

## MODULE VI : IMPACT ASSESSMENT OF GROUNDWATER RECHARGE RESULTANT TO MEASURES EFFECTED BY I & FC

1.0 Other than ponds development I & FC have carried out groundwater recharge projects on storm water channels and checkdams in the southern ridge area.

2.0 **Assessment of Recharge Through Checkdams** : A total of 23 checkdams have been constructed so far. They have been completed in 2002 and hence can be considered operational for 13 monsoon seasons [2003-2015]. These are all located in the Southern Ridge in Asola Wildlife Sanctuary.

3.0 Individual storage volumes have not been given by I & FC. The cumulative storage capacity of all 23 checkdams has been stated as 83500 cu.m.

4.0 It is assumed that the storage gets full every monsoon and it is further assumed that 80% of the stored volume is recharged to the aquifer. Accordingly the recharge volume effected so far is :

$$\text{Stored Volume} \times 80\% \times 13 \text{ Years} = 83500 \text{ Cu.M.} \times 80\% \times 13 \text{ Years} = \mathbf{868,400 \text{ Cu.M.}}$$

5.0 **Bhalaswa Lake** : A plane table survey of the lake by INTACH in 2007 showed a water spread of 40 ha. The lake gets full during monsoon and receives no further water thereafter. By June the lake spread shrinks greatly. The bathymetry survey carried out by INTACH showed a maximum depth in the centre of 1.5m with very shallow depths in the periphery. Estimation of recharge through the bed of the lake is based on the CGWB formula for ponds :

$$\begin{aligned} \text{Area in Sq.M.} \times 60\% \times 0.6 \text{ m} &= \text{Annual Recharge Obtained in Cu.M.} \\ \text{i.e. } 400000 \text{ Sq.M.} \times 60\% \times 0.6 \text{ m} &= \mathbf{144,000 \text{ Cu.M.}} \end{aligned}$$

6.0 **Storm Water Channels** : Dept. of I & FC has also desilted some major storm water drains and maintained them full of water round the year for effecting groundwater recharge through their beds. In view of the fact that the detailed data for recharge calculation is extremely difficult to come by some very simple parameters have been enunciated by the CGWB in their '*Report of the Ground Water Resource Estimation Committee, Ground Water Resource Estimation Methodology - 1997, Central Ground Water Board*'. On an average infiltration can be taken as 44 to 60 cm per year over a total water spread based on the average area of water spread.

a) **Najafgarh Drain** for a stretch of 30 km. from Dhansa to Kakraula. The work was completed prior to 2010 and as such may be said to be operational for 6 years. The total spread of the wet area is 2,760,000 Sq.M. As per CGWB Guidelines referred above the recharge is estimated at :

$$2,760,000 \text{ Sq.M.} \times 0.6 \text{ m} \times 6 \text{ Years} = \mathbf{9,936,000 \text{ Cu.M.}}$$

- b) b) **Mundela Drain** for a stretch of 12.5 km. The work was completed prior to 2010 and as such may be said to be operational for 6 years. The total spread of the wet area is 56,250 Sq.M. As per CGWB Guidelines referred above recharge is estimated at :  
56,250 Sq.M. x 0.6m x 6 Years = **202,500 Cu.M.**

**7.0 Thus, total recharge effected by Dept. of I & FC from non-pond works can be summed up at 11,150,900 Cu.M.**

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