



San Joaquin Geological Society

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Dam Safety Analyses for Isabella Dam

by

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ABSTRACT

Three deficiencies exist at Isabella Dam: a deficiency for the "Probable Maximum Flood" (PMF); a seismic deficiency; and a potentially serious seepage issue. Specific to seismic performance, Corps of Engineers criteria state that dams must be able to safely retain the reservoir under the Maximum Credible Earthquake (although damage under the MCE loading is acceptable), and suffer little to no damage under the Operating Basis Earthquake, generally defined as the maximum groundmotions expected at the dam site with a return period of 144 years (50% probability of occurrence in 100 years). Recently, the Corps has moved towards a risk-based approach to Dam Safety decision making. Initial screening level risk assessment has indicated that the Corps' Sacramento District operates several dams that have high risk features, with seismic risk prominent at Isabella Dam. In terms of risk to downstream residents, Isabella dam ranks at the top among all 600 (+) dams in the Corps' inventory.

Isabella Dam is located approximately 34 miles northeast of the City of Bakersfield on the Kern River in Kern County, California. The current study was initiated in 2003, and has been accelerated with the finding that the previously believed inactive Kern Canyon Fault, which passes under the right abutment of the Auxiliary dam, is likely a "capable" fault. The presence of loose alluvial soils has been confirmed under the Auxiliary dam, which leads to an extremely high risk to the downstream population.

BIOGRAPHY

Registered Geologist

B.A. 1983 Geological Sciences U. C. Santa Barbara

Post grad work at University of New Mexico

U.S Army Corps, Sacramento District since 1995

Manager, Dam Safety Assurance Program, Sacramento District since 2001:

- Oversees 15 high hazard dams and 1 significant hazard dam in District*
- Technical Lead for dam safety investigation projects at Isabella dam and Martis Creek dam; also involved with the Success Dam remediation project*