

PENERAPAN MODEL EPA SWMM 5.1 UNTUK EVALUASI SISTEM DRAINASE PERMUKIMAN PADA RUAS JALAN CIEUNTEUNG KOTA TASIKMALAYA

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ABSTRAK

Penduduk daerah Cieunteung Kota Tasikmalaya yang semakin padat menyebabkan Jalan Cieunteung menjadi salah satu jalan yang memiliki permasalahan drainase. Genangan yang terjadi berlangsung saat kondisi saluran tidak dapat menampung debit limpasan karena kondisi saluran drainase yang kurang baik bahkan dibeberapa titik tidak berfungsi. Penelitian ini bertujuan untuk menganalisis kondisi eksisting saluran, kapasitas penampang saluran dengan pemodelan EPA SWMM 5.1 (*Environment Protection Agency Storm Water Management Model*), alternatif penanganan saluran serta kelayakan saluran *main drain*. Data curah hujan yang digunakan diperoleh dari Stasiun Hujan Cimulu selama 14 tahun dan didapat curah hujan rencana. Nilai intensitas curah hujan rencana untuk berbagai periode ulang 2, 5, 10, 25 dan 50 tahun sebesar 164 mm/jam, 214 mm/jam, 241 mm/jam, 270 mm/jam, 288 mm/jam. Hasil pemodelan pada kapasitas penampang saluran terlihat saluran mengalami *overflow* pada saluran Con4, Con 6, Con 8, Con 22 ruas kanan serta Con5, Con7, Con11 pada ruas kiri Jalan Cieunteung, serta debit banjir rencana terbesar terjadi pada saluran Con 11 dan 23. Debit limpasan tersebut diambil dari hasil *running simulation* dengan PUH 5 tahun sebesar 1.246 m³/detik dan 4.633 m³/detik. Alternatif yang dapat dilakukan adalah menormalisasi saluran, melakukan *redesain* saluran, serta menambahkan storage berupa *Long Storage* dan Kolam Retensi.

Kata Kunci: Drainase, EPA SWMM 5.1, Kapasitas Penampang Saluran.

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APPLICATION OF EPA SWMM 5.1 MODEL FOR EVALUATION OF SETTLEMENT DRAINAGE SYSTEM ON THE CIEUNTEUNG ROAD SECTION OF TASIKMALAYA CITY

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ABSTRACT

The population of the Cieunteung area, Tasikmalaya City, which is increasingly dense, causes Cieunteung Road to be one of the roads that has drainage problems. Inundation that occurs when the channel conditions cannot accommodate the runoff discharge because the condition of the drainage channel is not good even at some points it does not work. This study aims to analyze the existing condition of the channel, the cross-sectional capacity of the channel using EPA SWMM 5.1 modeling (Environment Protection Agency Storm Water Management Model), alternative channel handling and the feasibility of the main drain channel. The rainfall data used was obtained from the Cimulu Rain Station for 14 years and the planned rainfall was obtained. The value of the planned rainfall intensity for various return periods of 2, 5, 10, 25 and 50 years is 164 mm/hour, 214 mm/hour, 241 mm/hour, 270 mm/hour, 288 mm/hour. The results of the modeling on the cross-sectional capacity of the channel showed experienced overflow on the Con 4, Con 6, Con 8 and Con 22 right segments and Con 5, Con 7 and Con 11 on the left side of Cieunteung Road and the largest planned flood discharge occurred in Con 11 and 23 channels. The runoff discharge was taken from the results of running simulations with a 5-year PUH of 1,246 m³/second and 4,633 m³/second. Alternatives that can be done are normalizing the channel, redesigning the channel, and adding storage in the form of Long Storage and Retention Pools.

Keywords: Channel Cross-section Capacity, Drainage, EPA SWMM 5.1.

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