Delineation of suitable areas for ground water recharge facilities in district Dera Ismail Khan, Khyber Pakhtunkhwa using geospatial approach

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Water acts as the most necessary feature in daily lives which is reducing at a higher rate in both rural and urban areas, and the reason is rapid growth in farming and household necessities. Hydrological modelling subsurface water acts as the most important feature because of shortage. The research is based on both lab work and field work. A field survey has been conducted to verify all the results. Different aquifer recharge influencing parameters i.e., LCLU, rainfall, Lineament density, Drainage density, Elevation, population density, Watertable, slope, geology and soil texture were selected. Two techniques were used in this study i.e., mathematical approach and fuzzy overlay. Results from the weighted overlay analysis using mathematical approach revels that 78.20 km^2 area having very high Potential, 786.03 km^2 area having high, 1175.23 km^2 moderate and 330.07 km^2 having poor potential for recharge. On the other hand, in the fuzzy overlay technique same number of parameters were used in fuzzy overlay analysis. Result from the fuzzy overlay analysis revels that 90.80 km^2 area is categorized as very high, 580.56 km^2 area as high, 1210.32km^2 as moderate and 407.78km^2 having poor recharge potential. This work is of significant importance for the soil and water conservation strategies in order to harvest and recharge the aquifer.

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