6:1 Froude Scale Physical Hydraulic Model in Support of Southern Nevada Water Authority's Las Vegas Wash Project

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Abstract. Sloped rock weirs are currently used in stream and bed stabilization applications. Rock sizing and design methodologies exist for steep slope and high velocity flow conditions, but are limited in their scope and range of application. In support of Southern Nevada Water Authority's existing and proposed sloped rock weirs in the Las Vegas Wash, a 6:1 Froude scale physical hydraulic model is currently being tested in an outdoor flume at the Hydraulics Laboratory located at the Colorado State University Engineering Research Center. The objective of the physical model study is to verify currently used rock sizing methodologies, as well as the location and magnitudes of the highest shear stresses within the system. Testing consists of three distinct rock sizes, each subjected to a range of discharges and downstream flow conditions. The information gained from testing will be utilized in the design, placement, and construction of the proposed sloped rock weirs. In addition, data from the testing will be used to develop a relationship between the water surface profile and the Manning's roughness coefficient along the structure.

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