Appraisal of Groundwater Potential Zonation Mapping in Coastal Track of Cuddalore District using Geospatial Techniques in Tamil Nadu India

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Abstract: The study area covers an area of 1774 km^2, which primarily depends on groundwater due to rapid urbanization and industrialization other than agriculture and aquaculture activities in the last two decades. Hence the present study aims to isolate the groundwater potential possible zones using the geospatial techniques. Weightage index values and rank has been assigned based on the significance and water holding capacity of the individual feature through linear equation method. Remote sensing and (GIS) have been used to integrate the eight thematic layers like Lithology, geomorphology, soil, land use/land cover, lineament density, drainage density and slope of the study area for delineating the groundwater potential zone through Weightage index overlay analysis (WIOA) technique. The groundwater potential zone has been divided into five classes such as very high, high, medium, low and very low. The results were more correlated with the water level of the study region. The final map of the area was demarcated by four different zones of groundwater prospects, viz., very high, (19.38% of the area), high (44.50 % of the area), moderate (30% of the area) low (4.83% of the area), and very low (1.35% of area). The hydro geomorphological units, such as alluvial plain, low slope area, and land occupied by urbanization, are prospective zones for groundwater occurrence in the study area. The proper augmentation and management are needed through proper planning in groundwater resource development and management.

Keywords: Groundwater Potential Zonation (GWPZ), Remote Sensing, GIS, WIOA, Cuddalore