# IDENTIFICATION OF GROUNDWATER POTENTIAL ZONES BY REMOTE SENSING AND GIS TECHNIQUES: A STUDY IN NORTH CENTRAL PROVINCE, SRI LANKA

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Groundwater is one of the most valuable natural resources, as it supplies a significant portion of the water requirement in all climatic regions of Sri Lanka. With increasing population and urbanization, the water demand is growing rapidly. Hence, sustainable exploitation of groundwater resources would be an ideal solution to meet the demand while assuring the sustainability of this valuable natural resource. Most people in North Central Province (NCP) depend on groundwater resources. Thus, it is essential to identify the groundwater extraction potential in this region to meet the demand. Also, the identification of groundwater potential zones helps to implement adequate groundwater recharging activities in the region. This study strived to identify groundwater potential zones in NCP to detect suitable locations for groundwater exploration and artificial recharging. As the distribution and potential of groundwater in the region vary from one place to another based on different parameters. Geology, geomorphology, lineament density, drainage density, land use, slope, and soil as the parameters crucially governing the groundwater potential. The parameters were generated as different layers in the Geographic Information System (GIS) to be used in the developed multicriteria methodology to identify the groundwater potential zones. Multi-influencing factor approach was used for the analysis, and the parameters and their assigned weights were integrated using GIS to generate groundwater potential maps. The final map was created using a raster calculator and classified into three different zones: high, moderate, and low groundwater potential zones. The study results revealed that the NCP consists of 20.8%, 53.1%, and 26.1% of high, moderate, and low potential zones for groundwater extraction. Future management plans, including groundwater exploration and artificial recharge practices, can be effectively made using these potential zones to manage the groundwater resources sustainably in NCP.

***Keywords:*** Artificial recharge, Groundwater exploration, Multicriteria, Multi influencing factor