**Page News & Courier "Water Matters"**
**Land Use and Water Quality**

Of the 248 miles of streams in Page County, approximately 73 percent of those streams-or 181 miles-are impaired according to the Virginia Department of Environmental Quality. These impaired streams do not meet the standards of the Clean Water Act or Virginia Water Quality Standards. The following rivers and streams in Page County are currently listed are not meeting water quality standards: South Fork Shenandoah River, Naked Creek, Cub Run, Mill Creek, Hawskbill Creek, Pass Run, Rocky Branch, Big Run, Line Run, Honey Run and Jeremy's Run.

Most people live in Page County, at least in part, due to the rural character and lack of intensive urban and suburban development. And most of us would agree that Page is a beautiful place to live. So, what is polluting our treasured streams and where did this pollution come from? The answer to that question is both simple and complex. Simply stated, our unhealthy (or impaired) streams are a result of our communities, farms, businesses, roads, air deposition, and the way we, as individuals, live, work and play.

More than half of the pollutants affecting our streams and groundwater comes from what is known as "non-point source pollution." When water flows across the land during rainfall events or during snowmelt, it carries fertilizers, loose soil, pet waste, grease and oils, insecticides and other pollutants into streams. As a result, everything we do on the land affects the quality and quantity of our water resources and the natural systems that depend on this water. Therefore, the natural environment, drinking water, the scenic quality of our region and our rural lifestyle are directly affected, either positively or negatively, by the way we care for and use the land.

Principle pollutants found in our streams are sediment, nutrients and chemicals. Although sedimentation and enrichment (from nutrients) are natural processes, human activities on the land greatly accelerate this process, often to harmful levels leading to impaired streams.

Sedimentation is the process of transporting sediment from one location to another by rivers and streams. Rain falling on the landscape loosens and transports sediment. The process is accelerated when protective vegetation is cleared from the land or removed from stream banks. The process is also accelerated when the ability of soils to absorb water is impeded by paving and soil compaction. As less water is absorbed, storm water runs more quickly across the land surface directly to streams, contributing to higher stream channel flows and more erosion.

Nutrients, primarily phosphorus and nitrogen, in excessive quantities lead to increased algae populations severely affecting the oxygen levels in water which in turn affect animal life in the stream. Streams with large quantities of algae often have a foul taste, odor, and appearance.

A variety of chemical compounds can also enter streams by way of storm water run-off. These typically include insecticides, chlorides (road salt and other sources), and road oils and greases. The harmful effects of some chemicals can persist for decades.

Contaminants to our streams can travel from a variety of sources making detection and restoration difficult. A single contaminant such as chloride can come from many different sources. It can be flushed into streams when snow melts from roads, or it can move underground from septic systems to nearby streams; or it can be discharged from wastewater treatment plants directly into streams.

Land use and water resources are indeed directly linked. The type of soil, land cover and the intensity of its use will have a strong influence on area streams. The impact of any land use practice on either the quantity or quality of water can be substantial. It is important to 'take care of our water' by taking care of the land.

This is the eleventh in a series of articles addressing Page County's water resources and was written by Wink Hastings, landscape architect, National Park Service, Chesapeake Watershed Assistance Program. For more information or to join the Watershed Management Planning Committee, contact the Page County Water Quality Advisory Committee at (540) 743-4808 or canderson@pagecounty.virginia.gov.