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**COMMENTS on
the REVISION of the LAND and RESOURCE MANAGEMENT PLAN
for the GEORGE WASHINGTON NATIONAL FOREST
on the issue of
DRINKING WATER RESOURCES and WATER QUALITY**

Thank you for the opportunity to comment on the Land and Resource Management Plan for the George Washington National Forest (GWNF), which is currently being revised. Please accept these comments on behalf of Heartwood and Wild Virginia. These comments address issues related to public drinking water resources and water quality in the GWNF.

In December 2008, Wild Virginia released a report entitled *The State of Our Water: Managing and Protecting the Drinking Water Resources of the George Washington National Forest*. The following comments incorporate information from the report and many other sources. Please include the report as part of the official planning record.

Forests are Critical for Good Water Quality

Forested lands play a critical role in providing clean, safe drinking water. A recent report by the National Research Council (2008) states that streamflow from forests provides two-thirds of this country's clean water supply. Changes in forested headwater areas affect the quantity and quality of water downstream. The report concludes that a sustainable supply of clean water is as

important as any commodity or resource produced by our forests, and that our forests should be managed accordingly.

Localities are increasingly aware of the ecological services provided by forested lands. Many are aware of the huge economic cost to clean and purify water before making it available for domestic use. As a result, many cities have decided to protect their water supply at its source rather than bear the cost of developing and maintaining the infrastructure necessary to cleanse it.

New York City may be the most well known example. By working with numerous agencies, organizations, and landowners to implement watershed protection measures, the City avoided the approximately \$6 billion cost of a water filtration plant, plus an estimated \$300 million per year operating cost. The \$1.5 billion cost to protect the watershed resulted in a net savings of approximately \$4.5 billion (Mates and Reyes 2006).

Other cities have also adopted the strategy of protecting water quality at its source, recognizing the economic savings as well as open space protection and other benefits that result. Cities in the southern Appalachian Mountains region that have used conservation easements to protect their drinking water supply include Purcellville, VA, Roanoke, VA, Asheville, NC, and Greenville, SC.

The U.S. Forest Service Recognizes the Need to Protect Water Quality

Historical.

The need to produce and protect clean water is widely recognized. The U.S. Forest Service has enumerated this need in numerous ways and venues through the years. The Weeks Act of 1911 authorized the federal government to purchase forest lands in the eastern United States. The Act established eastern national forests “*for the purpose of conserving the forests and the water supply of the States*” and “*for the protection of the watersheds of navigable streams.*”

A government circular written by Forest Service Chief Henry Graves shortly after the Weeks Act was passed provides more detail about the bill’s purpose. Though protecting the flow of navigable streams from sedimentation was the fundamental purpose, “*other benefits . . . will be kept in view. Among these are protection against disastrous erosion of the soil on mountain slopes*”, “*preservation of the purity and regularity of flow of the mountain streams, with a view to their use for the water supply of towns and cities*”, and “*preservation of the beauty and attractiveness of the uplands for the recreation and pleasure of the people.*”

The circular singles out the Appalachian Mountains and the need to protect water resources there. “*The sources of the navigable streams which have their origin in the Rocky Mountains or the mountains nearer the Pacific coast are already to a large extent protected by National Forests. The Appalachian Mountains, including the White Mountains, are for the most part without such protection. Because of their altitude, steepness, and lack of protection they are in a class by themselves in their need for the action authorized under this law.*”

Current.

The Forest Service continues today to recognize the importance of forests in providing clean water. The Forest Service Strategic Plan for Fiscal Years 2004-08 estimates that 3,400 towns and cities across the country depend upon National Forest System watersheds for their public water supplies. *“Communities that draw source water from national forests and grasslands provide water to 60 million people, or one-fifth of the Nation’s people”* (USDA Forest Service 2004a). Recognizing the importance of water quality, and with demand for water almost certain to increase through time, the strategic plan lists *“Improve watershed condition”* as one of its six major goals.

The newly appointed Chief of the Forest Service, Tom Tidwell, emphasized the importance of water resources and effective management of them in a June 19, 2009 newspaper interview (Chaney 2009). Three direct quotes from Chief Tidwell appearing in the article follow:

- *“Water will be another area where we will be increasing our emphasis of our management on watersheds. It's one of the things we're seeing with the change of climate, the change of streamflow. The importance of our watershed is something that's very undervalued. We must make sure these watersheds are in the best condition they can be in, to provide the abundant flow of water that so many people depend on.”*
- *“We'll definitely look to make sure we're doing everything we can to manage for watershed health. Maintain that clean abundant flow of water that comes off the national forest and grasslands.”*
- *“Water's been one of the foundations of this agency. One of the reasons many of our national forest lands were reserved in the first place was to maintain healthy watersheds. As we see the effects of climate, snowpacks and waterflows, and there's more and more people moving into especially arid parts of this country, there's an increasing need for clean water. We want to make sure we're factoring in the things we need today, to make sure these watersheds are in the best health they can be to serve the needs of 10 or 15 years from now.”*

The Forest Service Region 8 Strategic Framework has restoration as one of three focus areas, with a goal of *“Ecological systems are returned to their natural resilience and sustained.”* The first objective in meeting this regional goal is *“Condition of watersheds is improved.”*

Since 2007, research scientists with the Forest Service have been working on the issue of restoring forest ecosystems in the Southern Appalachians, identifying key restoration needs. Of the five Southern Appalachian Ecological Restoration Focus Areas identified, number one is *“Healthy stream systems within healthy watersheds.”*

The recent report *State of Chesapeake Forests*, co-edited by the Forest Service and the Conservation Fund (Sprague et al. 2006), identified five priority forested areas in need of protection to improve water quality in the Chesapeake Bay watershed. Though the report deals with privately owned land, four of the five forest types occur in the GWNF and warrant special focus:

- Forests in headwaters and on steep slopes
- Forests protecting drinking water supplies

- Large, contiguous blocks of forest
- Stream, shoreline, and floodplain forests and forested wetlands

Given the high degree of focus placed on watersheds and water quality by the Forest Service, both currently and historically, the Forest Plan for the GWNF must be consistent with stated goals and do the utmost to manage watersheds effectively for water quality and forest health.

Public and Local Concern About Water Quality

Americans continue to be concerned with water quality and the state of the nation's water supplies. Gallup conducted its annual Environment Survey in March of 2008. Of the twelve environmental concerns listed in the national survey, the top four concerns related to water quality. Pollution of drinking water was the number one concern.

Water quality and supply issues, particularly related to drinking water, are a focus of attention at many geographic levels. In Virginia, the Local and Regional Water Supply Planning Regulation (9 VAC 25-780) was finalized in 2006. Administered by the Virginia Department of Environmental Quality (DEQ) and the State Water Control Board, the law requires all local governments to develop water supply plans that are environmentally sound and provide for current and future water needs.

Many localities and organizations in western Virginia are concerned about the protection and management of public drinking water resources in the GWNF. To date, thirty-three organizations have adopted resolutions calling on the Forest Service to improve management of water quality and watersheds in the GWNF that are a local source of drinking water. Attachment A at the end of this document lists the organizations. The list includes fourteen localities (city councils, town councils, and county boards of supervisors), two regional Soil and Water Conservation Districts, a regional Planning District Commission, a county Public Service Authority, and a county Water Quality Committee.

Most, if not all, of the resolutions have been submitted to the Forest Service as comments on the Forest Plan. Common themes addressed in the resolutions include:

- the Plan should formally identify all watersheds that provide drinking water to local communities
- Forest Service staff should communicate more effectively with communities obtaining drinking water from watersheds and reservoirs within the GWNF
- Forest Service should improve data gathering and collection efforts in order to better describe and assess water quality and watershed conditions
- Forest Service should establish management objectives for entire watersheds in order to maintain, protect, and enhance water quality
- in coordination with local communities, other agencies, and the public, the Forest Service should develop policies and management plans for drinking watersheds

The GWNF is a Critical Source of Public Drinking Water

The GWNF provides drinking water to many thousands of residents in western Virginia. Containing headwaters of the James, Shenandoah, and Potomac Rivers, outflow from the GWNF is also a source of drinking water to millions of downstream residents of the of the Washington, DC and Richmond, VA metropolitan areas (Wild Virginia 2008).

The local need for clean water is acute. As documented in *The State of Our Water*, twenty-two localities in western Virginia obtain some or all of their drinking water from surface waters of the GWNF. Several localities rely solely on water originating in the GWNF for their domestic use. Surface waters from the GWNF provide drinking water to more than 262,000 residents in these communities (see Table 1, from Wild Virginia 2008). This figure is very conservative, as institutional (schools, hospitals, etc.), commercial, industrial, and agricultural users were not included in the estimate.

A large percentage of the GWNF land area is within these local drinking watersheds. Five reservoirs in the GWNF – Pedlar, Coles Run, Smith Creek, Staunton, and Switzer Lake – provide drinking water to nearby cities and communities. The reservoirs and their watersheds are approximately 68,086 acres in size. This represents 7.1% of the approximately 956,990 acres of the GWNF in Virginia. Approximately 357,788 acres of the GWNF comprise the watersheds for drinking water intakes on area rivers. This represents 37.4% of the GWNF lands in Virginia. The combined 425,874 acres within local public drinking watersheds represents approximately 44.5% of the total land area of the GWNF in Virginia.

There are Water Quality Concerns in the GWNF

There is cause for concern about water quality in the GWNF. Data from the Virginia Department of Environmental Quality in 2006 lists 6 reservoirs and 50 streams or rivers within the GWNF as impaired (Virginia DEQ 2006). Slightly more than 154 miles of streams and rivers within the GWNF in Virginia are impaired. Four of the six impaired reservoirs occur within local drinking watersheds, with drinking water being directly drawn from two of them. The drinking watersheds contain more miles of impaired streams than would be expected based on the land area they occupy. It is important to note though, that none of the water bodies were considered impaired as a public water supply.

Attachment B lists all the streams and rivers in the GWNF listed as impaired in the 2006 DEQ report. The six types of impairments and number of occurrences of each are (streams and rivers may have multiple impairments):

- low pH levels (acidity) – 26 occurrences
- benthic macroinvertebrate assessments (instream aquatic biota) – 19 occurrences
- fecal coliform bacteria – 15 occurrences
- *Escherichia coli* (bacteria) – 8 occurrences
- high temperature of water – 6 occurrences
- mercury in fish tissue – 2 occurrences (both in the South Fork Shenandoah River)

Locality	Estimated Population Served by GWNF Sources	Water Obtained Directly from Reservoir in GWNF	Water Obtained Directly from Local River Flowing from GWNF	Obtains Water from Another Locality or Organization Using Water from GWNF
Alleghany County	6,149			Yes
Amherst, Town of	5,000		Buffalo	
Augusta County	9,058	Coles Run Reservoir		Yes
Bedford County	17,300			Yes
Bridgewater, Town of	682		North	
Broadway, Town of	3,200		North Fork, Shenandoah	
Campbell County	269			Yes
Clifton Forge, Town of	4,679	Smith Creek Reservoir		
Covington, City of	7,300		Jackson	
Frederick County	12,649			Yes
Front Royal, Town of	12,500		South Fork, Shenandoah	
Harrisonburg, City of **	44,500	Switzer Lake	North, Dry	
Iron Gate, Town of	386			Yes
Lexington, City of	7,200		Maury	Yes
Lynchburg, City of	76,000	Pedlar Reservoir	James	
Middletown, Town of	1,120			Yes
Rockbridge County	2,764			Yes
Rockingham County (city-rural customers of Harrisonburg)	4,253		North, Dry	Yes
Staunton, City of	11,066	Staunton Reservoir		
Strasburg, Town of	4,500		North Fork, Shenandoah	
Winchester, City of	28,071		North Fork, Shenandoah	
Woodstock, Town of	3,952		North Fork, Shenandoah	
TOTAL	262,598			

Table 1. List of Virginia localities that obtain some or all of their drinking water from resources within the George Washington National Forest (GWNF). Estimated population data is from the years 2006 through 2008.

** The City of Harrisonburg owns and manages Switzer Lake. The water intake facility on the Dry River for the City of Harrisonburg is a few miles downstream of Switzer Lake. No water is drawn directly from Switzer Lake.

In the 2006 DEQ report, six reservoirs within GWNF were judged to be impaired for not adequately supporting aquatic life. The reservoirs are Pedlar Reservoir, Switzer Lake, Staunton Reservoir, Elkhorn Lake, Lake Moomaw-Lower, and Lake Moomaw-Middle. The impairments are:

- low levels of dissolved oxygen (all 6 reservoirs)
- pH levels (4 reservoirs)

- high temperature of water (1 reservoir)

Four of these reservoirs are within drinking watersheds on the GWNF, with drinking water being directly drawn from two of them (Pedlar and Staunton Reservoirs). However, none of the reservoirs are impaired for use as a public water supply.

While many of the causes of impaired waters are beyond the control of the Forest Service, the large presence of impaired waters in the GWNF means that more should be done to protect water quality. Acidic waters and benthic macroinvertebrate assessments are the two most common impairments in the streams and rivers. Though acid deposition is a major source of the problems, other stresses are likely at work too. As the Environmental Assessment for the Cubville Project (and numerous other Forest Service documents) explains, “On National Forest System land, sedimentation is the primary factor in water quality degradation. Sedimentation may be introduced into stream channels from soil disturbing activities such as timber harvesting and road construction.” (p. 19, USDA Forest Service 2007a). Benthic macroinvertebrate assessment impairments can be related to sedimentation. Other stresses can also contribute to this impairment. Unfortunately, data from DEQ lacks sufficient detail to ascertain the role of sedimentation in the impaired waters of the GWNF.

The Current Forest Plan and Management is Inadequate

The current Forest Plan does very little to address drinking water resources. The plan identifies drinking water reservoirs, but does not address the watersheds within which the reservoirs occur. No other public drinking water sources are identified or discussed, and no watershed maps are included in the Plan. Management Area 18C is defined as riparian areas adjacent to and 1 mile upstream of seven listed “municipal water supplies (Lynchburg Reservoir, Coles Run Reservoir, Mills Run Reservoir, Clifton Forge Reservoir, Skidmore Reservoir, Staunton Reservoir, and Elkhorn Lake).” (USDA Forest Service 1993)

Under the current plan, management of the GWNF does not differ significantly between drinking watersheds and other areas of the forest. Of the total land area in the drinking watersheds, 34.4% is “suitable for timber production” compared to 34.8% of the land area outside the drinking watersheds. Road and trail densities on the GWNF reveal no consistent differences or pattern when comparing drinking watersheds to the rest of the forest (Wild Virginia 2008).

Recommendations

The Forest Service must do more to protect water resources in the GWNF. Merely meeting state standards and best management practices, as called for in the 1993 Forest Plan, should not be a management goal. These standards represent minimum levels of acceptable management and should be greatly exceeded. National forests should produce the cleanest,

purest water possible and establish the highest of standards that other land management organizations can strive to meet.

Managing for watershed protection produces many benefits beyond drinking water protection. Reservoirs function for longer periods of time due to decreased sedimentation. Many aquatic species, terrestrial species, and natural communities benefit from sound ecological watershed management. Outdoor recreational opportunities, scenic resources, biological diversity, and other forest features are enhanced as well.

Brook trout (*Salvelinus fontinalis*) is a good example of a species that would benefit from stronger water quality and watershed management. The Eastern Brook Trout Joint Venture (EBTJV) has documented the decline of brook trout and the streams and watersheds that support them in the eastern U.S. Virginia is important to the long-term viability of native brook trout populations, as it has a greater number of subwatersheds (usually containing 25-75 miles of streams) with intact brook trout populations than any state south of New York (EBTJV 2006). The GWNF (along with Jefferson National Forest and Shenandoah National Park) is home to many of the remaining trout streams in the state.

Forest management can impact the quality of trout streams in a number of ways. The EBTJV (2006) identifies high water temperature as the greatest disturbance to brook trout populations in Virginia. The report also lists poor land management, degraded riparian habitat, grazing, and stream fragmentation (e.g., roads and culverts) as threats. All these threats are present to some degree in the GWNF. Poor land management and degraded riparian habitat can result not only in higher water temperature (with fewer trees to provide shade to streams) but increased sedimentation as well.

We recommend the following steps, at a minimum, be incorporated in the new Forest Plan.

Adopt measures from drinking water resolutions.

As described earlier in this document, thirty-three localities and organizations have adopted resolutions calling on stronger protection of drinking water resources and watersheds in the GWNF. Five requests that are common and consistent among the resolutions are listed below. These requests should be met in the new Plan.

- The Plan should formally identify all watersheds that provide drinking water to local communities. (At public Forest Planning meetings January 29, 2009 and February 5, 2009, staff announced this step would be taken. This is appropriate and commendable.)
- Forest Service staff should communicate more effectively with communities obtaining drinking water from watersheds and reservoirs within the GWNF.
- Forest Service should improve data gathering and collection efforts in order to better describe and assess water quality and watershed conditions.
- Forest Service should establish management objectives for entire watersheds in order to maintain, protect, and enhance water quality.
- In coordination with local communities, other agencies, and the public, the Forest Service should develop policies and management plans for drinking watersheds.

Roadless Areas and Potential Wilderness Areas.

All Inventoried Roadless Areas and all Potential Wilderness Areas identified in the current plan revision process should be managed in accordance with the 2001 Roadless Area Conservation Rule. By eliminating most ground-disturbing projects and activities in these areas, watershed and water quality protection will be greatly strengthened. Sedimentation rates will not be elevated, thus eliminating “the primary factor in water quality degradation” in national forests.

Inventoried Roadless Areas have a large impact on water quality within the GWNF. More than one third (approximately 36.7%) of the watersheds for the five drinking water reservoirs in the GWNF are within Inventoried Roadless Areas. More than one fourth (approximately 27.2%) of all local drinking watersheds combined, in the Virginia portion of the GWNF, are within Inventoried Roadless Areas (Wild Virginia 2008).

Four Inventoried Roadless Areas in the Shenandoah Mountain area - Little River, Oak Knob, Gum Run, Skidmore Fork - lie completely within local drinking watersheds. Of the 24 Inventoried Roadless Areas in the Virginia portion of the GWNF, 15 contain some or all the land base of local drinking watersheds. The nine roadless areas that do not overlap local drinking watersheds include the three smallest ones – Rough Mountain Addition, Saint Mary’s Addition, and The Friars.

The entirety of the Coles Run Reservoir watershed lies within the Kelley Mountain Roadless Area. All the Switzer Lake watershed and roughly half of the Riven Rock water intake watershed (City of Harrisonburg water intake on the Dry River) fall within the Skidmore Fork and Gum Run Roadless Areas. Approximately half of the Staunton Reservoir watershed occurs within the Ramseys Draft Addition and Little River Roadless Areas.

Using the Roadless Area Conservation Rule to manage Potential Wilderness Areas, which were identified during the current planning process and meet the definition of “roadless”, would further protect local drinking watersheds. In particular, greater protection would be extended to the North Fork Shenandoah River (through Beech Lick Knob and Big Schloss PWAs) and the six communities that obtain water from it – Winchester, Strasburg, Woodstock, Broadway, Middletown, and Frederick County. Lexington, Clifton Forge, and Front Royal would also benefit, as areas of their drinking watersheds occur within PWAs.

Management and Restoration Measures.

There are a number of measures that could be implemented to more effectively manage water quality.

- Forest Service staff should develop methods to assess watershed conditions and to manage them in a comprehensive manner. This would be consistent with comments by the new Forest Service Chief Tom Tidwell and language from a variety of Forest Service documents (all described earlier in this document). It is also called for consistently in the drinking water resolutions from local organizations.
- No new roads, including temporary roads and re-opening of roads that have not been used in recent years, should be constructed in drinking watersheds. Absent a truly compelling need, no new roadways should be created.

- Road closures and decommissionings. At public Forest Planning meetings January 29, 2009 and February 5, 2009, a draft goal of 1 – 1.5 miles/year of road decommissioning was announced. Road closings and decommissionings (i.e., the restoration of original slope, topography and hydrologic conditions, removal of invasive species if present, revegetation) is very desirable for watershed and forest restoration. A much higher goal (in terms of miles/year) should be established.
- Enhanced methods of monitoring water quality should be established. The current system of macroinvertebrate sampling in streams forest-wide, augmented by sampling for the Virginia Trout Streams Sensitivity Study, is good. To our knowledge though, no direct monitoring of sedimentation takes place in the GWNF. As “the primary factor in water quality degradation” in national forests, affecting both aquatic wildlife and drinking water resources, more information and monitoring of sedimentation is needed.

Impaired Waters.

As described earlier, impaired waters are a significant presence in the GWNF. However, there does not seem to be an effort in place to address them. In fact, activities and projects (e.g., Laurel Run/Road Timber Sale in Lee Ranger District) sometimes fail to acknowledge the presence of impaired waters.

All impaired waters are impacted by physical stresses, sometimes multiple stresses from multiple sources. Eliminating or minimizing stress will increase the resilience of these aquatic systems. The revised Plan should include strategies or a framework for addressing impaired waters. Several other national forests, including the Monongahela, White Mountains, Green Mountains, Wayne and Alleghany, have a significant number of streams impacted by acid deposition, just as the GWNF does. Each of these forests is addressing the problem of acidic streams, and the GWNF should as well. Treating Saint Mary’s River with limestone sand, as has been done in the GWNF, is a good example of taking action to improve impaired waters. This or similar actions should be considered on a broader scale.

Grazing Allotments.

As the draft Comprehensive Evaluation Report states, “*Efforts to fence cows out of Shenandoah River have failed and cows continue to cause bank erosion and resulting sedimentation in the grazing allotment(s).*” (USDA Forest Service 2007b, p. 28) Obviously, this situation is highly undesirable and needs to be resolved. The revised Plan should minimize, if not eliminate, the use of grazing allotments. Any allotments should meet all agricultural and forestry best management practices of the Commonwealth of Virginia.

Conclusion

The Forest Service has demonstrated the ability to work with local communities on drinking water issues. Cooperative relationships and/or agreements exist between the Forest Service and Santa Fe, NM, Grand Junction, CO, Cedaredge, CO, Hotchkiss, CO, and Portland, OR. Perhaps there are other examples of good working relationships between local communities and the Forest Service. With the GWNF being such an important source of public drinking water for local communities, improved communication between all parties can improve management of the forest.

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ATTACHMENT A

List of the 33 organizations (in alphabetical order) that have adopted resolutions calling for stronger protection of drinking water resources in the new Forest Plan for the George Washington National Forest. List is current through June 30, 2009. Localities are underlined.

Amherst County Board of Supervisors
Amherst County Service Authority
Amherst Town Council
Augusta County Board of Supervisors
Central Shenandoah Planning District Commission
Clarke County Board of Supervisors
Dayton Town Council
Friends of the North Fork Shenandoah River
Friends of the Shenandoah River
Harrisonburg City Council
Lynchburg City Council
Middletown Town Council
Page County Board of Supervisors
Page County Water Quality Committee
Potomac Conservancy
Preserve Frederick
Pure Water Forum
Robert E. Lee Soil & Water Conservation District
Rockingham Community Alliance for Preservation (CAP)
Rockingham County Board of Supervisors
Scenic 340 Project
Shenandoah County Board of Supervisors
Shenandoah Forum
Shenandoah Riverkeeper
Shenandoah Valley Network
Shenandoah Valley Soil & Water Conservation District
Staunton City Council
Timberville Town Council
Trout Unlimited - Virginia Council
Valley Conservation Council
Virginia Conservation Network
Virginia Wilderness Committee
Warren County Board of Supervisors

ATTACHMENT B

List of the 50 streams and rivers occurring on lands of the George Washington National Forest in Virginia and listed as “impaired” by the Virginia Department of Environmental Quality in their 2006 report (VA DEQ 2006).

Name of Impaired Stream or River	Occurs in Drinking Watershed	County	Ranger District
Back Creek	No	Augusta	Pedlar
Beaver Creek	Yes	Rockingham	North River
Big Run	No	Page	Lee
Boone Run	No	Rockingham	Lee
Briery Branch	Yes	Rockingham, Augusta	North River
Calfpasture River	Yes	Augusta	North River
Cedar Creek	Yes	Shenandoah	Lee
Coles Run	Yes	Augusta	Pedlar
Cowpasture River	No	Bath	Warm Springs, North River
Cub Run	No	Rockingham, Page	Lee
Dry River	Yes	Rockingham	North River
Falls Hollow	No	Augusta	North River
Fridley Run	No	Rockingham	Lee
Jackson River	No	Bath	Warm Springs
Johns Run	No	Augusta	Pedlar
Kennedy Creek	No	Augusta	Pedlar
Laurel Run	No	Bath	Warm Springs
Laurel Run	Yes	Shenandoah	Lee
Little Calfpasture River	Yes	Augusta	North River
Little Dry River	Yes	Rockingham	North River
Little Stony Creek	Yes	Shenandoah	Lee
Loves Run	No	Augusta	Pedlar
Mill Creek	Yes	Bath, Rockbridge	North River
Mill Creek	Yes	Rockingham	Lee
Mills Creek	No	Augusta	Pedlar
Mountain Run	No	Rockingham	Lee
Narrow Passage Creek	Yes	Shenandoah	Lee
North River	Yes	Augusta	North River
Orebank Creek	No	Augusta	Pedlar
Pads Creek, South Fork	No	Bath	Warm Springs
Panther Run	No	Bath	Warm Springs
Passage Creek	No	Shenandoah, Warren	Lee

Pedlar River	Yes	Amherst	Pedlar
Pheasanty Run	No	Bath	Warm Springs
Pine Run	No	Augusta	Pedlar
Porters Mill Creek	No	Bath	Warm Springs
Potts Creek, Lower	No	Alleghany	James River
Rocky Run	Yes	Rockingham	North River
Saint Mary's River	No	Augusta	Pedlar
Shenandoah River, South Fork	Yes	Page	Lee
Skidmore Fork	Yes	Rockingham	North River
Stony Creek	Yes	Shenandoah	Lee
Straight Fork	No	Highland	Warm Springs
Toms Branch	No	Augusta	Pedlar
Tunnel Hollow tributary	No	Augusta	North River
Tye River	No	Nelson	Pedlar
Tye River, South Fork	No	Nelson	Pedlar
Union Spring Branch	Yes	Rockingham	North River
Wilson Creek, Upper	No	Bath	Warm Springs
Wolf Run	Yes	Augusta, Rockingham	North River