

Name: _____

Module 9
CEE 387: Hydrology and Detention Pond Design
and Analysis Homework

Subwatershed for development (area, mi²): 1.89; 1.03; 2.02; or 2.04
New development: medium density residential; apartments; commercial; medium industry; low density residential; or office park

Use the information in the Module 9 presentation and posted material to conduct a pre- and post-development watershed analysis for the Brookwood watershed area, according to the above circled information (make sure you attach this sheet to the assignment. The four watersheds are indicated by their area (these correspond to the four high-lighted subareas on the ppt slides). In the assigned subarea, assume future development according to the circled conditions. You will need to make appropriate assumptions appropriate for the land use. You will be designing a detention pond to control the “25-yr” event appropriate for Tuscaloosa County so that the post development flows do not exceed the pre-development flows. Also make sure you provide an emergency spillway to handle the 100 year storm flows. For your assignment:

- 1) determine the pre-development conditions for your subarea and for the complete watershed.
- 2) design a detention pond so the peak runoff rate after development is no greater than the peak runoff rate before development for the subarea. Make sure you also evaluate the total watershed condition flows.
- 3) Modify the pond design to also provide water quality benefits appropriate to capture about 80 or 90% of the TSS (corresponding to capturing the 5 μ m particles).

Prepare a short report having summary printouts and graphs from WinTR55 and your own sketches, plus a discussion.

The grade for this assignment will be determined as follows:

	Max. available points	Assigned points
Predevelopment conditions (subarea and complete watershed)	20	
Design of pond (25 yr event for main outlet and 100 yr event for emergency spillway)	25	
Evaluate subarea and complete watershed for post-development conditions	25	
Water quality preliminary design	15	
Written report	15	