Erosion at Adit 4
Tunnel Spoils Disposal Site
North Fork Stanislaus River Hydroelectric Project

February 3, 2016
Facilities Committee Meeting
Background

- Adit 4 is part of the power tunnel connecting McKays Point Reservoir to Collierville Powerhouse
  - 1986 tunneling produced rock cuttings spoils
  - 240,000 cubic yards were loosely placed
  - Located over a creek bed on federal lands
  - Lost 2,000 - 4,000 cubic yards of spoils
Adit 4
Spoils

Eroded section

Degraded drainage conveyance
Spoils Erosion
Eroded Section
Downstream Deposition
Downstream Deposition
Collierville Powerhouse Flooding
Degraded Drainage Systems
Spoils Failure

- No observers witnessed failure
  - Catastrophically most likely on December 22\textsuperscript{nd}
- Notified CA Dept. of Fish and Wildlife and Federal Bureau of Land Management
- Original installation included a reinforced concrete toe cap for erosion protection
- Inadequate to withstand hydrostatic loading
  - Initial assessment is water intrusion into Spoils from perforations/plugging of water conveyance features
Spoils

Adit

Creek Conveyance

Tunnel Spoils

Concrete Cap

January 13, 2017
Spoils Failure

Creek Conveyance

Tunnel Spoils

Water Buildup

Adit
Spoils Failure

Creek Conveyance

Tunnel Spoils

Adit

Back-cutting
Liabilities

- $3,000 direct damage to Collierville control room due to flooding
  - “Near-miss” with extensive nearby electrical equipment
- Debris clean-up at Collierville needed
- Environmental impacts to be determined
- Edge of slope failure unstable and unsafe
- Scope of damages and environmental impacts likely to increase without interim water bypass measures
Interim Mitigation Measures

- Water bypass scheduled to stem erosion
- Requested Utica Water and Power Authority to avert spillway discharges
Project Work

- Phase I: Interim site stabilization
  - CEQA Notice of Exemption filed January 27th
  - Negotiated a time and materials contract
    - Control active erosion and minimize impacts of planned repair
    - $129,200 hybrid lump sum and time/materials contract
    - On-site work planned to begin February 8th
- Investigating potential insurance claim
  - Initial site visit February 2nd - additional planned
  - Marsh retaining 3rd party engineer
Project Work

- Phase II: Design and construct permanent repairs
  - Basis of design analysis (BODR) needed
  - RFP issued February 2\textsuperscript{nd} to engineering consultants
  - Develop a safe and cost-effective design
  - Early contractor involvement to address unique issues
  - BODR expected in May-June
  - Permitting required
  - Implementation timelines under development
Next Steps

- Control erosion
- Progress the BODR
- Address insurance and resource agency questions
- Provide Committee briefings as project progresses