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## Research Article

**ARTIFICIAL GROUND WATER RECHARGE FIELD  
STUDY : SITE CHARACTERIZATION AND TEST  
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**ABSTRACT**

Over-exploitation of local ground-water resources can be prevented by inducing ground-water mounding through artificial recharge using rain water stored in specially constructed basins. In order to maintain the regional water balance and to assure optimal use of available water, knowledge of the water-table fluctuation in response to the proposed recharged scheme is essential. In this paper suitability of the site criteria for recharge bore well is discussed. Also focused on collection of surrounding site geotechnical data, topography of the site, geometrical parameters, evaluation of aquifer, and mathematics of ground water.

Mathematical modelling of ground water flow related to unconfined aquifer with a change in saturated thickness with variation in Piezometric level, permeability, radius of influences or distance between two recharge well and presence of recharge by rainfall is discussed here. By using quadratic mathematical expression some significant relationship can be established. Drawdown and detention time of water storage can also be determined. The technique is implemented to an unconfined aquifer with horizontal impervious base receiving vertical recharge using rain water stored in specially designed basin.

Authors have set up precast octagonal recharge well system at proposed site and suggested design parameters for roof top rain water recharge system. Recharging capacity of well can be evaluated by field test and confirmed with analytical solution.

Authors have established correlations between radius of bore well  $r$  and depth of pervious strata  $h$  with capacity of borehole  $Q_r$  which are adopted at site and gives satisfactory results, few are highlighted.

**KEYWORDS:** unconfined aquifer, artificial recharges techniques, geometrical parameters, radius of influence, draw down, Hypothesis of Water.

**INTRODUCTION**

Human health and welfare, food security, industrial development and the ecosystems on which they depend, are all at risk, unless water and land resources are managed more effectively

in the present decade and beyond. About one-fifth of the world's population lacks access to safe drinking water and with the present consumption patterns; two out of every three persons on the earth would live in water-stressed conditions