

Assess Changes in Groundwater Dynamics Caused by Mini Dam Construction in Arid Zone of District Killa Abdullah, Pakistan

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Abstract : Dams are considered to recharge aquifers by raising the water table, especially the ones near wells. The present study investigates the impact of dams on groundwater recharge in Jilga, Pakistan. The comparative analysis of changes in the groundwater table of the year 2012 and 2019 was carried out using ArcGIS 10.5 through the kriging method and remote sensing techniques to evaluate the mini dam's impact on the upstream area. Arc Info Spatial Analyze extension was used to find static water level maps of the years. The water table was observed minimum 67.08 feet and maximum 130.09 feet in 2012 whereas in 2019 the minimum water table level 49.89 feet and maximum 115.85 feet. Groundwater recharge with different ratio was noted, but the most significant was at Rabbani dam with 26ft due to supported lithology conditions and the lowest recharge was found at Garang dam 14ft. The overall positive trend indicates the rehabilitation of dead karez and agriculture activities by increasing 36% the vegetation area in 2019. An over 6% increase in human settlement indicates socioeconomic development. Thus, it highlights the need for preferential focus on the construction of the dam so that the water level could be sustained to cater to the agricultural and domestic needs of the local population around the year

Keywords : water table, GIS, land cover, mini dams, agriculture

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