



## **Sustainable water resources management by River Bank Filtration around check dams in non-perennial rivers**

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Check dams are one of the popular and traditional methods of Managed Aquifer Recharge practiced in many parts of the world. River Bank Filtration (RBF) near the check dams will result in saving the water that otherwise will be lost due to evaporation especially in arid and semi-arid regions. This study investigates the natural treatment potential of RBF technique in a check dam across a non-perennial river near Chennai, India. The check dam chosen for this study was constructed in the year 2011 and 34 wells located around it was chosen for monthly monitoring of groundwater level and quality. The quality of groundwater was assessed in terms of major and minor ions as wells as trace metals and microbial constituents. The groundwater in wells near to the dam were very much benefitted by the recharge from check dam and the water were found to be suitable for both drinking and irrigation purpose. Thus, it is clear that the recharge from the check dam has resulted in improvement of groundwater quality. Reduction in turbidity, total coliforms and pathogens were observed in groundwater with increasing distance from the dam indicating natural treatment process. High microbial load ( $>150$  CFU/100 $\mu$ l) was present in the water stored and it affected the quality of groundwater. The groundwater from the wells at about 400 m had microbial content of  $<50$  CFU/100 $\mu$ l. Based on the aquifer hydraulic conductivity of this formation and the hydraulic gradient to achieve a travel time of nearly 60 days to overcome the problems of pathogens the RBF well need to be located at a distance  $> 400$  m. This will reduce the microbial load and hence the cost of post treatment can be very much reduced by taking advantage of natural treatment processes. The outcome of this research work will assist in designing RBF systems to meet the rural water supply along non-perennial river by construction of check dams. This will help to overcome the loss of water by evaporation and sustain water supply for domestic use around check dams.