

HYDROGEOELECTRICAL STUDIES IN HARSUL AREA OF AURANGABAD, MAHARASHTRA, INDIA

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Abstract

Vertical electrical sounding (VES) was used to locate potential groundwater resources in Harsul area of Aurangabad. The geo-electrical field measurements are conducted in 7 selected locations of the study area, using Schlumberger configurations. The data has been analyzed through conventional curve matching techniques to find out the characteristics of the subsurface layers, potential ground water zones were identified in the study area. The presence of groundwater in geological formation leads to distinctive reduction in the resistivity value. This characteristic of geological formations makes the geoelectrical survey more suitable than any other geophysical method for delineation of potential groundwater zones. Geo-electrical surveys are conducted to find out variation of resistivity either with depth or laterally. The former type of survey is called vertical electrical sounding (VES) and the latter is called profiling. Many configurations have been developed to carry out profiling and VES. Wenner and Schlumberger configurations are widely used for profiling and VES respectively. The values so obtained by resistivity method were correlated with the geology of the area. The resistivity values are low up to a depth of 35m and further down the values show increase continuously indicating (35m onwards) the deficiency of water in the deeper levels. The results from this study area are, for a contribution to better understanding of the aquifer systems in the area.

Based on vertical electrical soundings suggestions like, recharge measures i.e. roof top rainwater harvesting should be made mandatory for institutions, industries, commercial complexes and housing societies etc and if employed deficiency of water may be overcome and fulfill the demands and selective use of groundwater for domestic and agriculture can be increased in the area.

Keywords: Electrical soundings, Schlumberger configurations, Groundwater exploration, Harsul, Aurangabad, India.