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Protection of groundwater and surface water is necessary to sustain the water for future use. A Wellhead Protection Plan (WHPP) can be considered as a tool which will prevent groundwater contamination. When the contaminated lakes are contributing to the pollution of ground water, it is essential to carry out a study about the role of lakes, that is, to study which extent the lakes will affect the wellhead protection area (WHPA). Ground water flow model such as MODFLOW and contaminant transport model MT3D has been used to evaluate different scenarios. Application of ground water flow and contaminant transport model help delineate the protection zones, to assess the impact on environment and community and to plan management practices. The modelling study suggests that the particles residing in the lakes get migrated towards the wells along with the groundwater flow. Demarcation of groundwater protection zones is necessary to protect the recharge zones for the aquifer. The area of each protection zone is calculated and found that the area to be protected increases with increasing pumping rates and the number of lakes.

The study area is an unconfined aquifer in a Chennai basin, in which a large number of lakes are present. Necessary primary and secondary input data were fed to the model from 2004-2005 and the model was calibrated, then it was validated for the 2005-2006 period. A questionnaire survey had been carried out in order to get responses from the community people and analysed in Statistical Package for Social Science (SPSS) software

The study revealed that well water quality had been degraded due to the pollution in lakes and there is always an uncertainty in results due to the transport of contaminants from other disposal sites which cannot be exactly found out using the model. Activities such as over ground water extraction, effluent discharge and construction of structures should be avoided in those sensitive zones for better management of the aquifer which in turn will result in the good quality water. It is concluded from the analysis that awareness should be created for effective management as a preliminary step. By adopting management practices and community participation and by creating awareness, the land use practices can be changed and a better environment can be created. Some of the engineering measures such as controlling over extraction, treatment of effluents, pumping out polluted water, treating and recharging it and protecting the lakes from further contamination can be adopted as effective management practices.