

PhD-Thesis Layla Hashweh

Abstract - Hydrogeology and hydrochemistry of Ewaso Narok wetland in Kenya: Effects of flooding on the water quality

Ewaso Narok wetland suffers from heavy water pollution (LENWRUA members, et. al, 2013). As human activity around the catchment is increasing the pollution is expected to increase. There has been no hydro chemical or hydrogeological modelling of the pollutants along the Ewaso Narok catchment.

The study will elaborate in quantitative sense, on the quality between the polluted stream water and the groundwater aquifer underneath. It will do so by assessing the quality of surface and ground water during arid and flood seasons. The main sources and causes of chemical pollution will be identified and quantified. The methodology will include surveys, hydrogeological methods, and a management plan.

The surveys will try to understand the use of the wetland / the policies regarding its use/ the inlet of fertilizers/ sewage and their type. Accordingly surface and ground water points for sampling will be decided upon. Water sampling will investigate the hydro-chemistry and isotopes. The sampling will take place in the dry and flooding season and the analysis will take place on site and in Uni. Bon lab. The results will be the base for the statistical and hydrochemical modelling. The results of the modelling will investigate the existence of hydraulic connectivity between the surface and ground water. They will provide information and quantification of the water quality and pollutants amount and track which will enable an estimation of the groundwater and surface water flow, while clearly recognizing the most polluted spots.

Finally, appropriate management measures to reduce water chemical pollution will be developed to sustain the wetland's short and long term functioning. This will provide essential information to decision makers, and locals to grow their food and use the wetland for daily consumption and irrigation.