



# News Release

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## Health of Chesapeake Region Streams and Rivers Improving; Many Still Degraded

**Annapolis, Md.** – Nutrient levels in many tributaries of the Chesapeake Bay region have improved over the last twenty-five years. Nitrogen and phosphorus levels have decreased at almost 70 percent of the 32 monitoring locations in the watershed, according to the U.S. Geological Survey (USGS), while sediment amounts decreased at 40 percent of the sites. In this analysis, a decreasing trend may indicate improving conditions, since it means that smaller amounts of these pollutants are entering rivers that flow into Chesapeake Bay. Although this information indicates long-term improvements, the annual 2010 loads of nitrogen, phosphorus and sediment to the Bay were higher than in 2009 due to more rain, snow and river flow. Overall, the loads remain consistently too high in relationship to Chesapeake Bay Program (CBP) goals in restoring the Bay

“Long-term trends indicate that pollution-reduction efforts, such as improved controls at wastewater treatment plants and practices to reduce nutrients and sediment on farms and suburban lands are improving water-quality conditions in many areas of the watershed,” said USGS scientist Scott Phillips “However, nutrients, sediment, and contaminants will need to be further reduced to achieve a healthier Bay and streams.”

A separate study by CBP partners on the health of the watershed’s streams showed varied conditions. Of 7,886 stream sites sampled from 2000-2008, more than half (55 percent) were in very poor or poor condition with the remaining 45 percent in fair, good or excellent condition.

“Due to the large number of stream health monitoring sites, this indicator provides the best assessment of stream health on a small watershed scale,” stated Bruce Michael of Maryland Department of Natural Resources. “It provides managers with a geographically specific tool necessary to target restoration and protection practices. Good stream health is critical not just for the Chesapeake Bay, but for local fish, wildlife and recreational activities.”

### **In 2010:**

On an annual basis, the USGS measures the amount of water in the region’s major rivers and estimates how much is reaching the Bay. This amount, called “river flow”, is measured over the 12-month period from October-September, known as the “water year”.

➤ The average *river flow* entering the Bay in 2010 was 52 billion gallons per day (BGD), 11 BGD more than 2009.

Generally speaking, as river flow increases, it carries more nitrogen, phosphorus and sediment downstream to the Bay, thereby affecting conditions for fish, crabs, underwater grasses and many other creatures and habitats. USGS also monitors annual loads of these pollutants in the major rivers and works with the CBP to estimate how much reaches the Bay itself. In 2010:

- Approximately 278 million pounds of *nitrogen* reached the Bay. This is 43 million pounds more than the 2009 revised loads.
- Approximately 16 million pounds of *phosphorus* reached the Bay. This is 7 million pounds more than the 2009 revised loads.
- Approximately 9 million tons of *sediment* from non-tidal rivers reached the Bay. This is a 7 million ton increase from 2009. Initial results indicate that high runoff events in January and March of 2010 in the Potomac River basin generated this sediment load, which is one of the highest in the last twenty years.

The CBP goal is to have a long-term average of about 202 million pounds of nitrogen and 13 million pounds of phosphorus entering the Bay from watershed and airborne sources.

### Flow-adjusted Trends over Time

Nutrient and sediment levels in rivers vary greatly each year since they are influenced by changes in the amount of rainfall. Scientists adjust their analysis to remove the effects of such weather variations so that they can measure nutrient levels more consistently over time and better evaluate if long-term changes in a waterway's conditions are due to management efforts. This is what is called an analysis of "Flow-adjusted Trends".

The majority of long-term stream monitoring sites show flow-adjusted trends that indicate decreasing concentrations of nitrogen and phosphorus, with about 40 percent of the sites showing a downward trend for sediment. Between 1985 and 2009 at 32 sampling locations:

- Twenty-two sites showed downward flow-adjusted trends for *nitrogen concentrations*, two showed upward trends and eight showed no or small trends that are not statistically significant.
- Twenty-two sites showed downward flow-adjusted trends for *phosphorus concentrations*, four showed upward trends and six showed no or small trends that are not statistically significant.
- Twelve sites showed downward flow-adjusted trends for sediment concentrations, four showed upward trends, sixteen showed no or small trends that are not statistically significant.

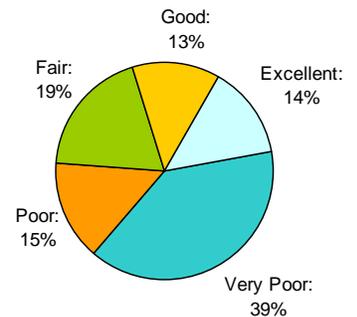
### Stream Health in the Watershed

Healthy freshwater streams support a diversity of fish, wildlife and habitats and are intrinsically linked to healthy rivers and a healthy Chesapeake Bay. The average stream health scores in 7,886 of sites sampled (between 2000-08) indicated that 3,584 were in fair, good or excellent condition and 4,302 were in very poor or poor condition. This relatively new system for measuring stream health provides citizens and groups with a uniform manner in which to evaluate the health of local waterways across state lines and in the context of the entire Bay watershed.

Scientists determine the health of freshwater streams and rivers by studying the many tiny creatures that live in these waters. The abundance and diversity of snails, mussels, insects and other bottom-dwelling organisms are good indicators of a waterway's health because these creatures can't move very far and they respond to pollution and environmental stresses.

In general a healthy Bay watershed would have a majority of streams ranked as fair, good or excellent. Based on the location of streams sampled, those in natural environments such as forested areas tend to be in good to excellent condition and those in areas with more pollution- generating land uses, including urban and some agricultural areas, tend to be in very poor to fair condition.

Stream Health 2000-2008



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For more information about *flow adjusted trends* and *stream health*, visit [http://www.chesapeakebay.net/status\\_watershedhealth.aspx?menuitem=26057](http://www.chesapeakebay.net/status_watershedhealth.aspx?menuitem=26057) or <http://chesapeake.usgs.gov/>

For additional information about *2010 pollutant* loads, visit [http://www.chesapeakebay.net/status\\_pollutants.aspx?menuitem=19795](http://www.chesapeakebay.net/status_pollutants.aspx?menuitem=19795).

*The Chesapeake Bay Program is a regional partnership that has coordinated and conducted the restoration of the Chesapeake Bay since 1983. Partners include the U.S. Environmental Protection Agency; the U.S. Department of Agriculture; the states of Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; many federal agencies; and advisory groups of citizens, scientists and local government officials.*

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