Chapter 2 - Watershed management

WIB is charged with the mission of implementing nonpoint source TMDLs. The goal is the full restoration of the targeted stream with its removal from the State's 303(d) list. The 303(d) list, now the *Integrated Report* is published by WVDEP-WAB every two years. It identifies streams that are not meeting water quality standards.

Watersheds are selected for TMDLs based on the groupings and schedule listed in *Table 2* and the *Figure 1* map. A TMDL is the total amount of a pollutant that can be assimilated by the receiving water while still achieving water quality standards. TMDLs can be expressed in terms of mass per time such as tons per year or by other appropriate measures. TMDLs can be like a water quality budget for a specific water body. The "expenses" of the "budget" are comprised of the sum of individual wasteload allocations for point sources, load allocations for nonpoint sources, and natural background levels. In addition, the TMDL must include a margin of safety. The "assets" of the budget would be all those factors that allow the water body to dilute or absorb pollutants. As with any budget when expenses are greater than assets problems occur. A TMDL sets load reductions from the various sources to bring the "budget" back into balance. It allows for various management options that will achieve the desired source load reductions. A load reduction is the amount of pollutant that is prevented from entering a stream. Achieving load reductions is the goal of any NPS project.

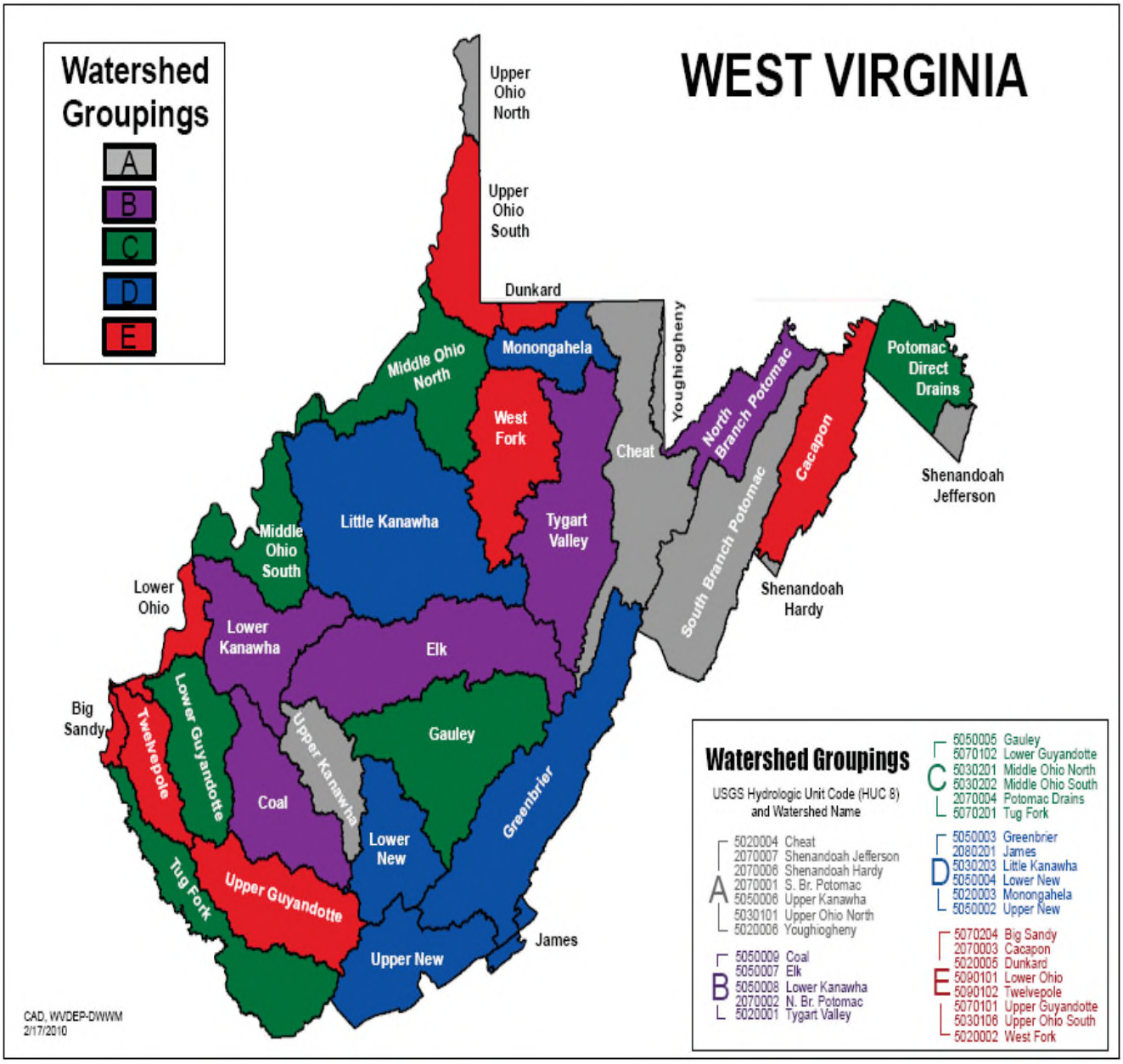
While WVDEP normally cycles through the watershed groupings each year for sampling, other factors influence the TMDL development schedule. For instance, the number of impaired waters not already addressed influences priority, as does the desire to revise older TMDLs to update point source contributions or address changes in water quality standards. WVDEP is currently developing TMDLs for the Upper Guyandotte, Twelvepole, Lower Ohio, and Big Sandy watershed, all of which fall in the Group E watershed group; as well as for the Lower Guyandotte in Group C. Pre-TMDL monitoring data is currently being collected to inform the development of TMDLs for the Tug Fork watershed, also in Group C. Planning has begun to select streams and stations to monitor from a portion of the Little Kanawha River watershed in Group D. The streams included in the TMDL development schedule are provided in *Appendix 3*.

Table 2 *– WVDEPs WAB sampling cycle*

2019 (Group D)	2020 (Group E)	2021 (Group A)
Greenbrier River	Cheat River	Gauley River
James River	Shenandoah River	Lower Guyandotte River
Little Kanawha River	South Branch Potomac	Middle Ohio North
Lower New River	Upper Kanawha River	Middle Ohio South
Monongahela River	Upper Ohio North	Potomac Direct Drains
Upper New River	Youghiogheny River	Tug Fork River

2022 (Group B)	2023 (Group C)
Big Sandy	Coal River
Cacapon River	Elk River
Dunkard Creek	Lower Kanawha River
Lower Ohio	North Branch Potomac
Twelvepole Creek	Tygart Valley River
Upper Guyandotte River	
Upper Ohio South	
West Fork River	

Figure 1 – WV Watershed Groupings



Stakeholder involvement

WIB relies on the TMDL process to help prioritize watersheds for the development of watershed based plans (WBPs). This provides the initial priority regions, but further refinements are needed before choices can be made on where on-the-ground successes are likely. One successful approach is the development of local Project Teams, usually facilitated by BCs, WVCA Conservation Specialists (CS) or other lead agency representative willing to act as the facilitator.

There are several successful project teams that meet regularly throughout our priority watersheds; Tuscarora Creek, Mill Creek Opequon, Elks Run, Sleepy Creek, Morris Creek, Deckers Creek Restoration Team, Upper Buckhannon, and Cheat River of Promise, just to name a few. WIB works to improve and expand project teams to other priority watersheds to help build the capacity of local stakeholder groups. Guidance is provided to project teams regarding their organizational structure, priorities etc. Every team is different… More information can be found *HERE*.

Basin Coordinators

BCs are WIB staff that help the local watershed protection efforts become reality. These experts are responsible for organizing local efforts to implement water quality improvement projects. To help get improvements on the ground, BCs have roles in:

- Fostering and supporting volunteer watershed associations and other organizations;
- Educating citizens on nonpoint pollution issues;
- Identifying local stakeholders and partners;
- Assisting with the development of WBPs; and
- Facilitating project teams to implement water quality projects.

The BCs efforts are extremely important to each successful implementation of our WBPs and watershed projects. Not only do they foster working relationships within their own regions, but they will also work with other BCs or specialists from other agencies in other regions of the state to get projects implemented. A map of the regions is provided in *Figure 2*.

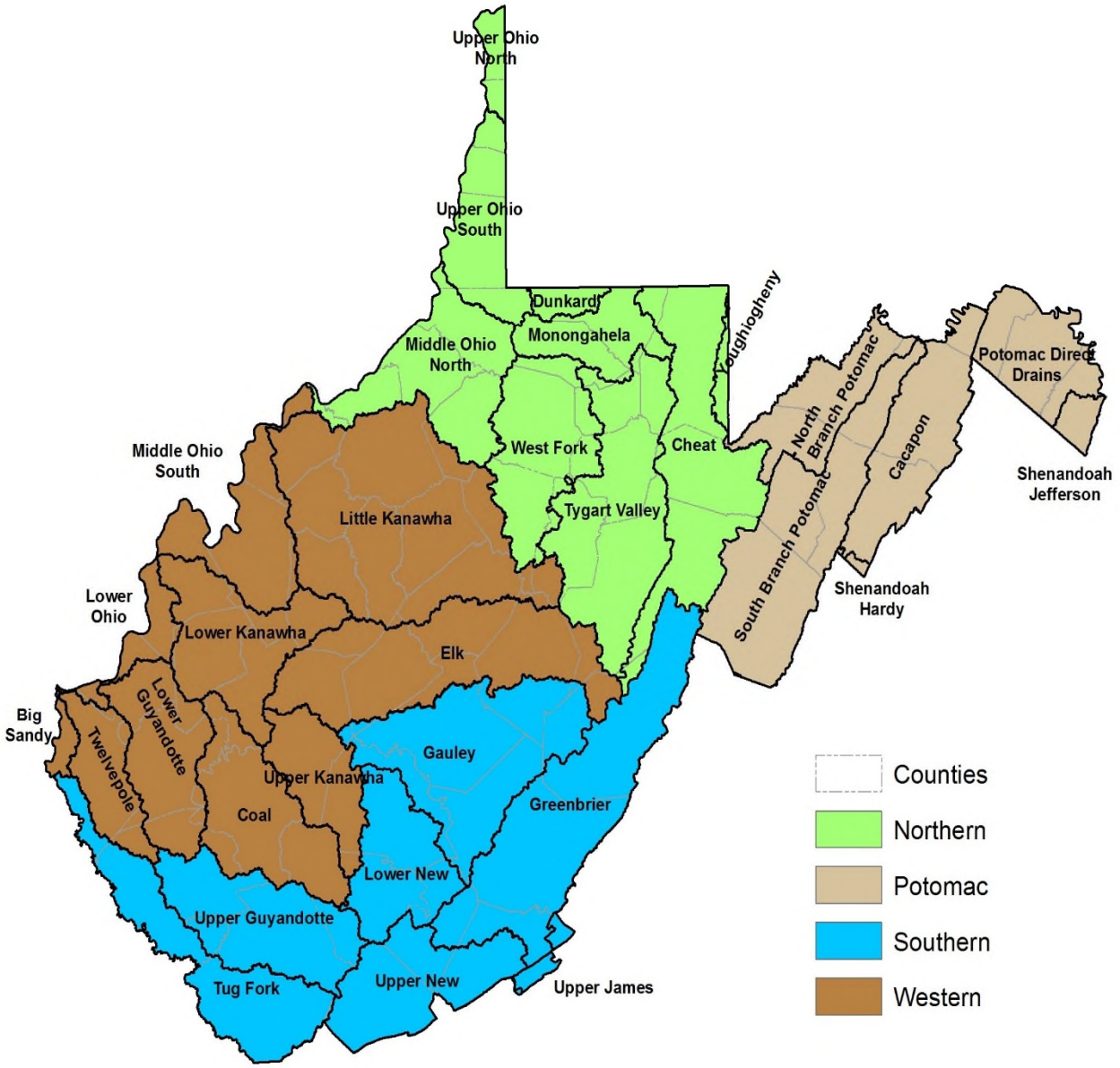
1. Potomac Basin: The water quality drivers in this region are the Chesapeake Bay TMDL for nutrients and sediment, and local bacteria and biological impairments. The Potomac BC coordinates the nonpoint BMP data collection effort for the CB Program and participates in its Watershed Technical Workgroup. The PBC also works with local watershed associations and interacts with local governments. The PBC is funded by Chesapeake Bay grant monies. Active WBPs in the region include Mill Creek of Opequon, Tuscarora Creek, Elks Run, Sleepy Creek, Anderson Run (new) and Back Creek watershed protection plan (WPP).

2. Northern Basin: In this region, several non-governmental organizations (NGOs) are planning and carrying out watershed projects to decrease loads of acidity and metals from abandoned mines so that streams will meet TMDL targets. Our Northern BC manages most of the NPS Program's AMD restoration efforts. Active WBPs in this region include Lower Cheat, Deckers Creek, Upper Buckhannon, Roaring Creek, North Fork Blackwater, Big Sandy Creek (new) and Lamberts Run. Note: The Lower Cheat is being sub-divided into smaller HUC12 size plans and most of which will be completed in 2019, 2020 and 2021.

3. Western Basin: Water quality in the western region of West Virginia varies, but is generally listed as impaired due to fecal coliform, sediment, and AMD per the corresponding TMDLs. Our Western BC's works closest with AMD treatment and stormwater issues with Municipal Separate Storm Sewer Systems (MS4) permittee's. Active WBPs in this region include Morris Creek, Cane Fork, Cherry Fork and Browns Creek.

4. Southern Basin: The Southern BC continues to establish relationships with state and federal agencies, volunteer organizations and community leaders. The southern part of West Virginia has a myriad of water pollution concerns, the most prominent being bacteria. Active WBPs in this region include Wolf Creek, Muddy Creek of Greenbrier, Second Creek, Potts Creek, Knapp Creek, Piney Creek, Milligan Creek, Indian Creek, Pipestem Creek, Spring Creek, Anthony Creek and Upper Meadow River.

Figure 2 *– BC regions*



Watershed based plans

WBPs are developed through local stakeholder involvement. Projects that are developed within a watershed must be designed to implement the plan. The WBP will identify all the partnerships, projects, funding sources, follow-up monitoring, and timeline. A WBP can be based on a watershed strategy or a TMDL (or both) and more clearly defines the specific responsibilities of each stakeholder group in implementing efforts to restore a watershed to compliance with water quality standards.

A complete list of all WBPs are provided in *Appendix 2*. The list includes active, not active, revised and plans currently being developed. Currently WIB has 42 WBPs in various stages of implementation. In late 2018 and early 2019, WIB held focused discussions with agency stakeholders on future WBP development, completion of current plans and revisions of those that have stalled. These discussions are on-going and will continue at least annually, or more frequently if needed.

Due to the large number of WBPs that are in or nearly in the implementation phase, WIB does not anticipate many new WBP submissions within the next five-years. At least two, perhaps a few more are anticipated. However, if opportunities present themselves the NPS Program will support the development of future WBPs, alternate plans and especially WPPs.

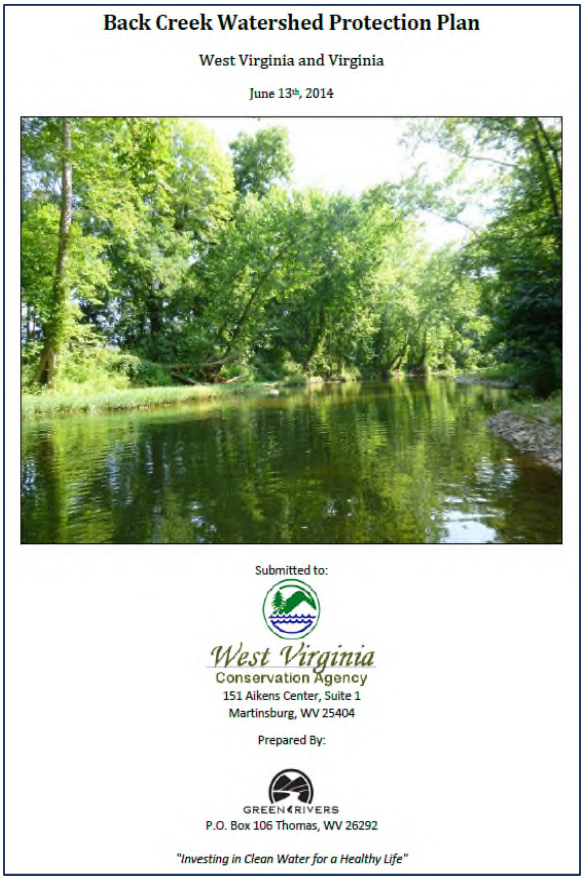
Watershed tracking

WBP/TMDL load reduction goals are calculated from TMDL allocations and key BMP goals are identified from WBPs and entered into USEPA's Watershed Plan Tracker (WPT) database. This step requires a dialogue with the author(s) of the watershed plan and state TMDL program to assure that information is properly interpreted. The next step requires that the implementation data in GRTS be checked to assure that it matches the TMDL boundaries identified in the WBP already entered in the WPT. Once these adjustments have been made in GRTS, the linkage is established between WPT and GRTS. Implementation, tracking reports and charts are created in Oracle Business Intelligence (OBI), a companion program. The NPS Program will use the WPT to track the progress of WBPs and schedule regular conference calls/meetings to update WBPs and correct any misinformation. A portion of the §319 grant funding is dedicated to *watershed tracking*.

Appendix 1 provides examples of WBT reports from OBI.

Healthy waters protection and evaluation

Healthy watersheds provide many ecosystem services and environmental benefits, including clean water, recreational opportunities, habitat for fish and wildlife, and reduced vulnerability to severe impacts such as flooding and climate change. Traditionally, the chemical, biological and physical characteristics of a watershed were used to determine a water body's health. However, it is now understood that a more holistic approach is necessary to maintain the integrity of healthy watershed systems. It is necessary to also understand the hydrology, geomorphology and natural disturbance patterns in the area. Only with a complete understanding of all these factors can we begin to protect the remaining healthy waters.



The Back Creek WPP received EPA approval in 2015. Since then, two major watershed projects have been funded and are nearly complete.

Protection tools in WV

Antidegradation refers to federal regulations designed to maintain and protect high quality waters and existing water quality in other waters from unnecessary pollution. This policy will ensure that West Virginia's waters are protected from activities which have the potential to lower water quality. West Virginia is required to establish a tiered antidegradation policy and implementation procedure.

Specific steps to be followed depend upon which tier of antidegradation applies. Procedures are outlined in the legislative rule Series 5 Antidegradation Implementation Procedures - Title 60CSR5. All waters are assigned to specific tiers depending upon the level of protection necessary to maintain high quality and/or existing uses. The higher the tier, the more stringent the requirements are for protection. West Virginia categorizes waters into the following tiers.

1. Tier 1: Maintains and protects existing uses of a water body and the water quality conditions necessary to support such uses. A waterbody that is listed as impaired on the state's 303(d) list is considered a Tier 1 water as it pertains to the specific pollutant listed.

2. Tier 2: Maintains and protects "high quality" waters - water bodies where the level of water quality exceeds levels necessary to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life. Tier 2 is the default assignment for a waterbody not listed as impaired on the states 303(d) list.
3. Tier 3: Maintains and protects water quality in outstanding national resource waters.

The Tier 3 category includes waters in Federal Wilderness Areas, specifically designated federal waters, and high quality waters or naturally reproducing trout streams in state parks, national parks, and national forests. Guidance pertaining to Tier 3 waters can be found in Series 2A Designation of Tier 3 Waters - Title 47CSR2A**.** Unique to WV is a process for **nominating** candidate waters for inclusion in the Tier 3 category. The nomination procedures are outlined in Series 5 Antidegradation Implementation Procedures - Title 60CRS5, Section 7.1**.** Section 7.1 outlines all necessary information and documentation that must be included in the nomination packet, and general procedures WVDEP staff utilizes during the nomination review. Nominations have been received and approved for Fill Hollow Creek and Watkins Run; both are headwater streams that support native trout, located in Preston County in the Buffalo Creek-Cheat River HUC12.

Another tool has been recently developed through collaboration with The Nature Conservancy (TNC) and funding from EPA and WVDEP. The tool, known as the WV Watershed Assessment Pilot Project (WVWAPP) is an interactive GIS map designed to help decision-makers and stakeholders prioritize watershed areas for protection and restoration activities. The data included comes from a wide variety of national and state sources including WVDEP's water quality, mining and oil and gas data, WVU's mining data, land cover and protected lands data from TNC, wetlands data from US Army Corp of Engineers (ACOE) and the US Fish and Wildlife Service (USFWS), climate data from NOAA and a variety of other legitimate data layers. The tool uses multiple metrics and a color-coded system to rate and display the condition of HUC12 and catchments layers in the categories of streams, wetlands and uplands.

Table 5 *– Categories of the WVWAPP*

Streams	**Wetlands**	**Uplands**
• Overall	• Overall	• Overall
• Water quality	• Water quality	• Habitat connectivity
• Water quantity	• Hydrology	• Habitat quality
• Hydrologic connectivity	• Biodiversity	• Biodiversity
• Biodiversity	• Wetland habitat	
• Riparian habitat		

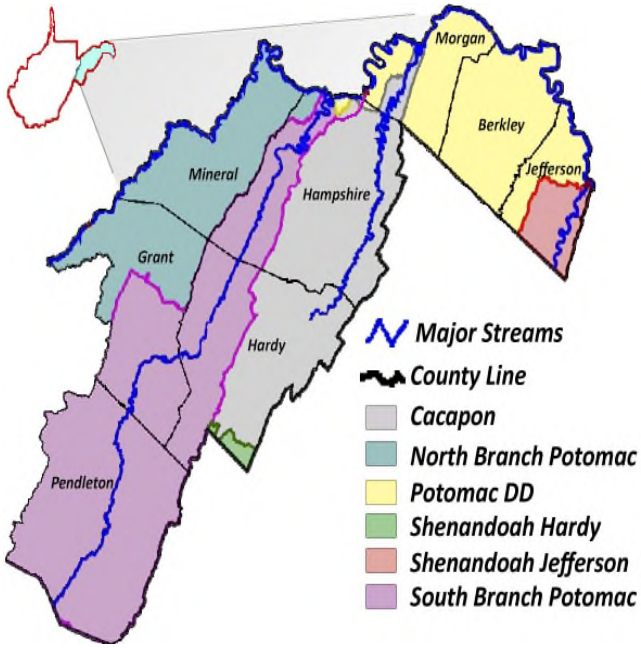
The TNC tool, due primarily to funding needed to maintain it, will most likely change. Discussions with WVDEP and others are on-going to find alternate hosts. A new tool, the Watershed Resource Registry (WRR) was recently implemented. WRR is similar to TNC's tool, but in many ways is more complete and has an expanded coverage area. The purpose of WRR is to help prioritize areas for restoration and preservation and its target audience is planners in natural resources, transportation and watershed managers. Learn more about WRR in *Appendix 4* and go to: *https://watershedresourcesregistry.org/*. In the future, WRR may incorporate much of the information from WVWAPP. Developers are currently reviewing the technical challenges. An option on the table is to incorporate the most important components from the TNC into WRR. Until that occurs the TNC tool will continue to be utilized.

Chesapeake Bay Program

West Virginia's Potomac drainage and a small portion of the James River are headwaters to the *Chesapeake Bay*. WV's CB Program efforts are fully integrated into the NPS Program in both the WVDEP and WVCA. Additional partners, including WVDA, WVDOF, watershed groups, NGO's and other stakeholders are also long time participants in West Virginia's NPS and CB Programs.

West Virginia's Chesapeake Bay TMDL Phase 3 *Watershed Implementation Plan* (WIP) identifies the actions that will be undertaken between 2018 and 2025 to reduce the contribution of nitrogen, phosphorus and sediment to the Bay. Most of these activities are nonpoint source BMPs on agricultural and urban lands. CB Program watershed priorities are based upon delivered nutrient load to the Bay. Within the Potomac drainage and the James River, WVDEP also has several local TMDLs that require fecal coliform and sediment reductions. Many of the same practices address both nutrients and fecal coliform. Since approval of the last WVNPMP, NPS Program

staff and partners have developed WBPs for seven priority basins in WV's Chesapeake Bay drainage. Where local TMDLs and CB Program priorities overlap, West Virginia is achieving the greatest efficiency of technical and financial resources.



Agricultural BMPs such as nutrient management, forested riparian buffers, livestock exclusion, and agricultural waste management are priorities in West Virginia's WIP and WBPs. West Virginia uses a combination of USDA Farm Bill funding through programs like EQIP, WHIP, CBWI (now RCPP), and CREP to fund most of the agricultural BMP installations. WIB works closely with NRCS and other agriculture partners to develop proposals for RCPP and other USDA funding. West Virginia also uses Chesapeake Bay Implementation Funds to support agriculture practices. WVCA's Agricultural Enhancement Program and §319 funds are also used where appropriate and/or needed.

Technical assistance for BMP implementation and nutrient management planning is provided by NRCS, WVCA, WVDA and County Extension Agents.

Urban stormwater BMPs such as rain gardens and other infiltration practices as well as policy and program activities such as development of local stormwater ordinances are also areas of focus. With few regulated MS4s within the Potomac drainage, most of the effort is placed upon working with local governments to develop stormwater ordinances comparable to West Virginia's MS4 program requirement for management of the first 1 inch of rainfall. This requires the first one-inch of rainfall to be managed so it can infiltrate and evapotranspiration to reduce the pollutants in stormwater. Voluntary urban stormwater BMPs are also installed in §319 priority watersheds and by using §319 AGO funds and Chesapeake Bay Implementation grant funds. Technical assistance on urban stormwater issues is provided through WV's NPS Program staff.

WV's NPS Program and CB Program staff participates in various CB committees providing input on policy and program development as well as reporting and progress evaluations. BMP verification has become a major focal point for the CB Program to ensure that BMPs that have been installed and continue to perform as intended. Two year milestones, that include programmatic goals and BMP implementation, are also established by West Virginia as required by EPA. Overall, progress made in advancing water quality improvements in West Virginia's Chesapeake Bay drainage are in part due to the ongoing nonpoint program activities and staff that have been in place for decades.

Additional grant opportunities (AGOs)

An AGO is a request for proposals from viable organizations for projects related to nonpoint source pollution issues. These projects can include education and outreach to the public or a specific sector of the public, monitoring of nonpoint sources and construction of practices to reduce nonpoint source pollution, staff support or a wide variety of other projects with a nonpoint focus. AGOs have been a valuable tool for the NPS Program. These small grants have allowed us to expand our volunteer base, improve outreach throughout the state by providing demonstration projects in high visibility areas that mitigate nonpoint sources of pollution, and support NPS monitoring programs.

In 2017 WIB was able to develop and fund a grant program that provided up to $30,000 in staff support. The program, initially called *Watershed Pilot Program* (WPP) funded positions for four watershed groups that currently have active WBPs or are developing and revising future WBPs. The organizations selected are responsible for all human resources management; they must provide office space, computer and internet access, have access to water quality monitoring equipment, can manage payroll, insurance etc. The term of the grant is three years and the second phase of the WPP is set to expire in 2021. However, the effort may continue if funding can be procured. WIB is encourage by the success of the WPP. With WPP funding, local groups that were not able to

manage §319 watershed projects in the past, have successfully implemented multiple projects, improved outreach and developed local partnerships to support their efforts.