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STATUS OF THE QUALITIY OF WATER IN THE MAIN CANALS AND TRIBUTARIES OF THE MAHAWELI RIVER DURING THE DRY SEASON

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The Mahaweli Left Bank Canal (MLBC) and Mahaweli Right Bank Canal (MRBC) which originates at the diversion structure at Minipe, provide water for paddy cultivation in the Mahaweli system C and E of Sri Lanka. The areas fed by the MLBC and MRBC are 7,020 ha and 30,760 ha, respectively. The total length of the unlined MLBC is 74.2 km, while a 65 km section of the MRBC is lined up to Weera Wewa. A considerable fraction of the catchment of the Mahaweli river (MR) is utilized for agriculture, and consequently, the quality of water (WQ) of the downstream of the diverted MR could be expected to be adversely affected.

Nine locations along the MLBC, Heen Ganga, (a tributary contributing its flow to MLBC), eight locations along the MRBC, Loggal Oya and Ulhitiya Oya (two tributaries contributing to MRBC) were selected for WQ monitoring during the dry season (August 2012), and representative grab samples were collected on two occasions at each location. Sample collection, transportation, storage and preservation were performed in accordance with standard methods. The pH and electrical conductivity (EC) were measured *in situ* and total dissolved solid (TDS), total suspended solids (TSS), chemical oxygen demand (COD), total hardness (as $CaCO_3$), chloride (Cl^-), sulphate (SO_4^{2-}), total dissolved phosphorous and total phosphorous were determined in the laboratory.

Mean values of the above parameters along the MLBC were 7.4 ± 0.1, 0.12 ± 0.03 mS cm^{-1}, 73.8 ± 18.6 mg dm^{-3}, 12.6 ± 6.9 mg dm^{-3}, 7.0 ± 2.9 mg dm^{-3}, 54.1 ± 17.5 mg dm^{-3}, 5.7 ± 1.2 mg dm^{-3}, 3.3 ± 0.3 mg dm^{-3}, <0.1 mg dm^{-3} and 0.1 ± 0.0 mg dm^{-3}, respectively. Corresponding values for the MRBC were 7.1 ± 0.1, 0.12 ± 0.01 mS cm^{-1}, 91.6 ± 5.8 mg dm^{-3}, 16.4 ± 25.7 mg dm^{-3}, 5.4 ± 3.6 mg dm^{-3}, 44.2 ± 5.5 mg dm^{-3}, 5.9 ± 1.1 mg dm^{-3}, 3.4 ± 0.2 mg dm^{-3}, <0.1 mg dm^{-3} and 0.2 ± 0.1 mg dm^{-3}, respectively. Considerable changes in WQ were not observed along the MRBC although there were some fluctuations. An increasing trend was observed for hardness, EC, TDS and SO_4^{2-} along MLBC and this gradient estimated for TDS and hardness are 1.8 mg/km (R^2 = 0.655) and 1.7 mg/km (R^2 = 0. 881), respectively. Evaporation, anthropogenic activities and hydrological variations would be responsible for this increase and further investigations are being carried out for justification. Measured WQ parameters of MRBC, MLBC and Loggal Oya, Ulhitiya Oya and Heen Ganga are within the maximum permissible levels for drinking water defined by Sri Lankan Standards.

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