

# **PENGENDALIAN BANJIR SUNGAI SERANG, WULAN DAN JUANA**

**Sukiswanto**

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## **ABSTRACT**

The Serang-Wulan and Juana are the two largest rivers in terms of catchment area and length, if compared with other rivers under Jratunseluna scheme project. Both rivers are linked by Wilalung gate structure, where flows were historically split, one part of the flows going down the Wulan river and the remainder being discharged into the Juana river. Wilalung gate was built by Dutch Colonial Government on 1908 as a discharge control structure, situated at Kudus district, Central Java. There are eleven gates at Wilalung structure, the two of them are located at Wulan river and nine of them are located at Juana river. Operated by two operators only, during a sudden flood the gates operation become complicated. Furthermore the storage capacity of Serang river for flood retention is insufficient.

This thesis studies the flood phenomenon and its countermeasure especially for gates operation system. The gates should be replaced to a weir at one of the rivers, Wulan or Juana rivers. Conservation of mass and momentum equations are used to calculate the hydrodynamic of flow (discharge, depth of flow and velocity) at each calculation node along the domain. The two equations are solved using finite different method and simulated by DUFLOW software.

The results of this study are (i) the gates operation more simple by maintaining the existing Wulan river gates and the gates at Juana river are replaced by a weir with +3,00 m crest elevation. (ii) the Serang river width are widened to raise the storage capacity for flood retention so that the inundation area of the Serang, Wulan and Juana rivers could be minimized.

**Key words : flood, gate, Wilalung, controlled gate**