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The Effect of Watershed Management Measures on Flood Mitigation Using Mathematical Model HEC-HMS (Case Study: Tezerjan Watershed, Yazd)

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Abstract

Quantitative assessment of watershed management activities in order to analyze of impact and their improve decision making on the correct implementation of these activities are necessary. This study was evaluated the effect of watershed management activities on flood in the Tezerjan watershed by using the HEC-HMS model.This research done for comparison of discharge variations before and after watershed

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managementactivities.To determine the effects ofmechanical and biological activities, the computed concentration time, and Curve Number (CN)was evaluated in the field. Validation and calibration were done with observed data, and flood hydrograph was simulated with return periods of 2 till 1000 years before and after the structures operation. Based on the simulation results, the effect of mechanical and biological activities and combinedactivities on reduction of their peak discharges were 6.44%, 0.66% and 7.19%, respectively. On the other hand, by increasing the return period, structure effects on the reduction of peak discharge was decreased . The effect ofbiological activities was more importantonreturn periods till10 years. Combination of mechanical and biological activitieshad most effect on the reduction of peakdischarge.

Keywords: Flood Assessment, Hec-Hms Model, Rainfall-Runoff Process, Tezerjan Watershed.