



## INTISARI

Pada Desember 2022, hujan lebat yang melanda kawasan Gunung Geulis, Sumedang menyebabkan terjadinya bencana longsor pada lereng gunung. Akibat dari tanah longsor dan hujan menyebabkan terjadinya banjir debris yang melanda Desa Sawahdadap yang berada di kaki Gunung Geulis, tepatnya di Sungai Ciseureupan. Banjir debris menyebabkan beberapa dampak, yaitu: rusaknya rumah warga, infrastruktur jalan dan drainase, serta korban jiwa. Pemerintah melalui Balai Teknik Sabo melakukan advis teknis dari bencana banjir debris tersebut, dan membuat rancangan sabo dam, untuk penanganan bencana jangka panjang untuk pengamanan Sungai Ciseureupan.

Penelitian ini menggunakan data sekunder berupa laporan hasil advis teknis, *shop drawing* desain awal, dan beberapa data yang didapatkan secara *online*. Penelitian ini dilakukan dengan membandingkan desain awal dari sabo dam dengan perhitungan desain sabo dam desain alternatif. Kemudian, pada perhitungan stabilitas, digunakan tiga macam perhitungan untuk menghitung stabilitas dari sabo dam, yaitu dengan perhitungan gaya sesuai SNI 2851:2015, perhitungan keseluruhan gaya pada kondisi awal, dan perhitungan keseluruhan gaya pada kondisi penuh. Hasil analisis menunjukkan bahwa desain awal tidak dapat menahan stabilitas geser pada perhitungan keseluruhan gaya pada semua kondisi.

Berdasarkan hasil penelitian ini, didapatkan nilai curah hujan rancangan dengan kala ulang 50 tahun sebesar 114,6 mm dan debit banjir sebesar 7,14 m<sup>3</sup>/s. Berdasarkan analisis perhitungan sedimen didapatkan konsentrasi sedimen sebesar 0,558 kemudian didapatkan debit aliran debris sebesar 11,12 m<sup>3</sup>/s. Berdasarkan hasil perencanaan sabo dam didapatkan sabo dam dengan tinggi efektif sebesar 2 m dengan kedalaman pondasi sebesar 0,8 m dengan kemiringan *main dam* sebesar 1:1,3 pada hulu dan 1:0,2 pada hilir. Panjang dari *apron* didapatkan sebesar 17 m dan ketinggian total dari *sub dam* sebesar 2 m. Adapun pada perhitungan stabilitas, desain alternatif sudah memenuhi angka aman, sehingga desain dapat diterima.

**Kata kunci:** Sungai Ciseureupan, banjir debris, sedimen, sabo dam, stabilitas



## ***ABSTRACT***

In December 2022, heavy rains that fall at Mount Geulis area in Sumedang caused a landslide on the mountainside. As a result of the landslide and rain, a debris flood hit Sawahdadap Village, which is located at the foot of Mount Geulis, precisely in the Ciseureupan River. The debris flood caused several impacts, namely: damaged houses, road and drainage infrastructure, and casualties. The government through the Balai Teknik Sabo conducted technical advice from the debris flood disaster, and made a sabo dam design, for long-term disaster management to secure the Ciseureupan River.

This study uses secondary data in the form of technical advice reports, initial design shop drawings, and some data obtained online. This research was conducted by comparing the initial design of the sabo dam with the calculation of the alternative design sabo dam design. Then, in the calculation of stability, three types of calculations were used to calculate the stability of the sabo dam, namely by calculating the force according to SNI 2851: 2015, calculating the overall force in the initial condition, and calculating the overall force in the full condition. The analysis results show that the initial design cannot withstand shear stability in the calculation of the overall force in all conditions.

Based on the results of this study, the design rainfall value with a return period of 50 years is 114.6 mm and a flood discharge of 7.14 m<sup>3</sup>/s. Based on the analysis of sediment calculations, a concentration of sediment is 0.558, then a debris flow discharge is 11.12 m<sup>3</sup>/s. Based on the results of sabo dam planning, a sabo dam with an effective height of 2 m is obtained with a foundation depth of 0.8 m with a main dam slope of 1: 1.3 at upstream and 1: 0.2 at downstream. The length of the apron was found to be 17 m and the total height of the sub dam was 2 m. As for the stability calculation, the alternative design has met the safety number, so the design is acceptable.

**Keywords:** Ciseureupan, River, debris flood, sediment, sabo dam, stability