

SECTION 684.17

Example Design Problem for Furrow Irrigation.

Given: The landowner has a field which is 950 feet long. The soil is Hastings silt loam; corn is the crop he wishes to raise. The land can be leveled between .002 and .004 grade. Ninety acres will be irrigated. Well yield is estimated at 800 gpm.

The landowner wants to know what his options are for leveling, furrow streams, and set times.

This soil is design group 4. Figure 683-9B shows that 0.33 is the maximum design use needed. The maximum net inches that needs to be replaced between each irrigation is 4.0" according to Table 684-1. It has been decided to leave 1.0" of storage in the profile for rainfall.

The optimum surface irrigation design worksheets show that between 16 (1.7 gpm/100 x 9.5) and 21 gpm would be the maximum efficiency range.

Two depths of applications were analyzed so it could be determined what would happen if the application needs were less than maximum. In some cases, it may be necessary to figure operation costs with re-use option when the field efficiency with and without re-use are substantially different.