THE USE OF BIORETENTION CELL TO DECREASING OUTFLOW FROM PARKING LOT

Abstract

The objective of the research was to look into the role that bioretention systems play in a decentralized management of stormwater runoff from the impervious areas. The study took place at a catchment of a low permeability and equipped with a combined sewer system. Two rainfall options were selected: actual rainfall intensity $q = 105.65 \text{ dm}^3\text{s}^{-1}\text{ha}^{-1}$ and a hypothetic rainfall with a probability of exceedance $p = 10\%$ and $q = 40.7 \text{ dm}^3\text{s}^{-1}\text{ha}^{-1}$. All calculations were carried out using the SWMM EPA program (storm water management model; Environmental Protection Agency). They have shown that the bioretention system reduces the cumulative flow rates by over 55\% and the flood wave volume by over 54\%. Moreover, it was found that, a precipitation pattern significantly influences runoff from the urban catchment.

Key words: bioretention system, Euler hyetographs, sewage system, stormwater, SWMM, urban catchment