

ONE-DIMENSIONAL MODELING OF INCISION THROUGH RESERVOIR DEPOSITS

Blair P. Greimann, bgreimann@do.usbr.gov , Jianchun Huang, jhuang@do.usbr.gov, Hydraulic Engineers, Sedimentation and River Hydraulics Group, Technical Service Center, Bureau of Reclamation, Denver, CO 80225

Abstract: A one-dimensional sediment transport model (GSTAR-1D) is used to simulate a laboratory experiment of incision through a reservoir delta deposit. The model allows the user to specify the erosion width through the deposit as a function of the flow rate. The model is shown to predict the vertical incision and downstream sediment load with reasonable accuracy if the erosion width is specified correctly. Sensitivity tests to the transport equation parameters, erosion width, and angle of repose are conducted. The sediment loads exiting the dam are shown to be sensitive to the critical shear stress, but are relatively not sensitive to changes to the erosion width and angle of repose. Further work on modeling of bank erosion is necessary to more accurately predict the long term evolution of reservoir deposits.