CWR 3540 – WATER RESOURCES ENGINEERING – Fall 2023

Study Material: Modules 4 and 5

Homework Set No.7:

Due on Thursday, November16, 2023, ***at the start of the lecture***

[This homework set can be solved either individually or in teams of up to 2 (two) students. If you work in a team, all members of the team must present an individual hard copy of the solution, which must list the names of all the team members].

Required Problems (A and B) below:

Problem A. The hydrograph shown herein below resulted from a 2-h duration rainstorm, which was recorded over a drainage area of 8,000 acres.

a) Using the simplest method (i.e., Method 1), separate the baseflow from the direct runoff. Next determine and report the volume of surface runoff and the average de0pth of runoff over the entire drainage area *in inches*.

Problem B. In reference to Example 9.8 of our textbook (p. 368), evaluate the sensitivity of the synthetic unit hydrograph to the duration of the storm, t_r. Do notice that information about the drainage area is presented in the problem statement of Example 9.7 (p. 366). In order to assess that sensitivity you may, at least, repeat the text solution of Example 9.7 (which is only for $t_r = 4$ hours) for t_r values of 2 and 6 hours. Then compare, at least, the difference among all the determined Q_p values for those three t_r values.

Recommended Practice Problems:

9.1, 9.2, 9.4, 9.8, 9.12, 9.14, 9.16, and 9.18, among all others that are available in Chapter 9 of our textbook.

Final Exam: Tuesday, December 5, 2023