Influence of land use/cover on water quality in the River Sironko catchment area, Eastern Uganda

Ten sampling stations located on RiverSironko catchment area were used to assess the contribution of selected land uses to the nutrients and Physico-chemical water quality levels of river Sironko for a period of six months from November 2019 to April 2020. This was done so as to capture wet and dry seasons. The data was also used to examine whetherland use size, altitude and discharge had an impact on water quality in the catchment area. The catchment area was divided into the upper, middle and lower reaches. Based on visual interpretation of Google Earth map and field observation data, polygons for the reference land use classes of forest, agriculture, sand mining, industrialization, and urbanisation that contributed their run off to the catchment were created using "heads up" digitizing tools in Google Earth program and sizes were calculated. The water quality parameters from land uses were compared with land use size, altitude and discharge usingPearson correlation coefficients generated from STATA Version.14in each of the three reaches to show the magnitude of impacts of land uses. Results indicated that water quality levels in the upper reaches were better than in the middle and lower reaches of the catchment area. Land use size had a significant negative correlation with TDS at $p(0.0135)$ but with significant positive correlation with D.O at $p(0.0056)$ in the middle reaches. In the lower reaches, land use size had a significant correlation with nutrients at $p(0.0344-0.0015)$. In the upper reaches, altitude and discharge influenced water quality more than land use size. We recommended that, all homesteads and business establishments must have toilets at least 10m away from the river banks.