ABSTRAK

DETEKSI GENANGAN BANJIR DI JAKARTA MENGGUNAKAN MODEL SHETRAN

(Studi Kasus Daerah Aliran Sungai Ciliwung Pada Tahun 2016)

Wiranto Aji[1)], Suroso[2)], Purwanto Bekti S[3)]

[1)]*Mahasiswa Jurusan Teknik Sipil, Universitas Jenderal Soedirman*
[2)] *Dosen Jurusan Teknik Sipil, Universitas Jenderal Soedirman*
[3)] *Dosen Jurusan Teknik Sipil, Universitas Jenderal Soedirman*
Jalan Mayjend Sungkono KM 05, Blater, Purbalingga
e-mail: wirantoaji7.wa@gmail.com

Daerah Aliran Sungai Ciliwung ini meliputi beberapa daerah yaitu Kabupaten Bogor, Kota Bogor, Kota depok dan juga DKI Jakarta. Panjang aliran utama sungai ini hampir 120 km dengan tangkapan airnya seluas 387 km persegi. Hulu sungai ini terletak di daratan tinggi yang terletak di perbatasan Kabupaten Bogor dan Kabupaten Cianjur, atau tepatnya di Gunung Gede, Gunung Pangrango dan daerah Puncak Bogor. Sungai Ciliwung bermuara di daerah Luar Batang, Teluk Jakarta, tepatnya pada koordinat 6° 07'08.2"S 106°49'43.3"E. Deteksi genangan banjir dalam penelitian ini menggunakan metode Sistim Informasi Geografis (SIG) dengan piranti lunak ArcGIS. Data yang diperoleh dari piranti lunak ArcGis terdapat data *Digital Elevation Model*, tata guna lahan, data tanah, data evaporasi, dan data hujan. Metode penelitian dengan model SHETRAN ini membandingkan data terukur genangan banjir dari model SHETRAN dan data terukur genangan banjir lapangan.

Dari analisis model SHETRAN ini peneliti mendapatkan hasil pada tahun 2016 hujan Jakarta terukur Dari data genangan banjir Jakarta yang dihasilkan oleh model SHETRAN adalah 13 cm yang tergolong kedalaman rendah. Sedangkan data terukur memiliki rata-rata ketinggian genangan banjir sedalam 34.22 cm tergolong kedalaman rendah. Data terukur lapangan tercatat bahwa Jakarta Timur Jatinegara sedalam 200cm pada bulan maret dan terendah di daerah Jatinegara sedalam 5cm pada bulan September. Sedangkan untuk model SHETRAN terukur tertinggi Jakarta Utara Pandemangan sedalam 40cm pada bulan April dan terendah pada daerah Jakarta Utara Penjaringan sedalam 1.5cm pada bulan Februari. Dari penelitian ini, model SHETRAN mampu memprediksi ketepatan genangan banjir 66% dan kurang tepat kedalaman banjir sebesar 34%.

Kata kunci: Daerah Aliran Sungai Ciliwung, Genangan Banjir, Genangan banjir Jakarta DAS Ciliwung, SHETRAN, *ArcGIS.*

ABSTRACT

FLOOD DETECTION IN JAKARTA USING THE SHETRAN MODEL

(Case Study of the Ciliwung River Basin in 2016)

WIRANTO AJI[1)], Soroso[2)], Purwanto[3)]

[1)] Student of Civil Engineering Department, Universitas Jenderal Soedirman
[2)] Associate Proffesor of Civil Engineering Department, Universitas Jenderal Soedirman
[3)] Associate Proffesor of Civil Engineering Department, Universitas Jenderal Soedirman
e-mail: wirantoaji7.wa@gmail.com

The Ciliwung River Basin covers several regions, namely Bogor Regency, Bogor City, Depok City and also DKI Jakarta. The length of the main river flow is almost 120 km with a catchment of 387 square km. The headwaters of the river are located on high land which is located on the border of Bogor Regency and Cianjur Regency, or precisely at Mount Gede, Mount Pangrango and Puncak Bogor area. Ciliwung River empties into the Outer Batang area, Jakarta Bay, precisely at coordinates 6 ° 07'08.2 "S 106 ° 49'43.3" E. Flood inundation detection in this study uses the Geographic Information System (GIS) method with ArcGIS software. Data obtained from ArcGis software includes Digital Elevation Model data, land use, soil data, evaporation data, and rain data. This research method with the SHETRAN model compares the measured data of flood inundation from the SHETRAN model and the measured data of inundation in the field.

From the analysis of the SHETRAN model, researchers get the results in 2016 Jakarta rain measured. From the Jakarta flood inundation data produced by the SHETRAN model is 13 cm which is classified as low depth. While the measured data have an average inundation height of floods as deep as 34.22 cm classified as low depth. Field-measured data recorded that East Jakarta Jatinegara was 200cm deep in March and the lowest in the Jatinegara area was 5cm deep in September. As for the SHETRAN model the highest measured North Jakarta Pandemangan was 40cm deep in April and the lowest in the North Jakarta area Penjaringan as deep

as 1.5cm in February. From this study, the SHETRAN model was able to predict the accuracy of a flood inundation of 66% and the inaccurate flood depth by 34%.

Keywords: Ciliwung River Basin, Flood Inundation, Jakarta flood inundation Ciliwung watershed, SHETRAN, ArcGIS.