3.4.2. Flow calculation

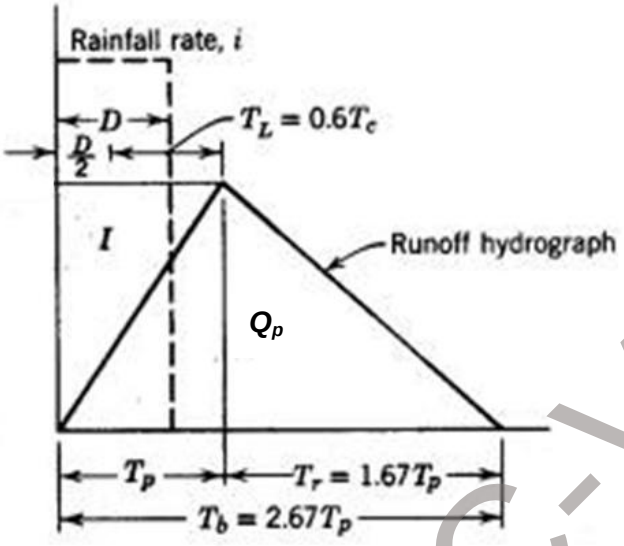

Figure 3-7: Rainfall and runoff with assumptions for the Soil Conservation Service triangular hydrograph method of rainfall estimation

The runoff calculated as described in the previous section should be routed to the outlet using the standard SCS unit hydrograph method.

Figure 3-7 above shows a dimensionless triangular unit hydrograph. To compute the peak discharge, the following equation is utilized:

$$Q_p = \frac{0.0021QA}{T_p}$$

Where

$$T_p = \frac{D}{2} + 0.6T_c$$

$$D = \frac{T_c}{7.5}$$

A is area (ha)

T_p is time to peak (hours)

T_c is time of concentration (hours)

D is duration (hours)

Q is the total runoff (mm)

Q_p is peak runoff (m^3/s)

There are a number of options for calculation of the outflow hydrograph once the curve number/runoff coefficient, unit hydrograph time to peak and storm profile have been determined:

- Hydraulic modelling software (hydrodynamic method if possible) is the preferred method of calculations. In hydraulic modelling software, the lag time T_L should be set at 0.6 Tc, the recession time to 1.67Tp and the default SCS peak rate factor should be used, with no base flow. Figure 3-7 above shows the relationships between all the parameters that the modelling software could prompt for. The rainfall profile should use a hyetograph for distribution.