

**SIMULASI 1-D BANJIR AKIBAT KERUNTUHAN BENDUNGAN ALAM**  
**Studi Kasus Bencana Banjir Bandang di Sungai Kaliputih,**  
**Kabupaten Jember Tahun 2006**

**Yanuar Tri Kurniawan**  
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**ABSTRACT**

On January 1, 2006 flash flood disaster (in Indonesia is known as banjir bandang) occurred in Kaliputih River, Jember District of East Java Province. This disaster resulted in more than 80 people were killed and hundreds were injured. The disaster was caused by natural dam break. The natural dam was formed by landslide due to heavy rainfall. After the January 2006 disaster, new cracks and crevices were found in the upstream area of Kaliputih River. Based on this condition, can not be disregarded repetition of similar disaster in the future. Therefore, it is required to conduct mitigation efforts in order to anticipate of similar disaster in the future. One of the mitigation efforts is by modeling simulation of the past event. The understanding which is obtained from the simulation can be used as reference to arrange plan and action of other mitigation efforts.

Modeling simulation of the January 2006 flood was conducted involving 1-D model of HEC-RAS version 4.1.0 software. Flood hydrograph was obtained by analyzing related hydrologic aspects using Nakayasu method. The natural dam model was interpreted from field observation and related references. Some assumptions were taken relating of study constraints. Model calibration was conducted by repeatedly simulation using fixed discharge and parameter values in a certain range. The observations were carried out to the maximum water surface elevation and tracing of flood to downstream.

Calibration model result showed that the height of natural dam was significantly influence to changes of water surface elevation at control point. Tracing of flood result in reconstruction of January 2006 flood showed the conformity with the real event. Observed from the arrival time of flood at certain location. From obtained results in this study, it can be concluded that modeling simulation was applied with acceptable results.

Keywords : *flash flood, simulation, natural dam*