



Subcommittee on Imported Water

Delta Freshwater Pathway and Emergency Preparedness

Item 3b

July 22, 2025

Item 3b

Outline

Subject

The Delta Freshwater Pathway & Emergency Preparedness

Purpose

Discuss the evolution of the Freshwater Pathway, securing Metropolitan's assets, and a roadmap for partnerships and asset management

Next Steps

Board discussion and direction

An aerial photograph of a delta region. A large, green, forested island is situated in the upper left, with a winding waterway flowing around it. The water is a deep blue, and the surrounding land is a mix of green vegetation and brown, possibly dried-up or eroded, areas. The overall scene depicts a complex hydrological system.

Overview of the Delta

The Delta

Hub of California's Water Supply & Economy



1. Portions of the North Coast Watershed are protected under the Federal & State Wild & Scenic Rivers Act (Klamath, Trinity, Mad, and Eel River)

The Delta

Annual Runoff Comparison (acre-ft.)

North Coast ¹



Sacramento



San Joaquin



13
Million
Runoff

Colorado

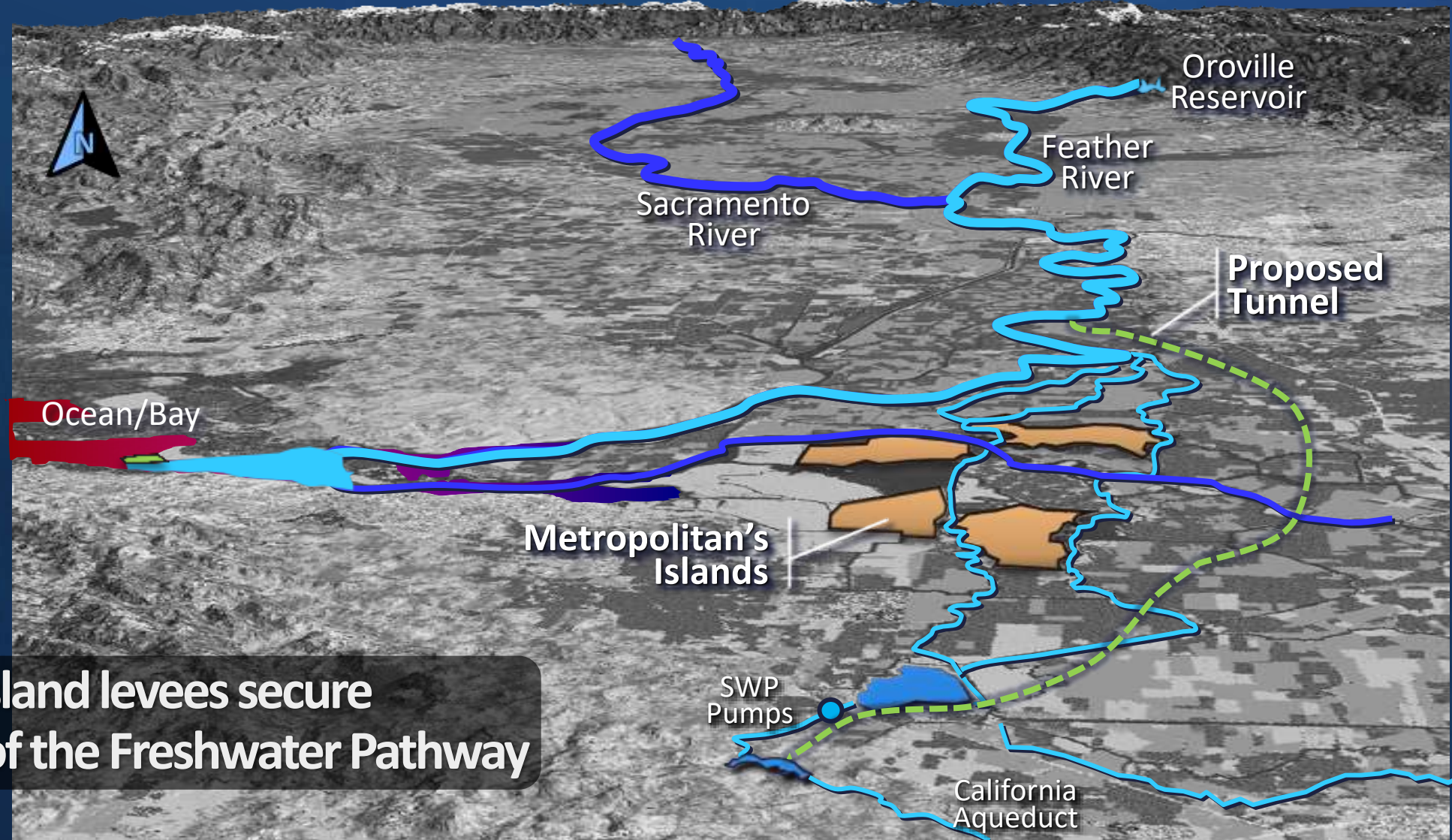


1. Portions of the North Coast Watershed are protected under the Federal & State Wild & Scenic Rivers Act (Klamath, Trinity, Mad, and Eel River)

The Delta

Hub of California's Water Supply & Economy

**Metropolitan's island levees secure
... 24% of the Freshwater Pathway**



The Delta

Key Discussion Items

Board Discussion Last Month

80% or more of core SWP/CVP deliveries will flow through the Freshwater Pathway even with the proposed Delta Conveyance Project

Is protecting the Freshwater Pathway important?

California
Aqueduct



Evolution of the Freshwater Pathway

A photograph of Lester Snow, Director of the California Department of Water Resources, speaking at a podium. He is an older man with glasses, wearing a dark suit, white shirt, and a red patterned tie. He is gesturing with both hands while speaking into a microphone. The background is dark and out of focus.

*“New Orleans provided
250-year flood protection.*

*Very few levees in the
Sacramento Delta offer even
100-year protection.”*

– **Lester Snow**, Director,
Department of Water Resources
(Apr 2006)

California State Assembly

Award of Excellence Winner

DENNIS G. MAJORS
Consensus Builder

Balancing construction,
environmental and
social needs
at dams

*“The Delta is the single
greatest risk to interrupting
SWP/CVP supplies”*

– **Dennis Majors, MWD (2007)**

MWD Lead – Diamond Valley Lake
USACE Lead – Seven Oaks Dam
Recipient of four national planning,
design & construction awards

Freshwater Pathway

Initial focus
was on flood &
seismic risks



Flood & Seismic Risk

The initial “Emergency” pathway only
focused on flood & seismic risks

Fishery Declines

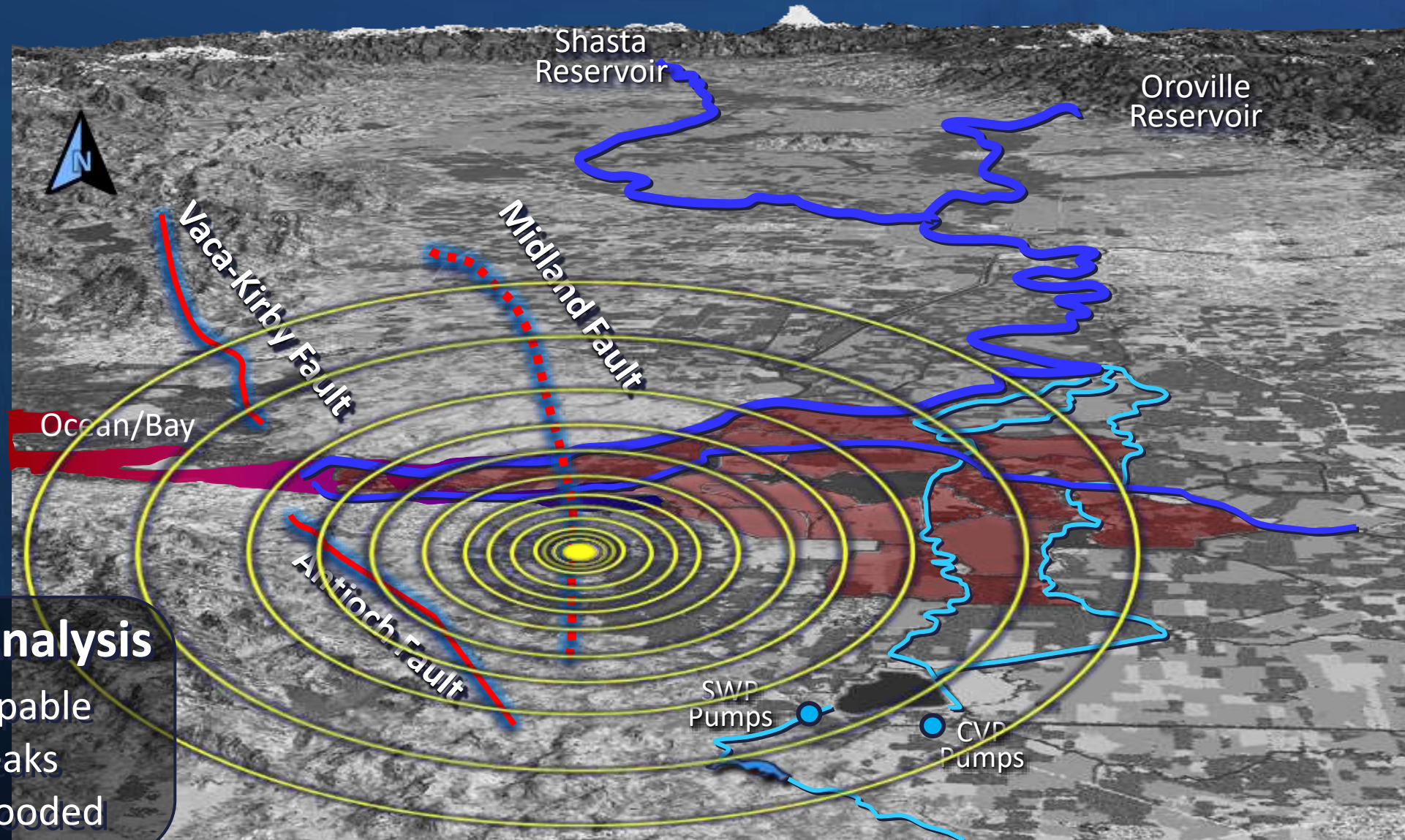
Subsidence Control

Freshwater Pathway

Seismic & Levee Analysis

Midland Fault Analysis

- 6.7 earthquake capable
- Multiple levee breaks
- Multiple islands flooded



Freshwater Pathway

Seismic Analysis Midland Fault



6.7 Magnitude Earthquake
up to 3- year outage

Seismic & Levee Risks

Multiple Analyses Completed



DATE	STUDY	AGENCY
2008	Delta Risk Management Study	DWR, URS, JBA
2011	Levee Stability Analyses of Freshwater Pathway	URS
2012	Peat Deformation/Consolidation Mechanisms	UCLA
2013	Seismic Hazard Analyses of the Freshwater Pathway	URS
2017	Post-Cyclic Settlements of Levee Structures on Organic Soil	UCLA
2018	Emergency Response Bay Delta Model	Lettis
2019	Updated Seismic Hazard Analyses of Freshwater Pathway	DWR, RMA
2019	Updated Levee Stability Pathway Analysis	AECOM, Lettis
2020	Technical Evaluation for Delta Levees	AECOM, Schnabel
2021	Seismic Hazard Analyses of the Freshwater Pathway	Lettis
2022	Central Valley Flood Protection Plan Strategy Update	Lettis

Seismic & Levee Risks

Multiple Analyses Completed

By Top International & Local Experts ...

• Earthquake Probabilities

- Dr Michael Blanpied, USGS, Reston, VA
- Dr. Norm Abrahamson, UC Berkeley
- Dr. David Schwartz, USGS, Menlo Park
- Dr. William H. Bakun, USGS, Menlo Park
- Dr. William Lettis International Inc., Walnut Creek
- Dr. William Ellsworth, USGS, Menlo Park
- Dr. William Foxall, USGS, Menlo Park
- Dr. Mark Petersen, USGS, Denver
- Dr. Thomas Hanks, USGS, Menlo Park

• Geotechnical & Seismic Risk

- Dr. Raymond Seed, UC Berkeley
- Dr. Martin McCann, Stanford University
- Dr Ross Boulanger, UC Davis
- Dr. Scott Brandenberg & Dr. Jonathan Stewart, UCLA
- Dr. Les Harder, State Dept of Water Resources, Sacramento
- Mr. Joe Ehasz & Mr. Ivan Wong, AECOMM-URS, Oakland
- Dr. Jeffrey Unruh, Lettis International Inc., Walnut Creek
- Dr. Robert Youngs, AMEC Geomatrix, Oakland
- Dr. Roy Shlemon, Consultant, Newport Beach
- Dr. Said Salah-Mars, URS Inc., Oakland



Flood Risks

Flood & overtopping risks were analyzed
... including dry-year failures



Jones Tract (2004)



Twitchell Island (2006)

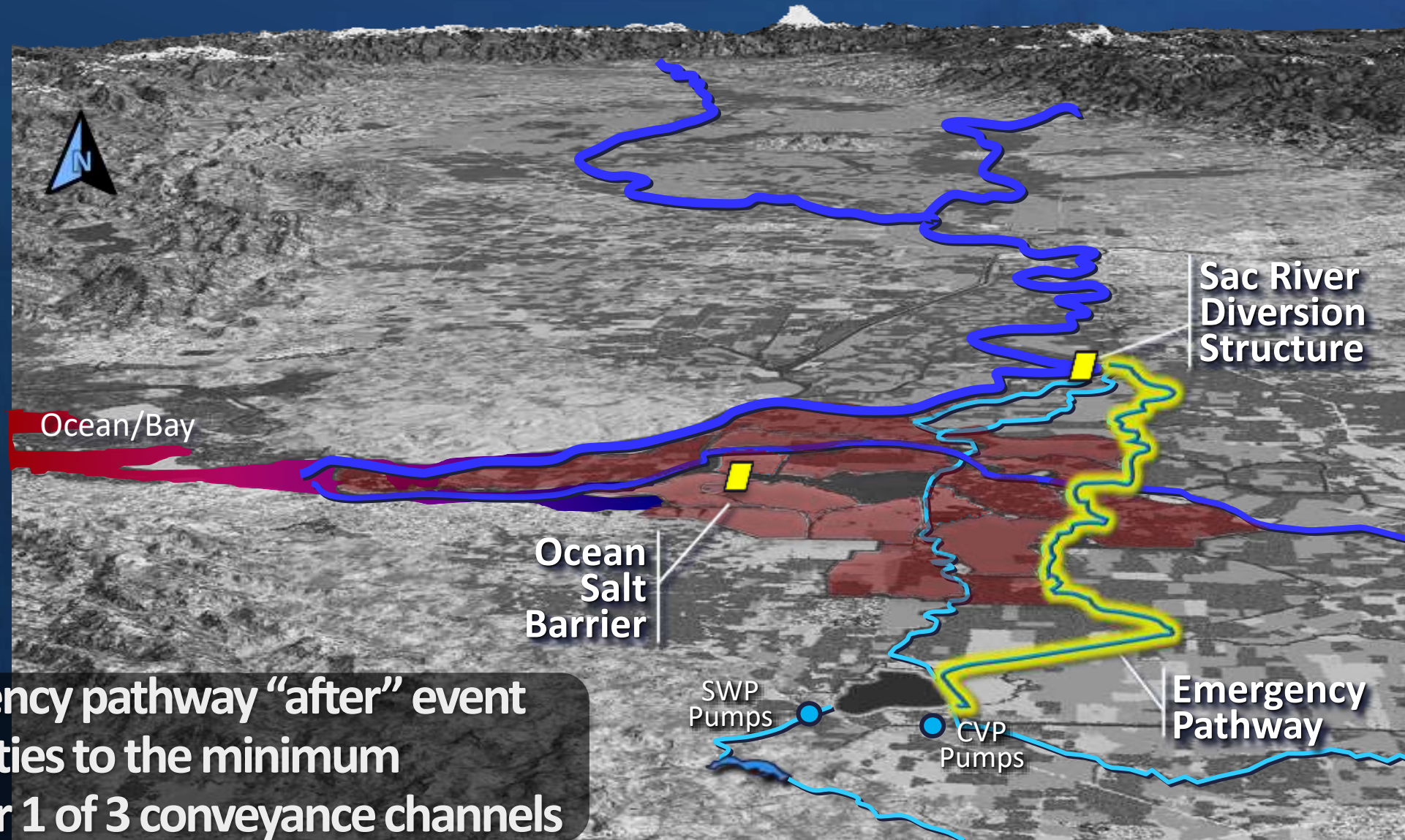


Victoria Island (2024)

Emergency Pathway

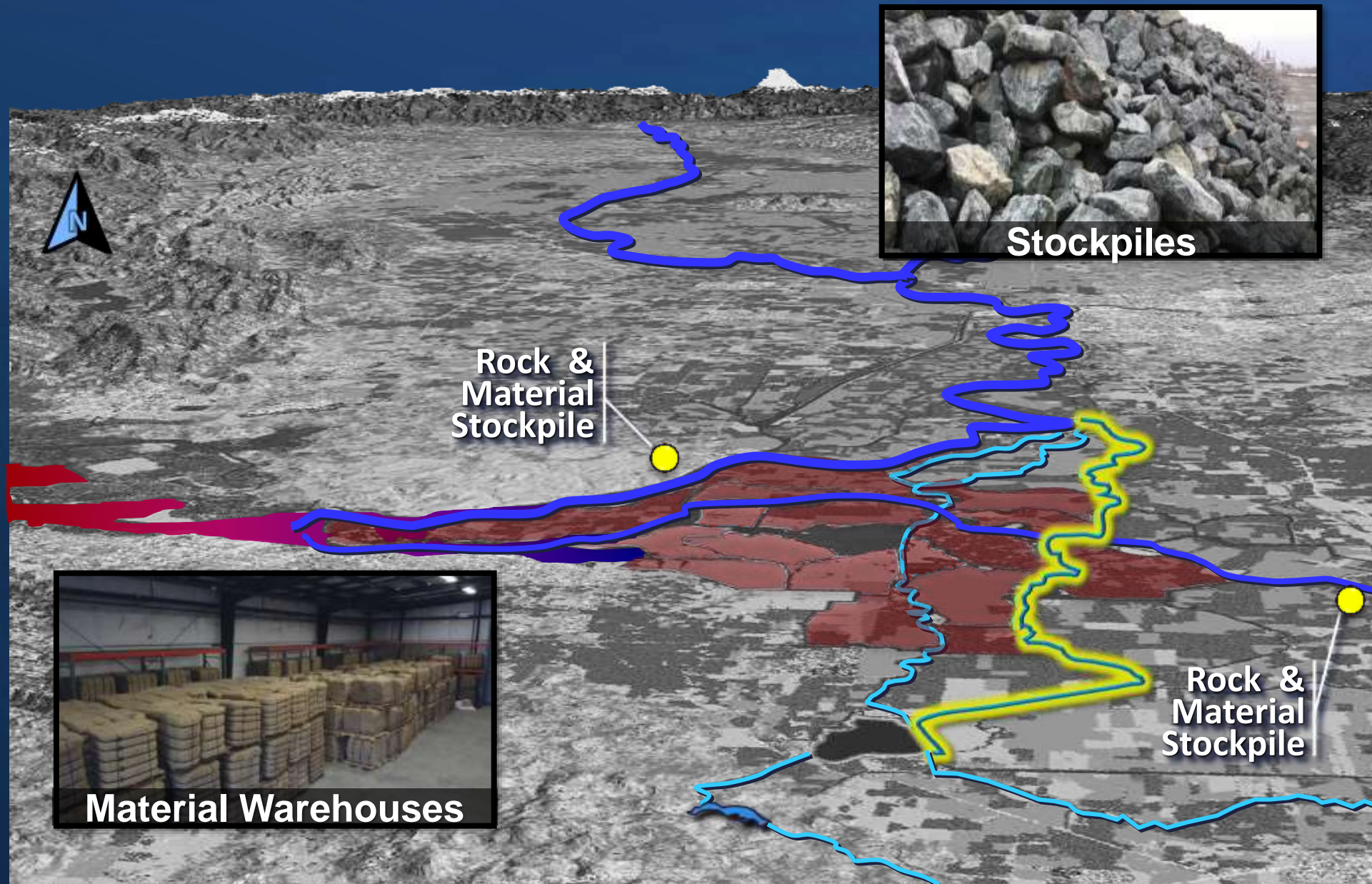
Proposed Facilities & Approach

**Secure emergency pathway “after” event
... keep facilities to the minimum
... only repair 1 of 3 conveyance channels**



Emergency Pathway

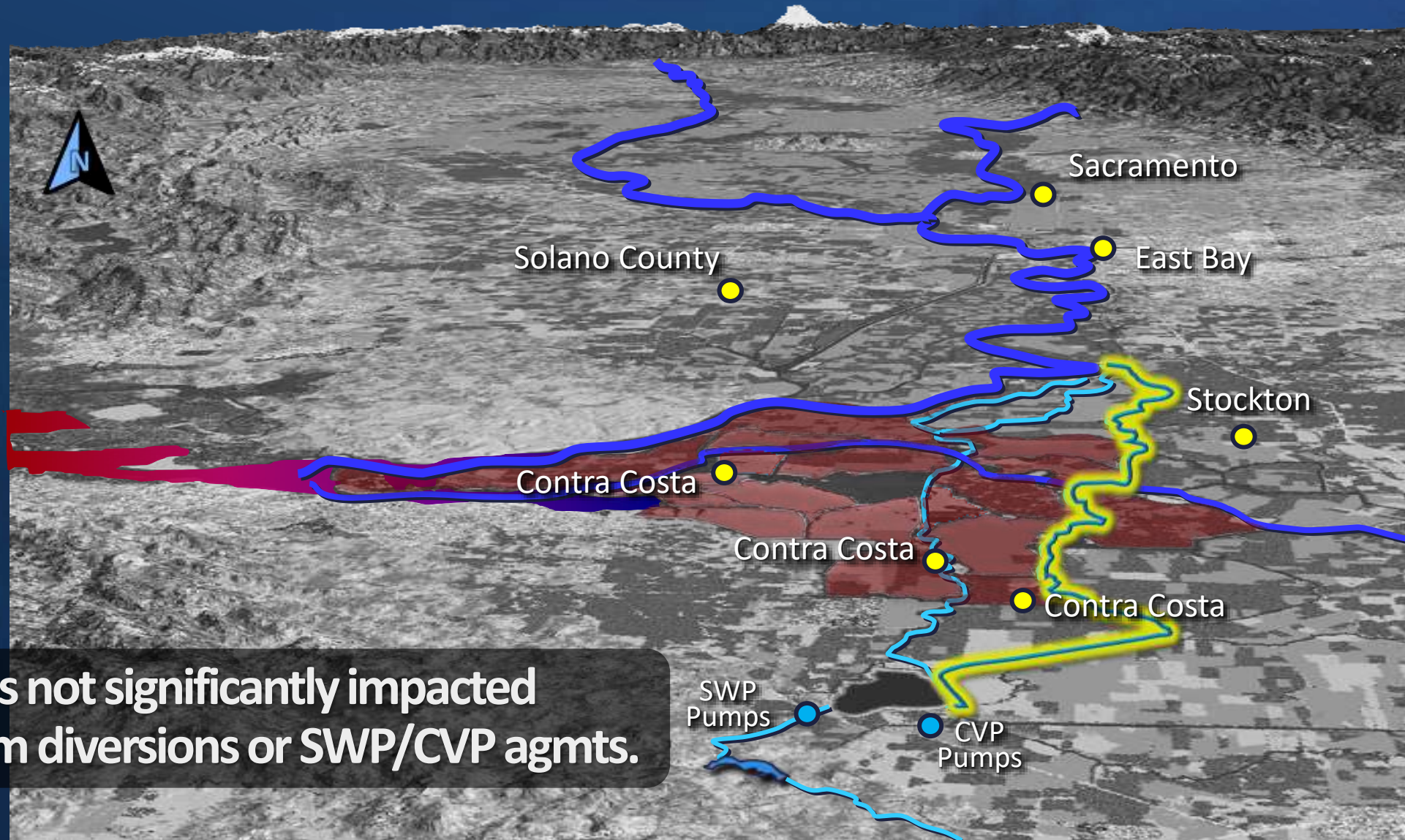
Proposed Material Depots



Emergency Pathway

Local Urban Diversions Impact

**Local urban supplies not significantly impacted
... due to upstream diversions or SWP/CVP agmts.**



Emergency Pathway Summary

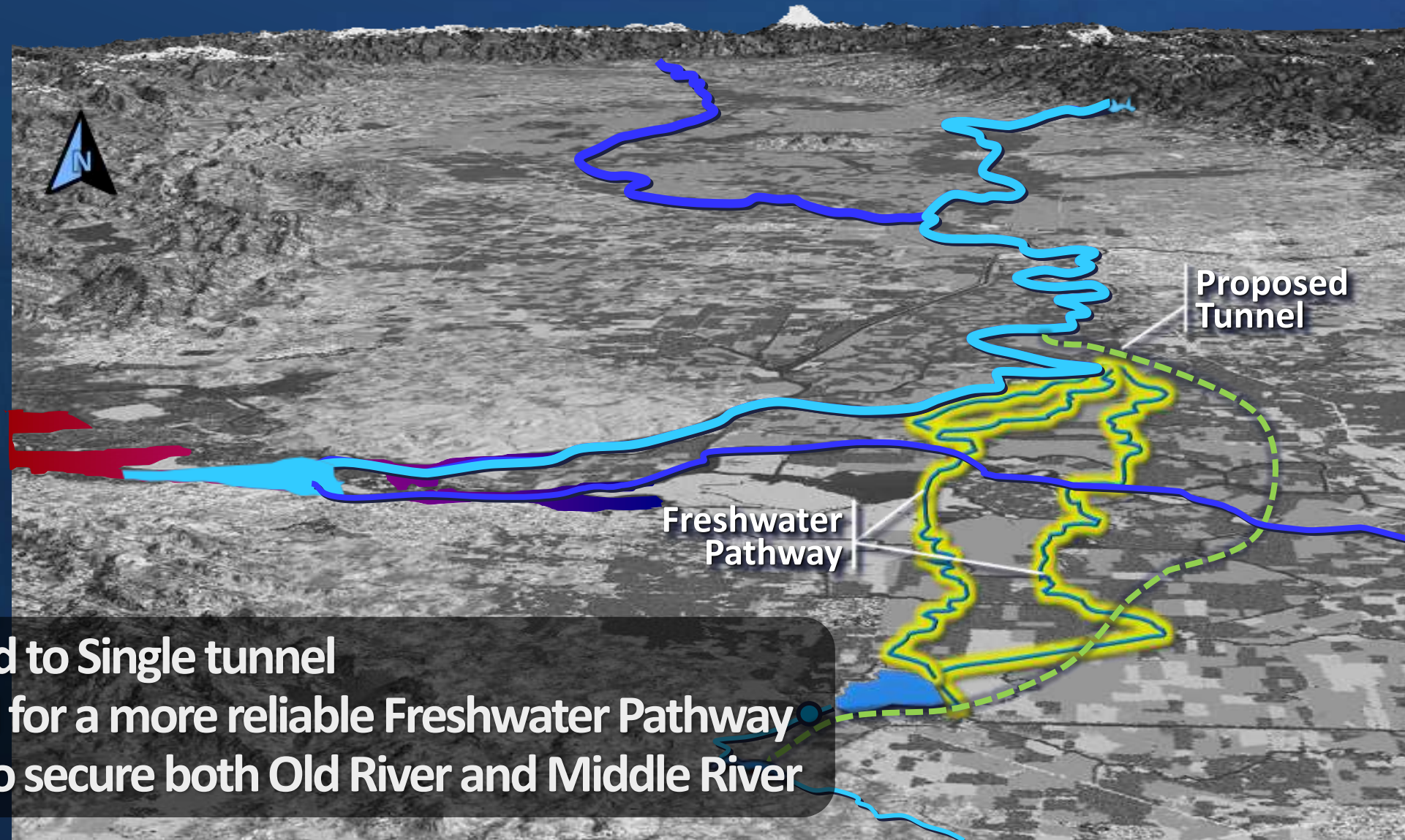
- Risk
 - Major seismic event could cause significant island failures
 - Ocean saltwater intrusion, fouling freshwater up to 3 years
- Strategy
 - No major levee design improvements
 - Develop rock & material stockpiles to place in key breaches
 - Implement with Delta twin tunnel conveyance project
- Summary
 - 3-year outage reduced to 6 months
 - 3 of 4 risks resolved (with twin tunnels)





What has Changed?

What has Changed?



**Twin tunnel reduced to Single tunnel
... triggering need for a more reliable Freshwater Pathway
... and the need to secure both Old River and Middle River**



Securing Metropolitan's Assets

Freshwater Pathway

Value to
Metropolitan

- Reliable Freshwater Pathway is essential to ...
 - Deliver Metropolitan's SWP water supply
 - Provide low-salinity water for service area groundwater basins
 - Blend higher salinity Colorado River to meet water quality goal

*Protecting the Freshwater Pathway helps
protect “all local” investments*

Delta Islands

Value to Metropolitan

- Reliable Delta Islands support ...
 - Ensuring conveyance (levee) system integrity
 - Enhancing water system and habitat interconnections
 - Conducting independent applied science investigations
 - Influencing fishery regulations

Protecting the Delta Islands enhances control of reliability and is consistent with service area O&M

Delta Pathways

Summary

- Emergency Pathway
 - No major levee design improvements
 - Develop rock & material stockpiles to place in key breaches
 - Delta twin tunnel conveyance project
- Freshwater Pathway
 - Delta single tunnel conveyance project
 - Freshwater Pathway helps protect “all Metropolitan” investments
 - Protecting MWD’s Delta Islands enhances control of reliability and is consistent with service area O&M



Freshwater Pathway: Balancing Water Supply Reliability & Sustainability

Jay Ziegler
Delta Watermaster



Office of the Delta Watermaster

Origin & Role of Delta Watermaster



- Created as part of 2009 Delta Reform Act
 - Independent Officer of the State
 - Four-year Term
 - Reports jointly to Water Board and Delta Stewardship Council
- Responsible for:
 - Administering water rights
 - Assisting with realization of legislative mandates (co-equal goals)
 - Coordinating implementation activities of many agencies
 - Advising on policy and practice in the Delta

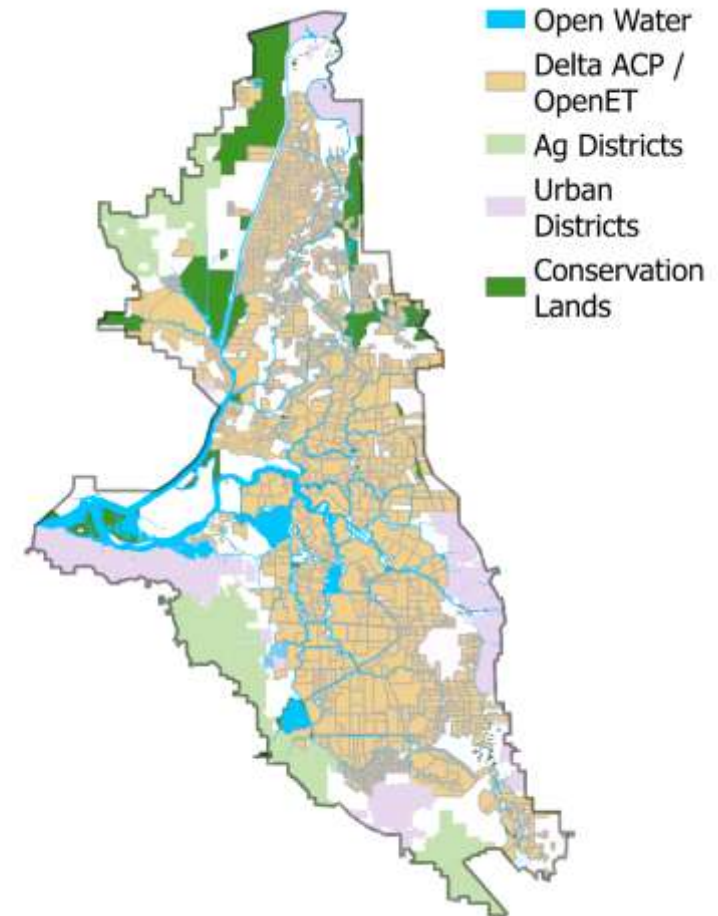
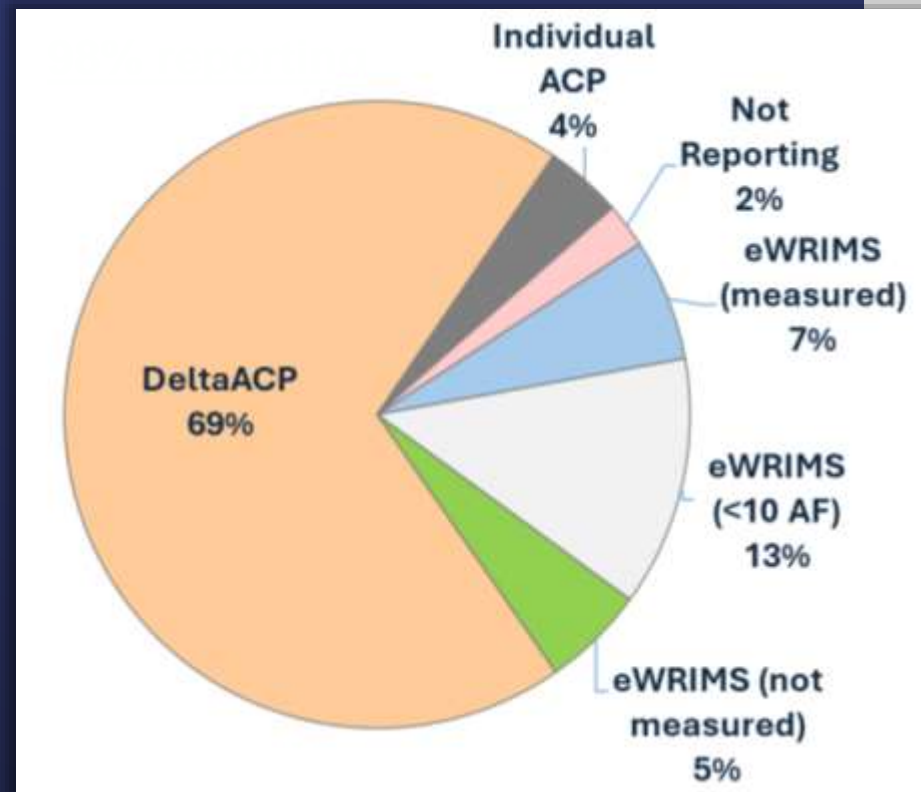
Necessary Leadership in Delta Matters

- Innovation, Pragmatism & Science-led management
- Critical need to *protect & advance science in the Delta*
- Partnerships Unlock Potential for Progress
- Critical Infrastructure Investments = Greater Water Supply Security

Science & Data Partnership Improving Understanding of Delta Diversions/Water Budget

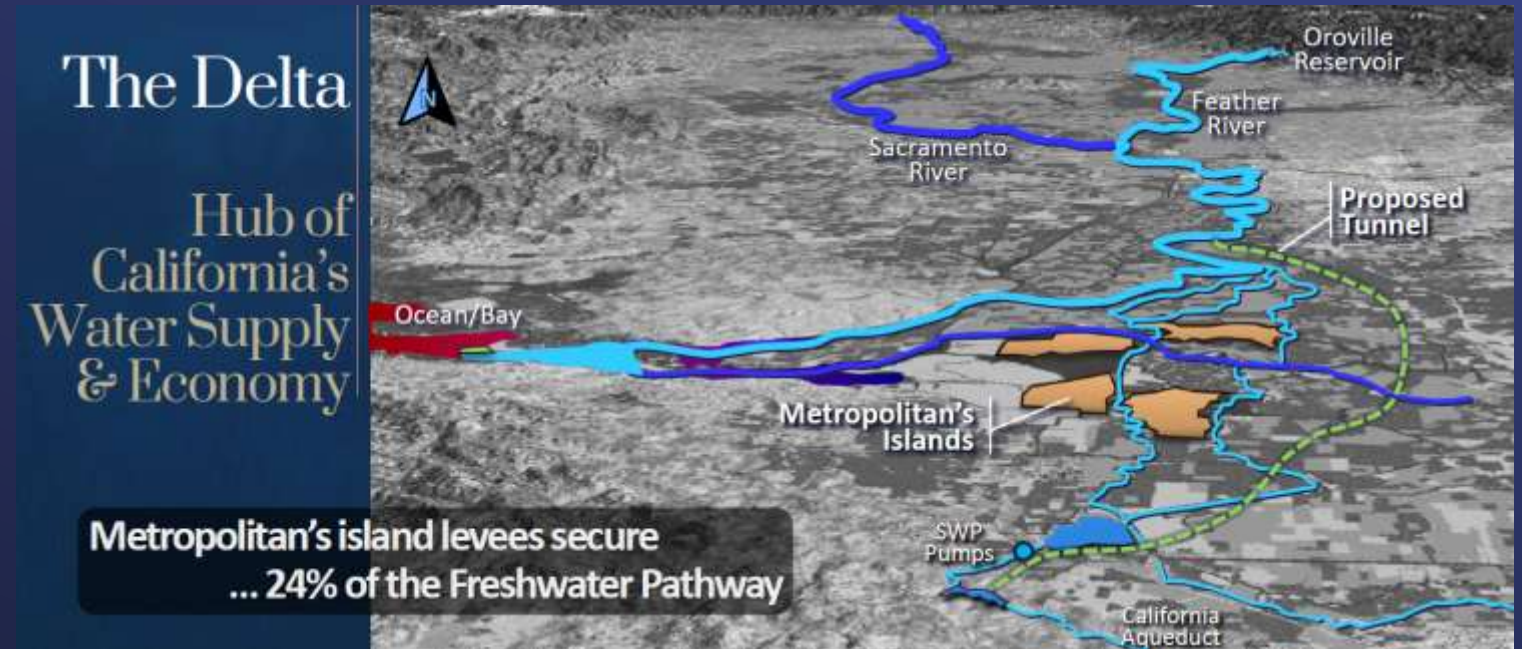
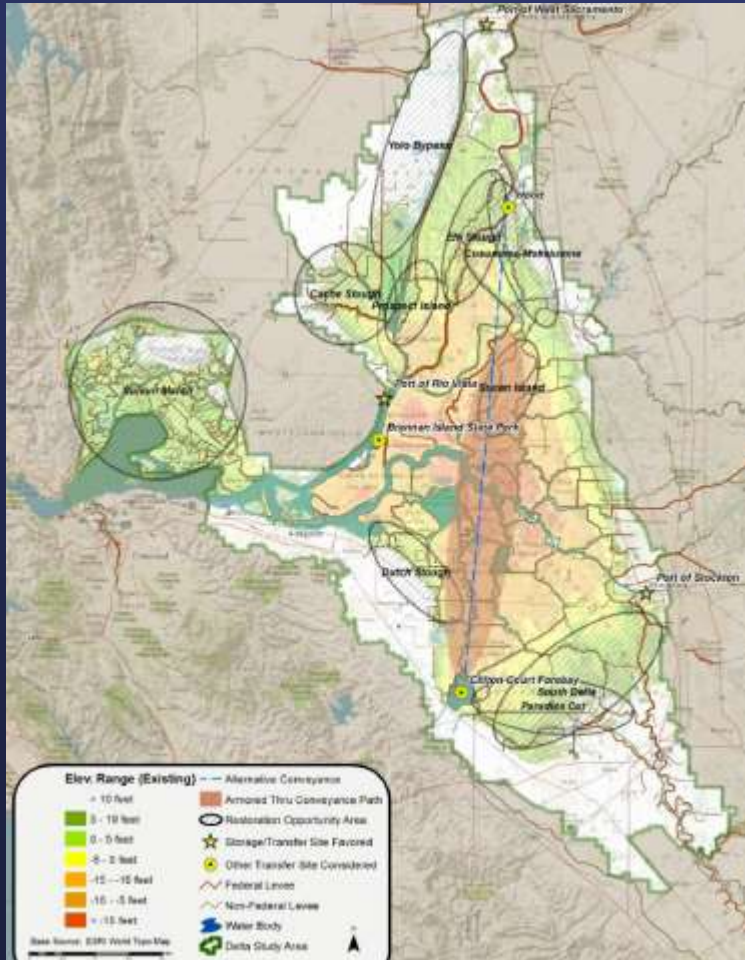
● Water Year 2024:

- Total in-Delta use ~1.4 MAF
- Total Project Exports ~4.2 MAF



Freshwater Pathway= Supply Resilience

- "Delta Adapts" Climate Resilience Plan underscores need for sustained investment in levees
- \$700 million estimate to "harden" key levees in "Freshwater Corridor"
- Strong support across Delta communities
- *With or without Delta Conveyance, reliance on "thru-Delta" water for 80%+ of water supply ([One Water and Stewardship Committee, 10/7/2024](#))*



Sustaining Foundational Science in the Delta



- Unprecedented threats to existing monitoring in the Delta
 - *USBR proposes "contracting-out" Delta Monitoring*
- On-going federal cuts to fisheries monitoring, climate science, flow & flood forecasting, public health & safety (HABS)
- Need better data to reach water quality & water supply objectives with focused experiments and solutions

Science = Better Decision-Making

- Water Quality Control Plan Update/Healthy Rivers and Landscapes
 - Science-based path foundational for dual goals of Delta Reform Act – water supply reliability and ecosystem improvements
- Corollary: *Reducing science investments and reliability undermines public confidence and jeopardizes dual goals*



Important Innovations

- Climate-resilient land management
 - Subsidence reversal, climate-friendly agriculture, levee investments
 - Monitoring strategies
- Continued work within Delta Measurement Experimental Consortium (DMEC)
 - Greater precision in local (island) water budgets and Delta-wide
 - Understanding relationships between diversions and outflow



Franks Tract – Water Quality

- Changes in Franks Tract landscape to minimize dispersive transport could:
 - Control salinity
 - Improve HAB conditions
 - Increase through-Delta survival of salmon
 - Increase water supply reliability
- Franks Tract Futures: Need for more experimentation



South Delta Circulation & Channel Maintenance

Objectives:

- Engage Federal, State & Local Agencies
- Multi-Benefit Projects

Next Steps:

- Multi-Party MOU & Shared Work Program
- Paradise Cut Evaluation Study

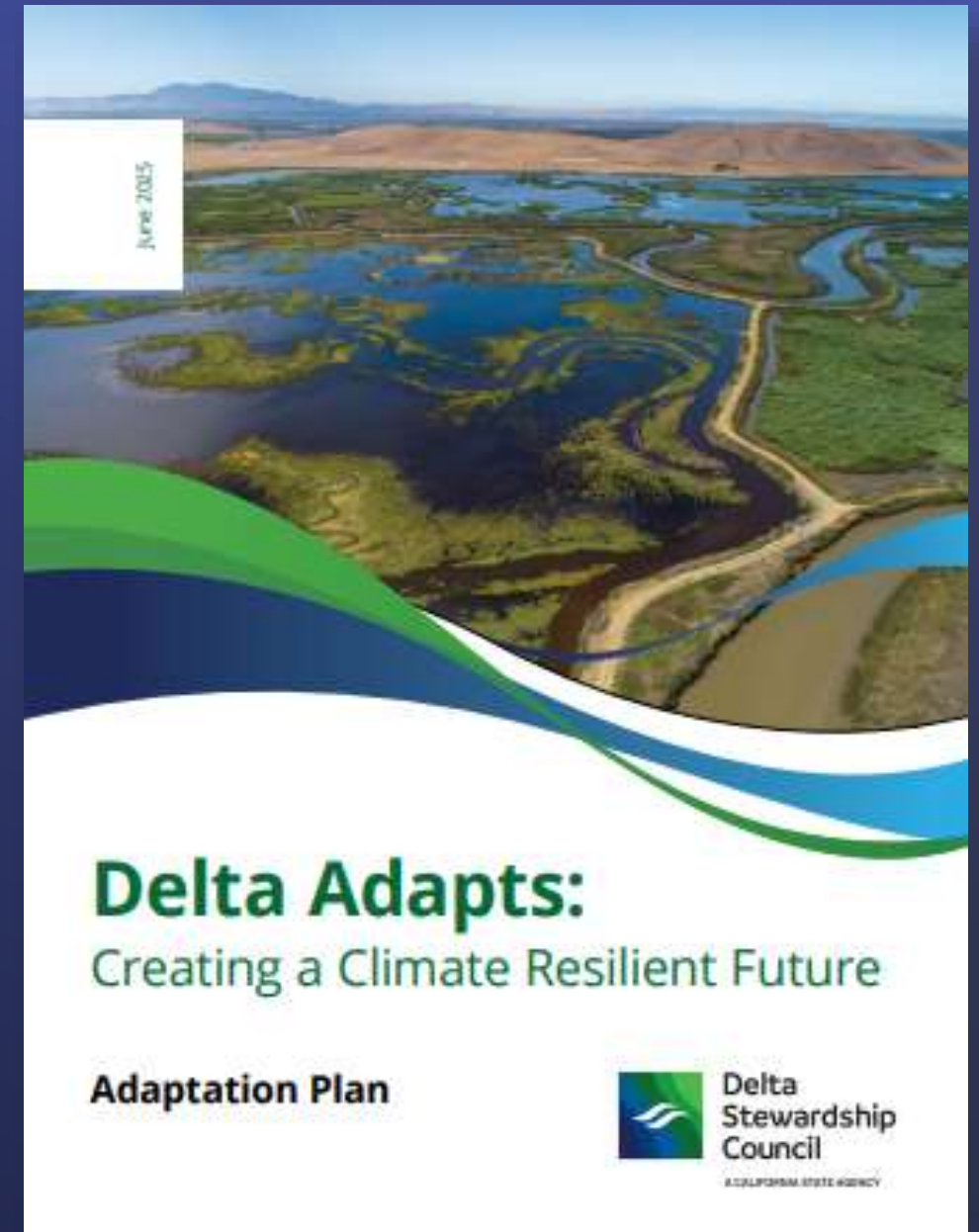


FARMER-TO-FARMER
**GREAT VALLEY FARM
WATER PARTNERSHIP**



Delta Adapts Plan

- Delta Stewardship Council Adopts Regional Climate Adaptation Plan
 - Phase 1 - **Vulnerability Assessment**
 - Regionally-specific climate change vulnerabilities and risks
 - Phase 2 - **Adaptation Plan**
 - How Delta communities, infrastructure, and ecosystems can adapt to future conditions
- Inclusive, transparent science and identifying constraints and trade-offs
- Plan calls for consistent and reliable levee funding and progress updates by 2030. . .



Critical Path Investments for Reliable Water Supply & Environmental Progress

- Science-led decision-making
- Levee Maintenance
- Multi-benefit Projects
- Sediment Management
- Partnerships



Thank you!

Jay Ziegler
Delta Watermaster
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