

**Effect of Additional Surface Irrigation Supply on Ground Water Regime in Upper Ganga Canal Command Area, Part-I Ground Water Balance**

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**ABSTRACT**

The water balance study serves as a means of solution to important theoretical and practical hydrological problems. On the basis of the water balance approach, it is possible to make a quantitative evaluation of water resources and its dynamic behaviour under the influence of man's activities. The water balance studies are undertaken in the Upper Ganga Canal command area to evaluate the various hydrological components constituting the recharge and discharge components for the ground water reservoir and understand their inter-relationship. This will facilitate for optimal planning and utilisation of water resources.

The study deals with an area of around 12,500 sq.km. of Upper Ganga Canal command covering the district of Bulandshahr and parts of the districts of Ghaziabad, Meerut, Muzaffarnagar and Saharanpur. Considerable variations in rainfall, canal supplies, ground water extraction and cropping pattern etc. exist within the study area.

The scope of the present study is the preparation of seasonal ground water balance of 12 years (1972-73 to 1983-84) for monsoon (June to October) and non-monsoon (November to May) seasons. The various components which influence the ground water balance in the study area are identified. These components are evaluated using the data made available by U.P. Irrigation Department and Ground Water Investigation organisation. The methodologies adopted for the estimation of water balance components have been discussed. Using the water balance approach, recharge from rainfall for the study area has been calculated. The values of various components of water balance are also verified with the results of various earlier investigators for their consistency.