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**APPLYING TWO-DIMENSIONAL MODELING TO ASSESS RIVER REHABILITATION SUSTAINABILITY AT
THE RIO GRANDE NATURE CENTER, NEW MEXICO**

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ABSTRACT: In early 2008, the US Army Corps of Engineers completed construction of a high-flow, rehabilitation, side channel at the Rio Grande Nature Center in Albuquerque, New Mexico. The channel receives flow during spring runoff, providing habitat for the endangered Rio Grande Silvery Minnow and encouraging river-floodplain connectivity. In the first three years, the channel appears to be effectively creating Silvery Minnow habitat. Establishment of native vegetation indicates that channel has effectively provided river-floodplain connectivity. However, the channel bed has aggraded significantly since construction, creating questions about the sustainability of the project. A two-dimensional model was developed and applied to predict long-term sedimentation. The channel is predicted to aggrade for 15 to 20 years before reaching a dynamic equilibrium and functioning for 50 years, receiving a reduced flowrate for a shorter annual duration. Alternative models were developed to determine the sustainability of specific channel features. From long-term alternatives modeling, design lessons are deduced.

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