



Innovative Dredging Technologies – Water Injection Dredging

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®



Focus Area

Innovation in Sediment Management - Innovative Construction and Operations Technologies and Practices

Problem

Dwindling multi-purpose pool capacity at the 419 USACE managed and operated dams and reservoirs with active storage requirements due to sedimentation.

Study Description

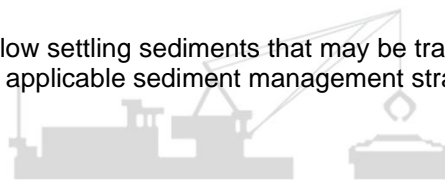
Water injection dredging (WID) is being investigated as a potential low-cost, rapidly implementable technology to maintain or restore reservoir pool capacity. The Tuttle Creek WID Demonstration provides an opportunity to prove its utility and develop operational protocols. Demonstration planning and a pre-dredging field data collection campaign are in progress by the USACE and the State of Kansas. 1-year of trial events will begin in May 2024. In preparation for the demonstration, the sediment has undergone testing for chemical and physical properties, fluidization, settling, submerged angle of shear resistance, and density current transport in a 130 ft x 3 ft x 3 ft flume.

Products

- 1) New management strategy and technology for dam and reservoir managers and operators to sustain pool capacity past designed life.
- 2) Technical Report – Water Injection Dredging and Density Current Laboratory Study.
- 3) Technical Report - Tuttle Creek Water Injection Dredging Demonstration

Summary

Reservoirs and dams with fluidizable and slow settling sediments that may be transported by density current to outlet works may find water injection dredging an applicable sediment management strategy.



Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.



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