PENGARUH PENAMBANGAN GALIAN C DI SUNGAI SOMBE DAN SUNGAI LEWARA TERHADAP SISTEM PENGENDALIAN ALIRAN DEBRIS

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ABSTRACT

Sombe River and Lewara River is a torrent river where the bottom slope in the upstream is relatively steep and the debris flow could potentially occur. As a debris flow mitigation efforts, there are 6 units of check dams in the Sombe River and 2 units in the Lewara River. The development of physical infrastructure caused the material needs also increased. Excessive material exploitation may cause the environmental damage (degradation) including the defect of sediment control dam, so therefore the sediment balance management needs to be done.

This study aims to assess the sediment balance based on the estimated of sediment flowing from the Sombe River and Lewara River upstream to the meeting point of the two rivers (control points). The analysis of the sediment inflow volume was approached with Takahashi (1991) and Mizuyama (1977) empirical formula while the sediment outflow volume was approached with Shimoda (1995) empirical formula. The balance simulation result is used to determine the ability of existing check dam in controlling the sediment inflow volume without mining activities and if mining activities occur.

The results obtained that the sediment balance without any mining activities that accounted by volume of sediment inflow assuming with rainfall limit 10 mm to 60 mm per day can lead to sediment runoff at the control points. The sediment inflow volume that can be controlled by checkdam is 10.22% to 70.70%. In the condition of mining activities occured, the sediment runoff developed at the control points that accounted by volume of sediment inflow assuming rainfall limit 10 mm to 40 mm per day. The sediment inflow volume that can be controlled by checkdam capacity and reduced by mining activity is 23,64% to 84,23%. Optimization functions of the existing sediment control dam by returning the storage capacity and effecting the checkdam control function can improve the ability of structural mitigation of debris flow disaster.

Keywords: sediment balance, checkdam, mining