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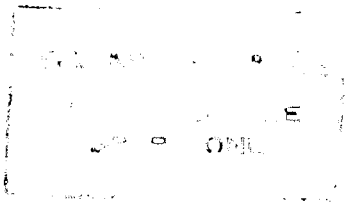
## (A CASE STUDY OF KUKULE GANGA, SRI LANKA)



A PROJECT REPORT PRESENTED BY
Y. A. KARUNARATHNA

To the Board of Study in Earth Sciences of the
**POSTGRADUATE INSTITUTE OF SCIENCE**

*In partial fulfillment of the requirements*
*for the award of the degree of*

**MASTER OF SCIENCE IN GIS AND REMOTE SENSING**

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**UNIVERSITY OF PERADENIYA**
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# GIS MODEL TO IDENTIFY SOIL EROSION POTENTIAL AREAS OF A WATERSHED
## (A CASE STUDY OF KUKULE GANGA, SRI LANKA)

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## ABSTRACT

Sri Lanka mainly depends on hydro-power for industrial as well as residential activities. Although the physical and environmental factors are conducive of hydro-power generation in the country, the mismanagement of the lands has created a significant constraint to the storage of the rain water to make use in dry season for hydro-power generation. The capacity of the reservoirs has been reduced due to sedimentation from the watersheds. The main argument of this study is the preserve the erosion prone areas rather than preserve whole catchment. Therefore this study attempts to develop a new Model to preserve the hydro-catchments by identifying the erosion potential areas. This study was not a soil erosion extent estimation study and attempted to identify the potentials for the Soil erosion in the Kukule Ganga catchment area.

This study was carried out using secondary data available in different government agencies and results validated using ground truths (Primary data collected using Global Positioning Systems - GPS). The main data layers were Soil characteristics, Land use and Land cover, Rainfall intensity, Slope characteristics and Drainage density. Most critical areas for each causative factor were identified by using, factor scoring method and weighted average method. However, in some cases computation analysis and data manipulations techniques were adopted in GIS environment. Such as the case of rainfall data which was in point features (Gauging Stations) had to be transformed to polygon features using Thiessen Polygons (Dirichiet tessellation or Voronoi Diagram) techniques to calculate the rainfall intensity received by the catchment. Finally, according to the developed model the catchment area was classified into five erosion potential regions as 'Very high' erosion potential, 'high' erosion potential, 'moderate' erosion potential, 'low' erosion potential and 'Slight to zero' erosion potentials.