

## **Quantification of Recharge through Haveli Fields— A Remote Sensing and GIS Approach**

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### **ABSTRACT**

The study characterized the haveli fields and quantifies the recharge potential of haveli areas in Jabalpur and Narsinghpur region. Haveli is an excellent water harvesting and runoff farming which has been followed traditionally for long back in history in Jabalpur and Narsinghpur region. It is because of this system the region could maintain huge reserves of ground water below alluvium and produced quality products in pulses and wheat. Satellite data IRS P6 LISS III was used for identification and mapping of haveli areas. To characterize haveli fields the black soils of the region were analyzed for determination of physical properties viz texture, bulk density, infiltration rate and hydraulic conductivity. ILWIS 3.1 is used as software for image processing as well as GIS Steps for determining the extent of haveli were georeferencing, creation of FCC, making of sample set, land use classification and histogram analysis of obtained image. Ground truth verification was performed at nine points distributed in the study area. The quantity of recharge mainly depends upon infiltration characteristics of soil. When rainfall occurs, field gets filled up with water. Impounded water is then allowed to evaporate and infiltrate. Infiltration, then after percolation saturates soil and when reached beyond field capacity contributes ground water. A procedure was developed based on bookkeeping accounting of the soil moisture to estimate ground water recharge and depth of storage over the field surface.