

RECLAMATION

Echo Dam

What: Reclamation is modifying Echo Dam and spillway to meet current seismic standards.

How: Reclamation's contractor began June 4 to excavate foundation material that could lose strength – or liquefy – from beneath the dam. When excavated to bedrock, the foundation material is replaced – and highly compacted – to provide additional strength to the dam. Additional material will be brought in, compacted, and then covered with large rocks.

Work Already Completed: The project began in July 2011 with installation of 35 wells and pumps to lower the water table immediately downstream of the dam. The dewatering was necessary to facilitate the excavation and replacement of material. An additional benefit of the dewatering was an immediate reduction in seismic risk at the dam.

Why Work is Being Done: Studies conducted at Echo Dam beginning in 1998 indicated that potentially liquefiable materials are present within the dam's foundation and underneath the spillway control structure. During an earthquake with strong seismic motion, the foundation materials could lose strength - or liquefy - resulting in a slumping of the dam embankment. This slumping could, under certain conditions, lead to catastrophic failure of the dam and reservoir.

Next Steps: The contract for the seismic modification of the spillway will be awarded in September 2012 with work beginning in the late summer of 2013.

Completion and Cost: Completion of the estimated \$50 million Safety of Dams modification is scheduled in 2014. Under Reclamation law, the Federal government covers 85 percent of the cost of a safety of dams modification. The remaining 15 percent is repaid to Reclamation by local water users. The Weber River Water Users Association is responsible for repaying 15 percent of the Echo modification costs over forty years under favorable terms.

Background: Congress approved a Safety of Dams Modification Report November 12, 2010, and authorized the Echo modification. Investigations, research, and computer modeling showed the most cost effective and verifiable method to modify the dam was to excavate the liquefiable foundation materials and replace them with stronger, denser compacted fill; to construct berms on the upstream and downstream sides of the dam; and to and replace the floor and walls of the spillway structure.

Location and Operation: The Weber River Water Users Association operates and maintains the dam under a contract with Reclamation. Echo Dam is part of the Weber River Project, authorized in 1927, to supply supplemental irrigation water to approximately 109,000 acres of land west of the Wasatch Mountains. Formerly designated the Salt Lake River Project, its principal feature is Echo Dam and reservoir located 42 miles southeast of Ogden, Utah, on the Weber River

Dam Statistics: Echo Dam, a zoned earthfill structure, was constructed between 1927 and 1931 and has an active storage capacity of 73,900 acre-feet. The dam is 158-feet high, 1,887-feet long, and contains more than 1.5 million cubic yards of earth embankment. A hydroelectric plant, installed in 1987, supplies the city of Bountiful, Utah, with up to 4.5 megawatts of power.

Safety of Dams Program: Reclamation's Dam Safety Program was authorized in 1978 by Congress (PL 95-578 as amended). Echo Dam is the thirteenth large dam in Utah and southwestern Wyoming to be modified by the Provo Area Office.

Reclamation ensures that dams are operated and maintained in a safe manner by conducting regular and thorough inspections for safety. Analyses are completed utilizing current technologies and designs. Corrective actions are based on current engineering practices and standards.

Echo Safety of Dams Contractor Information:

Dewatering Contractor – Echo Dam Modification Dewatering Project (Contract No. R11PC40007)
Foothill Engineering & Dewatering, Inc.
905 East Third Street
Corona, California 92879
Contract Award Date: April 30, 2011
Contract Award Amount: \$1,305,832.00

Foundation Contractor – Echo Dam Embankment Seismic Modification (Contract No. R11PC40013)
PNK Constructors, LLC
29 West 200 North
Coalville, Utah 84017
Contract Award Date: August 23, 2011
Contract Award Amount: \$18,405,025.00

Spillway Contractor – The spillway contract is anticipated to be awarded in September 2012.

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For More Information

Safety of Dams: <http://www.usbr.gov/ssle/damsafety/>

Echo Dam: [http://www.usbr.gov/projects/Facility.jsp?fac_Name=Echo Dam](http://www.usbr.gov/projects/Facility.jsp?fac_Name=Echo%20Dam)

Bureau of Reclamation, Provo Area: <http://www.usbr.gov/uc/provo/index.html>