Overview of the Chain Bridge Monitoring Program

In 1983, the Metropolitan Washing Council of Governments (COG) established an automated fall line monitor at the Chain Bridge on the Potomac River. The Chain Bridge station is operated by Virginia Tech's Occoquan Watershed Monitoring Laboratory (OWML) with funding from COG. Due to the number of streams discharging into the Bay watershed, and the changing composition of runoff due to storm events, it is challenging to monitor an individual river's nutrient and sediment contributions to the Bay. However, with careful selection of sampling locations and times it is possible to characterize pollutant inputs from a segment of the Potomac over a range of conditions.

The Chain Bridge station is part of a comprehensive Chesapeake Bay Program monitoring network. The network of rivers being monitored were selected to encompass runoff from as much of the Bay watershed as possible, covering a range of different run off sources to the Bay and its tributaries. Since the fall line designates the transition from the Potomac River's free flowing to its tidally influenced section, monitoring at the Chain Bridge location allows estimation of the quality and quantity of upstream nutrient and sediment loads to the Potomac estuary and the Chesapeake Bay.

Water quality problems in the Potomac River are caused both by direct inputs of pollutants and indirectly by changes to the land and air that surround and interact with the river. The Chain Bridge monitoring station was designed to extract representative samples of the river flow at a variety of stages, ranging from base flow to extreme storm peaks.

There are currently two types of sampling programs at the Chain Bridge station. The first consists of the manual collection of baseflow samples on a weekly basis from April to November, and on a bi-weekly basis from December to March. Automated collection of storm flow samples during storm events also exists. There are two side-by-side samplers; one sampler performs compositing while the other sampler collects discrete storm samples for approximately five storm events per year. Below is a list of the parameters currently being measured by the Chain Bridge station:

- temperature
- pH
- flow
- turbidity
- conductivity
- total hardness
- chemical oxygen demand
- dissolved oxygen
- dissolved organic carbon
- total organic carbon
- nitrate and nitrite nitrogen
- ammonia nitrogen
- total nitrogen
- total soluble nitrogen
- soluble reactive phosphorus
- total phosphorus
- total soluble phosphorus
- total suspended solids
- soluble reactive silica
- total alkalinity
- fecal coliforms and E. coli