INTRODUCTION

The watershed is a basic concept in hydrology. The definition of a watershed is the “land area that contributes runoff to a given point in a stream or river”. It is also synonymous with catchment and drainage area or river basin. Watershed boundaries are defined by topography and can be delineated using topographic maps.

EDUCATIONAL OBJECTIVES:

The objective of this laboratory is to determine the watershed boundaries associated with a given stream on a topographic map. By completing this laboratory exercise students will better understand:

- Watershed terminology.
- How to determine watershed boundaries.
- How to calculate the area of a watershed
- How to calculate runoff volumes

PROCEDURES

Given the contour map of the assigned watershed and the surrounding area, the watershed boundary will be determined. The area of the watershed can then be calculated and runoff volumes determined. The assigned watershed is the STEVENS CREEK WATERSHED in western North Carolina. A topographic map of this area will be provided.

REQUIREMENTS

1. Locate the watershed outlet on the topographic map.
2. Delineate the watershed boundaries that drain through Stevens Creek to the watershed outlet.
Note: The watershed must “close” at the outlet.
3. Determine the area of the watershed.
4. For a 25-yr, 24-hr rainfall event, and a runoff/rainfall ratio of 30%, calculate the amount of runoff to the Pigeon River in ft$^3$, acre-feet, and gallons.
Note: the 25-yr, 24-hr rainfall for the Stevens Creek watershed is one of the following rainfall rates
   a) 5 in.  
   b) 6 in.  
   c) 8 in.
5. Provide a brief report summarizing your procedures and results.

EQUIPMENT REQUIRED
1. Topographic maps (provided).
2. Engineering graph paper.
3. Textbook

REPORT:

A report should be created that follows the lab report guidelines handed out in class. These guidelines can also be found on the class website. A map with the delineated watershed should be attached.

HINT:

To calculate the watershed area, trace your watershed onto engineering graph paper. Count only full and half squares. The scale on the topographic map is 1 : 24,000.
Example Watershed Delineation --- SPRING CREEK

Figure 1: Topographic map of Spring Creek for the in-class example.
Figure 2. Topographic map of the Stevens Creek watershed in western North Carolina.