Ground water quality distribution in agro-wells in cascade systems: A case study of Horivilla cascade in Anuradhapura District

V.P.I.S. Wijeratne[1], R.U.K. Piyadasa[1] and M. Weerasinghe[2]

[1]Department of Geography, University of Colombo, Sri Lanka
[2]Faculty of Medicine, University of Colombo, Sri Lanka

Groundwater is the main source of rural water supplies in many developing countries and good quality ground water is a prime factor for sustenance of rural life. However, it has become a major problem today as this water is used for drinking and agriculture by more than half of the nation's population. The groundwater is the main water source for agriculture and domestic purposes in the dry zone of Sri Lanka. In the last decade, many agro- wells were constructed for agricultural purposes and sometimes for domestic and drinking purposes. The study was conducted in the Horivila cascade tank system in Palugaswewa DS division of Anuradhapura District. This study was carried out for a period of 3 months in 2011,and 25 randomly selected available agro wells' water samples were obtained from the entire cascade system. Groundwater quality monitoring has been conducted in the selected agro-wells with respect to pH, Electrical Conductivity (EC), salinity, Na, K, Ca, Ma, Fe, Cl and bacterial pollution. All water quality analysis was carried out according to Standard Methods. The study helped to prepare hydro geological map and the distribution of Electrical conductivity (EC) and pH maps using the Geographical Information System (GIS) package ArcMap 9.3. Hydro geological maps help to identify recharge and discharge areas of the study area depending on the seasonal atmospheric precipitation. Results of the study revealed that the electrical conductivity in well water is varying all over the area. It was in the range of 80µS/cm and 7390µS/cm. Most of the wells showed high conductivity and there was a high salinity problem. All these concentrations were high in the upper part of the study area. The study identified that groundwater quality has become the major problem in this area.