

PENGARUH VARIASI DIAMETER BUTIRAN SEDIMEN TERHADAP VOLUME PENGGELONTORAN SEDIMEN DI WADUK (UJI EKSPERIMENTAL)

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Abstrak

Pengaruh Variasi Diameter Butiran Sedimen Terhadap Volume Penggelontoran Di Waduk dibimbing oleh Riswal K dan Amrullah Mansida. Usaha yang bisa dilakukan untuk mengatasi permasalahan sedimentasi didalam saluran floodway adalah dengan melakukan pembilasan atau penggelontoran sedimen secara hidrolis (*Hydraulic flushing*). Pembilasan atau penggelontoran sedimen secara hidraulis (*Hydraulic flushing*) adalah cara yang lebih baik untuk mengembalikan kapasitas reservoir bila dibandingkan dengan cara lain seperti penggalian atau pengerukan secara manual (*Dredging*). Penelitian ini bertujuan untuk mengetahui kinerja metode flushing conduit terhadap variasi diameter butiran sedimen dan pengaruh diameter butiran sedimen terhadap volume penggelontoran. Variasi diameter butiran sedimen yang digunakan dalam penelitian ini adalah sedimen halus, sedimen sedang, dan sedimen kasar berdasarkan skala wentworth dari hasil analisa saringan. Dari hasil penelitian menunjukkan jumlah sedimen yang tergelontor untuk butiran sedimen halus jumlah volume gelontor (v_g) $0,0612 \text{ m}^3$, butiran sedimen sedang jumlah volume gelontor (v_g) $0,0488 \text{ m}^3$ dan, butiran sedimen kasar jumlah volume gelontor (v_g) $0,0038 \text{ m}^3$. Kinerja *Flushing Conduit* menunjukkan semakin kecil diameter butiran sedimen volume gelontor (v_g) cenderung meningkat akibat butiran sedimen yang leluasa masuk ke dalam pipa isap. Mekanisme kerja *flushing conduit* terbagi atas tiga tahapan yaitu memberikan tekanan sehingga terjadi fluidasi, proses penghisapan endapan sedimen masuk kedalam pipa akibat fluktuasi debit dan tekanan, serta transportasi sedimen dalam pipa.

kata kunci : Waduk, Sedimentasi, *Flushing Conduit*.

Abstract

The Effect of Sedimentation of Sediment Grain Variation on Residual Volume in the Reservoir is guided by Riswal K and Amrullah Mansida. The effort that can be done to overcome the sedimentation problem in the floodway channel is to do the hydraulic flushing (Hydraulic flushing). Hydraulic flushing (Hydraulic flushing) is a better way to restore the reservoir capacity when compared to other means such as excavation or dredging (Dredging). This study aims to determine the performance of the flushing conduit method on the variation of the diameter of the sediment grains and the effect of the diameter of the sediment grain on the flushing volume. Variations in the diameter of the sediment grains used in this study were fine sediments, moderate sediments, and coarse sediments based on goworth scale from filtering results. The result showed that the amount of sediment that was flushed for the fine sediment grains of volume amount of gelontor (v_g) 0.0612 m^3 , medium sediment grain amount of volume (v_g) $0,0488 \text{ m}^3$ and, coarse sediment grain amount of gelontor volume (v_g) $0,0038 \text{ m}^3$. Flushing Conduit performance shows that the smaller diameter of grain of sediment volume of gelontor (v_g) tends to increase due to the sediment grains that freely enter into suction pipe. Working mechanism of flushing conduit is divided into three stages, namely to provide pressure so that fluidation occurs, sediment sediment absorption process into the pipe due to fluctuations in flow and pressure, as well as sediment transport in the pipeline.

Keywords: Reservoir, Sedimentation, Flushing Conduit.