

1. FIELD METHODOLOGY LITERATURE

40 Points

The purpose of this exercise is to determine what procedures we should follow for collecting measurements of river discharge, including water depth and flow velocity, based on recommendations in the published literature. We will use the published literature to determine what we should measure in the field, how we should measure it, and where we should measure it. We will also learn why we should do these measurements in the recommended manner.

YOU SHOULD BE ABLE TO:

- Describe the characteristics of an ideal channel segment for measuring stream discharge accurately;
- Correctly describe how to use a current meter to measure stream flow velocity;
- Determine where to take flow velocity measurements – at what depths and at what locations across a channel – for the purpose of calculating stream discharge;
- Determine where to take water depth measurements for the purpose of calculating stream discharge and channel geometric characteristics;
- Explain the reasoning behind each of the above recommendations; and,
- Write a concise summary of the recommended field procedures in an outline format that includes appropriate citations and a reference list.

PROCEDURE

The class will be divided into teams of three or four students. Each student on a team will be assigned an article to read on wading measurements of stream discharge selected from the list on page 2. Each student will be responsible for taking notes on the following items from their assigned reading:

- Characteristics of an appropriate location for wading measurements of stream discharge;
- How to set up a transect;
- How to use a current meter to take stream flow velocity readings;
- How many measurements to take along a transect and how to space measurements; and,
- How to use the field measurements to calculate total discharge.

At our first lab meeting team members will consolidate their individual notes into a master set of notes in an outline format with appropriate citations. For example, if two of the assigned readings suggest measuring stream flow velocity at six-tenths of the water depth, the master set of notes should include both authors in the citation. You will eventually incorporate these notes into a scientific poster or oral presentation, and one requirement of scientific communications is the inclusion of citations and a reference list. Having multiple authors in a citation tells readers or listeners that what you are doing is a widely accepted practice; it is not just a method you cooked up after a relaxing Sunday brunch.

You also want to include notes on why the authors recommend taking measurements one way rather than another, or why they recommend taking measurements in one type of location rather than another. This will also be important for your

scientific poster or oral presentation because, no matter what the literature recommends, the real world (i.e. actual field sites) often don't allow us to follow recommended procedures precisely. Any time we deviate from recommended procedures, we run the risk of collecting invalid field data. That doesn't mean we will collect invalid field data, but we increase the risk of that occurring. One part of all scientific investigations involves careful evaluation of the collected data, particularly if the data don't reveal relationships we expect to see. If our expectations are not met, it could be a result of not following recommended procedures closely enough or it could also be a result of some unique aspect of our field site. We need to be able to determine which of those possibilities is real.

The bottom line is that as part of your scientific poster or oral presentation, you need to describe your field methodology and you need to account for any errors that might arise due to the actual field procedures used.

METHODOLOGY LITERATURE

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