The water district recognizes the catastrophic nature of potential dam failure and has implemented a comprehensive dam safety program to protect the public.

The Dam Safety Program includes four main components:

A. Periodic special engineering studies
B. Surveillance and monitoring program
C. Routine inspections and maintenance activities
D. Maintaining emergency response and preparedness plans

Through the water district’s dam safety program, it ensures the continued operation of its 10 major dams. The water district also works closely with state and federal regulators, and downstream emergency response partners to meet these goals.

Water district engineers and consultants continue to study earthquakes and seismic risks as it relates to dam safety. Engineers are currently undertaking extensive seismic stability studies at Anderson, Almaden, Calero, Guadalupe, Stevens Creek and Lenihan Dams. Studies for Uvas and Chesbro Dams begin in 2012.

Seismic stability evaluations typically study the ability of the dam to withstand the effects of strong shaking in a major earthquake and if any faults beneath a dam could move and cause damage. Of particular concern are loose layers of sandy or gravelly soils found under many of our dams, which could experience:

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a reduction in strength (known as liquefaction) during a major earthquake. If the intensity of the earthquake is large enough, the sides of the dam could deform and potentially cause significant damage. If a dam is found deficient in these studies, the water district will lower the water to a safe level while it fixes the dam with a construction project.

Every five years, the Federal Energy Regulatory Commission (FERC) requires the water district to bring in a team of independent experts to inspect Anderson Dam, evaluate all conceivable potential risks to the dam and develop strategies to minimize these risks. Though not required by the regulatory agencies, the water district has proactively expanded this potential failure mode analysis approach to the remainder of our dams. By the end of 2012, it will have completed potential failure mode analyses for Anderson, Almaden, Calero, and Guadalupe Dams.

Surveillance and monitoring

Instrumentation placed in and on the dam furnishes data for water district engineers to determine if the structure is functioning as intended.

The water district has automated instrumentation at five dams. The equipment is capable of collecting, checking, recording and archiving the collected data and alerting staff when parameters exceed set threshold limits.

The water district continuously monitors the conditions of its dams. Two basic parameters are monitored: water seepage through the dam and physical movement of the structure. Piezometers measure water pressure in the dam and at five dams, feed daily readings to transmitters located at the dam crest to water district offices via satellite. Inclinometers in the dam and surface monuments measure dam movements.

Contact us
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Emergency response and preparedness

At the core of the Dam Safety Program’s emergency response and preparedness is its post earthquake dam evaluation program team. After significant earthquakes, trained personnel inspect the dams for any signs of damage or potential for failure.

The water district works with various agencies on emergency action planning and training exercises each year. Under the Dam Safety Program, the water district is developing updated maps which estimate what areas could flood in the highly unlikely event of a dam failure. The inundation maps for Anderson Dam were updated in 2009 and shared with the appropriate downstream emergency response partners.