SOUTH SAN FRANCISCO BAY SHORELINE

Integrating flood risk management and ecosystem restoration along the bay's edge

Dr. Judy McCrea
Plan Formulation Specialist
South Pacific Division
US Army Corps of Engineers

STUDY PARTICIPANTS

NON-FEDERAL SPONSORS

- Santa Clara Valley Water District
- State Coastal Conservancy

LANDOWNERS

- U.S. Fish & Wildlife Service
- City of San Jose

CONSULTANTS

- HDR
- Northwest Habitat Institute
- Battelle

U.S. ARMY CORPS OF ENGINEERS

- Headquarters
- South Pacific Division
- San Francisco District
- Los Angeles District
- Jacksonville District
- Planning Centers of Expertise
  - Coastal Storm Risk Management
  - Flood Risk Management
  - Ecosystem Restoration
- Engineer Research & Development Center
- Agency Technical Review Team
- Independent External Peer Review Team
- Mandatory Cost Center of Expertise

PROJECT LOCATION & AUTHORITY

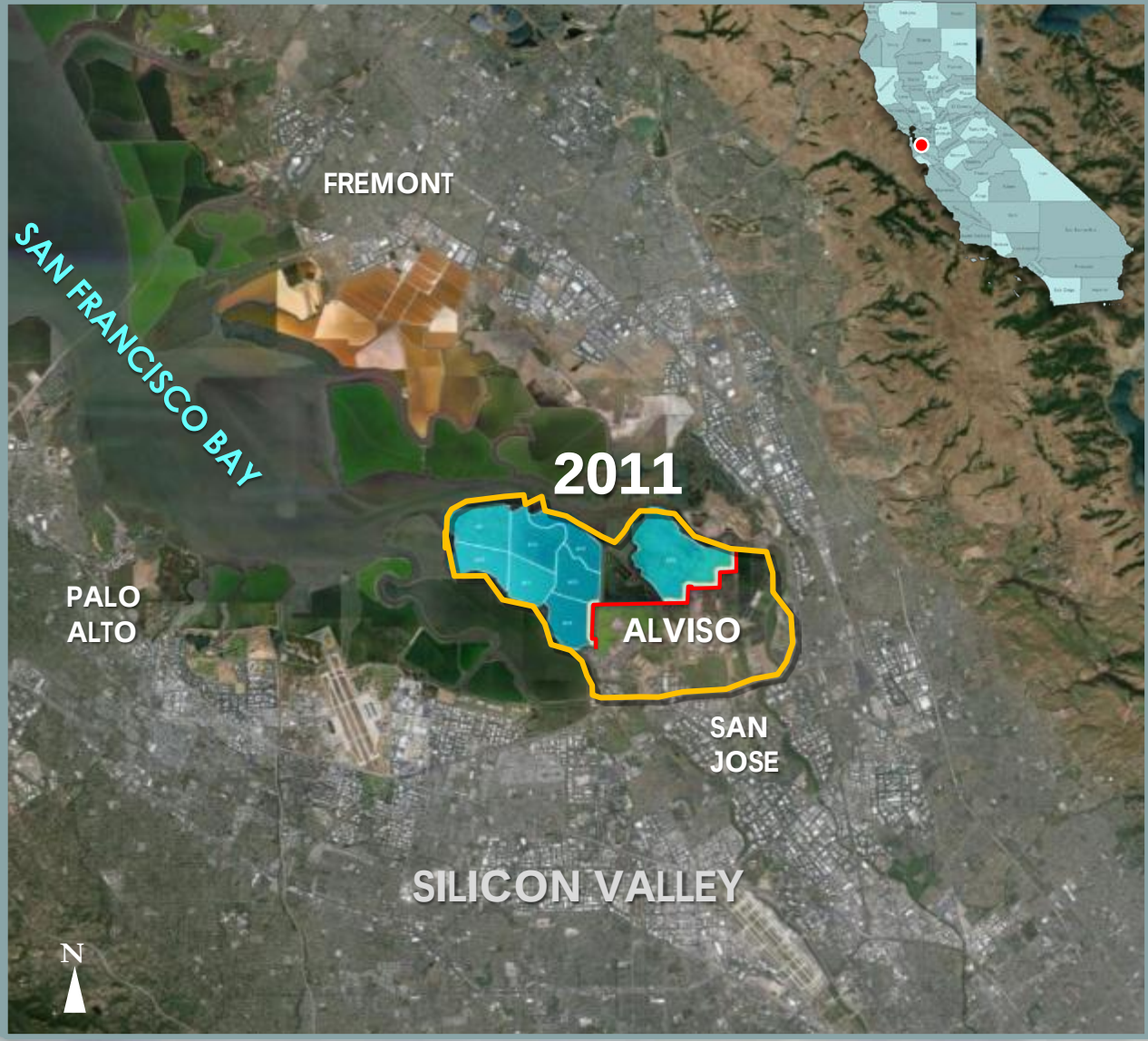
1976 WATER RESOURCES DEVELOPMENT ACT
Flood risk management in North & South San Francisco Bay

2002 STUDY RESOLUTION
South Bay focus w/added ecosystem restoration & recreation

2004 RECONNAISSANCE PHASE
Geographic scope = 9,000 acres/15 shoreline miles

2005 FEASIBILITY PHASE
Scope further reduced to Alviso Ponds and associated shoreline

2011 STUDY FOOTPRINT REDUCED
Northern San Jose area 2,900 acres/4 shoreline miles



SOUTH SAN FRANCISCO BAY SHORELINE THE RISK OF NOT ACTING

INCREASED THREAT OF FLOODING

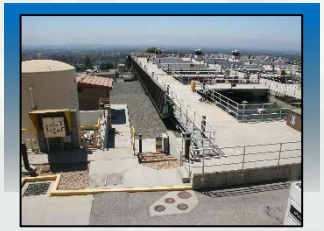
Community of Alviso & Surrounding Area (~5,500 people ~1,100 structures)

Increased vulnerability due to existing pond dikes

INCREASED THREAT OF FLOODING

Regional Wastewater Treatment Facility

Serves 1.4 Million People in 8-City Region



INCREASED THREAT OF FLOODING

Water Purification Center

Produces 8 million gallons/day of purified water matching CA drinking standards

LOST OPPORTUNITY TO RESTORE TIDAL WETLANDS

Rising sea levels & deeper water will prevent natural sedimentation from establishing tidal wetlands

CONTINUED LACK OF HABITAT/ CONNECTIVITY

To Support Wetland Wildlife

Existing residual tidal wetlands fragmented, narrow

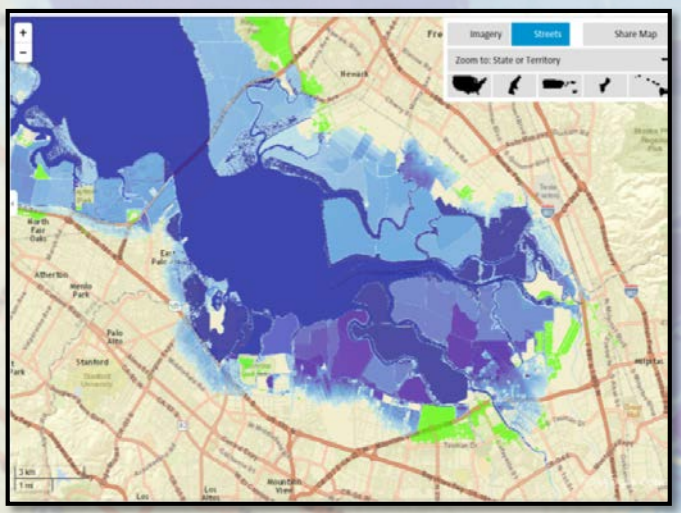
Minimal refugial habitat for listed species at high tide

INCREASED THREAT TO LISTED SPECIES

2 Federal Endangered Species

Salt marsh harvest mouse

Ridgway's rail

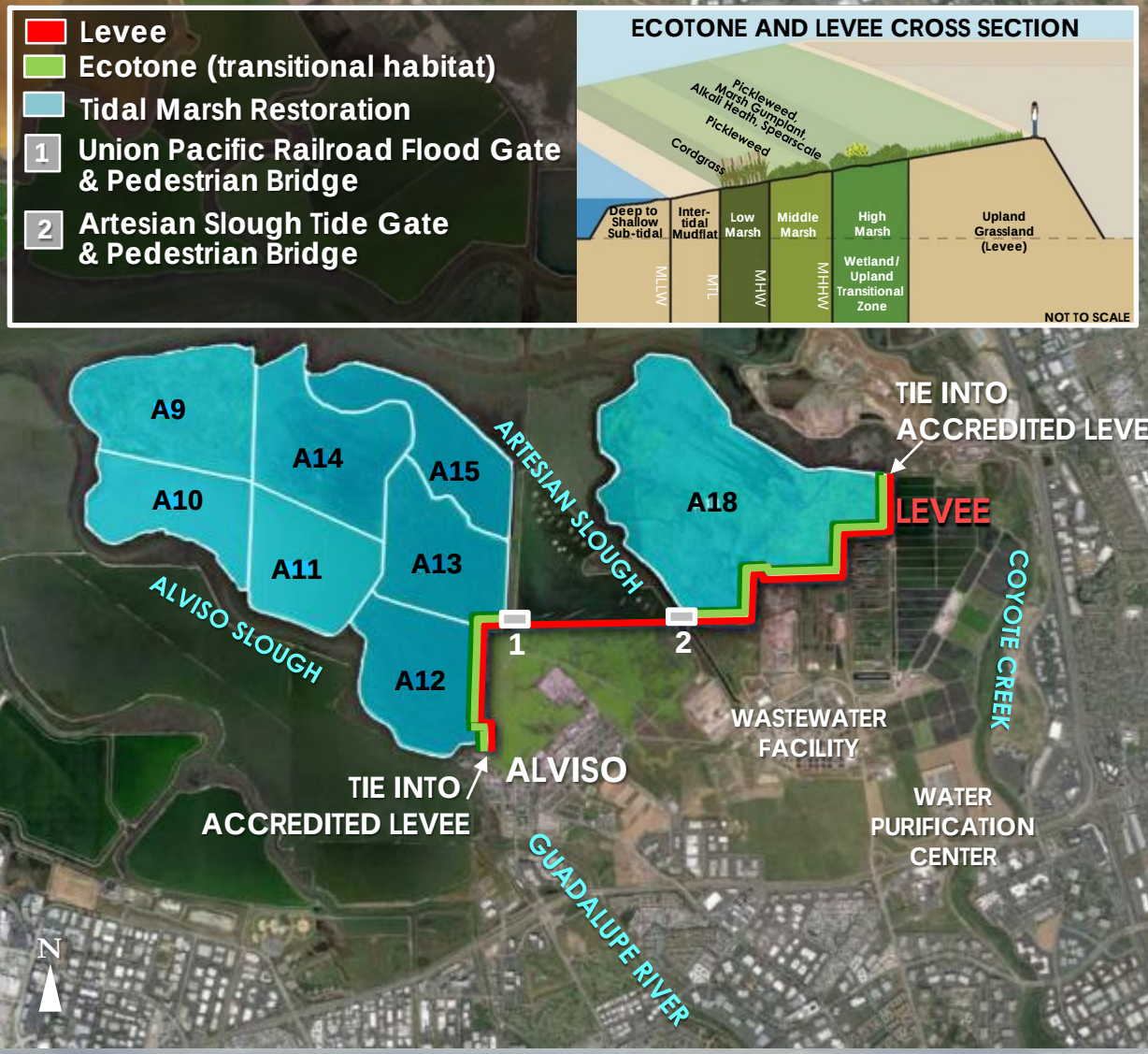


SEA LEVEL RISE & POTENTIAL FLOOD RISK

PROJECT OVERVIEW

- **Flood Risk Management - $92M**
  - 4-mile long levee
  - Manages risk for population of ~5,500, ~1,100 structures, & regional wastewater facility
- **Ecosystem Restoration - $76M**
  - 2,900 acres of tidal wetlands including ecotone
- **Recreation - $6M**
  - Provides key connections to San Francisco Bay Trail & viewpoints

TOTAL COST - $174 M

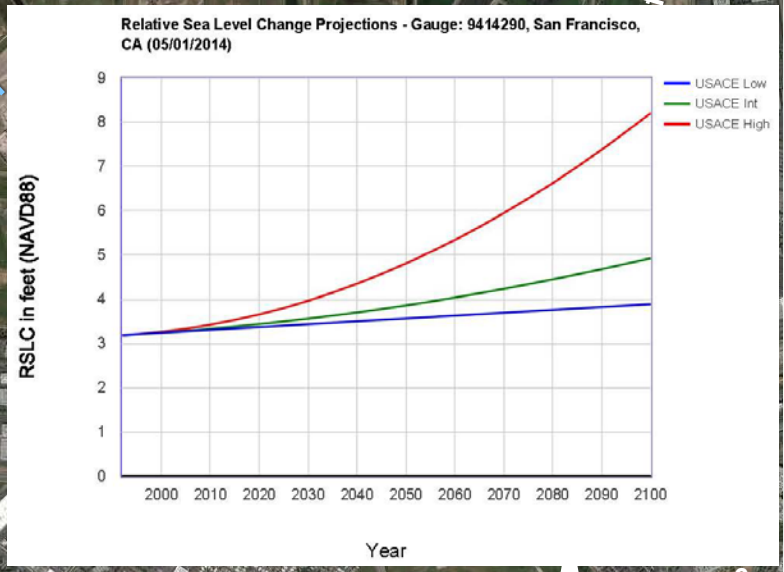


FLOOD RISK MANAGEMENT

A9
A14
A15
A10
A11
A13
A12
A18
Coyote Creek
Artesian Slough
UPRR
WPCP SOUTH (EXISTING DIKE ALIGNMENT)
ALVISO NORTH (EXISTING DIKE ALIGNMENT)
FLOOD GATE
TIDE GATE
ALVISO RR SPUR
ALVISO SOUTH
ALVISO
Alviso Slough
Guadalupe River

FLOOD RISK MANAGEMENT

- ALVISO NORTH LEVEE + WPCP South
- ALVISO RR SPUR LEVEE + UPRR Flood Gate + Artesian Tide Gate
- ALVISO SOUTH LEVEE + Non-structural



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ECOSYSTEM RESTORATION

TIDAL MARSH RESTORATION FEATURES:

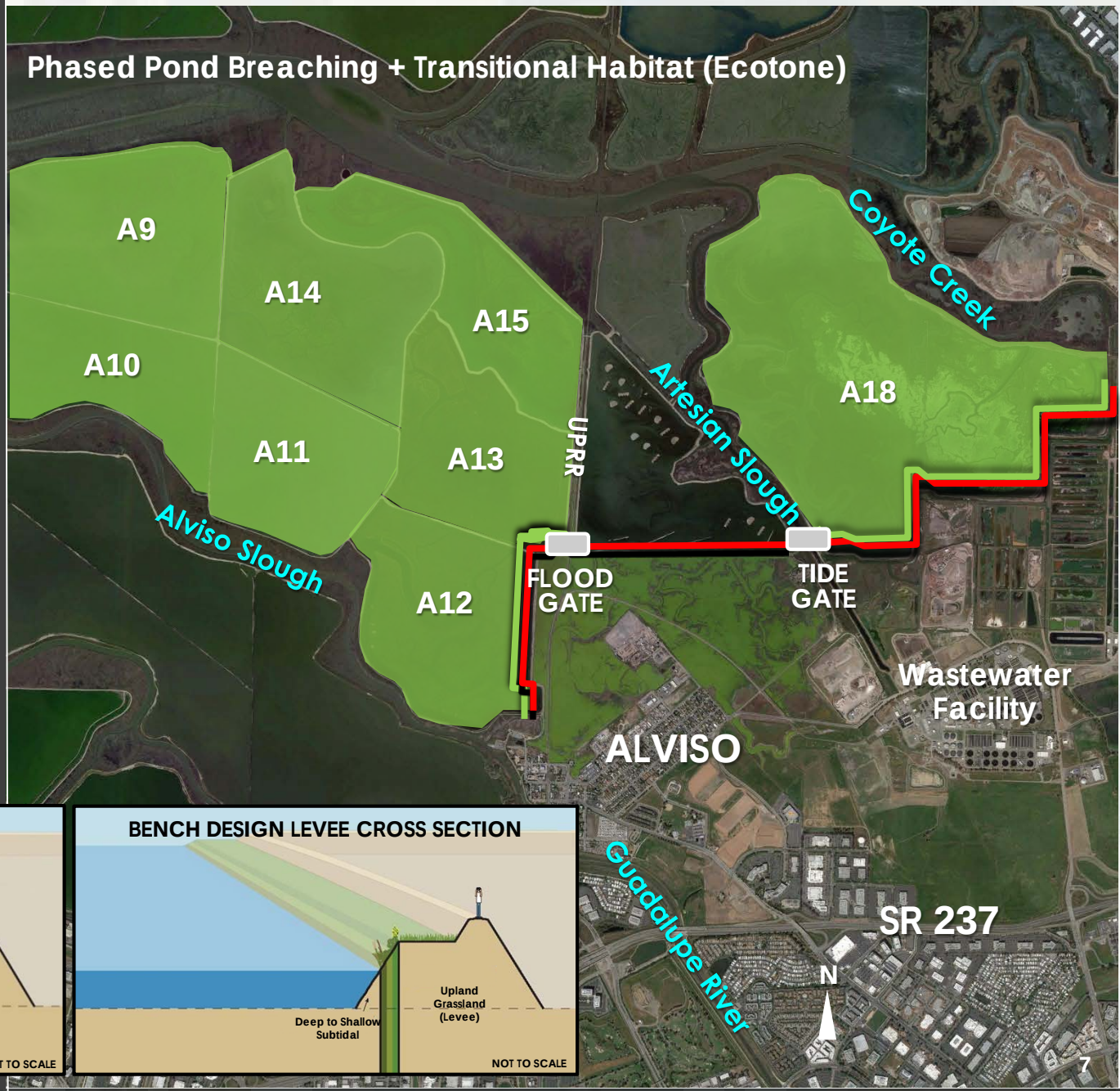
IN-POND PREPARATION
prior to breaching for tidal connection

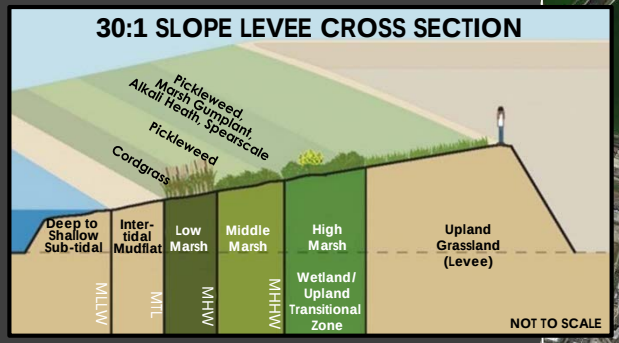
- Pilot channels through fringing marsh into ponds
- Ditch blocks
- Internal dike reinforcement or breaches

TRANSITIONAL HABITAT
- 30:1 Ecotone fill

POND BREACH PHASING
- A12, A18
- A9-A11
- A13-A15

Levee
Transitional fill/habitat *
* Between tidal marsh & levee





Tidal Marsh Restoration Features

Example Restoration: Pond A21 (April 2008 – 2011) Photo Credit: C. Benton

Ditch Block
to directs flow
toward center of site

Levee Lowering

Breach

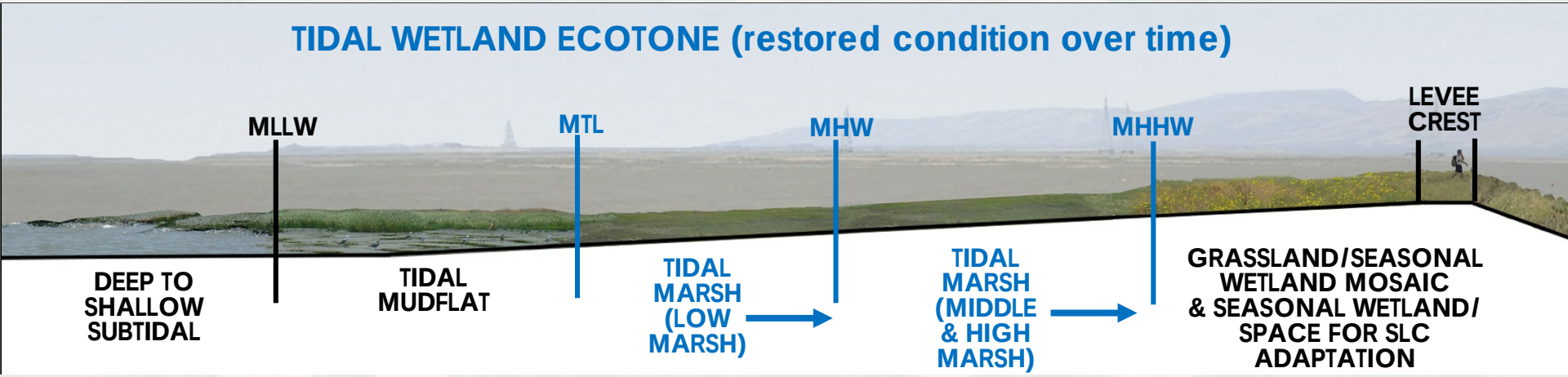
Pilot Channels

Breach

ECOTONE TRANSITIONAL HABITAT

OPPORTUNITY FOR MORE DIVERSE HABITAT & MORE RESILIENT FLOOD RISK MANAGEMENT

TIDAL WETLAND ECOTONE (restored condition over time)



MONITORING AND ADAPTIVE MANAGEMENT

POST-CONSTRUCTION ACTIONS

Monitoring

Evaluate Progress of Habitat Restoration

Adaptive Management

Adjust timing of phased breaches, lower dikes, adjust in-pond features, import fill, active seeding

Total Estimated Cost for Monitoring ($1.7m) & Adaptive Management ($6.3M)

$8 million

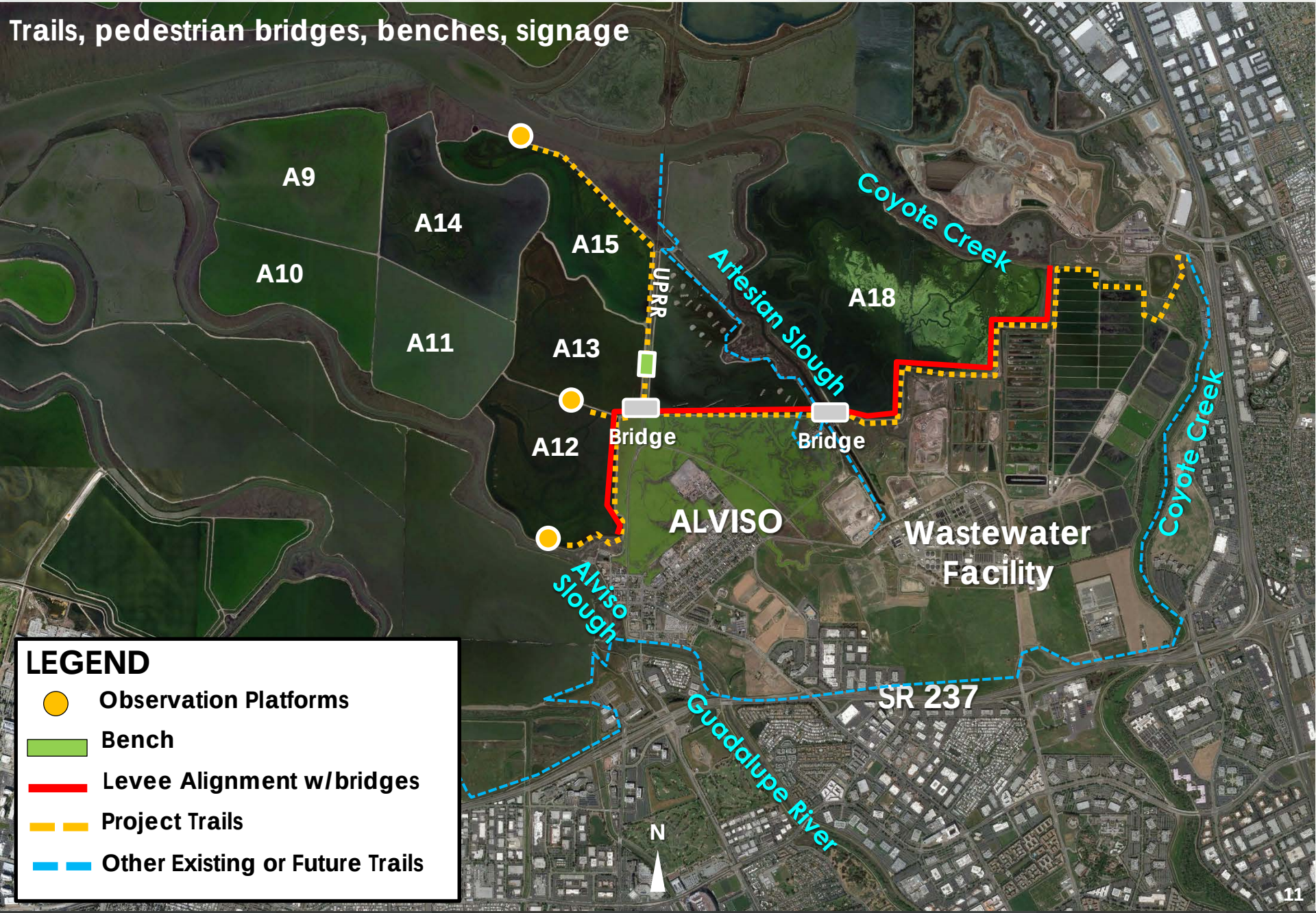
LONG-TERM ACTIONS

Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R)

by non-Federal sponsor

RECREATION

Trails, pedestrian bridges, benches, signage

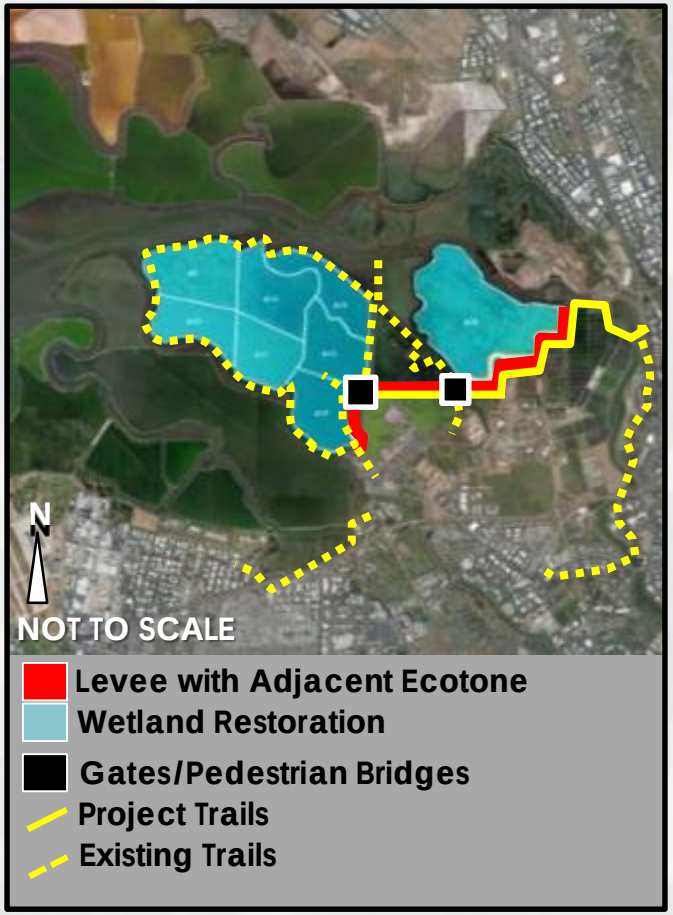


TIMELINE

- Chief's report: December 2015
- Project Authorization: To be determined
- Design Agreement: Spring 2016
- Project Partnership Agreement: Spring 2017
- Construction Contract Award: Spring 2018
- Construction Begins: Summer 2018

INTEGRATED PROJECT: CRITICAL INVESTMENT

	FEATURE	BENEFIT
ECOSYSTEM RESTORATION	2,900 ACRE WETLAND RESTORATION ▪ partial breaching of existing dikes ▪ ditch blocks ▪ pond berms	▪ Conditions restored for tidal wetland habitat (sedimentation & flows) ▪ Connections restored between wetland restorations, as well as San Francisco Bay
↕	▪ 30:1 slope ecotone fill	▪ More diversified tidal wetland habitat (ecotone) ▪ Robust to long-term sea level rise
FLOOD RISK MANAGEMENT (FRM)	LEVEE: ▪ Length: 4-miles long ▪ Height: 15.2' NAVD 88 ▪ Gates	▪ Risk managed for population of ~5,500, ~1,100 structures, businesses, & regional wastewater facility
↕	▪ Levee Trails ▪ Pedestrian Bridges	▪ Key connections to San Francisco Bay Trail
RECREATION	▪ Observation Platform ▪ Signage ▪ Trails ▪ Benches	▪ Key connections to San Francisco Bay Trail plus additional recreation enhancements



Questions?