

# STUDI PENGARUH KETEBALAN SEDIMEN PADA *FLUSHING COINDUIT* TERHADAP VOLUME PENGGELONTORAN DENGAN MATERIAL DASAR PASIR HALUS DI WADUK (UJI EKSPERIMENTAL)

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## Abstrak

Studi Pengaruh Ketebalan Sedimen Pada Flushing Conduit Terhadap Volume Penggelontoran Dengan Material Dasar Pasir Halus Di Waduk dibimbing oleh Ratna Musa dan Amrullah Mansida. Sumber utama kerusakan DAS merupakan bagian dari erosi dan sedimentasi. Kerusakan Daerah Aliran Sungai (DAS) sebagai daerah tangkapan air di waduk menyebabkan tingginya erosi lahan sehingga angkutan sedimen meningkat yang berdampak terhadap pengurangan kapasitas waduk, dan berpengaruh pada penyediaan fungsi waduk antara lain kebutuhan air irigasi, PLTA, Kebutuhan air bersih, dan lain-lain. Penelitian ini bertujuan untuk mengetahui kinerja metode flushing conduit terhadap variasi ketebalan sedimen dan pengaruh ketebalan sedimen terhadap volume penggelontoran. Karakteristik sedimen yang digunakan dalam penelitian ini adalah pasir halus berdasarkan skala wentworth dari hasil analisa saringan. Dari hasil penelitian menunjukkan jumlah sedimen yang tergelontor untuk  $Q_1$  yaitu pada ketebalan sedimen ( $d_b$ ) 20 cm jumlah volume gelontor ( $v_g$ )  $0,0037 \text{ m}^3$  atau 3,083%, ketebalan sedimen ( $d_b$ ) 30 cm jumlah Volume tergelontor ( $v_g$ )  $0,0032 \text{ m}^3$  atau 1,77% dan pada ketebalan sedimen ( $d_b$ ) 40 cm jumlah volume gelontor ( $v_g$ ) yaitu  $0,0029 \text{ m}^3$  atau 1,208%. Kinerja *Flushing Conduit* menunjukkan semakin tebal endapan sedimen ( $d_b$ ) volume gelontor ( $v_g$ ) cenderung menurun akibat adanya kepadatan pada sedimen. 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 : *Flushing Conduit*, Penggelontoran, Sedimentasi.

## Abstract

*Study of Effect of Sediment Thickness on Flushing Conduit Against Flushing Volume With Soil Basal Based Material In Reservoir is guided by Ratna Musa and Amrullah Mansida. The main source of watershed damage is part of erosion and sedimentation. Damage to watersheds in watersheds leads to high erosion of land so that sediment transport increases which impacts reduction of reservoir capacity, and influences the provision of reservoir functions such as irrigation water needs, hydropower, clean water needs, etc. This study aims to determine the performance of the flushing conduit method on sediment thickness variations and the effect of sediment thickness on the flushing volume. Sediment characteristic used in this research is fine sand based on wentworth scale from result of filter analysis. The results showed that the amount of sediment that was flushed for  $Q_1$  was on the thickness of the sediment ( $d_b$ ) 20 cm the volume of gelontor ( $v_g$ )  $0,0037 \text{ m}^3$  or 3,083%, the thickness of sediment ( $d_b$ ) 30 cm Volume was flushed ( $v_g$ )  $0,0032 \text{ m}^3$  or 1.77% and on the thickness of sediment ( $d_b$ ) 40 cm the amount of volume of gelontor ( $v_g$ ) is  $0.0029 \text{ m}^3$  or 1.208%. Flushing Conduit performance shows that the thickness of the sediment deposition ( $d_b$ ) of gelontor volume ( $v_g$ ) tends to decrease due to the density of the sediment. 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: Flushing Conduit, Flushing, Sedimentation.*