THE INFLUENCE OF RAINFALL CHARACTERISTICS ON PARAMETERS OF THE OUTFLOW HYDROGRAPH FROM URBANIZED CATCHMENT

Key words: calibration, hydrodynamic model, outflow hydrograph, SWMM

Summary

The purpose of the article was to evaluate the impact of rainfall characteristics on hydrograph parameters of runoff from urbanized catchment located in the city of Kielce. Hydrodynamic model of the catchment was used with SWMM program to determine the outflow hydrograph. The records of rains and flows since 2009 till 2011 were used for calibration. The effect of rain intensity distribution, its duration $t_d$ and probability $p$ on hydrograph parameters: wave volume $V_c$, maximum flow during culmination $Q_{dmax}$, time of water rising $t_p$ and the asymmetry of volume distribution $\omega$ was analysed in the paper. The amount of precipitation was determined with the Bogdanowicz and Stachy equation. Rainfall intensity distributions SCS type I, II, III, IV were considered in the study. Calculations showed that extending rain duration increased the volume of outflow, hydrograph parameter $\omega$ and the time of water rising. The exception was the rainfall of SCS type I, for $p = 50\%$ as in this case the higher was $t_d$ value, the smaller was the shape parameter of inflow hydrograph from the catchment.