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ASSESSMENT OF GROUNDWATER QUALITY OF KARIMNAGAR DISTRICT, TELANGANA STATE, INDIA WITH EMPHASIS ON OPTIMIZATION OF THE MONITORING MECHANISM

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Abstract

Groundwater quality assessment for various purposes was carried out for pre-and post-monsoon seasons of 2014 in Karimnagar district. Through water quality examination, efforts were made to focus on optimization of the monitoring mechanism. A majority of the tested waters is suitable for drinking as many parameters are less than the permissible limit of BIS.(2012) About ½ to 3/4 samples have many of the analyzed parameters above the requirement (acceptable) limits, and lence warrant redesigning of water quality monitoring. The probability of samples reaching the permissible limit (PL) determined by calculating the ratio between actual value and PL indicates,5 samples from pre-monsoon seasons and 27 samples in post-monsoon have a ratio of >0.80 with respect to TDS, TH, Mg^{2+}, NO_3^-,Cl^- and SO_4^{2-} which require more frequent and intense monitoring. Due to exponential increase in the intensity of pH, the ratios assumed vary from 0.98 to 0.99. The samples with parameters having <0.50 (<0.98 for pH) ratios require less attention in terms of quality monitoring. Based on this hypothesis, optimization of monitoring by redesigning the observation cycle is suggested which can be applied as a decision making tool for supply of safe drinking water. Awareness on the alternate use of poor quality water is required to preempt wastage of the resource. Collin's Ratio (CR) varies from 1 to 3 in about one fourth samples for both seasons displaying the evidence of local contamination. Most of the samples in both seasons have the irrigation indices well within the tolerable limit. Mg ratio is very high in 68% of samples in pre-monsoon and 63 % in post-monsoon which is ambiguous though groundwater is quite suitable for crops grown in the area. About 60% of the samples have high total hardens falling in the range of 120-180mg/l and about one fourth samples have permanent hardness which could damage plumbing. The corossivity ratio in all the samples are <1, making the water fit for core industry uses. The groundwater quality of the district is largely good and fit for many uses, a pilot experiment on optimization of the monitoring mechanism can be initiated in such water sheds to rationalize the resources and to get best data output.

Keywords: Piezometer, Groundwater, Karimnagar, Monitoring, Suitability, Corossivity, Collin's ratio