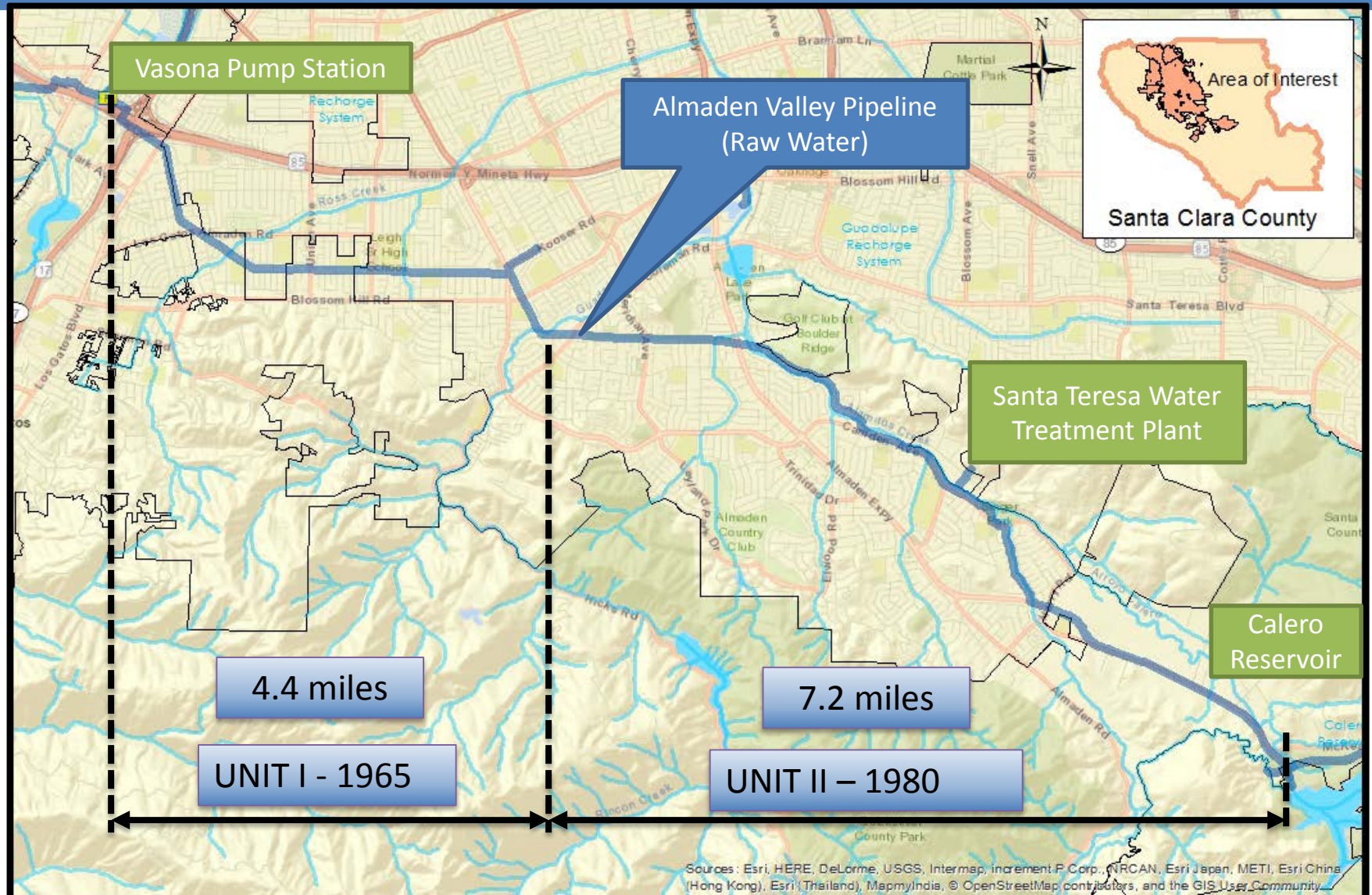


Almaden Valley Pipeline Inspection and Rehabilitation Project Update

Jim Crowley, Engineering Unit Manager
Barton Ching, Associate Civil Engineer
Katrina Jessop, Associate Civil Engineer

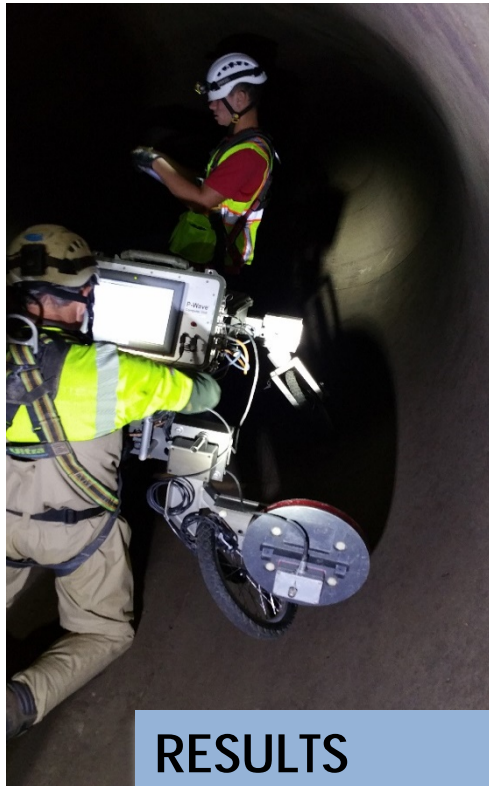


Almaden Valley Pipeline Location



Internal Pipeline Inspections

Electromagnetic Inspection by Pure Technologies



Visual Inspection by Utility Maintenance Engineering Unit



RESULTS

- Inspected: 11.6 Miles
- PCCP Pipes with Wire Breaks: 12%

Appurtenance Vault Rehabilitation

Typical of 93 vaults along the Almaden Valley Pipeline



Emergency Repairs

- **Repair Selection Criteria:**
 - Pipe segments with highest risk of imminent failure
 - Pipe segments with high risk and consequence of failure within 5 years
- **Total Pipe Segments Repaired:** Eighty One(81)
- **Repair Method:** Carbon Fiber Reinforced Polymer (CFRP) and Post-Tension (one segment)

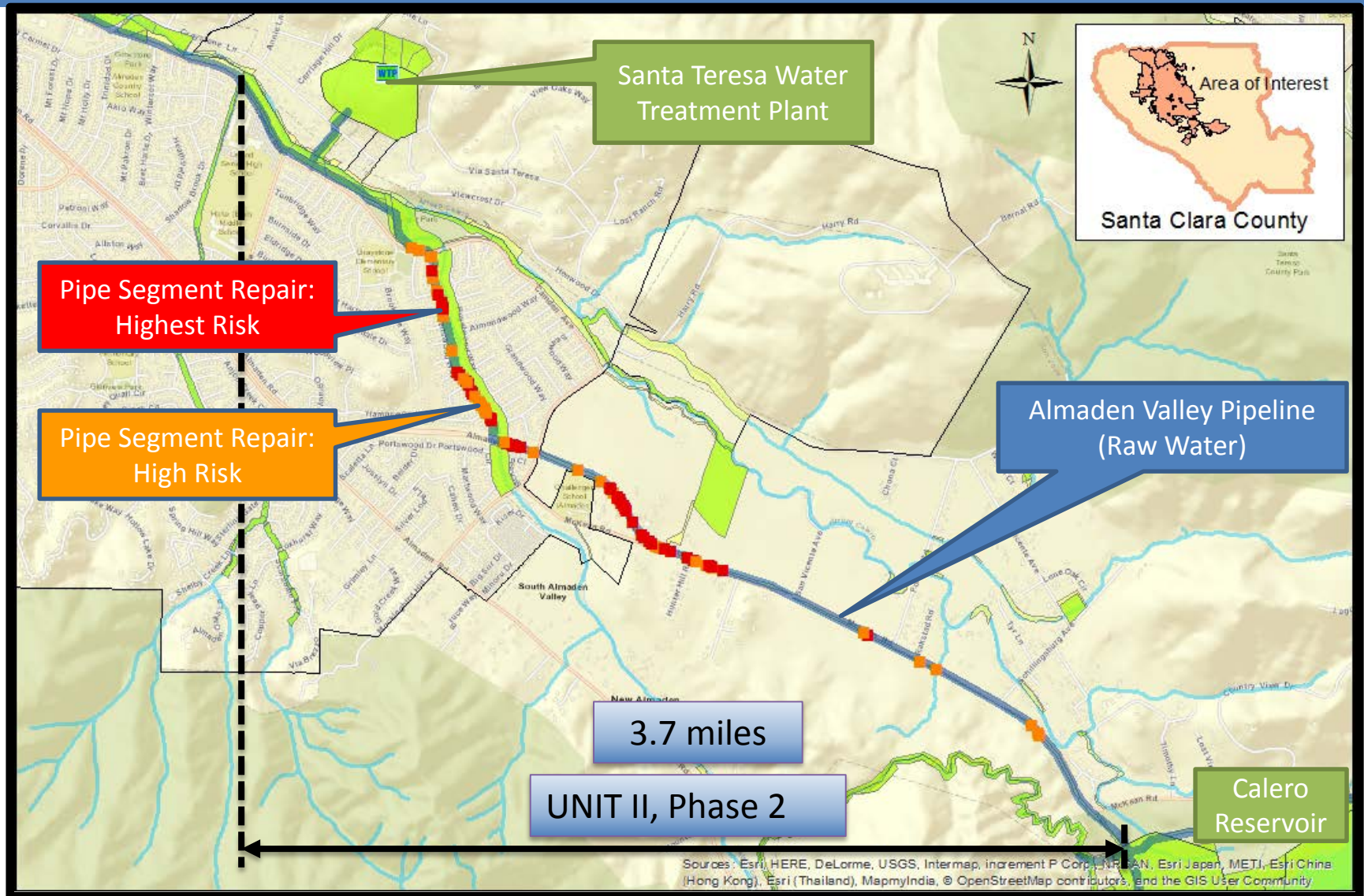
Post-Tension



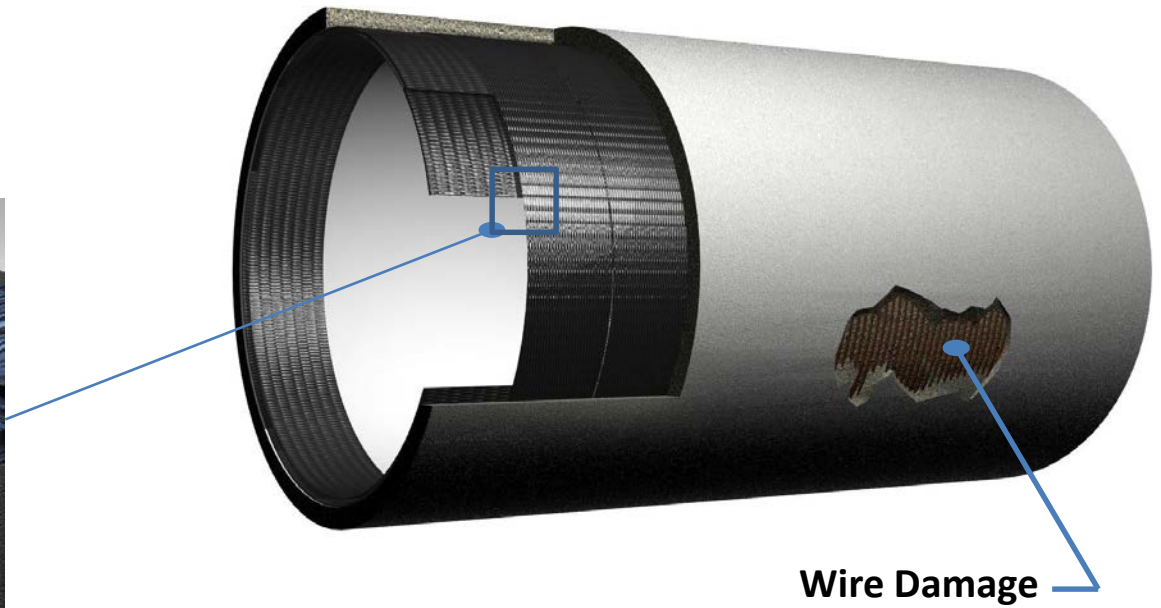
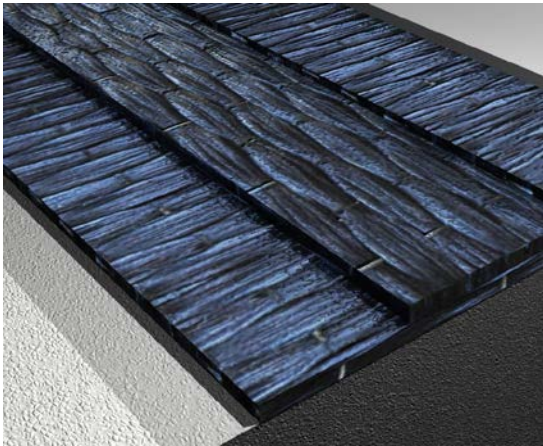
CFRP



Emergency Repair Location



Carbon Fiber Reinforced Polymer



Carbon Fiber Reinforced Polymer

Application: PCCP Pipeline Repair (Structural)

Benefits:

- Faster and more prompt repair
- No Excavation – Use Existing Point of Access

Considerations:

- Control of temperature and humidity
- Logistics

Resource: Structural Technologies
structuraltechnologies.com

Public Outreach – Emergency Work

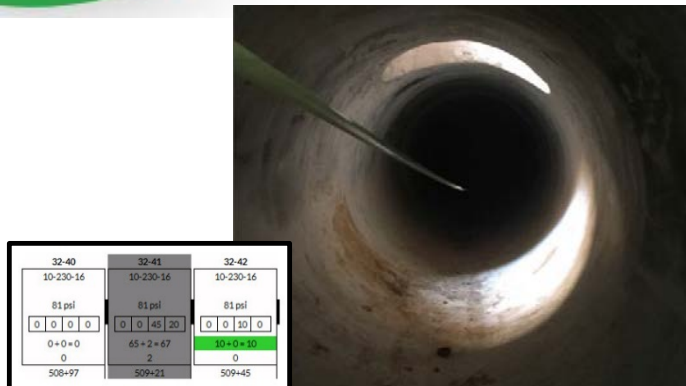
- Door-to-Door and Letter of Notification for Emergency Work
- On-line notifications and progress updates
- Water Quality Letter, collaborative effort by District and San Jose Water Company
- Coffee Chats



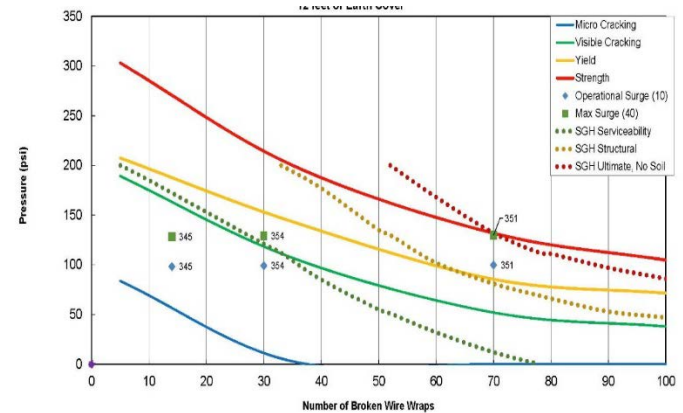
PCCP Real Time Monitoring



Pressure Monitoring



Acoustic Fiber Optic Monitoring



Finite Element Modeling