

cell is printed in matrix form. Following the execution of the feedback phase, the ground water elevation in each cell with a well is printed in a tableau which includes the results of the feedback computation.

(vi) Termination

Each 50-year simulation requires between 3 and 4 minutes on the IBM 7090 Computer. When the run is complete, the program searches for additional input data (another run), and if none is indicated the program terminates. The program requires approximately 20,000 binary instructions, and is written in the FORTRAN II language.

Investigations with the Multiwell Model

Twelve runs were made on a 5 x 5 matrix of 25 cells and three runs on a 25 x 1 matrix. The topographical pattern used with the square matrix is shown on Figure 7.22, and the pump locations for the twelve runs made with this matrix are indicated in Figure 7.23. In these studies rainfall and canal inflows were treated as deterministic rather than stochastic inputs. Also the random components in evaporation and other feedback parameters were set equal to zero. The following assumptions were made for these runs: the well field has an impervious boundary - this would be the case, for example, if an infinite plane were filled by a square lattice of sets of twenty-five wells each; the transmissibility of the aquifer is 100,000 gallons per day per foot and the storage coefficient is 0.25; each cell has perennial irrigation; seasonal rainfall is based on a weighted average calculated from four stations in or near Chaj Doab - the mean rainfall was 15.6 inches per year; the maximum evapotranspiration potential used in the evaporation feedback relation is 48 inches per year; inflow from canals averaged 1.67 acre feet per acre per year and the seasonal distribution is the same as that used in the Project No. Two Feasibility Reports for Chaj Doab;(21) and all of the tubewell effluent is recirculated to crops - no drains are used since the principal objective was to assess the ability of the tubewells to lower the water table at different rates of pumping.

The operating policy for each cell containing a pump was the following: During each season the rate of pumping is set to provide, if possible, sufficient water which when augmented by the incoming canal water will offset leakage and other losses and will meet the irrigation water requirement (target) for that season. In a cell during a run in which that cell has no pump, the capacity of the pump for that cell is set equal to zero. Irrigation water continues to be supplied to the cell from canals. However, without pumping the irrigation target may not be met.

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(21)Tipton and Kalmbach. "Project No. Two Feasibility Report for Chaj Doab" (1961).