

## **Integrated Approach of Hydrogeological, Geomorphological And Remote Sensing For Groundwater Potential of Khadki Macro-Watershed in Parbhani District, Maharashtra, India**

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The allocation and management of water resources is becoming a difficult task due to increasing demands, decreasing supply and diminishing quality. On account of population growth and increasing irrigation demand the groundwater is diminishing rapidly and as a result of it, the wells are drying up. To determine groundwater potential zone in the Deccan basaltic region of Khadki watershed of Godavari river Dist. Parbhani Maharashtra state, India, Geoforum carried out detailed investigation of this watershed covering area of 67.70 sq. km

Geologically, the study area belongs to the Deccan trap basalts of late Cretaceous to early Eocene period. Two types of basaltic lava flows occurring in the study area are massive (aa type) and vesicular-amygdaloidal (compound pahoehoe type), which are at places separated by red bole beds and pipe vesicles. The groundwater in the study area is restricted mostly to the zones of secondary porosity developed due to fractures, joints and weathering.

The groundwater in the study area is restricted mostly to the zones of secondary porosity developed due to fractures, joints and weathering. In Deccan Basalt terrain groundwater occurs under phreatic conditions in the exposed lava flows and under semi-confined conditions in the flows at deeper level. Lithological constraints dictate that groundwater is present in the pore spaces of the vesicular basalt and in the jointed and fractured portions of massive parts of the flows. The primary porosity in the basalts is associated with the vesicles, which are the pore spaces developed due to the escape of volatile and gases when the lava erupts on the surface as a lava flow. The groundwater in the study area therefore is restricted mostly to the zones of secondary porosity developed in these rocks due to fractures, joints and weathering.

The Khadki macro-watershed is classified into different geomorphic units Viz. Alluvial plain, pediments, pediplains and highly dissected plateau. The geomorphic characteristics and groundwater potential of each unit is described in the present paper. Alluvial plains are highly potential zones in the area. Groundwater potential in pediments is poor except along fractures where limited quantity of groundwater can be obtained for domestic purpose. The pediplains have fairly good groundwater potential. In highly dissected plateau the groundwater potentiality is poor. The interpretation from the study

will be useful to the decision makers and any other project implementing agencies engaged in watershed development programmes as well as central or state government schemes for rural development.