



JOLLYVILLE TRANSMISSION MAIN: Environmental Commissioning Summary Report

Presented to the Austin Environmental Board
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Watershed Protection Department



Environmental Concerns

- Water Quantity and Water Quality
- Contamination and Water Losses from the Northern Edwards Aquifer and Associated Springs and Seeps
- Contamination and Water Losses from Bull Creek and its Tributaries
- Damage to Endangered Species Habitat and Taking (birds, karst invertebrates and salamanders)
- Construction-Phase Erosion and Sedimentation
- Loss of Trees
- Noise, Light and Dust
- Water Management: Construction, Testing, and Disinfection

WTP4 and JTM Route

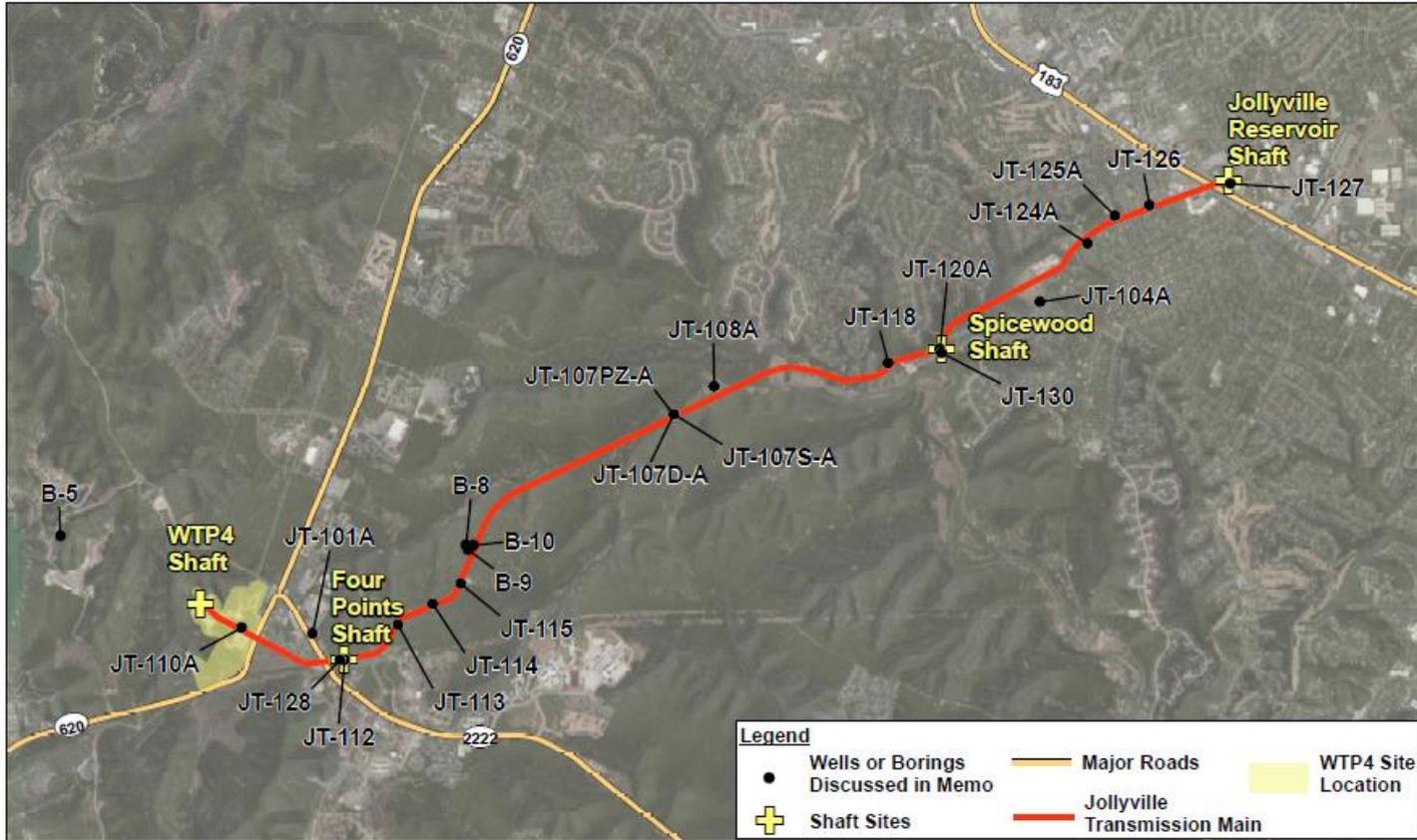
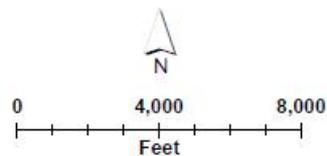
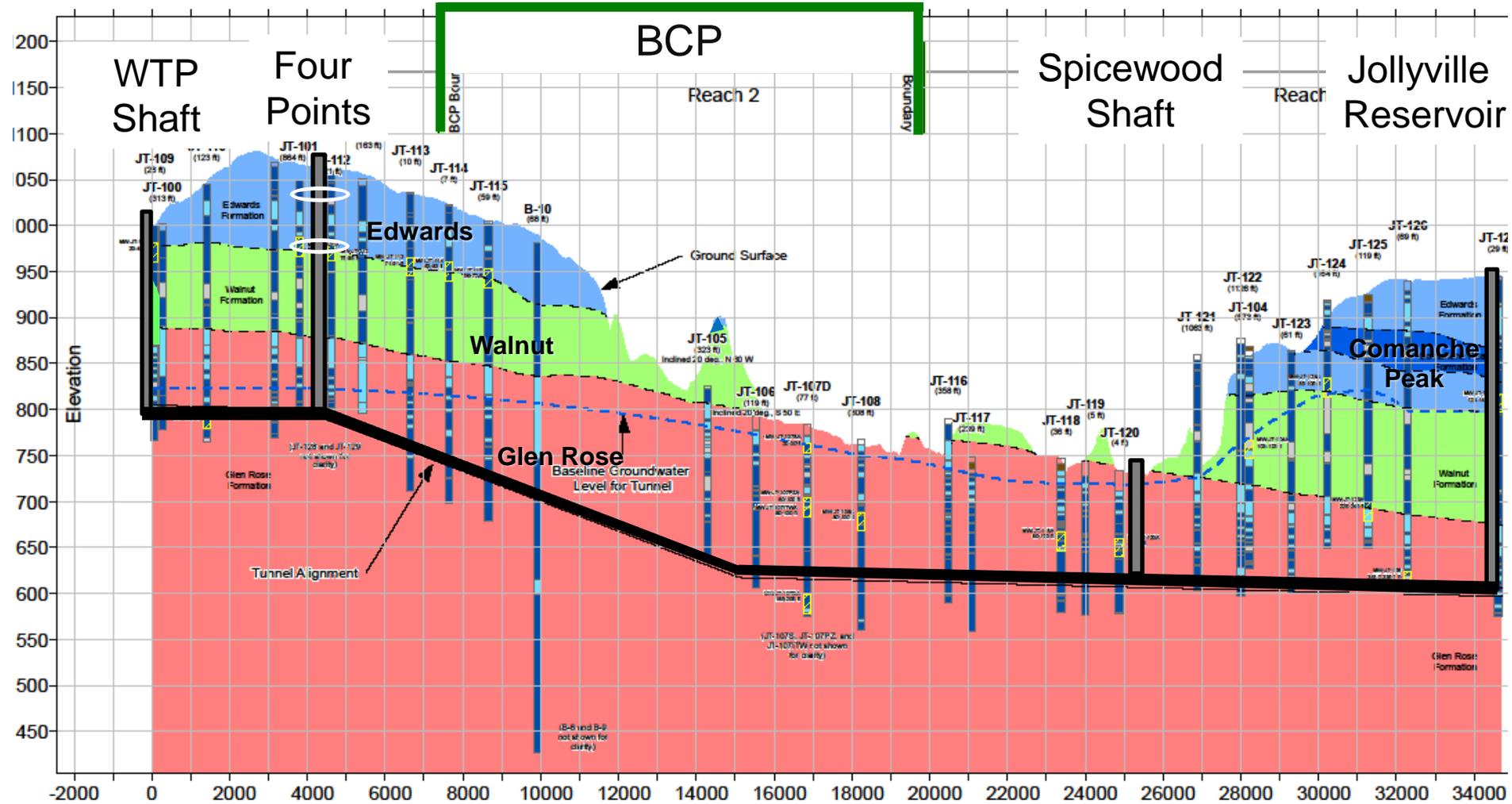


Figure 1
Map showing locations of monitoring wells along Jollyville Transmission Main route

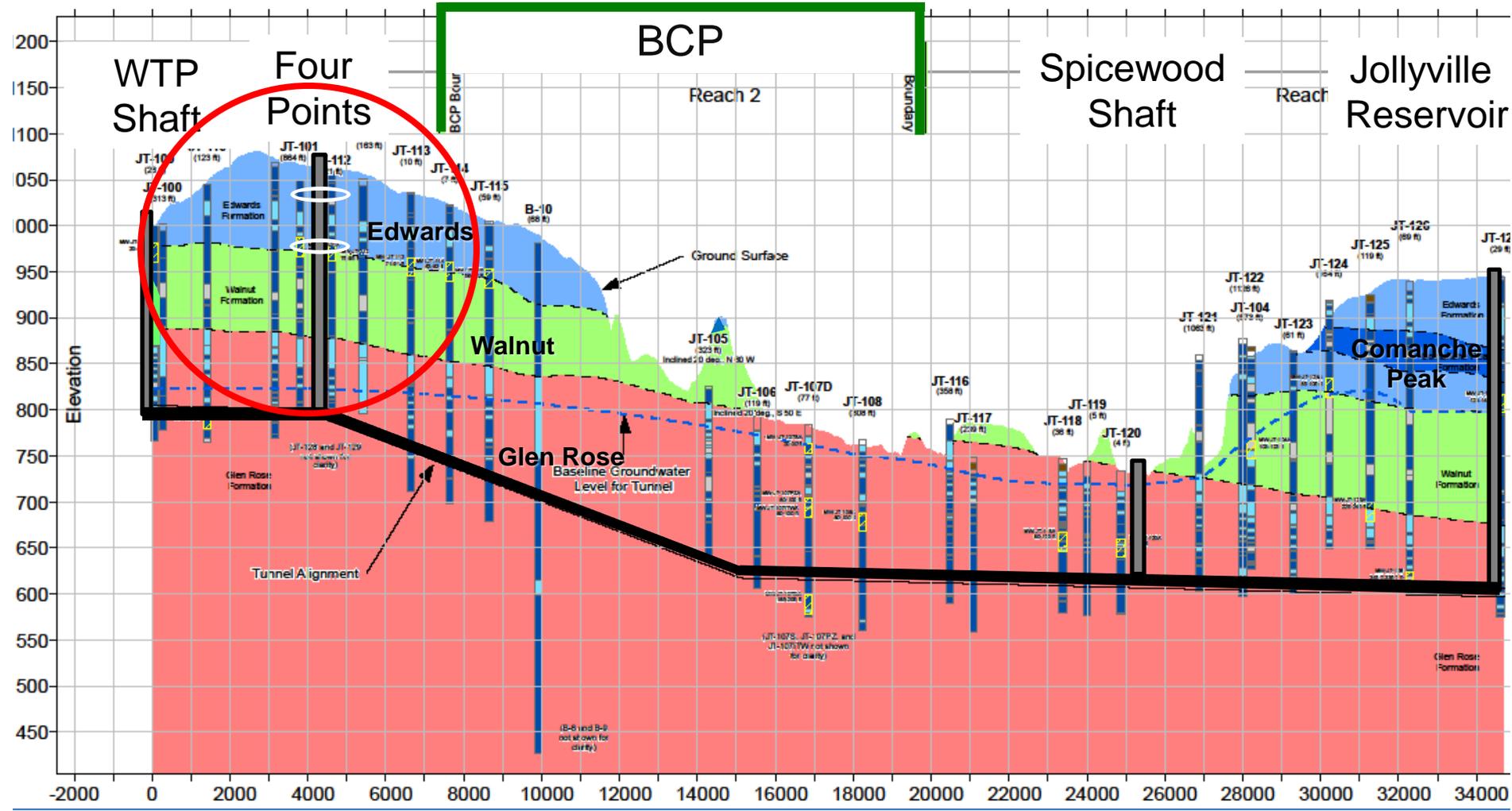


Jollyville Transmission Main Project



It's Done!!!

JTM: Four Points Shaft Area



Four Points Wells

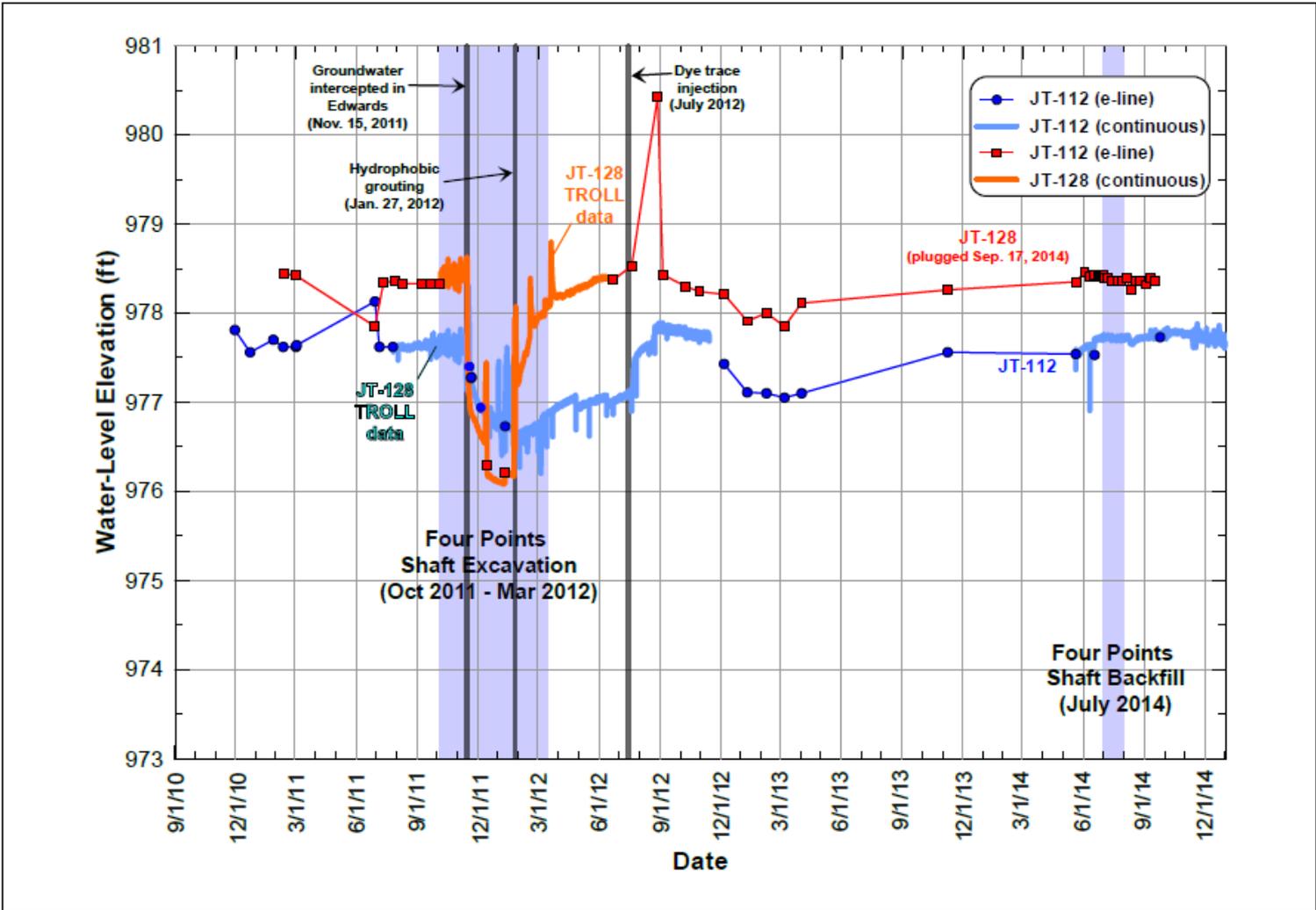


Figure 5
Groundwater elevations in JT-112 and JT-128
located adjacent to the Four Points Shaft



Four Points Wells (cont.)

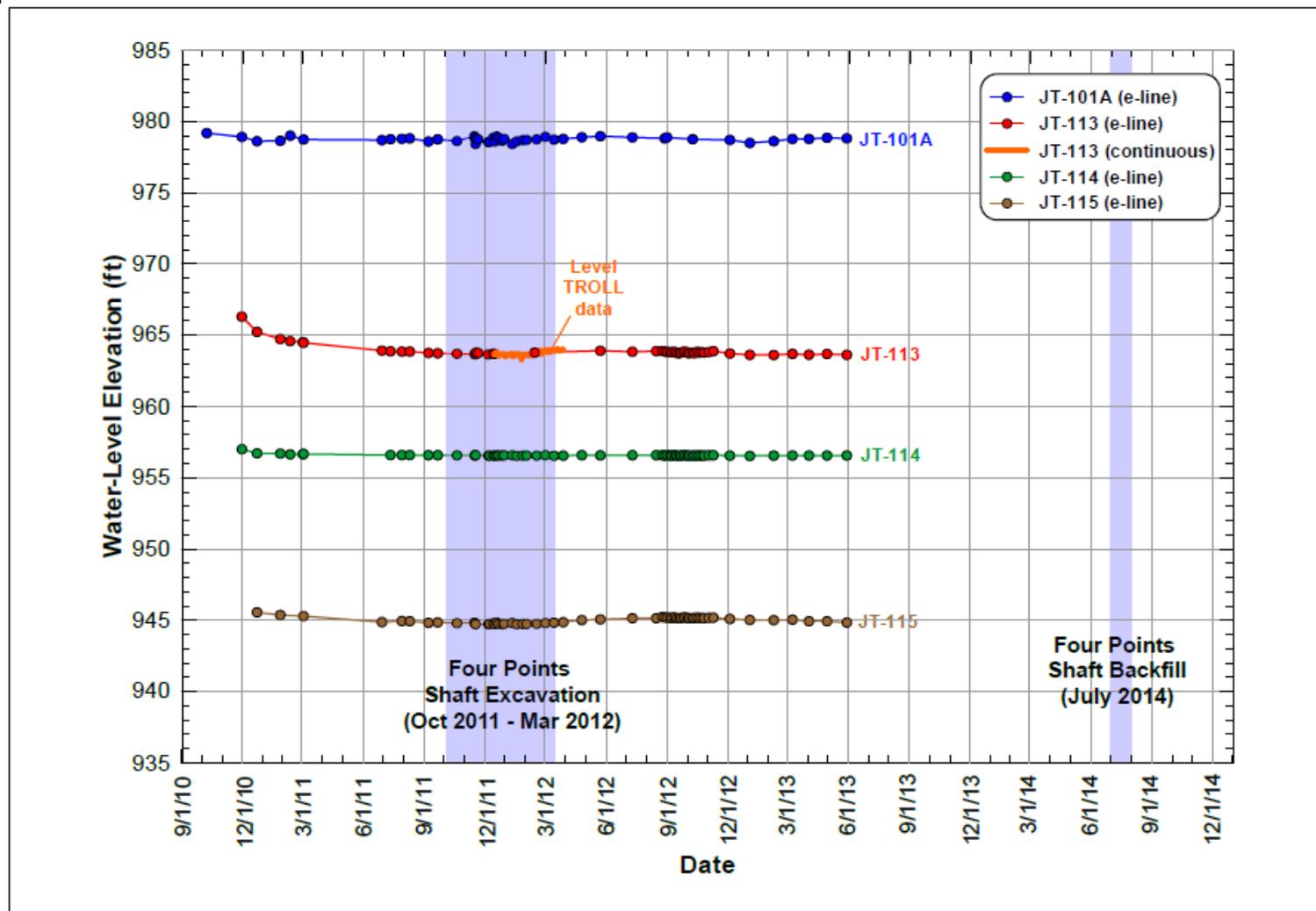
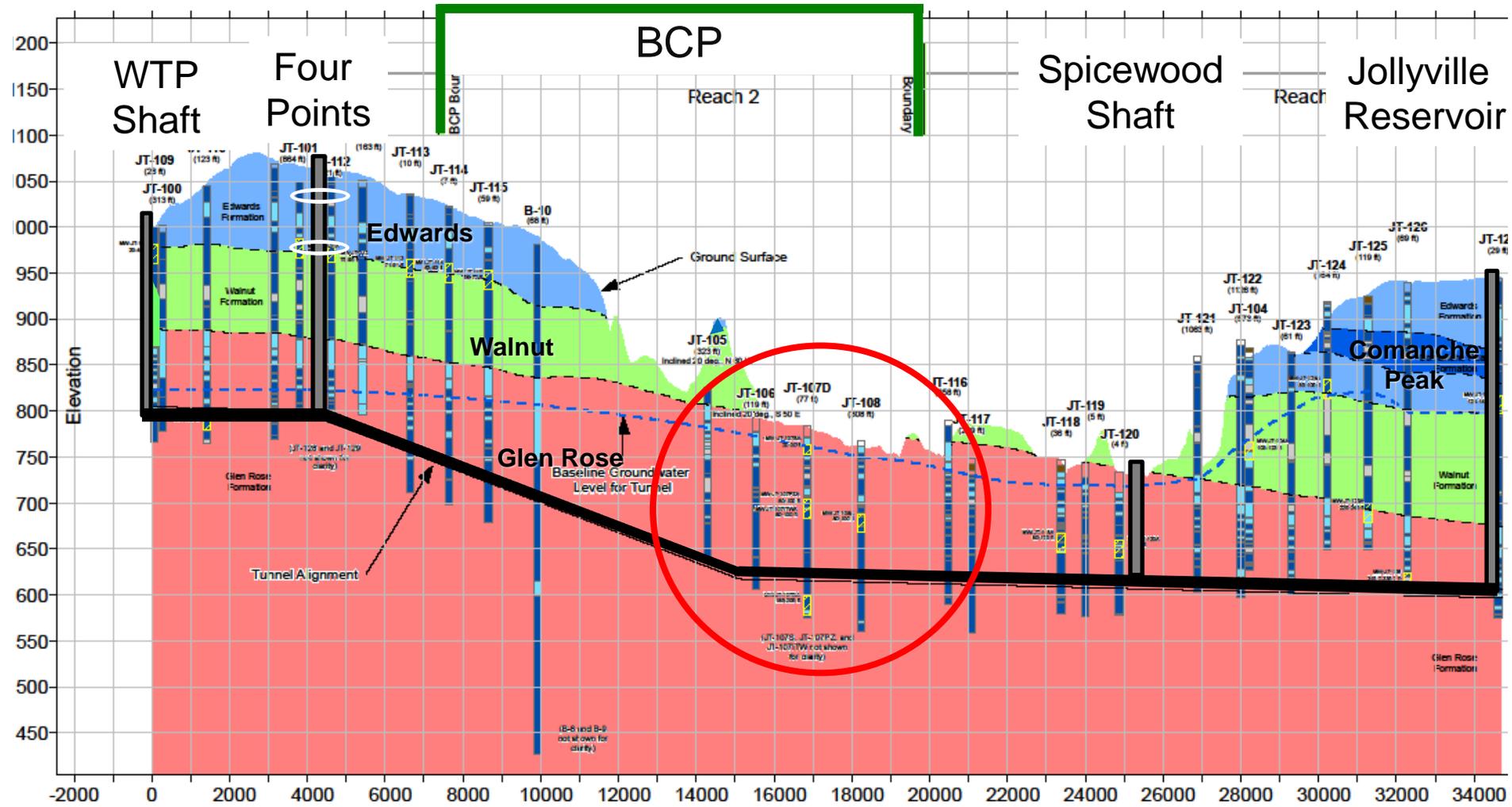


Figure 4
Groundwater elevations in JT-101A located in reach 1
and JT-113, JT-114, and JT-115 located in reach 2

JTM: Balcones Canyonlands Preserve Area



Glen Rose Inside BCP

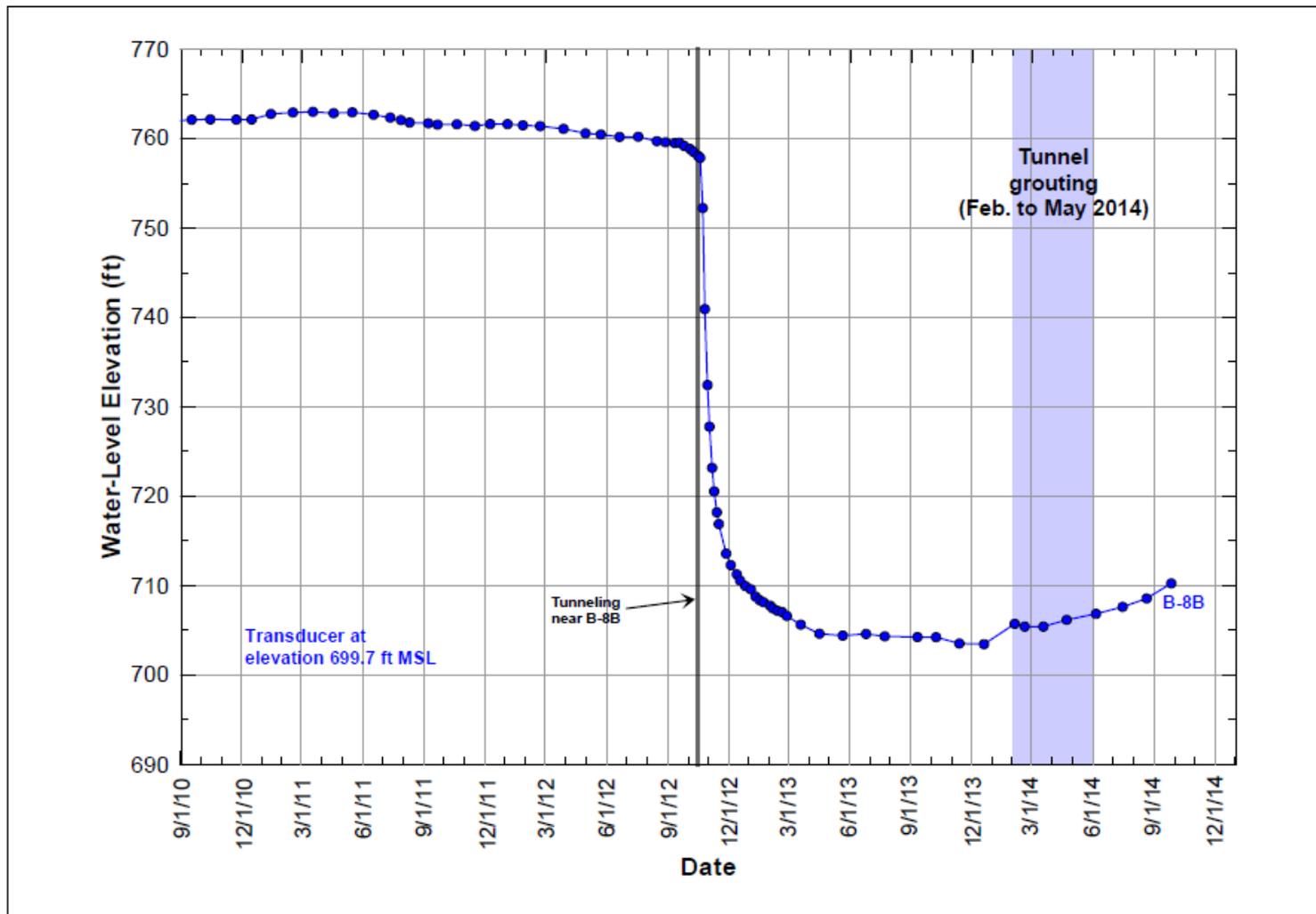


Figure 6
Groundwater elevations in B-8B
located in reach 2

BCP: JT107 Well Cluster

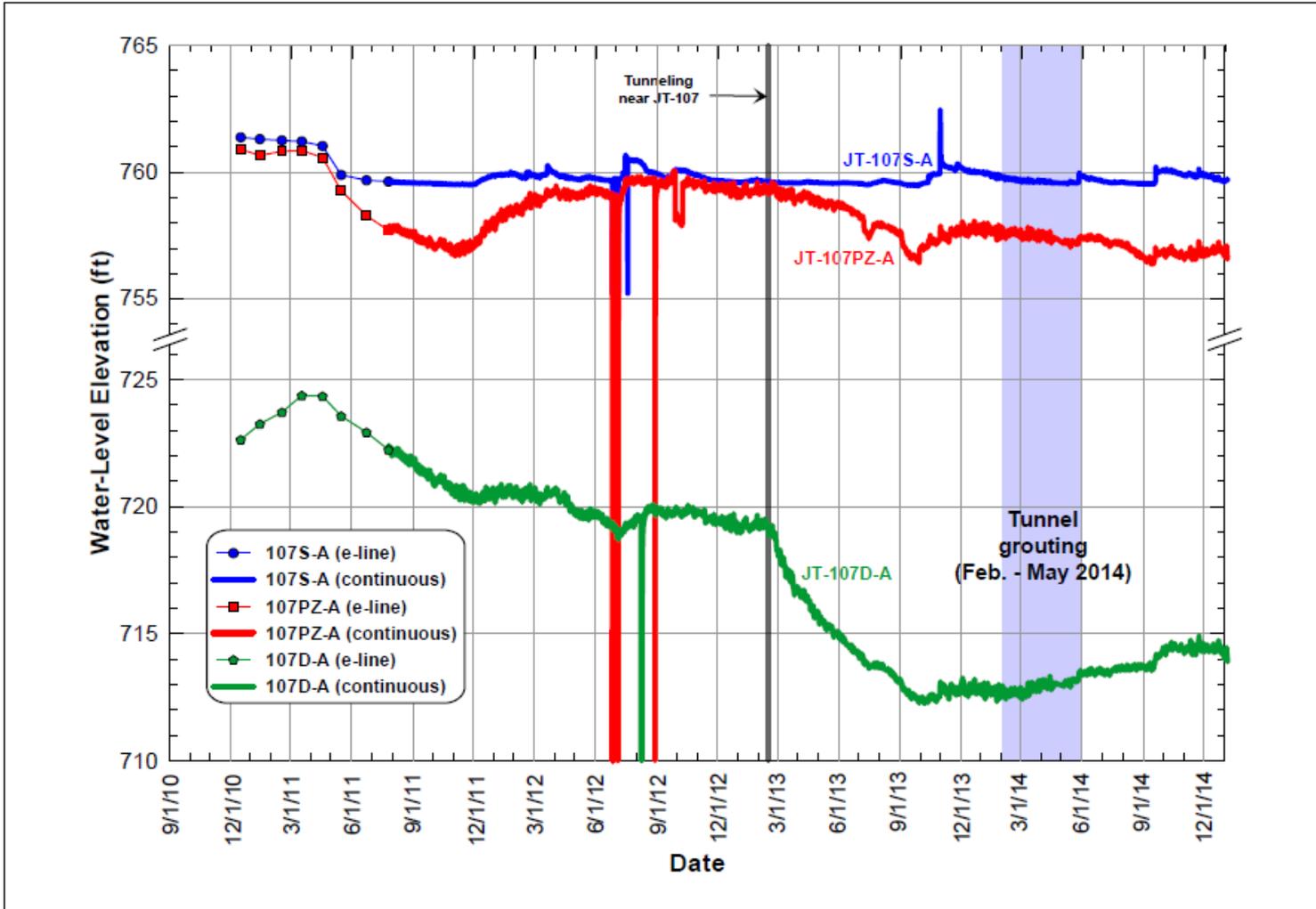
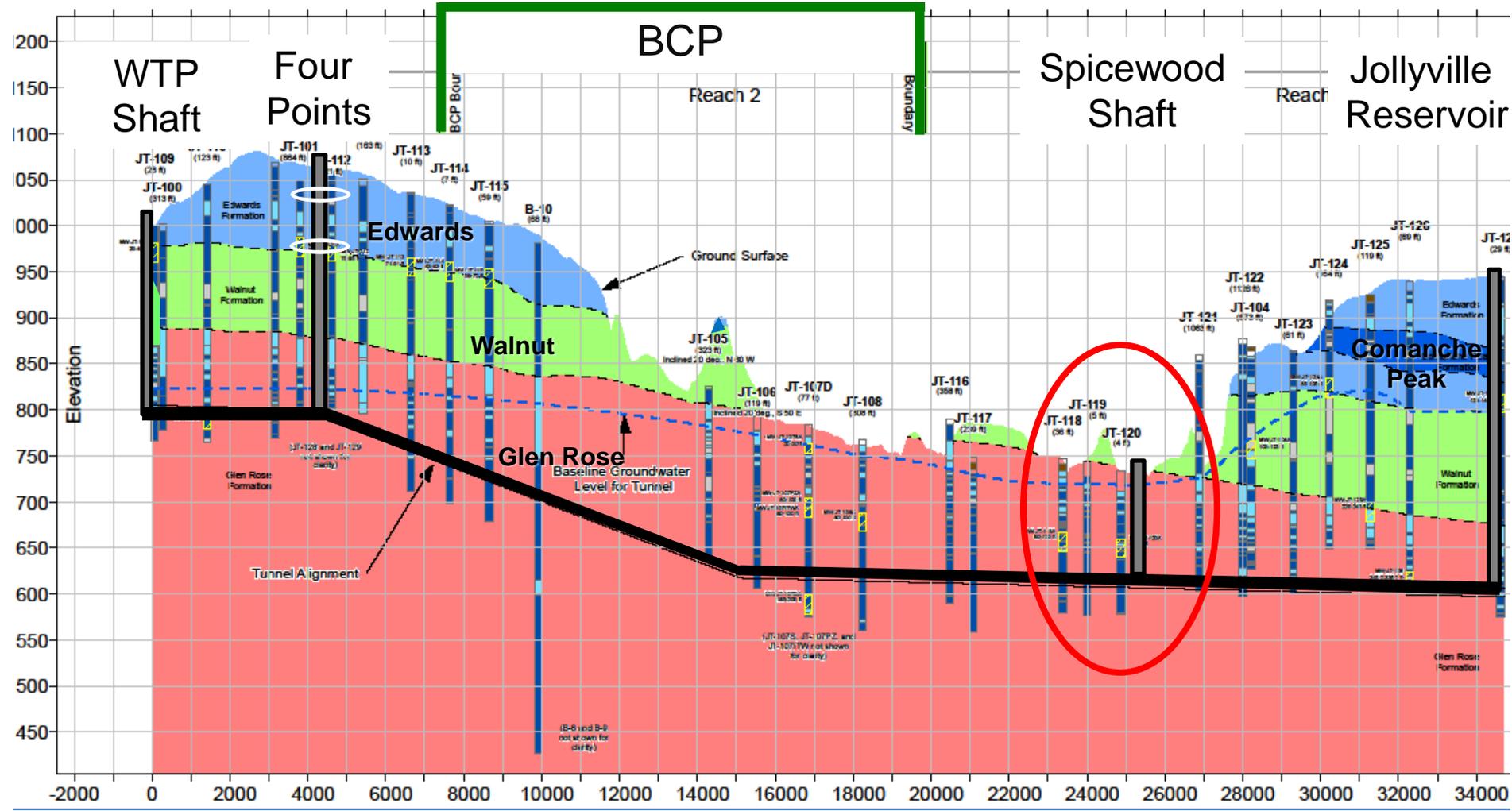


Figure 7
Groundwater elevations in JT-107
well cluster located in reach 2

JTM: Spicewood Shaft Area



Spicewood Shaft Wells

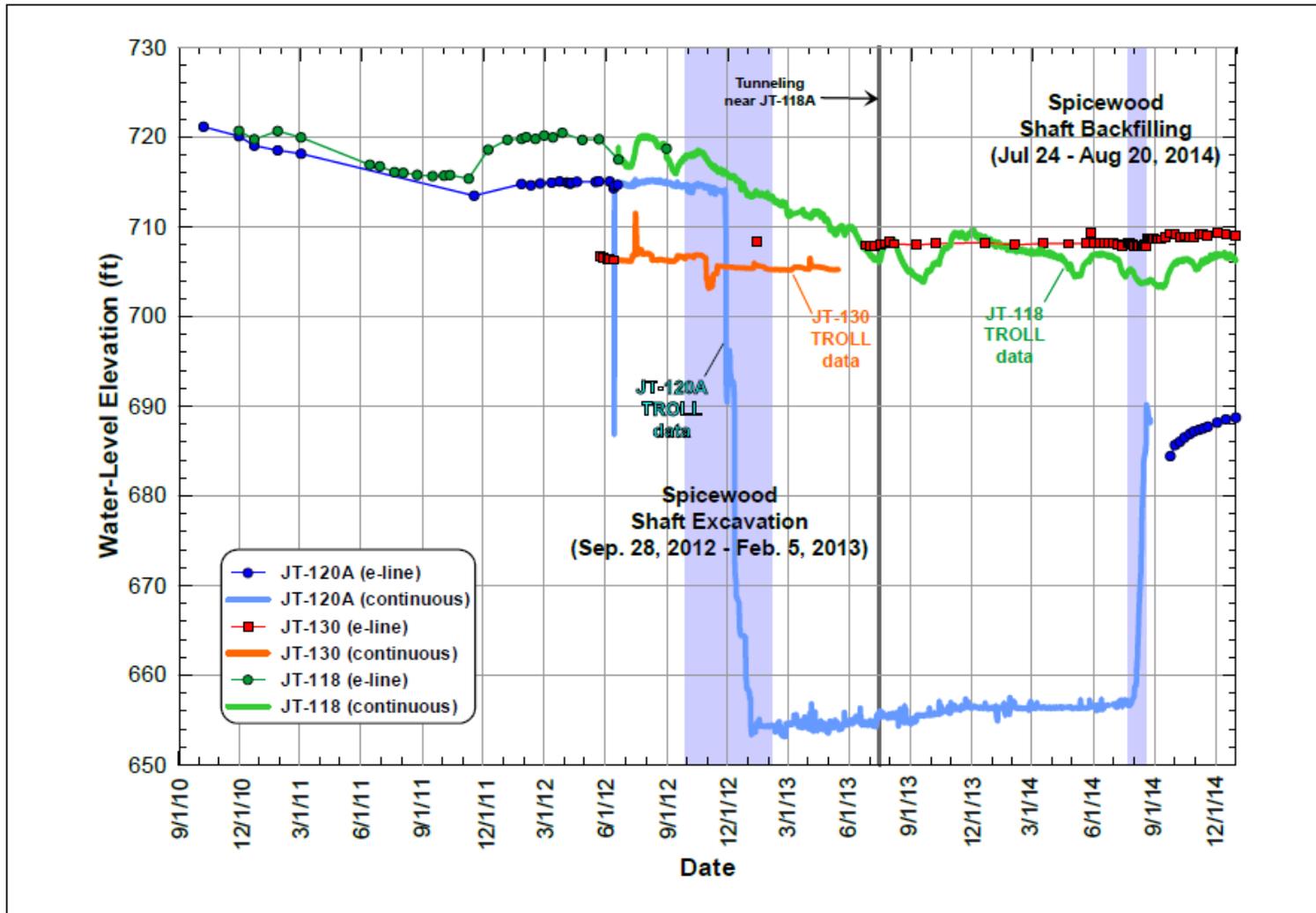
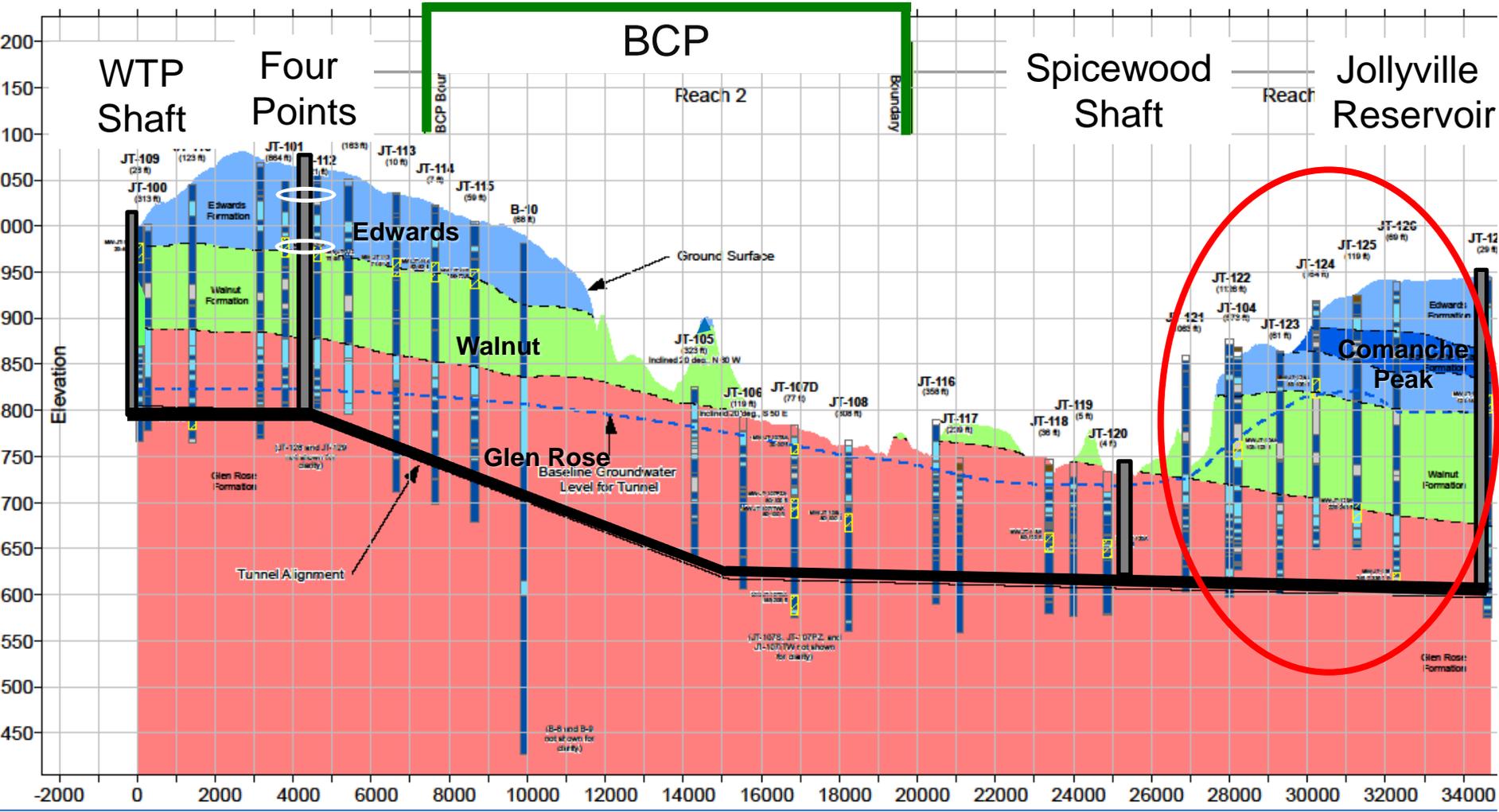


Figure 9
Groundwater elevations in JT-120A and JT-130 located adjacent to
Spicewood Shaft and JT-118A located west of Spicewood Shaft in reach 2

JTM: Jollyville Shaft Area



Eastern Wells

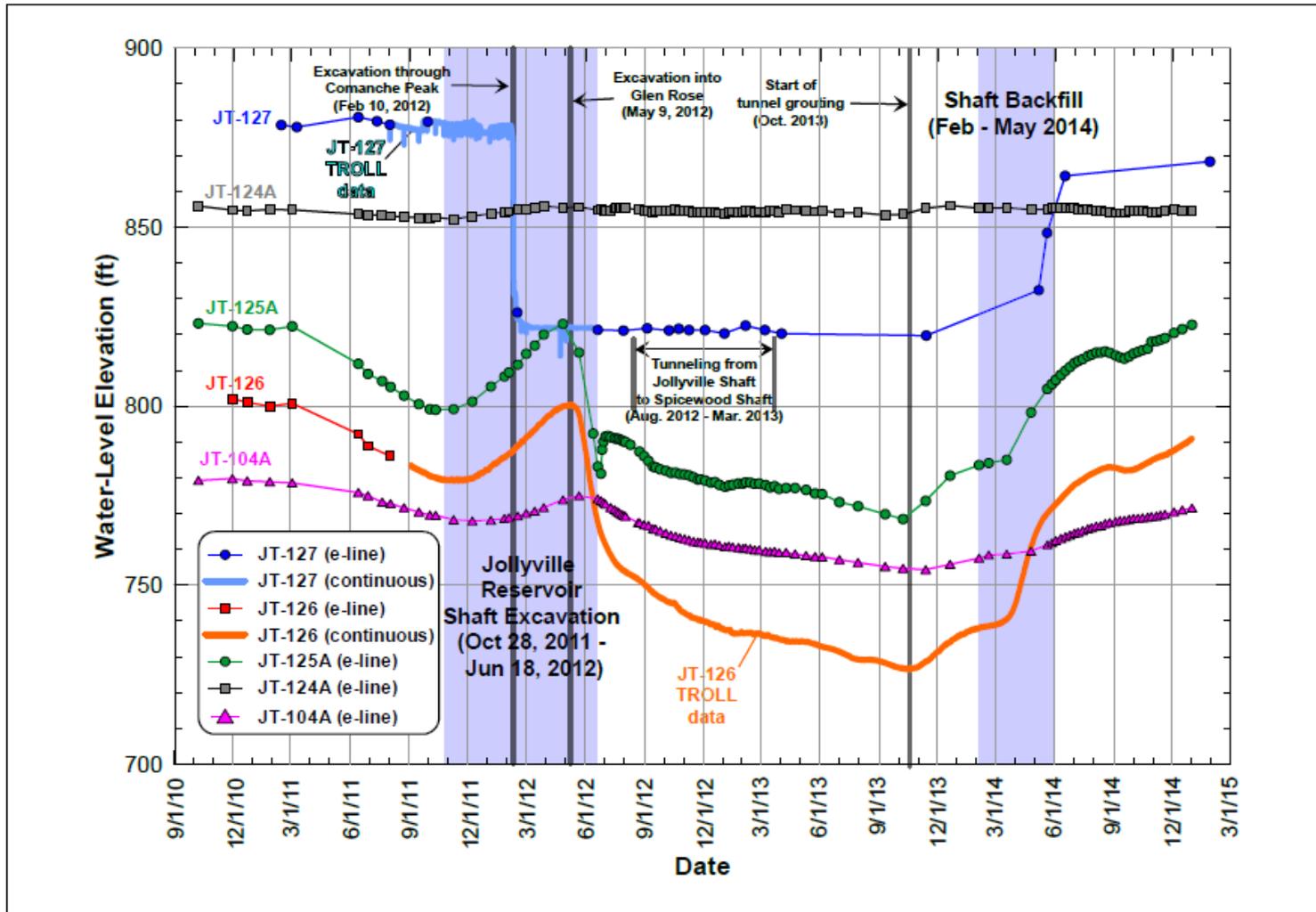


Figure 10
Groundwater elevations in JT-127 located adjacent to Jollyville Reservoir (JR) Shaft and JT-104A, JT-124A, JT-125A, and JT-126 located west of JR Shaft in reach 3

Environmental Monitoring - Water Quality



Pit Spring 9/26/14

- Main stem of Bull Creek and springs flowing at normal levels, dry summer, good fall rains
- Nondetects for indicators of mining, vehicular operation, and drilling (TPH, Cu, Cr, Zn)
- Nondetects for di-n-butyl grout compounds in JT-112, Gaas spring



EC Pre-Construction Activity

Design Workshop/Consensus Meetings

- Environmental Concerns: Water, species, general environment
- Design Constraints: Start and end points, tunneling needs
- Points of Agreement: Key areas include 4 Pts shaft location, JTM routes and depth, construction methods, monitoring and mitigation
- Contingency Planning: Fires, shaft/tunnel cave-in, emergency access in BCP
- Adaptive Management: Steps to address unanticipated conditions

Hydrogeologic/Biologic Investigations

- Geotech: Borings, wells, and packer tests
- Dye Tracing: Bull Cr plant site, Four Points shaft, Edwards K-ring
- Age Dating: Verified conceptual model
- Groundwater Modeling: Potential contaminant migration from Four Pts, water migration from finished pipe in Pit Springs area, drawdown related to golf course pumping
- Bull Creek and Springs: Flow measurements, water quality
- Biological Surveys: Discovery of JPS in Tributary 4 adjacent to Spicewood Shaft, on-going surveys during excavation

Plant Design and Construction

- CEF Protection: 360° buffers around rimrocks, springs, karst features
- Void Inspections: Examination and mitigation
- Regular Site Inspections: E/S Controls, trees, materials storage
- Water Disposal: Construction, testing, disinfection of pipes and facilities
- Construction and Start Up Meetings: Attend to track progress and raise EC considerations

Shaft Design and Construction

- Four Points Shaft Location: Moved as far away as possible from springs while accounting for construction logistics
- Shaft Designs: Preserved hydrogeologic connectivity in Edwards Aquifer around shafts (permeable rings)
- Shaft Water Inflow Limits: Limited water losses from hydrogeologic system
- Shaft Backfill: Impermeable layers to preserve horizontal water movement and prevent vertical water movement
- Shaft Access: Frequent observation and inspection

Tunnel Design and Construction

- Tunnel Depth: Deepened to avoid permeable geologic strata and protect Pit Springs
- Inflow Limits: Lower tunnel inflows below sensitive areas
- Tunnel Inspections: Voids (contractor and COA)
- Steel Pipe Below Pit Spring: Reducing risk of impact to spring from leaking treated water
- Water Treatment: Shaft and tunnel water during construction
- Water Management: Construction, testing, disinfection of pipes and facilities, reuse on site
- Tunnel Mapping: Contractor and COA (cost savings)

Adaptive Management

- Four Points Shaft Excavation: Staff (COA and INTERA) in hole 24 hrs/day during excavation through Edwards
- Contact Grouting: Restore water levels at base of Edwards at Four Pts shaft
- Spicewood Shaft Adaptive Management: Modify design to prevent inflow of shallow groundwater

- Post-construction monitoring extended until June
- Plug and abandon selected wells, leaving some open for long-term monitoring for other COA programs
- Environmental Commissioning final report



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