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Watershed Management of the Akot Region, Akola District, Maharashtra with Reference to Groundwater Quality

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ABSTRACT

Detailed hydro-geological geophysical and hydro-geochemical investigations have been carried out for the Akot region, Akola district, Maharashtra with an aim to understand the hydro-geochemical, geological, geomorphological and environmental control on the groundwater regime of the region. The study area is characterized by the presence of alluvial tract which is underlined by the horizontal sequence of lava flows which can be divided into simple and compound units based on their field characters, textual parameters and geomorphic expression.

Major element chemistry of groundwater samples from dug wells and bore wells from 150 selected sites from the Akot region has been analyzed during pre-monsoon and post-monsoon periods to understand the groundwater quality and its impact on the environment. Detailed geophysical resistivity surveys were carried out to understand the subsurface lithology aquifer parameters. Various thematic maps showing the distribution of various elements and their ratios along with iso-contour maps of physico-chemical parameters have been utilized to understand the water quality management of the region.

Geological, hydrogeological, geophysical and water quality studies have thrown light on the water level fluctuations in the region with emphasis on water resource and environmental management. The results of the chemical analysis indicate that in the Deccan Trap regions, both the surface and groundwater are suitable for drinking and irrigation purposes; however, in the alluvial zone brackish water is predominant. The highly fractured, amygdaloidal and weathered basaltic horizons have yielded sufficient amount of water whereas, the compact and massive portions show poor yield in the region. In this study, an attempt has been made to suggest various suitable measures for improving the groundwater recharge potential and salinity problem of the area with due emphasis on water resource management. Detailed environmental analysis was carried out to understand the water level fluctuations and quality of water. In addition, suitable remedial measures were suggested for water resource development and management of the region.