

**GROUNDWATER POTENTIAL MAPPING  
IN HARD ROCK AREAS  
USING GIS AND RS**

A PROJECT REPORT PRESENTED BY  
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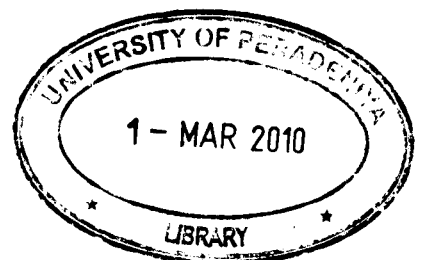
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## **ABSTRACT**

Development of the industrial, commercial and community sectors in Kalutara district creates a significant pressure on the capacity of existing surface water supply systems that are responsible for catering required water demand of that area. This problem can be noted specially at the areas of Horana, Bandaragama and Bulathsinhala where industrial scale activities are more intense. Therefore, water supply sector terns to find out alternative sources that can be fulfilled the increasing water demand. In this regard, the special emphasize is given to utilize ground water sources. Occurrence of groundwater in this area is mainly confined in deep crystalline aquifers. The conventional approaches for groundwater investigations are ground based surveys and exploratory drilling which are time consuming and uneconomical. Keeping this in view, the present study attempts to demarcate deep ground water potential zones in the study area using an integrated approach of Remote Sensing and Geographical Information System (GIS).

In order to produce a groundwater potential map of the area, the main relevant layers which include fracture trace density, lineament interconnections, stream density, proximity to deformed zones, lithology and geomorphology were integrated using GIS application software packages. Criteria for GIS analysis have been defined on the basis ground water availability and appropriate weightage has been assigned to each information layer according to relative condition that

influences towards the desired output. The final result; groundwater potential zone map generated through this method was verified with the ground truth data to ascertain the validity of the final product.

Based on this study, several main groundwater potential zones in the study area can be identified. Favorable zones for groundwater are significantly concentrated in the eastern part. These zones mainly follow structurally controlled dissected morphological conditions of the area concerned. Further, groundwater potential zones developed through the above approach are in agreement with ground truth data up to satisfactory extent. The variations exist regarding the above methodology may be due to the complexity of the hard rock terrain. Since, the present approach was built in logical conditions and reasoning, this method can be successfully used elsewhere with appropriate modifications.