

Distribusi Ukuran Sedimen Boulder Yang Melalui Sabo Dam Tipe Beam (Uji Laboratorium)

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ABSTRAK: Sabo dam merupakan salah satu struktur pengendali sedimen yang berfungsi menahan material berukuran besar agar tidak terbawa aliran menuju hilir. Namun, pada beberapa kasus, termasuk kejadian longsoran di lereng Gunung Bawakaraeng, ditemukan boulder berukuran besar yang mampu melewati sabo dam tipe beam. Kondisi tersebut mengindikasikan adanya ketidaksesuaian antara desain struktur dan karakteristik aliran debris di lapangan. Penelitian ini bertujuan untuk menganalisis distribusi ukuran sedimen boulder yang berhasil melewati sabo dam tipe beam serta mengetahui pengaruh variasi kemiringan saluran terhadap kemampuan struktur dalam menahan sedimen. Penelitian dilakukan melalui uji laboratorium menggunakan model open flume dengan variasi kemiringan tertentu dan analisis ukuran sedimen menggunakan metode analisis saringan. Hasil penelitian diharapkan memberikan pemahaman yang lebih baik mengenai perilaku sedimen boulder terhadap geometri sabo dam, sehingga dapat menjadi dasar untuk evaluasi desain dan peningkatan efektivitas sabo dam tipe beam dalam mengendalikan sedimen kasar di daerah rawan erosi dan aliran debris.

KATA KUNCI

Boulder, sabo dam tipe beam, distribusi ukuran sedimen, kemiringan saluran, simulasi laboratorium.

ABSTRACT: Sabo dams are sediment control structures designed to retain large debris materials and prevent them from being transported downstream. However, in several cases, including the landslide event on the slopes of Mount Bawakaraeng, large boulders weighing up to several tons were found to pass through beam-type sabo dams. This condition indicates a mismatch between structural design and the actual debris flow characteristics in the field. This study aims to analyze the size distribution of boulder sediments that pass through a beam-type sabo dam and to examine the influence of channel slope variations on the structure's effectiveness in retaining coarse sediments. The research was conducted through laboratory-scale simulations using an open-flume model with different slope configurations, followed by sediment size analysis using the sieve method. The results of this study are expected to provide a better understanding of boulder sediment behavior in relation to sabo dam geometry, and to serve as a scientific basis for evaluating and improving the performance of beam-type sabo dams in sediment-prone and debris-flow-prone environments.

Keywords:

Boulder, beam-type sabo dam, sediment size distribution, channel slope, laboratory simulation