

San Francisco Bay

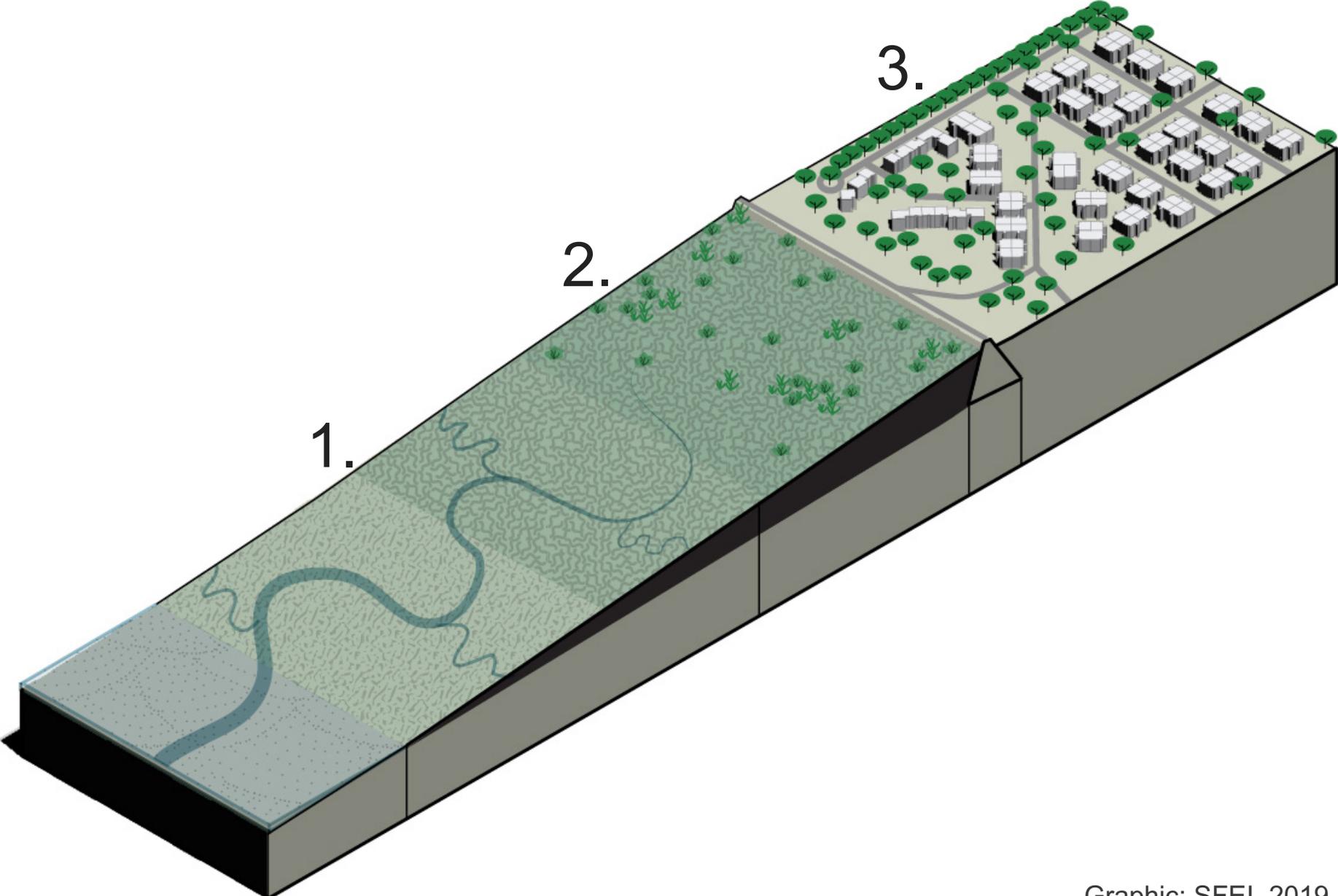
Jeremy Lowe, SFEI

BCDC Commission
March 7, 2019

Structure

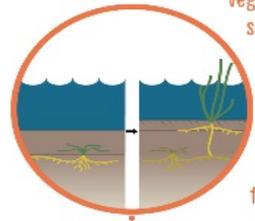
How could we use

- 1. Maintain our existing
- 2. "Complete the map
- upland transition
- 3. Manage very low



1. MARSH SPRAYING

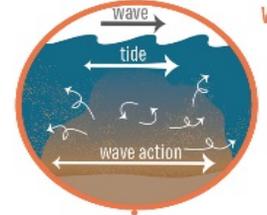
Dredged sediment is sprayed directly onto the marsh surface, which can increase accretion beyond natural rates.



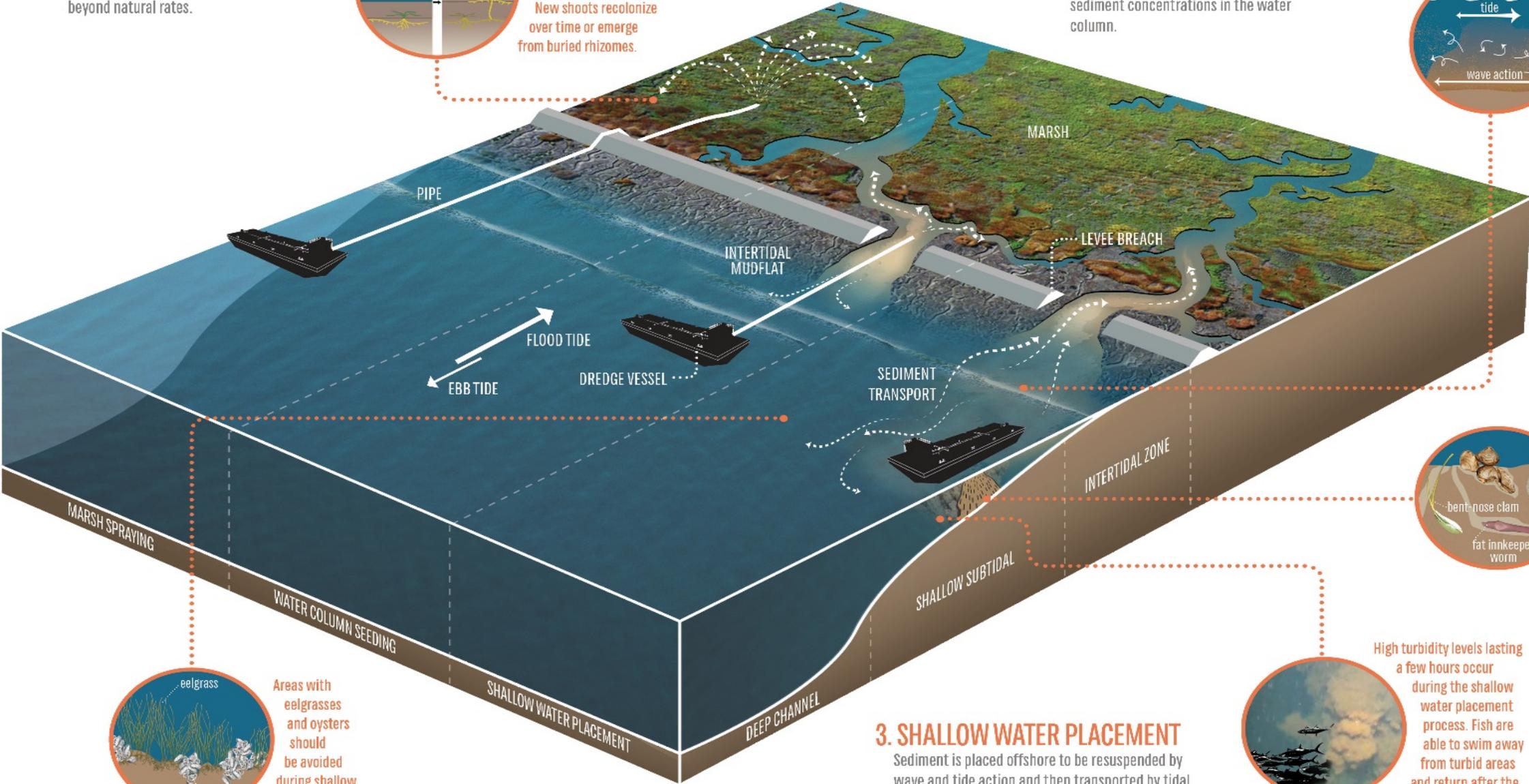
Vegetation is buried with sediment during spraying, affecting habitat quality and quantity for marsh wildlife. New shoots recolonize over time or emerge from buried rhizomes.

2. WATER COLUMN SEEDING

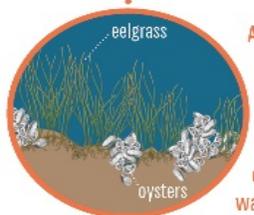
Sediment is released into the water column at the marsh channel entrance during an incoming tide to increase suspended sediment concentrations in the water column.



Wave and tidal current energy resuspend the placed sediment and move it primarily landward.



Organisms living on or within sediment would be buried.



Areas with eelgrasses and oysters should be avoided during shallow water placement.

3. SHALLOW WATER PLACEMENT

Sediment is placed offshore to be resuspended by wave and tide action and then transported by tidal currents onto the marshes.



High turbidity levels lasting a few hours occur during the shallow water placement process. Fish are able to swim away from turbid areas and return after the sediment settles.

Questions to ask...and possible ways to answer

1. How do we prioritize which marshes to maintain?

- Do we focus on the highest or lowest marshes?
- Value of marsh for wildlife, flooding, water quality at the landscape scale
- Guided by the Bayland and Subtidal Goals, Adaptation Atlas, and Resilience Map

2. How do we balance the impacts to marshes, water column, mudflats and shallow subtidal?

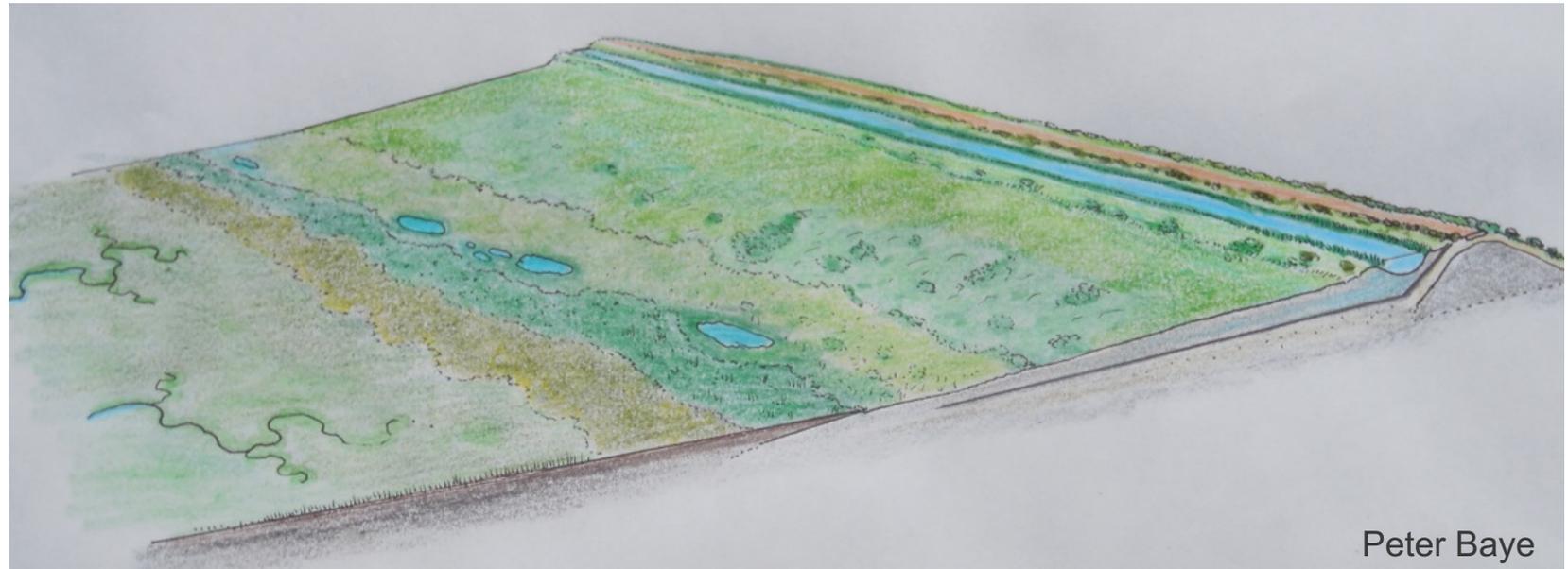
- Learn from pilot projects – Seal Beach, USACE SAGE, dredging impact studies
- SF Bay WIIN Pilot Project - direct and indirect impacts of placement in shallow water and water column
- What does “recovery” look like and how long does it take?

Upland



Wetland-Upland Transition

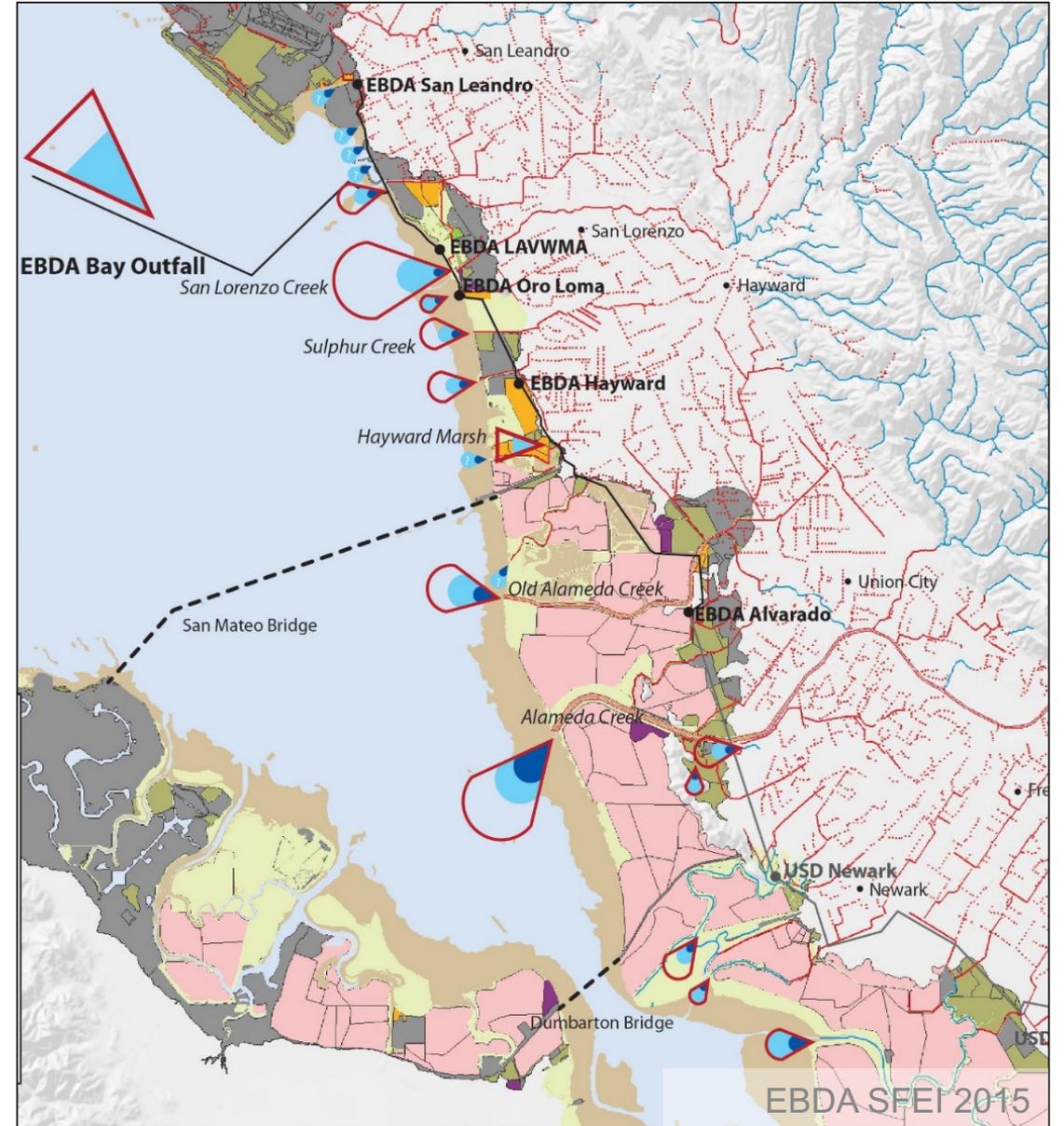
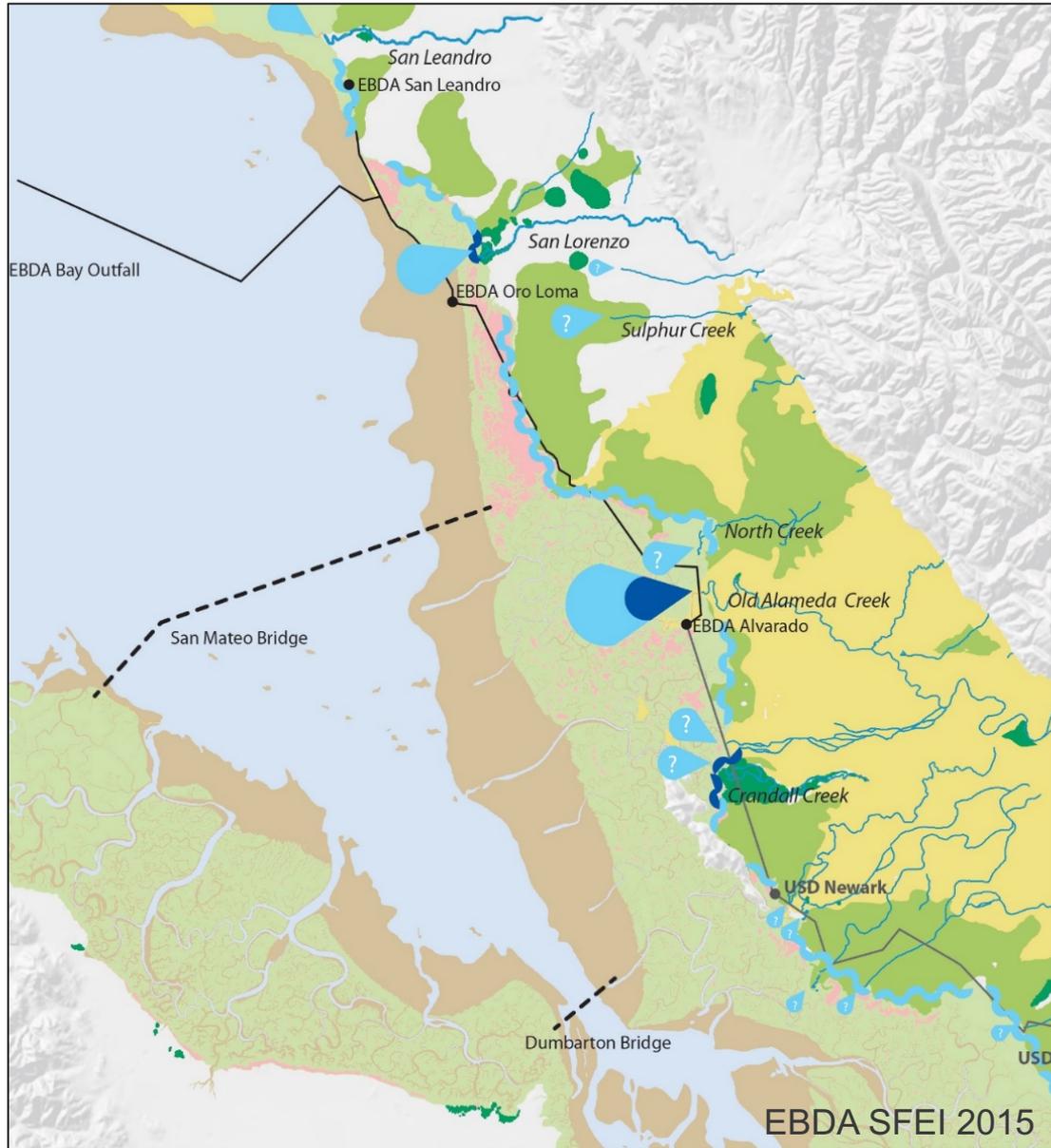
Horizontal Levees



Oro Loma Horizontal Levee



Historical and Current Freshwater Inputs



Questions to ask...and possible ways to answer

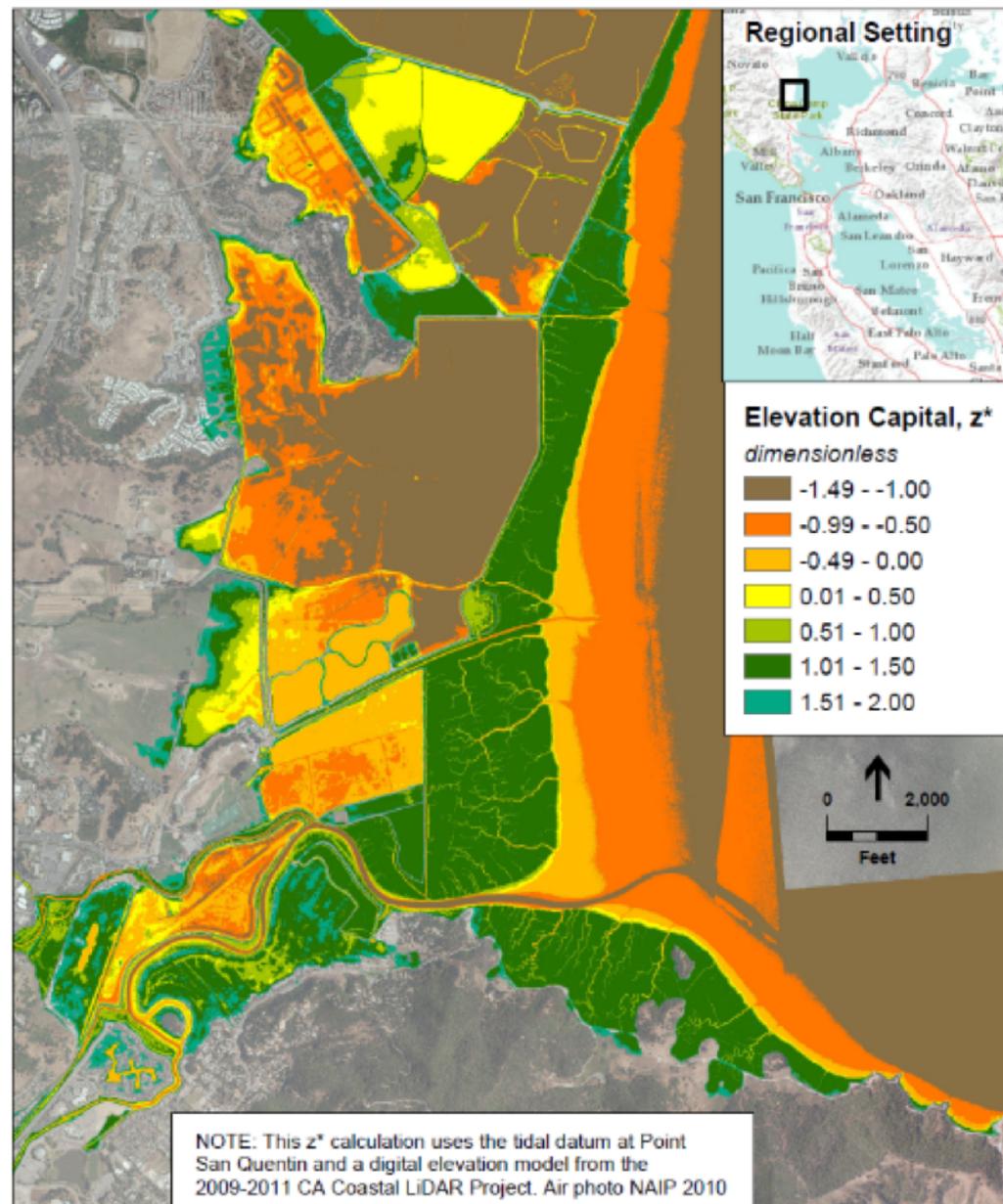
1. Where do horizontal levees make sense?

- Bayland Goals discusses “Complete Marsh”
- Adaptation Atlas suggests appropriate locations today in OLUs
- Need to consider the marshes, mudflats, shallow Bay in front
- Transition to where? Need to consider the land and land uses behind

2. How do we balance multiple objectives?

- Three-legged stool of wildlife, flood risk management and water quality
- Use present day marshes, flood risk, and hydrology to guide future landscape

Disconnected Low-Lying Areas or Polders

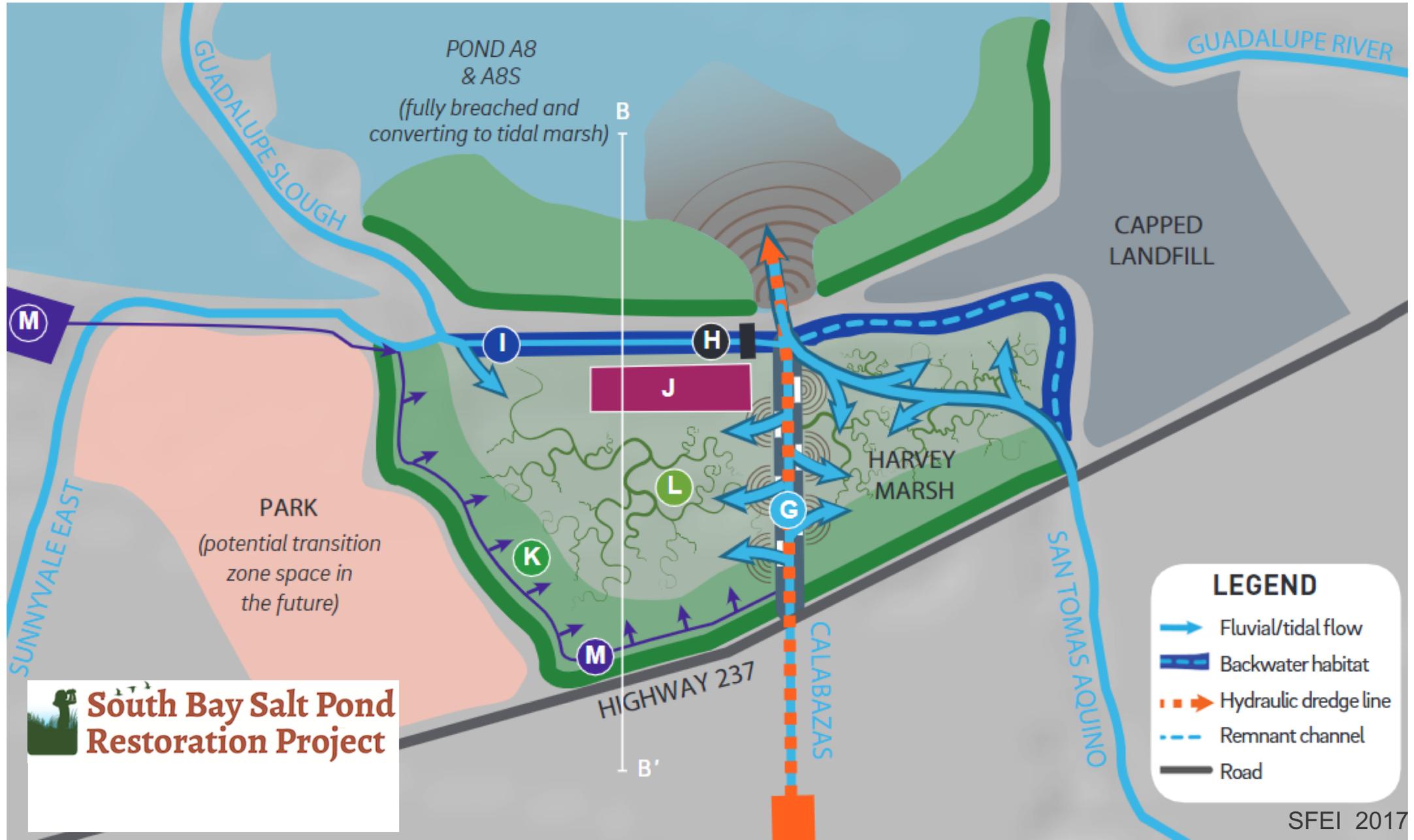


Hamilton Airfield Wetland Restoration



Hamilton Airfield 2015 - Dallan Oliver-Lee

Reconnecting Calabazas Creek to Pond A8



Questions to ask...and possible ways to answer

1. How do we manage disconnected low-lying areas or polders?

- What is the present land use that needs to be defended?
- Refer to BCDC ART Bay Area and other vulnerability studies
- Do we maintain the levees or breach and fill with water or sediment?
- Look at studies on Hamilton, Bel Marin Keys, and Skaggs Island.

2. Can these areas fail gracefully?

- Gradually fill with sediment by lowering levees and reconnecting creeks
- Look at Calabazas, Alameda, Walnut, and Novato Creek examples
- Should we adjust our long-term vision for the Bay?

Thank you

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