

# ANALISIS HIDRAULIKA BANJIR TUKAD BADUNG

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## ABSTRACT

There is densely populated residence along Tukad Badung reach resulting in the misuse of stream for waste disposal outlet. This condition causes the stream becoming the disposal place of waste, household sewage, and industrial waste. Also, there is erosion and sliding of river bank in the upstream. This condition also causes river reaches to shallow due to sedimentation resulting in the decrease of stream capacity to carry off the flood discharge. During recent years, Tukad Badung has been degraded in its function due to various factors occurring from the upstream to downstream resulting in the stream incapable to carry off the flood discharge optimally. The change of land use occurred in the watershed causes the change in stream flow pattern that can be seen from the high discharge fluctuation during rainy and dry seasons. The objective of this study is to observe 50 year return period flood water surface profile and to determine the flood control alternatives.

Hydrology and hydraulic analyses are carried out in the study. Hydraulic modeling of the river system is accomplished using the Hydrologic Engineering Center-River Analysis System (HEC-RAS) software of version 3.1.2. The stream is assumed to be a single reach using the upstream boundary at AWLR Wangaya and downstream boundary at Nusa Dua estuary dam. The geometric input is conducted for the existing, normalization, and dikes conditions, whereas the flow hydrograph and rating curve are using for upstream boundary and the downstream boundary respectively.

Based on the result of hydraulic analysis, the overtopping is occurred at 27 River Stations at the left bank and 23 River Stations at the right bank. The flood controlling by normalization is capable of decreasing flood water surface with the non existence of overtopping both at the left and right banks. The flood controlling by dike is also capable of retaining the flood discharge without the overtopping at the left and right banks. That can be concluded, by normalization or by dike the Tukad Badung is capable of carrying off the 50 year return period flood discharge. Calculation results shows the flood controlling by dike requires cost of Rp 1.118.376.638,35,- and by normalization requires cost of Rp. 1.316.571.000,00,- .

**Keyword :** *Hydraulic modeling, Water surface profile, Flood control alternatives.*