



**FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF WATER RESOURCES ENGINEERING
FINAL YEAR PROJECT**

**MODELING THE ENVIRONMENTAL AND ECONOMIC
IMPACTS OF DREDGING ON RIVER MANAFWA**

BY

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BU/UP/2021/0301**

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**A final year project report submitted to the Department of Water Resources
Engineering in partial fulfillment of the requirement for the award of the
Bachelor of Science in Water Resources Engineering of Busitema University**

APRIL, 2025

ABSTRACT

The environmental implications of dredging River Manafwa in Eastern Uganda, a critical water source supporting agriculture and local ecosystems, remain underexplored despite increasing dredging activities. This study aims to assess the impact of dredging on water quality, focusing on parameters such as turbidity, pH, dissolved oxygen, and heavy metal concentrations, while evaluating sedimentation's influence on water treatment costs. Utilizing baseline water sampling at multiple river sites, pre- and post-dredging data was analysed to identify shifts in water quality, employing multivariate statistical methods to isolate primary influencing factors. Hydrodynamic modelling through HEC-RAS facilitates the simulation of dredging impacts on river flow and sediment transport, providing predictive insights into potential downstream water quality deterioration. Additionally, sediment sampling and filtration efficiency tests were conducted to assess the increased demands on water treatment infrastructure caused by dredging-related sediment resuspension. (Results and findings and what they mean in summary) This research was contributing valuable data to guide sustainable dredging practices, mitigate ecological impacts, and support water quality management in alignment with Uganda's National Development Plan and SDG 6, promoting the sustainable management of water resources. The findings aim to offer a framework for minimizing dredging's adverse effects on water quality, benefiting both environmental health and community livelihoods.

Keywords: Dredging, Turbidity, Heavy Metals, Dissolved Oxygen, pH

DECLARATION

I KWOBA ROGERS hereby declare that, the work in this project final is our own original work except where citations have been done and has not been presented to any higher institutions of learning for any academic award.

NAME: KWOBA ROGERS

Signature 

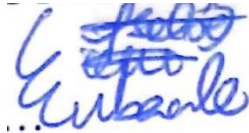
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APPROVAL:

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Signature



Date: 13th May, 2021.

Acknowledgement

I thank the Almighty God who has gifted me with life and has enabled me to reach this height of my academic journey. Indeed, He has been the provider of all the necessary requirements. Great thanks to my beloved family and friends for their unmeasurable support, timely encouragement and advise that has always given me the momentum to drift through all sorts circumstances. I acknowledge Mr. Lubaale Solomon Azarius for his tireless guidance and supervision which has this research

DEDICATION

I thank the Almighty God for guiding me in every way during this period of the final report.

To my parents, thank you for your continued contribution and support throughout the journey of this project. May the almighty God reward you abundantly.

I extend my sincere gratitude to my supervisor, MR. LUBAALE SOLOMON AZARIUS for tirelessly guiding me throughout my final. Thank you for the attention and care you gave to me.

I appreciate the head of department of water resources engineering Busitema University for providing me with such opportunity to do my research in this field.

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LIST OF ACRONYMS

BOD	Biochemical Oxygen Deman
COD	Chemical Oxygen Demand
DEM	Digital Elevation Model
DDS	Dynamically Dimensioned Search
GIS	Geographic Information System
GPS	Global Positioning System
HEC-RAS	Hydrologic Engineering Centre River Analysis System
LULC	Land use land cover
NDP	National Development Plan
NTU	Nephelometric Turbidity Unit
NWSC	National Water and Sewerage Cooperation
SDG	Sustainable Development Goal
TDS	Total Suspended Solids
TSS	Total Suspended Solids
USACE	U.S. Army Corps of Engineers
USGS	United States Geological Survey
WASP	Water Analysis Simulation Progamme
WHO	World Health Organization

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