

Delineation of Water Bearing Fractures in Bore Wells by EC Logs

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Mostly geological and geophysical techniques are in practice for the delineation of water bearing fractures in the hard rock areas. The attempt has been made to develop some technique, which may be simple, more informative and also cost effective as well as give groundwater quality information. Electrical conductivity measurements were conducted in a large number of shallow bore wells (experimental) in hard rock areas. Electrical conductivity logs were carried out in three different locations of India.

(1) Maheswaram: 13 shallow bore wells in a small watershed of 60 km² in a granitic aquifers (2) Wailpally: 4 shallow bore wells in a watershed of 50 km² in a granitic aquifers and (3) Sadras: 4 shallow bore wells in a small watershed 12km² in a charnokite aquifers. The observations were made at short interval of about 1.0m from water table (narrow spacing wherever required) till the bottom of the bore wells. It is observed that EC have shown remarkable changes, which suggests the probability of water bearing fractures in the bore wells. In addition, the results of EC logs were compared with the results of various known geological and geophysical techniques. The results of EC logs are in good agreement with the results obtained by litholog profiles, inflow measurements, γ -logs, resistivity logs etc. Thus EC log technique is considered to be a new technique for the delineation of water bearing fractures in hard rock areas.

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