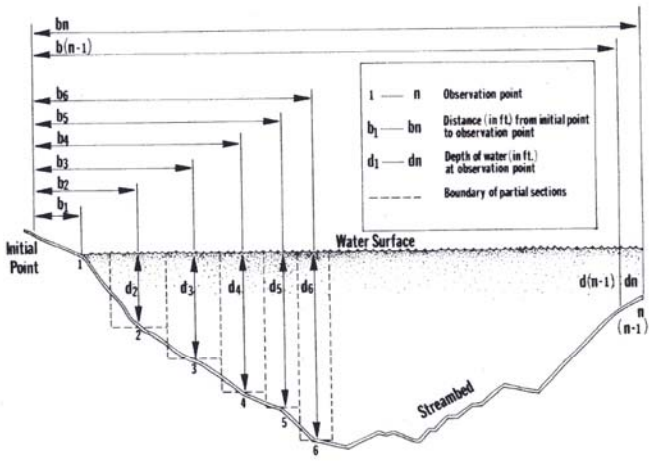
Stream Flow Procedures for Students

Introduction

The most important of all geologic processes is the force applied to the land by running water. Stream discharge is the amount or quantity of water flowing in a stream, and is perhaps the most important measurement a scientist can make in a stream. It is important to know how much water is flowing in a stream and the quantity of water going from the stream to a taro field or agricultural diversion. Many disputes and court battles have been fought over the quantity of water taken out of a stream because freshwater is the basis for all life, and is the most valuable and important natural resource we have. It is important to also know the seasonal effects of stream flow. For example, streams may become very low or even dry in the summer but be at a high level or even flood in the winter.

Below is an illustration of how we will take a cross-section to measure stream flow.



Procedure

1. The first step is to find an area of even stream flow with few obstructions in the water such as large tree branches or large boulders.

2. Next, take a measuring tape across the stream with the tape above the surface of the water. Make sure tape is placed straight across the water, tie the tape down with a rock or branch on each side of the stream.
3. Now, we take the current meter out and

attach the round, black velocity measuring knob to the staff rod (aluminum measuring pole), and tighten the screw.

4. Now, start taking velocities! We generally take flows about every 2 ft. So, go to one bank of the stream and first record where the water edge is on the tape. Then go out into the stream to the first two feet marker, by looking at the tape.
5. Record water depth by putting the staff gage into the stream, and read out the number from the metal pole. Depth is measured in tenths of feet, so if the water line is on the 1 and is five notches above, then depth = 1.5 ft. Single notches on the rod indicate tenths of feet, and double notches = 0.5 ft.
6. Next, we will be taking water velocities of the stream in three places: at the surface of the stream, the middle of the stream, and at the stream bottom.
7. We first take flow in the middle of the water column by lining up numbers on the metal staff rod. For example, if the stream is 1.6 ft deep then look for the number 1 on the top of the rod (are where blue arrow is), and move the movable part of the rod up until the number 6 on lines up with the number one (red arrow).
8. Then, looking at the flow meter take the flow after the reading on the meter stabilizes (usually 20 seconds or so).
9. Next, take flows on the surface of the water, and then on the bottom of the stream by moving the black knob up to the top of the stream, then down to the bottom of the stream.
10. Repeat this process by moving 2 ft over along the measuring tape, then record stream depth and take the three water velocities (middle, surface, and bottom).