INTISARI

Kapanewon Depok, Kabupaten Sleman memiliki riwayat banjir perkotaan dalam beberapa tahun terakhir yang diperparah akibat urbanisasi, perubahan iklim, dan ketidaksesuaian kapasitas jaringan drainase untuk menampung serta mengalirkan air. Penelitian ini bertujuan untuk menganalisis karakteristik genangan, mengetahui ambang batas curah hujan yang memicu banjir, serta mengidentifikasi pengaruh penerapan unit *Low Impact Development* (LID) *controls* terhadap pengurangan banjir perkotaan di Kapanewon Depok. Simulasi banjir perkotaan dilakukan menggunakan *Strom Water Management Model* (SWMM) dengan *software* EPA SWMM 5.2. Skenario yang digunakan mencakup curah hujan dengan kala ulang 5 tahun pada kondisi drainase eksisting serta skenario tambahan dengan penerapan sumur resapan sesuai 30 titik saluran yang meluap berdasarkan model dan 4 titik saluran hasil validasi lapangan yang menyebabkan genangan. Volume genangan terbesar dan durasi genangan terlama tercatat di Kalurahan Maguwoharjo, yang dipengaruhi oleh masifnya konversi lahan sawah menjadi permukiman tanpa diimbangi dengan peningkatan kapasistas drainase. Implementasi sumur resapan dengan luasan 0,5% dari total area *subcatchment* mampu mengurangi 12 titik banjir, menurunkan volume genangan hingga 62,5%, dan memperpendek durasi banjir 62%. Penelitian ini memberikan rekomendasi strategis dalam pengelolaan banjir perkotaan melalui penerapan LID dan peningkatan kapasitas infrastruktur drainase.

Kata Kunci: Banjir Perkotaan, Drainase, SWMM, LID *controls*

ABSTRACT

Kapanewon Depok, Sleman Regency has a history of urban flooding in recent years, which has been exacerbated by urbanization, climate change, and the inadequate capacity of the drainage network to receive and discharge water. This study aims to analyze the characteristics of flooding, determine the rainfall threshold that triggers flooding, and determine the effect of implementing Low Impact Development (LID) controls on reducing urban flooding in Kapanewon Depok. Urban flooding simulations were conducted using the Storm Water Management Model (SWMM) with EPA SWMM 5.2 software. The scenarios used include rainfall with a 5-year return period on existing drainage conditions and additional scenarios with the application of infiltration wells according to 30 channel points that overflow based on the model and 4 channel points resulting from field validation that cause flooding. The largest inundation volume and the longest inundation duration were recorded in the Maguwoharjo sub-district, which was influenced by the massive conversion of rice fields into settlements without a corresponding increase in drainage capacity. The implementation of infiltration ponds covering an area of 0.5% of the total sub-catchment area was able to reduce the number of flood points by 12, the flood volume by 62.5%, and the flood duration by 62%. This research provides strategic recommendations for urban flood management through the implementation of LID and increasing the capacity of drainage infrastructure.

Keywords: Urban Flooding, Drainage, SWMM, LID *controls*