



# South Bay Salt Pond Restoration Project

*Restoring the Wild Heart of the South Bay*



April 2008



September 2009



May 2010



October 2010

SALT POND A21 SOUTH BAY SALT POND RESTORATION PROJECT

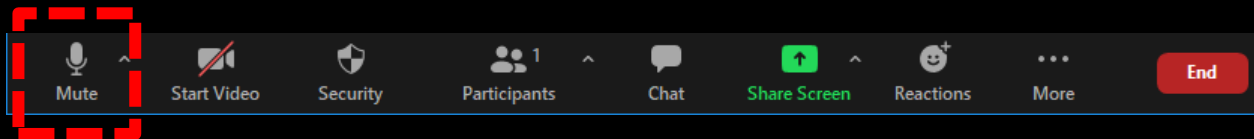
Kite aerial photographs of a small channel in the northeast corner following the 2006 breach to tidal flow. Field of view is ~ 120 feet. . C. Benton

## Stakeholder Forum Meeting, November 3, 2021

# **Zoom Orientation**

# Mute/Unmute

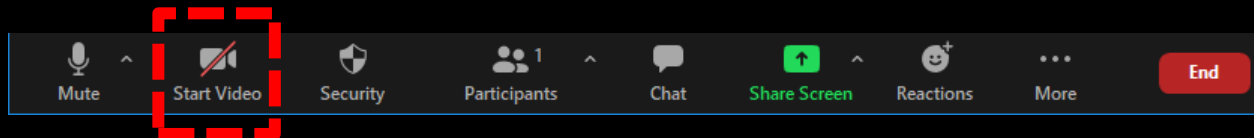
- Please remain on mute unless it is your turn to speak.
- On Zoom: Mute/Unmute button at bottom left
- On phone: Dial \*6 to mute/unmute



# Video On/Off

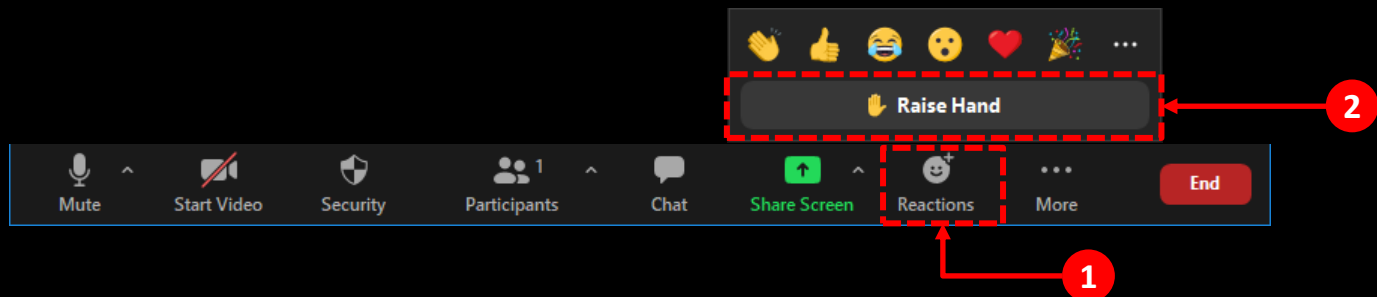
## Video

- **Video toggle button to right of mute button.**



# Virtual Hand-Raising

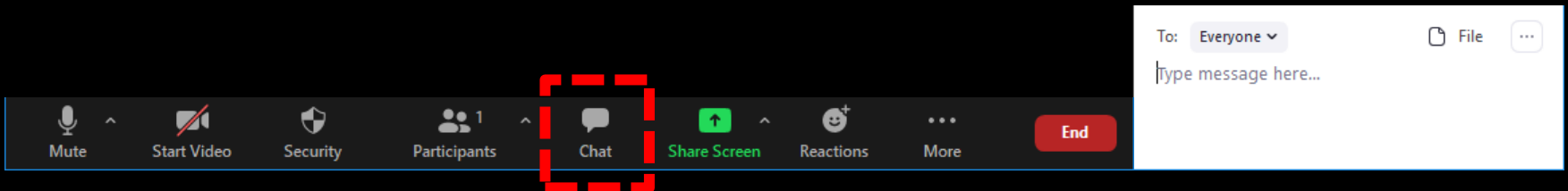
- To be added to the speaking queue, please raise your virtual hand
- On Zoom: Click Reactions, then Raise Hand.
- On phone: Dial \*9



# Zoom Orientation

## Chat

- You can ask questions or add comments in writing through Chat, if desired.



# **Tech Support**

- **Contact Ariel via text or phone at 510-356-7432.**
- **Or if you are in Zoom, you can use Chat.**
- **Reminder: Meeting is being recorded.**

# Introductions



# Today's Agenda

- **Restoration Overview**
- **Phase 2 Work at the Refuge**
- ***Break***
- **Phase 2 Work at Eden Landing**
- **Science Update**
- **South Bay Shoreline Project & Other Collaborations**
- **Looking Ahead**
- **Topic Breakouts**
- ***Optional Open House***

# Restoration Project Overview



Kite Photo by Cris Benton

# Three Main Goals

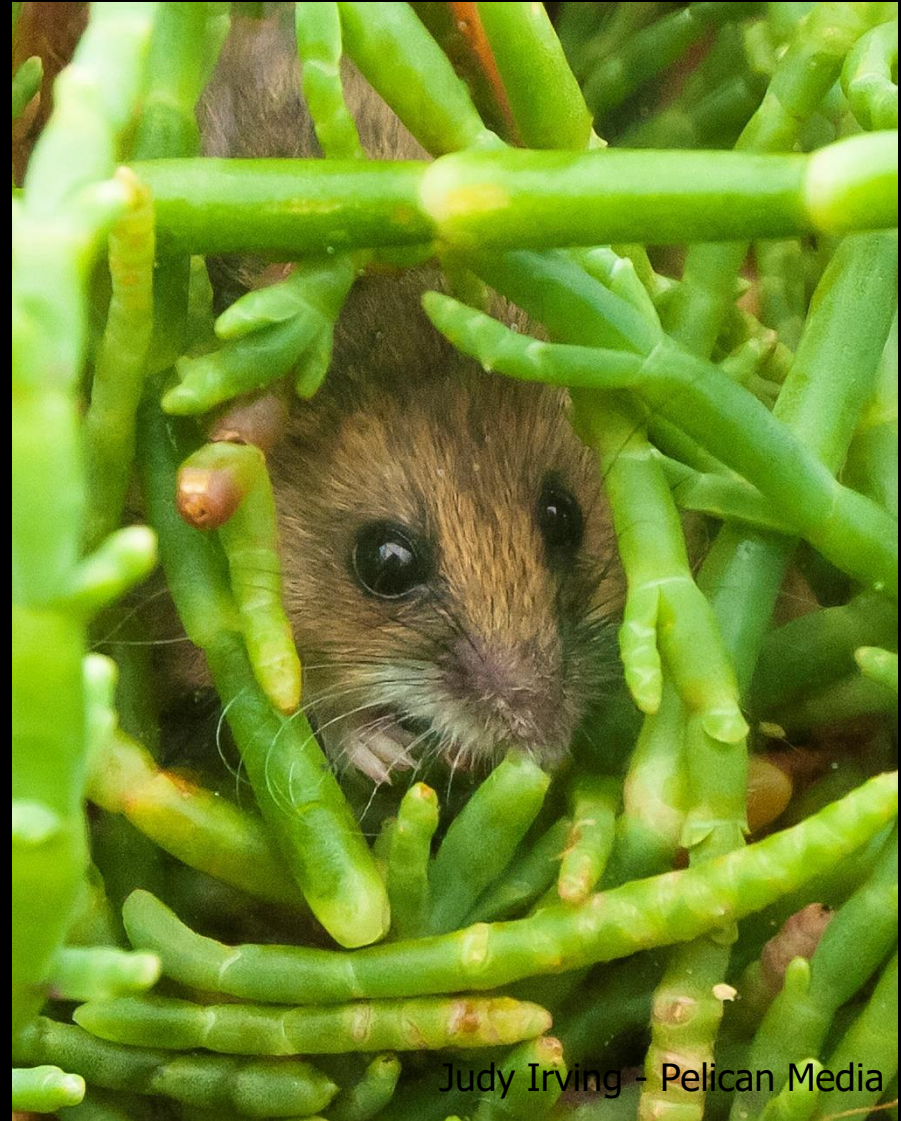
- 1. Habitat restoration**
  - Tidal marsh
  - Enhanced managed/reconfigured ponds
- 2. Flood protection**
  - “Increase or maintain” current levels
  - Not FEMA or USACE levees
- 3. Public access & recreation**
  - Must be wildlife-compatible



Callie Bowdish



## Habitat Restoration



Judy Irving - Pelican Media



# Flood Risk Management

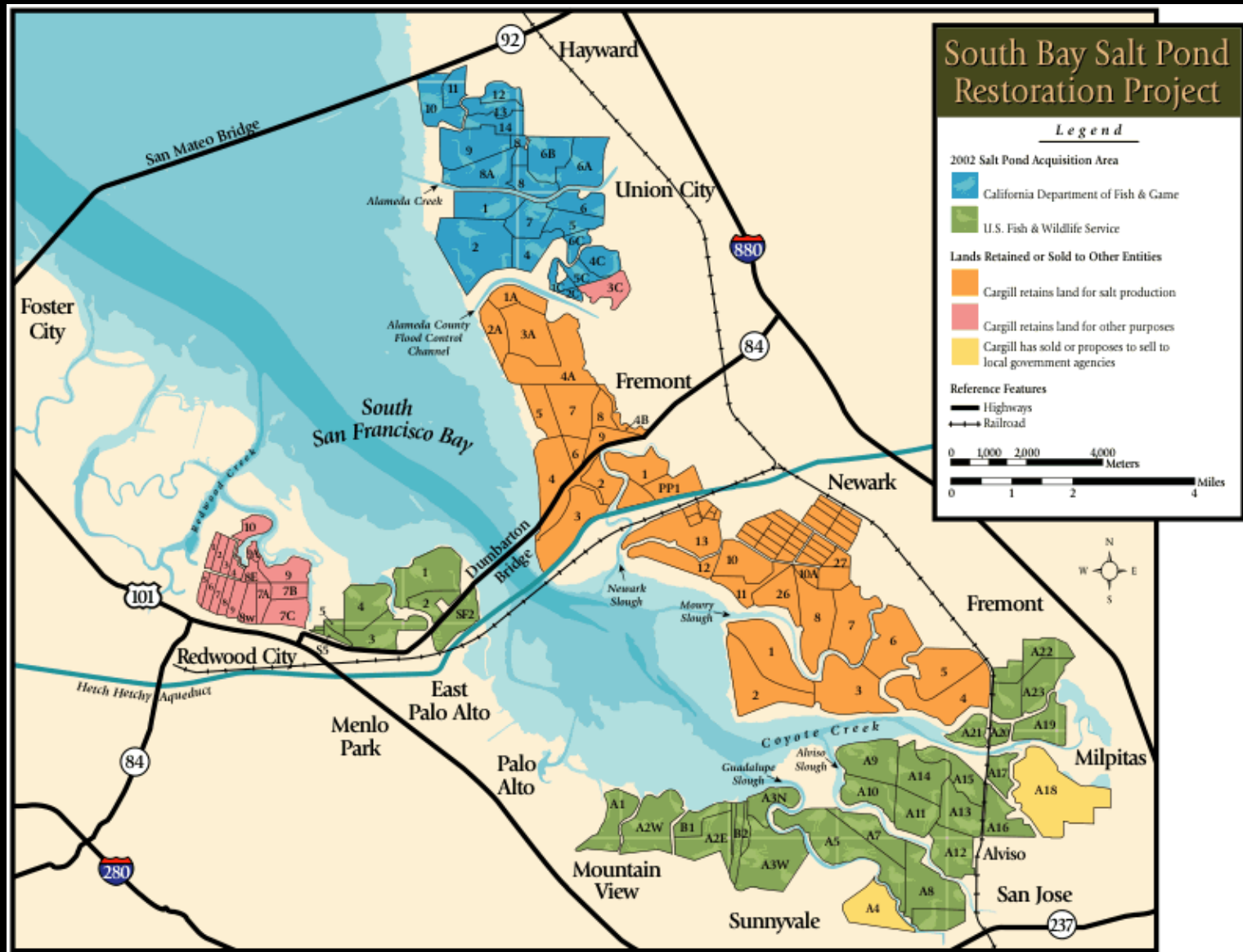




## Public Access and Recreation

Jack Morris

# Project Pond Complexes



# Project History

- 2003 acquisition from Cargill, Inc.
- Public and private funds for purchase
- Cargill donated a portion
- 15,100 acres in South Bay

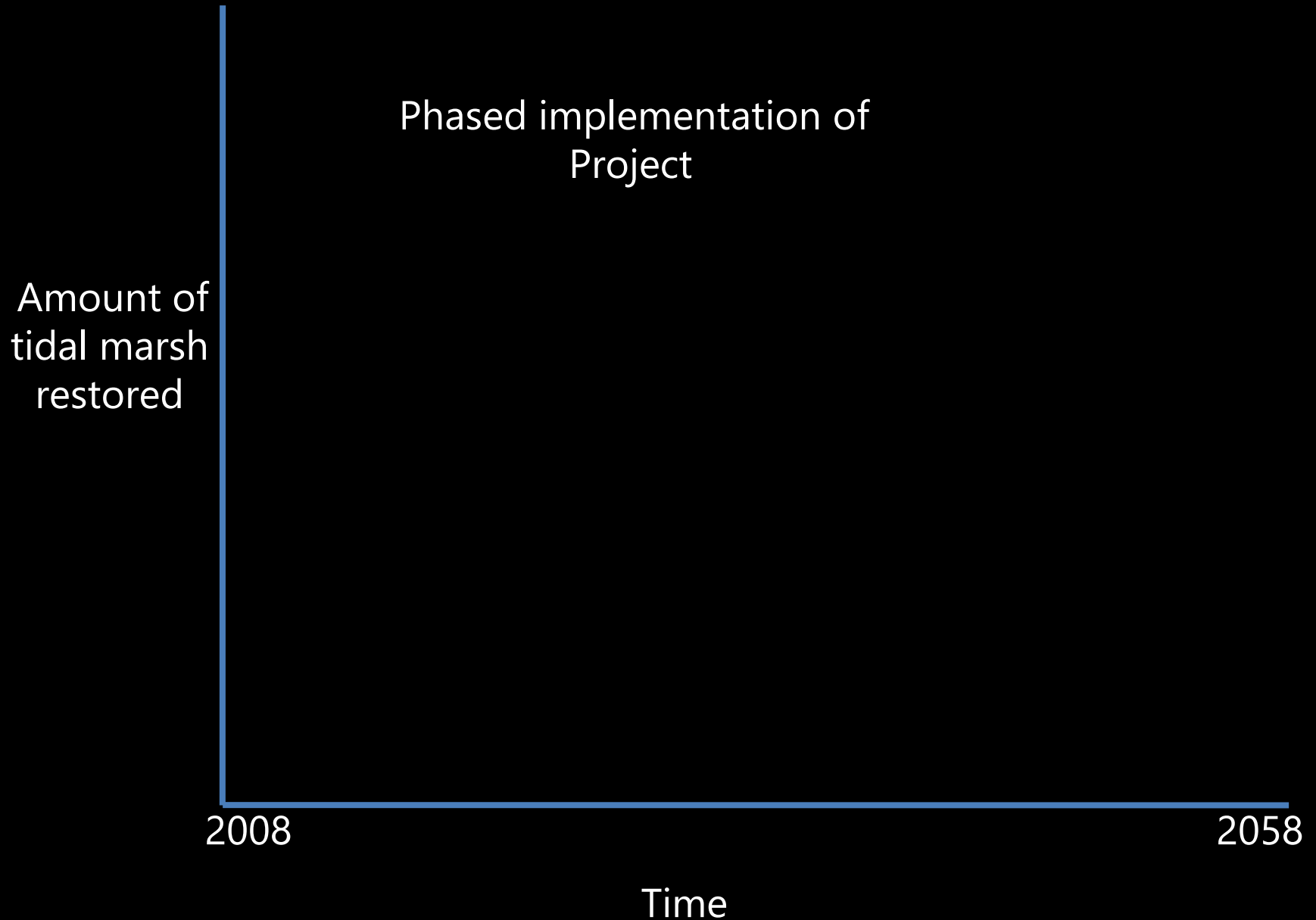


# Ecological Trade-offs

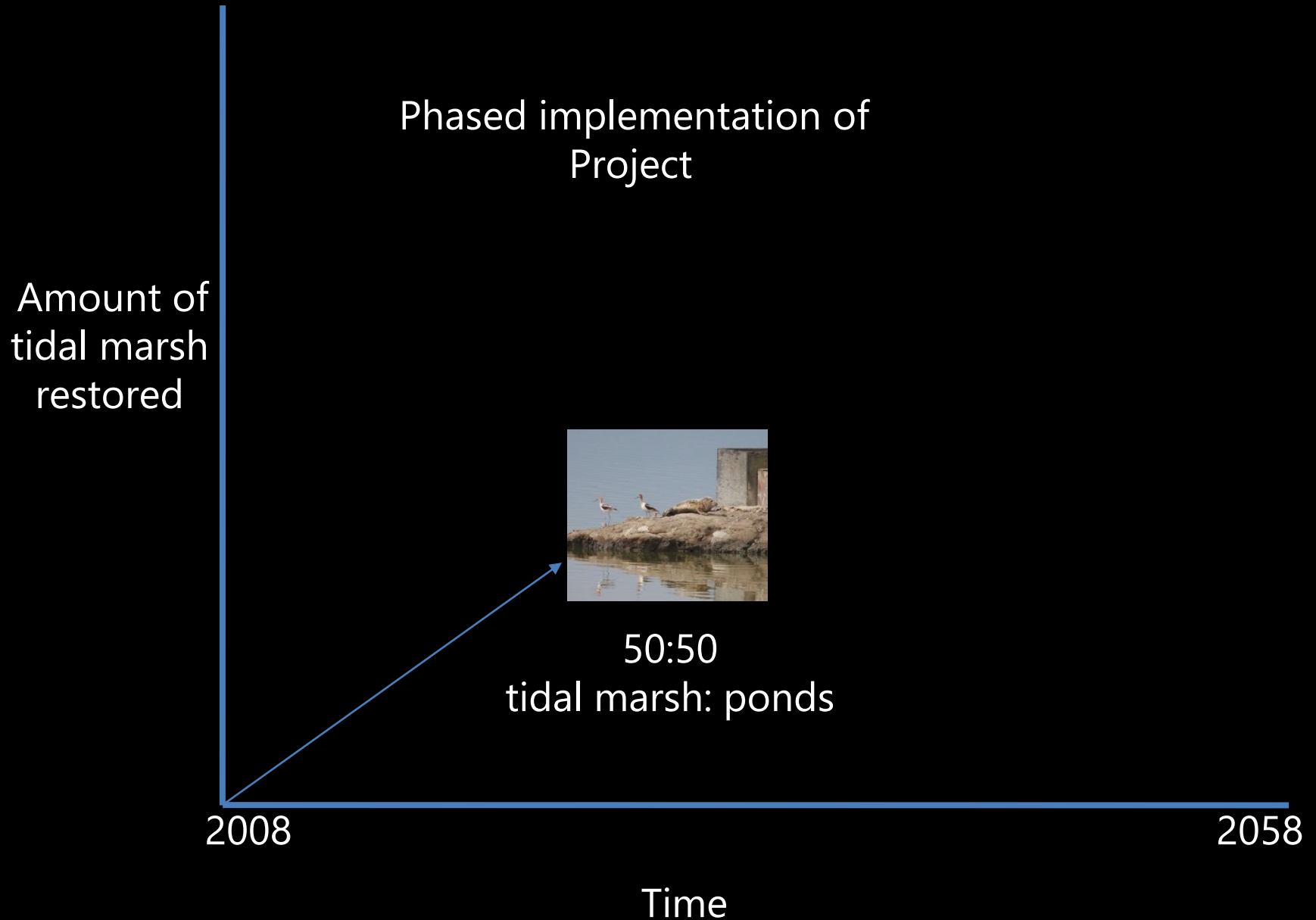
Tidal marsh species vs. salt pond species



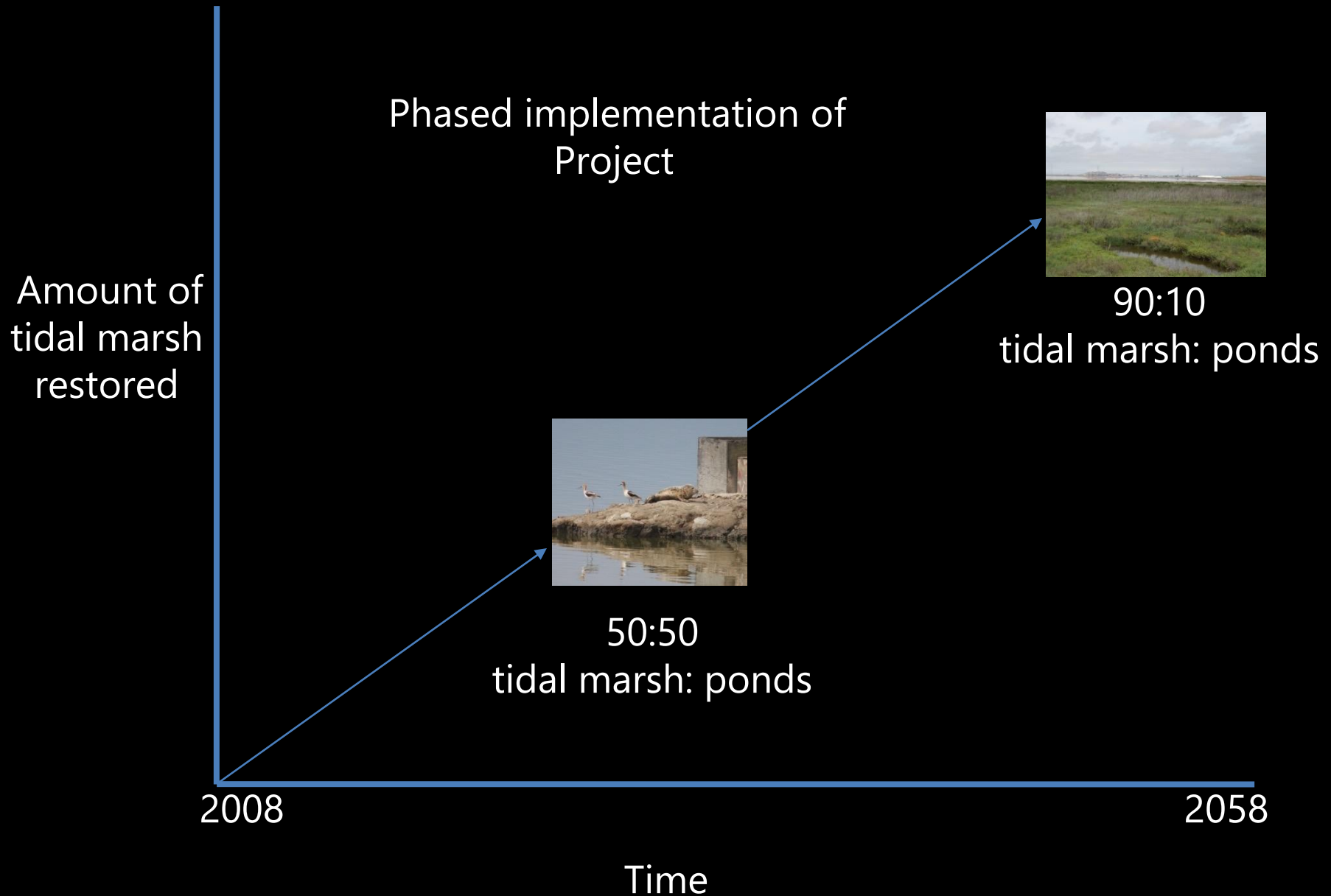
# Adaptive Management Restoration



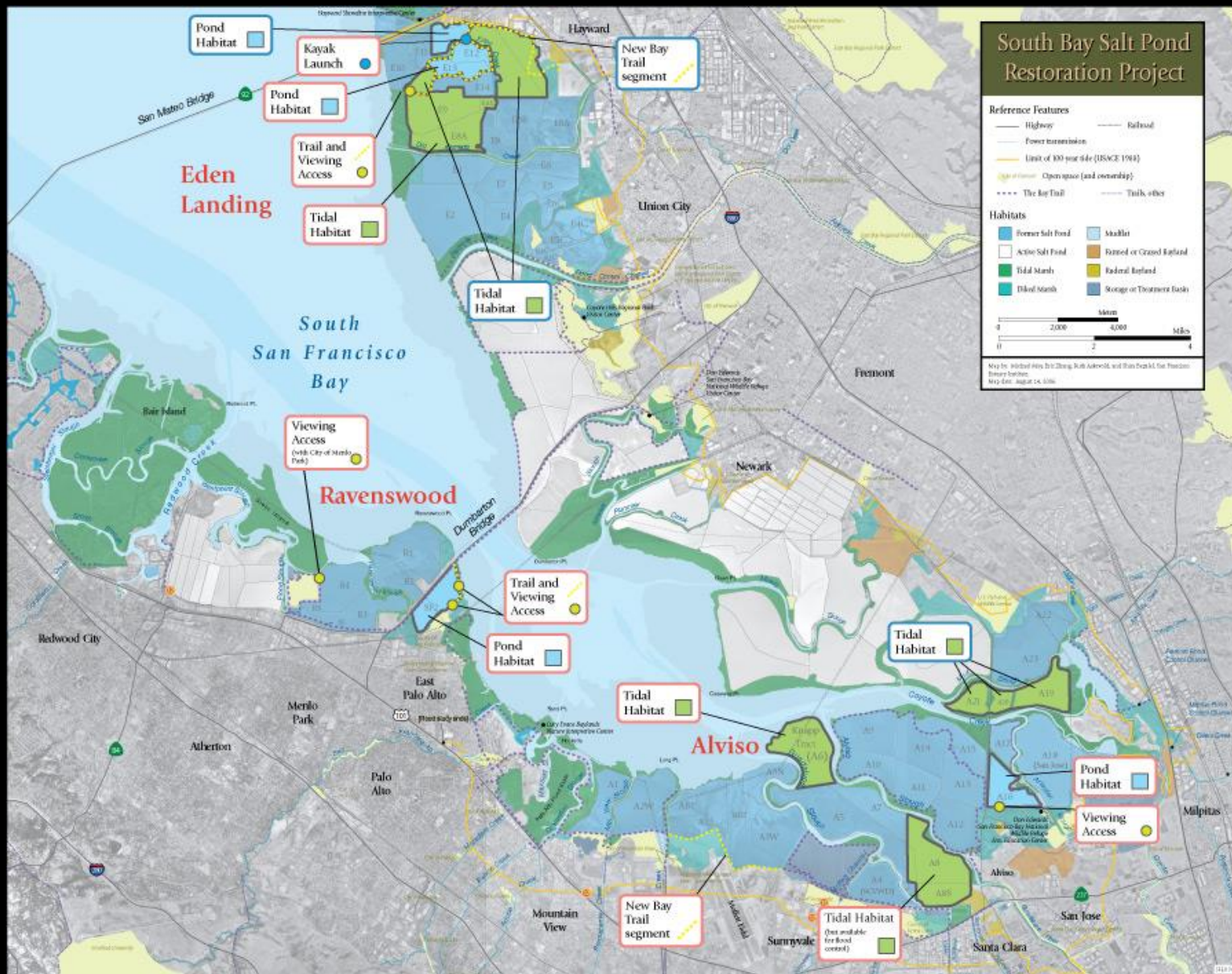
# Adaptive Management Restoration



# Adaptive Management Restoration



# Tracking our Progress: Phase One Actions

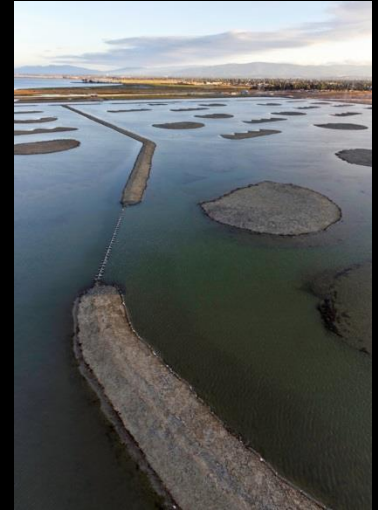


## Initial Restoration Actions

South Bay Salt Pond Restoration Project

2006 - 08 SBSP Phase 1

# Phase 1 Outcomes



**3,000 acres  
of tidal &  
muted tidal  
restoration;  
700 acres  
enhanced  
managed  
ponds**





**Restored ponds are  
now home to  
reproducing  
endangered species,  
after less than a  
decade**

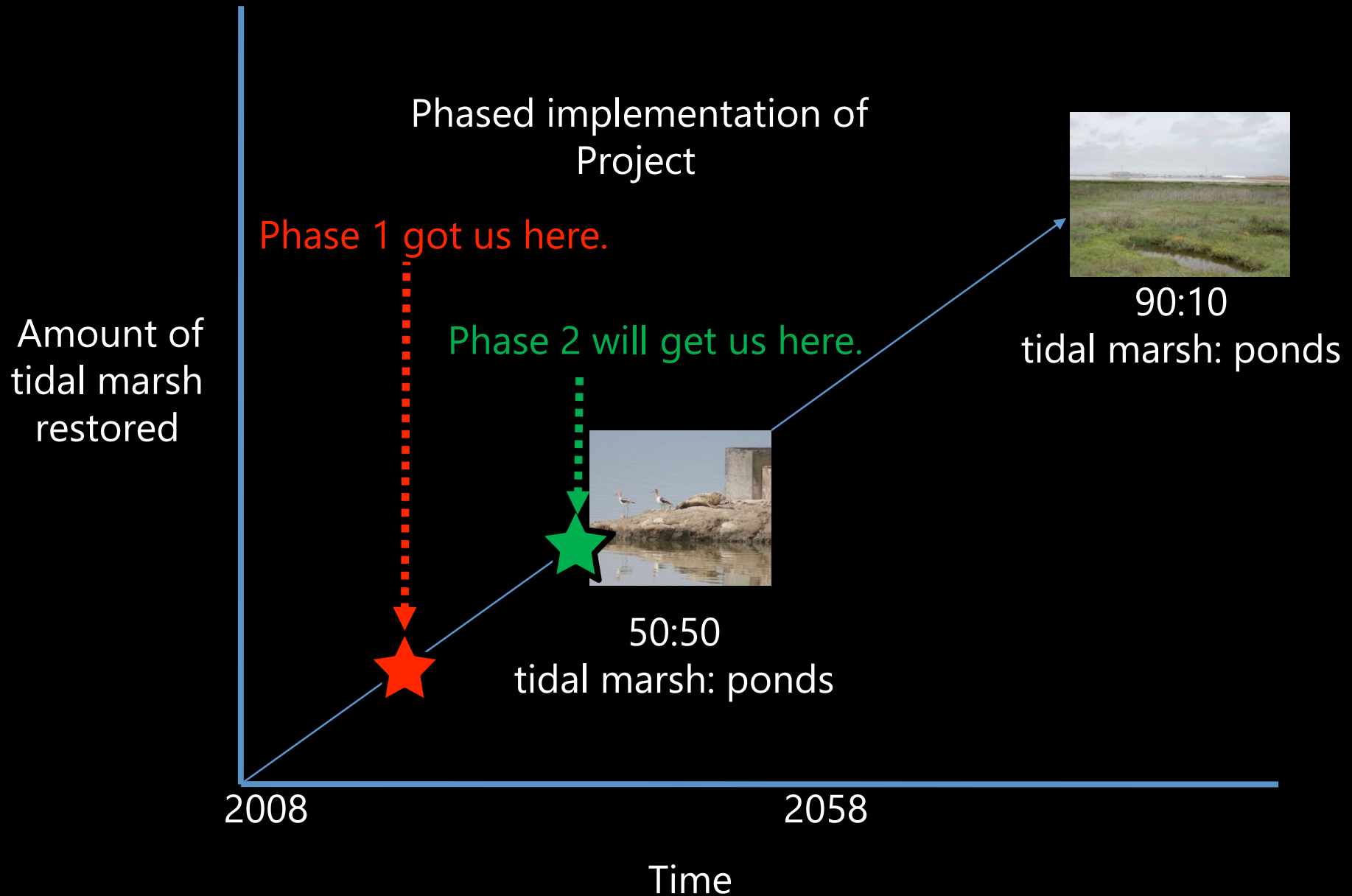


**Public Access**  
**7 miles of new trails**  
**Kayak launch**  
**Viewing platforms**

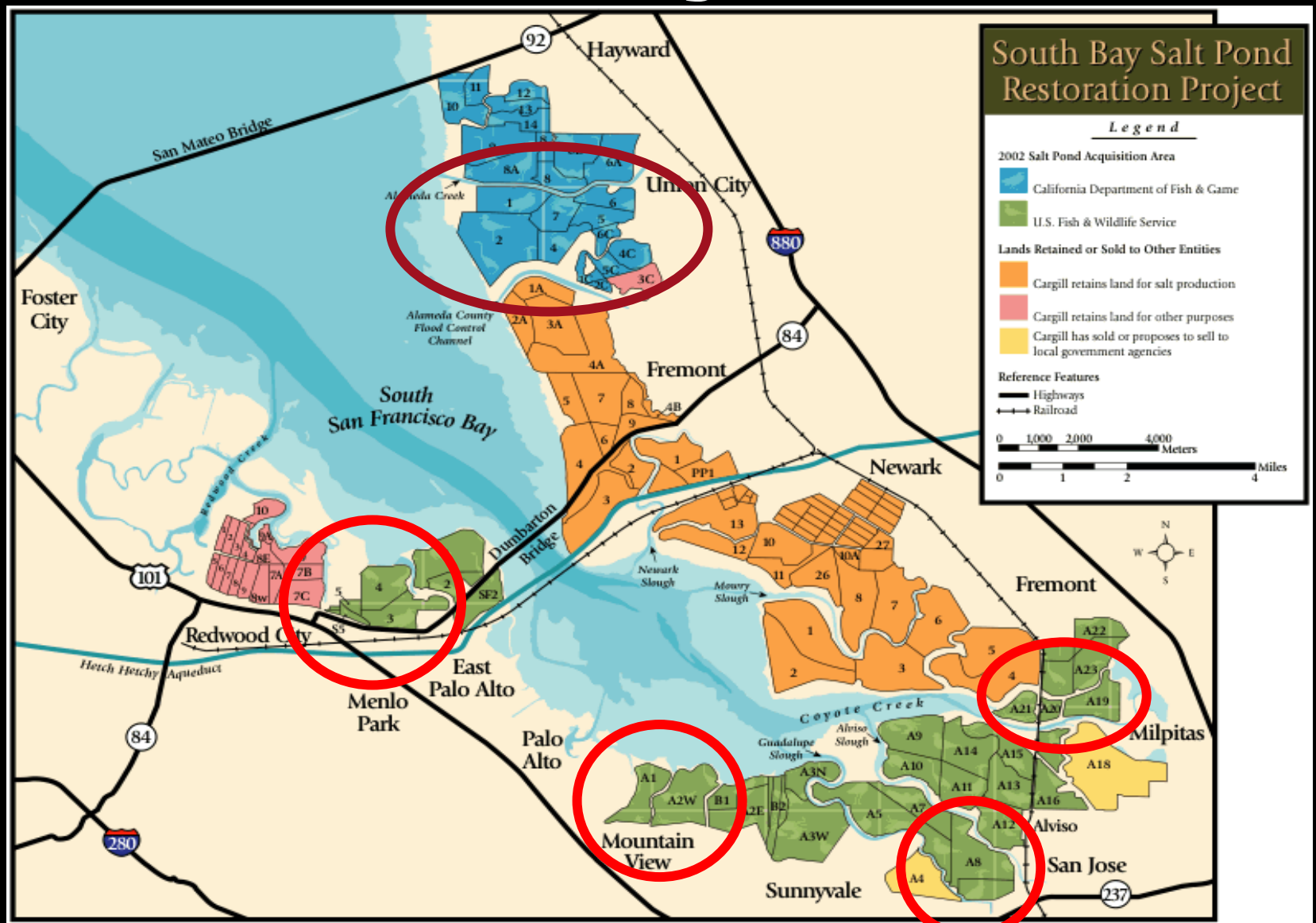


Photos: Judy Irving - Pelican Media

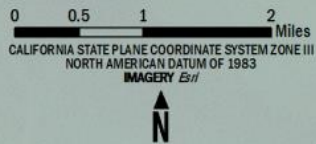
# Adaptive Management Restoration



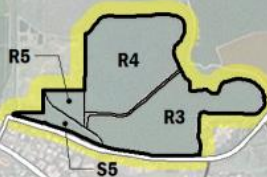
# Phase 2 Project Sites



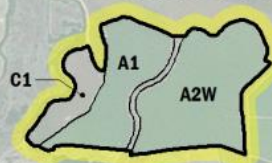
# **Tracking Our Progress: Phase 2 at the Refuge**



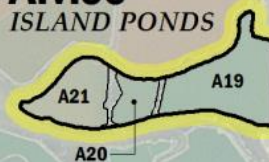
## Ravenswood



## Alviso MOUNTAIN VIEW PONDS



## Alviso ISLAND PONDS



## Alviso A8 PONDS



# Island Ponds – Now!

Enhancing 330 acres of restoring tidal marsh  
Adding connectivity and complexity



# A21 vs. A19



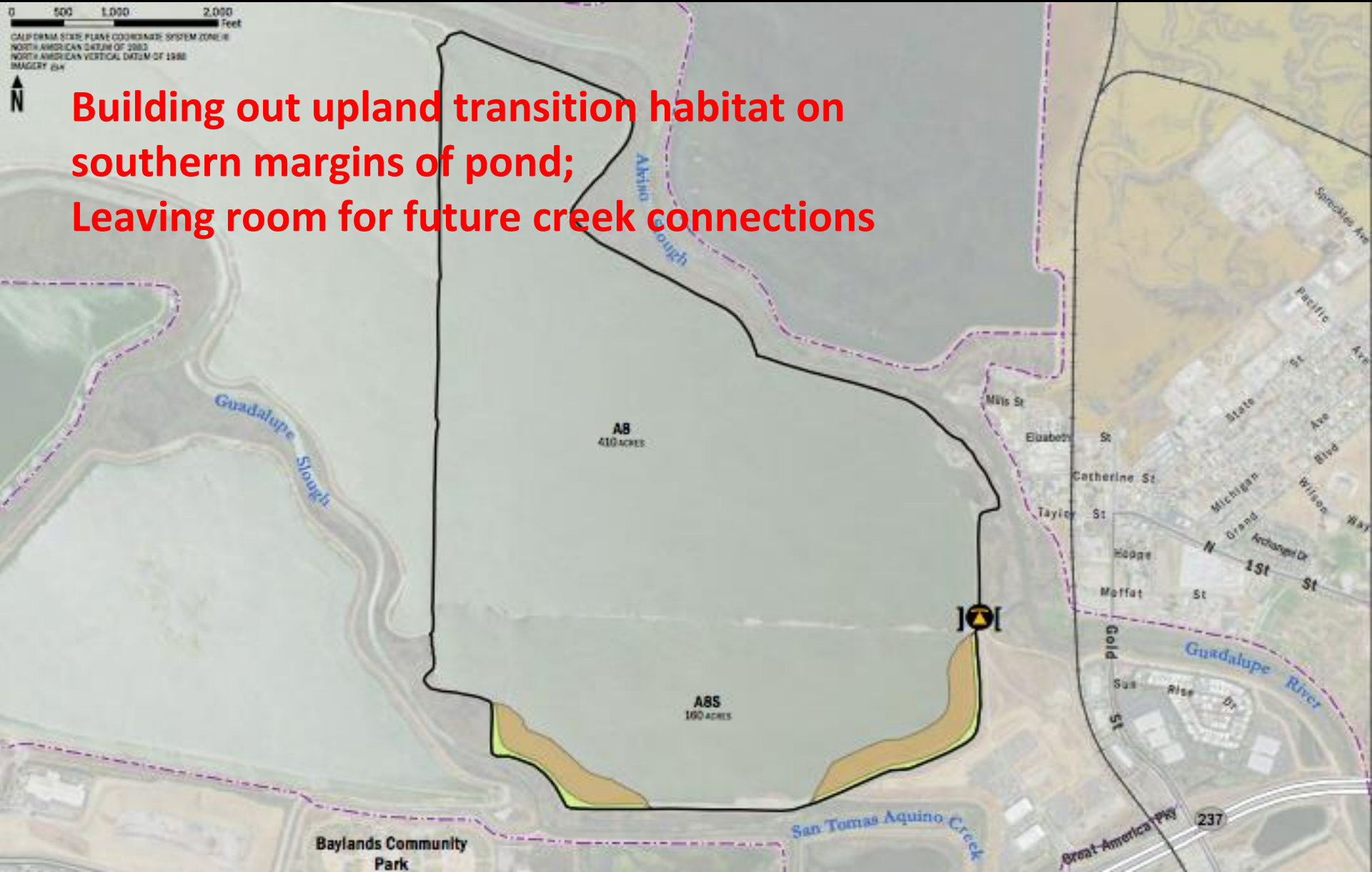
Photos by Jim Hobbs

# A8 Ponds – Ongoing

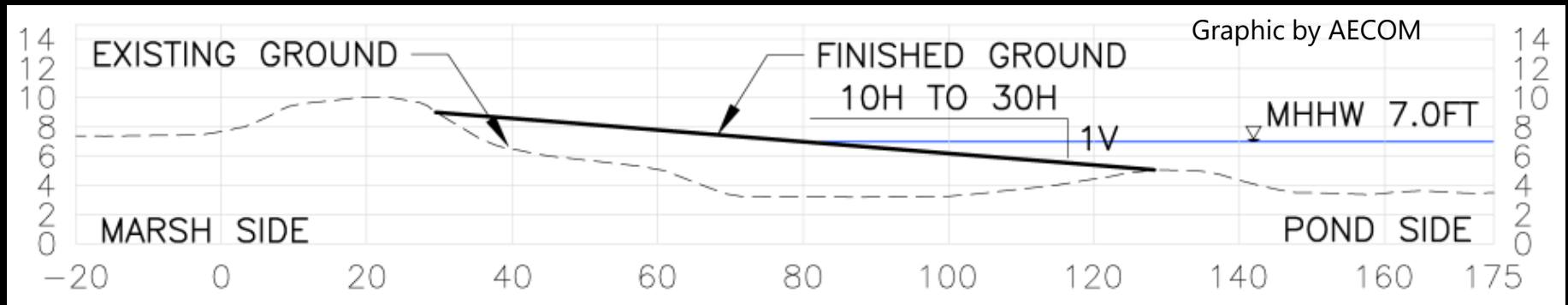
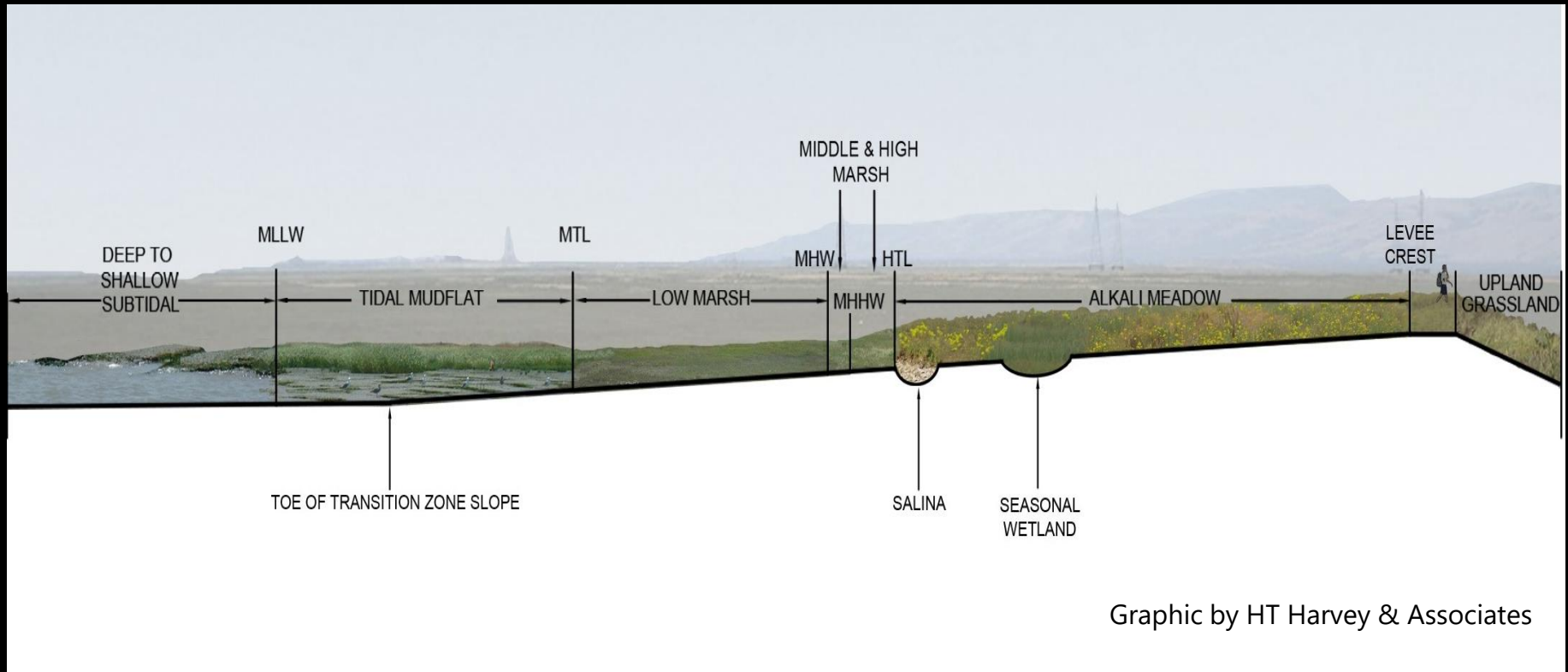
0 500 1,000 2,000 Feet  
CALIFORNIA STATE PLANE COORDINATE SYSTEM ZONE 18  
NORTH AMERICAN DATUM OF 1983  
NORTH AMERICAN VERTICAL DATUM OF 1988  
IMAGERY 6/14



Building out upland transition habitat on  
southern margins of pond;  
Leaving room for future creek connections



# Upland Transition Habitat



# Mountain View Ponds

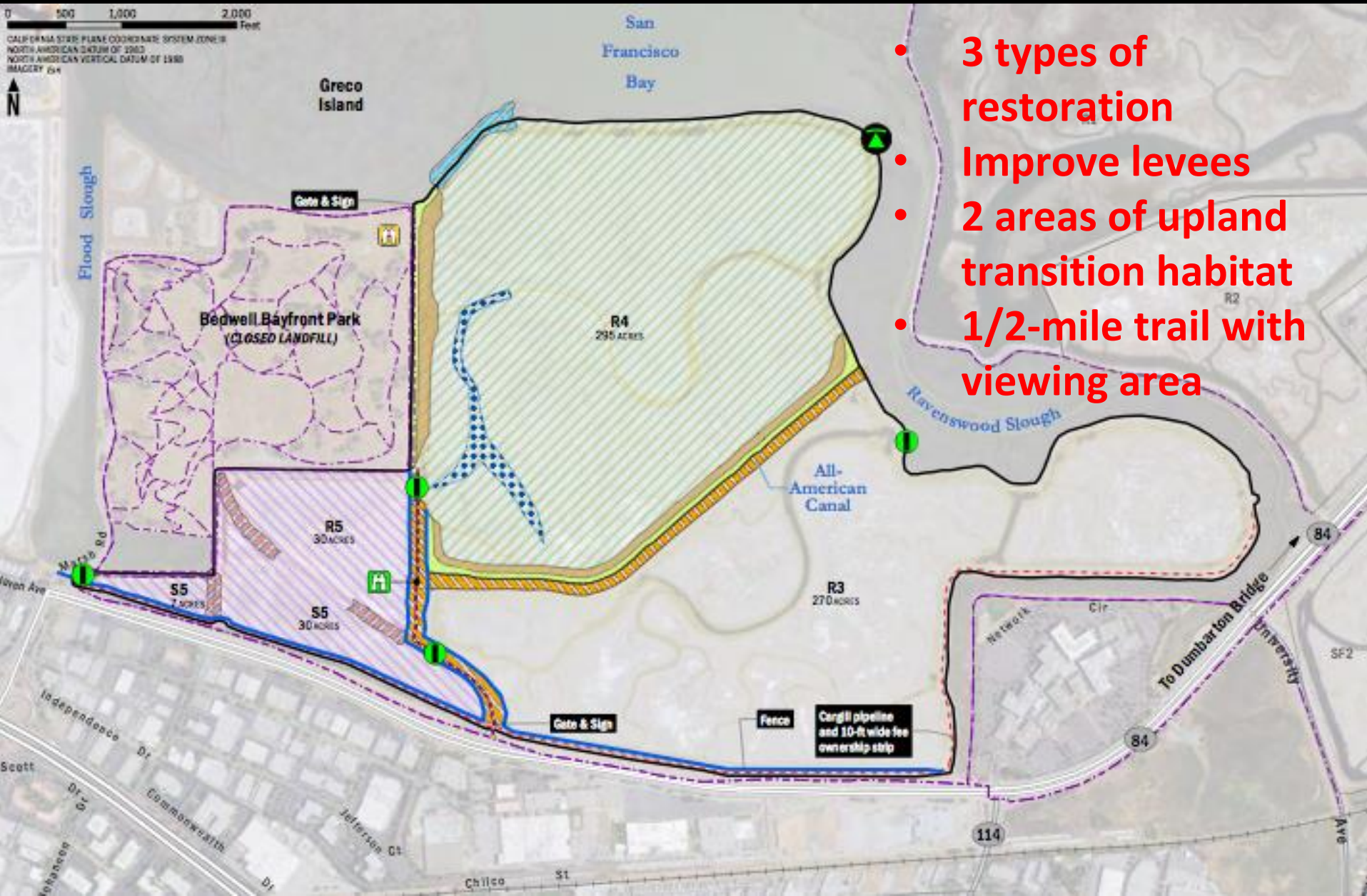
- 710 acres tidal marsh
- Transition habitat
- Islands
- Trails & view areas
- Flood management
- No Charleston Slough



# **Phase 2 at Mountain View**

- **Addressed City concerns:**
  - **Geotech, hydrodynamics, traffic**
  - **Basis of design reports**
- **Pond A2W first; Pond A1 to follow**
- **Pond A2W at 100% plans**
- **Easement agreements in legal review**
- **Import and construction → 2022**

# Ravenswood – Underway



# Ravenswood Phase 2 Activities



# **Phase 2 at Ravenswood**

- **Imported over 125,000 cubic yards**
- **Much Phase 2 earthwork completed**
- **Easement agreements w/ City of Menlo Park and Cargill**
- **Bayfront Canal & Atherton Channel Project coordination – underway now**
- **Planting the habitat zone this winter**

# Ravenswood Phase 2 Activities



# **Phase 2 at Ravenswood**

- **2021**
  - **Install all 4 water control structures**
  - **More import and earthwork**
  - **Plant (w/ Save the Bay) transition habitat**
  - **Start operating R5/S5 Ponds w/ BCAC**
- **2022**
  - **Complete earthwork for ecotones**
  - **Trail and public access features**
  - **Excavate tidal channels**
  - **Breach!**

# 15-Minute Break



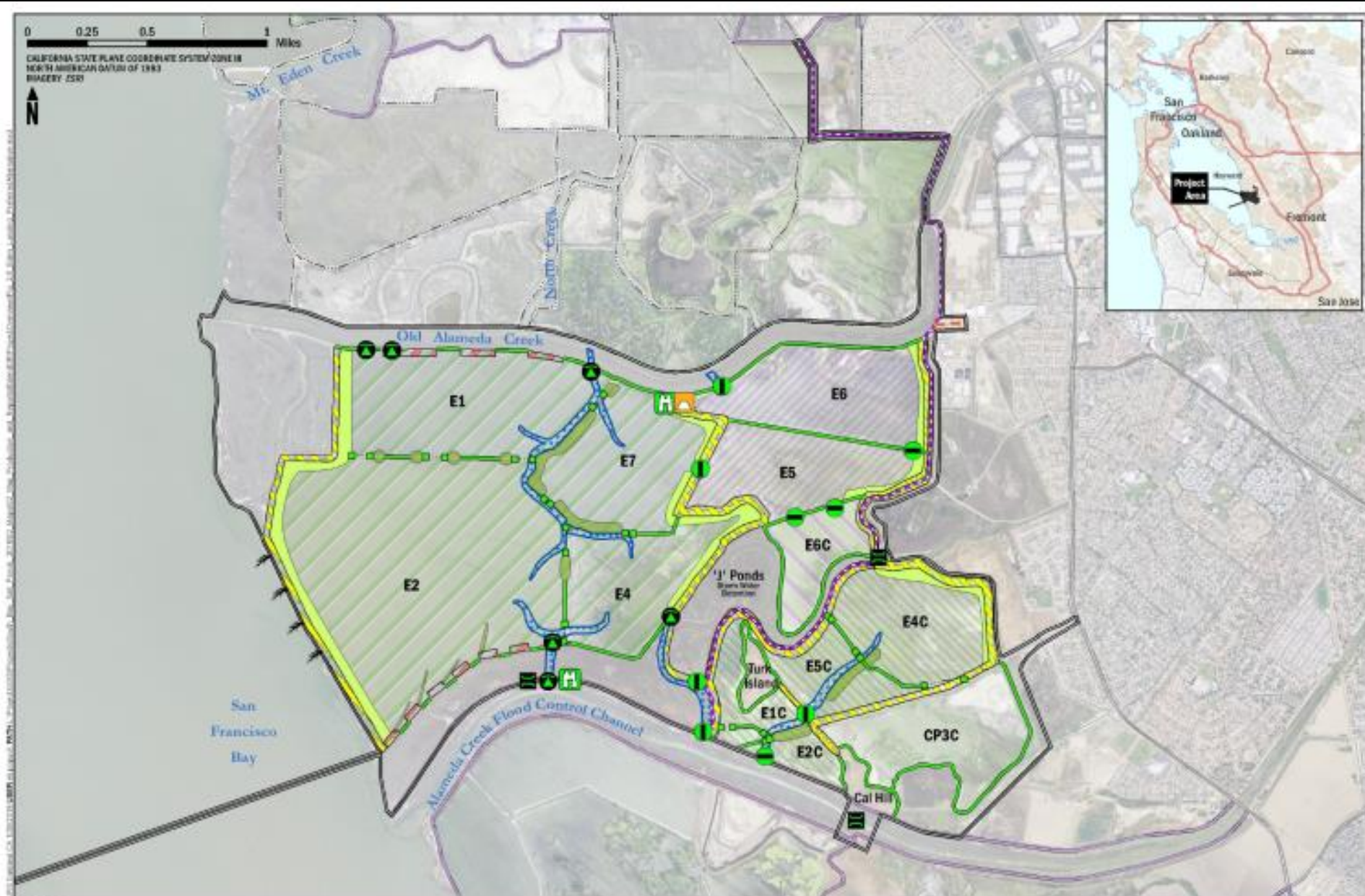
Volunteers at Eden Landing: San Francisco Bay Bird Observatory  
Snowy Plover habitat enhancements work party.  
Photo by Ivan Parr

# **Tracking Our Progress: Phase 2 at Eden Landing**

# Phase 2 at Eden Landing



# Phase 2 at Eden Landing



# **Phase 2 at Eden Landing**

- 1,635 acres of tidal marsh along the Bay**
- 765 acres of enhanced managed ponds**
- 450 acres of muted tidal restoration**
- Flood risk management improvements**
- Upland transition habitat**
- Add stormwater management capacity for Flood Control District**

# **Public Access**

- **Bay Trail spine (~4 miles)**
  - Bay Trail design standards**
  - 12-feet wide + 1- to 2-foot shoulders**
  - ADA-compliant surface & grading**
  - Drivable (maintenance & safety)**
- **Community connection trail to Union City**
- **Viewing platforms with benches, signs**
- **Bridge over stormwater channel**
- **Retain all existing public access**

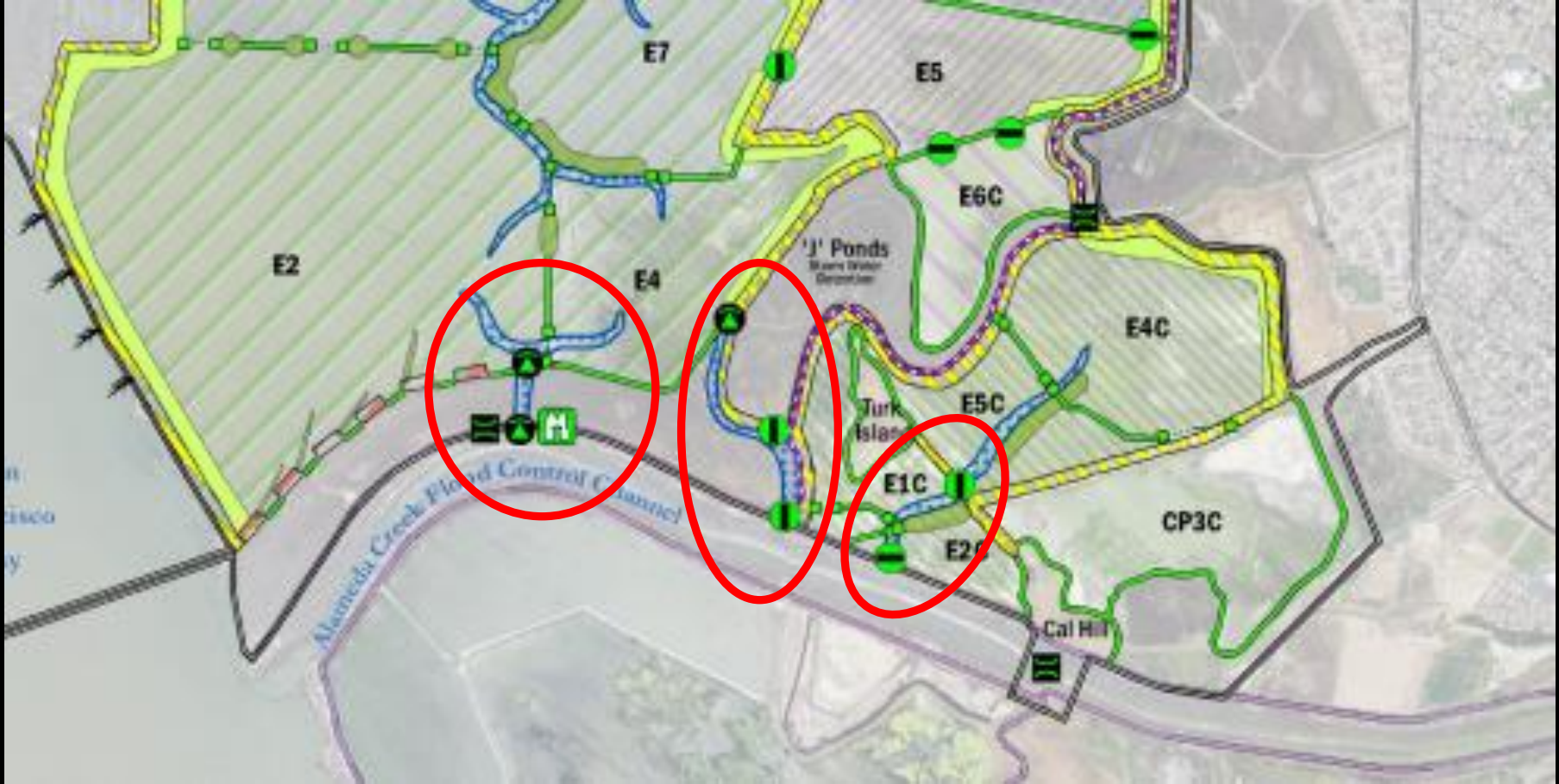
# Phase 2 at Eden Landing

- **Staged implementation**
  - **Stage A – Most project elements**
  - **Stage B – All connections to Alameda Creek Flood Control Channel**
- **Stage A design & permitting underway**
  - **60% designs almost done**
  - **Most permit applications submitted**
- **Construction to follow in 2022**

# Phase 2 – Stage A



# Stage B



- Increasing muted tidal circulation in Southern Ponds
- Up to 3 habitat connections to Flood Control Channel
- Enhance Bay Trail connection to Regional Trail

# Eden Landing Phase 2 Ponds Pre-Construction





Kite Photos by Cris Benton

# Science Updates


# **Phase 2 Science**

- **Expand on Phase 1 Science**
- **Climate and Science Syntheses**  
    **→ Framework → Plan**
- **Status of Science Symposium**
- **Regional Collaboration**

# Bird Use of Ponds



Scientific Questions	Score
To what extent will the creation of large isolated pond islands maintain numbers and reproductive success of <b>terns, avocet and stilts</b> ?	
<ul style="list-style-type: none"> <li>Will <b>California gulls</b> adversely affect nesting birds in managed ponds?</li> <li>Is the number of <b>California least terns</b> maintained?</li> </ul>	



Scientific Questions	Score
Will managed ponds provide breeding habitat to support sustainable densities of <b>snowy plovers</b> ?	

- **Phase 1 actions not wholly successful**
- **What else can we do?**
- **Can we keep concentrating nests?**
- **How can we effectively control predators?**

# Sediment & Sea-Level Rise

Scientific Question	Score
Is <b>current vegetated marsh</b> maintained or increased?	
Will sediment <b>accretion rate</b> in restored tidal areas be adequate to create and support emergent tidal habitat ecosystems within the projected 50-year timeframe?	

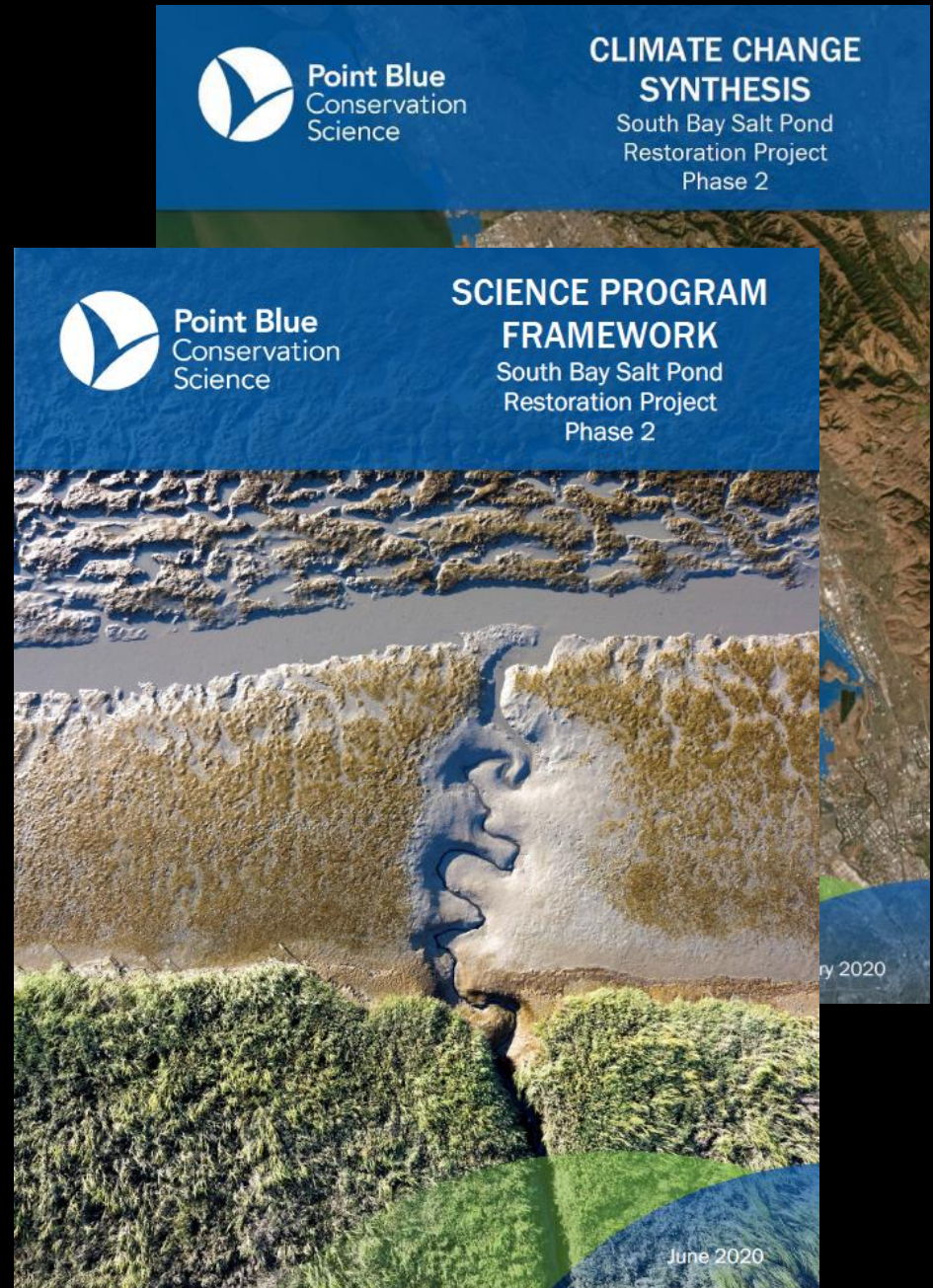


**Successful so far,  
but questions  
remain**



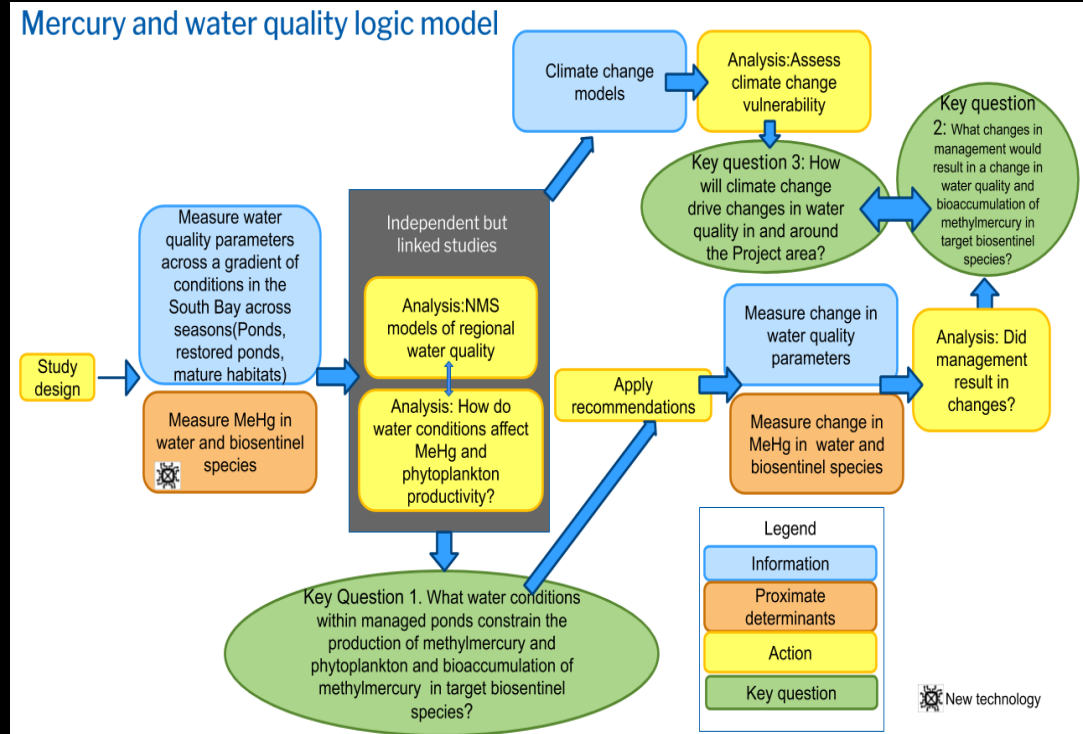
# Phase 2 Science

- **Incorporate Phase 1 and Phase 2 Science**
- **Climate Synthesis**
- **Regional Science and Collaboration**
- **Adaptation and Resilience**
- **Science Program**



# Framework Case Studies

- **Mercury/Water Quality**
- **Snowy Plovers**
- **Breeding Waterbirds**
- **Sediment**



# Sediment

## Uncertainties

- **Phase 1**
  - **Accretion and marsh development?**
  - **Impacts to mudflats?**
- **Phase 2**
  - **Sufficient sediment?**
  - **Restore in time for SLR?**
- **Phase 2 and Beyond**
  - **Staircase implications?**



# Sediment



## Phase 2 Studies

- HEMP
- Sediment Accretion (each complex)
- **Collaborations / External Studies**
  - LSB Sediment Flux (partner with RMP)
  - Lacy and Thorne study at Eden (RMP)

# Habitat Mapping Preliminary Results

Mapping Marshes and Mudflats from Space:

2019 Preliminary Results

Habitat Evolution Mapping Project 2.0

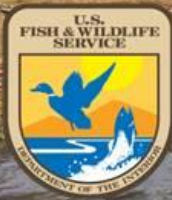


Image courtesy of C Benton

Brian Fulfroft, Lead Geospatial Scientist (co-PI)

David Thomson, Lead Biologist (co-PI)

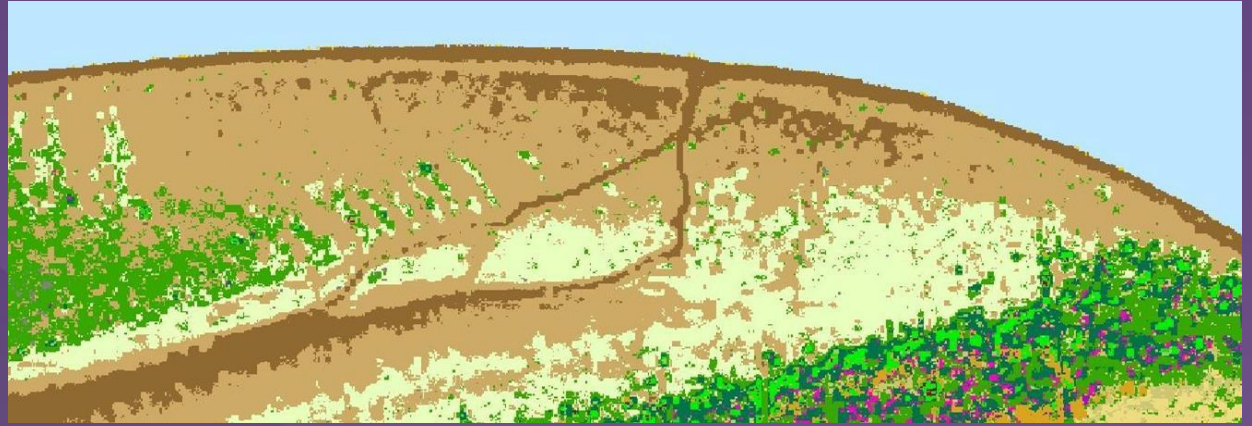


# Habitat Evolution Mapping Project 2.0 – 2019 Preliminary Results (A6)

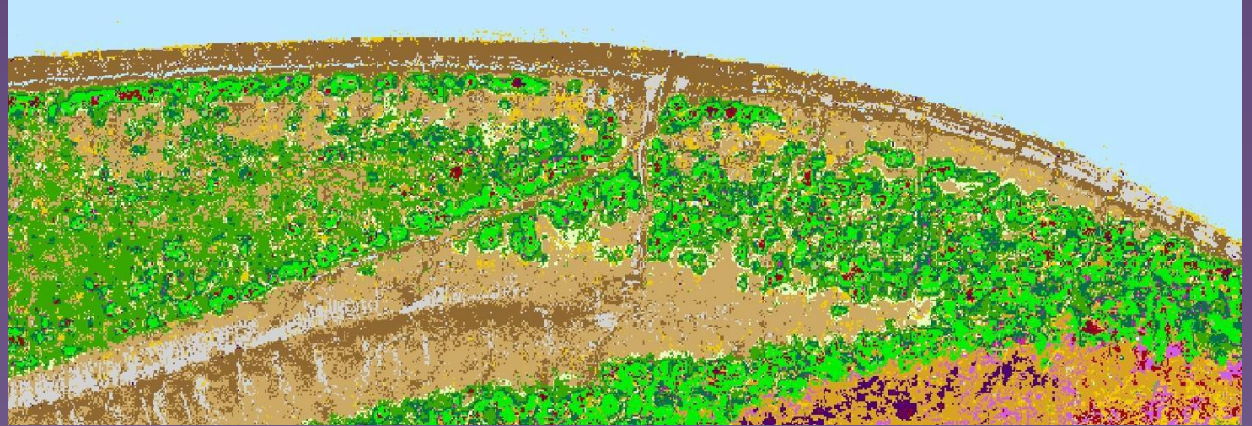


# Habitat Evolution Mapping Project 2 – 2019 Preliminary Results (Ogilvie Island)

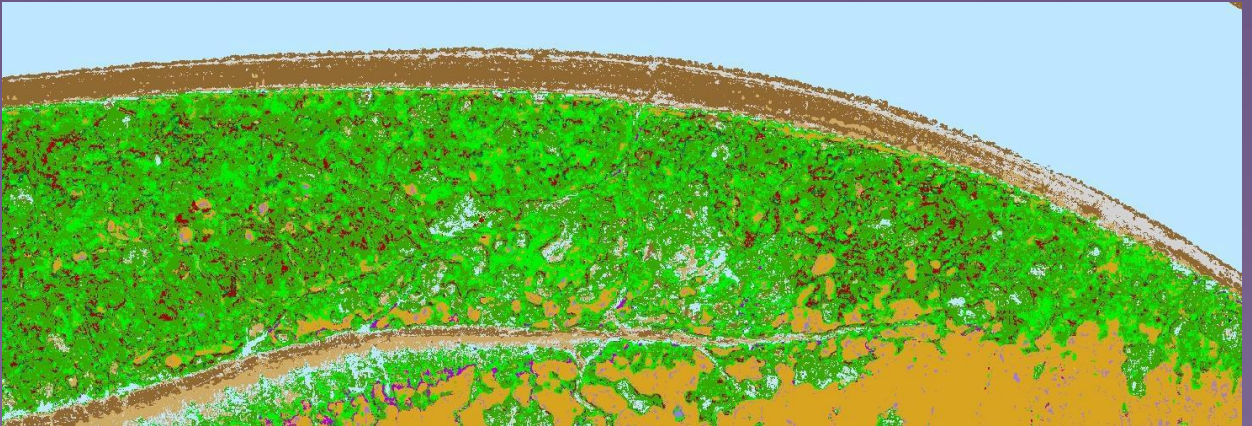
2009



2011



2019



# Waterbirds

## Uncertainties



- **Phase 1**
  - **Maintain habitat value and carrying capacity**
  - **Pond management**
  - **Reconfigured ponds**
- **Phase 2**
  - **Predation**
  - **External factors / Flyway trends**

# Waterbirds

- **Phase 2 Studies**
  - **Breeding Waterbirds**
  - **Surveys in 2022**
  - **Migrating Waterbirds**
  - **Fall, Winter, Spring Surveys in 2021-22**
  - **Phalaropes**
    - **SF Bay and Range-wide study**
  - **Motus Towers**



# Snowy Plover

## Uncertainties

- **Phase 1**
  - Maintaining diversity and abundance
  - Contribute to recovery goal
- **Phase 2**
  - Predation
  - Habitat enhancements
  - Regional habitat availability



# Snowy Plover

- **Phase 2 Studies**
  - **Breeding Surveys**
  - **Banding**
  - **Predation Study**
  - **UCB/SFBBO partnership**
  - **Habitat enhancements**



Ben Pearl, SFBBO

# Water Quality

## Uncertainties

- **Phase 1**
  - **Adverse effects of restoration?**
    - Water quality and productivity?
  - **Effects of pond management?**
- **Phase 2**
  - **Climate change/increased temps?**
    - Pond water effects on sloughs?



# Water Quality

- **Phase 2 Monitoring/Studies**
  - Water quality monitoring near restored ponds
  - Ongoing O&M monitoring
- **Regional Collaboration Opportunities**
  - NMS Moored Sensor Monitoring (SFEI)



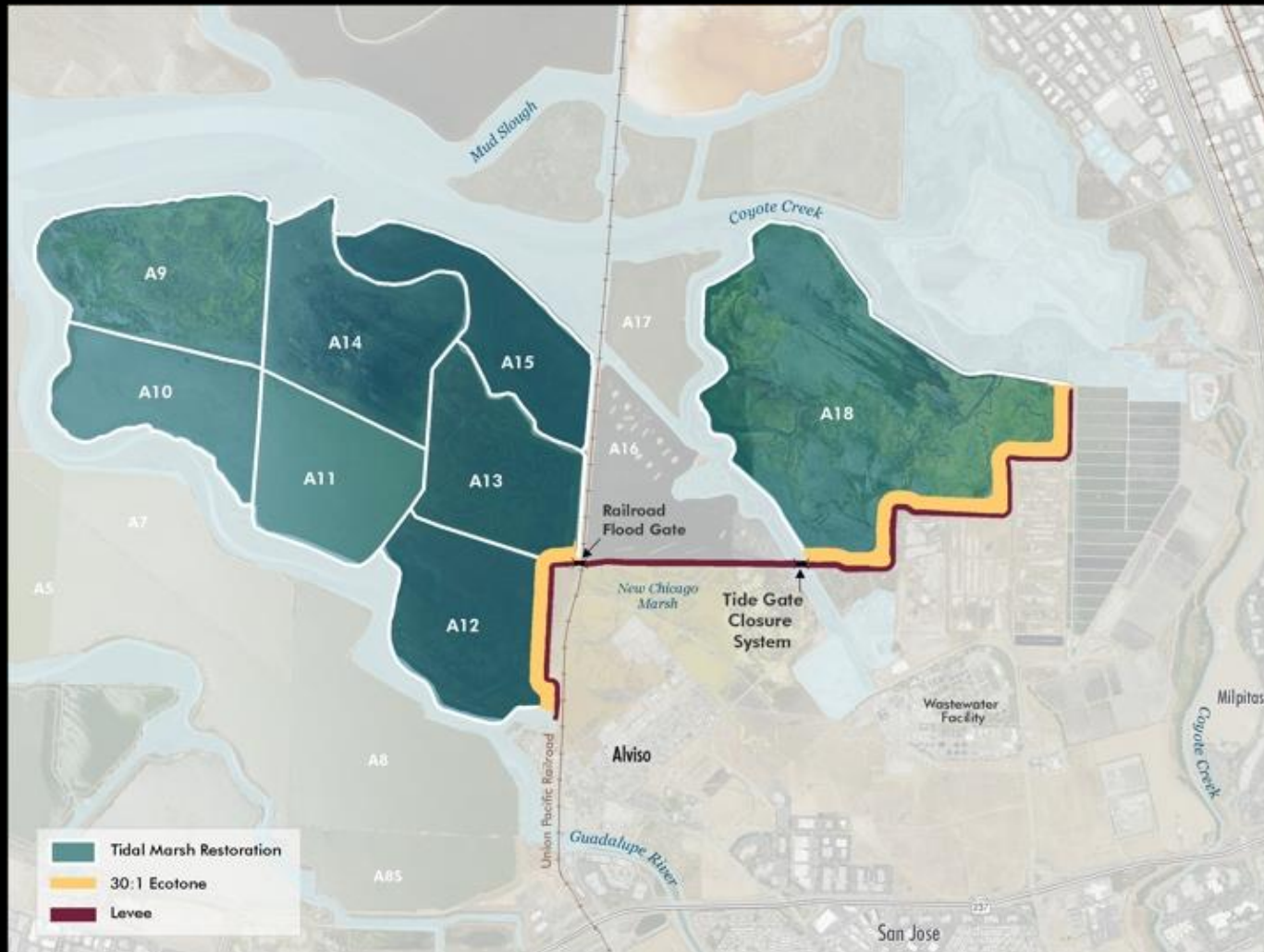
# Questions?

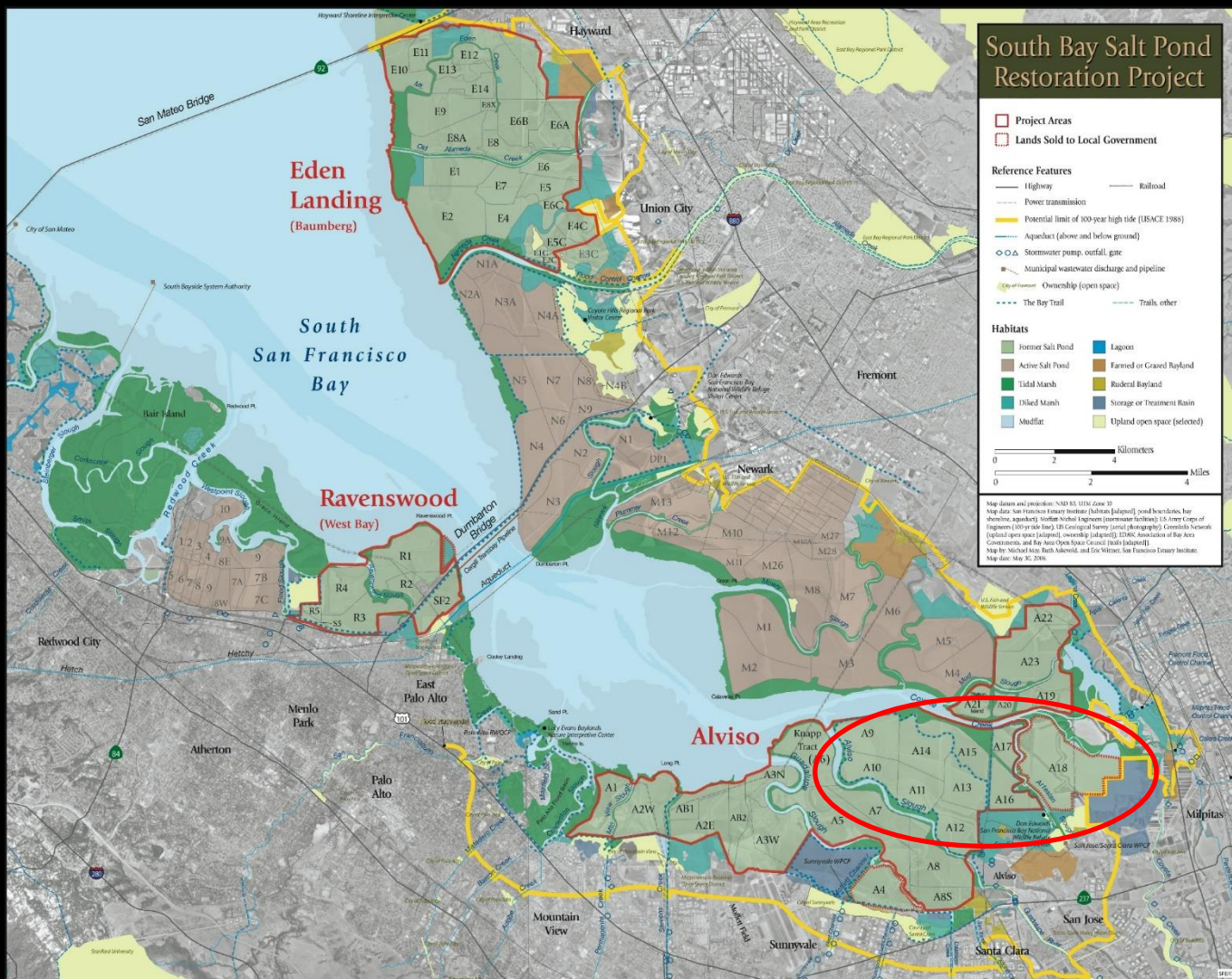


# Outside Collaborations



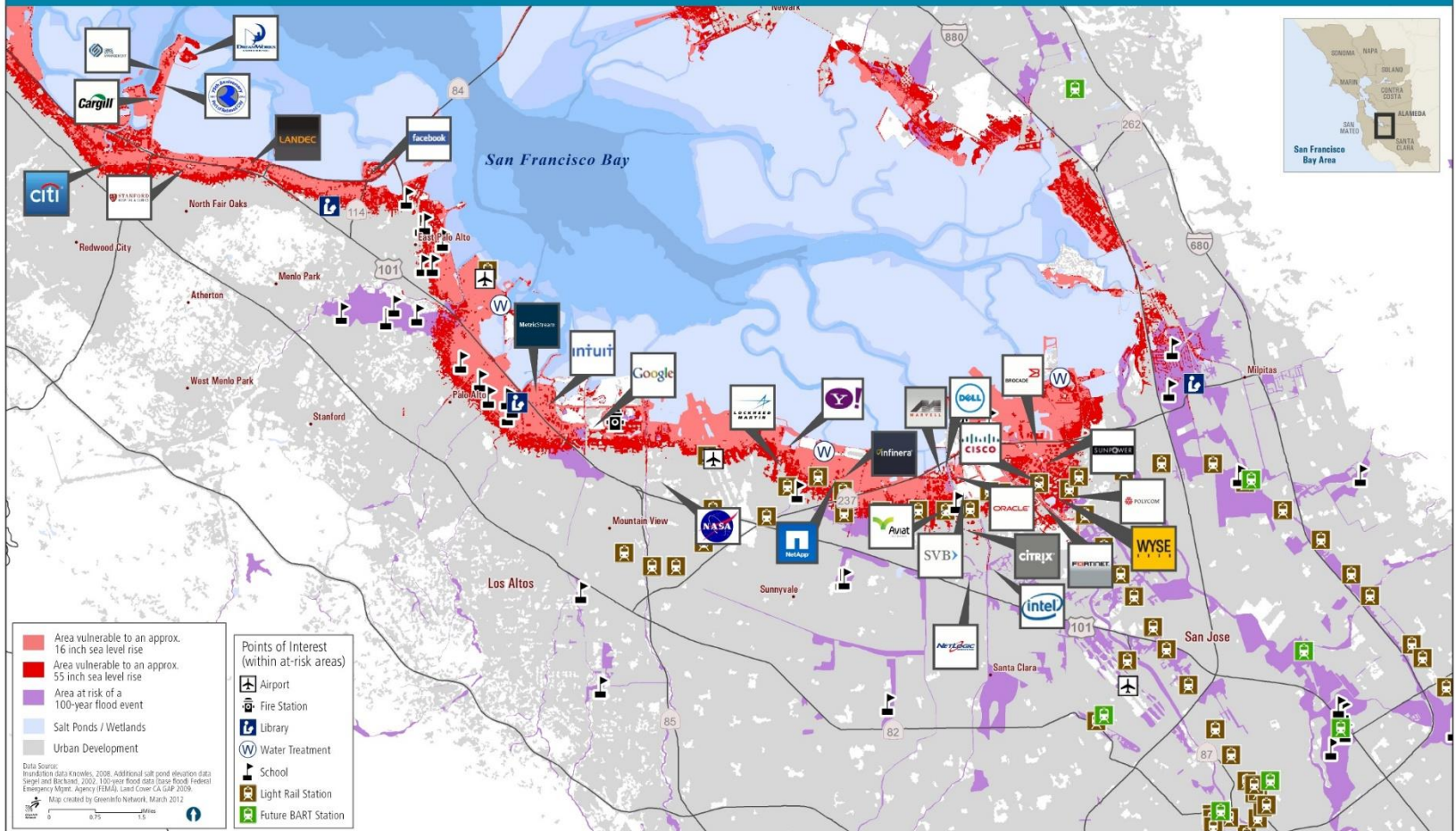
# South San Francisco Bay Shoreline Project

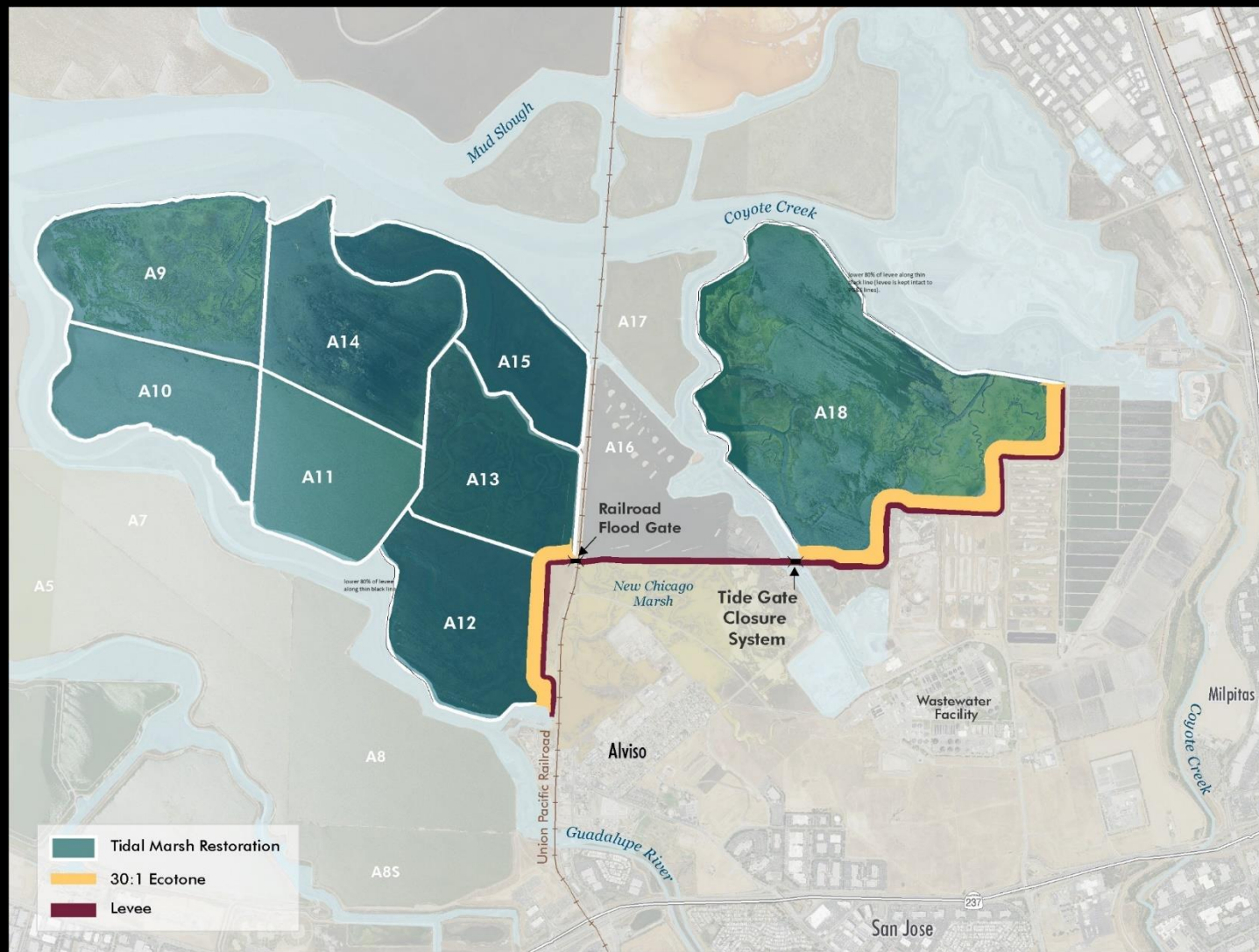


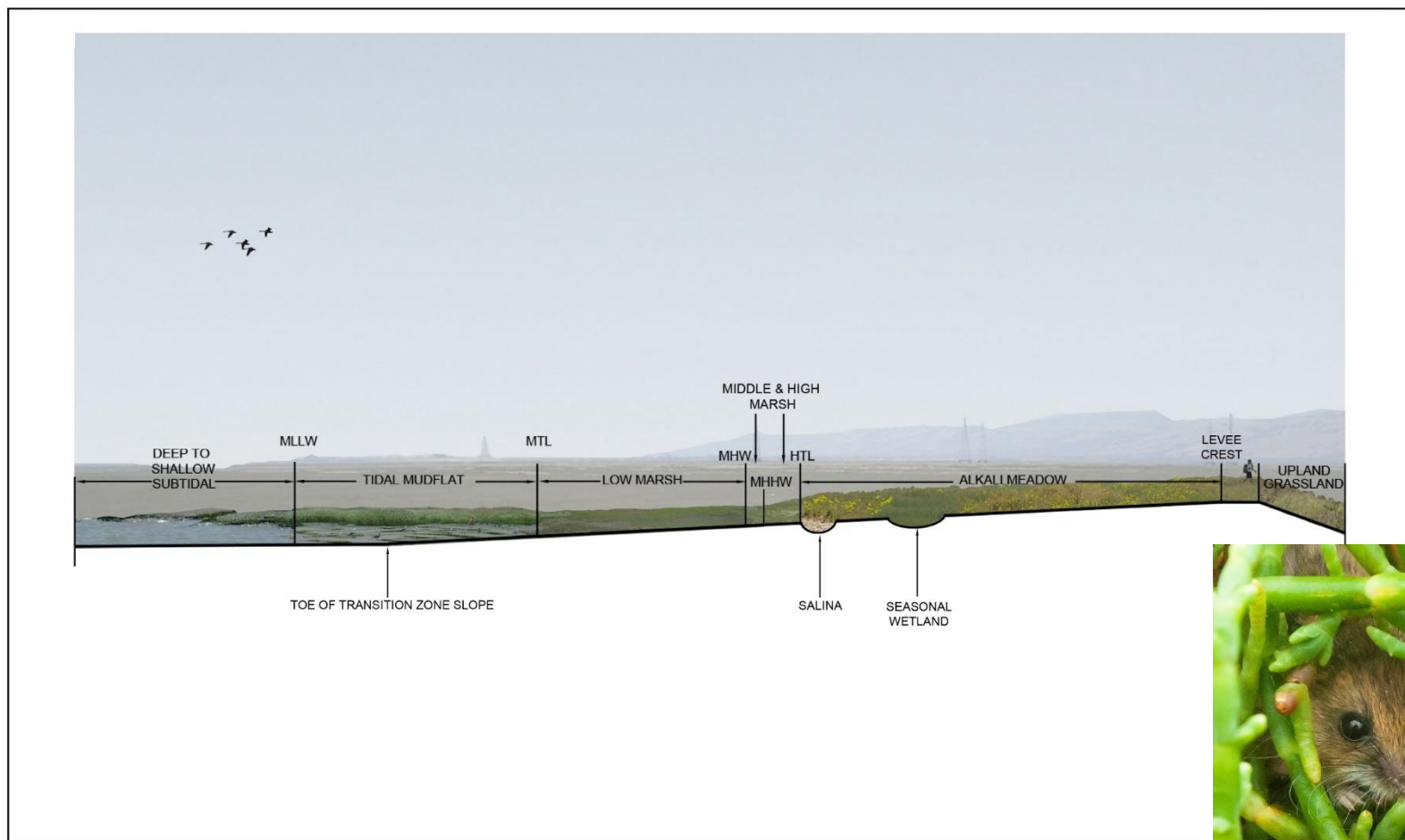


# Flood Risk and Sea Level Rise – South Bay

Economic Impact, San Francisco Bay Area





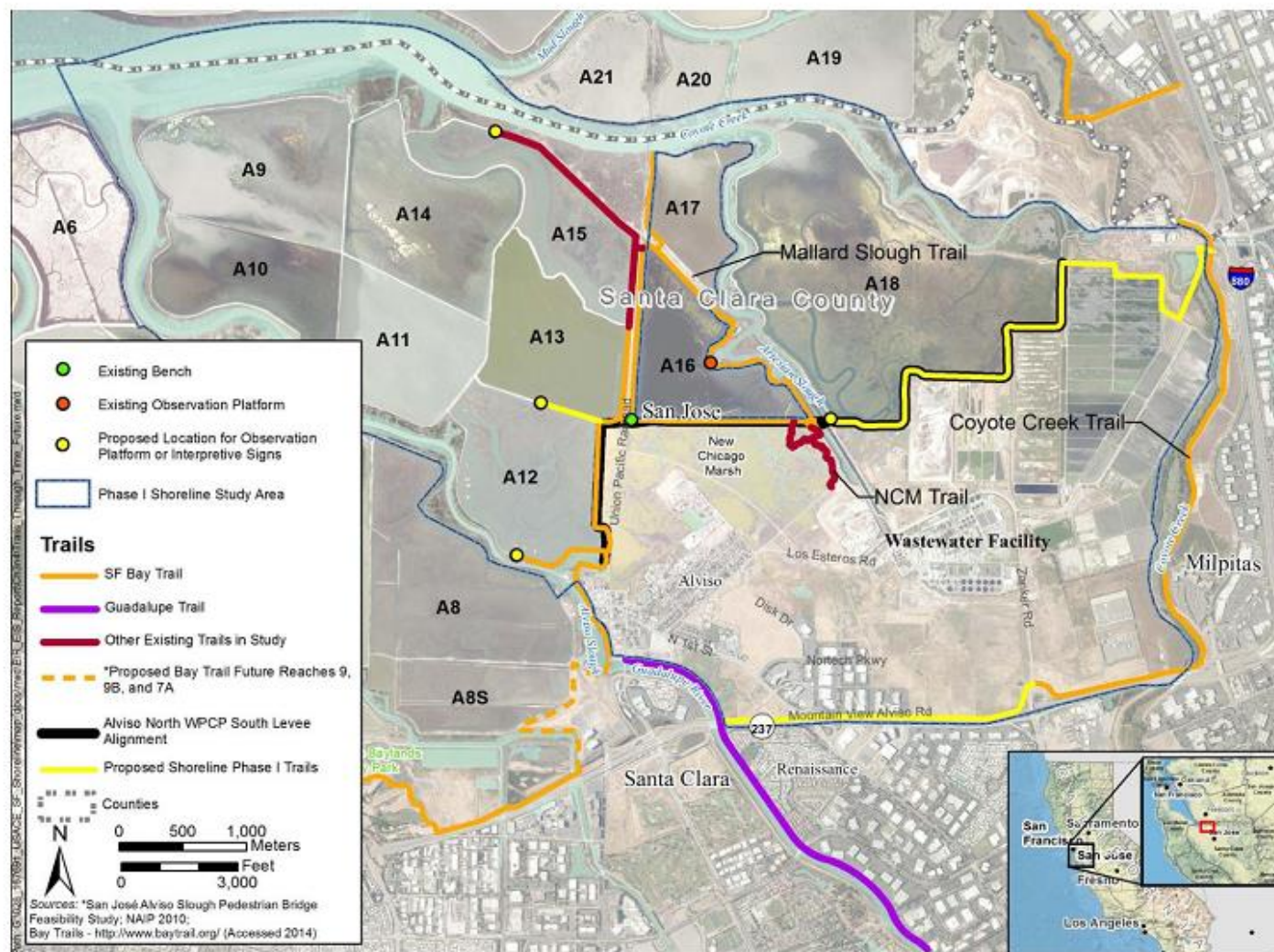


**H.T. HARVEY & ASSOCIATES**  
Ecological Consultants

SHORELINE STUDY TRANSITION ZONE—TYPICAL CROSS-SECTION  
CO



Photo: Judy Irving







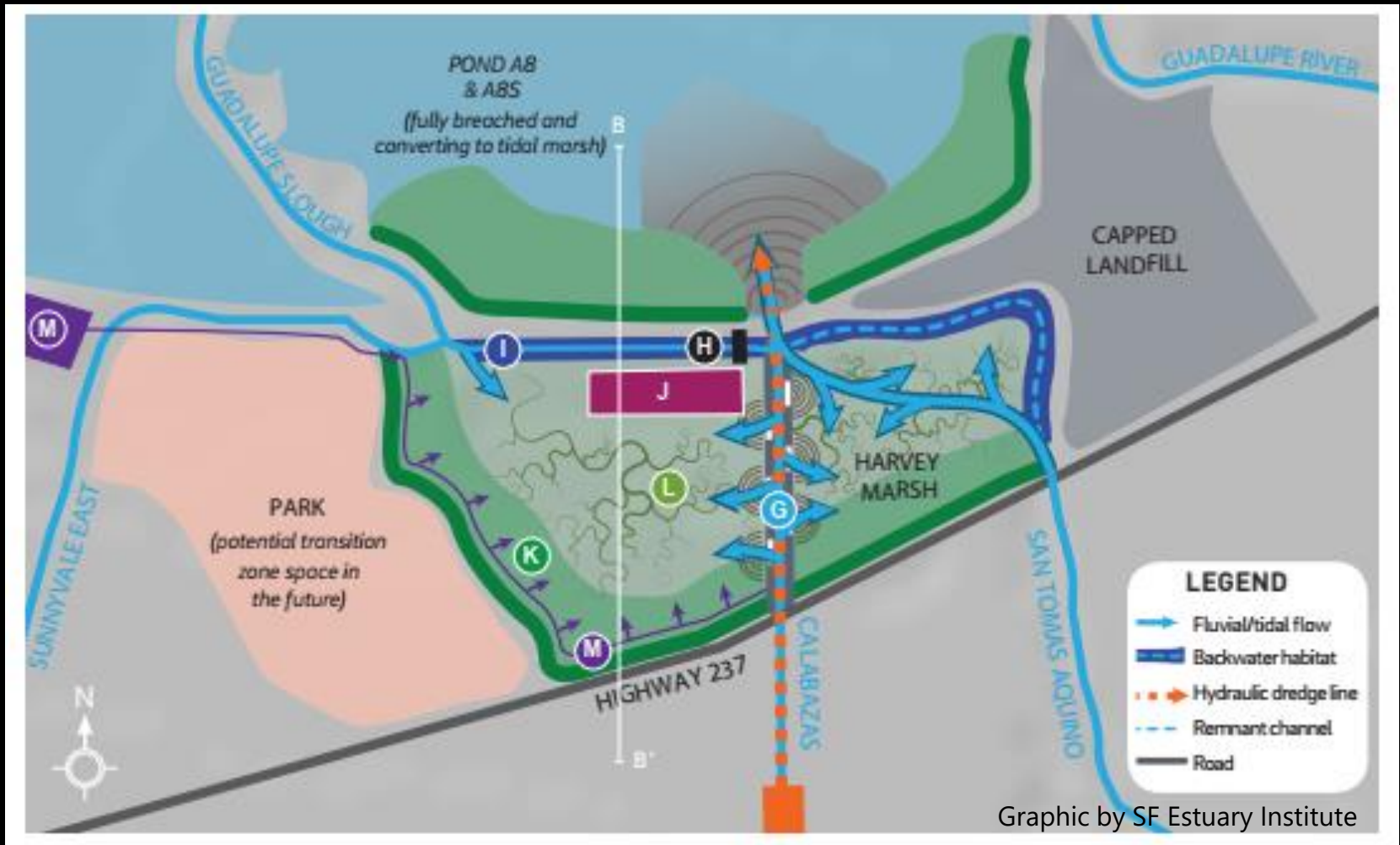




Alviso Pond A12, FWS  
Refuge

Photo: Tim Tidwell

# With Valley Water in Alviso: Calabazas/San Tomas Aquino Creek - Marsh Connection Project



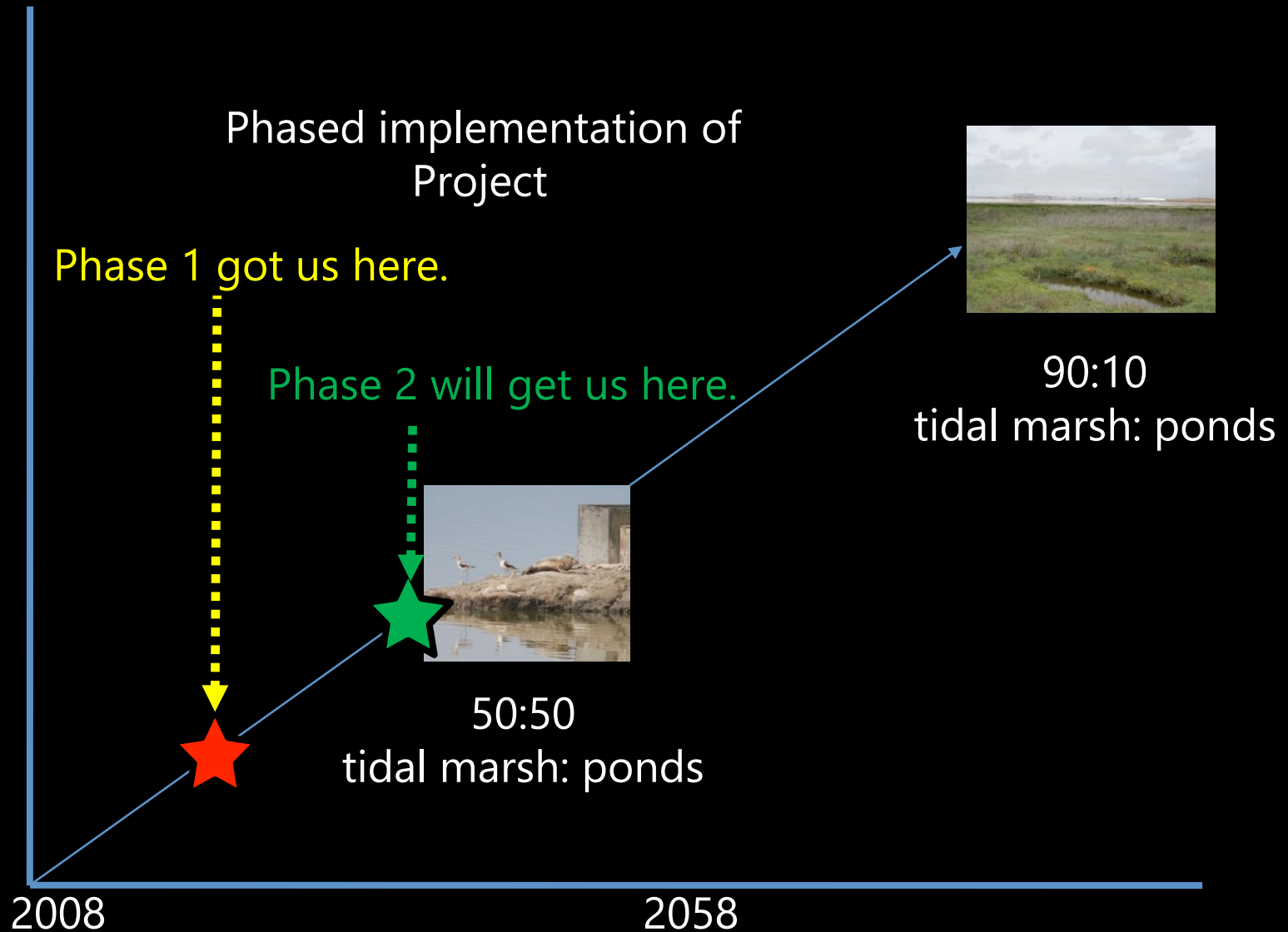
# **Other Outside Collaborations**

- **Ravenswood-Area Flood Risk Management:**
  - **San Mateo County & Area Cities: Bayfront Canal & Atherton Channel**
  - **San Francisquito Creek JPA (SAFER Bay)**
- **Sea Level Rise Adaptation:**
  - **Sunnyvale**
  - **Mountain View**
  - **Coastal Hazard Adaptation Resiliency Group**
- **Restoration:**
  - **Alameda Creek**

# Looking Ahead

- **Implement priority Science Program items**
- **Extend partnerships for regional monitoring**
- **Continue/complete Phase 2 construction at Refuge ponds**
- **Initiate construction at Eden Landing**
- **Advocate for policy modifications**
- **Advance partner projects**

# After Phase 2





**Dave Halsing**

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**Matt Brown**

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**John Krause**

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**Laura Cholodenko**

California State Coastal Conservancy  
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**Donna Ball**

Lead Scientist, San Francisco Estuary Institute  
[donnab@sfei.org](mailto:donnab@sfei.org) or [360-460-5227](tel:360-460-5227)

# Thank You

## For your Interest & Participation!



Courtesy of Invasive  
Spartina Project

**[www.southbayrestoration.org](http://www.southbayrestoration.org)**  
**Follow us on Facebook**

facebook



Name:  
South Bay Salt  
Pond Restoration  
Project

# **Breakout Rooms**

**To allow for informal dialogue and Q&A on focused topics, we will break into 4 rooms; Forum members & attendees can move into their topic of choice.**

## **Topics:**

- 1. Eden Landing**
- 2. Refuge: Alviso Ponds**
- 3. Refuge: Ravenswood Ponds**
- 4. Science & Monitoring**

# Directions

- **When we open the breakouts, you'll see a box listing the Breakout Rooms by topic name.**
- **Select "Join" to the right of that room name to move there.**
- **Once in a breakout, to move out, click "Leave Breakout Room."**
  - **Be careful not to click "Leave Meeting" unless you are ready to fully leave the meeting!**
- **Julia Van Horn from the Facilitation Team will remain in the main room to offer tech support as needed to help you move into a breakout room.**



**Dave Halsing**

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[dave.halsing@scc.ca.gov](mailto:dave.halsing@scc.ca.gov) or [650-814-0588](tel:650-814-0588)

**Matt Brown**

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**John Krause**

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**Laura Cholodenko**

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**Donna Ball**

Lead Scientist, San Francisco Estuary Institute  
[donnab@sfei.org](mailto:donnab@sfei.org) or [360-460-5227](tel:360-460-5227)

# Thank You

## For your Interest & Participation!



Courtesy of Invasive  
Spartina Project

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South Bay Salt  
Pond Restoration  
Project

# Adjourn to Informal Open House

