

**EVALUATION OF CRITICAL POLLUTION SOURCES OF THE
"KIMBULATITIYA OYA" IN KATUNAYAKE-SEEDUWA URBAN
COUNCIL AREA AND PROPOSAL FOR AN APPROPRIATE
TREATMENT PROCESS AND DESIGN**

by

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Dissertation submitted in partial fulfillment of the requirement for the MSc in
Environmental Science of the

OPEN UNIVERSITY OF SRI LANKA, NAWALA, NUGEGODA

December 2013

(21)

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Study

Abstract

The pollution caused to natural water ways is one of the major issues in Sri Lanka. The stream identified as 'Kibulapitiya Oya' and flowing to the West coast of Sri Lanka passing the Air force Base at Katunayake, the Airport and the Katunayake Export Processing Zone, dissuades most people from utilizing for general purposes. The contaminated water flow via the "Kibulapitiya Oya" initially access the Negombo lagoon prior to ending up in the sea causing a serious environmental impact on flora & fauna are found in the lagoon.

Therefore this study was carried out to investigate extent of pollution and identify the critical pollutant source and to propose an appropriate treatment process and ensure that treated effluent is discharged in to the inland surface water.

To separate assess the degree of pollution in each of these tributaries entering the main stream, samples were obtained from ten selected locations and subjected to analysis. The ten water quality parameters namely colour, turbidity, pH, DO, ammonium as N, phosphates as PO_4 , BOD_5 , COD, and Suspended Solids, TDS and Oil & grease were analyzed according to the APHA 5520 b & 4500 methods..

Based on the analytical results, the critical pollution sources were identified. The two sources have been exceeded the tolerance limits stipulated by the Central Environmental Authority, which were linked to treated wastewater released from water treatment plants which belongs to the Srilankan Catering Services and Katunayake Export Processing Zone. Hence, the wastewater treatment plant at Katunayake Export Processing Zone was selected to make corrective proposals.

Twelve samples of the influent were taken, twice a month, from the wastewater treatment plant at Katunayake Export Processing Zone for a period of six months, and subjected to analysis while the relevant data was compiled for the re-designing of the plant.

To rectify the operational shortcomings of the said plant, the Hydraulic design was done in order to reduce the BOD_5 and COD load with introducing an activated sludge recycling process whereby the higher biomass concentration can be maintained in the modified aeration tanks. In addition to this, floating type aerators were introduced to the modified aeration tanks while the existing lagoons and floating aerators were also retained.

In order to reduce pollution in the "Kibulapitiya Oya", a policy should be formulated imposing strict restrictions in keeping with the regulations stipulated by the Central Environmental Authority. Wastewater treatment plants recognized for their low efficiency should be modified as early as possible.