



UNIVERSITY OF NAIROBI

Hydrological Study of Upper Nzoia River Catchment

By Gacheru George Kiarie

F16/1394/2011

A project submitted as a partial fulfillment
for the requirement for the award of the degree of
BACHELOR OF SCIENCE IN CIVIL ENGINEERING

2016

Abstract

The Upper Nzoia River Catchment covers the upstream section of the Nzoia River. It forms part of the greater Lake Victoria North Catchment Area – one of the five major catchments in Kenya. Spanning over 300 kilometres, the Nzoia River emanates from two water towers; the Mt. Elgon and the Cherangani Hills, and drains its waters into Lake Victoria. The study sought to establish the quantity of rain water and surface water available within the catchment, the accuracy of data made available for the study, the rainfall seasons experienced in the catchment, the extent of high flows in the various streams, and, the storage required. Rainfall and Stream Flow records were used for this study. The records were processed in order to fill in any missing data. Probability, Statistical and Trend analyses were performed in order to achieve the objectives of the study. It was expected that the catchment would have high amounts of rainfall for most parts of any given year, with April/May and September/October expected to have the highest monthly rainfall. The average annual rainfall was expected to be about 1400 mm at the stations closest to the two water towers. High flows were expected to be observed in the period around the months of May and September, with the average discharge rates expected to be below 950 cumecs and 25-year return flood flows expected to reach 1100 cumecs in the main stream of Nzoia River. However, a little variation in these values was expected to be observed due to changes in the rainfall season over the years within the catchment.