

ABSTRAK

Banjir yang kerap melanda Kota Padang, khususnya di Komplek Bumi Lestari Indah, Korong Gadang, Kecamatan Kuranji, disebabkan oleh tingginya curah hujan serta berkurangnya kinerja saluran drainase. Penelitian ini bertujuan mengevaluasi kapasitas saluran drainase eksisting dalam menampung debit banjir rencana dan memberikan rekomendasi perbaikan. Data yang digunakan meliputi hasil survei lapangan, kondisi fisik saluran, serta data curah hujan harian maksimum 10 tahun (2015–2024) dari tiga stasiun hujan terdekat. Analisis hidrologi dilakukan untuk menentukan curah hujan rencana menggunakan beberapa metode distribusi (Normal, Log Normal, Gumbel, dan Log Pearson Type III), sedangkan analisis hidrolika digunakan untuk menghitung kapasitas saluran. Hasil analisis menunjukkan metode Log Pearson Type III paling sesuai dengan nilai curah hujan rencana periode ulang 10 tahun sebesar ± 260 mm/hari dan debit banjir rencana yang melebihi kapasitas saluran eksisting. Kondisi saluran yang mengalami pendangkalan, penyempitan, dan pertumbuhan vegetasi liar memperburuk kapasitas aliran. Rekomendasi perbaikan meliputi normalisasi saluran, pembersihan sedimen, dan peningkatan dimensi saluran agar mampu menampung debit banjir rencana. Penelitian ini diharapkan menjadi acuan bagi pemerintah daerah dan masyarakat dalam upaya mitigasi banjir dan pengelolaan drainase perkotaan.

Kata kunci: drainase, curah hujan, debit banjir rencana, Log Pearson Type III, Komplek Bumi Lestari Indah.

ABSTRACT

Flooding frequently occurs in Padang City, particularly in the Bumi Lestari Indah Complex, Korong Gadang, Kuranji District, due to high rainfall and reduced drainage performance. This study aims to evaluate the capacity of the existing drainage channels to accommodate the design flood discharge and to provide improvement recommendations. The data used include field surveys, the physical condition of the drainage channels, and daily maximum rainfall records from 2015–2024 obtained from three nearby rain gauge stations. Hydrological analysis was conducted to determine the design rainfall using several probability distribution methods (Normal, Log Normal, Gumbel, and Log Pearson Type III), while hydraulic analysis was employed to calculate the drainage channel capacity. The results show that the Log Pearson Type III method is the most suitable, with a 10-year return period design rainfall of approximately 260 mm/day and a design flood discharge that exceeds the capacity of the existing channel. The channel's performance is further reduced by sedimentation, narrowing, and the growth of wild vegetation. Recommended improvements include channel normalization, sediment removal, and enlargement of channel dimensions to accommodate the design discharge. This research is expected to serve as a reference for local government and the community in flood-mitigation efforts and urban drainage management.

Keywords: drainage, rainfall, design flood discharge, Log Pearson Type III, Bumi Lestari Indah Complex.