

GROUNDWATER QUALITY ASSESSMENT FOR DRINKING AND IRRIGATION PURPOSES IN AND AROUND ZAHIRABAD MANDAL, SANGAREDDY DISTRICT, TELANGANA, INDIA

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Abstract

Zahirabad area is one of the sugarcane growing regions in Telangana state using groundwater. To understand the groundwater quality and to find out its suitability for drinking and agriculture, 49 groundwater samples are collected from different locations in pre-and post-monsoon seasons. Physicochemical parameters like pH, Electrical Conductivity (EC), Total Dissolved Solid (TDS), Total Hardness (TH), Cations, viz., calcium, magnesium, sodium, potassium; and anions such as bicarbonate, chloride, nitrate, sulfate, and fluoride were determined using standard procedures. Most of the groundwater samples have chemical constituents within the BIS (2012) and WHO (2011) standards for drinking purposes except for nitrate and fluoride. On the basis of Weighted Arithmetic- Water Quality Index (WA-WQI), most of the samples fall in the good water class. The results of the concentrations are interpreted and compared with different irrigation standards, namely Sodium Adsorption Ratio (SAR), US Salinity Laboratory, Percent Sodium (%Na), Magnesium Hazard (MH), Permeability Index (PI), and Kelly's Ratio (KR, 1951). Based on Irrigation water quality indices the majority of samples in the area under study are acceptable for irrigation and drinking except for a few samples at different locations.

Keywords: Groundwater, Agriculture, Weighted Arithmetic-Water Quality Index WA-WQI, Sodium Adsorption Ratio (SAR).