ABSTRACT

Flood early warning system plays an important role in flood risk reduction by providing the information of river condition and the actual mitigation time for evaluation. Flood is a natural hazard caused by at least two main factors namely rainfall and topographical conditions. A high rate of rainfall is not likely to cause flood if it occurs in a relatively high area capable of channeling or distributing the water in the area concerned. Bima is a city at West Nusa Tenggara province, Indonesia where recently big floods occurred and hit the city. In this cause, flooding is from the heavy rainfall and the topographical condition that damage the properties. The purpose of this study is to provide the information of flooding and the actual mitigation time before it occurs by focusing on hydrology and hydraulic analysis. It is a critical factor for early warning.

The study consists of hydrologic and hydraulic analyze by using HEC-HMS and HEC-RAS software to obtain the maximum river capacity, to determine the cumulative rainfall depth in warning time and available mitigation time before flood occurred.

The result of this study provides the information for flood with 2-year, 10-year and 50-year return period at Bima City. The maximum capacity of Padolo River is 66 m^3/s floods correspond to the maximum cumulative of rainfall depth 24 mm. The actual mitigation time is 2 hours 23 minutes, 2 hours 8 minutes and 1 hour 51 minutes.

Keywords: Flood Early Warning System, HEC-HMS and HEC-RAS