Implementation Plan

Dan River Watershed Quality Improvement

Prepared by Dan River Basin Association

Sponsored by the River Bank Fund

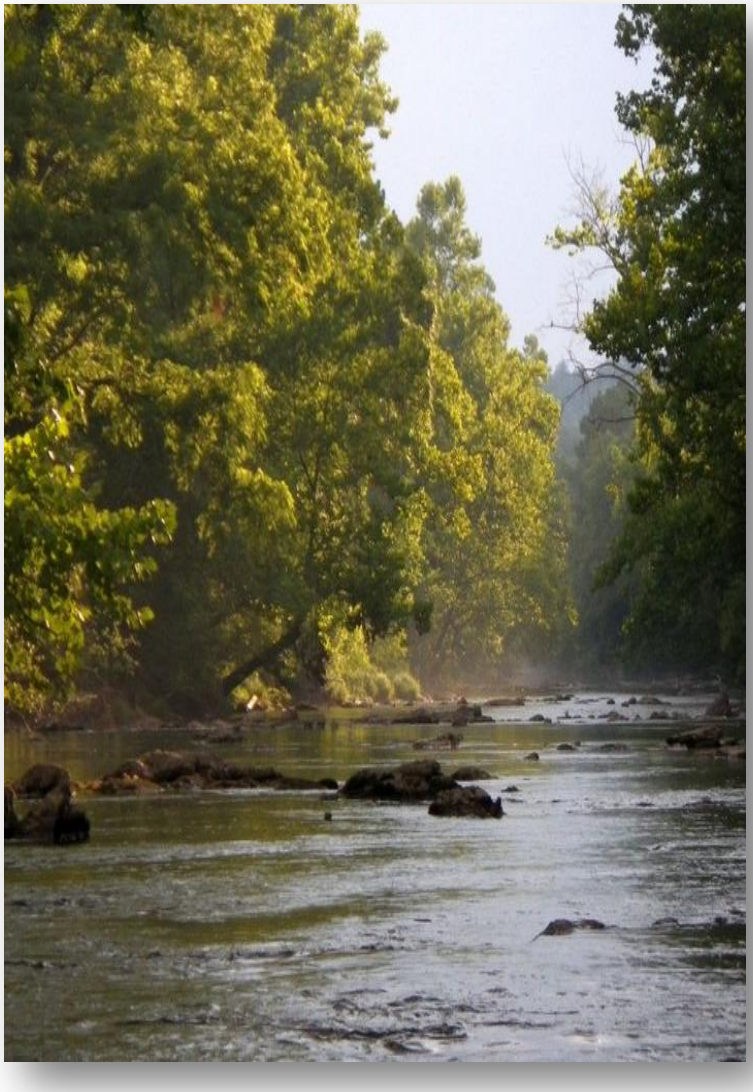
Introduction

The Clean Water Act (CWA) requires that all of our streams, rivers, and lakes meet the state water quality standards. The CWA also requires that states conduct monitoring to identify polluted waters that do not meet standards. Through our monitoring program, the Commonwealth of Virginia has found that many streams do not meet state water quality standards for protection of the five beneficial uses: recreation, the production of edible and marketable natural resources, aquatic life, wildlife, and drinking. When streams fail to meet standards they are placed on the state's impaired waters list, and the state must then develop a Total Maximum Daily Load (TMDL) for each pollutant. A TMDL is a "pollution budget" for a stream, meaning that it sets limits on the amount of pollution that a stream can tolerate and still maintain water quality standards.

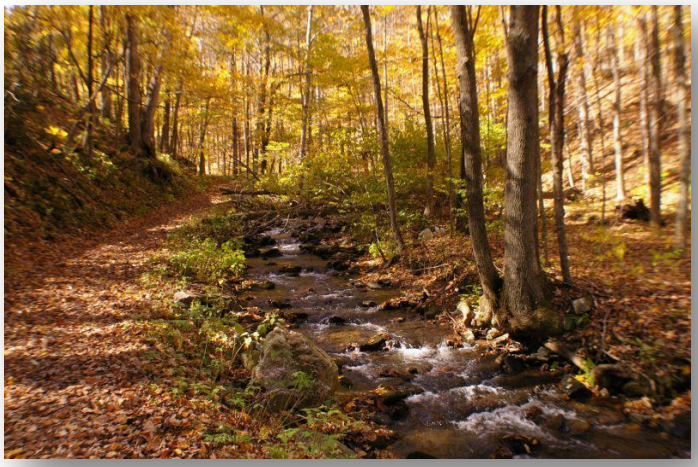
In order to develop a TMDL, background concentrations, point source loadings, and non-point source loadings are considered. Non-point source pollution occurs when pollutants are transported across the land to a body of water when it rains. Point source pollution occurs when pollutants are directly discharged into a stream. Through the TMDL process, states establish water-quality based controls to reduce pollution and meet water quality standards.

About the Dan River Basin Watershed

Size: 3,300 sq miles
Linear Stream Miles: 11,123
Lake Acres: 25,042
Federal & State Conservation Acres: 45,946
Other Conservation Acres: 42,858
Counties: 8 full, 8 partial



The Dan River has its origin on the eastern slope of the Blue Ridge Mountains in Patrick County, Virginia. From there it travels 200 miles, passing through Stokes, Rockingham, Caswell and Pittsylvania Counties, before reaching Halifax County, where it enters Kerr Reservoir near the town of South Boston, VA. Along the way, it is fed by five main tributaries - the Smith, Mayo, Sandy, Hyco, and Bannister Rivers. The Dan River Watershed forms part of the headwaters of the Roanoke River Basin, which feeds the Albemarle Sound in coastal North Carolina, part of the second largest estuary in the United States. The largely un-developed Dan River Basin is a well-kept-secret, bursting with natural, cultural and recreational resources.



The basin has long supported a diverse abundance of life, including rare and endangered plants, animals and aquatic organisms. The Virginia cup-plant, goldenseal and small-anthered bittercress are a few examples of endangered plant species that can be found on the shores of the Dan River and its tributaries.

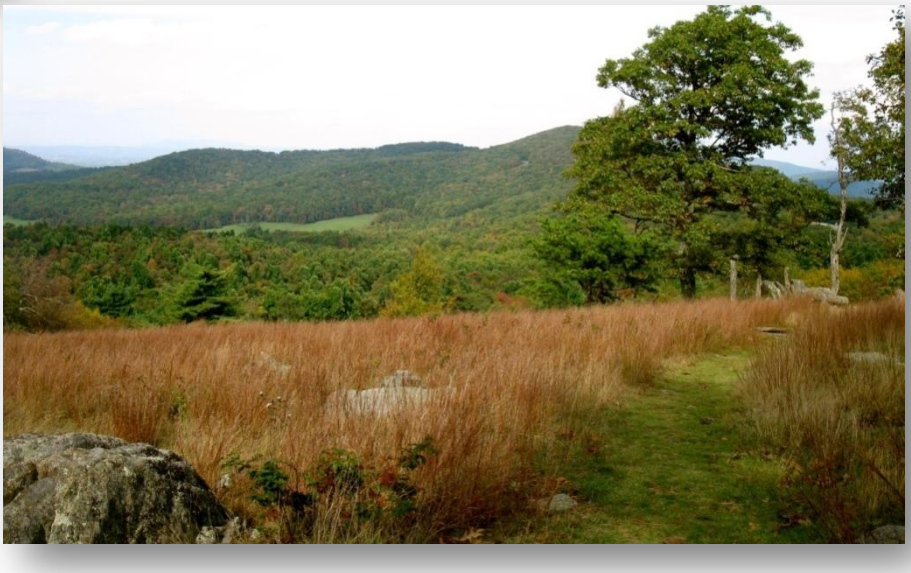
The Virginia Commonwealth has every natural bird or animal habitat that occurs between Maine and Florida; this rich diversity is celebrated by the Virginia Birding and Wildlife Trail. Several of the loops on the trail traverse the Dan River Basin, including the Fairystone, Turkeycock, Southwest Piedmont and Dan River Loops. These driving loops take you on a tour of the many state parks, reservoirs, nature preserves, hiking trails and scenic overlooks that offer a first-hand experience of the abundant wildlife that thrives in the Basin.[5]

Unfortunately, the Basin has not been immune to the widespread impairment of waterways throughout Virginia and North Carolina, however low rates of development in the area have preserved the pristine quality of most rivers & streams. The Basin's waterways are an exceedingly rare stronghold of endangered aquatic organisms, such as the James spiny mussel, a small freshwater mussel that is now found only in the upper tributaries of the James and Dan River basins.[2] The Roanoke logperch, a small fish often found in rivers and streams with very low turbidity, is another endangered species that has managed to persist in the basin's clear waters.[3]

Fall hunting for wild turkeys is a long-established tradition in the Basin.Turkey and other wild game were staple food sources for settlers who explored the area in the 17th, 18th and 19th centuries.

Natural Heritage inventories conducted in Stokes and Rockingham, NC were able to identify nineteen unique natural areas that are significant on the regional, state and national level. Ongoing efforts by the Piedmont Land Conservancy, Dan River Basin Association, Natural Resources Conservation Service and others aim to protect and enhance the ecological function of the Dan River Watershed to ensure the long-term viability of its natural resources.[2]

Aside from plant & animal habitat, the Dan River Basin also supports a culture that has historically been rich in farming and forestry. Tobacco was an important cash crop in the area; the Brightleaf tobacco curing process originated in Caswell, bringing great wealth to the area. Prior to the Civil War, Caswell was one of the wealthiest counties in North Carolina as evident by its collection of Antebellum homes, one of the largest in the state.[1] In the late 18th century and early 19th century, the Danville and Western and the Norfolk and Southern Railroads made it much easier for tobacco to be grown, processed and sold from towns such as Martinsville, Danville and Halifax. The railroads also made timber production more viable and companies moved in to harvest timber from the Basin, which was used to meet demand in the Northeastern and Midwestern U.S, where forest resources had been greatly depleted.[3]



While forestry still plays an important role in economy of the Basin, the advent of companies like R.J. Reynolds in Winston-Salem, NC meant the consolidation of small farms and factories. With the decrease in tobacco farming came the furniture and textile industries. Cities like Bassett, Martinsville, Danville, Eden and Roxboro saw a boom in industrial mills, however, many of these jobs would be outsourced globally beginning in the 1970's. This decline in manufacturing lead to a major economic slump that persists today.

As more and more nature and adventure-seekers are beginning to realize, the opportunities for outdoor recreation in the Dan River Basin are unlimited. There are many local, state and national parks and recreation areas, including Hanging Rock State Park in Stokes County, NC, Mayo River State Park in Rockingham County, NC and the Blue Ridge Parkway and Rocky Knob National Recreation Areas in Patrick County, VA.

The movement to create networks of Greenways & Blueways throughout the basin has taken off in the past several years. Counties and Municipalities have embraced efforts to create recreational amenities that highlight the unique heritage of the area, such as the Dick & Willie Passage Trail in Martinsville/Henry County, VA. This 4.5 mile paved trail follows the route of the old Danville & Western Railroad, a key piece of the basin's history.

The number of river access points on the Dan and its tributaries has greatly increased, providing more opportunities for fishing and paddling. Prior to 2001, there was only one river access on the Smith River in Henry County, today there are eight. The basin can accommodate paddlers of any nature. The fast-moving white-water runs of the Dan River in Kibler Valley eventually turn into slow, relaxing floats as the Dan crosses the

Virginia/North Carolina border. The many lakes and reservoirs of the basin serve as attractions for outdoor enthusiasts who enjoy fishing, paddling or wildlife viewing.

According to "Adventures in the Dan River Basin", there are 21 dams in the Dan River Watershed. These dams, some of which are no longer operable, power mill operations, provide industrial cooling, generate electricity and provide recreational opportunities.(4). Some of the larger dams also serve as a defense against damaging floods. While downstream, the dams have interfered with the spawning habits of native fish such as the Hickory Shad, they've also created some excellent fisheries. A great example of this is the Smith River below Philpott Dam. The Smith is one of the most productive Trout fishing tailrace streams in the State of Virginia.

The Dan River Basin Association is currently working with entities such as the Virginia Department of Game and Inland Fisheries and the Army Corp of Engineers to regulate flow rates from electricity-producing dams in a way that will improve fish habitat while also making the rivers more recreation friendly.

The Dan River Basin is largely rural, with less than five percent of land mass having seen city or town development. Despite this, a considerable number of the basin's assessed waters are considered impaired, with over half of these impaired waters citing higher than acceptable levels E.Coli. The rate and nature of impaired waters in the basin indicate historic and on-going degradation of water resources, a result of pollution from agriculture, forestry, and manufacturing practices.[3]

"Perhaps the largest threat to the watershed is that the Virginia-North Carolina state border divides it. The Environmental Protection Agency (EPA) gives mandates to State environmental agencies on standards and protocols for water quality monitoring based on their region. The Virginia DEQ and North Carolina DEQ do not work across state borders. Virginia is in the EPA Region 3, whereas North Carolina in EPA Region 4." [3]

Thanks to the many entities that recognize the importance of protecting the Basin's invaluable resources, there are several ongoing initiatives aimed at conserving critical aquatic and land habitats. The Dan River Watershed Protection Initiative, led by the Piedmont Land Conservancy, has been able to protect 2,248 acres of habitat in Stokes and Rockingham Counties.

There are also ongoing efforts by the Department of Conservation & Recreation and the Department of Environmental Quality in partnership with local entities to implement projects aimed at restoring water quality. Since 2002, the Dan River Basin Association (DRBA) has been coordinating initiatives to protect the natural and cultural resources of the watershed. DRBA offers educational programs that teach children and adults the value of protecting their environment and hold regular community clean-up events. The organization also helps localities develop public river and trail facilities that increase access to nature and encourage healthy lifestyles. Aside from these programs, DRBA advocates for sustainable economic development based around the smart-use of the Basin's abundant natural and cultural resources.

DAN RIVER BASIN ASSOCIATION

www.danriver.org

1 - Caswell County, NC Website. Accessed February 2013. http://www.caswellcountync.gov/faq.htm. **2** - Piedmont Land Conservancy. Accessed Online February 2013. http://www.piedmontland.org/sites/Dan_River.php. **3** - Piedmont Triad Regional Council & Dan River Basin Association. "Dan River Basin Watershed Assessment". Published 2012. **4** - Altman, Forrest. ”Adventures in the Dan River Basin". **5** - Virginia Department of Game and Inland Fisheries. Accessed Online February 2013. http://www.dgif.virginia.gov/vbwt/

Water Quality Problems in the Dan River

1. Although only a few sites are currently being monitored, there are streams and creeks violating water quality standard for bacteria, which was based on the concentration of fecal coliform in the water discovered by Citizen Water Quality Monitors. In 2003, Virginia switched to an *E.coli* water quality standard after it was found that there was a more positive correlation between contact with *E. coli* and gastrointestinal illness or infection.
2. Litter, agricultural runoff and lack of riparian buffer were identified as primary stressors.
3. Excess sedimentation was identified as a secondary stressor.

Creating an Implementation Plan

Once a problems are identified for a river, the next step is to create a plan that identifies how the pollutant reductions identified can be achieved. An Implementation Plan describes actions that can be taken by landowners in the watersheds that will result in improved water quality in the stream.

There are nine components included in an implementation plan:

1. Causes and sources of bacteria and sediment that will need to be controlled to meet the water quality standards
2. Reductions in pollutants needed to achieve water quality standards
3. Management measures (BMPs) that will need to be implemented to achieve the pollutant reductions
4. Technical and financial assistance needed, associated costs, and the authorities that will be relied upon to implement the plan
5. An information/education component that will be used to enhance public understanding on the project and encourage participation in selecting and implementing best management practices
6. A schedule for implementation of the practices identified in the plan

7. Goals and milestones for implementing best management practices
8. A set of criteria for determining if bacteria and sediment reductions are being achieved and if progress is being made towards attaining water quality standards
9. A monitoring program to evaluate the effectiveness of the implementation effort

Sources of Bacteria

Agricultural runoff, direct deposition of manure in streams by livestock, and wildlife have been identified as the primary sources of bacteria in our creeks. Non-point sources of bacteria in the watersheds include failing septic systems, livestock (including manure application loads), wildlife, and domestic pets.

Point sources including individual residences can contribute bacteria and sediment to streams through their permitted discharges. There needs to be research as to how many non point sources are permitted to discharge fecal coliform bacteria in the Dan River and its major tributaries to determine steps to alleviate negative impacts.

Goals for Reducing Bacteria

These goals are based on what it would take to reach the point where the creeks would never violate the water quality standard for *E. coli* (Table 1). This standard is designed to protect human health and reduce the risk of illness or infection upon primary contact with the water.

- Watershed Fecal Coliform Reduction from agricultural practices and residential/urban pipes
- Sediment Reduction from agricultural practices and open urban grass
- Phosphorous Reduction from agricultural practices, residential open grass and septic
- Pasture Cropland Residential Open urban

Goals for Reducing Sediment and Phosphorous

Sediment and phosphorous were identified as the primary pollutants stressing the benthic community (aquatic insects that live at the bottom of the stream). Sediment and lack of riparian vegetation were identified as the primary stressors. When too much sediment gets into the stream, it alters the stream bottom by filling in the spaces between gravel and other materials in the stream. This harms aquatic insects that live in the spaces by eliminating their habitat. Excess phosphorous loading into streams can accelerate algal growth, which consumes large amounts of oxygen in the water when it dies off and decomposes. This too is harmful to aquatic organisms, since they need that oxygen in the water to survive. In order to correct these problems, sediment and phosphorous reduction goals were developed for the streams.

Sources of Sediment and Phosphorous

The major source of sediment is channel erosion, which is occurring due to poor bank stabilization from lack of vegetative cover in riparian areas in the watershed. Excess sediment and phosphorous loads are coming predominantly from pasture and cropland. These land uses can contribute pollutants to rivers and streams through erosion and build-up/washoff processes. Agricultural lands are particularly susceptible to erosion when vegetative cover is minimal such as when pastures are overgrazed or crop fields are tilled and left uncovered. Public meetings are needed to bring property owners together to come up with new ideas to protect and restore water quality in their community. In addition, informational pamphlets describing programs associated with BMPs, VADCR, and VADEQ should be made available.

Collecting input from the local community on conservation and outreach strategies a critical step in this planning process. Three working groups (agricultural, residential and urban) can be formed order to discuss implementation and outreach strategies suitable for different land uses in the watersheds. Each working group can be made up of stakeholders who are familiar with land use management issues specific to their particular working group focus area.

- The role of the Agricultural Working Group would be to review conservation practices and outreach strategies from an agricultural perspective. This group would discuss existing obstacles to livestock exclusion including maintenance and cost issues.

- The role of the Urban Working Group would be to review existing programs to address sediment and phosphorous runoff from impervious and developing areas. Erosion and sediment control and stormwater management programs would be reviewed in addition to urban BMP mapping and maintenance needs.

- The primary role of the Residential Working Group would be to discuss methods needed to reduce human and pet sources of bacteria entering the creeks and review septic system repair and replacement costs.

Management Actions Selected through Stakeholder Review

An important part of the implementation plan is the identification of specific actions that will improve water quality in the watersheds. While management actions such as livestock exclusion and correction of failing septic systems will directly impact water quality, a number of additional measures are needed to control bacteria, sediment and phosphorous from land-based sources. Various scenarios can be developed by the working groups, who can review both economic costs and the water quality benefits. The majority of best management practices (BMPs) are included in state and federal agricultural cost share programs that promote conservation. In addition, innovative management practices suggested by local producers and technical conservation staff can be considered. BMPs that are easiest to implement, provide the greatest water quality benefits, and offer the greatest economic return to landowners should be implemented first. The effectiveness of these practices will be continually evaluated, and adjustments of actions will be made as appropriate.

As new technologies and innovative BMPs to address bacteria, sediment and phosphorous become available, these practices should also be evaluated for implementation.

Since this plan is designed to be implemented by landowners on a voluntary basis, it is necessary to identify actions including management strategies that are both financially and technically realistic and suitable for this particular community. As part of this process, the costs and benefits of these actions must be examined and weighed. Once the best actions are identified for implementation, estimates of the number of each action that would be needed in order to meet water quality goals can be developed.

Goals

- Bacteria Reduction
- Sediment Reduction
- Phosphorous Reduction

Agricultural

- Livestock exclusion with riparian buffer
- Sediment retention, erosion or water control structure
- Constructed wetlands
- Poultry litter storage, Dry manure storage
- Continuous no-till
- Sod waterway
- Streambank stabilization

Residential

- Pet waste disposal
- Pet waste education program
- Septic tank pumpout and repair
- Streambank stabilization

Urban

- Vegetated buffers
- Storm water drain litter control

Agricultural Resources

It is expected that the Conservation Reserve Program (CRP) will be utilized by farmers. For farmers who are willing to install a moderate riparian buffer, there is the CRP practice, which requires a 20 foot setback from the stream in order to receive cost share for fencing and off stream watering. It is estimated that fencing could be installed using the CRP practice. For those who are willing to install a 35 foot buffer or larger and plant trees in the buffer, the Conservation Reserve Enhancement Program (CREP) is an excellent option. This practice provides cost share and incentive payments ranging from 50% to 115% for fencing, planting materials, and alternative water source development. Runoff from pastures can carry with it bacteria from manure on the pasture, and can also pick up sediment and phosphorous on its way to the stream.

One pasture practice that will help water quality is prescribed grazing through rotational grazing systems and rotational loafing lot systems. Vegetated buffers can be also included in the implementation plan to treat runoff from pasture. These buffers will act as filters, trapping bacteria, sediment and phosphorous before it runs into the stream.

In addition, bacteria from the spreading of manure on cropland can end up in a stream unless the appropriate management practices are in place. Bacteria from manure spread on cropland can be reduced either by decreasing the source of the bacteria (spreading less manure or storing it longer so that bacteria will die off) or by the use of filtering practices (buffers), while sediment can be reduced by practices that increase vegetative cover and decrease soil disturbance, or provide filtering benefits

Residential Resources

A pet waste education program will help pet owners better understand the importance of picking up after their pets, whether it be in their own backyard, their neighborhood, or in public parks. Pet waste disposal stations at all public parks and trails are critical. In addition to a pet waste education program, the installation of pet waste digesters by private homeowners will assist in meeting bacteria reduction goals. A pet waste digester is a compact unit that can be installed in a backyard by digging a small hole, which the unit is then fitted into. Pet waste is collected and added to the digester along with water and an enzyme that aids in the digestion of bacteria found in the waste. It is recognized that these digesters will work best in more compact residential developments. The large number of geese found in residential neighborhoods can also contribute to decreased water quality. Modifying habitat around water features to deter year round colonization by geese can be helpful. Habitat modifications could include not mowing all the way down to the creek or pond edge, planting taller native grasses and managing them appropriately, and eliminating artificial water features that bring in large populations of geese. In order to address runoff of bacteria from domestic pets into the streams, some form of pet waste management will be necessary.

Straight Pipes and Failing Septic Systems

State law requires that failing septic systems and straight pipes be corrected. Based on the age of the homes in our watershed and the proximity of homes and businesses to our rivers and streams, there is a need to identify needed repairs and replacements of failing systems and plan for with conventional and alternative systems replacements. There are cost-sharing resources for homeowners to repair and replace, but many lack the ability to financially handle their portion of the sharing program. There needs to be a study of failing septic systems and straight pipes in the watershed to be able to estimate the cost of fixing this issue.

Urban Areas Resources

Currently, the City of Danville, the Town of Stuart and the Town of Halifax are implementing programs to control urban stormwater runoff through Storm Water Drain Programs. These are only three of more than 30 municipalities in the watershed. In reviewing opportunities for urban stormwater management in the watershed, it was determined that this is one of the more cost effective strategies to better address water quality. Other opportunities include cleaning out storm drains and stormwater pipes. In addition, the accumulation of sediment within the storm drain system could be addressed with the purchase of appropriate equipment for flush trucks.

Pilot Projects: Agricultural

These projects will not only reduce bacteria, sediment and phosphorous loading into the streams, they will also address existing obstacles to implementation of agricultural BMPs and serve as demonstration projects that can be publicized through field days and farm tours.

- **Streambank stabilization**: includes grading back stream banks and revegetating to reduce erosion. May include rock vanes and other in-stream structures to re-direct flow when needed.
- **Fencing/buffer maintenance program:** assist farmers in rebuilding washed out fencing after flooding events and removing invasive species from riparian buffers to prevent them from spreading into upland pastures.
- **Portable shade structures:** employ as a strategy to reduce the amount of time livestock spent near or in the stream. Funding for portable shade structures is available through EQIP; however, typically a farmer would need to have livestock excluded from the stream in order to qualify for these funds. Additional funding will need to be pursued in order to install the shade structures.

Pilot Projects: Residential/Urban

- Connection to public sewer is one of the most effective ways to correct a failing
- septic system. Providing cost share to homeowners for connection fees would greatly increase the number of homes that could be connected to the new sewer lines.
- Identify and map critical wetlands and riparian buffers for protection/enhancement
- Implement a streambank stabilization project
- Remove parking lot asphalt and replace with pervious pavers.
- Install a riparian buffer along 100 linear feet of river with limited access points for fishing and educational signage.
- In order to get landowners involved in implementation, it will be necessary to initiate education and outreach strategies and provide assistance with the design and installation of best management practices.

Education and Outreach - Agricultural

- Make contact with landowners in the watersheds to make them aware of implementation goals, cost-share assistance, and voluntary options that are available to agricultural producers interested in conservation
- Provide technical assistance for agricultural programs (e.g., survey, design, layout).
- Develop and distribute educational materials
- Organize educational programs (e.g., festivals, presentations, events)

There must be a proactive approach to contact farmers and residents to articulate exactly what the Implementation Plan means to them and what practices will help meet the goal of improved water quality. The working groups could recommend high priority areas and appropriate education/outreach techniques, which will be utilized during implementation. Outreach at festivals has been successful in other watersheds in the past. There are also opportunities for joint events with the Virginia Cooperative Extension Service. Presentations at

local Ruritan and Rotary clubs could be as an effective way to reach the public. In addition, local Farmer's Markets and Earth Day events would be good opportunities for outreach.

Education and Outreach - Residential Programs

- Identify straight-pipes and failing septic systems (e.g., contact landowners in older homes, septic pump-out program)
- Publicize cost-share programs
- Develop educational materials & programs
- Organize educational programs (e.g., demonstration septic pump-outs, pet waste control)
- Distribute educational materials (e.g., informational pamphlets on TMDL IP and on-site sewage disposal systems).
- Assess progress toward implementation goals

Education & Outreach - Urban Programs

- Develop educational materials and programs.
- Hold workshops for contractors and developers on existing erosion and sediment control and stormwater management regulations.
- Distribute information to homeowners who have stormwater management features on their property.
- Work with homeowners to obtain grants and develop a cost share program to properly maintain and/or retrofit smaller stormwater facilities to better address water quality
- Hold a rain barrel workshop
- Inventory existing storm drains and pipes; refine existing spatial data
- Work with contractors in the watersheds to make them aware of implementation goals and ensure compliance with existing erosion and sediment control and stormwater regulations

Benefits

The primary benefits to private property owners include flood mitigation and improved water quality. A 2004 study assessing the economic benefits of stormwater management showed that these services can be valued at 0-5% of the market value of a home (Braden and Johnston, 2004). In addition, urban BMPs have a number of economic benefits to localities. Increased retention of stormwater on site can lower peak discharges, thereby reducing the drainage infrastructure needed to prevent flooding. This can result in cost savings to local governments through reduced engineering and land acquisition costs, and reduced materials and installation costs for stormwater culverts and streambank armoring to prevent scour. Lastly, implementation greatly reduces soil erosion and sediment transport to our rivers, streams and lakes. A 1993 study of the economic cost of erosion- related pollution showed that national off-site damages from urban sediment sources cost between $192 million and $2.2 billion per year in 1990 dollar values (Paterson et al, 1993). This cost range would be far greater today if adjusted for inflation.

The goals established in this implementation plan will directly support this effort through the creation of riparian and in-stream habitat and water quality conditions necessary to support a viable fish population. The anticipated economic benefits of these efforts are substantial. According to a 2010 U.S. Fish and Wildlife Service Study of trout fishing in the United States, there were approximately 138,000 trout anglers (16 years or older) in Virginia in 2006, each of whom spent an average of 5 days a year fishing. This translated into considerable retail sales and state and federal tax revenues. Nationally, trout anglers spent an estimated $1.06 billion in 2006 on food and lodging for fish trips. In addition, anglers spent $32,362,000 and $18,654,000 on public and private land use fees respectively for fishing in 2006. Trout fishing related expenses generated $965,201,922 in federal tax revenues in 2006 and $807,005,252 in state and local tax revenues across the county (U.S. Fish and Wildlife Service, 2010). Consequently, it is expected that the creation of viable fishery on the Dan River and its major tributaries would result in considerable economic benefits to state and local governments, private landowners and business owners.

Partners

In addition to local farmers, participation from homeowners is also critical to the success of this plan. Though the amount of bacteria that is coming from failing septic systems and straight pipes is minimal compared to livestock, human waste carries with it pathogens that can cause health problems above and beyond those associated with livestock waste.

Other important partners include local government officials, parks & recreational departments, public works, nonprofit organizations and business. Improvement of water quality will need to be done in cooperation with the city and the county, however it is anticipated there may be concerns about the staffing levels that will be needed in order to implement the plan.

Business partners and their staff can be a good match for completing streambank restoration projects. VA Cooperative Extension can be helpful in working with farmers. SPCAs could assist in the distribution of information on the importance of picking up after your
Pet.

Each watershed in the state is under the jurisdiction of a multitude of water quality programs and activities, many of which have specific geographic boundaries and goals. Coordination of the implementation project with these existing programs could make additional resources available and increase participation by local landowners.

Funding for Implementation

A list of potential funding sources available for implementation needs to be developed, however below are a few resources that have all ready been identified:

Virginia Agricultural Best Management Practices Cost-Share Program

The cost-share program is funded with state and federal monies through local SWCDs. SWCDs administer the program to encourage farmers and landowners to use BMPs on their land to better control transportation of pollutants into our waters due to excessive surface flow,

erosion, leaching, and inadequate animal waste management. Program participants are recruited by SWCDs based upon those factors, which have a great impact on water quality. Cost-share is typically 75% of the actual cost, not to exceed the local maximum.

Virginia Agricultural Best Management Practices Tax Credit Program

For all taxable years, any individual or corporation engaged in agricultural production for market, who has in place a soil conservation plan approved by the local SWCD, is allowed a credit against the tax imposed by Section 58.1-320 of an amount equaling 25% of the first $70,000 expended for agricultural best management practices by the individual. The amount of the credit cannot exceed $17,500 or the total amount of the tax imposed by this program (whichever is less) in the year the project was completed. This program can be used independently or in conjunction with other cost-share programs on the stakeholder's portion of BMP costs. It is also approved for use in supplementing the cost of repairs to streamside fencing.

Virginia Agricultural Best Management Practices Loan Program

Loan requests are accepted through VADEQ. The interest rate is 3% per year and the term of the loan coincides with the life span of the practice. To be eligible for the loan, the BMP must be included in a conservation plan approved by the local SWCD Board. The minimum loan amount is $5,000; there is no maximum limit. Eligible BMPs include 23 structural practices such as animal waste control facilities, and grazing land protection systems. The loans are administered through participating lending institutions.

Virginia Small Business Environmental Assistance Fund Loan Program

The Fund, administered through VADEQ, is used to make loans or to guarantee loans to small businesses for the purchase and installation of environmental pollution control equipment, equipment to implement voluntary pollution prevention measures, or equipment and structures to implement agricultural BMPs. The loans are available in amounts up to $50,000 and will carry an interest rate of 3%, with favorable repayment terms based on the borrower's

ability to repay and the useful life of the equipment being purchased or the life of the BMP being implemented. To be eligible for assistance, a business must employ 100 or fewer people and be classified as a small business under the federal Small Business Act.

Virginia Water Quality Improvement Fund

This is a permanent, non-reverting fund established by the Commonwealth of Virginia in order to assist local stakeholders in reducing point and nonpoint nutrient loads to surface waters. Eligible recipients include local governments, SWCDs, and individuals. Grants for point sources are administered through VADEQ and grants for nonpoint sources are administered through VADCR.

Conservation Reserve Program (CRP)

Through this program, cost-share assistance is available to establish cover of trees or herbaceous vegetation on cropland. To be eligible for consideration, the following criteria must be met: 1) cropland was planted or considered planted in an agricultural commodity for two of the five most recent crop years, and 2) cropland is classified as "highly-erodible" by NRCS. The payment to the participant is up to 50% of the cost for establishing ground cover.

Conservation Reserve Enhancement Program (CREP)

This program is an "enhancement" of the existing USDA CRP Continuous Sign-up. It has been "enhanced" by increasing the cost-share and rental rates, and offering a flat rate incentive payment to place a permanent "riparian easement" on the enrolled area. Additional federal incentives can bring the effective cost share rate up to 115% of eligible expenses. Pasture and cropland adjacent to streams, seeps, springs, ponds and sinkholes are eligible to be enrolled. Buffers consisting of native, warm-season grasses on cropland, and mixed hardwood trees on pasture, must be established in widths ranging from the minimum of 30% of the floodplain or 35 feet, whichever is greater, to a maximum average of 300 feet. Cost-sharing (75% - 100%) is available to help pay for fencing to exclude livestock from the riparian buffer, watering

facilities, hardwood tree planting, filter strip establishment, and wetland restoration. The State of Virginia will make an additional payment to place a perpetual easement on the enrolled area.

Environmental Quality Incentives Program (EQIP)

Approximately 65% of the EQIP funding for the state of Virginia is directed toward "Priority Areas." These areas are selected from proposals submitted by a locally led conservation work group. The remaining 35% of the funds are directed toward statewide priority concerns of environmental needs. EQIP offers 5 to 10-year contracts to landowners and farmers to provide 75% cost-share assistance, 25% tax credit, and/or incentive payments to implement conservation practices and address the priority concerns statewide or in the priority area. Eligibility is limited to persons who are engaged in livestock or agricultural production.

Wildlife Habitat Incentive Program (WHIP)

WHIP is a voluntary program for landowners who want to develop or improve wildlife habitat on private agricultural lands. Participants work with NRCS to prepare a wildlife habitat development plan. This plan describes the landowner's goals for improving wildlife habitat and includes a list of practices and a schedule for installation. A 10-year contract provides cost-share and technical assistance to carry out the plan. Cost-share assistance of up to 75% of the total cost of installation (not to exceed $10,000 per applicant) is available for establishing habitat. Types of practices include: disking, prescribed burning, mowing, planting habitat, converting fescue to warm season grasses, establishing riparian buffers, creating habitat for waterfowl, and installing filter strips, field borders and hedgerows.

Wetland Reserve Program (WRP)

This program is a voluntary program to restore and protect wetlands on private property. Landowners who choose to participate in WRP may receive payments for a conservation easement or cost-share assistance for a wetland restoration agreement. The landowner will retain ownership but voluntarily limits

future use of the land. To be eligible for WRP, land must be suitable for restoration (formerly wetland, and drained) or connect to adjacent wetlands. A landowner continues to control access to the land and may lease the land for hunting, fishing, or other undeveloped recreational activities.

Southeast Rural Community Assistance Project (SE/R-CAP)

The mission of this project is to promote, cultivate, and encourage the development of water and wastewater facilities to serve low-income residents at affordable costs and to support other development activities that will improve the quality of life in rural areas. Staff members of other community organizations complement the SE/R-CAP staff across the region. They can provide (at no cost): on-site technical assistance and consultation, operation and maintenance/management assistance, training, education, facilitation, volunteers, and financial assistance. Financial assistance includes $1,500 toward repair/replacement/ installation of a septic system and $2,000 toward repair/replacement/installation of an alternative waste treatment system. Funding is only available for families making less than 125% of the federal poverty level.

National Fish and Wildlife Foundation

Grant proposals for this funding are accepted throughout the year and processed during fixed sign up periods. There are two decision cycles per year. Each cycle consists of a pre-proposal evaluation, a full proposal evaluation, and a Board of Directors' decision. Grants generally range between $10,000 and $150,000. Grants are awarded for the purpose of conserving fish, wildlife, plants, and their habitats. Special grant programs are listed and described on the NFWF website (http://www.nfwf.org). If the project does not fall into the criteria of any special grant programs, a proposal may be submitted as a general grant if it falls under the following guidelines: 1) it promotes fish, wildlife and habitat conservation, 2) it involves other conservation and community interests, 3) it leverages available funding, and 4) project outcomes are evaluated.

Virginia Natural Resources Commitment Fund

This fund was established in the Virginia Code as a subfund of the Water Quality Improvement Fund in 2008. Monies placed in the fund are to be used solely for the Virginia Agricultural BMP Cost Share Program as well as agricultural needs for targeted TMDL implementation areas. Watershed addressed in this water quality improvement plan are eligible for these funds, which are appropriated by DCR to Headwaters SWCD.

Clean Water State Revolving Fund

EPA awards grants to states to capitalize their Clean Water State Revolving Funds (CWSRFs). The states, through the CWSRF, make loans for high-priority water quality activities. As loan recipients make payments back into the fund, money is available for new loans to be issued to other recipients. Eligible projects include point source, nonpoint source and estuary protection projects. Point source projects typically include building wastewater treatment facilities, combined sewer overflow and sanitary sewer overflow correction, urban stormwater control, and water quality aspects of landfill projects. Nonpoint source projects include agricultural, silvicultural, rural, and some urban runoff control; on-site wastewater disposal systems (septic tanks); land conservation and riparian buffers; leaking underground storage tank remediation, etc.

Wetland and Stream Mitigation Banking

Mitigation banks are sites where aquatic resources such as wetlands, streams, and streamside buffers are restored, created, enhanced, or in exceptional circumstances, preserved expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources. Mitigation banking is a commercial venture which provides compensation for aquatic resources in financially and environmentally preferable ways. Not every site or property is suitable for mitigation banking. Wetlands and streams are complex systems, and their restoration, creation, enhancement, or preservation often requires specialized ecological and engineering knowledge. Likewise, the mitigation banking process requires experience to efficiently navigate. Mitigation banks are required to be protected in perpetuity, to provide

financial assurances, and long term stewardship. The mitigation banking processes is overseen by the Inter-Agency Review Team (IRT) consisting of several state and federal agencies and chaired by DEQ and Army Corps of Engineers. For more information, contact the Army Corps of Engineers or VADEQ's Virginia Water Protection Program.

Regional Foundations

The Danville Regional Foundation, Community Foundation of the Dan River Region, Harvest Foundation, Reidsville Area Foundation, Martinsville Area Community Foundation, and the ZS Reynolds Foundation are just a few of the regional foundations in the region that fund projects related to education, community vitality and environmental programs. There are also several corporate foundations in the region, including the Water Resources Fund through Duke Energy, Eastman Fund and Dominion Corporate Fund that provide support for natural resource protection projects.

About the Dan River Basin Association

DRBA is a 501(c)3 non-profit working across the Dan River basin to promote sustainable economic growth through education, recreation and stewardship of the region's natural and cultural resources. DRBA works to bridge borders and build communities in the piedmont region of southern Virginia and northern North Carolina. DRBA is working to foster the creation of a regional identity as a way to promote the history, natural resources, and unique features of the Dan River valley region that straddles the state dividing line between Virginia and North Carolina. By protecting the region's natural assets such as the Dan River and its tributaries, DRBA is working to promote tourism as well as healthy lifestyles. DRBA assists localities in creating community parks, trails and access to local rivers and streams. A recent example of a DRBA bi-state initiative is the approval of a feasibility study by the Virginia General Assembly for the creation of a state park along the North and South Mayo rivers in Virginia that would connect to the Mayo River State Park in North Carolina. By promoting a bi-state network of rivers, greenways, and trails, DRBA hopes to improve the region's quality of life, making the area a better place in which to live, visit, and do business. To find out more about DRBA and regional events, please sign up for a free e-newsletter at www.danriver.org.