

EVALUATION OF GROUNDWATER SUITABILITY FOR IRRIGATION AND DRINKING PURPOSES IN THE OLAKKUR BLOCK, VILLUPURAM DISTRICT, TAMILNADU, INDIA

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Abstract

The present study is aimed at evaluation of groundwater suitability for irrigation and drinking purposes in Olakkur Block, Villupuram district, Tamilnadu, India. A total of twenty one groundwater samples were collected during the post-monsoon period of 2016. The samples collected were analysed for major cations like Ca^{2+} , Mg^{2+} by Titrimetry, Na^+ and K^+ by Flame photometer; anions, Cl^- and HCO_3^- by Titrimetry, SO_4^{2-} , PO_4^- and H_4SiO_4 by spectrophotometer. EC and pH were determined in the field using electrodes. Based on these analyses, irrigational quality parameters like SAR, Percent Sodium, Residual Sodium carbonate (RSC), Permeability index (PI) were calculated. These parameters were compared with WHO (1996) standard limits. Majority of the samples were found to be within the safe limit suitable for drinking and irrigation purposes. The USSL (1954) plot indicates that a majority of the samples fall in C_3S_1 category and are suitable for irrigation. The sodium adsorption ratio (SAR) values in groundwater fall in the excellent category. Based on Permeability Index, a majority of the samples belong to class I suggesting the suitability of groundwater as good for irrigation purpose.

Keywords: Olakkur Block, Groundwater Suitability, SAR, RSC, PI, USSL plot