Tuttle Creek Water Injection Dredge Build Milestone IV

The Tuttle Creek Water Injection Dredging Demonstration has been fully assembled at the USACE Reservoir Tuttle Creek Lake by Michels Construction, Custom Dredge Works, and Measutronics. The demo is proceeding on schedule, presently the dredge is undergoing shakedown sea trials and is proceeding on schedule. Start of dredging is planned for the morning of September 17th.

Operating a modular WID in a reservoir presents unique challenges for the captain and crew. The custom design has unique handling characteristics to consider:

A. **Shallow Draft** – The dredge drafts approximately 4 feet with a flat bottom, which is a very maneuverable configuration allowing for a tight turning radius.
B. **Cross-Sectional Area** – The barge freeboard, deck equipment, pilot house, and spud anchors present a significant cross-sectional area for wind to steer the vessel.
C. **Multiple Independent Propulsion Systems** – An independent push-boat and on-board thrusters provides great maneuverability but requires a skilled pilot.
D. **Dredging Induced Propulsion** – The water injection system, under some conditions, may impart a thrust to the barge assembly.
E. **Suction Effects** – The injection system intakes a large volume of water, 36,000 gallons/minute, from under barge assembly, creating a flow field in the vicinity, and may influence handling.

Figure 3. Dredge operating with jet-manifold above water [The Mercury].

Figure 4. The jet-manifold with 78 x 2-inch nozzle configuration [Dredging Today].

With these considerations, the dredge operator, Michels Construction, is now performing comprehensive shakedown and sea trials. The intent of the trials is to improve operator skill and confidence so that dredging operations are as efficient as possible for the demonstration period. Additionally, dredging at night presents visibility challenges as the austere location offers little to no ambient light or easily identifiable reference points. This will require the captain to maneuver by instrumentation and communication with the crew.

Link: https://themercury.com/preparations/image_b52690e3-4671-4e7f-8f31-7a7e8284c848.html

https://www.dredgingtoday.com/2025/09/12/all-set-for-innovative-tuttle-creek-lake-dredging-project/

Funding: Innovative Sediment Management Project (FY24-26), Dredging Operations and Environmental Research (FY19-23), Ecosystem Management and Restoration Research Program (FY25)

POC: Zachary Tyler, Research Physical Scientist, Coastal Engineering Branch, Coastal and Hydraulics Laboratory Zachary.J.Tyler@usace.army.mil; Dr. Paul Schroeder, Environmental Engineering Branch, Environmental Laboratory, Paul.R.Schroeder@erdc.dren.mil