acre which is about the same as that determined in the Water Budget. Under the assumption that the steady flow rate of each well equals recharge rate of $0.72\,\pi\, r_e^2$ cubic feet per year, the skimming well equation yielded values of r_e that indicate the proper spacing of wells in the field. The first twelve cases pertain to soils with isotropic permeability, and the last twelve to anisotropic soils having a ratio of vertical to horizontal permeability of 0.10. The calculated results were obtained by replacing m in the last factor of the equation, $(r_w/2\alpha m)^{\frac{1}{2}}$ by $\sqrt{10}\,m$, which had the effect of reducing the yield of the well. This, however, is only one effect of anisotropy - there are others that are favorable. The adjustment made in the last twelve computations takes into account the fact that the streamlines in an anisotropic soil of this type tend to be flatter and more nearly radial so that fresh water from the deeper layers is not drawn into the well to the extent that occurs in an isotropic soil. This causes the effective yield to be smaller particularly when α is small. The principal compensating factors of anisotropy that are favorable that were not taken into account in the calculations, are (1) the volume of the salt cone is smaller ceteris paribus; and (2) the velocity of fresh water along the interface is smaller, so that the amount of mixing of salt and fresh water is reduced and water of better quality is pumped. As the degree of anisotropy, however, is difficult to determine and highly variable it cannot be counted to other than a safety factor.

The data of Table 7.2 indicate that skimming wells for the recovery of recharge in the peripheral zones of the mined project areas will have to be small, shallow and closely spaced. It is evident from the analysis that there is a sharp upper limit to the amount of water that can be pumped without entrainment of salt water. Moreover, for any given depth of the fresh water layer the yield of a skimming is a sensitive function of the degree of penetration - that is there is a rapid fall-off in production above and below the optimal distance of penetration. Finally the formulation shows that when the difference in densities of the two layers is small the maximum yield of fresh water is small. However, in this latter situation the quality impairment associated with over-pumping is less severe.

Computations 8 to 12 and 20 to 24 are of particular interest from the practical viewpoint. They indicate that a significant increase in skimming yield (with concomitant reduction in the total number of wells) can be obtained in shallow wells by increasing the radius of the well.

Rate of Increase of Ground Water Salinity

When pumping and evaporation of water from the aquifer lasts for any substantial length of time, the crucial question arises of how the salt concentration of the blended tubewell water and canal water applied to crops