KAJIAN PENGENDALIAN SEDIMENTASI
WADUK PANGLIMA BESAR SOEDIRMAN DENGAN TEKNOLOGI SABO

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ABSTRACT

Natural disaster due to sediment/debris flow often occurs in volcanic area or mountainous area. Sediment/debris flow has a big destruction so it is very dangerous to human lives and infrastructures along the river and it surroundings. One of the countermeasures against sediment/debris flow is by constructing checkdam/sediment control dam. In order to know the effectiveness of the dam to control sediment/debris flow, a physical model test at 1:25 scale was conducted.

Existing checkdam K Boyong No 5 (BOD5) is taken as a model with several modification. Peak discharge was modified from $Q_2 = 188 \text{ m}^3/\text{sec}$ during 70 minutes to $Q_2 = 59.84 \text{ liter/sec}$ during 14 minutes and the width of slits from 3 m to 8.4 cm. Simulation of sediment or debris flow in the model applies simplified flood hydrograph of 50 years return period at AWLR Pulowatu those are $Q_1 = 11.2 \text{ liter/sec}$ during 10 minutes, $Q_2 = 59.84 \text{ liter/sec}$ during 14 minutes, $Q_3 = 36 \text{ liter/sec}$ during 20 minutes, and $Q_4 = 16 \text{ liter/sec}$ during 16 minutes. Implementation of running test of the model use both open and close type of checkdam.

Results of the expriment reveal that controlled sediment volume (Vc) for open type sediment control dam after flowing of discharge $Q_1$ is 0.137 m$^3$, $Q_2$ is 2.749 m$^3$, and after $Q_3$ and $Q_4$ are 1,748 m$^3$. The controlled sediment volume (Vc) for close type sediment control dam after flowing of discharge $Q_1$ is 0.081 m$^3$, $Q_2$ is 1,989 m$^3$, and after $Q_3$ and $Q_4$ are 1,761 m$^3$. Based on the controlled sediment volume, open type sediment control dam is more effective than close typesediment control dam.

Keywords: sediment control dam, debris flow, effectiveness, physical model test