

Interactive comment on “Assessment of optimal empty flushing strategies in a multi-reservoir system” by F. N.-F. Chou and C.-W. Wu

Anonymous Referee #2

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General comments: Reservoir sedimentation management is important worldwide and this paper will contribute to introduce empty flushing operation in multiple reservoirs by considering both flushing efficiency and keeping suitable storage for water supply conditions. This optimization scheme will be valuable in case reservoir sizes are too large to recover storage volume in a short period after emptying flushing.

Specific comments: In the calculation of empty flushing, Eq.(1) is very much important but still unknown parameters are still exist. $W = 12.8 Q^{0.5}$ and ψ are those key factors. In case higher than EL.185 in Fig.8, we hardly say this is empty flushing and cannot apply Eq.(1) for sediment flushing volume. These are categorized to not free flow flushing but to pressure flushing without fully draw down. If so, there is very limited or almost no data for Tsengwen Reservoir lower than EL.185. This is very much critical defect in this paper. Another issues are environmental constraints. Generally, free flow

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flushing should be designed to minimize environmental impacts by high turbidity flow conditions. If so, periodical and short period draw down is suitable. In this regard, every year like in the Kurobe River, Japan or every three years in the Rhone River, Swiss-France are the good examples. Additionally, in order to avoid too much social stress to downstream water users, total duration of empty flushing should be limited less than couples of days because they should stop intake river water during high turbid water passing and they have the maximum acceptable duration for stopping intake. In this paper, if possible, such conditions should be considered. Lastly, one graph which shows sedimentation progress with and without empty flushing should be included.

Technical comments: P3, Line 4, The Tarbela Reservoir is not in Iran but in Pakistan. P21, Line 4, Fig.1 should be changed to Fig.2.

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