

## **The Effects of Bendway Weirs on Channel Flow Characteristics**

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**Abstract.** Installation of the Cochiti Dam on the Rio Grande in New Mexico has caused a shift in channel morphology. Changes in the channel bends on a 29-mile reach, from Cochiti Dam to Bernalillo, New Mexico, have become drastic enough to create a demand for stream rehabilitation in the area. Bend migration has threatened critical riverside facilities, warranting the use of stabilization techniques. The U.S. Bureau of Reclamation tasked Colorado State University (CSU) with developing a set of bendway weir design criteria for use on the Middle Rio Grande.

A 1:12 Froude scale, concrete-lined model with representative geometric characteristics of the 29-mile reach has been constructed in the Hydro-machinery Lab at the Engineering Research Center of Colorado State University. Baseline data, including flow depth, three dimensional velocities, and shear stress measurements have been collected for four discharges. Bendway weirs have been installed in various configurations and tested at three discharges. The configurations tested have included variations in spacing, length, planform angle, and crest slope.

Design equations predicting changes in velocity due to a given weir configuration relative to baseline conditions are to be developed. Ultimately, a designer will be able to use the developed equations together with a set of baseline data to predict maximum velocities in a bend prior to installation to ensure that the selected weir configuration satisfies the design criteria.