RECLAMATION
Managing Water in the West
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El Vado Dam repairs
Members of a Reclamation dive team entering or coming out of the water during the repair at El Vado reservoir on April 26.
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Who would have thought a magnetized, thin rubbery membrane would be a quick fix to a crack in a dam? This may not seem like a logical solution for many dams, but it works at El Vado, the only steel-faced dam that remains in operation in Reclamation.

Staff of the Chama Field Division of the Albuquerque Area Office became aware of the crack in the dam earlier this year during an inspection of the dam. They immediately welded the part of the crack that was above water, but knew that the crack extended below the water.

A dye test was performed in February to determine just how much seepage was occurring. Dye from the test appeared downstream within approximately 2-1/2 hours. The test showed that leakage through the crack formed a direct hydraulic connection from the reservoir through the dam.

A risk analysis conducted by Reclamation in March concluded that a temporary fix should be done before the spring runoff.

After analyzing several options for a fix and even exploring the possibility of the Navy or Army coming out to do an underwater repair, officials determined that a Reclamation dive team consisting of Rick Scott from the Upper Colorado Regional office and Jimmy Burke, Seth Ostrowski, and Caireen Ulepic from the Lower Colorado Region would come to El Vado to perform the temporary fix with the rubbery membrane. Scott had been involved in much of the effort to find a solution for El Vado under such a time crunch.

Members of a Reclamation dive team entering or coming out of the water during the repair at El Vado reservoir on April 26.
Photos by Anthony Vigil, Albuquerque Area Office

The LC dive team was able to mobilize on less than a week's notice and once again demonstrated that Reclamation remains a can-do organization.

The crack was covered by the membrane on April 26 after being postponed the previous day due to high winds. One of the critical issues the team had to deal with was the pressure differential caused by high flows going through the crack.

These flows create a suction effect that could theoretically catch a diver and pin him or her to the crack. This hazard was overcome by using a Remote Operated Vehicle (ROV) to place material into the crack prior to exposing the divers.

The ROV placed a sizable quantity of Oakum into the crack, which appeared to work very well and eliminated the hazard. Oakum is a rope-like material often embedded with bentonite and is commonly used to seal boats, or as a seal around radial gates.

The suction of the flows pulled the Oakum in place and made it safe to install the membrane. The temporary repair appears to have been successful, and a decrease in seepage has already been documented.

The crack was located approximately 15 feet below the water line. The main portion of crack itself was about a foot and a half long but it likely extended further down the dam. The membrane was placed an additional 15 feet below the main crack to ensure that the entire crack was covered.

In the midst of another dry year in New Mexico, Reclamation expects much of the water in El Vado to be released for use in the Middle Rio Grande this summer. That will allow for Chama staff to once again take to a boat and repair much more of the crack with a weld. This has become a common practice for repairs at El Vado.

El Vado Dam was built by the Middle Rio Grande Conservancy District (MRGCD) in 1934-35. In 1951, MRGCD entered into a repayment contract with Reclamation. Under this contract, Reclamation rehabilitated the dam in 1954-55.

Operation and maintenance responsibilities for the dam were transferred back to MRGCD in 1974. The reservoir has a total capacity of 196,500 acre-feet. The dam embankmentis rolled gravel fill with the ¼-inch steel membrane on the upstream face.