

EFFECTS OF TERRACES AND WATER & SEDIMENT CONTROL BASINS ON RUNOFF

Runoff may be adjusted for the effect of terraces in the design of many conservation practices. Terraces may have a shorter design life than some other practices so a partial credit is used. For areas that have or definitely will have closed-end terraces, the runoff may be reduced by 1.0 inch. The same considerations apply to water & sediment control basins. The adjusted runoff is computed by the use of the formula:

$$Q_a = Q - \left(\frac{\text{Area_Terraced}}{\text{Total_Drainage_Area}} \right) (1.0_inch)$$

Where :

Q = Runoff Depth, inches

Q_a = Adjusted Runoff Depth, inches

On level terraced areas, the water stored by the terrace will infiltrate into the soil and will not be considered as part of the runoff. For terraces using underground outlets that drain into the practice being designed, a base flow of 0.05 cfs per acre needs to be added to the inflow.

Peak flow rates may be reduced by the same percentage as the reduction in runoff volume.

Many software packages are not able to directly give credit for the runoff reduction. For those situations a revised rainfall value can be calculated from the adjusted runoff depth and the runoff curve number.

A spreadsheet has been developed to perform the calculations. The spreadsheet can be found on the Iowa Engineering web page using the following path from the Iowa NRCS home page:

Iowa NRCS home page → Topics → Technical Resources → Engineering → Engineering Spreadsheets → IaTerraceCredit.xls

The first tab on the spreadsheet, labeled "IA EFH2-91(35-36)", gives two examples that show how the Peak Flow Adjustment Factor is calculated. These examples refer to a rainfall-runoff nomograph located in EFH Chapter 2. An alternative to using the nomograph is to use tables giving rainfall-runoff relationships by curve number. These tables are located in the National Engineering Handbook Part 630, Hydrology; Chapter 10, Estimation of Direct Runoff from Storm Rainfall; Appendix 10A, Rainfall - Runoff Tables for Selected Runoff Curve Numbers. These tables have rainfall-runoff values for curve numbers 50 - 98.