THE BUFFERING CAPACITY OF KINAWATAKA WETLAND KAMPALA-UGANDA; WITH PARTICULAR EMPHASIS TO BACTERIOLOGICAL INDICATORS AND SUSPENDED SOLIDS

BY

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Abstract

The buffering capacity of Kinawataka wetland was investigated with particular emphasis on the indicator organisms (faecal coliforms) and total suspended solids (TSS). Field measurements for physico-chemical parameters were done at all the major inflows into the wetland, in the wetland and in the outflow from the wetland. Water samples were also taken from the same locations for laboratory analysis. Field observations were also made and dominant plant species were collected for identification. Socio-economic activities in and around the wetland were also documented. Faecal coliforms were analyzed by Membrane Filtration method and presumptive faecal coliform numbers estimated on laury1 Sulphate Broth. The analysis of TSS was adopted from APHA (1992).

The wet season exhibited significantly higher faecal coliform numbers than the dry season for all the sites. The faecal coliform numbers were significantly different during the wet season for all the sites ($p = 0.00$). For the wet season, the trend of faecal coliform numbers was Banda = Concorp = Pepsi > Kyambogo > Outlet. The faecal coliforms numbers were also significantly different during the dry season for all the sites ($p = 0.00$). The trend for the wet season was Pepsi = Corcorp

= Banda > Kyambogo > Outlet. The loads of faecal coliforms for the wet season was significantly higher than that of the dry season at all sites. The loads for the wet season were significantly different between the sites ($p = 0.00$). The trend of the loads for faecal coliforms during the wet season was Concorp = Banda = Pepsi = Kyambogo > Outlet. For the dry season, there was significant difference of the loads of faecal coliforms between the sites ($p = 0.00$) and the trend was Pepsi = Concorp > Banda > Kyambogo > Outlet.

TSS values for all the sites were significantly higher for the wet season compared to the dry season. There was significant difference of TSS concentration between the sites during the wet season ($p = 0.00$). The TSS concentration during the wet season was Pepsi > Concorp = Banda > Kyambogo > Outlet. The general loads of TSS were significantly higher for wet season compared to the dry season. There was significant difference of loads of TSS between the sites for the wet season ($p = 0.001$). The trend of loads for TSS during the wet season was Concorp = Pepsi > Banda > Kyambogo > Outlet. The trend of the loads of TSS during the dry season was Concorp > Pepsi > Kyambogo > Banda > Outlet = and were significantly different between the sites $P = 0.00$).

Considering all loads of the inflows into the wetland and those in the effluent, the overall efficiency as a whole is 99.94% and 96.13% for faecal coliforms and TSS respectively in the dry season. Kinawataka wetland is providing a significant buffering against pathogens and total suspended solids and measures should be put in place to stop encroachment. Reduced loading into the wetland could be achieved by encouraging the factories discharging into the wetland to construct treatment facilities (e.g. ponds) and repair the ponds in Ntinda and Kyambogo estates.