Enhancement of Stafford Dam safety and security with advanced instrumentation and monitoring

Request

$1 million for the implementation of advanced dam safety and security monitoring instrumentation on North Marin Water District's Stafford Dam, the only local water supply, including vibrating wire piezometers, inclinometers, security cameras, and seismic sensing instrumentation.

NORTH MARIN WATER DISTRICT

The problem
The Novato Creek Dam (a.k.a. Stafford Dam) is classified by the California Department of Water Resources Division of Safety of Dams (DSOD) as an Extremely High Hazard Dam. This is due to the significant amount of the both residential and commercial development downstream of the dam in the Novato area that would suffer property damage and potentially loss of life if the dam or spillway were to fail catastrophically. The dam is listed as the Novato Creek Dam under the DSOD inventory as well as the National Inventory of Dams (DSOD Dam No. 88-0; National ID No. CA00321).

Stafford Dam, which was built in 1951 and modified (raised) in 1985, has consistently received the highest inspection rating of "Satisfactory" from the Division of Safety of Dams as part of an annual inspection program. The North Marin Water District's engineers and operators rely on manually obtained seepage data from an array of piezometers and drain outlet weirs as well as periodic physical monument surveys to evaluate the dam's overall stability and subsurface seepage management. In addition to below ground data needs, overall physical security can be enhanced with the use of cameras and related sensing instruments for detection of unwanted intrusions.

The opportunity
There is proven technology available to enhance the District's manual monitoring program for Stafford Dam. This includes vibrating wire piezometers to measure groundwater levels, inclinometers to measure displacement, flow meters to measure seepage flow, and seismic sensors to locally measure movement from earthquakes to allow real-time data management and analysis for dam safety. Use of strategically deployed cameras can provide supplemental data for physical surveillance of the dam infrastructure. This data can easily be integrated into the District's supervisory control and data acquisition (SCADA) system that includes existing dam operation control valves and related infrastructure.

The benefits of advanced monitoring
- Real-time data management in order to enhance overall dam safety.
- Use of proven technology to replace or supplement existing manually obtained data.
- Compliment and support existing Emergency Action Plan (EAP) for better response times and communications with emergency response partners.
- Provide reliable data for managing risk for short-term response as well as long-term capital improvement planning.

For additional information
Scan the code or please contact Eric Miller at emiller@nmwd.com or 415-897-4133.

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