

عنوان مقاله:

Trend of maximum discharge for effective parameters of outflow hydrograph due to piping

محل انتشار:

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خلاصه مقاله:

Dams provide society with essential benefits such as water supply, flood control, recreation, hydropower, and irrigation. When dam failure happens, the impounded water runs through the breach, and it leads to death of people and destruction of structures in the downstream valley. According to reports by International Commission on Large Dams (ICOLD, 1973), about 38 percent of all dam failures are caused by overtopping of the dam due to inadequate spillway capacity, about 33 percent of dam failures are caused by seepage through the dam, about 23 percent of the failures are related to foundation problems, and the remaining failures are caused by slope embankment slides, damage, or liquefaction from earthquakes. Due to loss of life, environmental damage and economic reflection, prediction of dam breach and outflow hydrograph should be considered. The breach is an opening in embankment dam which is created by piping or overtopping. Piping occurs where the body of dam is permeable. This phenomenon starts from downstream and expands to upstream in the body of the dam. When the top point of breach reaches water level, great amount of water enters into the breach, and causes dam failure. The purpose of this study is investigation of effective parameters on dam breach outflow hydrograph due to piping. BREACH GUI is used for modeling of dam breach failure. The results describe parameters which are effective on dam breach outflow hydrographs. These parameters are average grain size diameter (D50) of outer material, porosity of inner and outer material, upstream slope, and downstream slope of the surface and core.

کلمات کلیدی:

Dam Failure, Breach, Piping, Outflow Hydrograph, Trend Curve

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