



FACULTY OF ENGINEERING
DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING
FINAL YEAR PROJECT REPORT

**A SOCIOHYDROLOGICAL APPROACH TO THE MITIGATION MEASURES USED
ALONG THE FLOOD PLAINS OF RIVER NYAMWAMBA.**

BY

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ABSTRACT

The study was conducted to determine a sociohydrological approach to the flood mitigation measures used along the flood plains of river Nyamwamba. HEC-HMS and HEC-RAS models were employed to achieve the first objective of developing a hydrodynamic model that estimated the flood risk extent. Results of the rainfall frequency analysis used to obtain the rainfall intensities for different return periods such as 50, 100, 200, 500 and 1000 years were used as an input for the hydrological model.

The HEC HMS model was calibrated and validated using automatic methods and the Nash-Sutcliffe Efficiency (NSE) obtained were in the ranges of 0.765- 0.925 for the different return periods showing that the model was satisfactory. From the results of the hydraulic model, it was observed that, the flood plain inundated areas increase with the magnitude of flow within the modelled network indicating a high flood risk level for activities and settlements adjacent to the river banks. . The simulated peak discharges 93.2m³/s, 138.1m³/s,187.8m³/s, 259.1m³/s and 316.6m³/s of the respective 50, 100, 200, 500, and 1000-year return periods produced maximum channel flood depths of 2.27ft, 2.7ft, 3.10ft, 3.66ft, 3.98ft respectively.

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Last but not least, we thank our classmates for their advice and we admire their support. There are no better teammates for this undertaking.

DECLARATION

I, AMURON IMELDA and I, AMPIRE BRENDAH, declare that this report is our own research and has not been submitted before to any university or institution of higher learning for any academic award.

We stand to account for all this information contained in this report and to regret any queries that may arise out of it if there is any.

Name: AMURON IMELDA	Name: AMPIRE BRENDAH
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APPROVAL

This proposal on sociohydrological approach to the mitigation measures used along the flood plains of River Nyamwamba has been written under the supervision of;

Name: **Mr. Kajubi Enoch**

Signature: Date.....

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