

2020 SHARING TECHNOLOGIES SEMINAR

Farm or Fowl?

How Traditional & Trenchless Methods Are Working Together to Strengthen California's Water Supply and the Environment

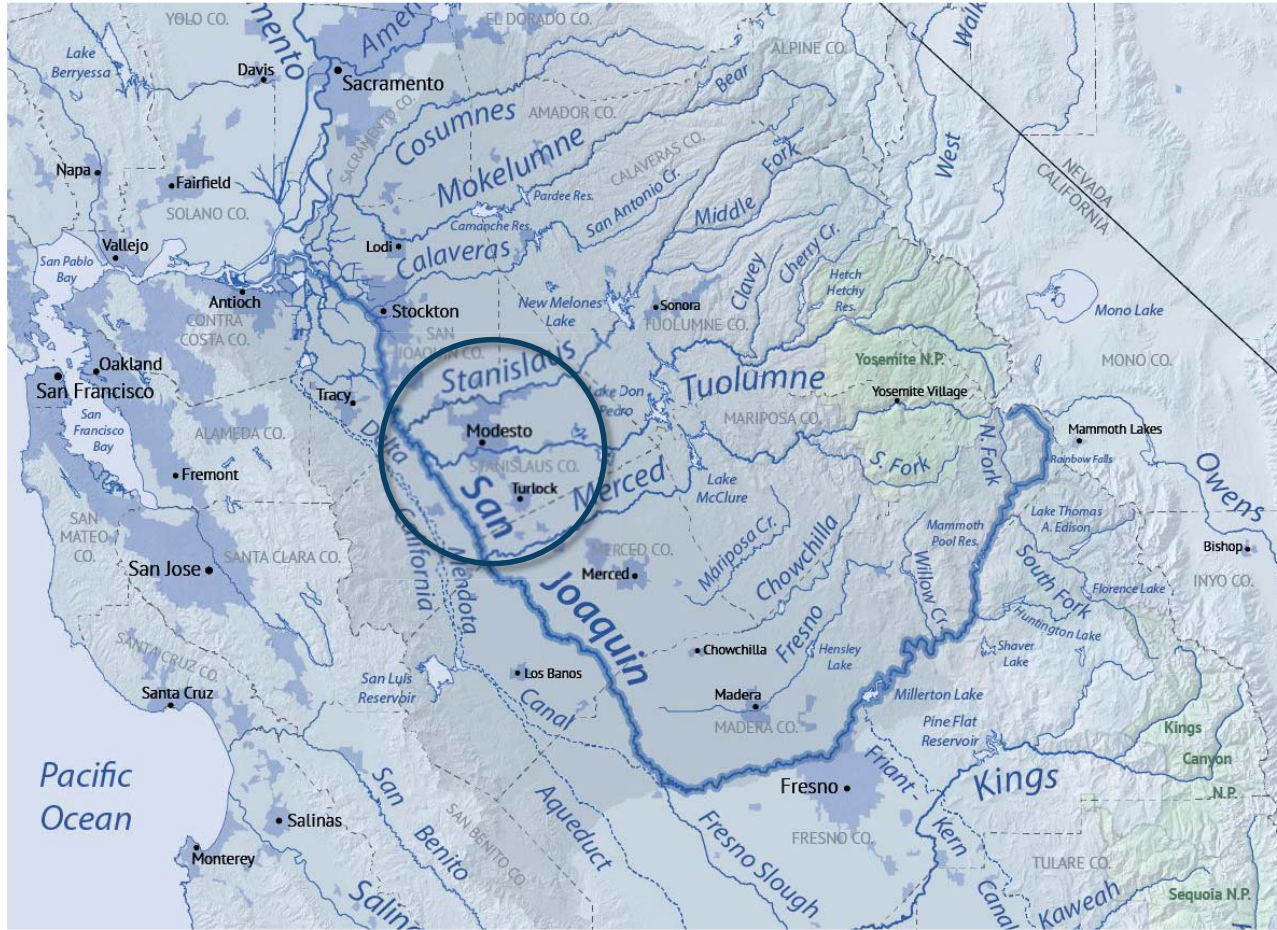


Michael Jaeger, PE, Tanner Pacific, Inc.
Thomas J. Hanson, Tanner Pacific, Inc.



PRESENTATION OVERVIEW

- **Project Location & Background**
- **Design Considerations**
- **Construction Challenges**
- **Lessons Learned**
- **Q & A**



PROJECT LOCATION

The North Valley Regional Recycled Water Program (NVRWRP) is located within California's San Joaquin Valley



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PROJECT BACKGROUND
 Recycled water will be conveyed to Del Puerto Water District via a pipeline from the Cities of Modesto and Turlock to the Delta-Mendota Canal

PROJECT BACKGROUND

Partnership

- City of Turlock
- City of Modesto
- City of Ceres
- Del Puerto Water District
- Stanislaus County



PROJECT BACKGROUND

Turlock Segment:

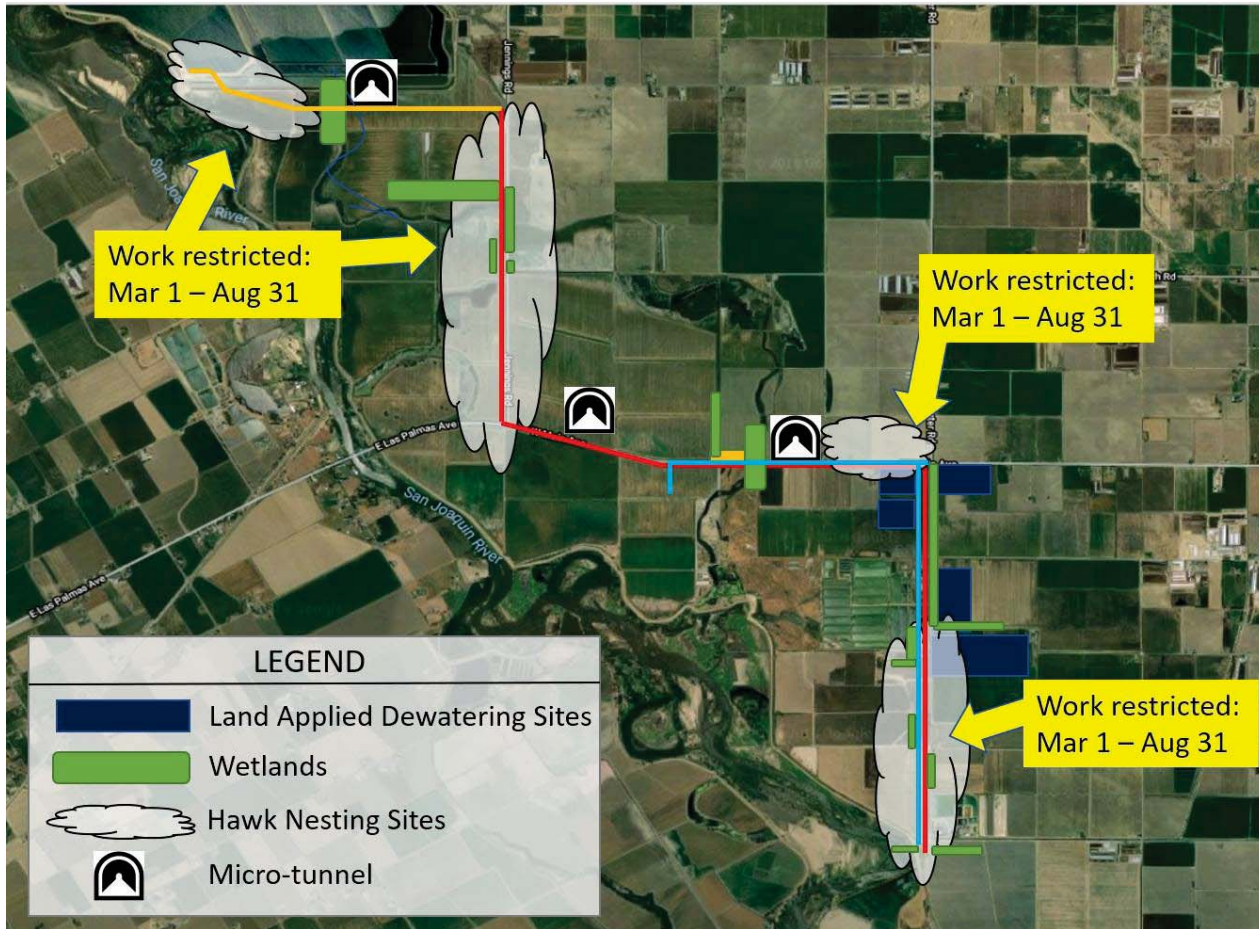
- 7 Miles of 42-inch Cement Mortar Lined and Coated (CMLC) Welded Steel Pipe (WSP)
- 1,000 WSP Joints
- Site-Mix CLSM Backfill
- 2 Microtunnel Drives



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PROJECT BACKGROUND



- Owner: City of Turlock
- Engineer: Carollo Engineers, Inc.
- CM: West Yost and Tanner Pacific, Inc.
- Contractor: Ranger Pipelines
- Original Bid: \$27.5 M
- CCO's: ~ \$690 K (~2.5%)
- Final Cost: ~ 28.2 M
- Total Time: ~Mar 31, 2020



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PROJECT BENEFITS

- Eliminate Wastewater Discharges to River
- Increase Irrigation Water Supply
- Boost Local Economy
- Fortify Wildlife Habitat



DESIGN CONSIDERATIONS

- **Biological Concerns**
 - Western Pond Turtle
 - Killdeer
 - Hawks
- **Environmental Concerns**
- **Soil Conditions**
- **Construction Area and Easement Acquisition**



CHALLENGES & SOLUTIONS

Swainson Hawk and Killdeer Nest Areas

- Monitored habitat
- Developed flexibility in baseline schedule
- Altered sequence of pipeline installation
- Relocated staging and parking area



CHALLENGES & SOLUTIONS

Existing Wetland

- Section of pipeline installed under wetland
- Utilized microtunneling to reduce impact
- No night work; lights
- Limited work site



CHALLENGES & SOLUTIONS

Subsurface Conditions

- Top soil and loose subgrade
- CLSM backfill
- Utilized trench shields at each joint location
- Create small cofferdam at launching shafts



CHALLENGES & SOLUTIONS

High Groundwater

- Identified dewatering discharge locations to avoid interference with farmers' operations.
- SWPPP Requirements, due diligence, and Best Management Practices



CONSTRUCTION CHALLENGES

Interior Joint Welding

- Welders limited to 500 LF of welding lead
- 35 temporary access points added
- Tight work area and heavy coordination



CHALLENGES & SOLUTIONS

Site Access/Conditions

- Wet conditions caused contractor to miss first milestone requiring schedule adjustment
- Developed alternative method of site ingress and egress



CHALLENGES & SOLUTIONS

Narrow Right of Way

- Survey stakes and markings
- Coordinated agreement with City to acquire temporary easements
- Lane closures



LESSONS LEARNED

Temp Easements In Agricultural Areas

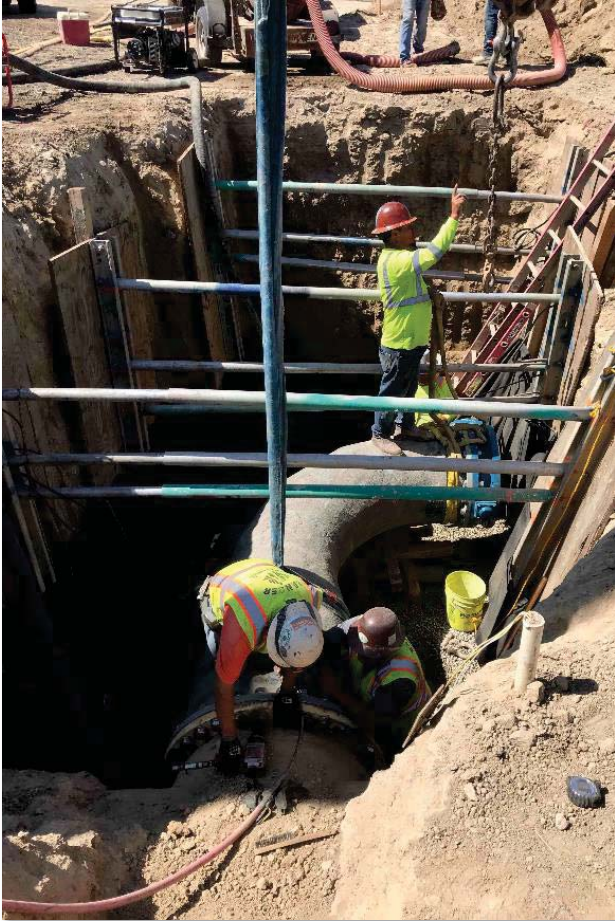
- Top Soil Stockpile
- Staging and laydown
- Traffic patterns
- Temporary access agreements



LESSONS LEARNED

Temporary Access Roads

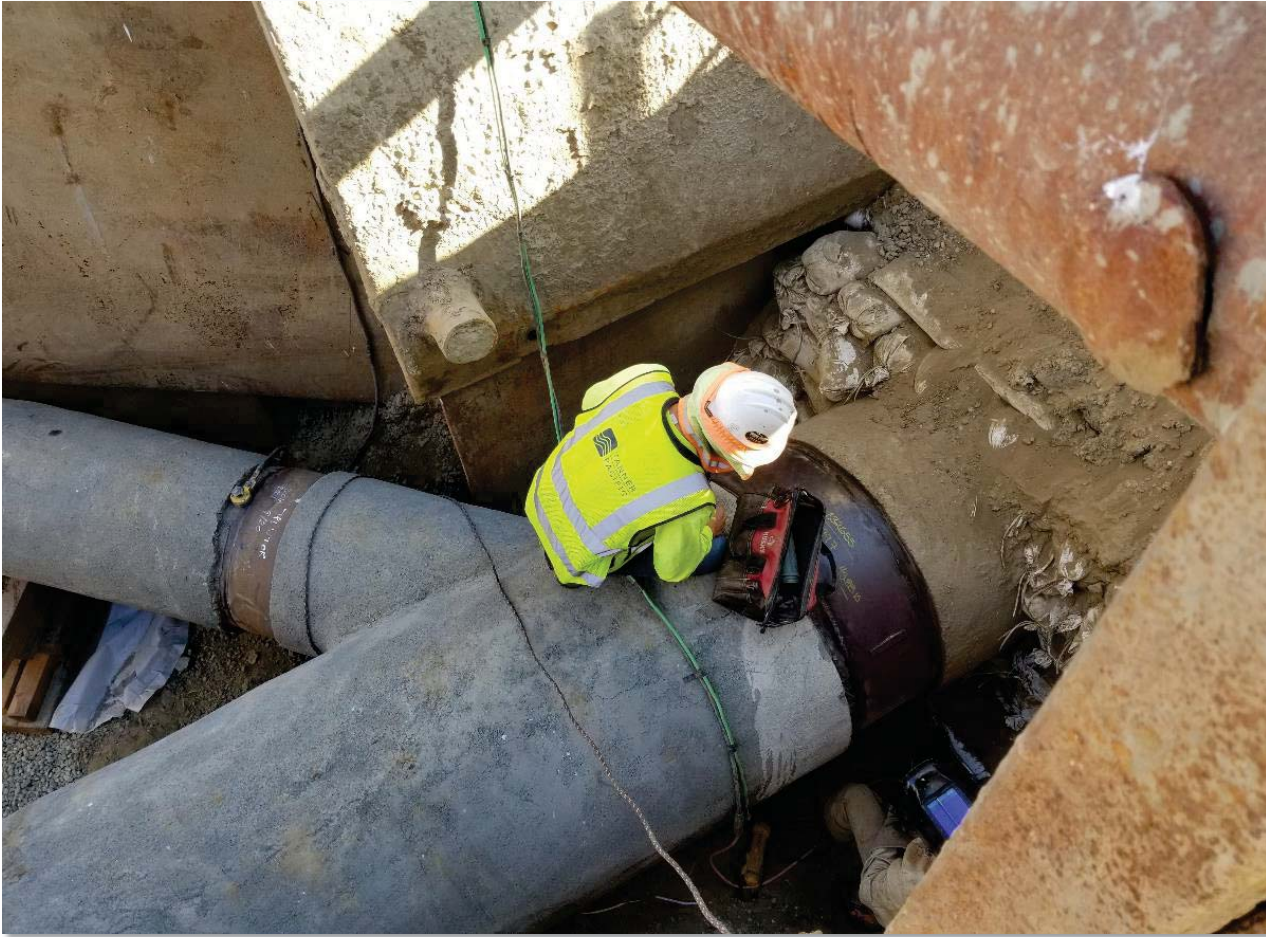
- All weather conditions
- Schedule impacts
- Cost savings



LESSONS LEARNED

Utilize Available Tools

- Benefits of mixing construction methods
- Microtunneling
- Open Cut
- Procore and field tablets



PROJECT CONCLUSION

- Running Smoothly
- Mainline Passed Hydrostatic Test on First Attempt!
- Estimated Substantial Completion March 2020



QUESTIONS?

Michael Jaeger, PE
mjaeger@tannerpacific.com

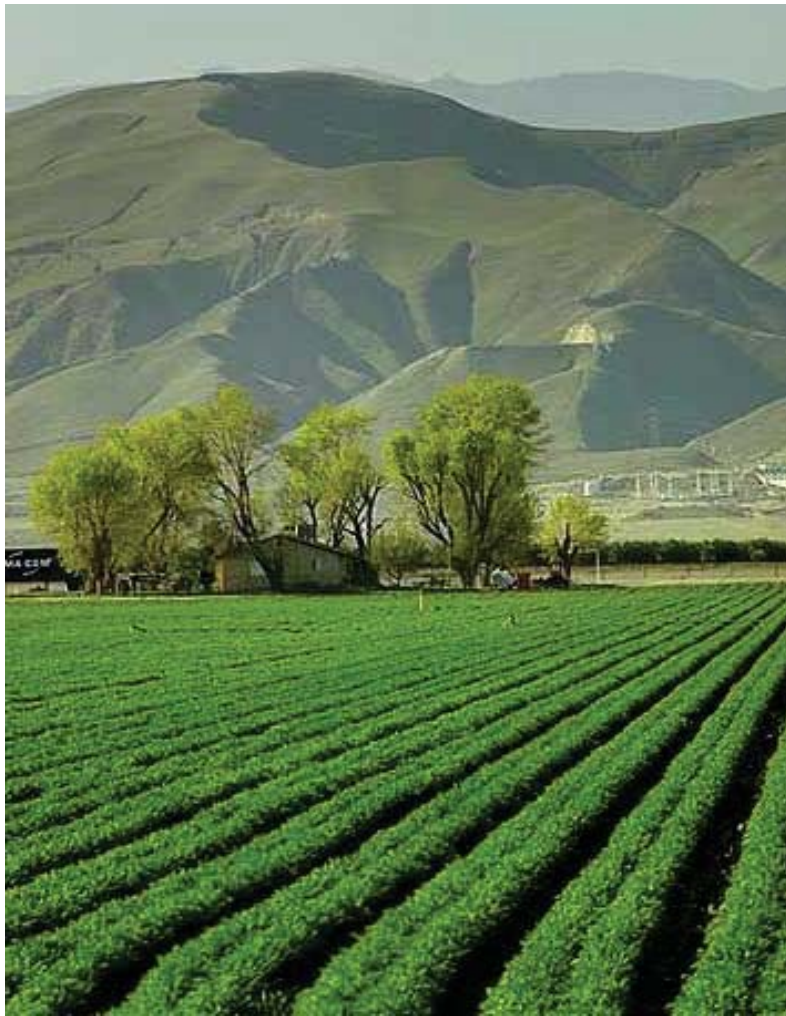
Thomas J. Hanson
thanson@tannerpacific.com

Eric Harman
eharman@westyost.com



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Thank You!

