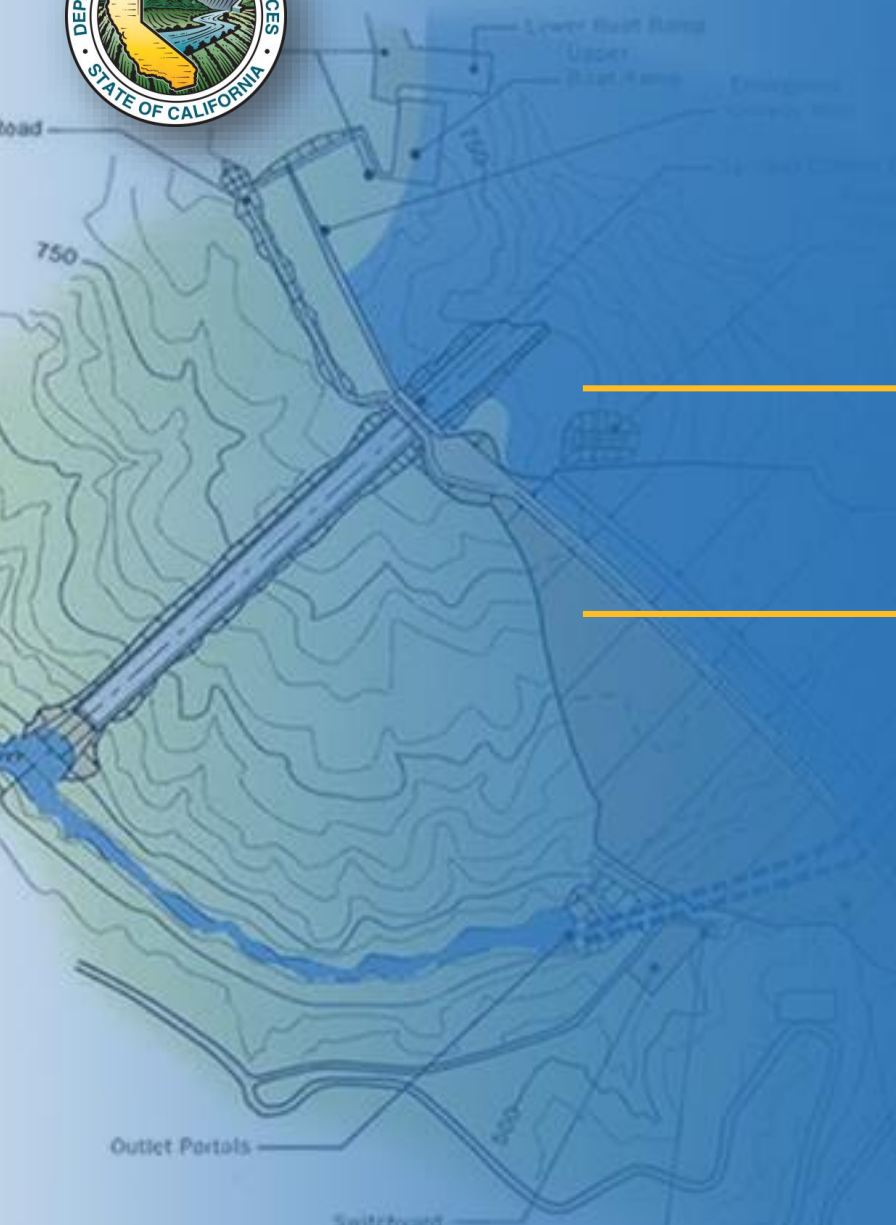


STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
**OROVILLE DAM SAFETY
COMPREHENSIVE NEEDS ASSESSMENT**

Independent Review Board Memorandum #2

Oroville Independent Review Board Meeting No. 2
October 9-10, 2018





IRB Members



IRB Members

- (Elizabeth) Betty Andrews, Environmental Science Associates
- Dr. Lelio Mejia, Geosyntec Consultants
- Bruce Muller, US Bureau of Reclamation (Retired)
- Paul Schweiger, Gannett Fleming, Inc.
- Daniel Wade, San Francisco Public Utilities Commission



General Observations



General Observations

- Notable progress in addressing prior recommendations
- More study-wide activities evident (should improve quality and efficiency)



Specific Recommendations



1. Does the IRB have any recommendations or comments on the revised CNA Project Approach and Integration summarized in the materials provided and presentations given during this meeting?

- Scope has been appropriately refined to give better definition
- IRB pleased to see linkages to the Forensic Team's report and the FERC Part 12 Inspection effort
- Appropriate continued emphasis on identifying opportunities for expedited risk reduction actions



2. Does the IRB have any recommendations or comments on the project evaluation approach, including the planned risk assessments and overall evaluation criteria?

- IRB supports risk-informed approach
- 1 additional recommended evaluation criterion – “permittability”
- Eliminate the notion of primary/secondary criteria



3. Does the IRB have any recommendations or comments with regard to the planned reservoir operations studies that will be part of the CNA Project versus those planned for the Water Control Manual outside of the CNA Project auspices?

- IRB agrees that revision of the water control manual is a USACE led activity with linkages to the CNA study
- IRB recommends looking at the FCO spillway release limitation in a more risk-based manner that would account for uncertainty in the actual capacity of the downstream levees
- IRB agrees with limiting powerplant outflows to 50% of capacity and notes that flow may have to be eliminated during a flood event where the tailwater elevation threatens the powerplant
- IRB recommends consideration of measures to eliminate grid demand or grid failure as limiting factors for powerplant capacity



4. Does the IRB have any recommendations or questions on the information presented on the activities completed to date for Task 3, FCO Headworks?

- Review stability analyses in light of the revised PMF (2018)
- IRB supports plan for non-linear stress analysis and recommends a written plan for validating the model and results
- IRB recommends a written plan for addressing seismic performance of FCO mechanical and electrical systems



5. Does the IRB have any recommendations or questions on the information presented on the activities completed to date for Task 5, Embankment Dam?

- Commendable effort to address seepage and stability issues identified in the FERC Part 12D process
- IRB recommends broader consideration of potential failure modes to determine if there are other issues that have not come up in the FERC Part 12D process
- IRB recommends thorough documentation of knowledge and understanding of the performance of the dam (very low observed seepage, significance of the vegetated areas on the downstream slope of the embankment)



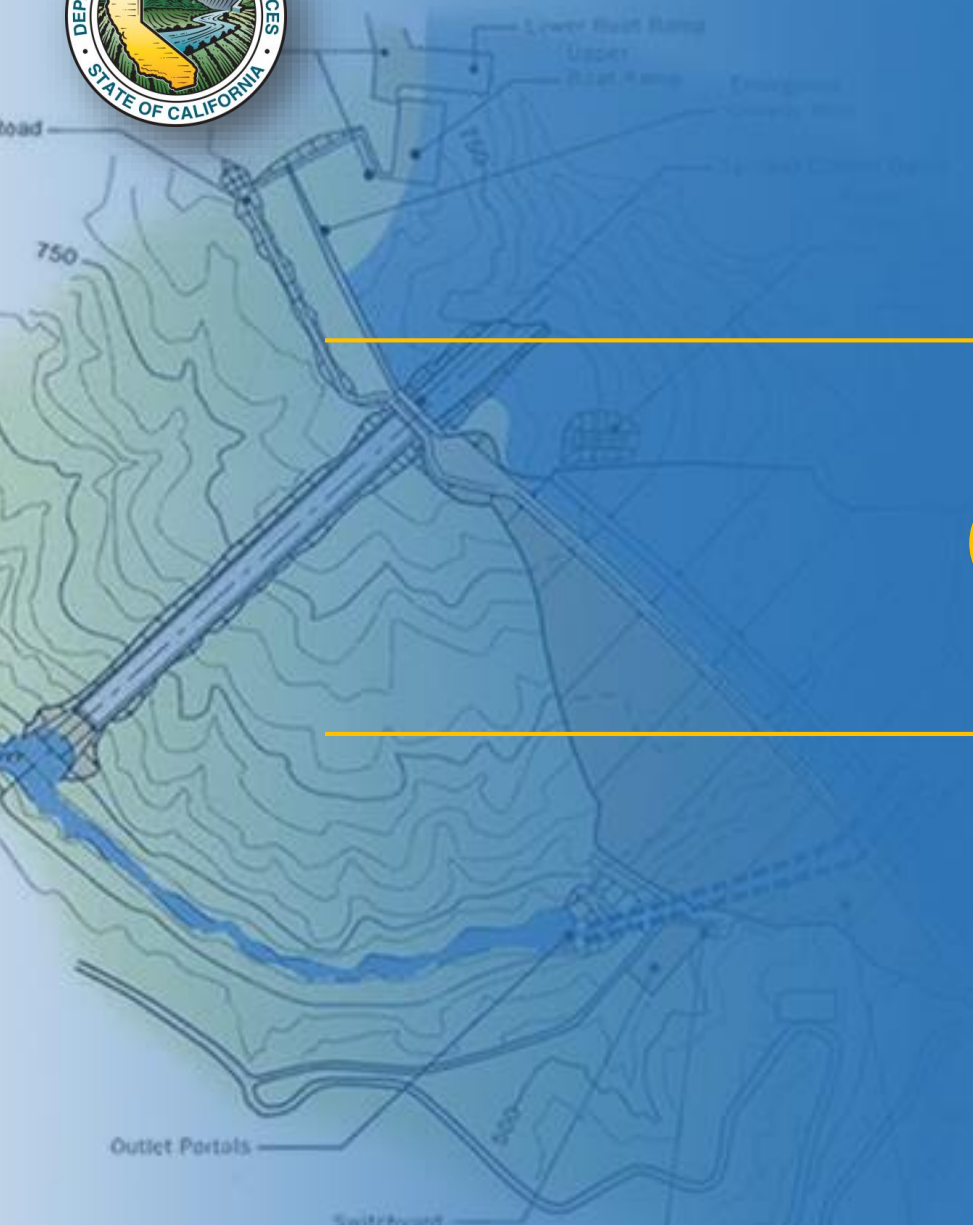
6. Does the IRB have any recommendations or questions on the CNA Workplan update?

- Commendable effort to assess activities as project-wide or task specific.
- IRB please to see appropriate consideration given to schedule flexibility as the scope of the project is further defined (additional 5 months to complete based on current information)



7. Does the IRB have any other recommendations or comments?

- IRB recommends that the report outline be further developed and presented at each successive IRB meeting



Questions?