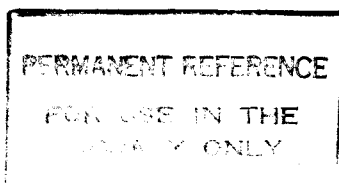


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**CONTAMINATION OF SHALLOW GROUNDWATER IN THE SINNAUPPODAI
COASTAL AREA, BATTICALOA, SRI LANKA.**

A PROJECT REPORT PRESENTED BY

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to the Board of Study in Environmental Science of the
POSTGRADUATE INSTITUTE OF SCIENCE

*in partial fulfillment of the requirement
for the award of the degree of*

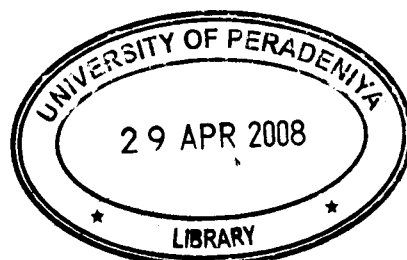
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ABSTRACT

Pollution of groundwater in the coastal aquifer is a major threat in Sri Lanka. Sinnauppodai has a very good groundwater potential due to the presence of peripheral water bodies in Batticaloa district. The study area mainly depends on the ground water. In general urbanization and wetland pollution reduce the ground water quality. Further, the tsunami occurred in 2004 damaged the groundwater bodies of the area. Present study focused to understand the groundwater pollution in the Sinnauppodai area. Selected physical & chemical parameters were measured in the field and laboratory experiments were carried out to measure the nitrate and phosphate levels of water.

The results indicate that the temporal and spatial variations of groundwater by means of physical and chemical parameters are considerable. The conductivity of wells located very near to lagoon is very high (17.14% of the studied wells were exceeded the WHO recommended limit). pH was varied the range from 9.0 to 5. Most of dissolved ion concentrations are generally high during the dry season especially in August.

The nitrate concentrations are high in wells near to the toilet pits and dumping sites (near to Thamaraikerni wetland area). However, the values have not reached the WHO recommended limits. The phosphate concentrations are very high in wells located near the wet lands namely Kannamadu and Uppodaikuddah wetlands. Most of studied wells (about 60%) have higher concentrations of phosphate values that is higher than the WHO values. The correlation of analytical results with land use patterns indicates that the anthropogenic activities, mainly detergents, toilet wastes resulted to increase the nutrients of water. Further, chemical quality of water in the study area has also been changed due to the tsunami waves occurred in 2004. Comparison of analytical results with the previous values suggests that it will take longer time to recover the groundwater pollution due to the tsunami flooding.

Key words: Electrical conductivity, Nitrate, Phosphate, pH, Turbidity and TDS.