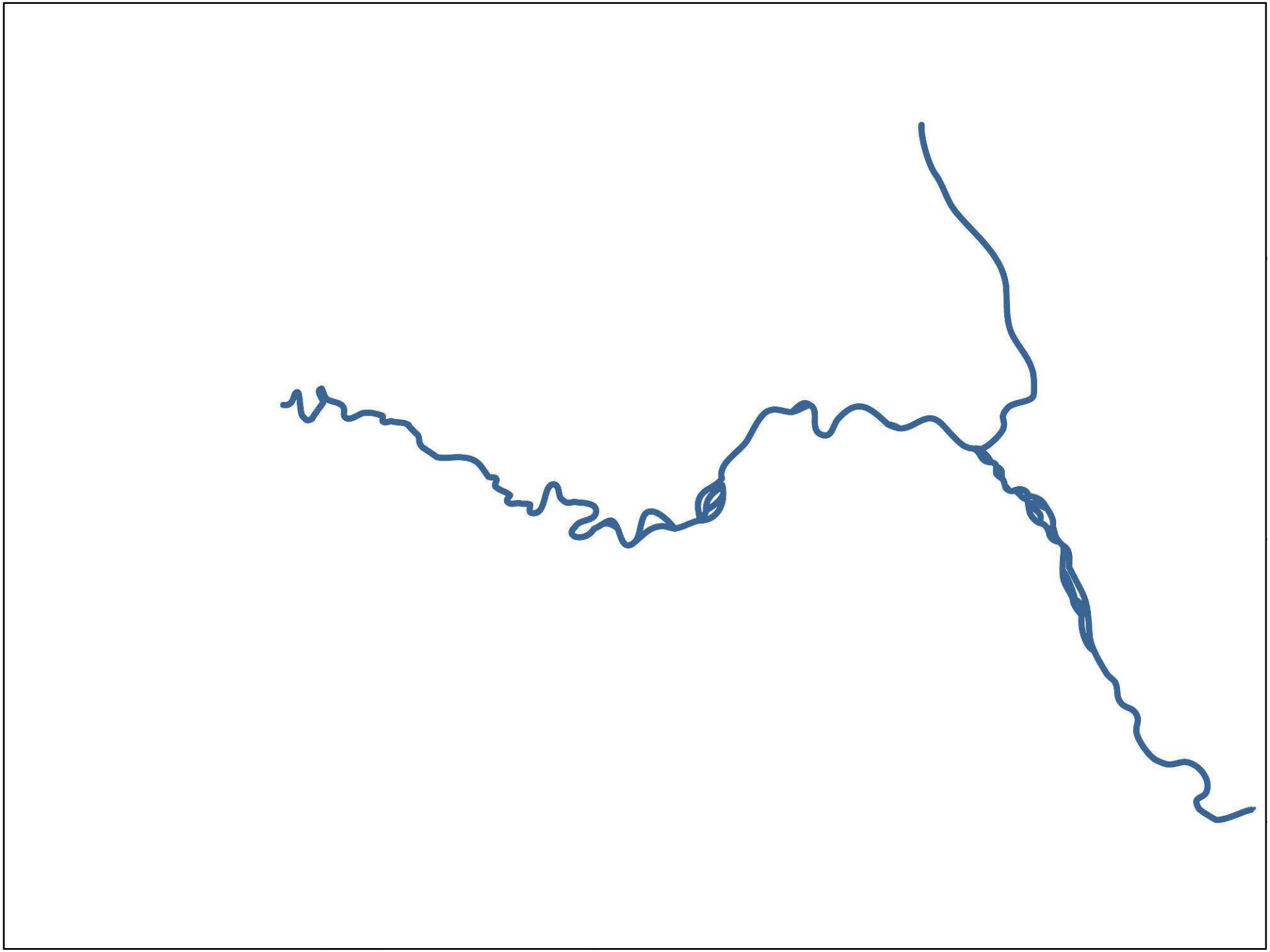
←***not all reaches are equal***

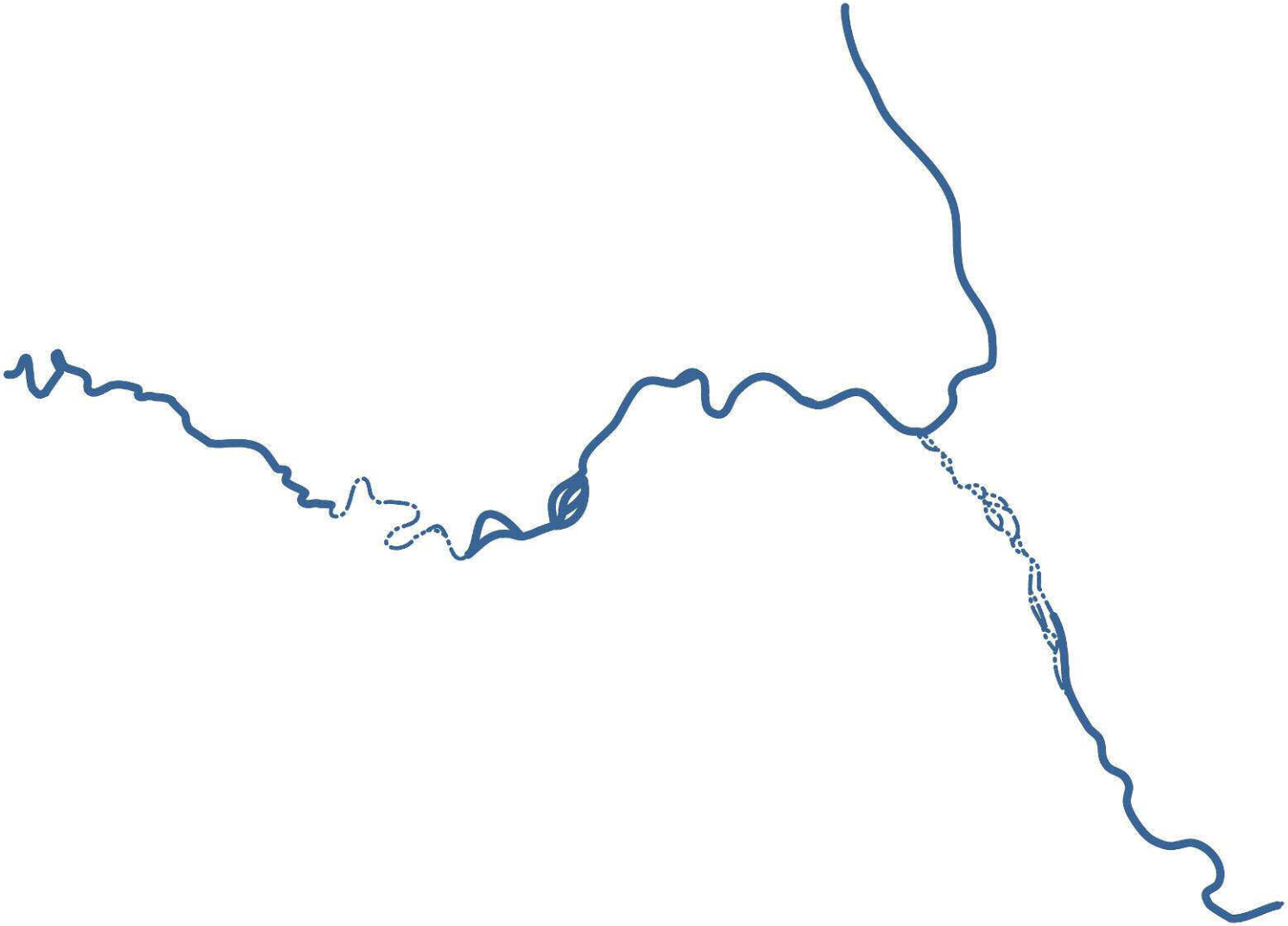
- Understand changes at the reach-scale

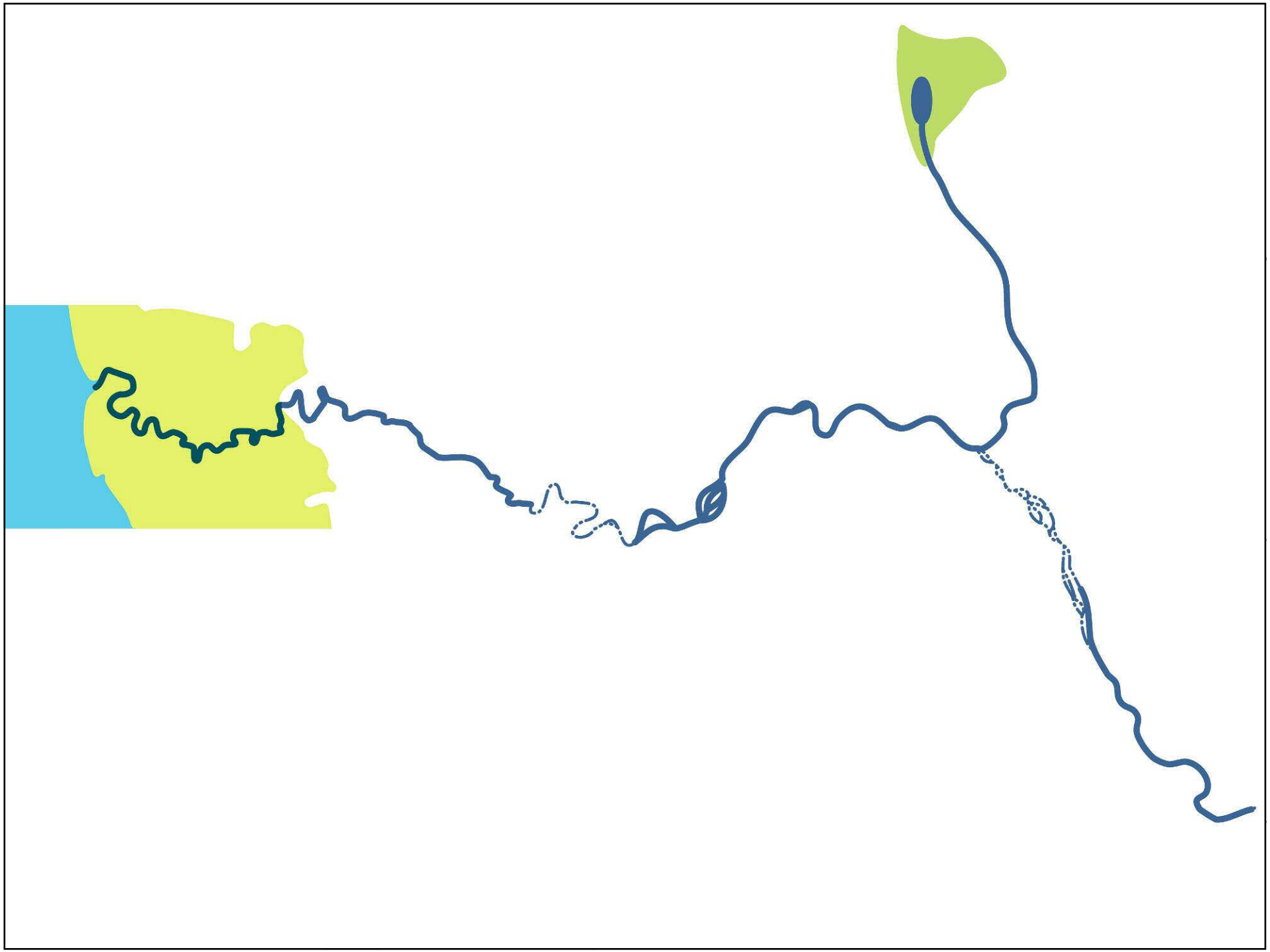
- Reach as management-level unit

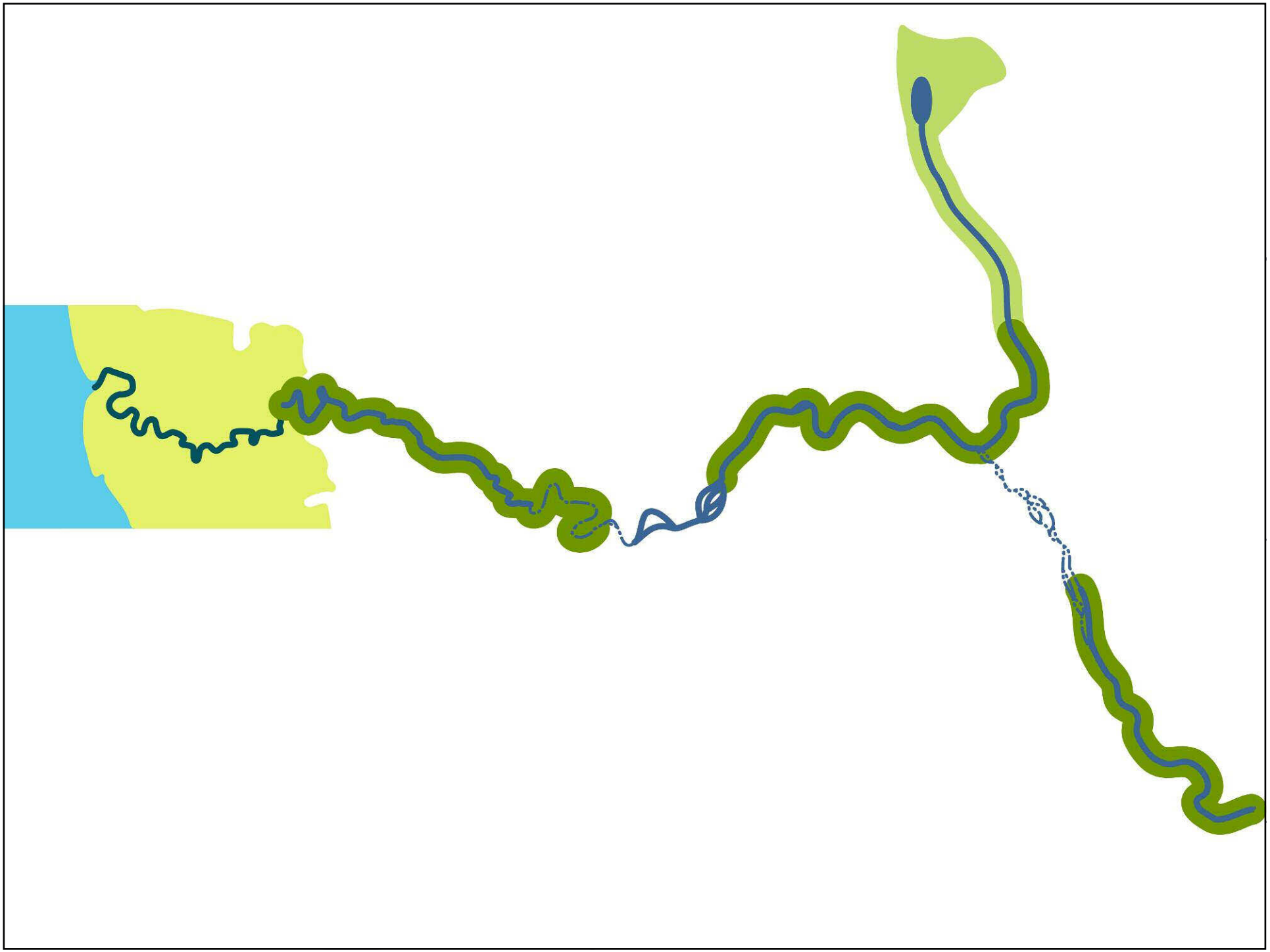
Study area boundary












DRAFT mapping
PLEASANTON LAGOON
AND
ARROYO DE LA LAGUNA
TIDAL HABITAT
SUNOL
VALLEY
NILES CONE
Marsh and willow riparian
Mixed Riparian
Sycamore Alluvial Woodland
Herbaceous Riparian
(gravels)
Creek / Pond
Intermittent Creek
Tidal Marsh
Bay

HYDROLOGY
(dry-season flow, groundwater interaction)

GEOMORPHOLOGY
(channel form)

RIPARIAN HABITAT TYPE

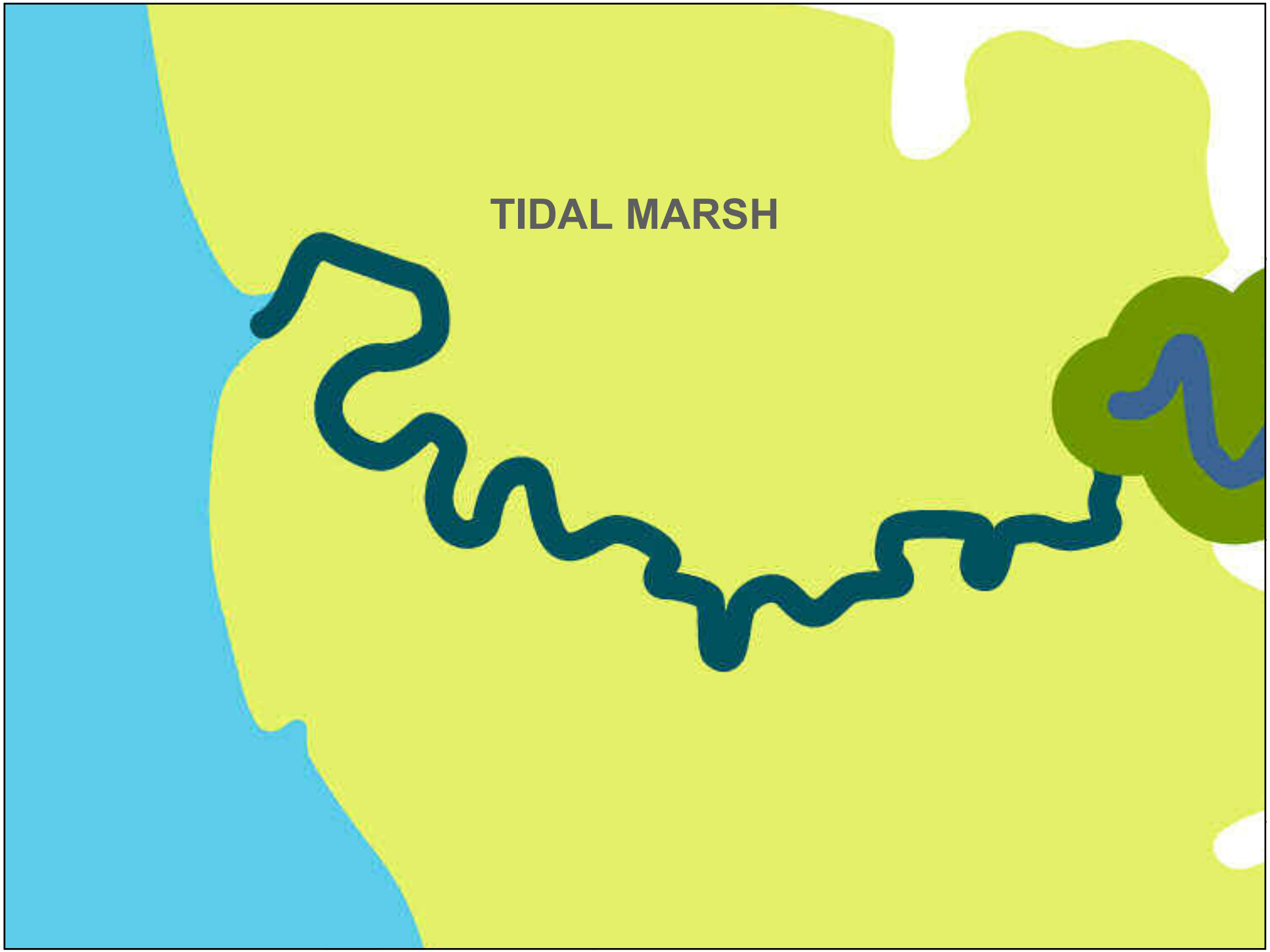
groundwater flux

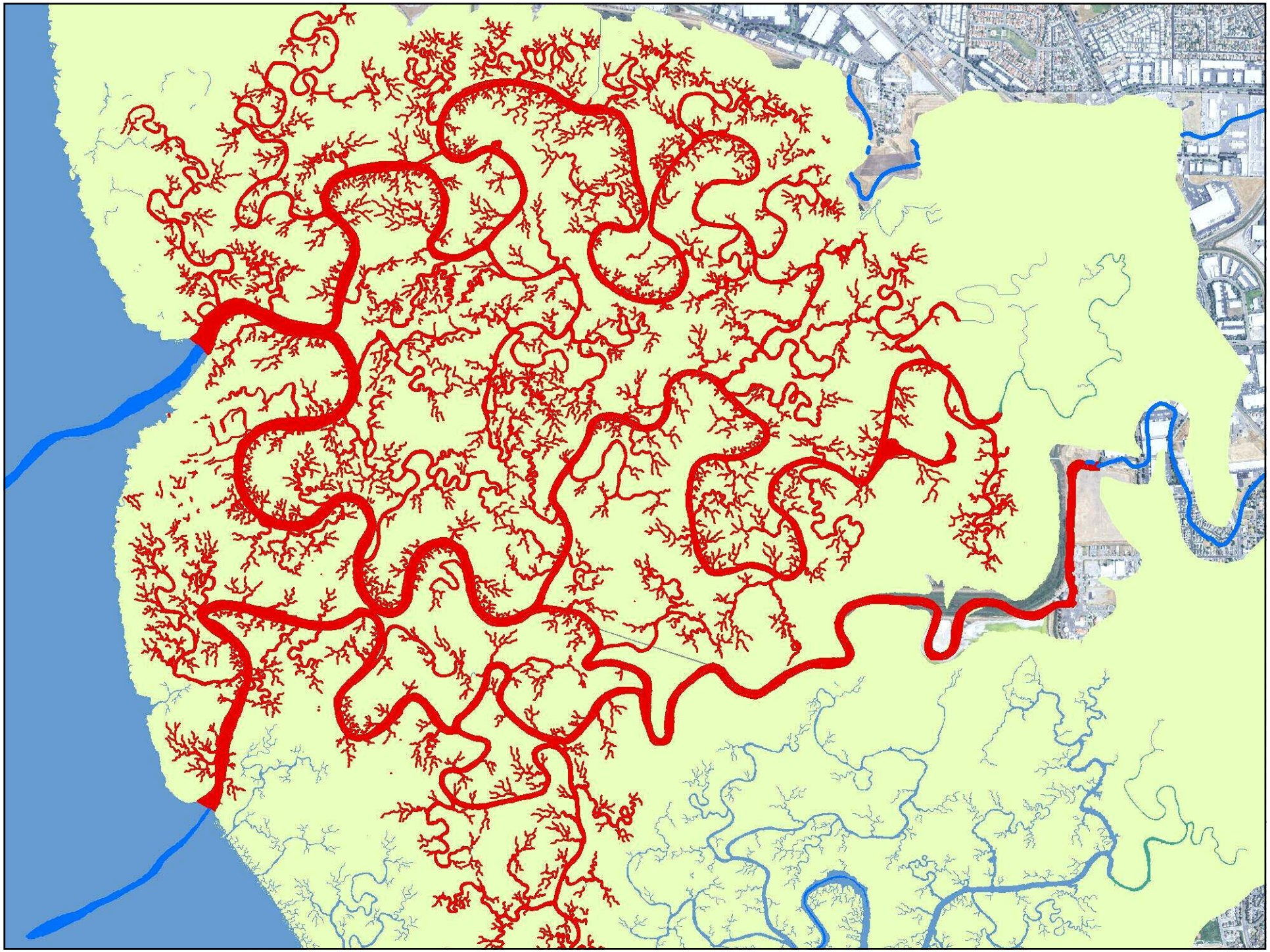
sediment dynamics

habitat for key species

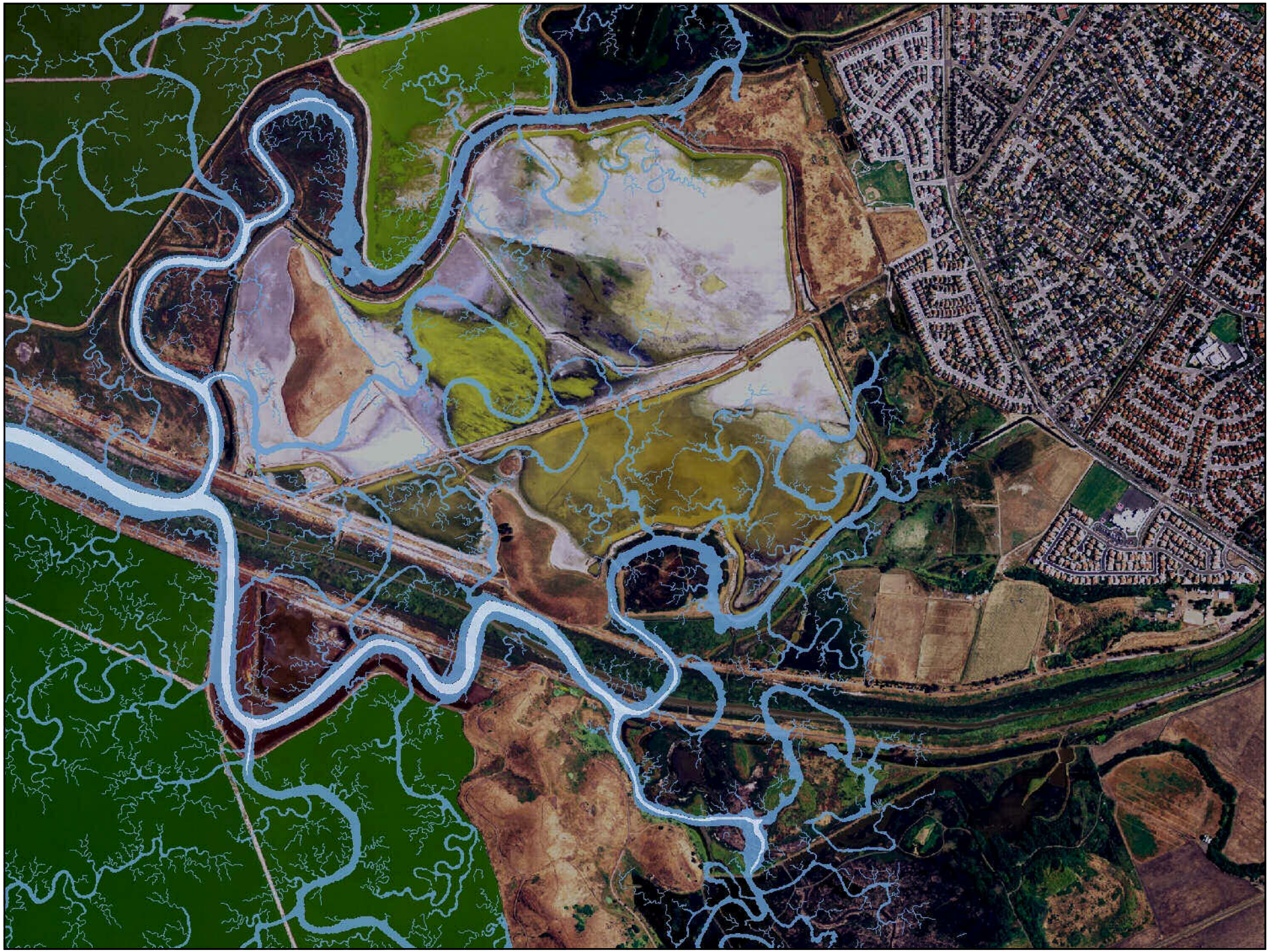
flood protection


PLEASANTON MARSH AND ARROYO DE LA LAGUNA
TIDAL MARSH
NILES CONE
SUNOL VALLEY


TIDAL MARSH

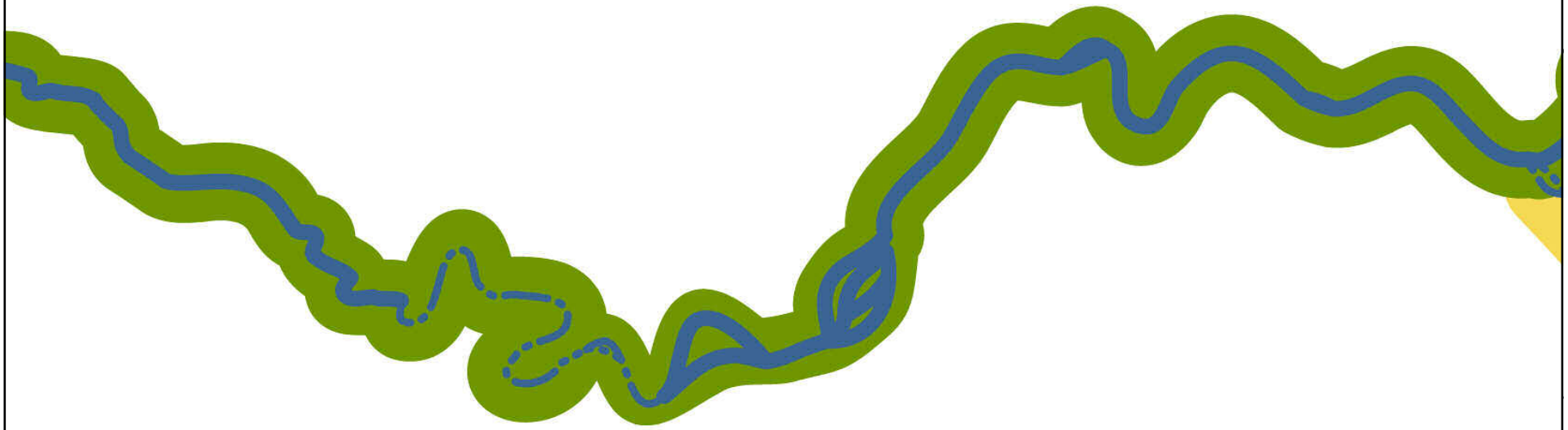


Union City Blvd
Dyer St
Smith
Lowry Rd
Padre Pkwy

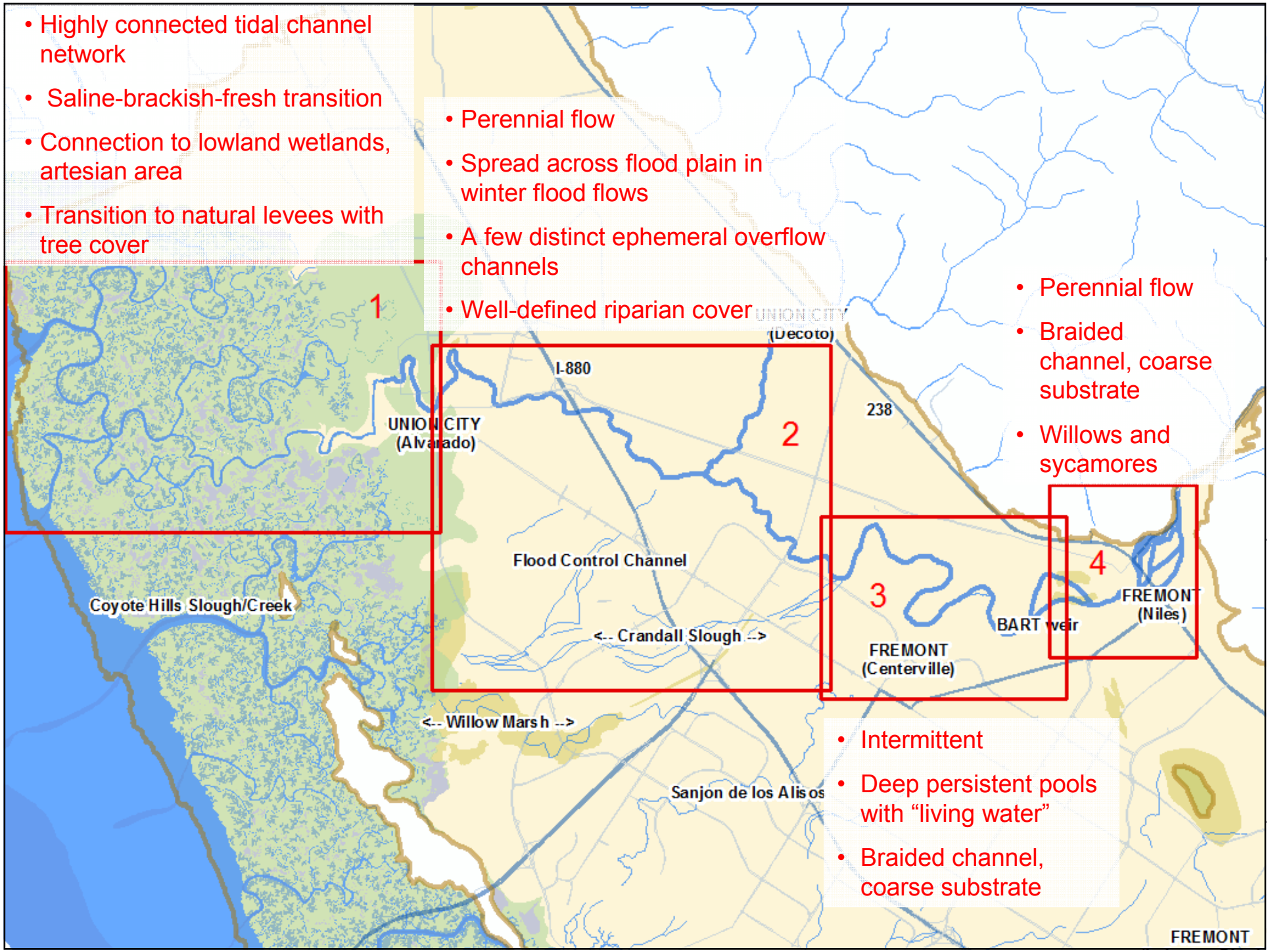


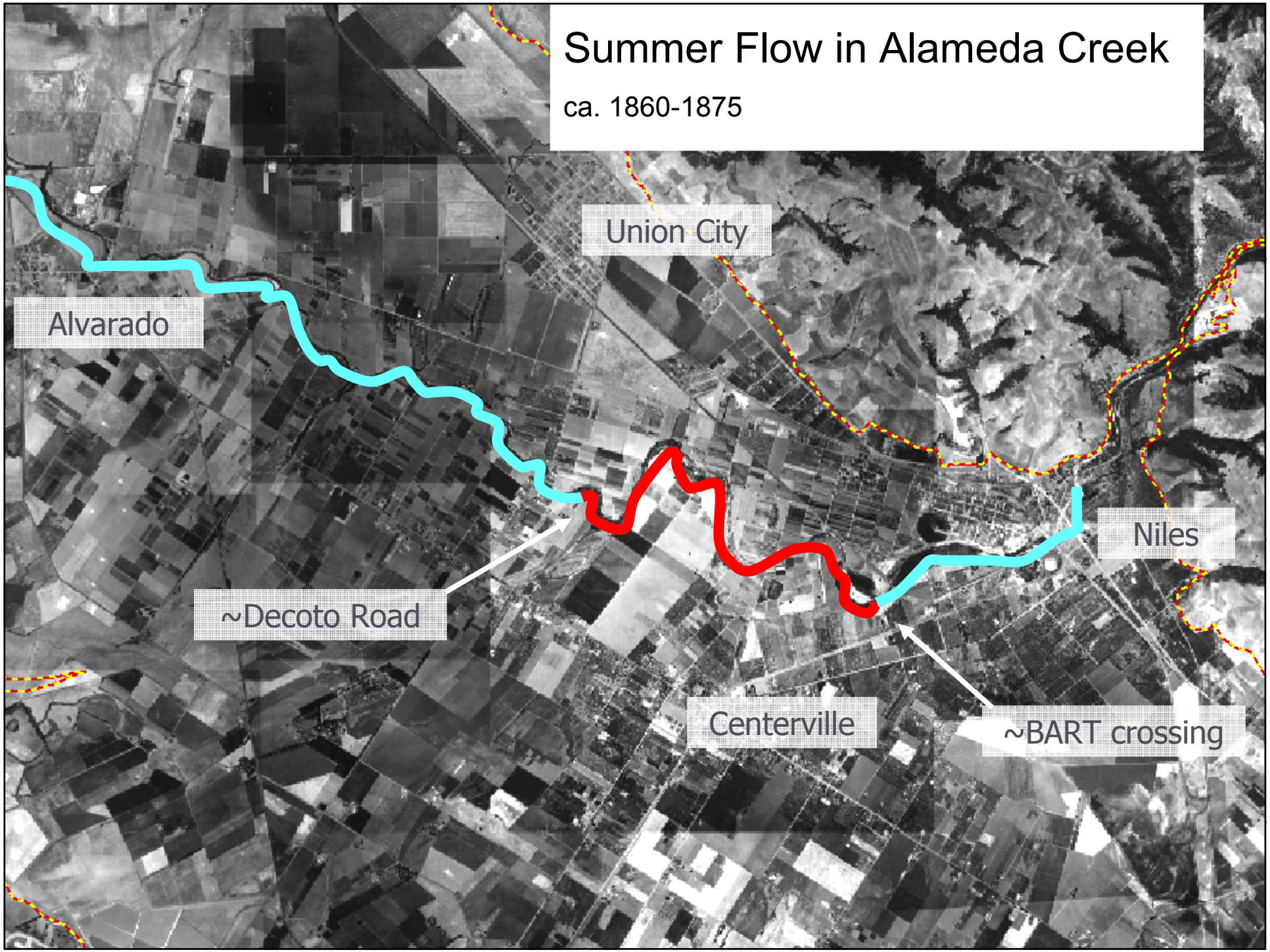
TIDAL MARSH REACH

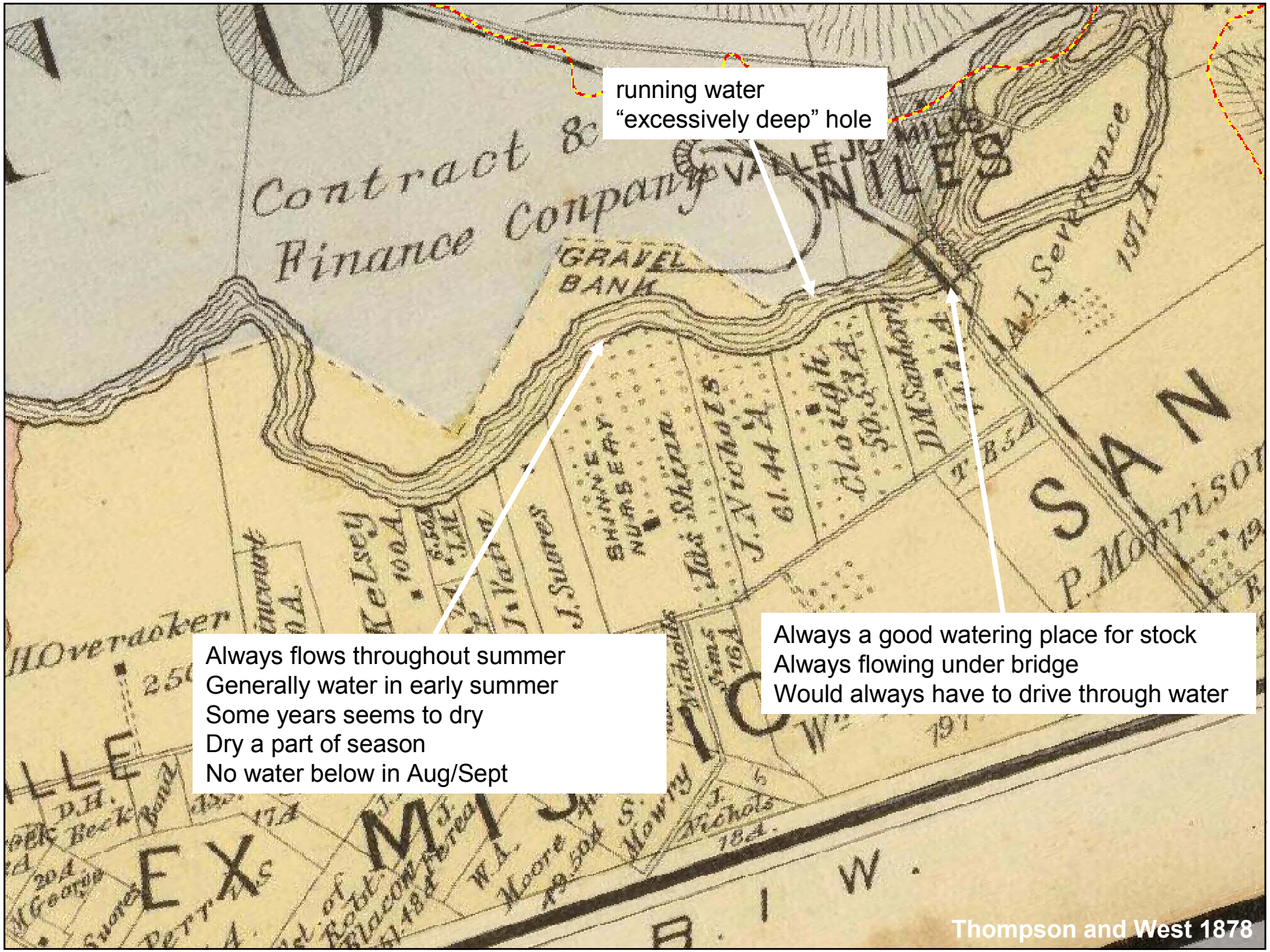
	1800	2010	2050
Fine sediment storage/ marsh maintenance	●	•	? ●
Fish support	●	•	? ●

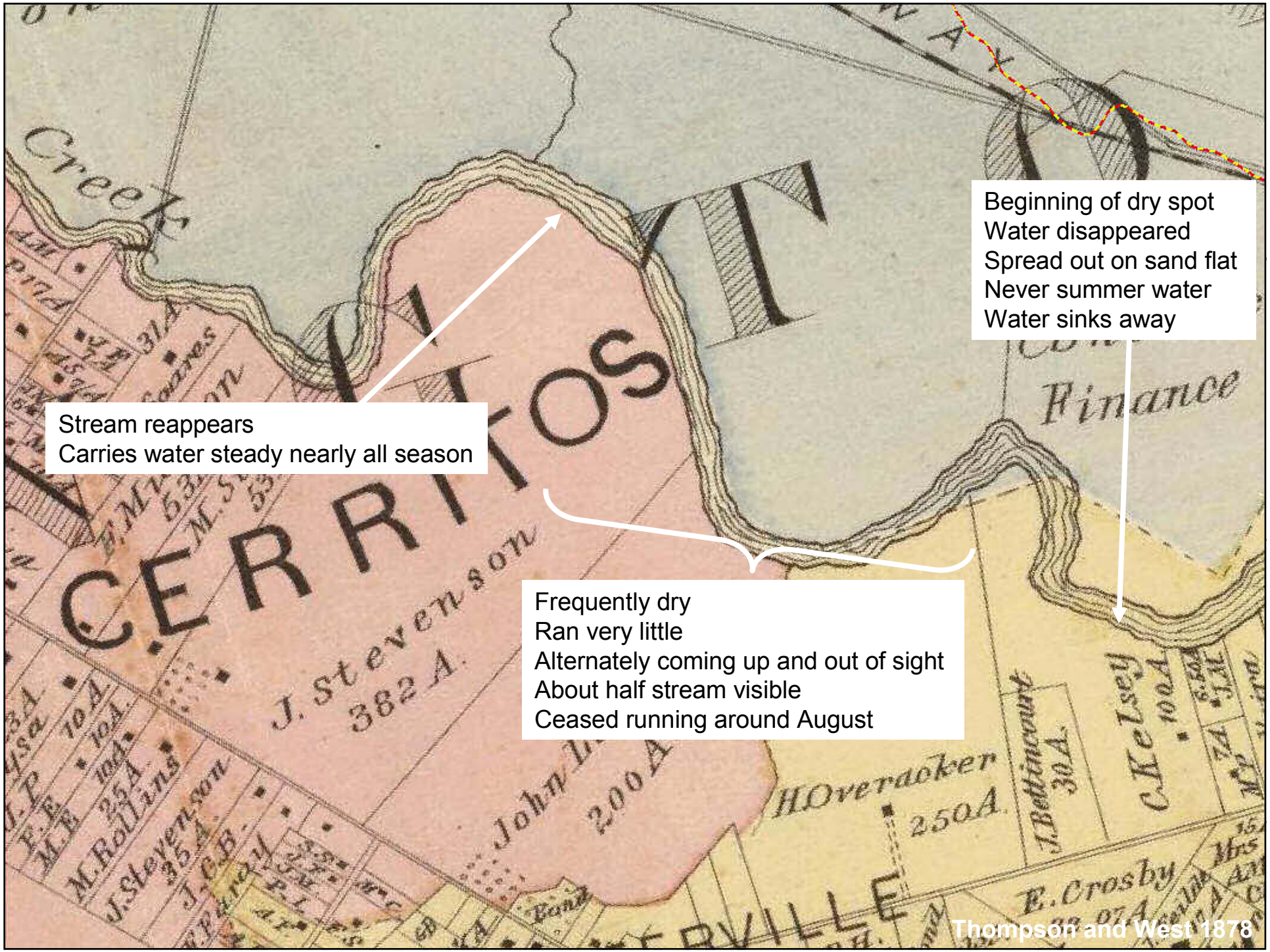


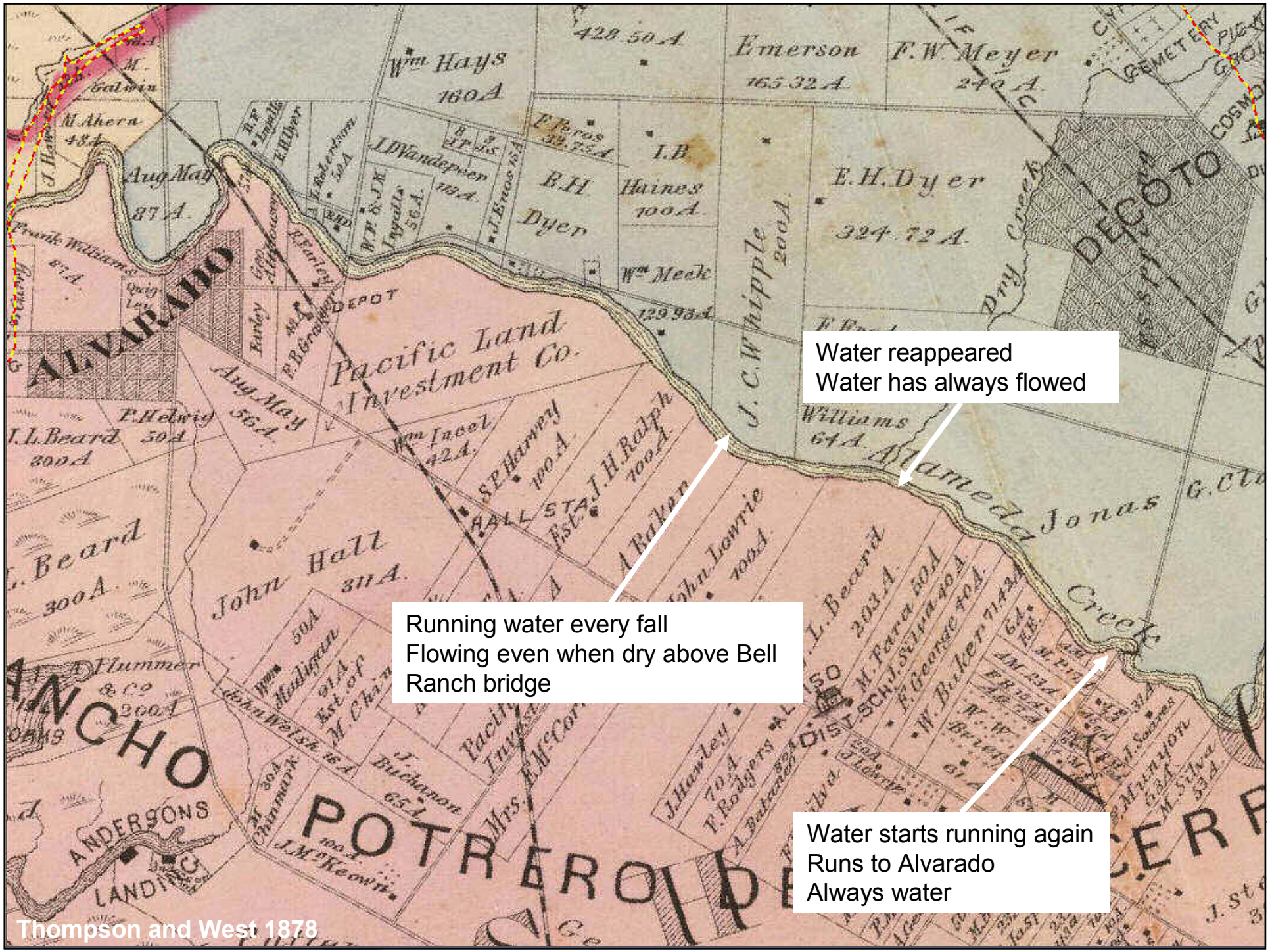
NILES CONE


• Highly connected tidal channel network
• Saline-brackish-fresh transition
• Connection to lowland wetlands, artesian area
• Transition to natural levees with tree cover
• Perennial flow
• Spread across flood plain in winter flood flows
• A few distinct ephemeral overflow channels
• Well-defined riparian cover
• Perennial flow
• Braided channel, coarse substrate
• Willows and sycamores
• Intermittent
• Deep persistent pools with "living water"
• Braided channel, coarse substrate
1
2
3
4
UNION CITY
(Decoto)
I-880
238
UNION CITY
(Alvarado)
Flood Control Channel
Coyote Hills Slough/Creek
<-- Crandall Slough -->
BART weir
FREMONT
(Niles)
FREMONT
(Centerville)
<-- Willow Marsh -->
Sanjon de los Alisos
FREMONT


Summer Flow in Alameda Creek
ca. 1860-1875
Union City
Alvarado
Niles
~Decoto Road
Centerville
~BART crossing


running water
“excessively deep” hole
Always flows throughout summer
Generally water in early summer
Some years seems to dry
Dry a part of season
No water below in Aug/Sept
Always a good watering place for stock
Always flowing under bridge
Would always have to drive through water
Contract 8
Finance Company
GRAVEL BANK
VALLEJO MILLS
SHINNEY NURSERY
Thos Shinn
J. Nichols
Clough
D.M. Sanborn
A.J. Severance
J. Suares
Kelsey
P. Morrison
H. Overacker
Moore
Mowry
J. Nichols
W.I.
Thompson and West 1878


Beginning of dry spot
Water disappeared
Spread out on sand flat
Never summer water
Water sinks away
Stream reappears
Carries water steady nearly all season
Frequently dry
Ran very little
Alternately coming up and out of sight
About half stream visible
Ceased running around August
Thompson and West 1878

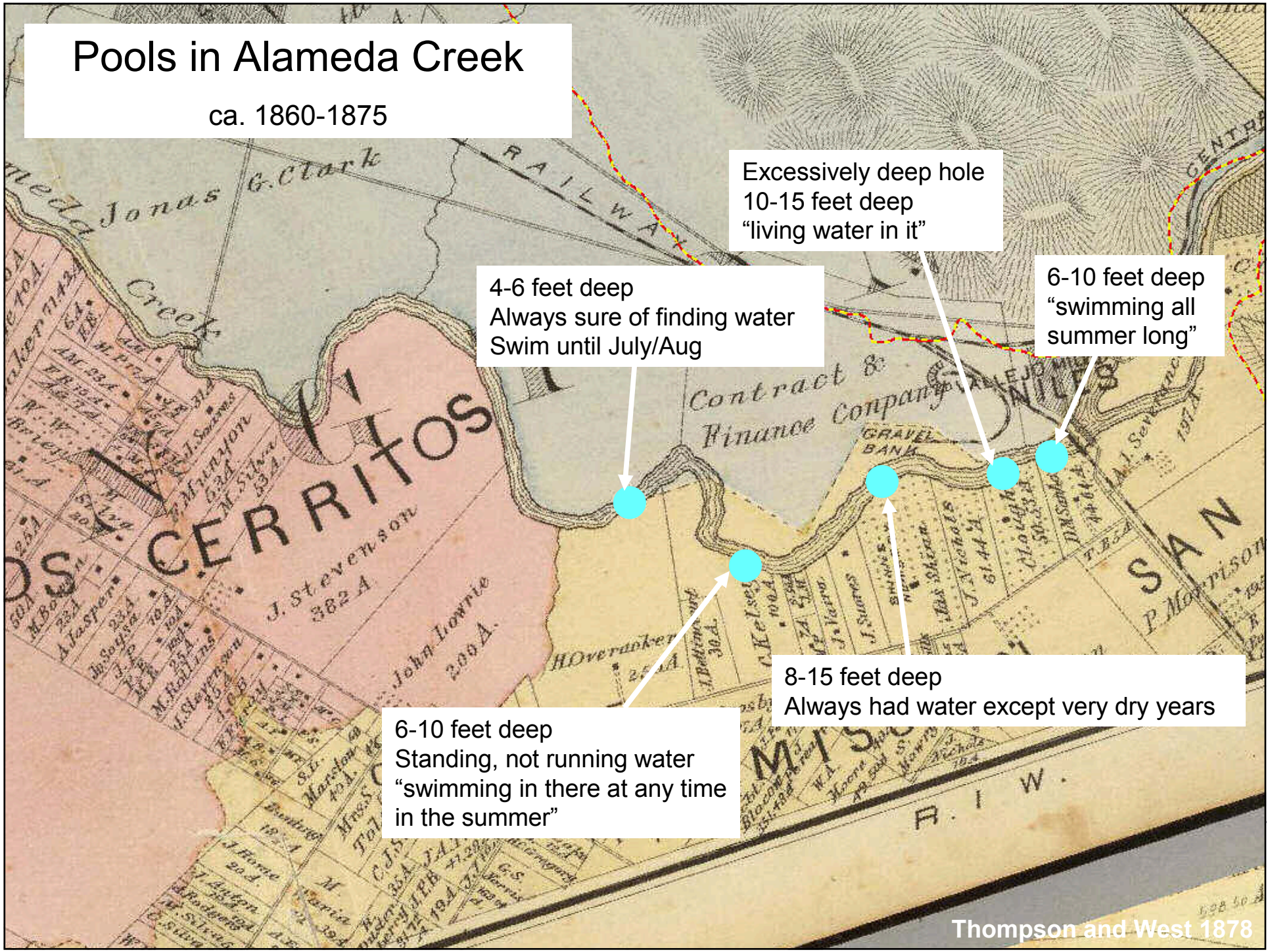

Water reappeared
Water has always flowed
Running water every fall
Flowing even when dry above Bell Ranch bridge
Water starts running again
Runs to Alvarado
Always water
Thompson and West 1878
Wm Hays 160A
428.50A
Emerson 165.32A
F.W. Meyer 240A
E.H. Dyer 324.72A
R.H. Dyer
I.B. Haines 100A
Wm Meck 129.93A
J.C. Whipple 200A
Pacific Land Investment Co.
Aug May 87A
Aug May 56A
P. Helwig 50A
I.L. Beard 200A
John Hall 311A
Williams 64A
Alameda Creek
Jonas
DECOTO
ALVARADO
ANCHO POTRERO
ANDERSONS LANDING
DEPOT
DISTRICT SCH.
Dry Creek
CEMETERY

October 22, 1795: “Following the arroyo farther down, we saw where **the water disappears, perhaps a quarter of a league from the hills. At a distance of a league the water comes out again**.”

(Danti 1795)

Pools in Alameda Creek

ca. 1860-1875



March 31, 1776: “About half way on the road we came to an arroyo with little water, most of it in **very deep pools**…”

Font 1776

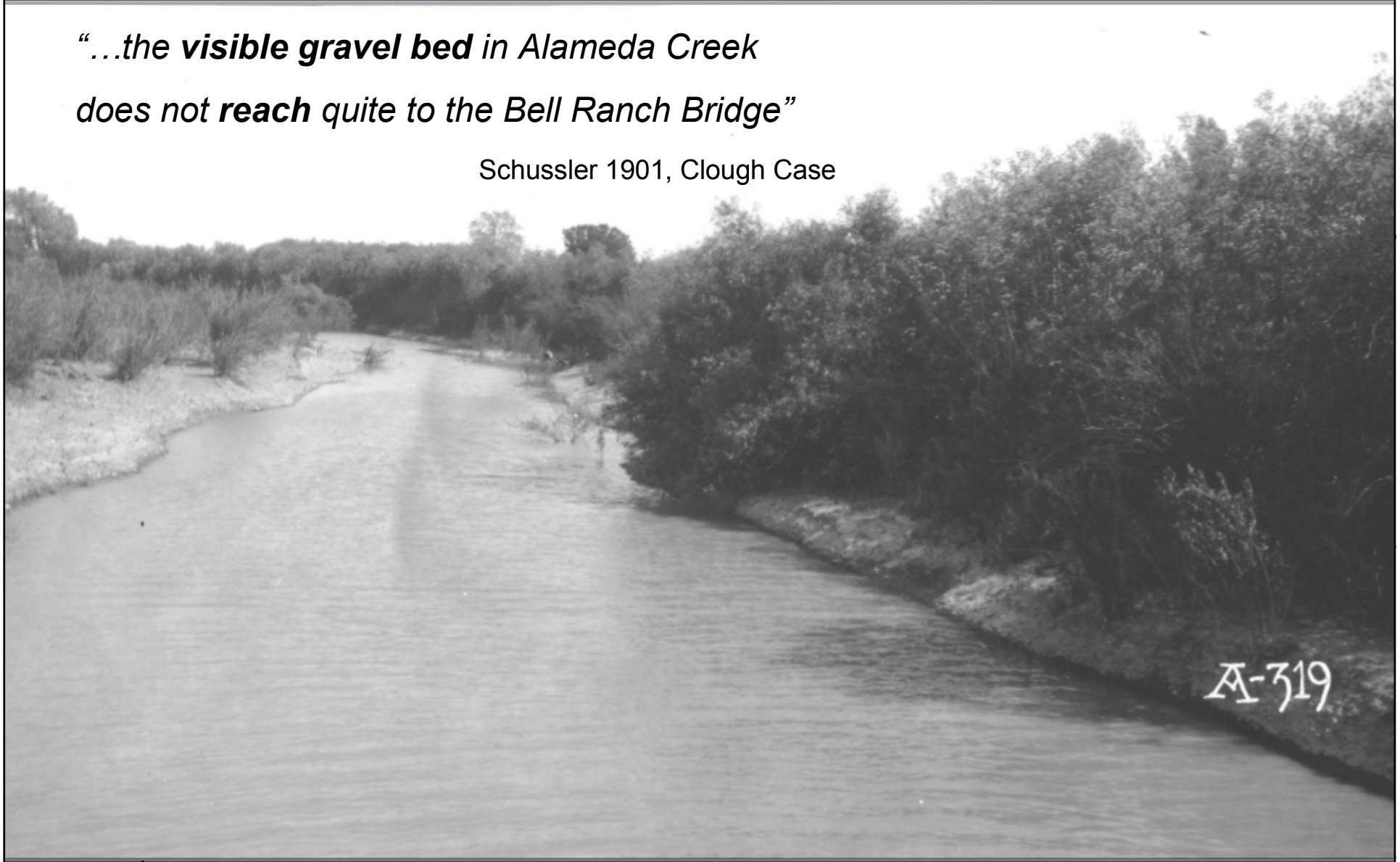
1889: “As the water recedes from the Alameda creek at Niles, **pools are left in various places** from which a number of **fine specimens of the salmon trout have been taken**, some of them measuring two feet or more in length.”

Daily Alta California, February 4, 1889

*"…the **visible gravel bed** in Alameda Creek*

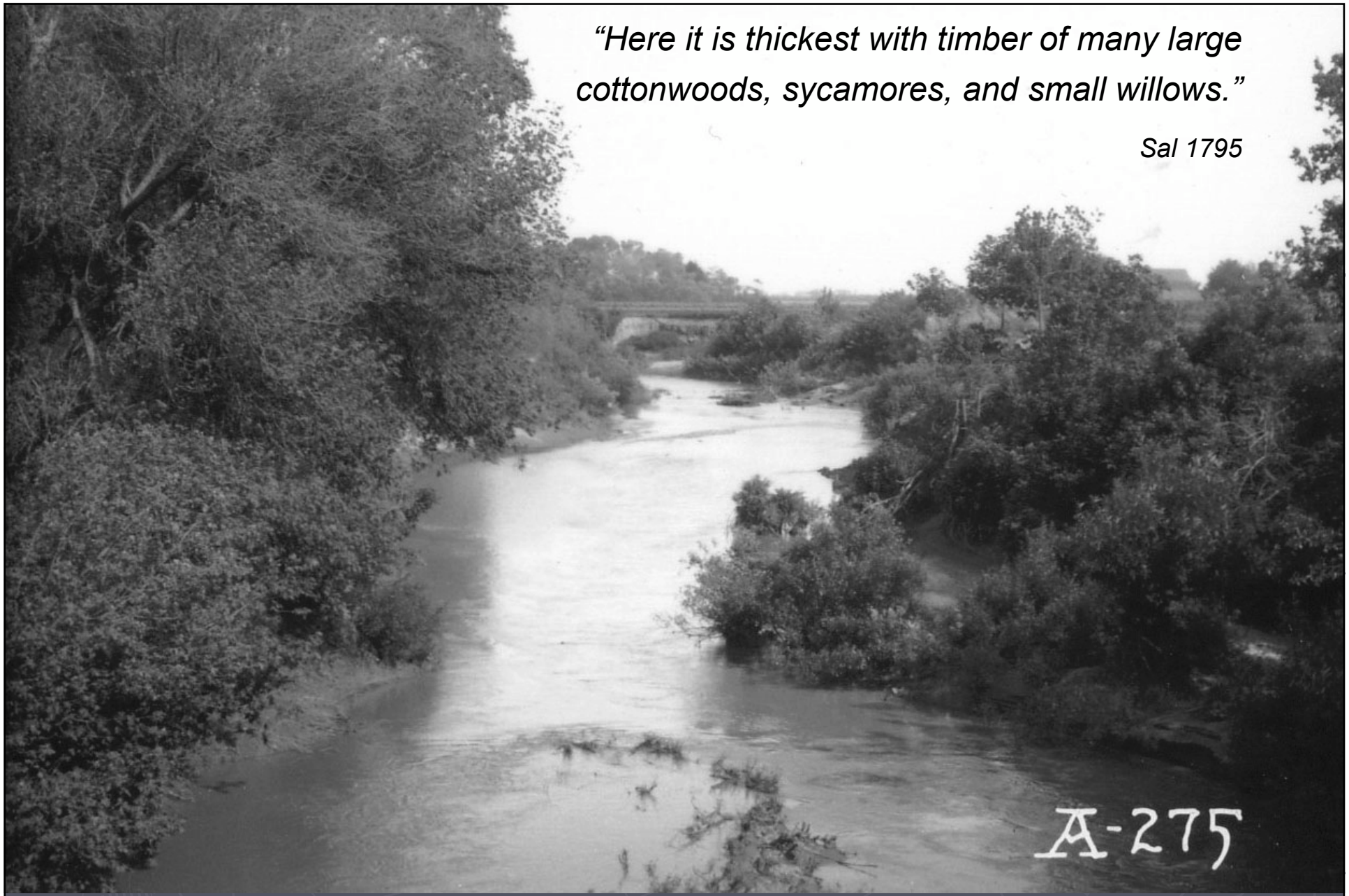
*does not **reach** quite to the Bell Ranch Bridge"*

Schussler 1901, Clough Case



Alameda Creek, north of present day Quarry Lakes

6/11/1915 (SFPUC)



"Here it is thickest with timber of many large cottonwoods, sycamores, and small willows."

Sal 1795

Alameda Creek, looking upstream near Decoto, towards the intermittent reach

5/28/1915 (SFPUC)

1776 (March 31): “About half way on the road we came to an arroyo with little water, most of it in very deep pools. It has **on its banks many sycamores, cottonwoods, and some live oaks and other trees**, and it appears to flow west to empty into the estuary, toward which all the arroyos flow and toward which runs a **thick growth of trees**; but I was not able to distinguish whether it marked the course of the river or was a stretch of grove…”

Font 1776

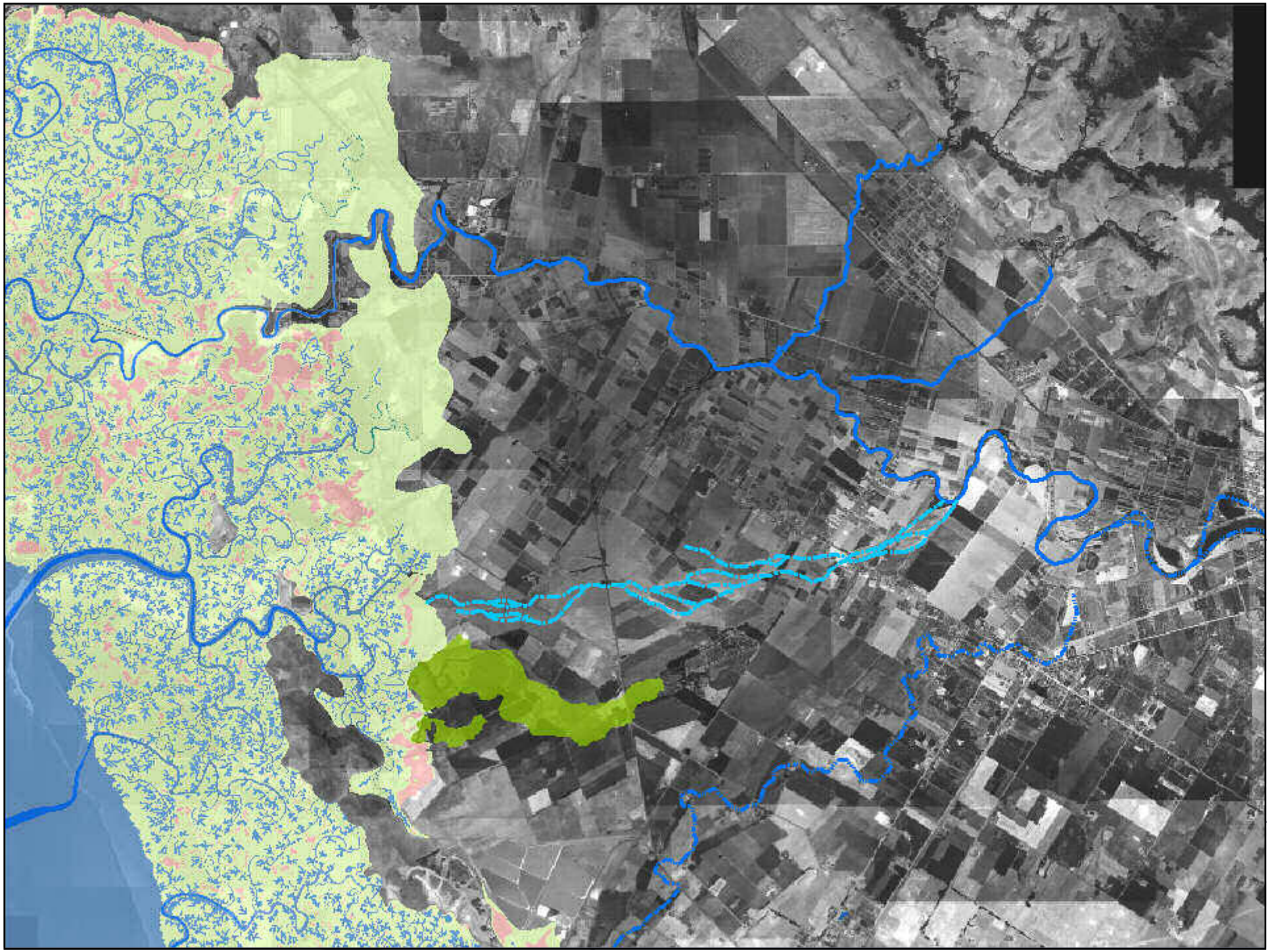
1887: “The Alameda Creek was, between 1850 and 1853, the dividing line between Contra Costa County and Santa Clara County. Its banks being bordered, then as now, **with cottonwood and willow trees**, in the midst of an otherwise scarcely wooded plain…”

Office of State Bureau of Labor Statistics 1887

Williams 1915 (ACWD)

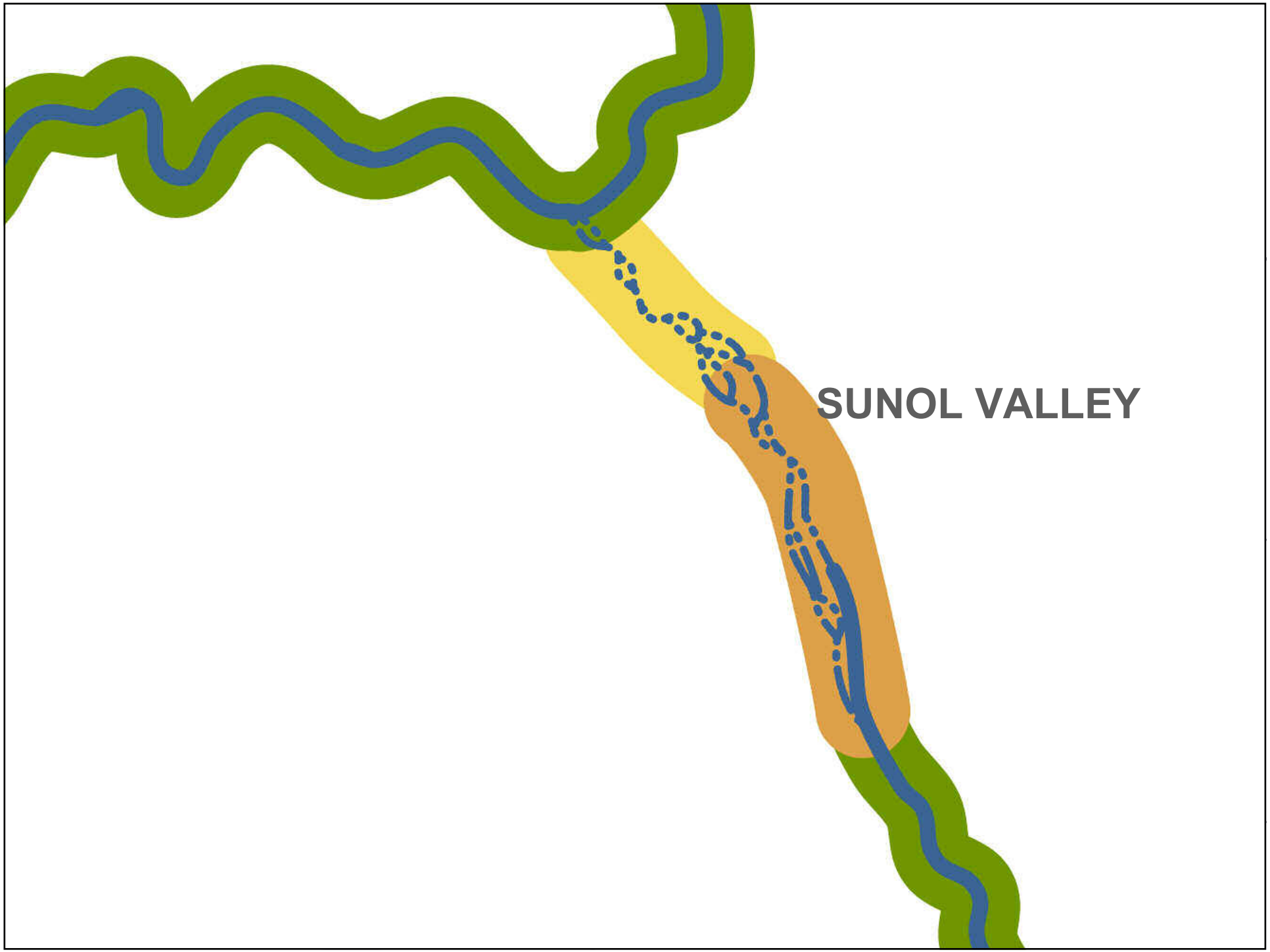
Crandall Slough, looking NE from Fremont Blvd.

1/4/1916 (SFPUC)

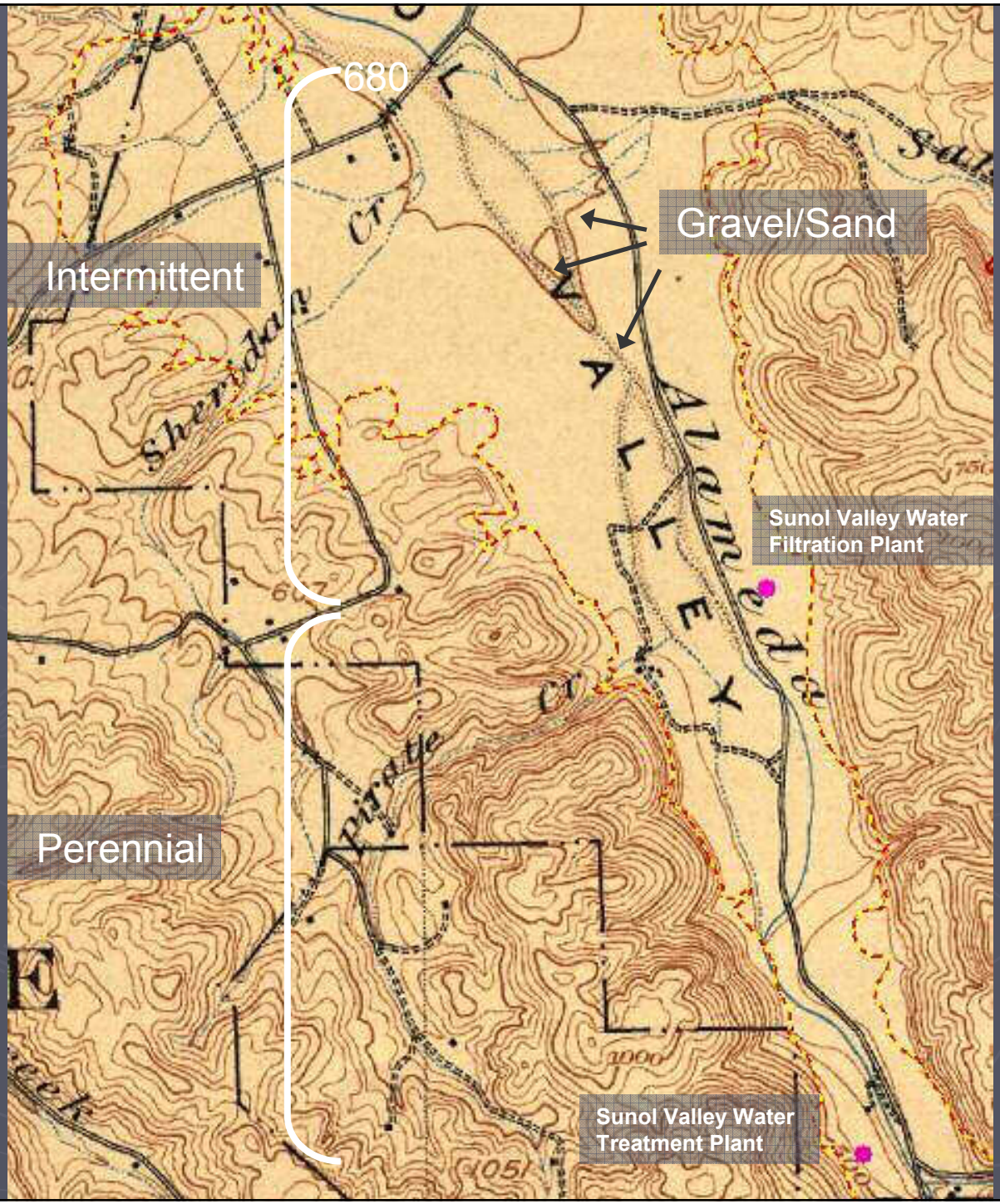


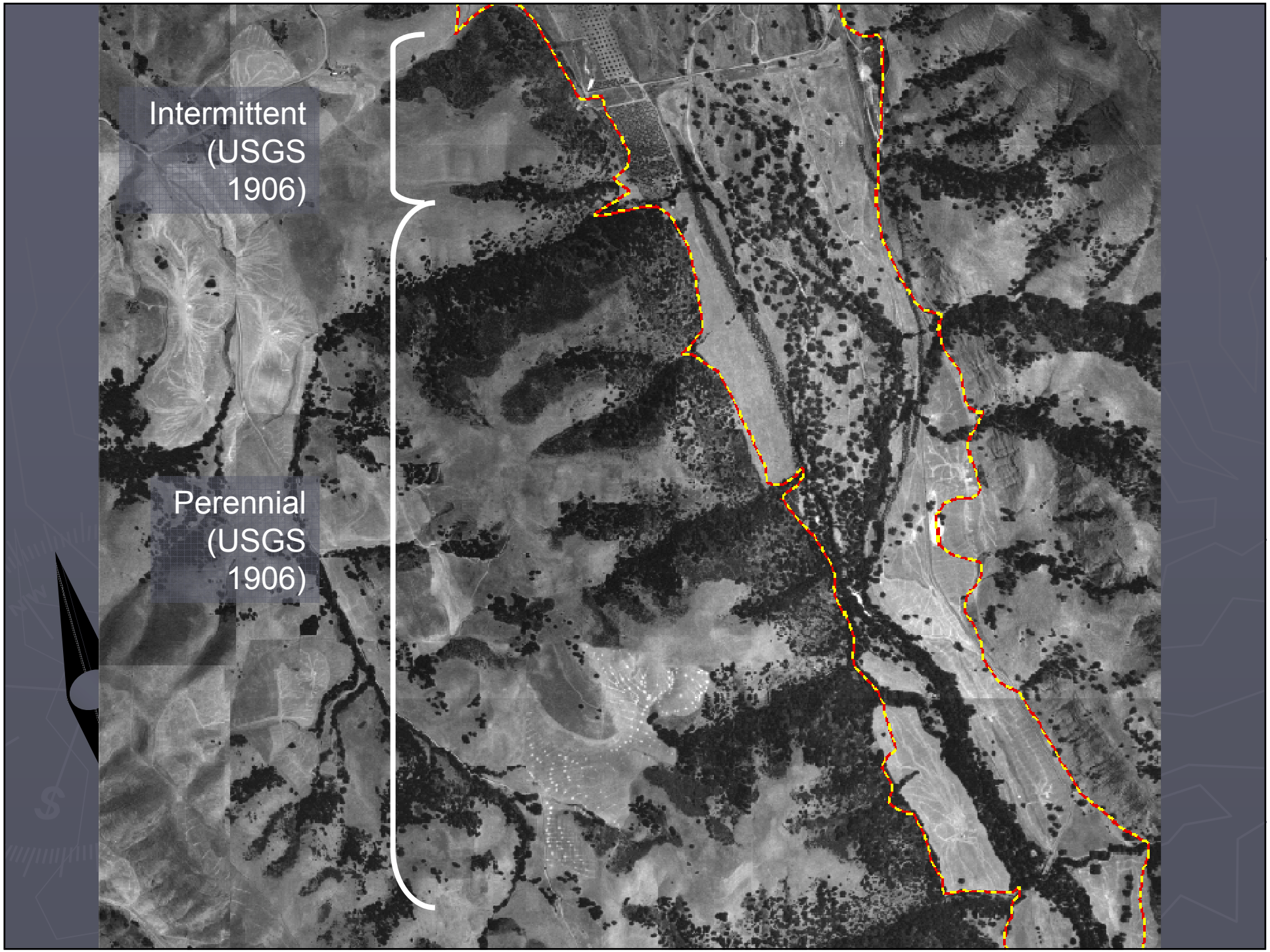
NILES CONE

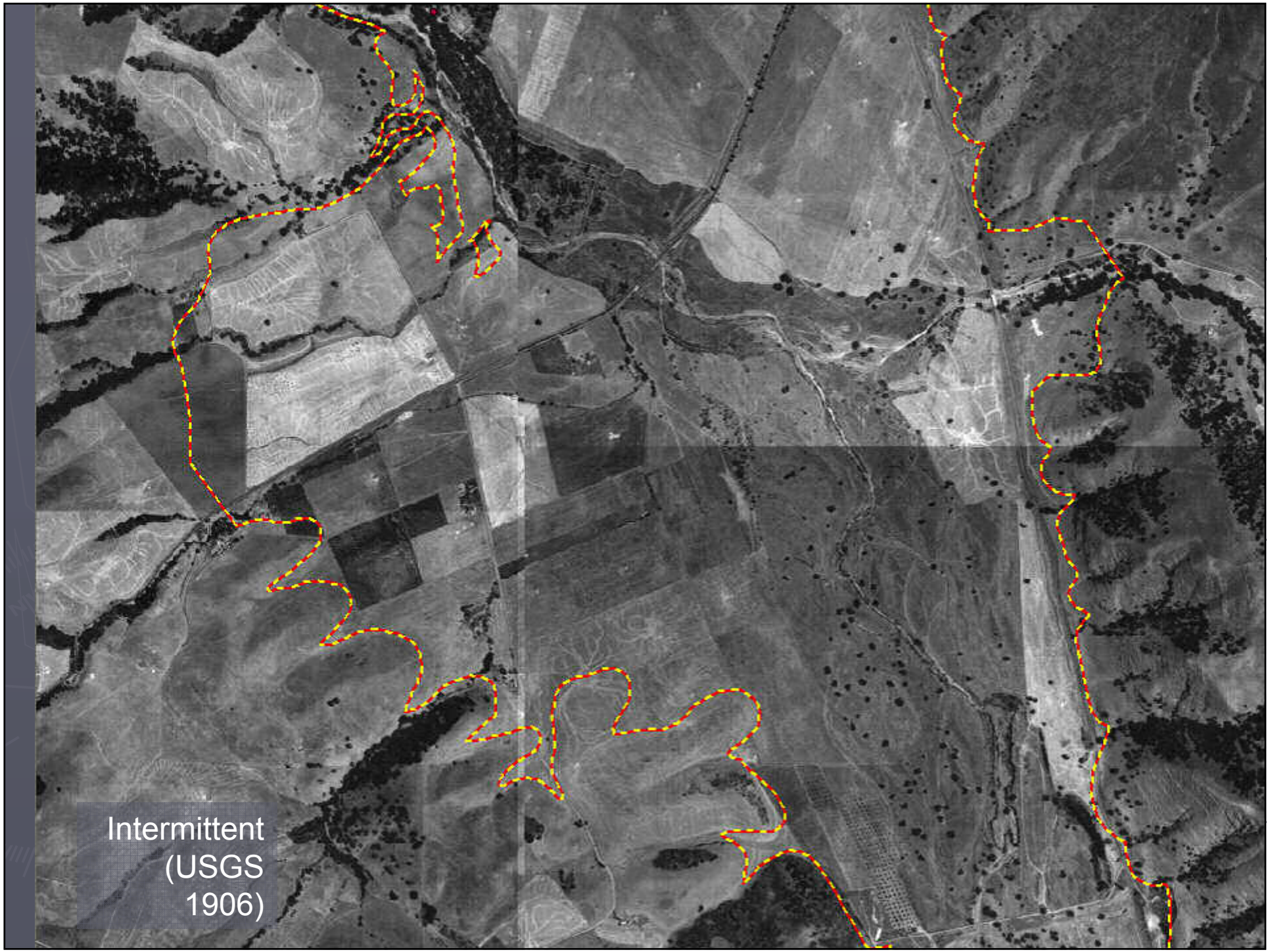
	1800	2010	2050
Groundwater recharge	●	●	?
Fisheries support	●	•	● ?
Sediment storage	**on fan**	**in channel**	**?**
Floodplain	●	•	•

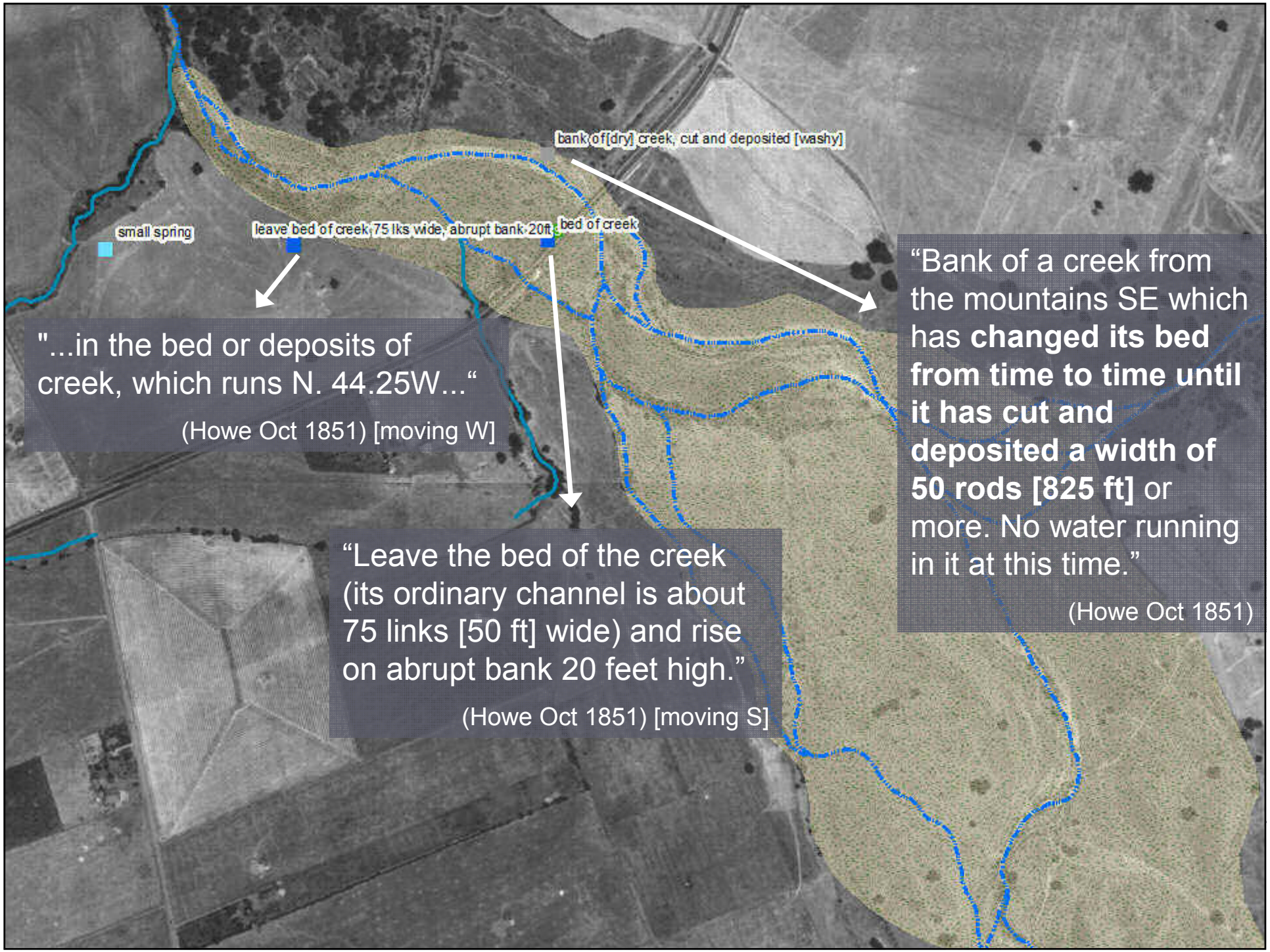

SUNOL VALLEY

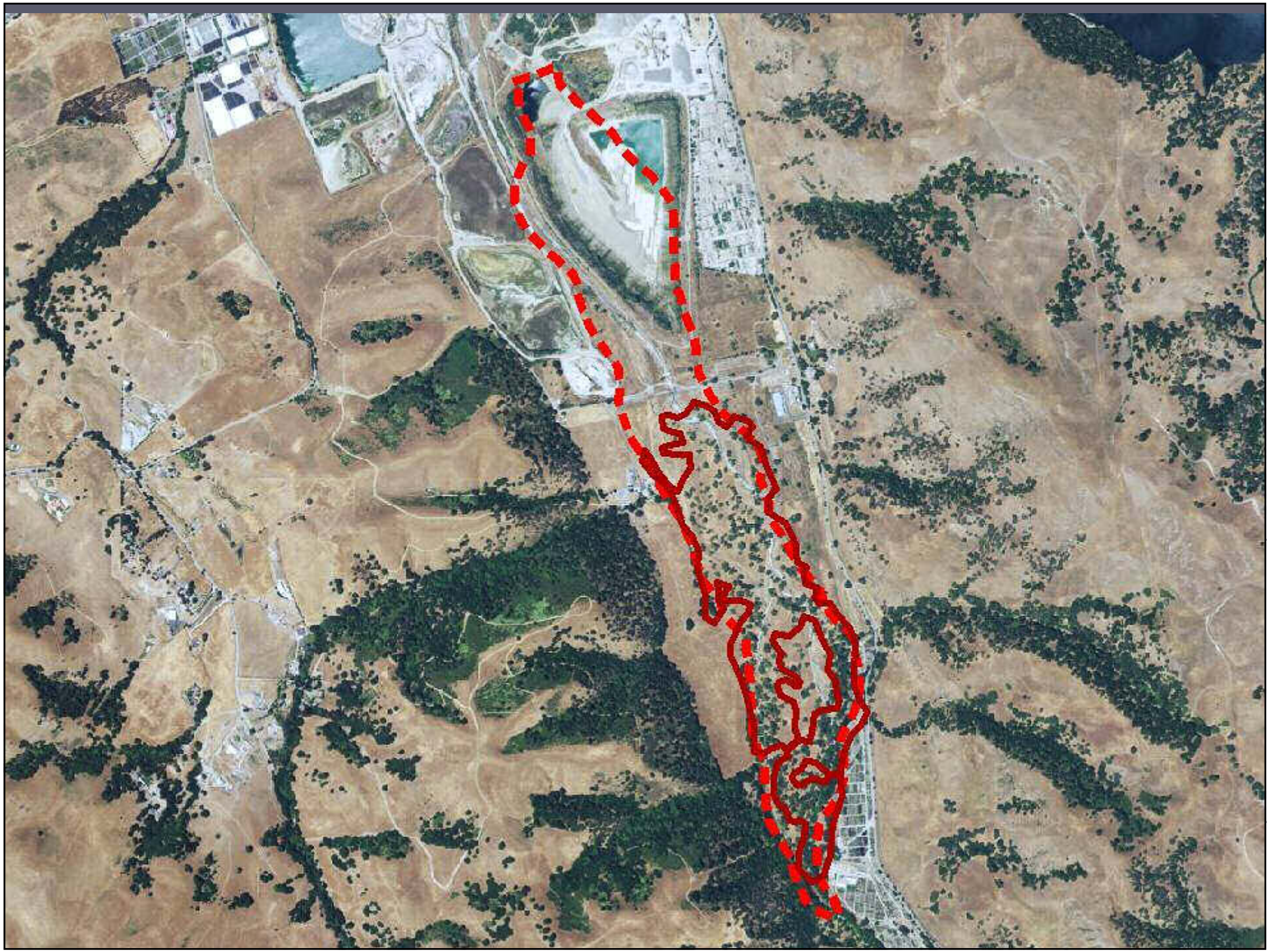
USGS 1906

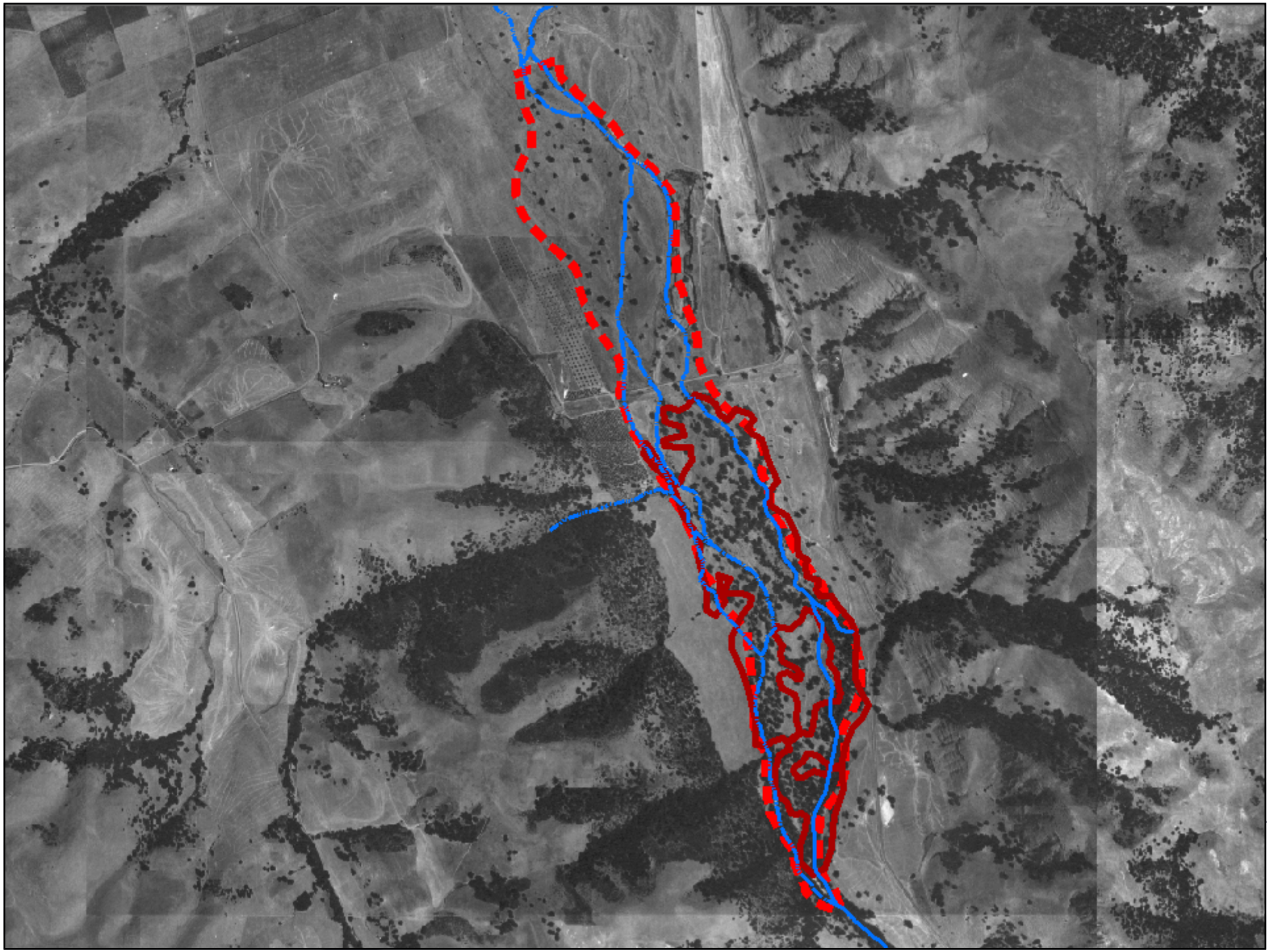

680
Gravel/Sand
Intermittent
Sunol Valley Water
Filtration Plant
Perennial
Sunol Valley Water
Treatment Plant


Intermittent
(USGS
1906)
Perennial
(USGS
1906)


Intermittent
(USGS
1906)


bank of [dry] creek, cut and deposited [washy]
small spring
leave bed of creek, 75 lks wide, abrupt bank 20ft
bed of creek
"...in the bed or deposits of creek, which runs N. 44.25W..."
(Howe Oct 1851) [moving W]
"Leave the bed of the creek (its ordinary channel is about 75 links [50 ft] wide) and rise on abrupt bank 20 feet high."
(Howe Oct 1851) [moving S]
"Bank of a creek from the mountains SE which has **changed its bed from time to time until it has cut and deposited a width of 50 rods [825 ft]** or more. No water running in it at this time."
(Howe Oct 1851)



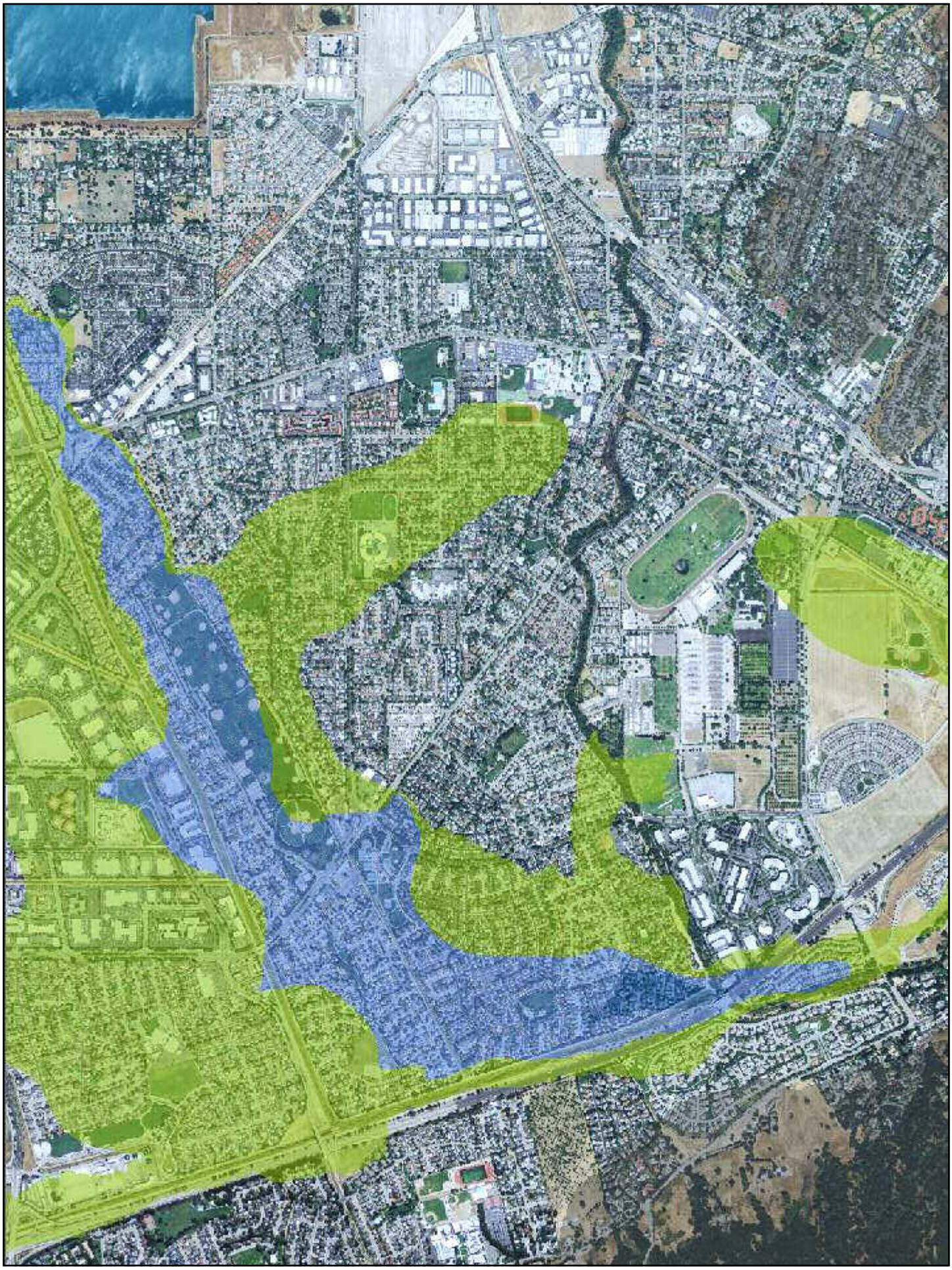


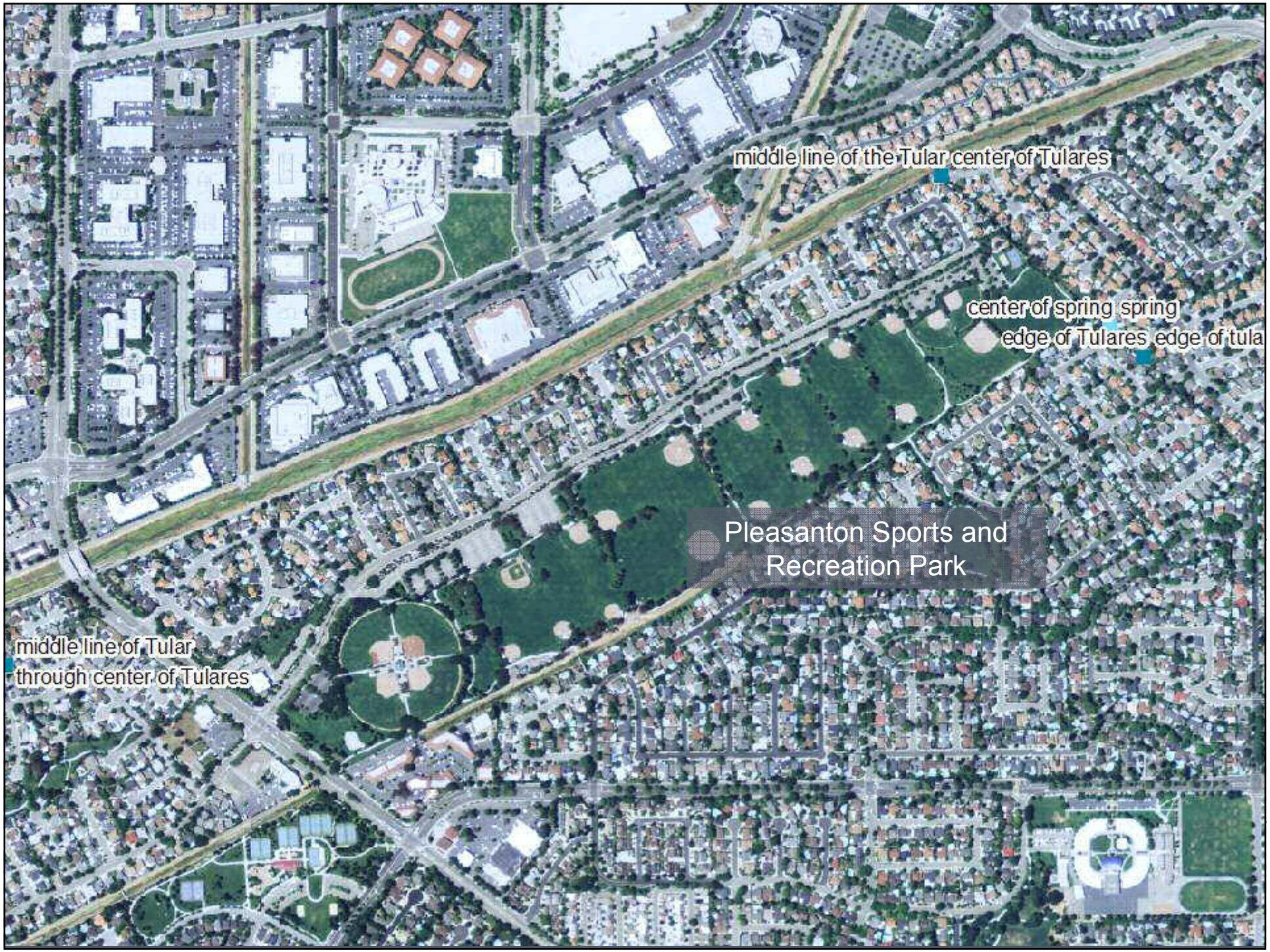
SUNOL VALLEY

	1800	2010	2050
Groundwater storage	●	●	?
Fish rearing	•	•	?
Sycamore alluvial woodland	●	●	?
Floodplain	●	•	?

PLEASANTON MARSH
and
ARROYO DE LA LAGUNA

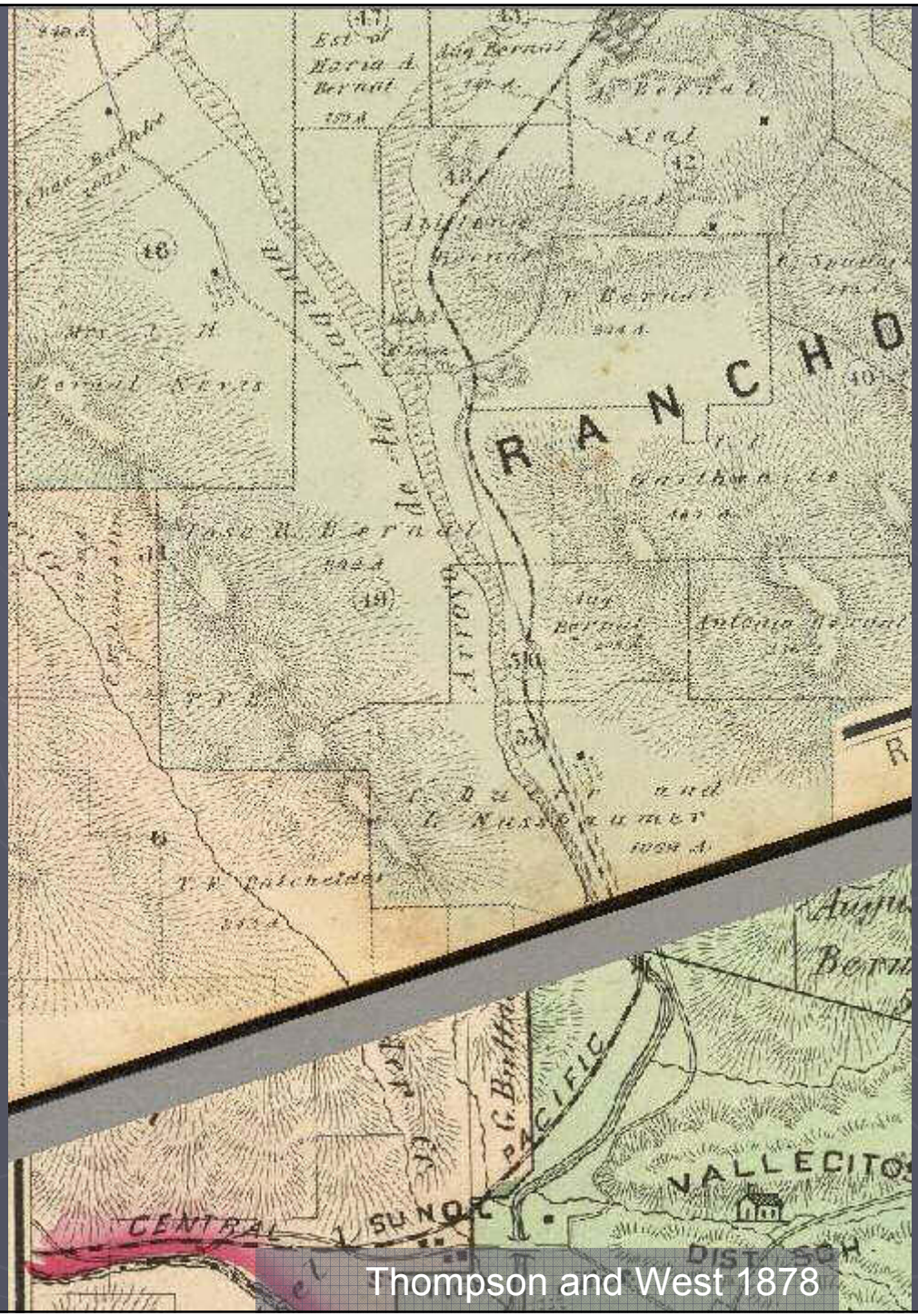
[Map removed to respect permissions.]




middle line of the Tular center of Tulares
center of spring spring
edge of Tulares edge of tula
Pleasanton Sports and
Recreation Park
middle line of Tular
through center of Tulares

1911: “In recent years the marsh has been drained by the construction of reclamation ditches and by the deepening and clearing of a portion of the Laguna Creek channel, which allowed the flood waters a free course. The channel, now less obstructed, is greatly cut down…”

(Williams 1912)



Thompson and West 1878

PLEASANTON LAGOON and ARROYO DE LA LAGUNA

	1800	2010	2050
Groundwater discharge	●	●	?
Fisheries support	●	•	•
Sediment storage	●	•	•
Sediment source	•	●	? ●

Next Steps

- Finish synthesis and GIS
- Develop analysis and reporting
- Translate information through presentation/communication

ACKNOWLEDGEMENTS

Sponsors

- San Francisco Public Utilities Commission (SFPUC)
- Alameda County Flood Control and Water Conservation District (ACFCWCD)

Partners

- Alameda County Resource Conservation District (ACRCD)
- Laurel Collins (Watershed Sciences)
- Rob Leidy (EPA)

THANK YOU

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