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Pollutant load assessment of Kalu *ela* sub basin of Kelani river lower reach

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Water is only second to air for the human being and a key factor in sustaining human life. The demand for good quality potable water increases with increasing population, urbanization, and industrialization. The water quality of rivers is of vital importance since rivers are the major source of the potable water supply in the country. The Kalu *ela* basin is the secondly highest polluted sub catchment among the Kelani river sub catchments which covers an extent of nearly 59 km². The present study focused in estimating the pollutant load of Kalu *ela* basin as it represents pollution status and it is alleged that the assessment of pollutant load could address present, water scarcity in future. The Hydrological Modeling System (HEC-HMS) was designed to simulate the precipitation-runoff process of five dendritic drainage basins. Area of sub basins, SCS curve number, lag time and precipitation data were considered as the main input parameters for the model. Eleven water quality parameters namely pH, salinity, turbidity, conductivity, total dissolved solids (TDS), nitrite-nitrogen (NO₂⁻ - N), phosphate-phosphorous (PO₄³⁻ - P), dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD) and chloride (Cl⁻) were tested. The total discharge at the outfall of the Kalu *ela* basin was given by HEC-HMS simulation processed as 2.967m³/s. The concentration of Cl⁻ was 83.12mg/L while COD was 46.8mg/L. Salinity, turbidity, TDS and conductivity were 400mg/L, 24 NTU, 1769 mg/L and 295 μs, respectively. Pollutant loads of Cl⁻, COD, BOD, DO, PO₄³⁻, NO₂⁻ were estimated at 246.6, 138.9, 13.18, 5.1, 4.7, 0.05 g/s respectively. The Cl⁻ concentration in the Kalu *ela* was considerably higher than the other observed parameters and it is suspected that the Cl⁻ and salinity was influenced due to tide flow and also due to leachates of sea sand, which was used for sub-grade of Katunayaka - Colombo expressway. The results revealed that monitoring mechanisms are required for industries to control the receiving pollutant loads to the Kelani River and accelerate the proper wastewater management systems. Therefore, water quality monitoring is essential to identify and mitigate anthropogenic activities to prevent further pollution of the Kelani river sub catchments.

Keywords: Kalu *ela* basin, Water quality, pollutant load assessment, Kelani river lower reach, HEC-HMS simulation