

Percolation tank - An effective tool of groundwater recharge

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ABSTRACT

The percolation tank at Jamb located 10 km away from Parbhani city was selected for the study in the year 2003-2004. The flood routing components of percolation tank were estimated from the recorded observations. It was observed that the average recharge from Jamb percolation tank over the period of September 2003 to March 2007 was approximately 55 per cent of the total water stored into the tank and the average recharge rate was 1.43 cm/day. It was also observed that the tank influenced up to distance of 1100 m in the zone of influence of percolation tank.

Key words : Percolation tank, Ground water, Recharge.

The importance of percolation tank is increasing greatly since last 10 years. Percolation tank are constructed for increasing water table depth below the ground surface. The recharge occurred from percolation tanks has helped to generate additional groundwater potential to increase the irrigation, the irrigation activities as well as water supply available for drinking purpose in summer seasons. An ideal percolation tank will fill up in the rainy season and have adequate cultivable area in the down stream. The research on assessment of groundwater recharge through percolation tank is scanty (Deshmukh and Kumar, 2004; Mukade, 2006). Therefore, it is necessary to quantify the groundwater recharge through the percolation tank and assess the area of the influence (distribution) of groundwater recharge in the down stream region of the percolation tank in order to know the irrigation potential of the tank.

METHODOLOGY

The percolation tank at Jamb located 10 km away from Parbhani city was selected for the study in the year 2003. The reconnaissance survey was carried out to locate the wells at down stream of the tank. About twenty-three wells were selected on down stream site of percolation tank for recording the weakly water level fluctuations. The water levels in wells were recorded before the start of pump. The different flood routing components like storage in pond, evaporation, water spread area, rainfall data etc. were used for quantification of groundwater recharge in the command area. The daily rainfall data, evaporation data for the year 2003 to 2007 have been collected from Minor Irrigation Project Office, Parbhani. The volumetric recharge and recharges in forms of depth were calculated every 15 days. The area of

influence of percolation tank was determined by noting the water level fluctuations in the wells and their respective distance from the percolation tank. The best-fit equation for this relationship was determined. RL of the wells and their distances from percolation tank given in Table 1.

Table 1: RL of well and its Distance

Sr. No.	Well No.	Distance (m)	Reduced level (m)
1.	W ₁	1125.2	430.25
2.	W ₂	1250	432.45
3.	W ₃	1025.3	430.59
4.	W ₄	9080	429.59
5.	W ₅	1375	459.66
6.	W ₆	1270	427.93
7.	W ₇	1120	426.88
8.	W ₈	890	426.33
9.	W ₉	740	425.33
10.	W ₁₀	1070	428.40
11.	W ₁₁	8011.2	428.83
12.	W ₁₂	525.8	423.82
13.	W ₁₃	698.3	423.65
14.	W ₁₄	734.8	422.90
15.	W ₁₅	325.8	424.47
16.	W ₁₆	429.3	424.42
17.	W ₁₇	1054.19	4247.32
18.	W ₁₈	1245.3	427.92
19.	W ₁₉	1350	427.65
20.	W ₂₀	1325	427.93
21.	W ₂₁	1420	427.50
22.	W ₂₂	987.5	427.42
23.	W ₂₃	1487.5	425.23
24.	Percolation tank	000	431.75

RESULTS AND DISCUSSION

The variations of reduced water level in some wells located at different distances from the percolation tank