U.S. Army Corps
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St. Paul District

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Public Affairs

Corps Facts

Flood Terms

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Cubic Feet Per Second

As the term implies, this is a common unit of flow measurement based on the number of cubic feet (12"X12"X12") of water passing by a point in a second. It is abbreviated cfs. A flow rate of one cfs is equivalent to 449 gallons per minute.

River Stage

A site-specific measurement of river-level referenced as the height in feet above a designated zero reference point, called the gauge zero, at the site. The zero reference point is sometimes, but not always, chosen as the elevation of the river bottom. Normally, stage values are always positive. Drought conditions could cause the river level to fall below gauge zero, and the stage reading at that time would be negative. Since each gauge was established independently at each location, the stage reading is good for that location only and cannot be compared to other locations. For example, a stage of 30 feet at Fargo, N.D., cannot be compared to a stage of 30 feet at Grand Forks, N.D. The only way direct comparisons between two gauges can be made is by converting river stage to elevation by adding the stage to the gauge zero elevation.

Flood Stage

The National Weather Service, based on the desires of the local community, establishes the "flood stage" gauge height for any given community. The flood stage gauge height is often the stage where damages begin to occur. Many communities desire to use the flood stage gauge height as an early warning alert, prior to the onset of significant damages. Significant damages may not occur until river levels are several feet above flood stage. Additionally, conditions along some rivers may have changed since the gauge and flood stages were established and reaching the flood stage may or may not result in actual flooding. Again, stages are site-specific, so feet above flood stage at one location can't be compared to another.

Acre Feet

A measure of volume typically used to describe how much water is in a reservoir or how much storage capacity is available. An acre-foot of water is the equivalent of a volume of water that is one-foot deep, covering an area of one acre. An acre has an area of 43,560 square feet. Therefore, an acre-foot of water contains 43,560 cubic feet of water. A flow of one cubic foot per second equals a volume of approximately two acre feet every 24 hours.

Reservoir Inflow

A measure of how much water (usually in cfs) is entering a reservoir. Inflow is calculated by using a reservoir storage-inflow-outflow formula, where inflow equals outflow plus the change in storage. The Corps' water control section in St. Paul uses the known outflow (discharge from the dam) and the known increase or decrease in the amount of water stored in the reservoir (based on changes in pool elevation) to calculate the inflow. Often, a gauge upstream of the reservoir will provide baseline data on inflow. However, the upstream gauge will not include smaller tributaries and runoff from the land near the reservoir or rain falling directly on the reservoir surface. Actual measurements of upstream flows serve to verify the validity of calculated reservoir inflow.