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FACULTY OF ENGINEERING

DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING

WATER RESOURCES ENGINEERING FINAL YEAR PROJECT REPORT

ASSESSMENT OF THE GROUNDWATER VULNERABILITY TO POLLUTION.

Case study: Pallisa District.

BY

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A final year research project report submitted to the Department of Water Resources and Mining Engineering as a partial fulfillment of the requirements for the award of a Bachelor of Science degree in Water Resources Engineering

DECLARATION.

Any piece of work in this project report is entirely and absolutely the results of my personal struggles and tremendous work done and has not been submitted anywhere else by any other person.

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APPROVAL.

This is to certify that this project report was written by BOTI NALAPA FESTO, REG. NO. BU/UP/2014/599, under the guidance of my supervision on the topic "**ASSESSMENT OF THE GROUNDWATER VULNERABILITY TO POLLUTION**" and is now ready for submission to the department of Mining and Water resources engineering of Busitema University.

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ABSTRACT

This report shows how DRASTIC model techniques were applied in assessing groundwater vulnerability in Pallisa District. Groundwater pollution has emerged as a major economic, social and environmental problem in Pallisa district. The best way of dealing with groundwater pollution is to take appropriate measures to arrest leaching of pollutants especially in vulnerable areas. This requires a prediction system for areas with high pollution potentials based on scientific inputs. Geographical information system was used to generate GIS based vulnerability model parameters to obtain vulnerability index map for Pallisa district. The software used different inputs such as the soil data, land use data, water well data, Rainfall data, slope data and lithologic data. Water quality analysis was also carried out to characterize groundwater quality

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LIST OF ACRONYMS.

MODFLOW MODular Three-dimensional finite-difference groundwater FLOW.

GSFLOW coupled Ground-water and Surface-water FLOW

GWM-2005 GroundWater Management process for MODFLOW-2005

DRASTIC Depth to water, Recharge, Aquifer media, Soil media, Topography, Impact of vadose zone media, hydraulic Conductivity

GIS Geographic Information System

SEEPAGE System for Early Evaluation of Pollution potential from Agricultural Groundwater Environments

HDL High Desirable Limit

MPL Maximum Permissible Limit

UNICEF United Nations International Children's Emergency Fund

SSURGO Soil Survey Geographic database

MWE Ministry of Water and Environment

NPS None-Point Sources

DWRM Directorate of Water Resources Management

NARO National Agriculture Research Organization

FAO Food and Agricultural Organization

THF Tetrahydrofuran

IBDG Inverter-based Distribution Generations