

## **How and Why to Calculate the Flow of Water, or Flow Rate, by a Dam:**

American shad only return to lay their eggs in larger rivers with a certain amount of water flowing in them. They do not live in small streams. One way that biologists can determine which dams block shad are important to remove or put fish passage in is by calculating the amount of water flowing by a dam each second. This is also called the flow, or flow rate of water.

Biologists measure the flow of water by a point, such as a dam, in Cubic Feet per Second, or CFS (ft<sup>3</sup>/sec). A cubic foot is 28.3 litres, or 14, 2 litre water bottles with 1 bottle 1/3 full (see CFS Diagram ). Flow by a dam means that every second, a certain number of 2 litre bottles containing water flow by a dam. This is also called flow rate.

What does flow rate of water look like? Think of a garden hose that has only a trickle of water coming out the end. This an example of a low flow rate. Now, if the faucet were fully turned on, the hose would gush with water. This would be a high flow rate. Flow of water from land includes ground water (up to 95%) and surface water.

The average annual amount of water flowing from each square mile of an area draining to a dam (drainage area) per second is listed on each of the Drainage Area maps, 2 a-c, as an underlined number. River gauges are used to calculate flow of water in rivers. The U.S. Geological Service (USGS) runs a series of river gauges which you can view on their website, <http://waterwatch.usgs.gov/>. River gauges can also be listed on GIS maps.