



One Water and Stewardship Committee

Delta Levee Real-Time Monitoring

One Water and Stewardship Committee

Item 6b

July 8, 2024

Item 6b

Delta Levee Real-Time Monitoring

Subject

Delta Levee Real-Time Monitoring

Purpose

Monitor Delta levees more efficiently in real time

Next Steps

Delta Levee Real-Time Monitoring

Delta Levee Real-Time Monitoring

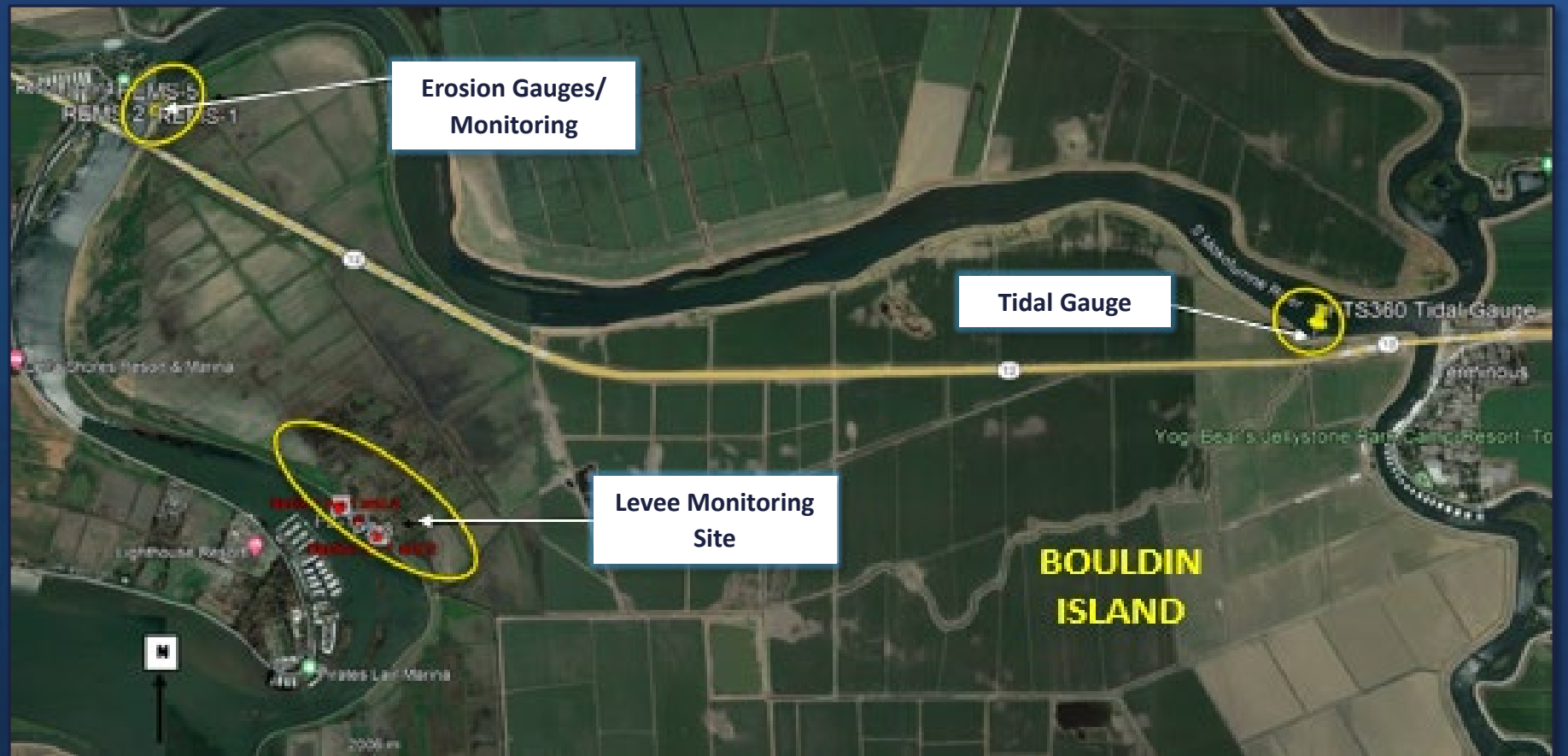
Presentation Summary

- Metropolitan's Delta Islands Overview
- Levee Monitoring Pilot Project
- Real-Time Communications
- Bouldin Island (west levee) Movement
- Levee Risk Reduction & Improvement Strategy
- Next Steps

Metropolitan's Delta Islands

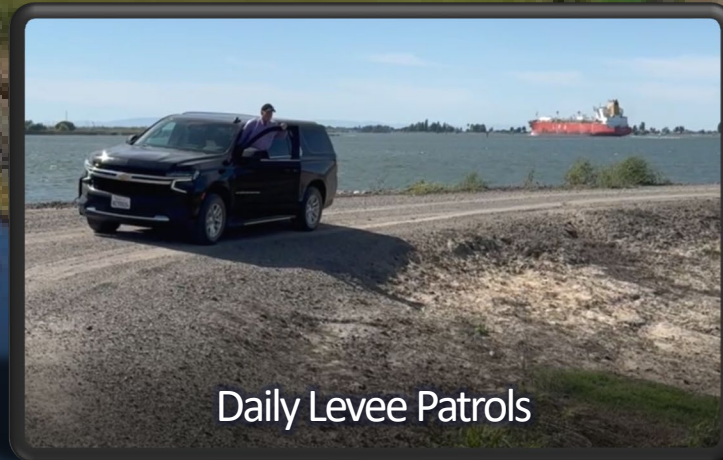


Levee Monitoring Pilot Project (Bouldin Island)



- Incorporate new technologies/innovative instrumentation
- Reduce monitoring costs & failure risks
- Provide for quicker emergency responses

Delta Levee Monitoring



- Low-tech Monitoring
 - Reclamation District daily levee patrols
 - California Department of Fish & Wildlife
 - Camera detection stations
 - Use of detection dogs

Levee Monitoring Pilot Project

Technologies Assessed

Traditional Methods

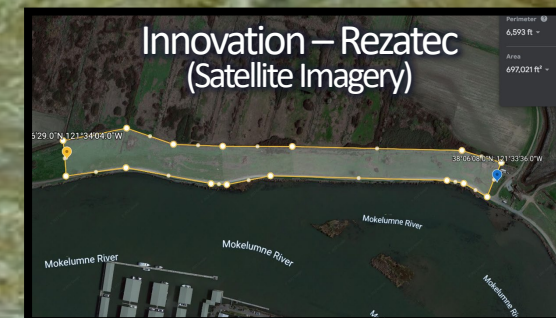
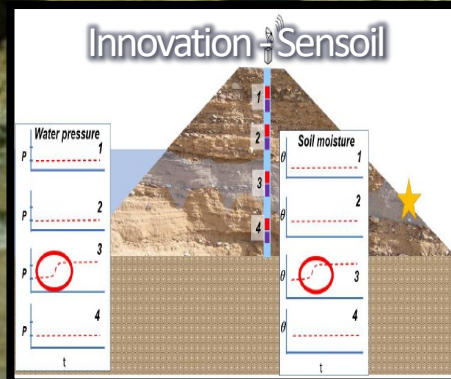
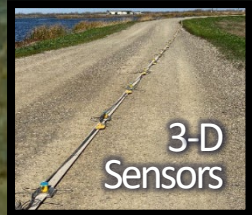
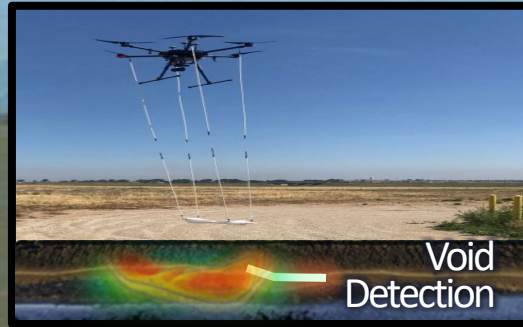
- Shape Array Inclinerometers
- Vibrating Wire Piezometers
- Horizontal Time-Domain
- Soil Moisture/Velocity Sensors
- Reflectometer Cable

Advanced Technologies

- LiDAR Drone Magnetometers
- Drone Thermal/Photo Sensors
- Terrestrial Scanning (mobile)

Innovative Methods

- Innovation (Sensoil/Rezatec)

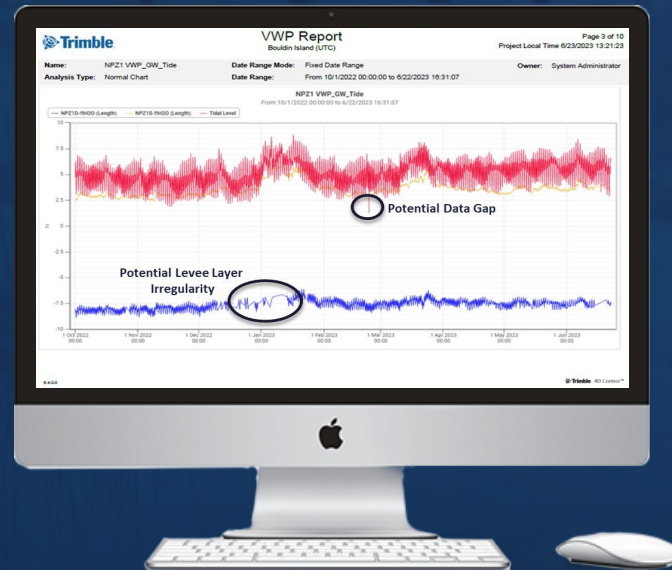


Real-Time Communications



Communications
(Site Telemetry)

Computer-Engineering Analytics



Communications
(Real Time)

Communications
(Real-Time Alerts)



Bouldin Island (West Levee) Pilot Project

Real-Time
Monitoring

Initial Levee Movement ...



... Response



Levee Risk Reduction & Improvement Strategy

Five-Part Approach

- 1) Regional Flood Fighting Materials
- 2) On-Island Rock Stockpiles
- 3) Levee Enhancements
- 4) Real-Time Levee Monitoring
- 5) New Modernization Levee Std.



Regional Flood Fighting Materials
(Satellite Imagery – Bouldin Island East)



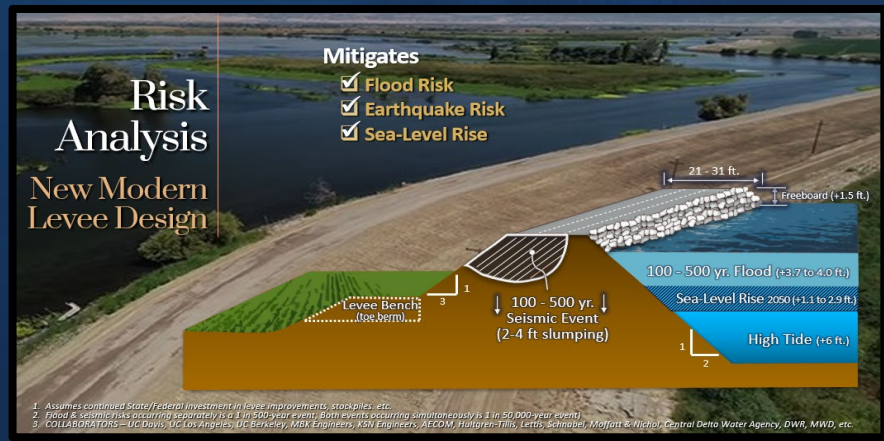
On-Island Rock Stockpiles



Levee Enhancement Project
(2023 – Bouldin Island North Levee)

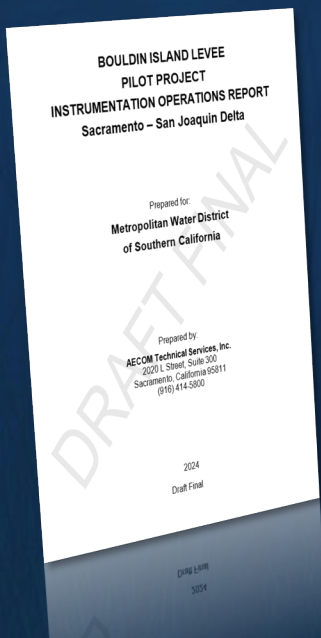


Real-Time Levee Monitoring



1. Assumes continued State/Federal investment in levee improvements, stockpiles, etc.
2. Flood & seismic risks occurring separately is a 1 in 500-year event. Both events occurring simultaneously is 1 in 50,000-year event.
3. COLLABORATORS—UC Davis, UC Los Angeles, UC Berkeley, M&E Engineers, K&N Engineers, AECOM, Hunkeler-Tillis, Letts, Schlueter, Moffatt & Nichol, Central Delta Water Agency, DWR, MWD, etc.

Levee Monitoring Pilot Project



Next Steps

- Data real -time/alert development (on -going)
- Draft Bouldin Island Pilot Report (Summer 2024) ¹
- Delta Advisory Coalition Feedback (Fall 2024)
- Outreach - Ongoing (Summer/Fall 2024)
- Final Bouldin Island Pilot Report (Winter 2024)

¹ *Bouldin Island Levee Pilot Project – Instrumentation Operations Report*

