

Impact of Lined/Unlined Canal on Groundwater Recharge in the Lower Bhavani Basin, Tamilnadu, India

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Abstract : Bhavani basin is the fourth largest Sub Basin in the Cauvery basin. The entire command area of all three major canals that takes off from the Bhavani river falls within the Erode District i.e. Lower Bhavani Project (LBP), Kodiveri and Kalingarayan canals. The LBP canal is a major source of irrigation in Erode District. Many of these canals are unlined and leakage takes place from them. Thus the seepage from the canal helps in recharging the wells in the area, enabling to get adequate water supply for the crops when water was not released from Bhavanisagar Dam. In this study, the groundwater recharge is determined by groundwater flow modeling using Visual MODFLOW model. For this purpose, three major natural sources of groundwater recharge are taken into consideration such as rainfall infiltration, canal seepage and return flow of irrigation. The model was run and ZONEBUDGET gives an idea about the amount of recharge from lined/unlined canal to the field. Unlined canal helps to recharge the groundwater about 20% more than the lined canal. The analysis reveals that the annual rainfall also has rapidly changed in this region. In the LBP canal Head reach meets their requirement with available quantity of water from the canal system. Tail end reach does not receive the required quantity of water because of seepage loss and conveyance loss. Hence the lined canal can be provided for full length of the main canal. Branch canals and minor distributaries are suggested to maintain the canals with unlined canal system.

Keywords : lower Bhavani basin, erode, groundwater flow modeling, irrigation practice, lined canal system

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