



Artificial Recharge Rates in Granites, Basalt, Sedimentary and Alluvial Formations of Andhra Pradesh, India, Using Injection Tritium Tracer

R. Rangarajan, D. Muralidharan, G.K. Hodlur , and Pallavi Banerjee

Rate of groundwater artificial recharge is a very unpredictable and complex phenomenon to understand. But it is a vital parameter to be known for groundwater budgeting and management. Percolation of a portion of the rainfall through the vadoze zone is the principal source of regional artificial recharge to the aquifer system. Tritium injection method based on the piston flow model is ideally suitable for quantifying the downward flux of moisture in the vadoes zone and for the measuring the artificial recharge rate under various hydrogeological conditions. Recharge rates due to monsoon rainfall were measured using injected tritium tracer technique in 17 watersheds / basins located in granite, basalt, sedimentary and alluvium formations of Andhra Pradesh during the last two and half decades. Recharge measurement were made at several sites in each watershed or basin area. At each site, tritiated water was injected at the depth of 60 cm below ground level before the onset of monsoon and vertical soil core profiles in 10 cm section were collected after the completion of monsoon. After laboratory process to measure the moisture content and tritium concentration, the recharge values are computed. The recharge rate measurements facilitate to demarcate favorable areas for taking up artificial recharge measures.