



# ASSESSING THE SURFACE WATER QUALITY IN ANURADHAPURA, SRI LANKA

Fonseka G.K.D. <sup>1,\*</sup>, Amarathunga A.A.D. <sup>2</sup> and Sameera Pemarathna <sup>2</sup>

<sup>1</sup> Department of Bio-science, Faculty of Applied Science, University of Vavuniya, Sri Lanka.

<sup>2</sup> National Aquatic Resources Research and Development Agency, Colombo, Sri Lanka.

\* Corresponding author email: [dulanjafonseka@gmail.com](mailto:dulanjafonseka@gmail.com)

**Abstract:** The major tanks in Anuradhapura district such as Kalawewa, Rajanganaya, Nachchaduwa, Nuwarawewa, Tissawewa are interconnected as cascade system. These tanks mainly receive water from Mahaweli river diverted towards the dry zone. In addition, the existence of irrigated paddy fields under these tanks contributed seepage water to the respective tanks. The Puliyankulama tank, situated in Thanthirimale, is not connected to this tank cascade system and be as an isolated tank. Seasonal variation and rainfall distribution have an impact on environmental variables which influence the quality of water. The objective of the study was to assess the quality of surface water considering the seasonal variations. Samples from the tanks were collected from each location during the wet and dry seasons. Water quality parameters such as pH, Electrical Conductivity (EC), Dissolved Oxygen (DO), Total Dissolved Solids (TDS), Total Suspended Solids (TSS) Salinity, Turbidity, Fluoride, Chloride, Bromide, Nitrate, Phosphate, Sulfate, Magnesium, Total hardness, Ca hardness and Alkalinity were assessed using standard laboratory procedures. The results of the physicochemical parameters of the surface water were statistically tested using student *t*-test. The result revealed that there is a significant ( $p < 0.05$ ) seasonal variation with respect to Fluoride, Chloride, pH, DO, EC, TDS, TSS, Ca, Mg and Alkalinity in cascade system, while Fluoride, Total Hardness, Ca Hardness, Magnesium and Turbidity were significantly different ( $p < 0.05$ ) in Isolated tank as well. Further all these parameters were below the maximum permissible level of irrigation water quality standards in both seasons. Hence, this study confirms that the water in the tanks in cascade systems and in the isolated tank is suitable for irrigation.

**Keywords:** Cascade system, Isolated tank, Surface water, Seasonal variation, Water quality

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