

GROUNDWATER QUALITY ASSESSMENT FOR DRINKING AND IRRIGATIONAL PRACTICES AT HIREHALLA SUB-BASIN (HSB), BAGALKOTE DISTRICT, SOUTHERN INDIA

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Abstract

The objective of the present study is to evaluate the suitability of groundwater for drinking and irrigational practices at Hirehalla Sub-basin (HSB), Bagalkote District, Karnataka. For this purpose, fifty groundwater samples were collected each during pre-monsoon and post-monsoon seasons and analyzed for parameters such as Electrical Conductivity, pH, Total Dissolved Solids, major cations-Ca²⁺, Mg²⁺, Na⁺, and K⁺ and anions-SO₄²⁻, Cl⁻, and HCO₃⁻. The results were then compared with (BIS, 2012 and WHO, 2017) standards to check its suitability for domestic purpose. Irrigational water quality parameters like the Sodium Absorption Ratio, Residual Sodium Carbonate, Sodium Percent, Magnesium Hazard, Permeability Index, and Kelly's Ratio were determined. On the basis of TDS concentration, 04 and 11 number of water samples during pre-monsoon and post-monsoon respectively were found to be unfit for individual use. (USSL, 1954) diagram used for irrigational suitability reveals the water samples to be falling in the category: C2-S1 (medium salinity and low sodium) and C3-S1 (high salinity and low sodium) hazard. Besides, the (Doneen, 1964) diagram suggests that the water samples fall under Class-I and Class-II implying that they are suitable for irrigation. The findings from the present study will help in a better understanding of the water quality and sustainability of HSB.

Keywords: Drinking water, Irrigation Water quality, SAR, Hirehalla Sub-basin (HSB), Bagalkote, Karnataka