

A Perspective on Water Resources in the Northern Shenandoah Valley

Jeffrey D. Slack

[The] Shenandoah is not only a river, but also a valley...[and] the Valley is a way of life.

--Julia Davis, *The Shenandoah*.

Water has made a lot of news in Virginia this summer. On one hand, the issue was too much water: that is, the late June/early July floods that caused significant damage in many parts of Virginia. On the other hand, the issue was not enough water: that is, Virginia Beach's long-running, still unresolved proposal for a pipeline to the city from Lake Gaston, a Roanoke River reservoir that straddles the Virginia-North Carolina border.

The northern Shenandoah Valley¹, especially Warren County, had its share of too much water in this summer's floods. Typically, however, August and September bring to this area the problem of potentially too little water along the Shenandoah River and its tributaries. In those months, Shenandoah River flows have historically been the lowest, while many river uses reach their peak. Apple processing facilities, for example, which are the largest industrial users of water in the northern Valley, are busiest during the late summer and early fall months.

The population of the northern Valley has been increasing rapidly since at least 1970. As the population within the area continues to grow, so does the importance of maintaining the Shenandoah River at its current quantity and quality. An increasing population means that there will be increasing demands for drinking water supplies, industrial water needs, and quality recreational opportunities.

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As a native and resident of Clarke County, as a natural resource planner for the region, and as a volunteer in a local conservation group, I have a deep, basic interest in the wise use and conservation of the Shenandoah River. I have seen evidence that many citizens in my area, with varied occupations and backgrounds, are united by this basic interest. These citizens have, however, often been divided on how to accommodate the specific interests of different users of the river's resources. This article presents my observations on Shenandoah River watershed issues and describes a process by which local citizens have been trying to balance their sometimes-competing natural resource interests.

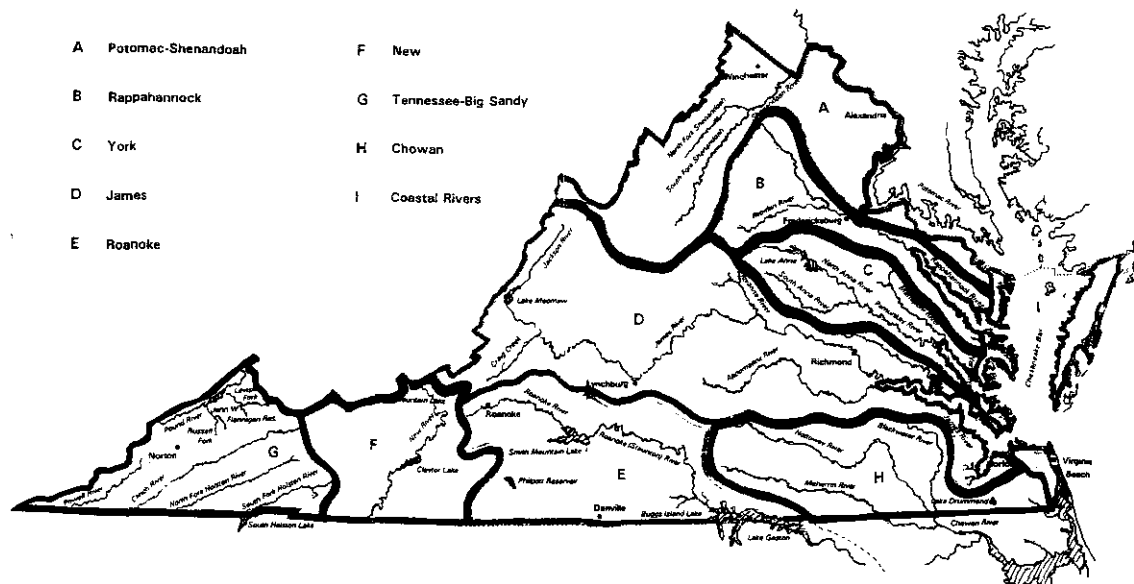
The Shenandoah River and Its Watershed

The Shenandoah River, along with its tributaries the North Fork and the South Fork, is one of Virginia's great natural resources. Historically, the river and its valley provided transportation routes for commerce and migration, and the area was the setting for many Civil War battles. Today the river continues to provide numerous beneficial uses: domestic, agricultural, and industrial water supply; wastewater assimilation; habitat for fish, wildlife, and other species; recreation; and scenic beauty.

As the quote above noted, the Shenandoah is not only a river, but also a valley and more precisely for our purpose here, a "watershed." As used here, the word "watershed" refers to the total area of land that drains into a river and its tributaries. Figure 1 shows the major river watersheds in Virginia, including that of the Shenandoah River. Note that the Shenandoah River lies within the Potomac River watershed.

¹As used in this article, the "Northern Shenandoah Valley" refers to the area encompassed by the Lord Fairfax Planning District. For more information on this area, please see the "Profile" on page 3.

Figure 1. Major river watersheds in Virginia.



Source: Adapted from *Virginia's Waters*. Virginia Water Resources Research Center, Virginia Tech, Blacksburg, 1989. Used with permission from the VWRRC.

The Virginia portion of the Shenandoah River watershed runs from Augusta County in the south to Clarke County in the north. Within that area, all the towns, industries, farmers, homeowners, canoeists, and others who use the watershed's land or water can potentially affect, or be affected by, a common resource, the Shenandoah River. No single individual, group, or political jurisdiction is isolated from the watershed-affecting actions of others. For that reason, comprehensive management of the river involves addressing issues and uses throughout the watershed.

Competing Demands in the Shenandoah Watershed

According to 1993 population estimates, the Shenandoah River provides drinking water to approximately 45,000 people in four towns and one independent city, and waste assimilation to approximately 96,000 people in the Northern Shenandoah Valley. As noted above, the river is also used for water supply and wastewater assimilation for area industries, especially fruit processing. The Shenandoah also provides some of the most spectacular scenery in Virginia, and it supports an outstanding recreational fishery that provides relaxation and pleasure to thousands of local and regional citizens each year. Recreational canoeing and fishing are important to the economy of the area.

Given these multiple uses, one area of concern has been the potential impacts of low flow conditions during

summer or other drought periods. Under such conditions, the river may not be able to support all of the uses to which residents and visitors have become accustomed. Indeed, low flow conditions in 1988 caused some municipalities to ask residents to conserve water. Low flow conditions also impact recreation and have been linked to at least one fish kill along the river (in 1988, according to the Virginia Department of Game and Inland Fisheries).

I believe that most people in the Northern Shenandoah Valley understand that state law requires essential human needs to come first in the consideration of water use during drought conditions. Reasonable people realize that there are no other higher priorities than inside domestic water use (drinking, cooking, bathing, and cleaning) and fire protection. The disputes can occur when attempts are made to prioritize other uses, such as commercial/industrial demands, fish habitat, recreation, agricultural irrigation, and outside domestic use (for example, lawn watering).

Faced with increasing demand for water due to population growth, and the potential for conflict over different river and watershed uses, many stakeholders in the northern Valley realized the need for a watershed-level approach to management of the Shenandoah River. The ongoing process of bringing together the different river users to discuss common interests has been lengthy and complicated. But it has proved to be valuable and *absolutely necessary*.

Profile of the Northern Shenandoah Valley

The Virginia Shenandoah Valley--that is, the watershed of the Shenandoah River in Virginia--stretches from Augusta County to Clarke County. The northern portion of this area corresponds approximately to Virginia's planning district #7, the Lord Fairfax Planning District, which includes the counties of Clarke, Frederick, Page, Shenandoah, and Warren; the city of Winchester; and several incorporated towns. The Valley has long been an important travel route, and today the area is a transportation hub, with Interstates 81 and 66 along with several major U.S. and Virginia highways. Traditionally an agricultural region (known, for example, as the "breadbasket of the Confederacy" during the Civil War) and long a popular tourist area, the Valley has remained strong in both of those industries, while also maintaining and increasing a manufacturing base.

In recent years, the population of the northern Valley has increased rapidly (see Table 1). The growth is continuing: The most recent provisional population data for 1993 shows the region grew by 6.1 percent growth rate from 1990 to 1993. The only other areas of the state to exhibit more rapid growth rates during this period were the urbanizing areas around Fredericksburg and the metropolitan Northern Virginia area. Current projections have the northern Valley adding an additional 70,000 people by 2020 (a projected 44-percent growth rate from 1990).

Table 1. Northern Shenandoah Valley population.

Year	Population	10-year Rate of Increase
1960	97,045	---
1970	106,372	9.6%
1980	132,492	24.6%
1990	159,239	20.2%

Applying Watershed Planning and Management to the Shenandoah

Watershed-based planning and management are not new. There are literally hundreds of projects underway at the federal, state, and local levels. In the Northern Shenandoah Valley, we modeled our effort after a process called "multi-objective river corridor management" (MORC), developed initially in the western United States. Certain general principles have guided the Shenandoah River watershed planning process:

- All parties with a stake or interest in a specific watershed should participate in the analysis of problems and the creation and implementation of solutions.
- All priority problems in a watershed should be identified and addressed. Emphasis should be placed on

problems posing the greatest risk to human health, ecological resources, and desirable uses of the water.

- Watershed planning and management should draw on the full range of scientific and political methods and tools available. To do so, cooperation among different organizations is necessary and should be cultivated.
- Successful watershed management projects require assistance from technical cooperators. In the Northern Shenandoah Valley, for example, we have had the technical assistance of Virginia Tech, the U.S. Geological Survey in Richmond, and the Interstate Commission on the Potomac River Basin.
- Planning for the sake of planning accomplishes nothing! Management plans must be reasonable and capable of implementation on the local level or there is no point in developing them. In most cases, implementation will probably happen slowly, or "incrementally": existing policies or procedures are modified only slightly at any one time. An incremental approach should, in fact, be considered for implementing local watershed management plans.

The MORC process for the Shenandoah River is pursuing these general principles through nine basic steps, shown in Table 2. As of July 1995, a regional MORC committee had met seven times to discuss river-related issues and problems. Two of these meetings were conferences bringing together the many different river users within the region. Following the regional committee's work, Page County's Board of Supervisors formed a county-wide committee to develop a river corridor protection plan for the South Fork of the Shenandoah in Page. The Page County committee met and investigated specific issues of concern to Page residents. One major issue has been addressed by the formation of the Shenandoah River Canoe Livery Association, which has been working to resolve disputes between private landowners and clients of commercial canoe outfitters. Another important step has been the computerized mapping of land uses within 500 feet of the river. This use of a geographic information system, or GIS, gives local decision makers a powerful and flexible tool for assessing watershed activities and impacts.

Table 2. Basic steps for developing a river corridor or watershed management plan.

1. Committee Selection
2. River Corridor Research
3. Issue Identification
4. Public Involvement
5. Goal Setting/Policy Statement Development
6. Data Collection/Mapping
7. Investigation of Alternatives for Action
8. Decide Upon Actions to be Implemented
9. Publish Plan Report

Conclusion

Rivers do not always follow political boundaries, and the people who use rivers--and who often share concerns related to river use--do not necessarily all vote for the same local officials. Wise use of rivers, therefore, requires planning and management at the level of the entire community of interests in a river--the river watershed level. But watershed planning involving many citizens and political jurisdictions is neither quick nor easy. Is it worth the trouble?

If you value water resources--and who can afford *not to*?--the answer has to be "yes," because watershed-level planning is necessary to account for the many factors influencing the quantity and quality of water available for use. Viewing water resource management *only* from the perspective of one's own use is like developing a budget without accounting for bills or taxes. Like financial resources, water resources are *assets that require proper management*. Wise business people realize that it just does not make good sense to neglect proper management of assets. Similarly, sound management of our rivers and other water resource assets is needed if those water resources are to provide the desired benefits for everyone.

Ed. note: For more information on watershed planning within the Shenandoah Valley, contact the Lord Fairfax Planning District Commission, 103 East Sixth Street, Front Royal, VA 22630; phone (540) 636-8800.

NOTICES

**A new REAP Report, *Economic Change in Floyd County*, by Judith Stallmann et al., describes economic trends in Floyd over the last 20-30 years. Besides the information specific to Floyd, the report can be useful to other localities by showing the types of information, sources of information, and analytical techniques that can be part of a study of a local economy. Single copies of the report may be requested from Extension Distribution, 112 Landsdowne St., Blacksburg, VA 24060; phone (703) 231-6192. Please request Publication 448-218/REAP R020.

A new Policy Paper REAP--*Municipal Solid Waste Management in Virginia: Rethinking the Choices*, by Gerald Stedje and Leonard Shabman--discusses the changes over the last few years in federal and state requirements for solid waste management and landfills, and how these requirements have increased localities' solid waste management costs. This publication will be sent to all *Horizons* recipients. If you did not receive a copy, or would like additional copies, please contact Extension Distribution and ask for Publication 448-306/P006.

HOW TO REACH US: REAP, Department of Agricultural and Applied Economics, Virginia Tech, Blacksburg, VA 24061-0401; telephone (540) 231-9443; fax (540) 231-7417.

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