

عنوان مقاله:

Numerical Modeling of Local Scour at the Junction of Open Channels in Flow3D Numerical Model

محل انتشار:

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خلاصه مقاله:

At the junction of channels, the two corresponding flows of the main and submain channels are diverted from their main alignment and the form and the flow properties change at the junction. Changes in water level profile and depth of flow, velocity distribution, stagnation zone, constriction of public channel, energy loss and also formation of hydraulic jump are among the most important hydraulic variables in this location. For accurate recognition of hydraulic properties of flow and local scour at the junction of channels, physical models are made and constructed. Setting up a physical model requires many conditions and high costs which sometimes are not justifiable, hence appropriate numerical models could be proposed for such options. In this research using Flow3D numerical model, the numerical modelling of the flow has been performed in 3D form utilizing the available laboratory information which is calibrated and validated and accuracy of the numerical modelling, and the corresponding relative error are determined. The calibration and validation of the numerical model results demonstrate that the maximum relative error of the numerical model when simulating for maximum values of scour depth at the flow junction is equal to 8.2%. Also using the numerical model it was found that with passage of time in numerical model, from the start of scouring, the location of maximum scour is transferred towards the opposite wall of the sub main channel and is distanced from the junction position also the volume of sedimentation is increased and is translated toward the downstream main channel

کلمات کلیدی:

Local Scour; Channel Intersection; Numerical Modelling; Flow3D

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