# WATER INJECTION DREDGING IN TUTTLE CREEK RESERVOIR


## AUTHORS

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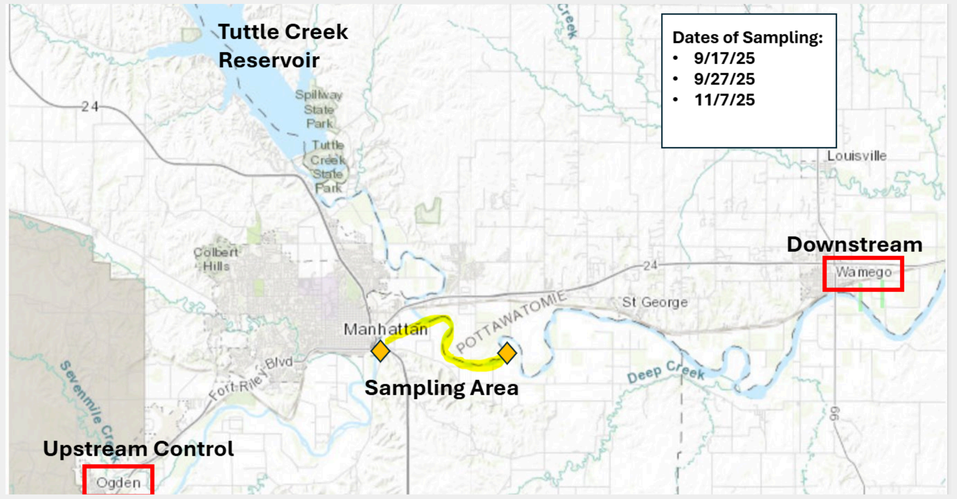
## INTRODUCTION/WHAT IS WID?

- Purpose of addressing sedimentation build-up and loss of water storage capacity in the Tuttle Creek Reservoir.
- Goal of evaluating whether WID is successful in dislodging sediment and restoring reservoir storage capacity.
- WID (Water Injection Dredging) is a technique used to dislodge and fluidize built-up sediment and carry it downstream through a subsurface density current.
- WID operation was initiated by the U.S. Army Corps of Engineers on September 17, and ran until September 27.

## OBJECTIVE/HYPOTHESIS

- Investigate the potential effects of WID on water quality downstream of Tuttle Creek Reservoir.
- Measure concentrations of TSS and nutrients before, during, and after WID.
- Assess whether TSS and nutrient concentrations increased downstream following WID cessation.



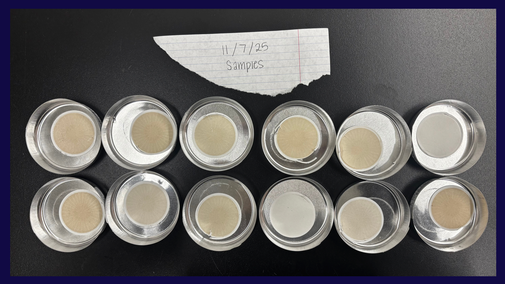

MAP OF STUDY AREA WITH LABELS FOR UPSTREAM, DOWNSTREAM, AND SAMPLING ZONES.

## METHODOLOGY

- Collection of water samples to examine total suspended solids, nitrate, and phosphate concentrations.
- Systematic review of social media posts.

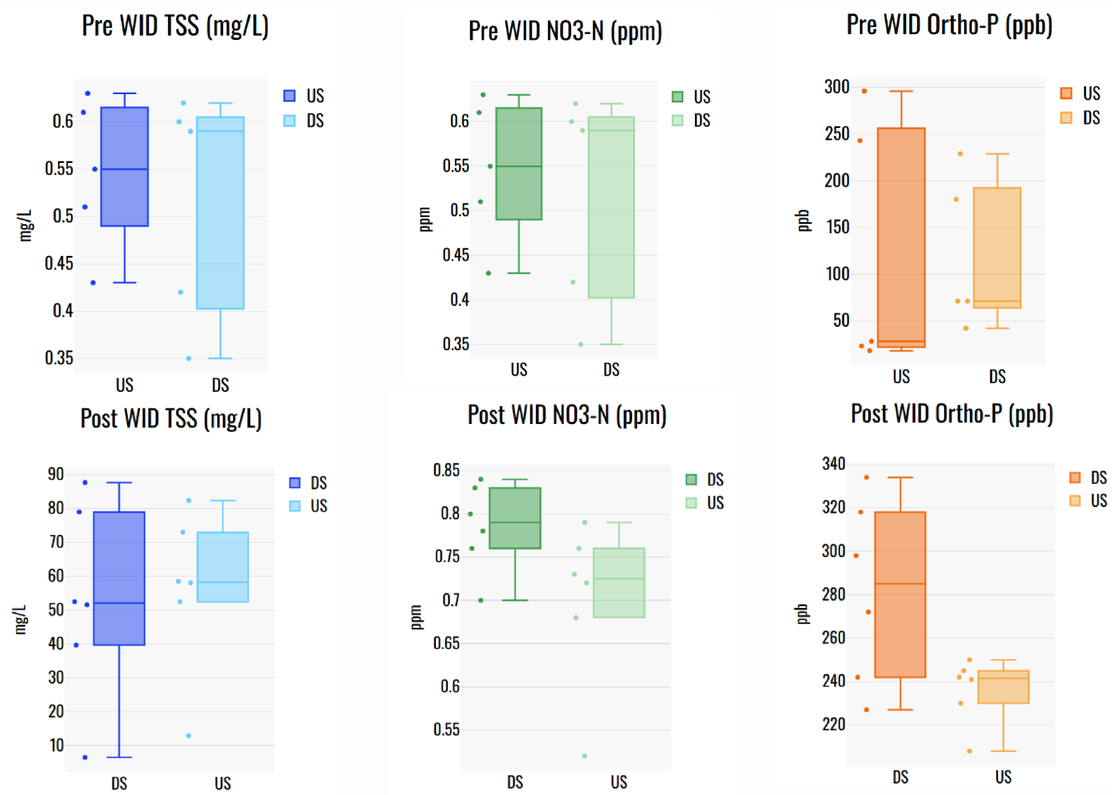
## RESULTS/FINDINGS

Our recorded results revealed no statistically significant difference in levels of total suspended solids, nitrate, and phosphate at the Tuttle Creek Reservoir pre and post WID. This was the case both upstream and downstream of the WID site.




## ANALYSIS

Graphs below depict the difference in TSS, nitrate, and phosphate concentrations upstream and downstream of Tuttle Creek Reservoir pre and post WID.




## CONCLUSION

The WID operation in Tuttle Creek Reservoir showed no statistical long-term impacts on the downstream levels of total suspended solids, nitrate, and phosphate. Further studies should aim to assess whether water injection dredging is a viable option for sedimentation control in freshwater reservoir management.