



Measuring Stream Discharge - Field Sampling SOP 5 (S-5)

Stream discharge will be measured with the aid of a Marsh McBirney flow meter (Model 2000 or Model 201D), following protocol established by the United States Geological Survey (Rantz et al. 1982).

Stream discharge will be measured utilizing the velocity-area method. This method requires the physical measurement of the cross-sectional area and the velocity of the flowing water. Discharge is determined as the product of the area times the velocity. Velocity will be measured using a March-McBirney, Flow Mate 2000 or Model 201D, flow meter. Information about using the Flow Meters is available in Field Sampling SOP 3.

Measuring the average velocity of an entire cross section is impractical, so the method uses an incremental method. The width of the stream is divided into a number of increments; the size and number of the increments depends on the depth and velocity of the stream. The purpose is to divide the stream section into increments with approximately equal discharges. For each incremental width, the stream depth and average velocity of flow are measured. For each incremental width, the meter is placed at a depth where average velocity is expected to occur. That depth has been determined to be about 0.6 of the distance from the water surface to the streambed when depths are shallow. When a depth greater than three feet, the average velocity is best represented by averaging velocity readings at 0.2 and 0.8 of the distance from the water surface to the streambed. The product of the width, depth, and velocity of the section is the discharge through that increment of the cross section. The total of the incremental section discharges equals the discharge of the river.