

# **PENGELOLAAN SEDIMEN KALI BOYONG (MIGRASI ALAMI DAN CAMPUR TANGAN MANUSIA)**

**Sri Utami Sudiarti**  
14579/PS/MPBA/04

Telah dipertahankan di depan Dewan Penguji  
Pada tanggal 11 April 2006

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## **ABSTRACT**

Boyong River is administratively situated on Sleman Regency, Yogyakarta Province and it stretches about 38 km. The river is upstream lies on the Southport of Merapi Mountain. Seven units of Sabo dams have been built in stream in order to anticipate sediment disaster. The upper unit of those dams is Boyong 7 Dam (BOD-7) which then followed by other Sabo dams. C-class sand mining intensively operated since the year 1995 will cause environmental damage and decrease the function of Sabo dam.

The research is aimed at sediment transport volume prediction and sediment balance estimation concerning the sediment deposit caused by flood occurred in 1995. The analysis of incoming sediment volume ( $vS$ ) is conducted using empirical equation of Takahashi (1991) and Mizuyama (1977). Over flowed sediment volume is analyzed using empirical equation of Shimoda (1995). Sediment balance analysis is calculated based on the year 1995-2001 incoming sediment volume. It is also compared to the year 1995 incoming sediment volume according to Frank's research (1995).

The research results in critical rainfall of 10 mm and 5 years accumulated sediment ( $f = 0.5 V C$ ). The 5 years accumulated sediment (1995-1999) shows that net incoming sediment volume is 2,502,015 m<sup>3</sup> and the amount of sand mining is 1,717,199 m<sup>3</sup>. The incoming sediment volume is less than the volume of sand mining which is about 94.8 %. Natural over flowed sediment volume those are BOD7 of 524,249 m<sup>3</sup>, BOD-6 of 630,209 m<sup>3</sup>, BOD-5 of 629,169 m<sup>3</sup>, and BOD-4 of 213,664 m<sup>3</sup>. Over flowed sediment volume after mining only occur are BOD-7 and BOD-6. Incoming sediment volume must be proportional to sand mining volume so that sediment balance continuation can be sustained. Sediment management is needed in order to maintain sediment balance. Law enforcement, appropriate regulation, and mining activity supervision must be improved.

**Key words** : *sabo dam, sand mining, sediment balance, over flowed volume*