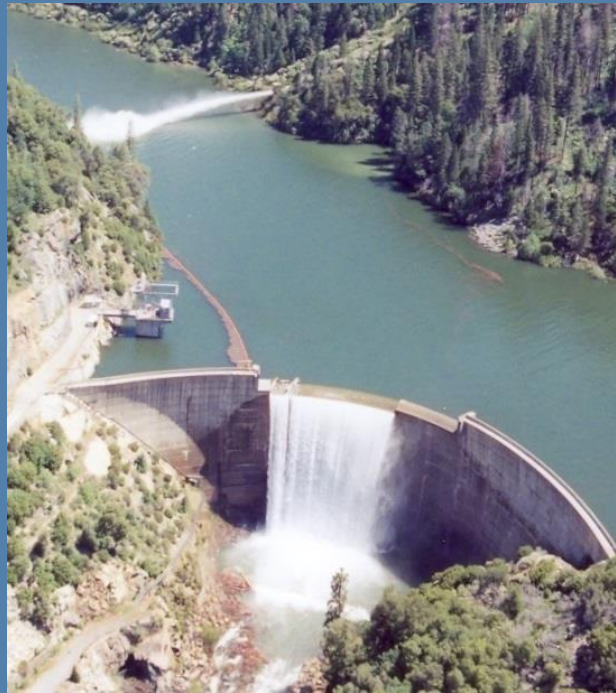


# Hydro Project Update



January 4, 2017  
Facilities Committee Meeting

## Discussion Topics

- North Fork Tunnel Maintenance
- McKays Point Drain Reaming
- Collierville Powerhouse Roof Sealing

# North Fork Tunnel Maintenance





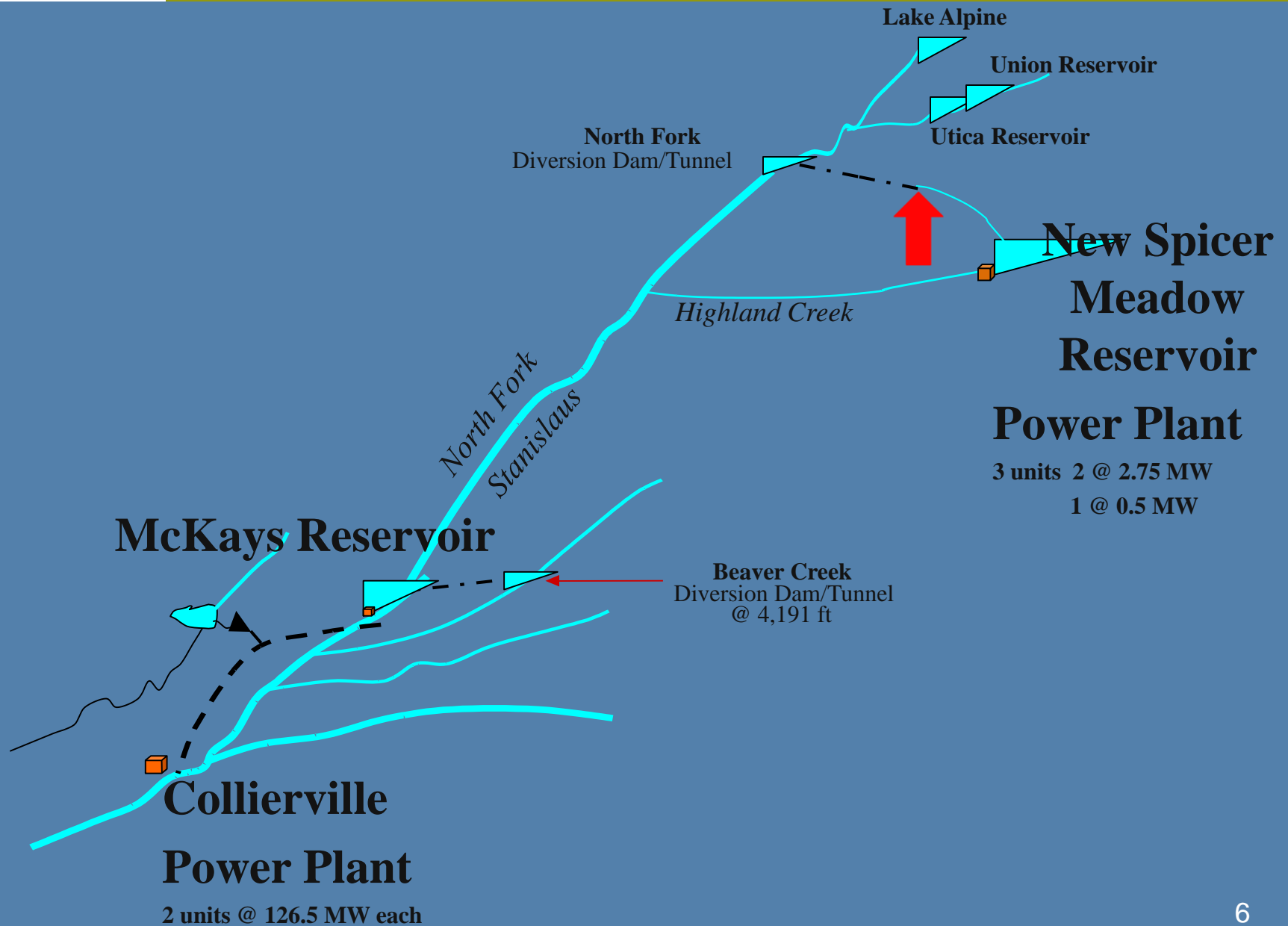
## North Fork Tunnel Maintenance





# North Fork Tunnel Maintenance





## North Fork Tunnel Maintenance

- Tunnel required maintenance: age, erosion, fall-out
- Project competitively bid
- Project made scalable to optimize budget/schedule
- Three at job-walk / two submitted bids
  - Drill Tech was the responsive low-bid at \$248,115

## North Fork Tunnel Maintenance

- Single entry, small/long tunnel in conjunction with relatively small quantities called for ingenuity
  - Mobile plant within versus fixed at the portal
    - Reduced fixed/mobilization costs and time within tunnel
    - Much smaller air compressor
  - Custom drill attachment built for the NFT project



## North Fork Tunnel Maintenance

- Installed 45 rock bolts, 45 yards of shotcrete
- \$232,000 final cost
  - High priority regions 100% addressed
- Work performed October 3<sup>rd</sup> through November 23<sup>rd</sup>

# Equipment



# Equipment





# Equipment



## Drilling Rock Bolts



## Shotcrete Mixer





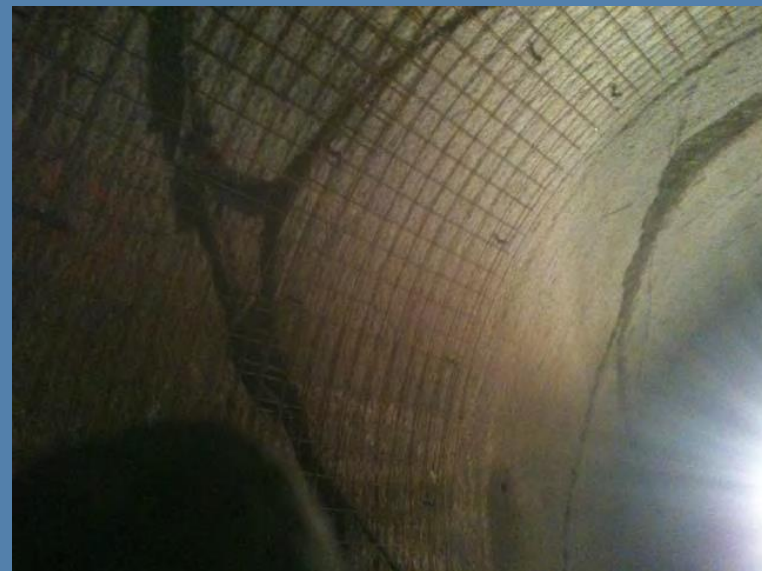
# North Fork Tunnel Maintenance



## Rock Bolt Pull-Out Testing



## Wire Reinforcing Comparison





## Shooting Gunitite



## North Fork Tunnel Maintenance (Before and after photos)



## North Fork Tunnel Maintenance (before and after photos)





## North Fork Tunnel Maintenance (before and after photos)



## North Fork Tunnel Maintenance

- 1 Year warranty inspection next August
- Return to 1 in 5-year tunnel inspections for 2022

# McKays Point Dam Drain Reaming





# McKays Point Dam Drain Reaming



## McKays Point Dam Drain Reaming

- Project competitively bid
- Five qualified engineering firms
- Two at job-walk / two submitted bids
- \$18K/34K holesaw reaming/coring
- Mobilized November 24<sup>th</sup>, demobilized November 27<sup>th</sup>
- Three drains reamed (162 total feet) at \$18K

# McKays Point Dam Drain Reaming





## McKays Point Dam Drain Reaming



## McKays Point Dam Drain Reaming





# Collierville Powerhouse Roof Sealing





## Collierville Powerhouse Roof Sealing

- Water seepage into Powerhouse through concrete roof
- Product seals/protects
- \$22K labor/materials

