



Streamgaging

NOAA NATIONAL WEATHER SERVICE

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Benefits of Streamgaging



Automated Gage (DCP)

Streamgages are the monitoring tools used to track the movement of water in streams and rivers. They may be read manually or automated. The U.S. Geological Survey (USGS) operates a network of about 7,500 automated streamgages nationwide. The information from an individual streamgage can be used to:

- Measure stage (water height) and streamflow
- Define a relation between stage and streamflow
- Apply the stage-streamflow relation for a continuous streamflow record
- Monitor trends of stage and streamflow including rate of rise
- Correlate stages with impacts

The National Weather Service (NWS) uses the data from these gages and may provide additional services for established gages. These services could include: establishment of an official flood stage, quantitative river forecasts, flood warnings containing crest height, when the area is forecast to reach flood stage or crest, etc.

Types of Streamgages

There are 3 main types of streamgages. Staff gages (like a large ruler in the waterway), wire weight gages (typically attached to a bridge rail over the middle of the channel), and automated gages (electronic gages that automatically send measurements at regular intervals). Staff gages and wire weight gages are read manually, and the measurements are then relayed (usually by phone) to local officials and the NWS.



Reading a Wire Weight Gage

Considerations for Placing Streamgages



Staff Gage

- **Physical Siting:** Adequate access to the gage for installation and maintenance is a necessity. The ability to take measurements during a flood should also be considered.
- **Proximity to Other Gages:** Optimal gage locations will account for the influence of upstream water sources such as feeder creeks, agricultural drainage, etc. and be spaced appropriately with respect to other gages to capture variation within the watershed.
- **Cost:** Streamgages vary greatly in cost. Manual gages can cost as little as \$50 to install and maintain, while automated gages such as a DCP can cost around \$13,000 to install, and then \$9,000 per year to maintain. Partnerships are often built to share costs.
- **Local Impacts:** Consideration of hydrologic impacts to population centers, sensitive areas, etc. may influence the placement of a particular streamgage.
- **History of the site:** An existing stage-impact relationship may be used if there is an established history at the site. For example, a record of stages and their correlated impacts may be expanded upon following the establishment of an automated streamflow gage. However, if a new gage is placed at a different location, there is a risk that the relationship will not be the same and a new period of record must begin.

On the web:

U.S. Geological Survey www.usgs.gov
 National Weather Service Quad Cities www.weather.gov/quadcities
 Water Levels of Rivers and Lakes (USACE) www.rivergages.com