

IMPACT OF URBAN LAND USE ON WATER QUALITY OF UPPER MALWATHU OYA STREAM

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Malwathu Oya is the only perennial stream passing through Anuradhapura, which provides water for various purposes. Moreover, the stream serves as a site for waste disposal in the urban area and water becomes polluted easily. This study was conducted to assess the impacts of urban land use on pollution in upper Malwathu Oya stream to develop a comprehensive management plan to prevent further pollution. The research was done by conducting a questionnaire survey using a random sample of 50 city dwellers and industries and measuring quality of water from nine sampling points representing different land uses along the three drainage canals; D1 (flowing through new town), D2 (flowing near urban council Anuradhapura) and D3 (flowing through old town). Two samples from the main stream at the inlet (M1) and outlet (M2) to the city were collected for analysis. Total dissolved solids, pH, electrical conductivity, dissolved oxygen level, PO_4^{3-} and NO_3^- of the collected water samples were measured. According to the results, M2 showed higher values for all the water quality parameters than M1 confirming the impact of urban land use on water pollution. Discharge levels of all drainage canals were lower and consisted of higher concentration of nutrients and other elements. Among them, D2 showed the highest concentration of NO_3^- , PO_4^{3-} and K^+ than D1 and D3. Questionnaire survey revealed that, only 4% of community is satisfied with the activities on preventing of pollution of main stream by the municipal council. Nearly 75% of the households were not satisfied with the contribution of central environmental authority and politicians of the area on protecting water quality of Malwathu Oya. Finally, it can be concluded that, there is a higher impact of urban land use on pollution of Malwathu Oya and a comprehensive plan is needed for preventing further pollution with the participation of other responsible parties.

Keywords: Malwathu Oya, Pollution, Urban land use, Waste management, Water quality