Miniaturizing America’s Tallest Dam | College of Engineering

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News Release – LOGAN, UTAH, June 2, 2017 – Engineers at Utah State University’s Utah Water Research Laboratory have constructed a 1:50 scale model of the Oroville Dam spillway.

Engineering researchers and students constructed a 1:50 scale model of the Oroville Dam spillway. The model will help engineers in California test possible repair options at America’s tallest dam. (Matt Jensen/USU)

Chief engineers Dr. Michael Johnson and Dr. Zachary Sharp worked with a team of 15 engineers and technicians to construct the working model in just 40 days.

The approximately 100-foot-long, 60-foot-wide model replicates the spillway in its current state and features the terrain conditions that were formed following the damaging flow events in February.
Dr. Zachary Sharp, left, and Dr. Michael Johnson are the chief engineers on the project. Johnson specializes in experimental hydraulics and has designed other engineering solutions for Oroville Dam. (Matt Jensen/USU)

Johnson, who specializes in fluid mechanics and experimental hydraulics, says the model will provide useful information about hydraulic conditions in and around the damaged spillway. He and his team are currently taking measurements on various sections of the model to determine depth of flows, wave action, pressures, velocity profiles and more.

“Our goal is to assist the design team in California in making the best decisions moving forward with data from the model,” said Johnson. “Data from the model will provide useful information that will help engineers there make better-informed decisions about repair and replacement.”

This is the second time a Utah Water Research Lab team has been involved with engineering efforts at Oroville Dam. Johnson helped design an engineering solution that improves the river valve outlet system in low-level reservoir conditions. His work helped alleviate the effects of drought from 2014-2016.

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About the Utah Water Research Lab:

The Utah Water Research Laboratory at Utah State University conducts practical research in Utah, the nation and the world, directed at solving water-related problems, informing water policy and management, and training the next generation of water experts.

Utah Water Research Lab Quick facts:

- Oldest and largest of the 54 university-based US water centers
- Annual research expenditures between $8 and $12 million
- Faculty + staff + students, about 200 people work at the UWRL
• 113,000 square-feet of floor space
• World-class hydraulics and environmental quality lab facilities
• Between 250 and 300 active contracts and grants at any time
• Research/training activities in all 29 Utah counties, approximately 10 other states, and typically in one or more foreign countries

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