Chehalis Basin Strategy Geologic Considerations

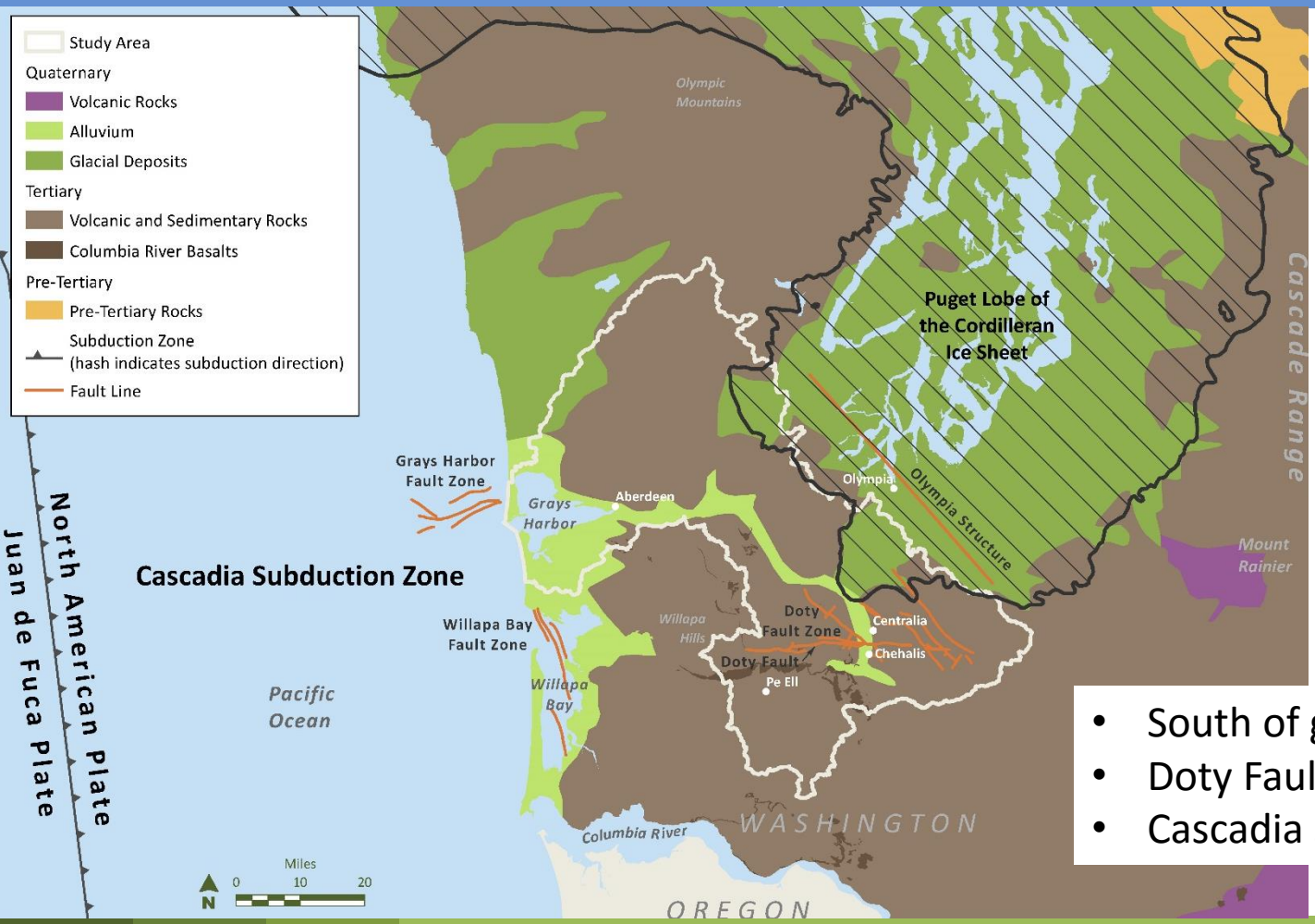
Shannon & Wilson, Inc.

Geologic Considerations

- Purpose is to identify geologic hazards and assess their potential impacts on
  - Design and construction of the project
  - Project elements after construction
  - Project operation

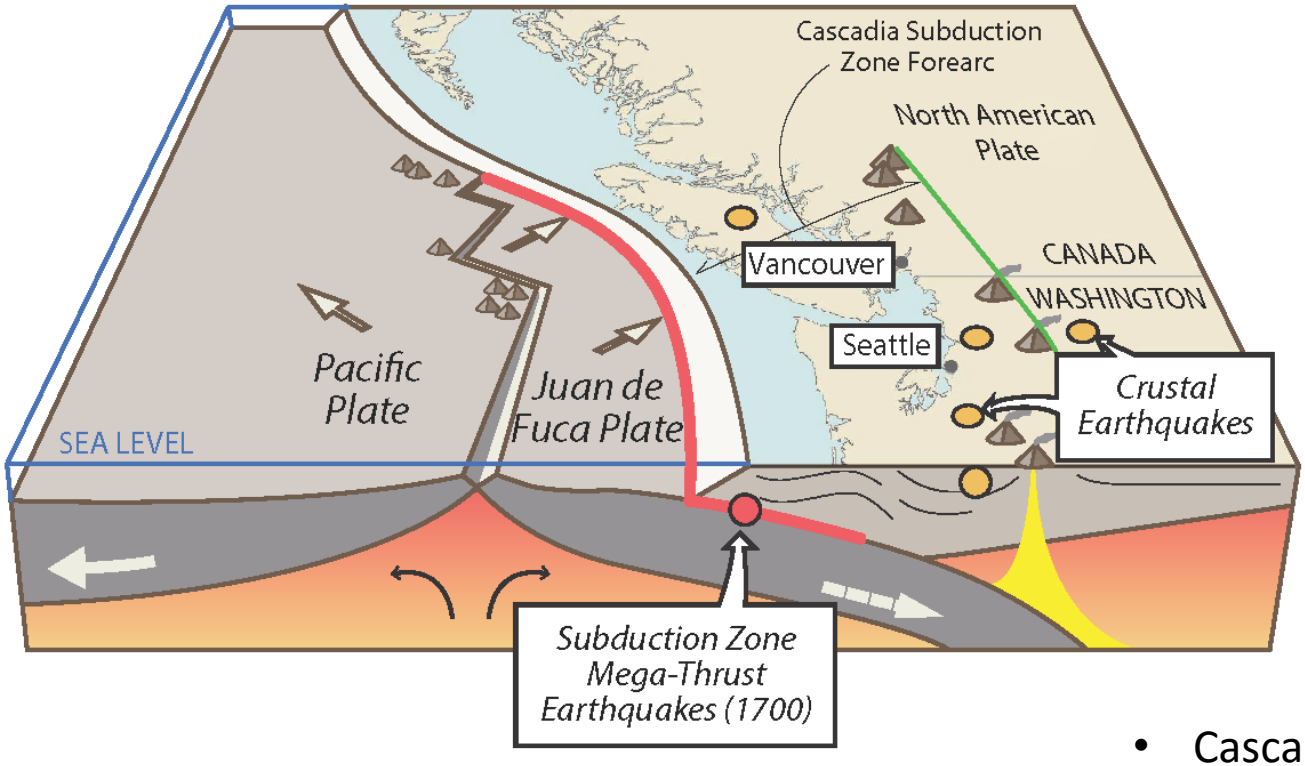
- Geologic Hazards
  - Earthquakes, faults
  - Landslides

Regional Geology



- South of glacial extent
- Doty Fault
- Cascadia Subduction Zone Fault

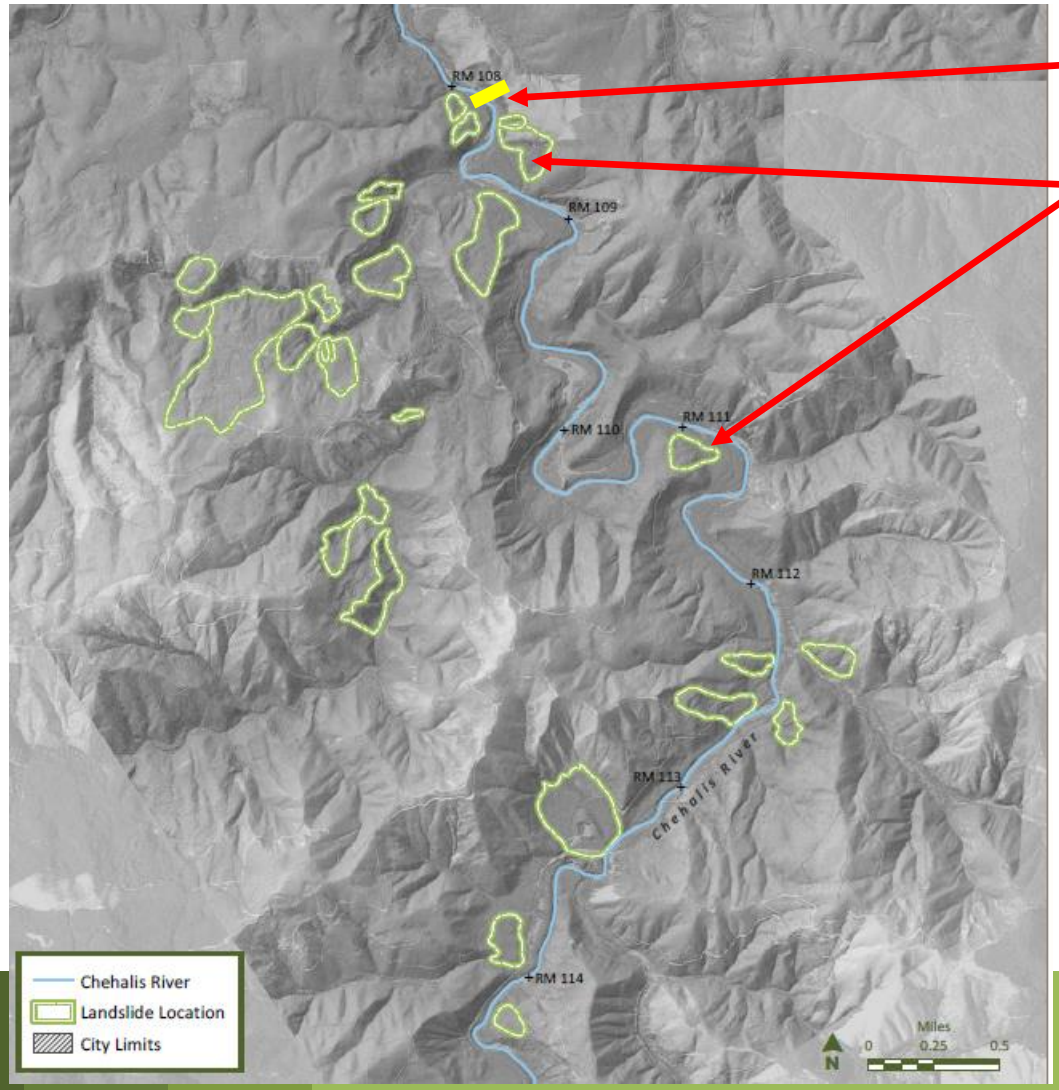
Seismic Sources



- Cascadia Subduction Zone Fault is dominant seismic source
- Doty Fault is considered

Project-specific ground motions have been developed

Landslides

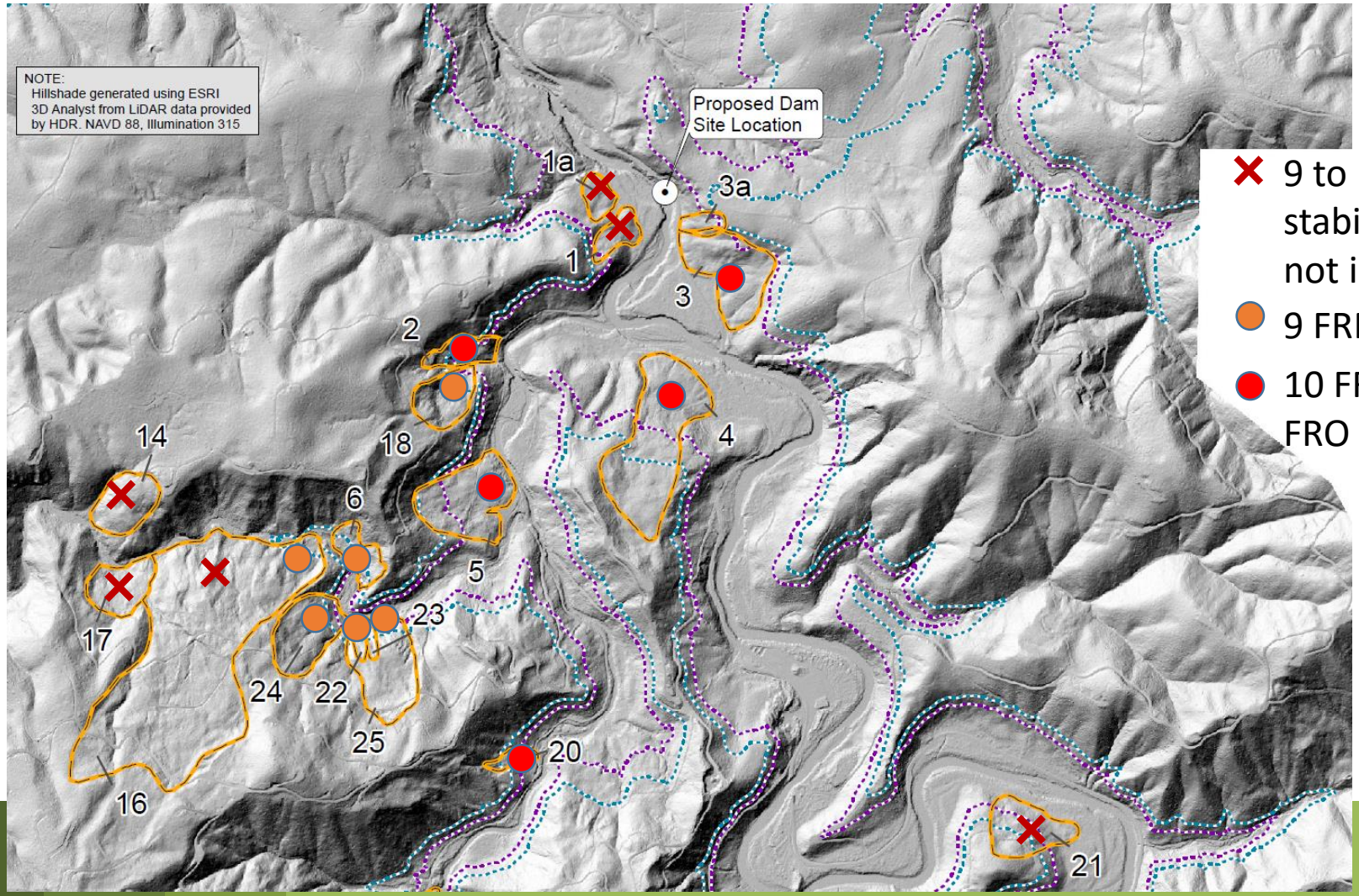


Dam site

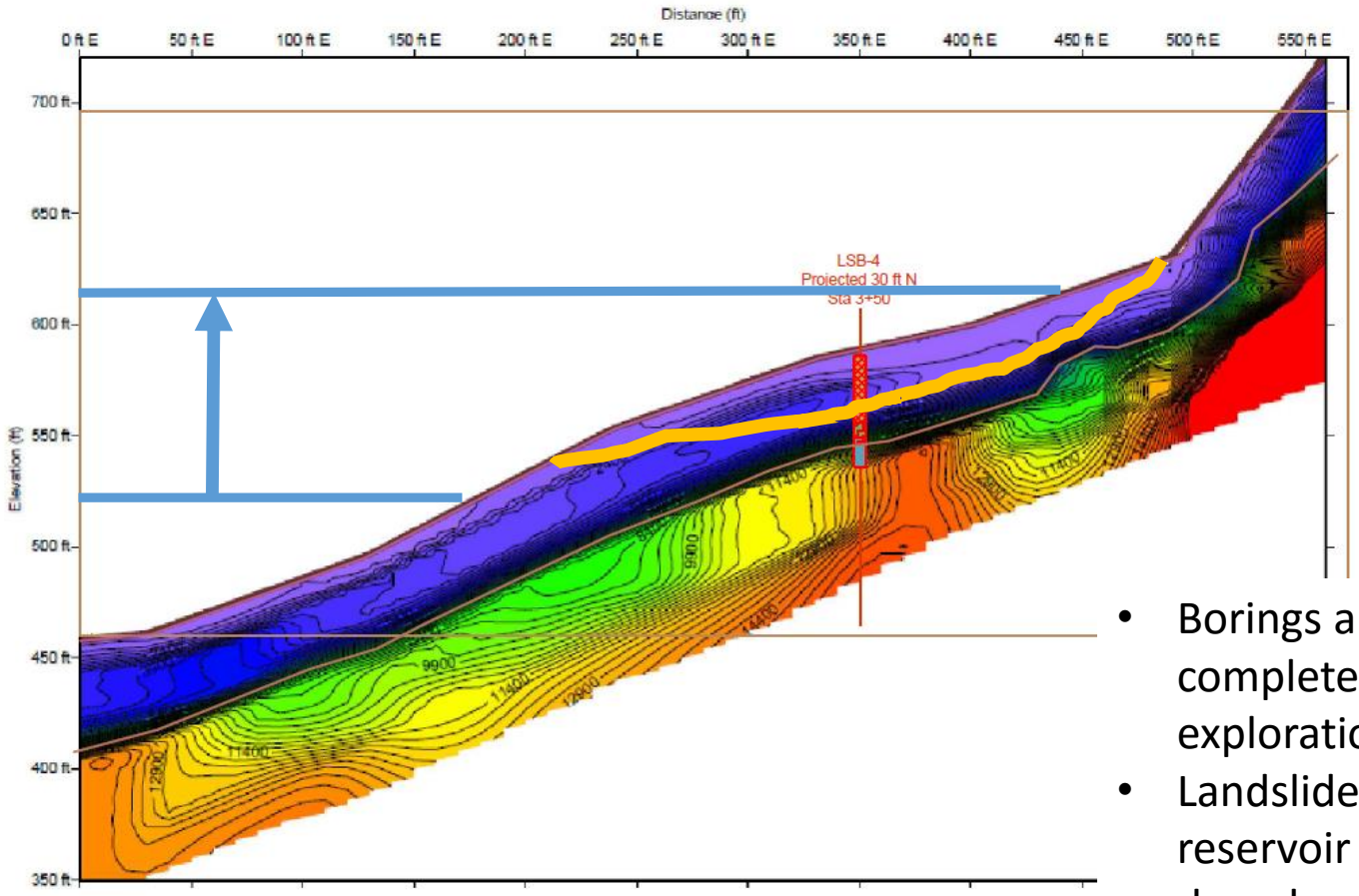
Existing landslides in reservoir area

- 28 landslides and landslide deposits at dam site and in reservoir identified
- Landslides reconnaissance complete
- Landslides which could be impacted by reservoir operations have been identified for further assessment

Landslide Assessment

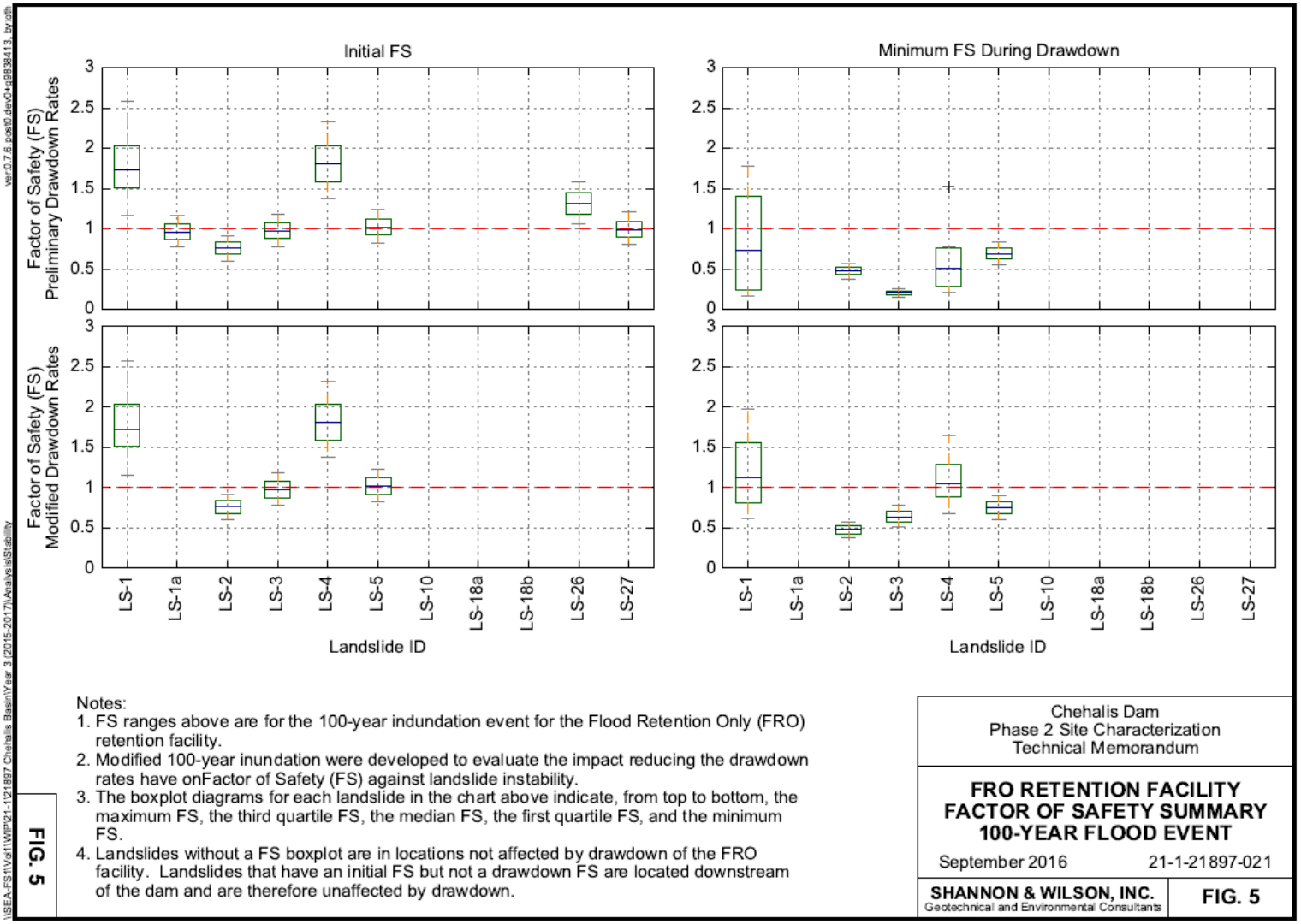


Landslide Stability



- Borings and geophysics completed for preliminary exploration of some landslides
- Landslide stability under reservoir operation and drawdown being evaluated

Landslide Stability



Landslide Stability Improvement

- Remove landslide mass (around dam, tunnel, inlet, outlet)
- Monitor landslide activity (in-reservoir landslides)
- Reshape landslide – flatten slopes within landslide limits
- Reshape landslide – remove material from landslide head
- Buttress landslide – add material to landslide toe
- Improve drainage of water from within landslide mass (during reservoir drawdown)
- To choose approach for each landslide
  - Perform additional subsurface explorations and laboratory testing
  - Perform stability analyses and evaluate stability improvement measures

Landslide-specific assessment and mitigation to be done

Questions