

Name \_\_\_\_\_

**Homework Assignment 5 (Due: Friday, October 14)**

Please hand in this homework pamphlet as a cover sheet with your answers (everything will be returned once graded). Be sure to list all assumptions and show all your work. Credit will only be assigned if it is clear how each problem was solved.

1. Use Excel or another appropriate spreadsheet application to construct a synthetic unit hydrograph using the NRCS (SCS) method for a drainage basin with an area of 250 acres. The time of concentration has been estimated as 0.5 hours. Assume that the time to peak  $t_p$  can be estimated as

$$t_p = \frac{\Delta t}{2} + t_L$$

**Note: In your submission be sure to show both the tabular values and a plot of the unit hydrograph. Your spreadsheet should be concise and the thought process used for problem development should be clear. Select one row in your completed spreadsheet and provide sample calculations that verify the results and the equations used.**

- Given the inflow hydrograph in Table 1 for the detention pond shown in Figure 1, use the storage indication method to route the hydrograph through the pond and generate the outflow hydrograph. Provide a final plot showing the inflow and outflow hydrographs.

Table 1. Inflow hydrograph

Time (hr)	Inflow (cfs)
0.0	4
.4	6
.8	9
1.2	23
1.6	84
2.0	48
2.4	20
2.8	14
3.2	11
3.6	9
4.0	8
4.4	7
4.8	7

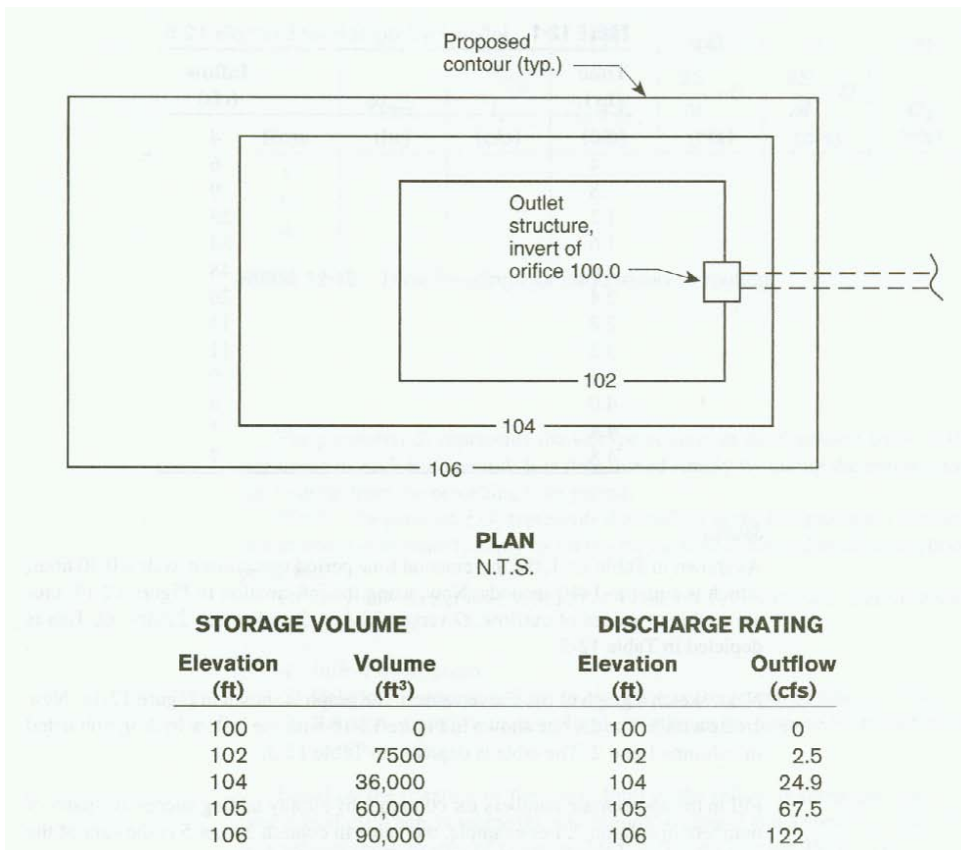


Figure 1. Detention pond schematic with stage, volume, and discharge information.