



Hydraulic Simulation to Find Bottlenecks and Potential Flood Points in the Main Runoff Collection Channel by HEC-RAS 5 Model (Mianroud Canal, Tehran)

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(Date of received: 02/05/2020, Date of accepted: 15/08/2020)

ABSTRACT

Currently, floods are one of the biggest threats to social security and sustainable development, and are among the most devastating and costly natural hazards. In recent decades, studies on urban flooding have increased and there has been a leap forward in flood risk management. The management of runoff and floods in the metropolis of Tehran is also more important due to its location at the foot of the mountain, leveling the land, occupying the privacy of the Channels, high relative density of housing and population and improper use of the Channels. For this purpose, in this study, the main Channel collecting surface runoff in the second district of Tehran (known as Flood Diversion Channel of West Tehran) was examined. The HEC-RAS 5 model was used for hydraulic simulation to flood the area and identify critical points in the area. Two parameters, speed and depth, were used as important parameters to assess risk. Studies conducted in this study, as well as a general comparison between flood risk zoning methods, show that the use of combined models with different factors in determining flood risk will have more appropriate results. The use of flow energy in flood risk assessment and considering the two components of depth and speed and their targeted combination will lead to the verification of results. In addition to the above, it seems appropriate to provide appropriate zoning for potential flood hazards, to identify safe areas, to provide relief routes, to economically justify reorganization plans, to flood flood-affected lands, and to manage floods.

Keywords:

Flood risk assessment, flood risk estimation, plain flood management, Mianroud Tehran Channel