

***Evaluation of the Cibangaran Drainage System Using EPA SWMM with a  
Green Infrastructure Approach***

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***ABSTRACT***

*Flooding and waterlogging problems in urban areas are generally caused by increased surface runoff due to changes in land use and the limited capacity of existing drainage systems. One area experiencing this problem is the Cibangaran drainage system in the city of Tasikmalaya. This study aims to evaluate the performance of the Cibangaran drainage system and analyze the effect of implementing green infrastructure (Low Impact Development/LID) on increasing the capacity and performance of the drainage system using EPA SWMM software. The research methods included hydrological analysis in the form of rainfall analysis, rainfall frequency and intensity analysis, determination of catchment areas, and modeling of the existing drainage system using EPA SWMM. Furthermore, simulations of the application of green infrastructure in the form of bioretention cells, rain gardens, and rain barrels in several subcatchments were carried out to evaluate their impact on runoff discharge and channel conditions. The simulation results showed that under existing conditions, several channel sections were unable to accommodate the planned flood discharge and experienced overflow conditions. The application of green infrastructure was able to reduce peak discharge and runoff volume entering the channel network, thereby improving drainage system performance. This study concluded that the application of green infrastructure integrated with conventional drainage systems is an effective alternative solution.*

*Keywords: drainage, EPA SWMM, green infrastructure, Low Impact Development (LID)*