

**PERINGATAN DINI BANJIR SUNGAI BABAK
UNTUK PENGURANGAN RISIKO BENCANA
DI KABUPATEN LOMBOK BARAT PROVINSI NUSA TENGGARA BARAT**

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ABSTRACT

Babak River is a river that overflows almost every year across the region of the Central Lombok district administration and the district of West Lombok. Flood which occurred on January 10, 2009, is regarded as the largest flood in the West Lombok district and surrounding areas. The flood resulted in tremendous losses including economical, social and environmental aspect. Reducing the risk of flood overflow of the Babak River is very necessary. Effort that can be done is to build the Flood Early Warning Systems in the flood prone area.

The flood early warning system that will be applied in Babak River watershed is a system of early warning rainfall and water surface level indicator. The data used in this study include rainfall data, discharge data and geometry data along 30.63 km of the Babak River. HEC-HMS support version 3.3 software is implemented to rainfall-runoff simulation, to select rainfall station that mostly affects the flood, and to determine expected warning time. Bankfull capacity of the river and water surface level that causes the flowing as well as flood flow travel time were analyzed using HEC-RAS support version 4.0 software.

The result shows that Lingkok Lime rainfall station and water surface level above weir Gebong at sta. 20473.4 could be used for flood early warning system at Babak River, especially in determining Bankfull capacity, rainfall intensity and water level. Bankfull capacity of the river was reached at discharge of 112 m³/s in sta. 4236.8. This is caused by rainfall with the intensity of 25 mm distributed during 1 hour or rainfall with the intensity of 35 mm distributed during 1.5 hour and water surface level above the weir crest Gebong 2.0 m. There are four indicators of flood preparedness level at Babak River. Rainfall intensity < 25 mm and water surface level above the weir crest Gebong < 2.0 m indicates “normal” status. Rainfall intensity 25 - 50 mm distributed during 1 hour and water surface level 2.0 – 2.6 m indicates “ready” status (green). Rainfall intensity 50 - 80 mm distributed during 1.5 hour and water surface level 2.6 – 3.2 m indicates “alert” status (yellow). Lastly, the rainfall intensity >80 mm distributed during 2 hour and water surface level >3.2 m indicates “beware” status (red). The time required by rainfall to reach control point of weir Gebong was 170 minutes while flood travel time from control point of weir Gebong to flood prone area was 130 minutes, thus the total of warning time was 300 minutes.

Keywords: Rain, Floods, HEC-HMS, HEC-RAS, the Flood Early Warning System