



An Appraisal of the Ancient Concept of Positioning the Tank System in Walawe River Basin

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Abstract

The Walawe River Basin (WRB) extends over 2500 km² through varying climatic zones from Wet to Arid. The antecedents evidence that WRB was once a prosperous area having a well-planned irrigation system. However, it is always important to have scientific proof on tank placement and water availability for proper functioning of the ancient system. In this study, our main focus was the tank placement. A tank distribution map was created by digitizing one inch to one-mile maps of survey department, Sri Lanka (1930s survey data). The soil map and the geological map were created with the aid of literature. The current climatic zone map (Meteorological department) of Sri Lanka was used as the source climatic map of the basin. The slope map of the basin was created with 5 m contour data. GIS analyses were conducted with Arc GIS 10.1 software package and tank locations were verified by field data. As per the analysis, the dams of the two major tanks (Hambegamuwa and Mahagama tanks) had been placed on hard Granite or biotite bedrocks. The majority of the tanks (66 %) were located on the reddish brown soil. Moreover, the highest tank density (36 tanks per 25km²) was observed in the Intermediate climatic zone, while the lowest (3 tanks per 25 km²) was observed in Semi-Arid zone. About 50 % of the land area of the basin was less slopy (<4%) and 99% of the tanks have been positioned on this low slope ground. Therefore, it could assume that proper soil type and the geology has been concerned when placing tanks. The Intermediate zone where the precipitation exceeds the evapotranspiration has mostly been used as the storage zone. Low slope land stripes have been used for constructing the tanks and it is fair to assume the concern of dam safety against breach at floods. Accordingly, it is fair to assume that the ancient tank system has followed the geology, soil type, slope and the climatic factors. However, the water availability to function the whole ancient system at once will need to be highly concerned in future studies.

Key words: *ancient irrigation system, geology, tank positioning, Walawa basin, water resources.*

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