



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**FACULTY OF ENGINEERING
DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING
FINAL YEAR PROJECT RESEARCH
ASSESSMENT OF IRRIGATION WATER QUALITIES OF RIVER MALABA**

BY

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A final year project report submitted in partial fulfillment of the requirement for the award of a Bachelor of Science degree in water resources engineering of Busitema University

ABSTRACT

Malaba River is a perennial river that is situated on the eastern part of Lake Kyoga (ILM, 2004). The Malaba River is a mid-sized catchment, and transboundary in nature (Catchments, 2017). The size of this mid-sized catchment is 2,232 km². The river originates from the slopes of Mount Elgon, from where it forms the border between Uganda and Kenya (Lakimo, 2004; Kizito and Ngirane-Katashaya, 2006) and later drains into Lake Kyoga. About seventy percent of the river is situated in Uganda (midstream and downstream), while the remaining portion is in Kenya (upstream). The catchment experiences a mean annual temperature of about 27.9°C. The highest precipitation is received between March to May (280 mm/month, 240 mm/month) and August to November (183 mm/month, 170 mm/month). The driest months are January (71 mm/month) and July (81 mm/month). The potential evapotranspiration rates are highest in the months of January (148.8 mm/month) and March (148 mm/month). The lowest are experienced in the months of May, June, July, and August with 114 mm/month respectively. The main land use in the catchment is rain-fed subsistence agriculture. Virtually the basin outside the Mount Elgon Forest area is divided into agricultural and grassland, fallow land, and isolated woodlots. Land use changes in the river Malaba basin and notably in the catchments of the Mt Elgon ecosystem have adversely changed the river hydrological flow regimes. (Catchments, 2017)

The basin faces constraints primarily from deteriorating water quality/ water scarcity in parts of the catchments. Degradation of water resources and the widespread poverty of the inhabitants are linked.

The main land use in the catchment is rain-fed subsistence agriculture. (Muli, n.d.) The key water related issues in the river Malaba catchment include low safe water and sanitation coverage, inadequate awareness of water resources related issues, water pollution (surface water / groundwater), deforestation, flooding, and drainage of wetlands, excessive soil erosion, and cultivation along riverbanks. (Catchments, 2017) Population growth is exerting pressure on the catchment natural resources encroachment of gazetted forests and wetlands for additional agricultural land. Unsustainable land use practices and mismanagement of water resources. It is therefore imperative that the quality of the water in River Malaba to be ascertained to verify if it meets the recommended standards for irrigation. It is of great importance that the farmers on the banks of the river and the public in general be informed of the quality of the water regarding agricultural use and inform the relevant government agencies for remedial measures if the quality is below the recommended standards since due to population pressure, farm sizes have considerably diminished with fragmentation into small units less than 1.0 Ha which is not economical for agricultural production.

DECLARATION

I JAKOLYA CHARLES declare that this final year project Research report is a result of my own efforts and tremendous work during the research period and has never been submitted to Busitema University or any other institution of higher learning for any academic award.

NAME: JAKOLYA CHARLES

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APPROVAL

This is to certify that this research report was written under the guidance of my supervisor on the topic “*assessing the suitability of irrigation water qualities of river malaba by application of GIS and IWQI*” and is now ready for submission to the department of water resources and mining engineering, Busitema University.

NAME OF SUPERVISOR: **Mr. OKETCHO YORONIMO.**

SIGNATURE:

DATE:

DEDICATION

I dedicate this report to my dear parents, brothers and sister

ACKNOWLEDGEMENT

I would like to extend my sincere thanks to the almighty GOD who has gifted me with life and has enabled me to reach this academic height as he has been the provider of all the necessary requirements.

Great thanks go to my beloved parents, brothers and sisters for the financial support and moral guidance.

Let me convey my heartfelt appreciation to my supervisor, Mr. oketcho yoronimo as well as the classmates for their advice and guidance during the preparation of this report.

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