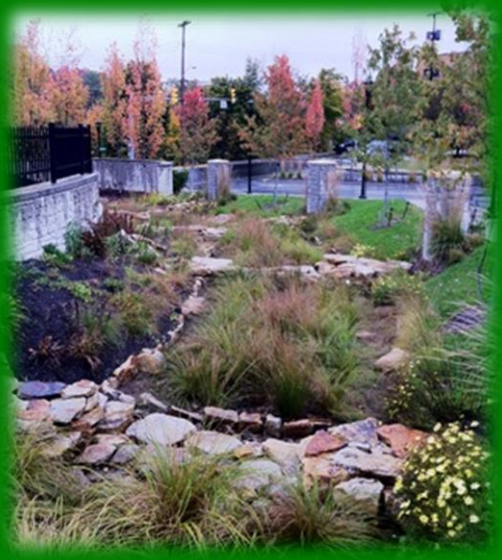
West Virginia's Nonpoint Source Program Management Plan

September 25, 2014



http://www.dep.wv.gov/nonpoint

WV's Nonpoint Source Program's Management Plan

Prepared
By

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Acknowledgements

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 West Virginia's Nonpoint Source Program is funded by Clean Water Action § 319 Grants, administered by the U.S. Environmental Protection Agency (US EPA).

Cover left to right: Rain garden, Piney Creek - Beckley; AMD treatment system maintenance, Deckers Creek; Rain barrel workshop and painting - Charleston; Mill Creek stream restoration - near Inwood

Contents

Chapter 1 - Introduction

This document is West Virginia's revised Nonpoint Source Management Plan. It updates the State's Nonpoint Source Management Plan originally developed under § 319 of the Clean Water Act (CWA) in 2000. The document was developed by the WV Department of Environmental Protection (WVDEP) as part of its 2015 workplan with the US Environmental Protection Agency (EPA). According to EPA guidance, states should periodically review and evaluate their Nonpoint Source Program Management Plan. State's should assess their goals and objectives and revise their Program's goals and objectives every five years or as appropriate.

The Management Plan will be reviewed every two-years or more frequently if needed, and revised every five years to make sure it consistently addresses WV's NPS Program needs and priorities taking into account new and existing TMDLs/WBPs, funding and stakeholder opportunities.

Statutory Background

Congress enacted § 319 of the Clean Water Act in 1987, establishing a national program to control nonpoint sources of water pollution. Clean Water Act § 101(a)(7) states, "it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution."

Funding appropriated under § 319 can be used to implement state NPS programs including, as appropriate**,** non-regulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects to achieve implementation of best management practices (BMPs) and water quality goals.

Under § 319(a), all states have addressed NPS pollution by developing NPS assessment reports that identify NPS pollution problems and sources responsible for the water quality impairments. Under § 319(b), all states have also adopted state NPS management programs to control NPS pollution. State

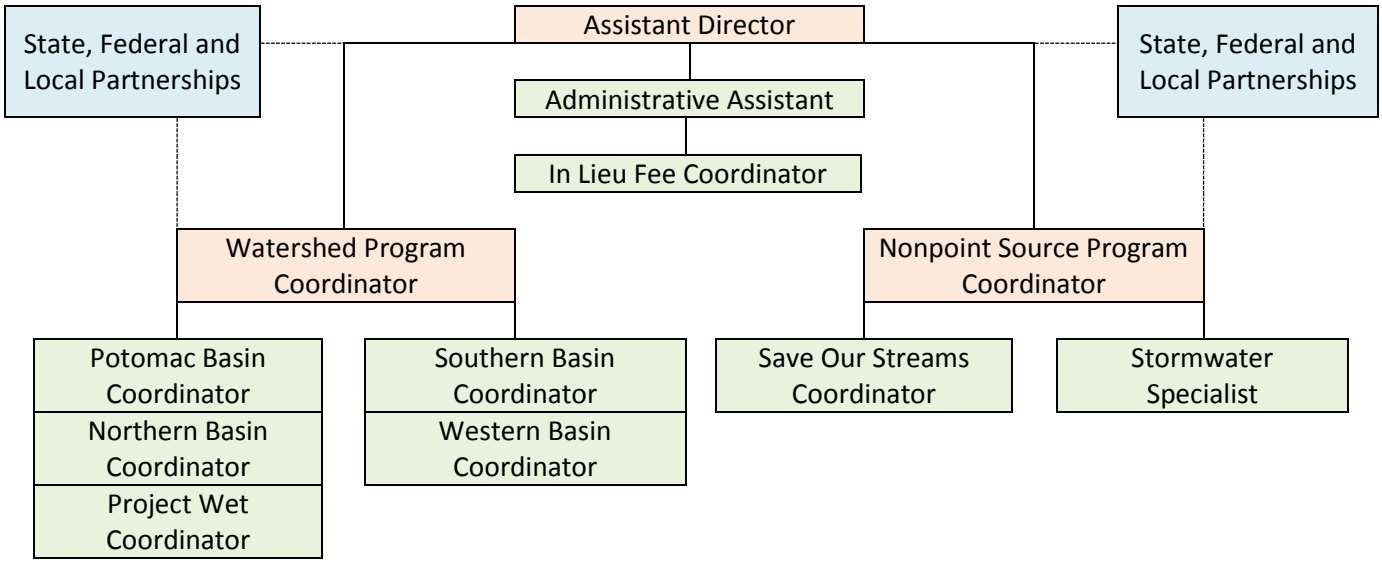
NPS management programs provide the foundation for state programs to address NPS pollution. These programs should articulate each state's strategy to address nonpoint sources and to achieve/maintain water quality standards. Since 1990, Congress has annually appropriated grant funds to states under § 319(h) to implement their approved state NPS management program.

Nonpoint Source pollution is not specifically defined in the CWA. A brief definition is that nonpoint pollution includes pollution caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, other coastal waters and ground water. Atmospheric deposition and hydrologic modification are also sources of nonpoint pollution.

NPS Organization and Structure

As the lead agency the WVDEP, Division of Water and Waste Management's (DWWM) Nonpoint Source (NPS) Program manages and coordinates the statewide NPS Program activities. The NPS Program is grouped with the Stream Partners Program (SPP), Chesapeake Bay Program (CBP), and the In Lieu Fee (ILF) Program. The NPS Program employs four environmental specialists as Basin Coordinators (BCs) and one Stormwater Specialist (SWS) to locally coordinate, develop, track and implement plans and projects. The NPS Program also employs the Project Wet Coordinator, Save Our Streams (SOS) Coordinator, and an ILF Coordinator. US EPA's § 319 Grant funds the Northern and Southern Basin Coordinators. WV Conservation Agency takes a leadership role in agriculture and construction activities.

Table 1 - Nonpoint Source Program's Organizational Chart



This chart shows the hierarchal structure of the Nonpoint Source Section. However many of our duties and responsibilities cross-over into many areas depending upon the type of grants, goals and objectives of the work and the skill sets of the employees. To carry out the overall goals and objectives of the NPS program we work as a team. Our Mission Statement is "**To inspire and empower people to value and work for clean water**".

The NPS Program coordinates within WVDEP with the Division of Mining and Reclamation (DMR), the Office of Abandoned Mined lands and Reclamation (OAMR), the Stormwater Permitting Program, the State Revolving Loan Fund (SRF), the Watershed Assessment Branch (WAB), Office of Oil and Gas (OOG) and Office of Environmental Enforcement (EE).

Other agency partners include the WV Dept. of Agriculture (WVDA), WV Division of Forestry (WVDOF), WV Division of Natural Resources (WVDNR), WV Dept. of Health and Human Resources (WVDHHR), US Office of Surface Mining (OSM), US Dept. of Agriculture's Natural Resource Conservation Service (NRCS). Non-governmental partners include West Virginia University (WVU), Canaan Valley Institute (CVI), Cacapon Institute, Freshwater Institute, numerous watershed organizations, schools, and many types of non-governmental organizations (NGOs).

Chapter 2 – Watershed Management

The NPS Program is charged with the mission of implementing nonpoint source Total Maximum Daily Loads (TMDLs). The ultimate goal is the full restoration of the targeted stream with its removal from the State's 303(d) list. The 303(d) list is published by WVDEP 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 on the map in Figure 1. 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 considered to 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.

WVDEP is currently developing TMDLs in Hydrologic Group A (Upper Ohio North, Upper Kanawha, and South Branch Potomac), Group B (Tygart Valley River) and preparing to start Group C (Select tributaries of the Meadow River, Rocky Marsh Run, and Warm Springs Run) in early 2015. Hydrologic Group D (Monongahela River mainstem and Hughes Creek) is projected to start October 2015. The streams included in the TMDL development schedule are provided in Appendix 5.

Table 2 – WVDEPs Watershed Assessment Branch (WAB) sampling cycle

2016 (Group A)	2017 (Group B)	2018 (Group C)	2019 (Group D)	2020 (Group E)
Cheat River Shenandoah River South Branch Potomac Upper Kanawha River Upper Ohio North Youghiogheny River	Coal River Elk River Lower Kanawha River North Branch Potomac Tygart Valley River	Gauley River Lower Guyandotte River Middle Ohio North Middle Ohio South Potomac Direct Drains Tug Fork River	Greenbrier River James River Little Kanawha River Lower New River Monongahela River Upper New River	Big Sandy Cacapon River Dunkard Creek Lower Ohio Twelvepole Creek Upper Guyandotte River Upper Ohio South West Fork River

Stakeholder Involvement

The NPS Program 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 an NPS Basin Coordinator, WVCA Conservation Specialist or other representative willing to act as the leader.

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. The NPS Program works to improve and expand project teams to other priority watersheds to help build the capacity of local stakeholder groups.

Project Team Guidance

The goal of project teams is to bring all stakeholders together to implement the TMDL in watersheds prioritized by the NPS Program Partners.

Objectives:

1. Identify all watershed stakeholders
2. Develop outreach plan
3. Identify project potential
4. Identify project partners
5. Develop watershed based plans (WBPs) and watershed project proposals
6. Identify funding sources
7. Secure funding
8. Implement watershed projects
9. Monitor success
10. Report to WVDEP and EPA

Who is involved?

1. Project Team Leader – Watershed Basin Coordinator or WV Conservation Agency staff responsible for contact list, meetings (location, facilitation, agenda and minutes), project tracking, grant development and reporting.

2. Stakeholders – Local government, state government, federal government, local business and industry, civic and environmental organizations, landowners, elected officials who are Project Team Members committed to attending meetings and developing projects.
3. Watershed Association – Broad-based community organization committed to improving the quality of life within the watershed. Mission and goals will include working to improve water quality.

Tasks:

Identify stakeholders:

- Talk with community members
- Advertise meetings and activities
- Develop and Update contact list (electronic and US mail)

Develop an outreach plan:

- Set up a mailing/contact system to keep stakeholders informed
- Identify stakeholders to assist with public information
- Commit to some form of public notification to update community of plans and progress

Identify project potential:

- Brainstorming during the first meeting
- Follow up with missing players and area experts
- Survey and mapping of the watershed
- Secure partners commitment

Develop Watershed Based Plan:

- Recruit subcommittee from stakeholders
- Review EPA's WBP outline and samples
- Identify needs and data
- Assign tasks to obtain data and information

Identify Funding Sources:

- Develop funding opportunity timeline –application deadlines and award dates
- Secure 319's required 40% match
    - Stakeholders' time
    - Partners' program funding
    - Local Government activities and funds
    - Corporate donations
    - SPP grants

Implement Projects:

- Secure contractors
- Trouble shoot unexpected needs and changes
- Follow up to keep project on schedule

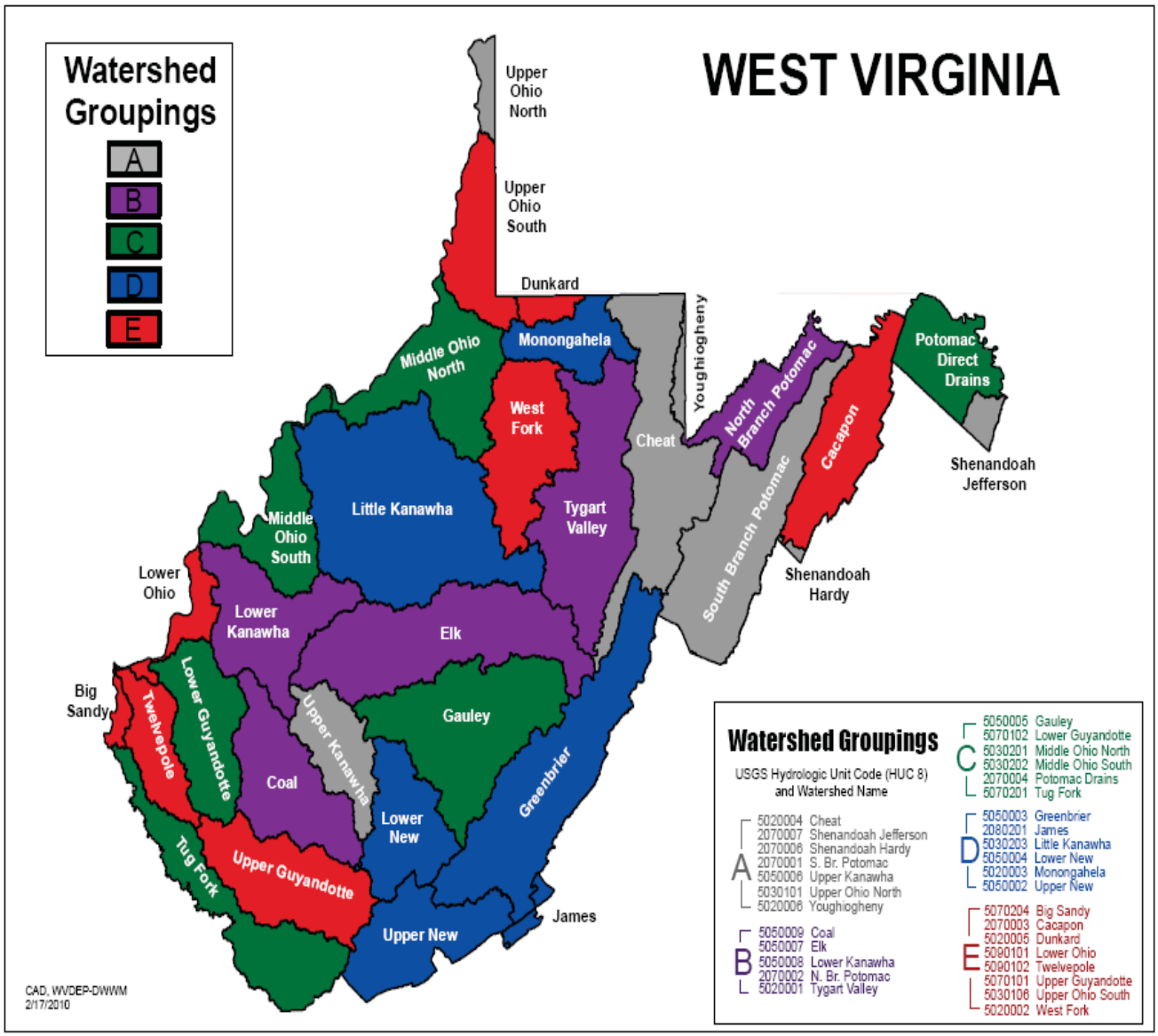
Monitoring Success:

- Coordinate TMDL monitoring data with reporting
- Identify unmet monitoring needs
- Develop local monitoring networks (volunteers and schedule)
- Develop database or work with TMDL program for compiling and interpreting monitoring data

Reporting:

- Determine grant reporting requirements
- Set reporting schedule
- Follow up with partners to obtain information
- Compile reporting data
- Determine future monitoring and reporting needs

Figure 1 – WV Watershed Groupings



Basin Coordinators

Basin Coordinators (BCs) are NPS staff that helps 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 in order to implement water quality projects.

The BCs efforts are extremely important to each and every 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.

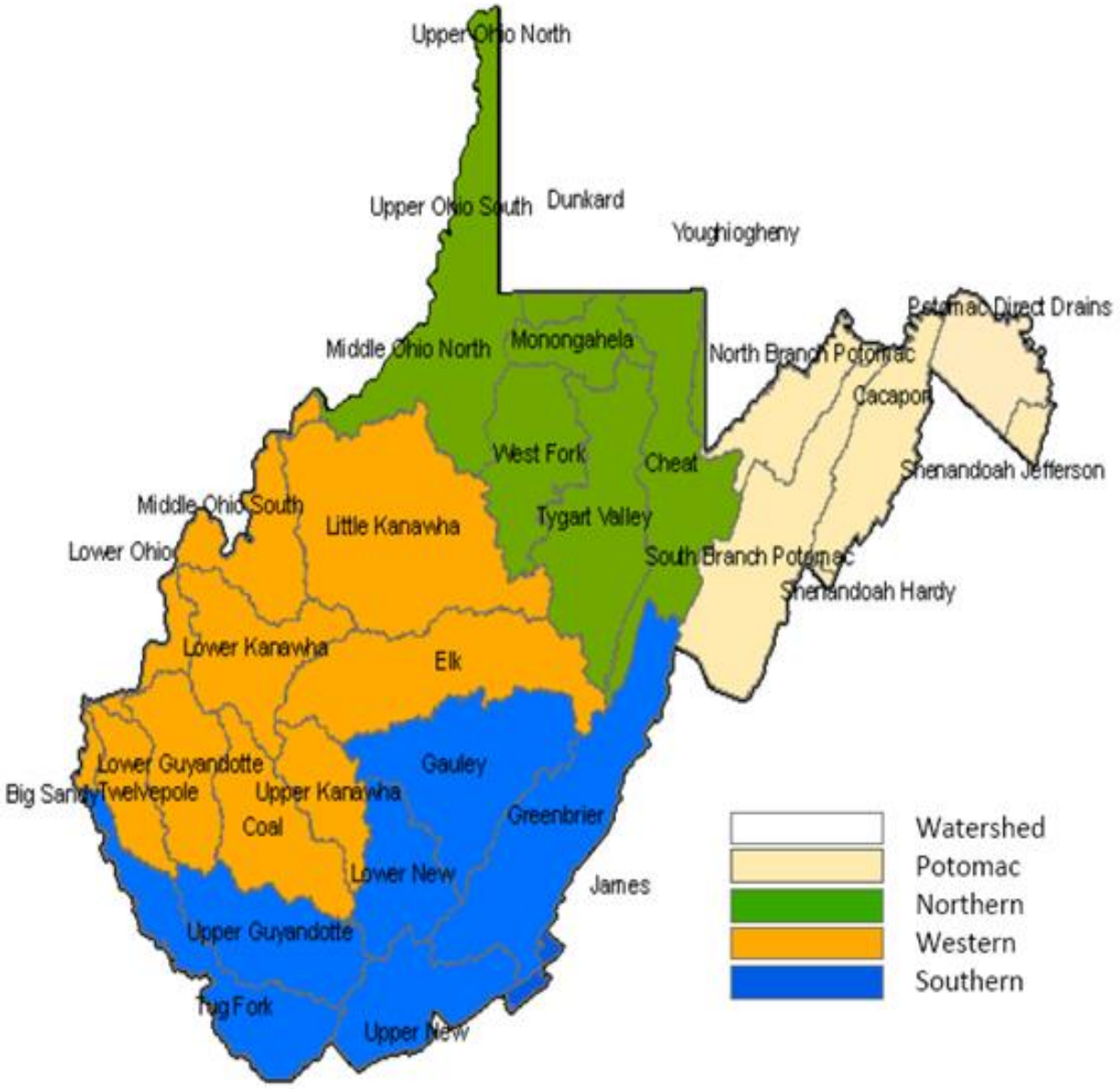
1. Potomac Region: The water quality drivers in this region are the Chesapeake Bay TMDL for nutrients and sediment, and local bacteria and biological impairments. The Potomac (PBC) coordinates the nonpoint BMP data collection effort for the Chesapeake Bay Program, and participates in its Watershed Technical Workgroup. The PBC also works with local watershed associations and interacts with local governments. The PBC is funded by Chesapeake Bay grant monies. Current WBPs in this region include Lost River, Mill Creek of South Branch, Mill Creek of Opequon, Tuscarora Creek, Elks Run, Sleepy Creek and the Back Creek Protection Plan.

2. Northern Region: 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 (NBC) manages most of the NPS Program's AMD restoration efforts. Current WBPs in this region include Lower Cheat, Deckers Creek, Sandy Creek, Upper Buckhannon, West Run, Roaring Creek, Three Forks Creek and Lamberts Run. Four new plans and a revision will occur in 2015 within this region.

3. Western Region: Water quality in the western region of West Virginia varies, but is generally listed as impaired due to fecal coliform, sediment, and AMD according to the corresponding TMDLs. Our Western (WBC) works closest with AMD treatment and stormwater issues with Municipal Separate Storm Sewer Systems (MS4) permittee's. Current WBPs in this region include Morris Creek, Cane Fork, Upper Elk Protection Plan and Browns Creek, which was recently submitted to EPA.

4. Southern Region: The SBC 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. Current WBPs in this region include Wolf Creek, North Fork of Elkhorn Creek, Upper Guyandotte, Muddy Creek of Greenbrier, Second Creek, Potts Creek, Knapp Creek (NWQI), Piney Creek, Milligan Creek, and Upper Meadow River.

Figure 2 – Basin Coordinator Regions



Watershed Based Plans

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.

Table 3 - WV Watershed Plans

HUC8 watersheds	WBP name	Status	Plan date	Pollutants
Cacapon	Lost River	On-going	2006	B, S
Cheat	Lower Cheat	On-going	2005	M, P
	North Fork Blackwater	Stalled	2005	M, P
Elk	**Upper Elk**	On-going	2012	**PP**
Greenbrier	Knapp Creek	On-going	2013	B, S
	Milligan Creek	On-going	2014	B, S
	Muddy Creek	On-going	2009	B, S
	Second Creek	On-going	2008	B
Gauley	Upper Meadow River	Not yet initiated	2014	B, M
Upper Guyandotte	Upper Guyandotte	On-going	2006	B, M
James	Potts Creek	On-going	2012	B
Upper Kanawha	Cane Fork	Stalled	2011	M, P
	Morris Creek	On-going	2013	M, P, S
Monongahela	Deckers Creek	On-going	2005	M, P
	West Run	On-going	2008	M, P
Lower New	Piney Creek	On-going	2012	B, M, P
	Wolf Creek	On-going	2009	M, P, B
Potomac Direct Drains	**Back Creek**	Not yet initiated	2014	**PP**
	Elks Run	On-going	2013	B, S
	Mill Creek (Opequon)	On-going	2008	B, S
	Sleepy Creek	On-going	2008	B
	Tuscarora Creek	On-going	2013	B, S
South Branch Potomac	Mill Creek (South Branch)	On-going	2007	B, S
Tug Fork	North Fork Elkhorn	On-going	2007	B, M
Tygart Valley	Three Forks Creek	Stalled	2006	M, P
	Roaring Creek	On-going	2012	M, P
	Sandy Creek	Stalled	2012	M, P
	Upper Buckhannon	On-going	2006	M, P, B
West Fork	Lamberts Run	On-going	2004	M, P

Pollutants: (B) Bacteria, (M) Metals, (P) pH, (S) Sediment; (PP) Protection Plan

West Virginia's NPS Program has developed more than 30 EPA approved WBPs since 2004, some have been put on hold for one reason or another and a few have been completed. In West Virginia, as in most states, TMDL development far exceeds the pace of WBPs. The NPS Program is working to revise out dated WBPs, and WBPs that have outdated milestones. Additionally, several partners are dividing larger plans into smaller HUC12 WBP planning units. Below are the WBPs being updated and proposed for 2015.

Table 4 – WBPs for 2015

HUC8	WBP name	Organization	Status
Cheat	Lick Run	WV Water Research Institute	Under development (New plan)
Cheat	Muddy Creek	Friends of the Cheat	Submitted to EPA (New plan)
Cheat	Pringle Run	Friends of the Cheat	Submitted to EPA (New plan)
Coal	Browns Creek	Coal River Group	Submitted to EPA (New plan)
Lower New	Wolf Creek	Plateau Action Network	Under development (Revision)
Monongahela	Deckers Creek	Friends of Deckers Creek	Under development (Revision)
West Fork	Little Tenmile	WV Water Research Institute	Under development (New plan)

Due to the large number of WBPs that are in or nearly in the implementation phase, the NPS Program does not anticipate new WBP submissions within the next five-years. However, if opportunities present themselves the NPS Program will support the development of future WBPs, alternate plans and especially watershed protection plans (WPPs).

Watershed Tracking

WBP/TMDL load reduction goals are calculated from TMDL allocations and key Best Management Practices (BMPs) goals are identified from WBPs and entered into EPAs Watershed Plan Tracker (WPT) database. This step requires a dialogue with the author(s) of the watershed plan and state TMDL program in order 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.

Appendix 2 provides three examples of WBT reports from OBI as well as the list of HUCs associated with the current WBPs listed in Table 3.

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.

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 states 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. They are located in Preston County in the Upper Cheat River watershed.

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 (FWS), 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).

Table 5 – Categories of the WVWAPP

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

The WVWAPP tool includes the Elk, Gauley, Little Kanawha, Monongahela, Tug Fork and Upper Guyandotte basins. It is intended solely as a prioritization and information gathering tool and should not replace field verification and site visits. Since the tool is static the changes that may have occurred since it was published and into the future will not be indicated. It is our hope that the tool can be developed further and become a more thorough mechanism for the assessment and prioritization of healthy watersheds throughout West Virginia. The use and expansion of the WVWAPP tool has been discussed for the WV portion of the Chesapeake Bay watershed. Within TNC's Conservation Gateway additional information and detailed reports are available for each basin. Go to: http://www.watershedmapwv.tnc.org/ to learn more.

Chesapeake Bay Program

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

West Virginia's Chesapeake Bay TMDL Watershed Implementation Plan (WIP) identifies the actions that will be undertaken between 2011 and 2025 to reduce the contribution of nitrogen, phosphorus and sediment to the Bay. The majority of these activities are nonpoint source BMPs on agricultural and urban lands. Chesapeake Bay 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. As of 2013, NPS Program staff and partners have developed WBPs for seven priority watersheds based upon local TMDLS. Where local TMDLs and Bay 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 the majority of the agricultural BMP installations. The NPS Program coordinated with NRCS in the selection of priority watersheds under the CBWI and WVCA works closely with NRCS and other agriculture partners to develop a pre-proposal for RCPP funding. WVCA's Agricultural Enhancement Program and § 319 funds are also used on a more limited basis where needed.

West Virginia's Agriculture Water Quality Loan Program, funded through the WVDEP's Clean Water State Revolving Loan Fund (CWSRF), is used to provide the necessary farmer contribution, or in some cases to fully fund BMPs. Technical assistance for BMP implementation and nutrient management planning is provided by NRCS, WVCA, WVDA and County Extension Agents. In 2012, implementation of WV's CAFO NPDES permitting program also became more robust. On farm inspections by WVDEP Environmental Enforcement (EE) staff became a priority and the permitting of facilities a reality. This will also result in a reduction of polluted runoff from agricultural operations.

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, the majority of effort is placed upon working with local governments to develop stormwater ordinances comparable to West Virginia's MS4 program requirement for a 1 inch capture of rainfall. This requires the first 1 inch of rainfall to be captured so it can infiltrate and evapotranspire 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 NPS and Chesapeake Bay Program staff participates in various CBP 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 CBP to ensure that BMPs that have been installed 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)

In essence 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 general 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 because 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.

Over the next five years the NPS Management Plan will put a greater emphasis on AGOs funds. We will use AGO funding to encourage watershed organizations to submit proposals that will help sustain project management efforts in watersheds where 319 grant funding is available. We will develop an application process for up to $30,000 in staff support. This full or part time position will manage watershed project implementation. The organization must be capable of human resources management; they must provide office space, computer and internet access, have access to water quality monitoring equipment, be able to manage payroll, insurance etc. The term of the grant can be one-year or longer depending on the full or part-time status as described in the workplan. If part time, it could extend for two-years or more.

Chapter 3 - Water Quality Monitoring

Monitoring of water quality will be accomplished within the DWWM through the Watershed Assessment Branch (WAB). WAB provides water quality data and monitoring support for NPS Program projects throughout West Virginia. Sampling of the mainstem and tributary loading impacts provides an overall picture as to the total degree of pollutant impacts. WAB will assist the NPS Program in evaluating the effectiveness of NPS projects, helps identify areas for future projects, and through the TMDL process targets other priority areas for WBP development and protection opportunities.

Additional monitoring support will be provided by the BCs, by monitoring for load reductions from specific projects, by assisting our partners who conduct monitoring, and by working with groups to produce an approved Quality Assurance Project Plan (QAPP). The NPS Program will continue to participate in the National Water Quality Initiative (NWQI) webinars that focus on NPS monitoring and will seek technical guidance from EPA, if needed. Finally, additional support will be provided by the SOS Program through training and in some cases specific project monitoring.

Water Quality Standards

Water quality standards are the backbone of the 303(d) and 305(b) processes of the federal Clean Water Act. In West Virginia, the water quality standards are codified as 47CSR2 – Legislative Rules of the Department of Environmental Protection – Requirements Governing Water Quality Standards. Impairment assessments conducted for the 2012 cycle are based upon water quality standards that have received the EPA's approval and are currently considered effective for Clean Water Act purposes. A waterbody is considered impaired if it violates water quality standards and does not meet its designated uses. Some examples of designated uses are water contact recreation, propagation and maintenance of fish and other aquatic life, and public water supply.

Because implementation of the load allocations established by TMDLs are not enforceable under the CWA, for waters impaired solely or partly by NPS pollution sources, the primary implementation mechanism is generally the state NPS Program coupled with other state, local, and federal land management programs and authorities. Thus, the NPS program is an important mechanism to implement TMDLs and restore the impaired waters listed under § 303(d) where NPS pollution is a contributor to the water quality impairment. This is best achieved through the development of WBPs that incorporate information from TMDLs that have been developed in the watershed. The implementation of WBPs has been and continues to be the highest priorities for the use of § 319 funds.

With the multiple WBPs now in existence in the state, monitoring the progress of these plans becomes more and more important.

Quality Assurance Project Plans

The Quality Assurance Project Plan (QAPP) integrates all technical and quality aspects of a project, including planning, implementation, and assessment. The purpose of the QAPP is to document planning results for environmental data operations and to provide a project-specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use. The QAPP

document describes how QAQC procedures are applied to an environmental data operation to assure that the results obtained are of the type and quality needed and expected.

As mentioned previously the BCs will work with groups to develop QAPPs as needed for each watershed project proposal or their entire WBP if that is more appropriate. Technical guidance and support is also provided by WVDEPs NPS Program Coordinator, WAB, TMDL section, EPA, and contractual support is available from the Cacapon Institute, Alvan Gale (now a part-time employee with the WVCA), and others. Several watershed associations such as Friends of Deckers Creek and Friends of the Cheat have written approved QAPPs within their watersheds for Acid Mine Drainage (AMD) monitoring and are also available to provide technical assistance.

The NPS Program follows the guidance provided by "EPA Requirements for Quality Assurance Project Plans EPA QA/R-5" for development of QAPPs for its watershed projects. These are submitted formally to EPA Region 3 for approval.

Volunteer Monitoring

Volunteer monitoring efforts have always played key roles in § 319 projects and will continue to do so into the future. The WV Save Our Streams (SOS), once part of the NPS Program budget it is now funded by § 106 and the Water Quality Management Fund, but it is still supported by the NPS Program. The SOS Program provides technical monitoring assistance, training and certification. Volunteers receive a full day of classroom and stream side training on water quality, habitat and benthic macroinvertebrate collection and identification. They then must take a test and demonstrate their skills to become certified volunteer stream monitors.

Typically, these groups educate encourage community members to get involved in the efforts to restore priority watersheds. Their local monitoring activities not only provide data, but they also demonstrate the importance of water quality. Volunteer monitoring groups often assist more experienced watershed groups that have active 319 projects, and through additional training by these groups and SOS are used to collect benthic data that can be preserved and analyzed to determine the impact of projects on biological integrity.

STORET

EPA requires states to enter their water quality monitoring data, for data collected in a waterbody as a part of the implementation of a § 319 project, into EPA's storage and retrieval (STORET) data system. All water quality data generated with § 319 funding, either directly or by sub-award, are required to be transmitted into the STORET data warehouse using either the Water Quality Exchange (WQX) or WQXweb.

In the past WVDEPs NPS Program has not been consistent entering its data into STORET and has simply relied on the WAB. The number of WBPs and watershed projects is far less than the number of typical stations that WAB monitors during their rotation through their cyclical monitoring cycle. If we need project monitoring we communicate with WAB as early as possible, but even under these circumstances much of our project monitoring is completed by watershed associations or other partners. These partners have not entered their data into STORET on a consistent basis.

Over the next several years regional training will be provided on the use of STORET and WQX so that NPS information is more consistently entered into this database.

Operation and Maintenance

Operation and maintenance (O&M) is required on all practices installed with § 319 funds. Practices for agriculture, AMD, septic systems, and urban stormwater are operated and maintained for the expected lifespan of the practice. This requirement is passed on to all partners in WVDEPs sub-grant awards.

In June of 2014 the NPS Program's NBC, our expert in AMD, completed a manual that provides guidance and encourages watershed groups to develop plans for the O&M of all their projects, and to gather resources to carry out those plans. The chapters in the manual include information on:

- Institutional practices supporting O&M
- O&M considerations through the project life cycle
- Common BMPs for AMD remediation and their maintenance needs
- Post construction inspection, monitoring, and operation
- Post-construction major maintenance and more

This O&M manual is one of the most comprehensive guidance's on the topic and will be available for download from the NPS Program's website in early 2015.

Chapter 4 – NPS Priority Categories

Agriculture

The NPS Program coordinates with other federal and state agricultural agencies on watershed projects and cost sharing incentives and provides water quality monitoring support to priority agricultural projects. NPS Program staff participates in meetings of the various Soil and Water conservation organizations and committees, the NRCS State Technical Committee, the CREP Committee and the Nutrient Management Advisory Committee. The NPS Program also provides guidance and support to WVCA as they develop and implement WBPs and watershed projects. Additionally, the NPS Program assists as needed in facilitating the use of CWSRF for agriculture through WV's Agriculture Water Quality Loan Program (AgWQLP). The proposed procedure for the use of CWSRF is for the implementation of BMPs related to agriculture, and includes cooperation between the DWWM's Construction Assistance Branch, WVCA, NRCS, Farm Service Agency (FSA) and local banking institutions.

The WVCA develops WBPs and implement the agriculture components of the West Virginia's NPS Program in priority watersheds as designated by the 303(d) list and approved TMDLs to protect and restore streams. WVCA provides coordination and BMP installation for overall water quality improvement in targeted watersheds. Projects include, but are not limited to the basins shown in Table 6.

Table 6 – WBPs where WVCA is the lead agency

HUC8 Watershed	WBP/Watershed Project
Cacapon	Lost River
Gauley	Knapp Creek (NWQI)
	Upper Meadow River
Greenbrier	Milligan Creek
	Muddy Creek
	Second Creek/Kitchen Creek
James	Potts Creek
Potomac Direct Drains	Elks Run
	Back Creek Protection Plan
	Sleepy Creek
South Branch Potomac	Mill Creek

Coordination with USDA Programs

The New 2014 Farm Bill has a very strong focus on farmer's markets and local economic development- i.e. - seasonal high tunnels to extend the growing seasons, organic production, and on-farm energy emphasis. This is somewhat of a shift from past legislation where the focus has been related to concentration on environmental and wildlife issues. These programs are allowing producers to diversify their operations and take advantage of local niche marketing opportunities.

The opportunity to assist producers on the farm varies from region to region within West Virginia. Technical and monetary assistance often goes hand in hand with the local NRCS field offices. Where gaps exist in Farm Bill funding, the 319 Program can step in and fill these voids. Again, this varies from area to area where EQIP priorities are set by the local working committees. An example would be the earmarked additional funding the Chesapeake Bay drainage area of West Virginia receives and often additional funding thereby limiting the opportunity for 319 watershed based participation. Contrasting is the Greenbrier and western areas of the State where federal funds are limited and the 319 Program allow additional opportunities to pick up and correct resource concerns.

Additionally, Farm Bill cost-share programs require considerable amounts of paperwork and contracting which can be a long and undesirable process. These programs also frequently require a ranking system to prioritize resource concerns and can result in up to a one year waiting period to determine qualification. An example would be farmers/producers who have extensive or numerous "problems" on their operations and are willing to enter into contracts (thereby committing additional dollars out of their pockets) are more likely to rank out at a higher level for funding than a smaller producer or one with limited issues needing attention. This is often where the 319 Program can be exceptionally helpful in making water quality improvements.

It should also be noted that the Conservation Reserve Enhancement Program (CREP) has been a popular opportunity and choice for landowners. The cost share rates on this program are currently the highest in West Virginia and pay upward of 90-100% for practices such as riparian buffer establishment, alternative watering, streambank fencing, etc. The State does commit funding to this

program to increase the cost-share rates and encourage participation while also allowing program dollars to be spread as far as possible.

Resource Extraction

WVDEP's Division of Mining and Reclamation (DMR) works closely with the NPS Program to identify state resources for match and/or to construct AMD treatment systems. Since 2011 DMR has fully or partially funded 11 AMD and other restoration projects in watersheds with mining WBPs. These are being managed by the NPS Program and thus are subject to more stringent review and reporting.

1.	Smooth Rock Lick 1&2	$53,608	2011
2.	Sovern – Titchnell Sands	$202,466	2012
3.	West Run Airport Phase 2	$264,685	2012
4.	Roaring Creek Mars Portals	$215,302	2012
5.	Lamberts Run Site 7	$200,000	2012
6.	North Fk Greens Run	$111,523	2013
7.	Muddy Creek improvements	$12,504	2013
8.	Wolf Creek restoration	$196,307	2013
9.	Muddy Creek – Schwab	$57,605	2014
10.	Beaver Creek – Big Bear	$40,302	2014
11.	Winding Gulf restoration	$35,132	2014

WVDEP's Office of Abandoned Mine Lands & Reclamation (OAMLR) was created in 1981 to manage the reclamation of lands and waters affected by mining prior to passage of the Surface Mining Control and Reclamation Act (SMCRA) in 1977. The AML program is funded by a fee placed on coal, currently set at 31.5 cents per ton for surface-mined coal, and 13.5 cents per ton for coal mined underground. Their mission is to protect public health, safety, and property from past coal mining and enhance the environment through reclamation and restoration of land and water resources. The OAMLR and the NPS Program work closely together in order to develop, fund and implement restoration projects in mining impaired watersheds.

The Office of Special Reclamation (OSR) is part of the Division of Land Restoration. OSR is mandated by the State of West Virginia to protect public health, safety and property by reclaiming and treating water on all bond forfeited coal mining permits since August 1977 in an expeditious and cost effective manner. Funding is from forfeited bond collections, civil penalties and the Special Reclamation Tax on mined coal.

The NPS Program held several meetings with OAMLR and OSR Program Managers to brainstorm ways to further our partnerships with ever increasing funding pressures. Our mining sections within the agency are feeling the crunch of economic downturn and the coal industry rhetoric regarding EPA's regulatory restrictions and its impact on jobs. The State funding sources that were once more readily available for matching federal dollars are much more difficult to come by. However, both Programs have agreed to partner locally with watershed associations by keeping open lines of communication, providing data request, being open to treatment options during land restoration projects, and providing lime when that option is available. For this document OAMLR's GIS Specialist provided mapping information of upcoming projects that may be useful for coordinating with restoration efforts

in watersheds with WBPs (See Appendix 3). More specific OAMLR and OSR project site and information based on the maps is provided in Appendix 4.

WVDEP's Office of Oil and Gas (OO&G) is responsible for monitoring and regulating all actions related to the exploration, drilling, storage and production of oil and natural gas.

- It maintains records on over 55,000 active and 12,000 inactive oil & gas wells.
- It manages Abandoned Well Plugging and Reclamation Program.
- It ensures surface/groundwater is protected from oil and gas activities.

The NPS Program also cooperates with US Department of Interior's Office of Surface Mining (OSM) on their Watershed Cooperative Agreement Program (WCAP). OSM provides technical assistance, oversight and match to pre-SMCRA AMD treatment projects. OSM and OAMLR staff assist with training, workshops and guidance for local watershed associations and others on developing project proposals, conceptual designs, procurement, construction oversight and other areas as needed. OSM is an integral part of West Virginia's NPS Program.

WVDEP recently worked with OO&G to develop a sediment and erosion control manual. During that time, the oil and gas industry boomed with Marcellus shale play. As a result, in 2012 and 2013 the West Virginia Legislature passed new horizontal drilling rules and DEP has developed regulations. Sediment and erosion from access roads and pipeline construction has been significant. The DWWM has developed a state permitting program for stormwater associated with pipeline construction. The DWWM has also added four EE stormwater inspectors to address nonpoint source impacts from oil and gas development activity.

The emerging issue of the development of the Marcellus Shale natural gas plays has led to concerns of stream sedimentation from the well pad sites as well as the construction of pipelines to transport the gas and roads to service the wells. Landowners are expressing concerns in regard to how and what to do to minimize impacts while development activity is occurring as well as to the best methods to stabilize the sites when activities have culminated. Many landowners are leasing or have leased their land for development yet can provide input to the development companies on the BMPs and vegetation establishment, and some have the latitude to make demands on sediment and erosion controls as activities are in progress. These landowners have little information or expertise in the field of erosion and sediment control or site reclamation and are therefore looking for advice to best protect and/or restore their land.

The companies doing well pad site development and pipeline construction are often from out of state, and although they have vast experience preparing well sites and installing pipelines their experience dealing with terrain, geology, soils and watershed drainage systems like those here is non-existent. These companies need an information source to help them deal with the unique problems land disturbance activities in West Virginia can present.

West Virginia University (WVU) Extension is currently providing general educational seminars on the natural gas industry, leasing, land rights and environmental concerns but do not have the ability to provide specialized advice on the many BMPs options available to prevent water quality degradation resulting from land disturbance activities. Recently WVDEPs SOS Coordinator worked with WVU, Trout

Unlimited (TU), WVU Dickenson College ALLARM and others to hold a one-day symposium on shale-gas monitoring procedures that can be adopted region wide. This event also included WVDEP's Environmental Advocate who has been active in assisting local stakeholders, educating watershed groups about permitting, providing important contact information regarding the enforcement of oil and gas regulations, especially as they pertain to Marcellus.

WVCA can also serve as a provider of information and assistance in selection of BMPs available as well provide technical advice with water and land management schemes for landowners, agencies and development companies in order to protect the natural resources of the state while helping provide for the energy needs of our country. Thus far the NPS Program has provided support for outreach and monitoring to better understand the impacts to the local streams and rivers that are being most impacted by the activities in the north central regions of West Virginia.

Urban Stormwater/Developed Lands

West Virginia is a rural state with a population of 1.85 million in 2012, spread across 24,230 square miles. West Virginia's largest cities are Charleston, Huntington, Parkersburg, Morgantown and Wheeling, with a high population of 51,317 in Charleston to 28,486 in Wheeling. West Virginia has no Phase 1 MS4 communities and thus far 47 registered and 7 un-registered Phase 2 MS4s.

Construction Stormwater[1]

WVDEPs Construction Stormwater General Permit is used to regulate discharges of stormwater associated with construction activity. Operators of construction sites that disturb one acre or greater, including smaller sites that are part of a larger common plan of development, register under the general permit and maintain permit coverage through the construction and reclamation period. The permit requires the development of stormwater pollution prevention plans (SWPPPs) that identify site-specific sediment and erosion controls that will be implemented to achieve the following goals:

1. Limiting the amount of total disturbance
2. Diverting upslope water around disturbed areas of the site
3. Limiting the exposure of disturbed areas to the shortest duration possible
4. Controlling internal water and runoff
5. Removing sediment from stormwater before it leaves the site

SWPPPs for all sites that are three acres or larger are individually reviewed and approved. When construction activities are complete and all disturbed areas are stabilized, registrants are required to submit a Notice of Termination (NOT) to end permit coverage.

In WV and the CB TMDLs, wasteload allocations are based upon the total concurrently disturbed area registered under the Construction Stormwater General Permit (CSGP) and are prescribed at the subwatershed or county scale respectively. Implementation is accomplished by maintaining total registered disturbed areas equal to or less than the area provided for each county. This is accomplished

[1] 319 funds are not used to directly implement WV DEP's NPDES construction stormwater program.

by requiring phasing of the total disturbed area in the approved SWPPP. Sites less than one acre are provided technical assistance by the WVCA.
These sites collectively can represent a rather large portion of the total sediment delivered to a receiving water body or stream. WVCA provides assistance to individual landowners, local agencies and industry undertaking construction activities in West Virginia by providing technical assistance with BMP selection – regardless of the size of land disturbance. Additionally, WVCA will write or review for adequacy, erosion and sediment control plans for construction sites less than one acre. Promotion of this program along with cooperation of DEP referrals and education reduces sediment delivered to WV streams.

WVCA adheres to the practice standards set forth in the **West Virginia Erosion and Sediment Control Best Management Practice Manual**. The manual is designed to assist construction site developers, engineers, designers, and contractors in identifying and implementing the most appropriate best management practices for construction activities.

The WV Contractor's Expo is held annually. WVCA attends to present and discuss NPS issues with representatives of the construction industry. WVCA seeks out new technology and develops demonstration projects to educate the public about the ever-changing world of erosion and sediment control.

Municipal Separate Storm Sewer Systems[2]

Statewide Program

West Virginia's MS4 General Permit required that MS4s develop and submit SWMPs to WVDEP for approval no later than January 22, 2011. The SWMP includes minimum control measures in each of six categories outlined in the Federal Phase II stormwater rule [40 CFR § 122.32(a)], along with measurable goals and milestones for each measure. The minimum control measure categories are public education and outreach, public involvement and participation, illicit discharge detection and elimination, controlling runoff from construction sites, controlling runoff from new development and redevelopment, and pollution prevention and good housekeeping for municipal operations. MS4s must be fully implementing their SWMPs by 2015.

EPA has recognized that West Virginia's MS4 General Permit is particularly progressive with regard to its post-construction requirements. The post-construction minimum control of the General Permit directs MS4s to develop ordinances requiring all new development and redevelopment of one acre or greater to capture and manage the first one inch of rainfall by utilizing runoff reduction stormwater practices. Runoff reduction practices include: canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration and/or evapotranspiration and any combination of these practices. The MS4 General Permit also contains a section with strong watershed protection elements that includes non-structural practices to protect water quality. For the remaining, most difficult sites, the permit allows for the MS4 to develop a payment-in-lieu program or offset mitigation to address the runoff reductions.

[2] 319 funds are not used to directly implement MS4 permits. WVDEP has used Clean Water State Revolving Loan Funds to implement stormwater practices within MS4 communities.

Local MS4 Programs

Regulated municipal MS4s in West Virginia have been granted authority by state law to form stormwater utilities in order to finance the implementation of their stormwater programs and the MS4 program. To date, seven of West Virginia's 54 MS4 regulated entities have formed stormwater utilities. This is a positive step toward dedicated funding for program and practice installation.

In other areas, adequate resources and support for MS4 staff is a statewide issue. In many MS4 entities, the public works director or the chief operator of the wastewater treatment plant is tasked with managing stormwater in addition to their existing duties. In addition, the reissued MS4 General Permit requires a certain level of understanding of runoff reduction practices to manage stormwater. Stormwater management is new to most West Virginia communities, and runoff reduction practices are even newer. MS4 operators have little training in the science of stormwater management, much less implementation of effective stormwater practices. In response, WVDEP has been:

- Providing training workshops open to all parties interested in managing stormwater or implementing the MS4 General Permit.
- Developed a compliance spreadsheet tool and provided training for stormwater designers/engineers and MS4s that will ascertain compliance with the one inch capture performance standard. Developed a statewide stormwater management guidance manual that provides design specifications of runoff reduction practices. Runoff reduction practices are the primary method to meet the one inch capture performance standard.
- Filled a position in the NPS Program to provide stormwater and compliance assistance to MS4 communities in the Chesapeake Bay drainage.[3] This employee promotes utilization of stormwater practices that encompass green infrastructure including infiltration, extended filtration, canopy interception, soil amendments, evaporation, evapotranspiration, reuse and any other practices that reduce stormwater volume. The employee assists the four existing MS4s, counties and consulting engineers in meeting MS4 permit criteria for stormwater management. He also conducts training, provides technical assistance and review of local stormwater ordinances and plans for BMP implementation, and conducts BMP inspection, verification and tracking.
- Developed a West Virginia Stormwater Management and Design Guidance Manual and provided training. This manual provides design and guidance on designing and implementing stormwater management practices that will manage rainfall on site in accordance with West Virginia's small MS4 general permit. This manual contains stormwater management practices that utilize the Runoff Reduction Method, which is a method that utilizes infiltration, harvesting and evapotranspiration of rainfall on site.

Unregulated Developed Lands

The NPS Program, with regard to unregulated, developed lands, depends on voluntary participation from local governments and landowners. Implementation of urban stormwater BMPs, adoption of new laws and ordinances by state and local governments and an increase in both personnel and

[3] 319 funds are not used to support the activities of the NPS Program Stormwater Specialist.

financial resources will be necessary to reduce nonpoint source pollution from unregulated developed lands.

For the most part, West Virginia is well suited to enable success through voluntary action. Through our NPS Program staff including, WVDEPs Basin Coordinators, Stormwater Specialist, Project WET, WVCA Conservation Specialists, and the WV Watershed Resource Center, we have been very effective at building partnerships across the spectrum of government and non-government organizations. These staff and programs provide technical assistance to local governments, watershed associations, homeowners and others on rain barrels, rain gardens, low impact development, and other urban stormwater BMPs. They assist local governments in strengthening local stormwater ordinances to reduce stormwater runoff and pollutants. They conduct workshops, organize outreach events, write news articles, and work with individuals and local governments on site specific needs. They assist with planning and implementation of the urban stormwater component of WBPs.

Wastewater

West Virginia is predominantly rural with a median household income below the national average. Approximately 60% of West Virginia residents are served by public sewer systems. Small communities and individual homes are located in the bottomlands of narrow valleys or on hillsides. Homes, businesses, roadways, railroads, and inevitably, streams, are often clustered in close proximity leaving little space for additional infrastructure such as drainfields or treatment plants. Old and failing septic systems exist throughout the state. A significant challenge exists of collecting and treating wastewater. As a result, the NPS Program is working with individuals and small communities to demonstrate and implement cluster and individual on site systems to address this need and reduce nonpoint source pollution from failing septic systems.

The NPS Program conducts outreach and coordination to educate individuals and communities on the nonpoint source impacts from failing systems and the options available to address them. Training for local governments, public service districts and local wastewater treatment staff is coordinated to increase confidence that alternative systems can be successfully operated and maintained. Inventories of need have been conducted, demonstration projects have been installed and follow up continues as we address this problem. Extensions of sewer lines to existing wastewater treatment plants are also a part of the effort to reduce these nonpoint source impacts.

The NPS Program also works in cooperation with WVDEPs CWSRF Program to offer grants and loans to correct failing systems. This effort allows eligible non-profit organizations to administer the loan program for on-site individual and cluster wastewater systems. In addition we work to continue using CWSRF funds in combination with 319 or other resources to install community wide decentralized wastewater systems. These systems are put in place where soils and/or lot sizes are not suitable for an individual on-site system.

WVDEP is working diligently to foster better working relationships with WVDHHR's County Sanitarians by inviting them to participate in project team meetings and any other focus where their knowledge and expertise are needed. 54% of the NPS Program's active WBPs have fecal coliform as their major impairment, so support from local PSDs and sanitarians is critical in successful implementation of these WBPs.

Most of our current work is in southern West Virginia's Guyandotte, Tug Fork, New and Gauley watersheds however, projects are also occurring in the Greenbrier, Potomac Direct Drains, and Monongahela.

Silviculture

The Logging and Sediment Control Act (LSCA) was signed into law in March 1992. It requires the licensing of all logging operators and the certification of loggers in safety, first aid and BMPs on the logging operation. The act follows the procedures and requires the adherence to the BMPs in the WVDOF's BMP Manual. A seven-member committee to review and adopt new BMP standards has been established. The NPS Program represents the DWWM on this committee, which meets to update the manual every three years. The registration of logging operations implemented through the NPS Program is a mandatory notification format under the LSCA. Notifications are reported quarterly to the Director of DWWM by the WVDOF. The Office of EE provides enforcement when water quality standards are violated.

In 2013 the WVDOF completed the development of the Logging Operation Notification, Inspection and Enforcement (LONIE) system, which was partially funded with a § 319 grant. LONIE provides the WVDOF with a state of the art system to manage the thousands of active logging operations throughout the state. The web-based online database and simple mapping API allows users to submit, track, and enforce logging operation notifications and activities. The new streamlined system facilitates accurate data entry, improves the allocation of limited resources, facilitates the timeliness and accuracy of reporting activities, and provides real time spatial data detailing harvesting activities occurring in the state. Each of these benefits help the WVDOF improves their ability to implement and enforce the LSCA and minimize NPS pollution from logging and other silvicultural activities.

Additionally, the LONIE system provides improved service to landowners, forest operators who can access notifications, inspection reports, and enforcement actions at any time, as well as have improved contact with the state foresters who visit active jobs. Centralized, uniform, and organized data provide the WVDOF new opportunities to analyze harvesting and enforcement data to improve service, identify potential issues, and support departmental programming.

Source Water Protection

In West Virginia, the Source Water Assessment and Protection Program encompasses both the wellhead protection and surface water source water assessment efforts. Implementation of the wellhead protection program began in the early 1990's, as part of West Virginia ground water protection strategy. This protection strategy was extended to surface water sources with the 1996 Safe Drinking Water Act Amendments, which are regulated by WVDHHR, Bureau for Public Health. The Act require states to develop and implement a Source Water Assessment and Protection (SWAP) program designed to evaluate the vulnerability of public drinking water systems to possible sources of contamination, and encourages states to work with these systems in developing protection and management plans.

The recent chemical spill in the Kanawha Valley has brought attention to the vulnerability of our water supplies. There are still many questions to be answered and many more to be considered regarding

more stringent regulations, better preparedness and more research regarding the effects of un-regulated or under-regulated chemicals. The NPS Program's received many calls from concerned citizens and although not directly involved was able to provide some outreach assistance to the local community by partnering with the City of Charleston's Stormwater Utility and sponsoring several rain barrel workshops. Water re-recycling and re-use became and still is very popular and the local population is making connections to the drinking water and the water quality of our streams and rivers. A major outcome of this disaster was the recent passage of Senate Bill 373 (SB-373), a bill relating to water resources protection. The bill has three parts:

1. Development and submission of Source Water Protection Plans (SWPP);
2. Public Water Supply Protection Act; and
3. Above Ground Storage Tank Act.

Although no specific goals and objectives have been identified at this time SB-373 provides opportunities for § 319 resources to be used, especially to assist WVDHHRs SWAP Program expand their source water assessment and protection efforts, **and** engage citizens, which is a required element of the SWPP. Go to http://www.wvrivers.org/ to download the Citizen's Guide to SB-373.

Stream Restoration

West Virginia has over 32,000 miles of streams. Its rugged terrain and steep mountains result in some of the most beautiful headwater streams on the east coast. Anthropogenic impacts, such as agriculture, timber harvesting, resource extraction, and urban development over the past 300 years have resulted in increased velocity of stormwater and instability in stream channels. This instability causes erosion and sedimentation, eliminates stream habitat, reduces the efficiency of nutrient processing, and contributes to nonpoint source pollution.

Stream restoration projects are a consideration in all nonpoint sectors and are accomplished in cooperation with many of the same partners and programs. WVCA provides technical assistance and project oversight on stream restoration in agriculture and urban lands. WV's ILF program and mitigation funds have been brought to bear to complement and enhance nonpoint source projects. Trout Unlimited, Canaan Valley Institute, USFWS and WVDNR have provided project planning and assistance for a variety of nonpoint source projects. Multiple opportunities exists for stream restorations projects in priority watersheds and statewide.

Chapter 5 – Administration and Coordination

The NPS Program manages and coordinates the statewide program through various cooperating agencies, non-profits such as watershed associations, colleges and universities, conservation districts, NGOs, municipalities and others. As implementation efforts are initiated, close coordination is necessary to insure that individual program elements are adequately being addressed. Because plans are never static, there may be a need to revise implementation elements. Any changes in implementation procedures must first receive approval from the NPS Program, and if approved, be reported to the US EPA project office.

The NPS Program provides funding directly to agency partners, watershed associations, other non-profits, NGOs, colleges and universities and others through sub-grants. Project proposals for WBP development, project and BMP implementation, monitoring, and education and outreach are reviewed and approved by the NPS Program. Management and oversight of the existing sub-grants related to NPS projects is a necessary aspect of the work load.

Responsibilities include preparing, reviewing and approving WBPs and watershed restoration project proposals; preparing program guidelines and policies; delegating program activities to state and federal agencies through negotiations of interagency agreements; oversight of agency and partners progress in implementing field work; analysis and evaluation of water quality impacts from NPS pollution; and managing financial budgets.

US EPA has mandated the use of GRTS for tracking 319 grants and submitting progress status reports. The NPS Coordinator is responsible for maintaining West Virginia's portion of GRTS. The NPS Coordinator is also responsible for providing guidance to our partners so that the necessary data elements that need to be reported are provided in the proposals and entered into GRTS. Coordination between the NPS Program and its partners is required in order to facilitate adequate and timely GRTS data entry and annual reporting.

A wide variety of training materials, mostly web-based, have been developed to provide information, guidance, facilitate reporting, and provide a means of submitting the necessary documents for watershed proposals. The next phase is the development of a tool to improve the submission of AGOs and watershed proposals. The NPS Program has developed an initial tool but the use of the tool has been slow to catch on thus far. Even with all the guidance manuals and the effort already provided we realize additional training is needed. Below are some thoughts for the next three years:

- The nuts and bolts of WBP developments
- The basics of how to read TMDLs, taking that information, and translating it to a WBP
- Nuts and bolts of reporting
- What is the most important and critical information needed for reporting?
- What is the best way to communicate the successes of your projects?
- How do we develop better and more sustainable partnerships?

These are just a few of the possible workshops. The focus for the next two years will be on reporting and sustainability.

Another goal is to have continuous submission of project proposals and a review process in place twice each year. We will develop a bank of proposals from which to choose from any given fiscal year, and communicate with the stakeholders so that they are fully aware of our plans for a particular project. For the last three years the number of watershed project proposals have far exceeded our § 319 allocations and we've had to either phase projects, not fund them, or look for other creative ways to cut back. This has been a challenge and impedes the implementations of WBPs. Over the years, our review processes have evolved, which allows us to make better decisions. The basic scoring rubric we use to help us decide on AGO funding is described below. We use a similar methodology to review watershed project proposals, except that the rubric is more intense.

Project Ranking - Example

Initial proposals include the organizations contact information, and consist of a brief description, including an initial budget. NPS personnel evaluate the initial proposals to determine which organizations will be invited to submit formal grant proposals. The proposals are evaluated on the criteria below using a 1-10 scale. High and low outliers are removed and rankings are determined based on the total score. The rankings are then compared to the amount of funding available and the awards will be determined based on the ranks and funding.

Criteria and ranking

1	2	3	4	5	6	7	8	9	10
Poor			Fair		Good			Excellent	

1. Project is nonpoint pollution related.
2. Project fits the mission of the NPS Program, and will benefit the watershed and/or public.
3. The project is an activity that would qualify for § 319 funding based on the appropriate planning or listing qualifications.
4. The project will result in a substantial benefit to the watershed and/or community either through reducing NPS pollution through BMP implementation, providing outreach and education, monitoring sources and causes of NPS pollution or sustaining/improving capacity of organizations to develop and manage future 319 projects.
5. The organization is viable with the capability to successfully complete the project.
6. The budget and total funding request is reasonable.
7. The organization has proven it is capable of completing a project and can manage grant funds responsibly.

Organizations that are invited to submit a formal proposal (e.g. workplan) must do so within 30 days of the invitation. The workplan must be submitted to the NPS Program Coordinator.

Program Evaluation

§ 319(h)(8) of the Clean Water Act provides that no § 319 grant may be made to a state in any fiscal year unless EPA determines that the state has made satisfactory progress in the preceding fiscal year in meeting the schedule specified in its NPS management program. EPA regions determine, based on an examination of state activities, reports, reviews, and other documents, as well as discussions with the state in the previous year, whether the state's progress for the previous fiscal year in meeting the schedule set forth in its NPS management program was satisfactory.

In addition to the federal evaluation, West Virginia will evaluate this Management Plan every **two-years** through key performance indicators (KPIs). These monitor how well the organization is working towards fulfilling their objectives. Evaluating the outcomes helps to keep the process of change moving forward. If the original strategy needs to be revised, it allows managers to make decisions that enable future processes of change to be more effective.

KPIs include the following:

- Stakeholder engagement
- Outcomes and impacts
- Benefits
- Learning
- Effectiveness of the project

The focus of our evaluation will be on the questions that need to be answered to demonstrate success. We will ask BCs to engage their project teams in this process, and Program Managers as well as the remaining staff will provide input from their experiences working within the 319 Program. We will use the following list of evaluation questions to answer the important KPIs. Note: This list may be expanded and/or revised as the process evolves.

1. Are goals and objectives being achieved or not? If they are, then acknowledging, reward and communicate the progress. If not, then consider the following questions.
2. Will the goals be achieved according to the timelines specified in the plan? If not, then why?
3. Should the deadlines for completion be changed (Note: Great care goes into this decision, it is important to know why efforts are behind schedule before times are changed)?
4. Do personnel have adequate resources (money, equipment, facilities, training, etc.) to achieve the goals?
5. Are the goals and objectives realistic?
6. Should priorities be changed to put more focus on achieving the goals?
7. Should the goals be changed (Note: Know why efforts are not achieving the goals before changing the goals)?
8. What can be learned from our monitoring and evaluation in order to improve future planning activities and also to improve future monitoring and evaluation efforts?

Funding

West Virginia's NPS Program is supported by a variety of funding sources. Statewide program activities, watershed restoration and watershed protection are all important to the program's success. Coordinated efforts among a variety of partners help the nonpoint source program diversify and extend our limited resources. Below are the primary sources of funding used for nonpoint source activities in West Virginia.

Abandoned Mine Lands Set Aside Fund

WVDEP's OAMLR has established an AMD set aside fund to address AMD problems. Dollars from the fund including all interest earned are used to for the abatement of causes and treatment of the effects of acid mine drainage from abandoned mine lands. In the past, these funds have been used for project construction of both active and passive treatment systems as well as O&M. Several projects, though not all, have been constructed in 319 priority watersheds in cooperation with the NPS Program.

Administrative and Civil Penalties

From time to time, WWDEP pursues environmental enforcement actions through administrative and/or civil penalties. Violations of mining, oil and gas, and construction stormwater permits resulting in monetary payments are sometimes made available for use for nonpoint source outreach and education, planning, and/or nonpoint source projects in priority watersheds.

Chesapeake Bay Program grants and funding

West Virginia accesses a number of financial resources made available through the Chesapeake Bay Partnership. Chesapeake Bay Program implementation and regulatory and accountability grants include and complement the NPS Program efforts. National Fish and Wildlife Foundation grants have also been awarded to nonprofits in West Virginia that are conducting nonpoint source outreach, education and projects.

Clean Water Act Section 106 Funds

WVDEP uses § 106 funds to support a number of activities related to nonpoint source pollution. WVDEP's Watershed Management Framework's five year cycle including watershed sampling and assessment; TMDL development and implementation; and environmental permitting and enforcement are supported by the 106 Program. Currently, WVDEPs statewide Watershed Coordinator, who provides supervision for nonpoint program staff, administers the SPP, coordinates the WV Watershed Network (WVWN), Watershed Celebration Day (WDC), and CB Program funding; and the Western BC, who conducts nonpoint source program outreach, assistance to local watershed associations, and develops and implements watershed plans are funded by 106.

Clean Water Act Section 319 Funds

WVDEP is the primary recipient of § 319 funds in West Virginia. WVDEP provides program and watershed project funding to partner agencies, nonprofits, universities, local governments, watershed associations and others to undertake nonpoint source education efforts, monitoring, demonstration projects, and BMP implementation statewide and in watersheds with WBPs.

Clean Water State Revolving Fund (CWSRF)

The primary long term goal identified in West Virginia's CWSRF FY 2013 Intended Use Plan (IUP) is to expand CWSRF accessibility by creating new financial assistance programs to address nonpoint pollution control problems. A secondary long term goal is to integrate the CWSRF into WVDEPs Watershed Management Framework to increase program effectiveness by targeting CWSRF funds toward higher priority watersheds. In 1997, the CWSRF funded its first nonpoint water quality projects through the WVDEP's Agriculture Water Quality Loan Program (AgWQLP) in partnership with the WVCA. The AgWQLP provides a source of low interest financing match funds to implement best management practices that will reduce agricultural NPS impacts on water quality. In 2008, WV's CWSRF began a program to eliminate existing health hazards and water quality problems from direct sewage discharges resulting from failing septic systems or direct pipes to streams.

This program operates statewide in cooperation with the WV Housing Development Fund and local county sanitarians. In 319 priority watersheds, NPS Program staff also facilitates the use of these funds. The CWSRF also funds West Virginia's Project WET (Water Education for Teachers) Program through its administrative fee account. Project WET, housed within the NPS Program, provides education and outreach on water quality and nonpoint source pollution to teachers and students statewide.

Local Watershed Association/Nonprofit Partner/Local Government Funds

Local watershed associations and other nonprofits often bring a variety of resources to the program. Contributions from local businesses, contractors, association members, local governments and other stakeholders, as well as fundraising and grant writing have brought match and/or operation and maintenance to nonpoint source projects. Watershed associations have accessed EPA Brownfields and urban watershed funding for nonpoint source projects.

Office of Surface Mining Watershed Cooperative Agreement Program (WCAP) Funds

OSM WCAP funds are provided to watershed organizations to complete local AMD reclamation projects on abandoned mine lands. Funds are limited to 33% of total project cost up to $100,000. WV's NPS Program relies heavily on WCAP to match § 319 funds in priority watersheds.

USDA Farm Bill Program Funds

WV's NPS Program cooperates with NRCS and FSA to access USDA Farm Bill programs and funding. EQIP, WHIP, CREP, RCPP, Farmland protection, and wetlands reserve programs are the primary resources available in West Virginia to address agricultural nonpoint source pollution statewide. In 319 priority watersheds, a combination of funds is used to achieve a comprehensive watershed approach. Special programs, such as USDA's Regional Conservation Partnership Program (RCPP) and National Water Quality Inventory (NWQI) are also coordinated in West Virginia to select priority watersheds and implement agriculture best management practices.

USFWS Partners for Wildlife

The USFWS Partners for Wildlife program is very active in West Virginia, constructing fence and planting trees in cooperation with CREP and other programs to restore and protect riparian corridors. In 2013, the Program hit a milestone of 1 million feet of fence installed in West Virginia.

West Virginia Conservation Agency Agriculture Enhancement Program Funds

The WVCA has funds available through its Ag Enhancement Program (AgEP) for technical assistance and agricultural practices identified as priorities in Conservation Districts. The purpose of the AgEP, administered by the WVCA through local conservation districts, is to increase farm productivity by conserving soil and making wise use of agricultural resources and to improve water quality in the state's streams and rivers. Each of the 14 Districts identifies their own practices for funding.

West Virginia General Revenue Funds and/or Permitting Fees

WV state agencies, including WVCA, WVDA, WVDOF, WVDEP and others are supported by state general and special revenue funds, including permitting fees. Programs within state agencies, such as NPDES CAFO permits, groundwater permits, oil and gas permits, logging sediment control act and others protect rivers and streams from nonpoint source pollution and are funded through general and special revenue. Nonpoint source environmental enforcement activities related to nonpoint source pollution are supported by these funds as well.

West Virginia In Lieu Fee Program and/or Mitigation Funds

In some instances, it is possible for mitigation or ILF projects and funds to complement our nonpoint source projects in 319 priority watersheds. Long term operation and maintenance of passive AMD treatment projects and additional work on and/or feet of stream restoration using natural stream channel design has been obtained. WVDEP continues to look for opportunities where these programs can be coordinated to increase or enhance nonpoint source projects.

West Virginia Stream Partners Program

The Stream Partners Program (SPP) is a cooperative effort of the WVCA, WVDEP, WVDOF, and WVDNR. The Program is housed within the Nonpoint Source Program of WV DEP. The program provides $100,000 annually to support the efforts of local watershed volunteers, many of whom partner with the Nonpoint Source Program on larger watershed planning and implementation efforts.

Other Funding Sources

Other funding sources used have included: US Army Corps of Engineers for watershed planning, USDA Rural Development programs for wastewater and failing septic, WVDHHR SWAP Program, WV Community and Development Block Grants, Regional Planning and Development Council funds, and EPA Clean Water Act § 604(b) funds.

Outreach

Accomplishing the goals and objectives of the NPS Program requires the maintenance of public awareness through the development of educational materials, public presentations, media, workshops as well as individual contacts. The NPS Program strives to promote the Program's efforts and educate the broader population regarding the need to reduce and control future impacts from nonpoint sources of pollution. By educating our citizens through training, workshops, informative materials, web-based information and the media, a climate of concern is built that will support strong polices, regulations and programs to restore water quality.

All NPS Program staff directly contributes to the accomplishments of the education component for agriculture, silviculture, wastewater, urban stormwater, acid mine drainage etc. We assist and participate in Project Wet activities, stream monitoring demonstrations, watershed outreach activities, and other environmental activities with academic institutions, 4-H, scouts, community groups and many others. As a supporter of the WV Watershed Network (WVWN) the NPS Program participates in

organizing and sponsoring Watershed Celebration Day (WCD). WCD is a two-day annual event that celebrates the accomplishments of watershed association volunteers. WCA provides an opportunity for these volunteers to network with other associations across the state as well as state and federal agencies, to share and learn new techniques. The volunteers are honored for their efforts with awards and recognition.

Two Statewide Programs are housed within the Nonpoint Source Section, Project WET and WV Save Our Streams, both promote the NPS mission statement "**To inspire and empower people to value and work for clean water**". These programs are nationally recognized for their accomplishments and continue to inspire volunteers, teachers and students throughout West Virginia.

In addition, WVCA's Watershed Resource Center (WRC) educates the public, watershed associations, and others on nonpoint source pollution and best management practices. The WRC houses and extensive website and disseminates information related to nonpoint source pollution. Assistance is also provided through a variety of efforts with targeted audiences ranging from one-on-one discussions to presentations made in large group settings. Education is delivered through distribution of brochures, fact sheets, conference presentations, watershed model demonstrations, hands-on field days, articles written on NPS topics and published in newsletters, project demonstration, presentations to school students, community groups, watershed associations, landowners, land/resource users, professionals, local farmers, developers, contractors, engineers, government representatives, the general public, and staff. The WRC also publishes its own newsletter quarterly, WaterNet, hosts Facebook and twitter sites, and provides desktop publishing as needed for agency staff and watershed associations.

Chapter 6 - Goals and Objectives

The NPS Program's primary goal focuses on planning, development and implementation of comprehensive watershed restoration projects to remove streams from the state's 303(d) list. The difficulty in coordinating a stakeholder driven process to implement voluntary compliance aimed at achieving mandatory water quality objectives is a special challenge. The development of realistic WBPs, effective project proposals, and the implementation of these projects is time consuming. The process requires a great effort and resources from all of the NPS partners and stakeholders.

Responsibilities include preparing, reviewing and approving watershed based plans and restoration project proposals; preparing program guidelines and policies; delegating program activities to state and federal agencies through negotiations of interagency agreements; oversight of agency and partners progress in implementing field work; analysis and evaluation of water quality impacts from nonpoint source pollution; and managing financial budgets. Actions involved in meeting these responsibilities include reviewing and managing U.S. EPA's GRTS and NPS sub-grants; protecting water quality standards; assisting when needed in enforcement measures; coordinating with stakeholders and agencies the on AMD issues; with the NRCS and WVCA on agricultural issues; with a variety of agencies and stakeholders in the CBP; with WVDEP's SRF Program to deliver loans to individuals to install agriculture BMPs and correct failing septic systems; with WVDEP's ILF Program to align projects where feasible; with other agencies on the nonpoint aspects of developing and implementing TMDLs and WBPs, and designing technical measures to correct nonpoint source problems.

Short-term

Short-term goals and objectives describe the annual activities that the NPS Program undertakes in order to administer the program's activities. These may change slightly from year to year as new watershed proposals are added; however the basic activities and actions that guide these and all other aspects of the NPS Program are consistent.

SHORT-TERM GOALS AND OBJECTIVES

1. **Provide leadership in managing the NPS Program**.
    a. Maintain and update US EPA's GRTS database (semi-annually)
    b. Participate in workshops, meetings and conferences to promote the NPS Program (as needed)
    c. Coordinate the submittal of reports to US EPA Region III (semi-annually)
    d. Manage the NPS Program's grant and process funding invoices submitted by the various partners
    e. Submit annual reports to USA Region III reflecting the milestones met during the past year (annually)
    f. Submit a minimum of one Success Story that shows waters partially of fully restored, shows progress towards achieving water quality goals, or shows ecological restoration (annually)
    g. Submit financial status reports to US EPA Region III on the on-going NPS Program grants (annually)

2. **Represent the DWWM in multi-agency and stakeholder organizations**.
    a. Represent the DWWM in or lead PTs for priority watersheds (as needed)
    b. Represent of the NPS Program on the SPP review committee (as needed)
    c. Participate on the NRCS Agricultural Technical Advisory Committee (quarterly)
    d. Represent the DWWM on the WV State Soil Conservation Committee (quarterly)
    e. Represent the DWWM's NPS Program on Chesapeake Bay Program committees (quarterly)
    f. Participate in ILF Program's Interagency Review Team (quarterly)

3. **Project management of all watershed projects**; **includes tasks such as technical guidance**, **support**, **and oversight and compliance management**.
    a. Coordinate with federal and state agencies partners on all active watershed projects (as needed)
    b. Oversee and work with local project managers, volunteer organizations and other NGOs on all active watershed projects (as needed)
    c. Work with state and federal agencies to leverage funds for specific project match (as needed)
    d. Report on the progress of watershed project proposals, and close-out completed projects (as needed)
    e. Monitor and encourage progress on nonpoint source WBPs and TMDLs (as needed)

4. **Coordinate and oversee NPS Program grant projects relating to nonpoint source issues in non-priority watersheds in order to foster a better understanding of NPS pollution**, **as well as more recognition for the NPS Program**.
    a. Oversee existing AGO projects (as needed)
    b. Work with potential applicants for the development of new AGO projects (as needed)

5. **Participate and coordinate in the development of work plans and grant proposals in priority watersheds**.
    a. Participate with Project Teams (PTs) to develop watershed project plans for abating sewage contamination in and acid mine drainage in priority watersheds (as needed)
    b. Coordinate with local PTs and Project Managers on projects providing guidance and technical assistance as needed during the implementation phases (as needed)
    c. Coordinate and guide watershed associations and other stakeholders in the development and/or revision of WBPs as needed (as needed)
    d. Develop and submit one success story to the US EPA (annually)

6. **Maximize the use of all funds to achieve water quality standards in NPS impaired streams**.
    a. Track implementation success and report restored streams and stream segments to the US EPA (annually)
    b. Leverage funding from other program's to protect and restore streams impacted by NPS pollution (annually)

7. **Establish a targeted monitoring approach for NPS Program projects including baseline**, **pre and post project to better evaluate the effectiveness of BMPs**. **Work with WAB and local partners to coordinate monitoring efforts**.
    a. Regional BCs will coordinate, oversee or develop monitoring plans in project areas and potential future project areas (as needed)
    b. Acquire approved Quality Assurance Project Plans (QAPPs) for watershed proposals, when they are required (as needed)
    c. Participate in the monitoring required for the NWQI (as needed)
    d. Support legitimate NPS monitoring efforts in priority watersheds where additional information is needed to determine water quality improvement and to prioritize restoration opportunities (annually)

8. **Participate in and coordinate with the WVWN**.
    a. Support WCD by participating in its organization and coordination, through financial assistance and through NPS Program outreach at the event (annually)
    b. Work with volunteers through training and AGO grants to build the capacity of local watershed organizations (annually)

9. **Coordinate with appropriate agencies, watershed associations and Public Service Districts to address failing on-site wastewater systems**.
    a. Facilitate the implementation of project proposals addressing on-site wastewater systems in the priority areas (as needed)
    b. Coordinate 319 projects where wastewater has been identified as a concern, with the CWSRF (annually)

10. **Coordinate with project teams to propose additional funding opportunities and activities in order to conduct streambank stabilization projects in priority watersheds**.
    a. Coordinate with PTs to develop new proposals for streambank restoration in priority watersheds where WBPs call for sediment reduction (annually)

11. **Participate in the Cheat and Monongahela River TMDL implementation plans**.
    a. Coordinate with the WAB, AML, OSM, FODC, FOC and the River of Promise Committee to implement the TMDLs (quarterly)
    b. Continue to monitor the success of completed projects (as needed)
    c. Coordinate the development of new AMD treatment projects (as needed)
    d. Monitor for water quality standards achievement throughout the entire length and/or portions of Sovern Run and Kanes Creek, and if the data shows submit it as a candidate for removal from the 303(d) list (as needed)

12. **Develop guidelines for an urban runoff management program that promotes low impact development practices**.
    a. Regional BCs and the SWS will work with local officials and watershed associations to develop LID and green infrastructure proposals when appropriate, and provide guidance and technical assistance when needed (as needed)

13. **Coordinate with WVCA and NRCS to implement CREP/EQIP programs in priority watersheds**.
    a. Act as the DWWM representative on the CREP committee and coordinate with WVCA to provide guidance to NRCS in future National Water Quality Initiative (NWQI) efforts (quarterly)
    b. Work with NRCS, WVCA and local conservation districts to seek diverse funding base for agricultural projects in priority watersheds (as needed)

14. **Provide conservation education and information to educators**, **youth and the general public**.
    a. Conduct eight nonpoint source or aquatic biology related activities, outdoor classrooms or presentations focusing on youth (as needed)
    b. Participate in water festivals, conferences and other activities to present or conduct nonpoint source education for the general public (as needed)

15. **Increase capacity for watershed associations to actively participate in and provide leadership for NPS watershed projects**.
    a. Provide training for watershed staff and volunteers from 10 watershed associations to address gaps in team memberships, and develop a performance agenda (annually)
    b. Work with BCs and watershed associations to identify shortfalls, and offer additional training to increase capacity and project management capabilities (as needed)
    c. Target AGO funds toward watershed association staff recruitment, capacity building and the development of financial and project related systems to enable watershed project development and implementation (annually)

Long-term

The long-term goals describe the implementation priorities into the future. This list is based on extensive hours of evaluating the progress of existing WBPs, considering new WBPs and determining to the extent possible the expected load reductions. They also include other long-term goals and objectives the NPS Program believes are possible. These long-term goals will be evaluated every two-years and we will work with EPA to adjust our schedules and goals as opportunities and/or changes occur.

LONG-TERM GOALS AND OBJECTIVES

WATERSHED MANAGEMENT

1. **Goal**: Conduct restoration activities and BMP implementation is priority watersheds with the goal of achieving load reductions that will meet their designated uses by 2025. **Table 7** provides load reduction projections for the major categories of NPS pollutants.

Objectives

a) By 2020 develop two-four new WBPs in priority areas as designated by the Watershed Management Framework and TMDL processes.
b) Every two years, evaluate the progress and revise existing active WBPs as needed.
c) By 2020 complete the proposed watershed projects and achieve the required load reductions (LRs) that will meet the designated uses in three existing WBPs.
d) Every two-year's or more frequently when needed or requested by EPA, report on active WBPs in accordance with the milestones established in approved plans.
e) By 2020 target priority basins in the Little Kanawha, Upper, Middle and Lower Ohio for the development of two new WBPs.
f) Support and encourage the remediation of watersheds impacted by wastewater in priority watershed and on a statewide basis by promoting the statewide efforts of the CWSRF and Agricultural Loan Programs. See Table 7 for LR estimates.
g) Support, provide funding and technical assistance within priority watersheds and on a statewide basis to stream restoration projects that restore the streams natural hydrologic conditions and reduce sedimentation. See Table 7 for LR estimates.

2. **Goal**: Support and encourage the protection of healthy watersheds and work with local stakeholders to educate their communities on their importance. This includes waters identified as high quality and outstanding national resources, as well as those that still remain high quality but may be threatened by NPS pollutants.

Objectives

a) If there is local stakeholder interest, funding and agency support, a Watershed Protection Plan (WPP) will be developed to protect high value water bodies identified as Tier 3. The goal is to develop one WPP within the next five years.
b) If there is local stakeholder interest, funding and agency support efforts will be made to protect high priority wetland and riparian areas and other high value watershed resources, including water quality reference streams, in priority restoration and protection watersheds. The goal is

to engage land trust, local landowners and others to implement conservation easement protection (CEP). The goal is to develop two-four CEPs within each of the approved WPPs within the next five years.

c) Support the development of the WVWAPP tool and encourage WVDEP to develop statewide criteria to define healthy waters that will ensure better protection of high quality watersheds.

The major load reduction goals are reflected in Table 7. **These projections will be used to evaluate the progress and the success of the NPS Programs watershed management activities on a statewide basis and in priority watersheds.**

Table 7 - Projected LRs for the major categories of nonpoint source pollutants

Pollutant	**Unit**	**Projected load reductions**		
		5-year	10-year	15-year
Acidity	tons/yr	300	600	900
Metals (Aluminum)	lbs/yr	37,800	75,600	113,400
Metals (Iron)	lbs/yr	95,200	190,400	285,600
Metals (Manganese) *	lbs/yr	7,000	14,000	21,000
Total metals	lbs/yr	140,000	280,000	420,000
Nutrients (Nitrogen)	lbs/yr	280,000	560,000	840,000
Nutrients (Phosphorus)	lbs/yr	220,000	440,000	660,000
Total Nutrients	lbs/yr	500,000	1,000,000	1,500,000
Sediment	tons/yr	6,000	12,000	18,000
Fecal Coliform	cfu	1.70E+15	3.30E+15	5.00E+15

*Note: According to 6.2.d of 47CSR2 (Requirements Governing Water Quality Standards) the Manganese criteria shall only apply within 5-miles immediately upstream of known water supplies used for human consumption. In many cases this rule eliminates the need for Manganese reductions because there are no public or private water supplies within 5-miles of NPS projects.

AGRICULTURE

3. **Goal**: Targeting statewide opportunities and priority watersheds, promote the conservation of cropland, pastureland and other land within the agriculture community through technical assistance, BMP implementation, conservation planning, nutrient management, monitoring and education.

Objectives

a) Every two-years develop 10 Conservation Plans under the Farm Bill Programs.
b) Every five-years 25 nutrient management plans will be written or reviewed managing the estimates provided in Table 7 for pounds/year of nitrogen and phosphorus through the implementation of BMPs.
c) Every five-years provide technical assistance to 25 agriculture producers with the development, protection, stabilization and/or maintenance of riparian areas or with resource management advice that protects surface water.
d) Provide estimated reduction of sediment from stabilization/restoration of failing streambank, etc. (Calculated by BEHI) on an annual basis using the values provided in Table 7 as the targets.

e) Provide estimated sediment reductions due in part to change in management schemes; rotational grazing, exclusion, etc. (Calculated by RUSLE) on an annual basis using the values provided in Table 7 as the targets.
f) Provide information on the Agriculture Water Quality Loan Program to 10 agricultural landowner's on an annual basis.

4. **Goal**: Manage pesticides to protect surface and groundwater.

Objectives

a) Every two-years coordinate pesticide collection to protect surface and ground water in compliance with WVDA.
b) By 2020 organize a minimum two pesticide collection pickups by in cooperation with WVU Extension and the WVDA.

5. **Goal**: Support monitoring programs in priority watersheds impaired by agricultural nonpoint pollutants.

Objective

a) WVCA staff will assists landowners, watershed associations and partner agencies with stream monitoring activities in priority watersheds as needed.

URBAN STORMWATER/DEVELOPED LANDS

6. **Goal**: Improve and protect West Virginia's soil and water resources by reducing the amount of erosion from earthwork sites through education and technical assistance.

Objectives

a) Provide technical assistance and/or information to 2,500 attendees at the WV Construction & Design Exposition over the course of five years through an informational display booth with technicians on hand to answer questions.
b) Every two-years review and/or provide advice with writing 40 construction erosion and sediment control plans with estimates of soil saved.

7. **Goal**: Provide education and technical assistance on Stormwater Best Management Practices.

Objectives

a) From 2015-2020 provide five stormwater workshops or demonstration projects.
b) By 2018 present 20 stormwater management workshops across the state.
c) By 2016 provide technical advice regarding stormwater management quality and/or quantity issues to 20 clients.

RESOURCE EXTRACTION

8. **Goal**: If funding allows, the NPS Program will coordinate to the extent possible with DEP's OAMLR, OSR, OO&G and WVDOF on future project opportunities in watersheds impaired by resource extraction activities.

Objectives

a) Where their project align with current WBPs, or where TMDLs and other sources of information suggest alternate WBPs could be developed to fully restore smaller impacted watersheds; the NPS Program will partner with local stakeholders our agency and partner agencies to develop restoration projects. See Table 7 for LR projections.
b) If funding allows, the NPS Program will partner with DEP's mining program and the federal OSM to provide support for long-term operation and maintenance of passive and active AMD treatment.

9. **Goal**: Support the WVDOF in their administration of the Logging and Sediment Control Act (LSCA), which reduces the potential impacts to water quality from forestry operations. The NPS Program will work with the WVDOF to support LSCA activities, the objectives listed below as well as other activities that promote the protection of water quality from NPS pollution; however, WVDOF is the primary agency for implementing all forestry management activities.

Objectives

a) Every three-years participate in the Forestry BMP Committee that updates and revises the WVDOF BMP Manual.
b) Increase community/landowner involvement with Urban Forestry Program, Stewardship Incentive Program (SIP) and Forest Incentive Program (FIP).
c) Encourage proper forestry management on all forest lands, which will ensure a productive forest and enhance water quality.

CHESAPEAKE BAY PROGRAM

10. **Goal**: WV is a headwater state for the Chesapeake Bay watershed and the NPS Program will support the goals of the CB Agreement by serving on committees, participating in regular meetings and calls and providing input to the future development of the Bay TMDL and models. The NPS Program will also work on specific objectives that support the general goals of the CB Program. **The general goals of the Chesapeake Bay Agreement are as follows**:

    1) Protect, restore and enhance finfish, shellfish and other living resources, their habitats and ecological relationships to sustain all fisheries and provide for a balanced ecosystem in the watershed and Bay.
    2) Restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.
    3) Reduce pollutants to achieve the water quality necessary to support the aquatic living resources of the Bay and its tributaries and protect human health.
    4) Ensure that the Bay and its rivers are free of effects of toxic contaminants on living resources and human health.
    5) Sustain state-identified healthy waters and watersheds recognized for their high quality and/or high ecological value.

6) Increase the number and the diversity of local citizen stewards and local governments that actively support and carry out the conservation and restoration activities that achieve healthy local streams, rivers and a vibrant Chesapeake Bay.
7) Conserve landscapes treasured by citizens in order to maintain water quality and habitat; sustain working forests, farms and maritime communities; and conserve lands of cultural, indigenous and community value.
8) Expand public access to the Bay and its tributaries through existing and new local, state and federal parks, refuges, reserves, trails and partner sites.
9) Enable every student in the region to graduate with the knowledge and skills to act responsibly to protect and restore their local watershed.
10) Increase the resiliency of the Chesapeake Bay watershed, including its living resources, habitats, public infrastructure and communities, to withstand adverse impacts from changing environmental and climate conditions.

Objectives

a) Implement local TMDL WBPs and CB WIP to reduce nutrients, sediment and fecal coliform to local waters and the Chesapeake Bay.
b) Participate in the development of local TMDLs in Warm Springs Run and Rocky Marsh Run to enhance TMDL/NP coordination by identifying opportunities to incorporate information needed for WBP development.
c) Continue to work with local governments to incorporate post construction stormwater requirements in local ordinances.
d) Continue implementation of agriculture BMPs and WV NPDES CAFO permitting and enforcement consistent with the WIP and WBPs.

Resources and Partners

Partnerships are the key to the success of 319 implementation, planning and overall management. If not for the commitments of the federal and state agencies and the variety of NGOs, nonpoint source pollution abatement would not be accomplished.

WVDEP partners

1. Bay Program
   http://www.dep.wv.gov/WWE/watershed/wqmonitoring/Pages/ChesapeakeBay.aspx
2. Clean Water State Revolving Loan Fund
   http://www.dep.wv.gov/WWE/Programs/SRF/Pages/default.aspx
3. Construction Stormwater Programs
   http://www.dep.wv.gov/WWE/Programs/stormwater/csw/Pages/home.aspx
4. Integrated Water Quality Monitoring and Assessment Report – 305(b) and 303(d)
   http://www.dep.wv.gov/WWE/watershed/IR/Pages/303d_305b.aspx
5. Office of Abandoned Minelands and Reclamation
   http://www.dep.wv.gov/aml/Pages/default.aspx
6. Total Maximum Daily Load (TMDL) Program
   http://www.dep.wv.gov/WWE/watershed/TMDL/Pages/default.aspx
7. Water Quality Monitoring Programs

http://www.dep.wv.gov/WWE/watershed/wqmonitoring/Pages/waterquality.aspx

8. Water Quality Standards Program
   http://www.dep.wv.gov/WWE/Programs/wqs/Pages/default.aspx

State and Federal agency partners

9. Bureau for Public Heath - Source water Assessment and Wellhead Protection
   http://www.wvdhhr.org/oehs/eed/swap/
10. Environmental Protection Agency (Region III)
    http://www2.epa.gov/aboutepa/epa-region-3-mid-atlantic
11. Natural Resource Conservation Service
    http://www.nrcs.usda.gov/wps/portal/nrcs/site/wv/home/
12. Office of Surface Mining
    http://www.arcc.osmre.gov/about/states/wv.shtm
13. WV Conservation Agency – 319 Programs
    http://www.wvca.us/WNPSProgram.cfm
14. WV Conservation Agency – Bay Program
    http://www.wvca.us/bay/
15. WV Division of Forestry
    http://www.wvforestry.com/

NGO partners

16. Blue Heron Environmental Network
    https://www.facebook.com/pages/Blue-Heron-Environmental-Network/121364874546221
17. Cacapon Institute
    http://www.cacaponinstitute.org/
18. Canaan Valley Institute
    http://www.canaanvi.org/CVI/index.html
19. Freshwater Institute/Conservation Fund
    http://www.conservationfund.org/our-conservation-strategy/major-programs/freshwater-institute/
20. Friends of Deckers Creek
    http://www.deckerscreek.org/
21. Friends of the Cheat
    http://www.cheat.org/
22. Greenbrier River Watershed Association
    http://wordpress.greenbrier.org/
23. Morris Creek Watershed Association
    http://www.morriscreekwatershed.org/
24. Plateau Action Network
    http://plateauactionnetwork.org/
25. Sleepy Creek Watershed Association
    http://www.sleepycreekwatershed.org/
26. Trout Unlimited (WV Council)
    http://www.wvtu.org/

27. WV Rivers Coalition
    http://www.wvrivers.org/
28. WV Rural Water Association
    http://www.wvrwa.org/
29. WV Water Research Institute
    http://wvwri.org/

And many more

319 Program Resources

30. In Lieu Fee Program
    http://www.dep.wv.gov/WWE/Programs/Pages/In-Lieu-Fee.aspx
31. Nonpoint Source Program
    http://www.dep.wv.gov/WWE/Programs/nonptsource/Pages/NPS.aspx
32. Project WET
    http://www.dep.wv.gov/WWE/getinvolved/WET/Pages/default.aspx
33. Stream Partners Program
    http://www.dep.wv.gov/WWE/getinvolved/WSA_Support/Pages/StreamPartners.aspx
34. WV Save Our Streams
    http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/default.aspx

Appendix 1 – Watershed tracking

Plan Name	Watershed	Sub Watershed	Sub Watershed	BMP/Action	Unit	Goal	Implemented	TMLD LRs	% Implemented	Pollutant ID	Unit	LR Achieved
Deckers Creek	Deckers Creek	WV Deckers Main	WV M-8	Aggregated BMP Load Reductions								
Deckers Creek	Deckers Creek	WV Deckers Main	WV M-8	Passive Treatment		1.00						
Deckers Creek	Deckers Creek	WV Deep Hollow	WV M-8-A.7	Passive Treatment		1.00						
Deckers Creek	Deckers Creek	WV Dilan Creek	WV M-8-G	Passive Treatment		1.00						
Deckers Creek	Deckers Creek	WV Hartman Run	WV M-8-O.5A	Passive Treatment		2.00						
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Aggregated BMP Load Reductions				9,350.00		Metals (Aluminum)		52,929.00
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Aggregated BMP Load Reductions				45,471.00		Metals (Iron)		72,119.00
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Aggregated BMP Load Reductions						Acidity	LBS/YR	135,800.00
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Constructed Wetland Aerobic	INDIVIDUAL UNITS	3.00	3.00		100			
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Land Reconstruction, Abandoned Mined Land	UNITS	1.00	1.00		100			
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Limestone Doser	UNITS	2.00	2.00		100			
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Limestone Open Channel	UNITS	4.00	4.00		100			
Deckers Creek	Deckers Creek	WV Kanes Creek	WV M-8-I	Sulfate Reducing Bioreactor	UNITS	1.00	1.00		100			
Deckers Creek	Deckers Creek	WV Laurel Run	WV M-8-H	Passive Treatment		1.00						
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Aggregated BMP Load Reductions				4,974.00		Metals (Manganese)	LBS/YR	
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Aggregated BMP Load Reductions				192,500.00		Metals (Iron)	LBS/YR	50,300.00
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Aggregated BMP Load Reductions						Acidity	LBS/YR	82,000.00
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Aggregated BMP Load Reductions						Metals (Aluminum)	LBS/YR	45,300.00
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Aggregated BMP Load Reductions						pH	TONS/YR	305.37
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Constructed Wetland Anaerobic	UNITS	2.00	2.00		100			
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Limestone Leach Bed/Pond	UNITS	2.00	2.00		100			
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Limestone Open Channel	UNITS	1.00	1.00		100			
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Open Channel	FT	2,700.00	2,700.00		100			
Deckers Creek	Deckers Creek	WV Slab Camp Run	WV M-8-F	Vertical Flow Treatment System	UNITS	4.00	4.00		100			

Plan Name	Watershed	Sub Watershed	BMP/Action	Unit	Goal	Implemented	TMDL LR	% Implemented	Impairment ID	Pollutant ID	Unit	LR Achieved
Lamberts Run	Lamberts Run	WVLR1901	Aggregated BMP Load Reductions				2,140.00			Metals (Aluminum)		
Lamberts Run	Lamberts Run	WVLR1901	Aggregated BMP Load Reductions				8,878.00			Metals (Iron)		
Lamberts Run	Lamberts Run	WVLR1901	Aggregated BMP Load Reductions							Acidity	LBS/YR	0.00
Lamberts Run	Lamberts Run	WVLR1901	Constructed Wetland Aerobic	UNITS	3.00	0.00		0				
Lamberts Run	Lamberts Run	WVLR1901	Limestone Open Channel	UNITS	1.00	0.00		0				
Lamberts Run	Lamberts Run	WVLR1901	Lined Waterway or Outlet	UNITS	1.00	0.00		0				
Lamberts Run	Lamberts Run	WVLR1902	Aggregated BMP Load Reductions				273.00			Metals (Aluminum)		
Lamberts Run	Lamberts Run	WVLR1902	Aggregated BMP Load Reductions				1,416.00			Metals (Iron)		
Lamberts Run	Lamberts Run	WVLR1902			0.00	0.00						
Lamberts Run	Lamberts Run	WVLR1902			0.10							
Lamberts Run	Lamberts Run	WVLR1903	Aggregated BMP Load Reductions				735.00			Metals (Manganese)		8,200.00
Lamberts Run	Lamberts Run	WVLR1903	Aggregated BMP Load Reductions				1,937.00			Metals (Aluminum)		2,800.00
Lamberts Run	Lamberts Run	WVLR1903	Aggregated BMP Load Reductions				7,315.00			Metals (Iron)		40,420.00
Lamberts Run	Lamberts Run	WVLR1903	Constructed Wetland Aerobic	UNITS		3.00						
Lamberts Run	Lamberts Run	WVLR1903	Constructed Wetland Anaerobic	UNITS	1.00	1.00		100				
Lamberts Run	Lamberts Run	WVLR1903	Limestone Leach Bed/Pond	UNITS	1.00	1.00		100				
Lamberts Run	Lamberts Run	WVLR1903	Limestone Open Channel	UNITS	1.00	4.00		400				
Lamberts Run	Lamberts Run	WVLR1904	Aggregated BMP Load Reductions				1,067.00			Metals (Manganese)		
Lamberts Run	Lamberts Run	WVLR1904	Aggregated BMP Load Reductions				3,872.00			Metals (Aluminum)		400.00
Lamberts Run	Lamberts Run	WVLR1904	Aggregated BMP Load Reductions				4,153.00			Metals (Iron)		19,200.00
Lamberts Run	Lamberts Run	WVLR1904	Anoxic Limestone Drain	UNITS	4.00	4.00		100				
Lamberts Run	Lamberts Run	WVLR1904	Constructed Wetland Aerobic	UNITS	3.00	1.00		33				
Lamberts Run	Lamberts Run	WVLR1905	Aggregated BMP Load Reductions				659.00			Metals (Aluminum)		34,800.00
Lamberts Run	Lamberts Run	WVLR1905	Aggregated BMP Load Reductions				2,485.00			Metals (Iron)		34,600.00
Lamberts Run	Lamberts Run	WVLR1905	Constructed Wetland Aerobic	UNITS		1.00						
Lamberts Run	Lamberts Run	WVLR1905	Limestone Leach Bed/Pond	UNITS		1.00						
Lamberts Run	Lamberts Run	WVLR1905	Steel Slag Treatment	UNITS		1.00						

Plan Name	Watershed	Sub Watershed	BMP/Action	Unit	Goal	Implemented	Year	% Implemented	Pollutant ID	Target LR	Unit	LR Achieved	% LR Achieved
Lost River	Lost River	WV Lost River	Aggregated BMP Load Reductions		1.00		2011		Nitrogen	29,954.00	LBS/YR	6,738.00	22
Lost River	Lost River	WV Lost River	Aggregated BMP Load Reductions						Pathogens (Coliform)	2.39E+17	CFU	5.29E+18	2212
Lost River	Lost River	WV Lost River	Aggregated BMP Load Reductions						Phosphorus	5,300.00	TONS/YR	44,112.40	832
Lost River	Lost River	WV Lost River	Aggregated BMP Load Reductions						Sedimentation-Siltation	2,700.00	LBS/YR	7,048.00	261
Lost River	Lost River	WV Lost River	Alternative Water Sources		80.00								
Lost River	Lost River	WV Lost River	Barnyard Runoff Management	UNITS	13.00	1.00		8					
Lost River	Lost River	WV Lost River	Feed Management	INDIVIDUAL UNITS		2.00							
Lost River	Lost River	WV Lost River	Fence	FT		6,000.00							
Lost River	Lost River	WV Lost River	Grazing Planned Systems	UNITS		5.00							

Lost River	Lost River	WV Lost River	Natural Channel Restoration		10,000.00								
Lost River	Lost River	WV Lost River	Riparian Buffers - Vegetative	AC		13.80							
Lost River	Lost River	WV Lost River	Riparian Forest Buffer	AC	110.00	3.80		3					
Lost River	Lost River	WV Lost River	Sediment Basin	AC	100.00		2011						
Lost River	Lost River	WV Lost River	Tree/Shrub Establishment	AC	50.00		2011						
Lost River	Lost River	WV Lost River	Watering Facility	UNITS	5.00	0.00		0					
Lost River	Lost River	WV Lost River	Wetland Restoration	AC	10.00		2011						

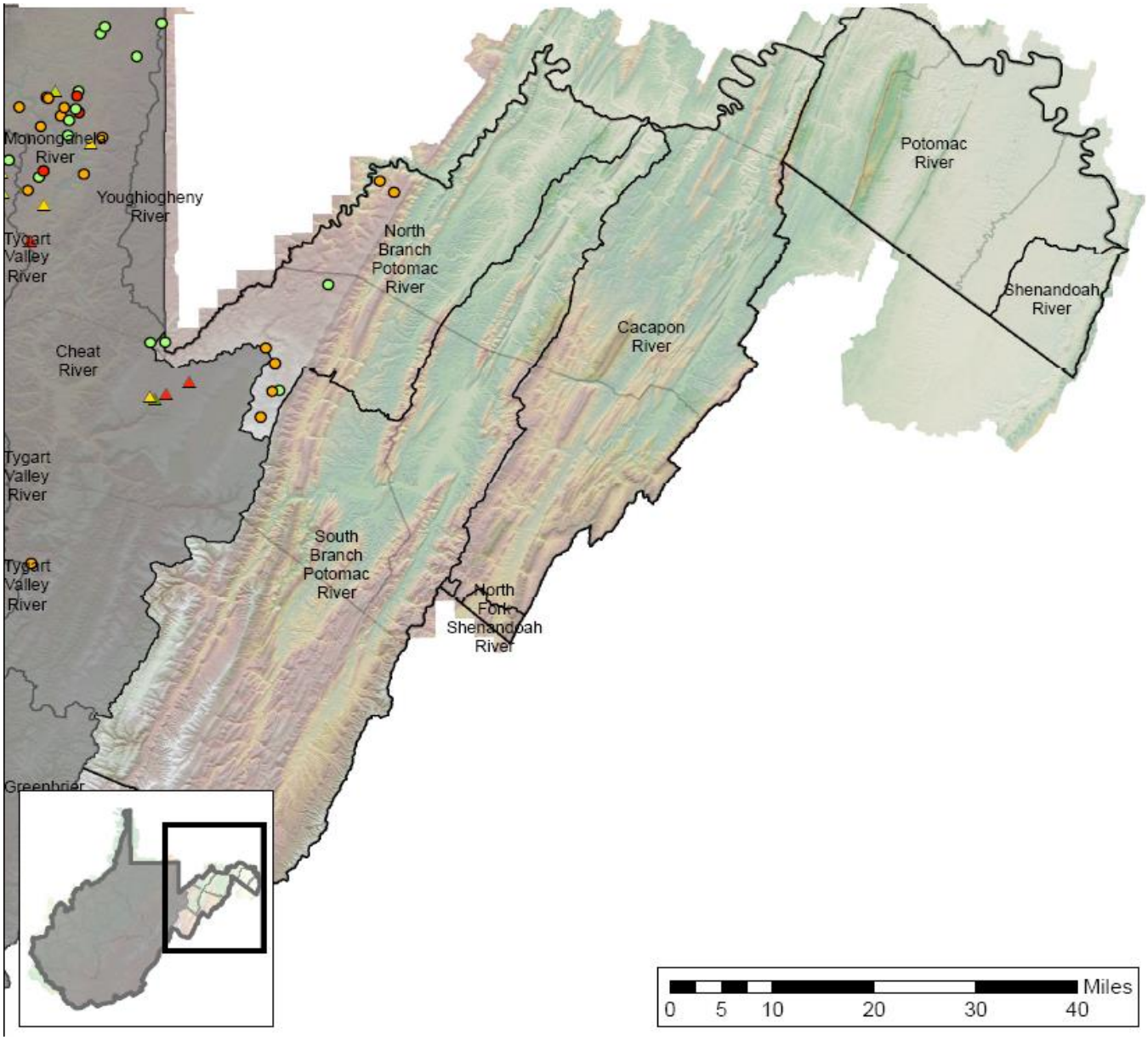
Watershed Based Plan	HUC8-Name	HUC12	HUC-names
Lost River	Cacapon	20700030502	Upper Cove Run-Lost River
Lost River	Cacapon	20700030504	Kimsey Run-Lost River
Lower Cheat River	Cheat	050200040707	Cheat Lake-Cheat River
Lower Cheat River	Cheat	050200040706	Bull Run-Cheat River
Lower Cheat River	Cheat	050200040705	Greens Run-Cheat River
Lower Cheat River	Cheat	050200040704	Roaring Creek-Cheat River
Lower Cheat River	Cheat	050200040703	Muddy Creek
Lower Cheat River	Cheat	050200040702	Pringle Run-Cheat River
Lower Cheat River	Cheat	050200040605	Lower Big Sandy Creek
Lower Cheat River	Cheat	050200040604	Middle Big Sandy Creek
Lower Cheat River	Cheat	050200040603	Beaver Creek-Little Sandy Creek
Elk Headwaters	Elk	050500070101	Old Field Fork
Elk Headwaters	Elk	050500070102	Dry Fork-Elk River
Elk Headwaters	Elk	050500070103	Abb Run-Elk River
Elk Headwaters	Elk	050500070104	Sugar Creek
Elk Headwaters	Elk	050500070106	Bergoo Creek-Elk River
Upper Meadow River	Gauley	050500050601	Little Clear Creek
Upper Meadow River	Gauley	050500050602	Otter Creek-Meadow River
Upper Meadow River	Gauley	050500050603	Big Clear Creek
Upper Meadow River	Gauley	050500050604	Sewell Creek
Upper Meadow River	Gauley	050500050605	Mill Creek-Meadow River
Knapp Creek	Greenbrier	50500030201	Douthat Creek
Knapp Creek	Greenbrier	50500030202	Headwaters Knapp Creek
Knapp Creek	Greenbrier	50500030203	Outlet Knapp Creek
Milligan Creek/Davis Springs	Greenbrier	050500030903	Milligan Creek-Greenbrier River
Muddy Creek (Greenbrier)	Greenbrier	050500030802	Kitchen Creek
Muddy Creek (Greenbrier)	Greenbrier	050500030803	Mill Creek

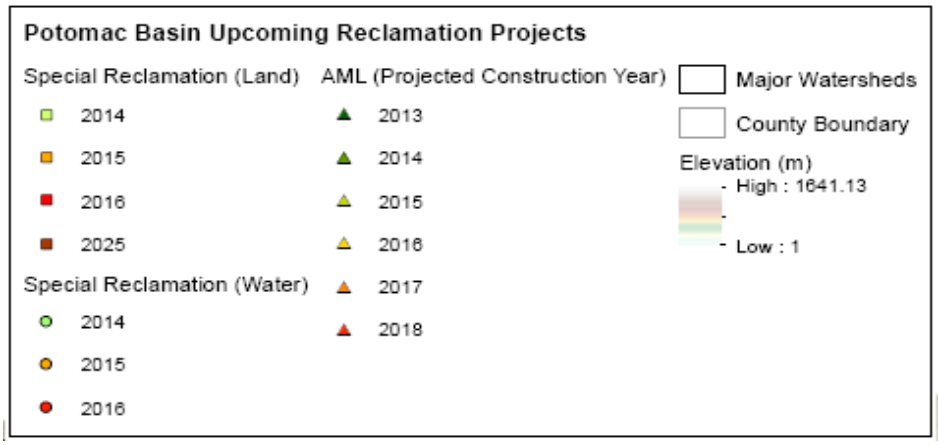
Muddy Creek (Greenbrier)	Greenbrier	050500030804	Muddy Creek
Second Creek	Greenbrier	050500030701	Upper Second Creek
Second Creek	Greenbrier	050500030703	Lower Second Creek
South Fork Potts Creek	James	020802010401	South Fork Potts Creek-North Fork Potts Creek
South Fork Potts Creek	James	020802010301	Sweet Springs Creek-Cove Creek
Wolf Creek	Lower New	050500030904	Wolf Creek
Wolf Creek	Lower New	050500040304	Wolf Creek-New River
Deckers Creek	Monongahela	050200030201	Headwaters Deckers Creek
Deckers Creek	Monongahela	050200030202	Outlet Deckers Creek
West Run	Monongahela	050200030309	West Run-Monongahela River
Back Creek	Potomac Direct Drains	020700040404	Brush Creek-Back Creek
Back Creek	Potomac Direct Drains	020700040405	Babbs Run
Back Creek	Potomac Direct Drains	020700040406	Warm Springs Hollow-Back Creek
Back Creek	Potomac Direct Drains	020700040407	Elk Branch-Back Creek
Back Creek	Potomac Direct Drains	020700040408	Tilhance Creek
Back Creek	Potomac Direct Drains	020700040409	Outlet Back Creek
Elks Run	Potomac Direct Drains	020700041107	Elks Run
Mill Creek (Opequon)	Potomac Direct Drains	20700040905	Mill Creek
Sleepy Creek	Potomac Direct Drains	020700040201	Upper Sleepy Creek
Sleepy Creek	Potomac Direct Drains	020700040202	Middle Fork Sleepy Creek
Sleepy Creek	Potomac Direct Drains	020700040203	Middle Sleepy Creek
Sleepy Creek	Potomac Direct Drains	020700040204	Meadow Branch
Sleepy Creek	Potomac Direct Drains	020700040205	Lower Sleepy Creek
Tuscarora Creek	Potomac Direct Drains	020700040907	Tuscarora Creek
Mill Creek (SB Potomac)	South Branch Potomac	020700010401	South Mill Creek
Mill Creek (SB Potomac)	South Branch Potomac	020700010402	Johnson Run-Mill Creek
North Fork Elkhorn	Tug Fork	050702010202	Headwaters Elkhorn Creek
Roaring Creek (Tygart Valley)	Tygart Valley	050200010406	Roaring Creek
Sandy Creek (Tygart Valley)	Tygart Valley	050200010501	Little Sandy Creek
Sandy Creek (Tygart Valley)	Tygart Valley	050200010502	Left Fork-Sandy Creek
Upper Buckhannon	Tygart Valley	050200010301	Left Fork Buckhannon River
Upper Buckhannon	Tygart Valley	050200010302	Right Fork Buckhannon River
Upper Buckhannon	Tygart Valley	050200010303	French Creek
Upper Buckhannon	Tygart Valley	050200010304	Tenmile Creek-Buckhannon River
Upper Buckhannon	Tygart Valley	050200010305	Sand Run
Upper Buckhannon	Tygart Valley	050200010306	Fink Run-Buckhannon River
Upper Buckhannon	Tygart Valley	050200010307	Pecks Run-Buckhannon River
Upper Guyandotte	Upper Guyandotte	050701010101	Tommy Creek
Upper Guyandotte	Upper Guyandotte	050701010102	Slab Fork

Upper Guyandotte	Upper Guyandotte	050701010103	Devils Fork-Guyandotte River
Upper Guyandotte	Upper Guyandotte	050701010301	Barkers Creek
Upper Guyandotte	Upper Guyandotte	050701010302	Pinnacle Creek
Upper Guyandotte	Upper Guyandotte	050701010303	Cabin Creek-Guyandotte River
Morris Creek	Upper Kanawha	050500060306	Hughes Creek-Kanawha River
Piney Creek	Upper New	050500040101	Beaver Creek
Piney Creek	Upper New	050500040102	Headwaters Piney Creek
Piney Creek	Upper New	050500040103	Outlet Piney Creek
Lamberts Run	West Fork	50200020602	Limestone Run-West Fork River

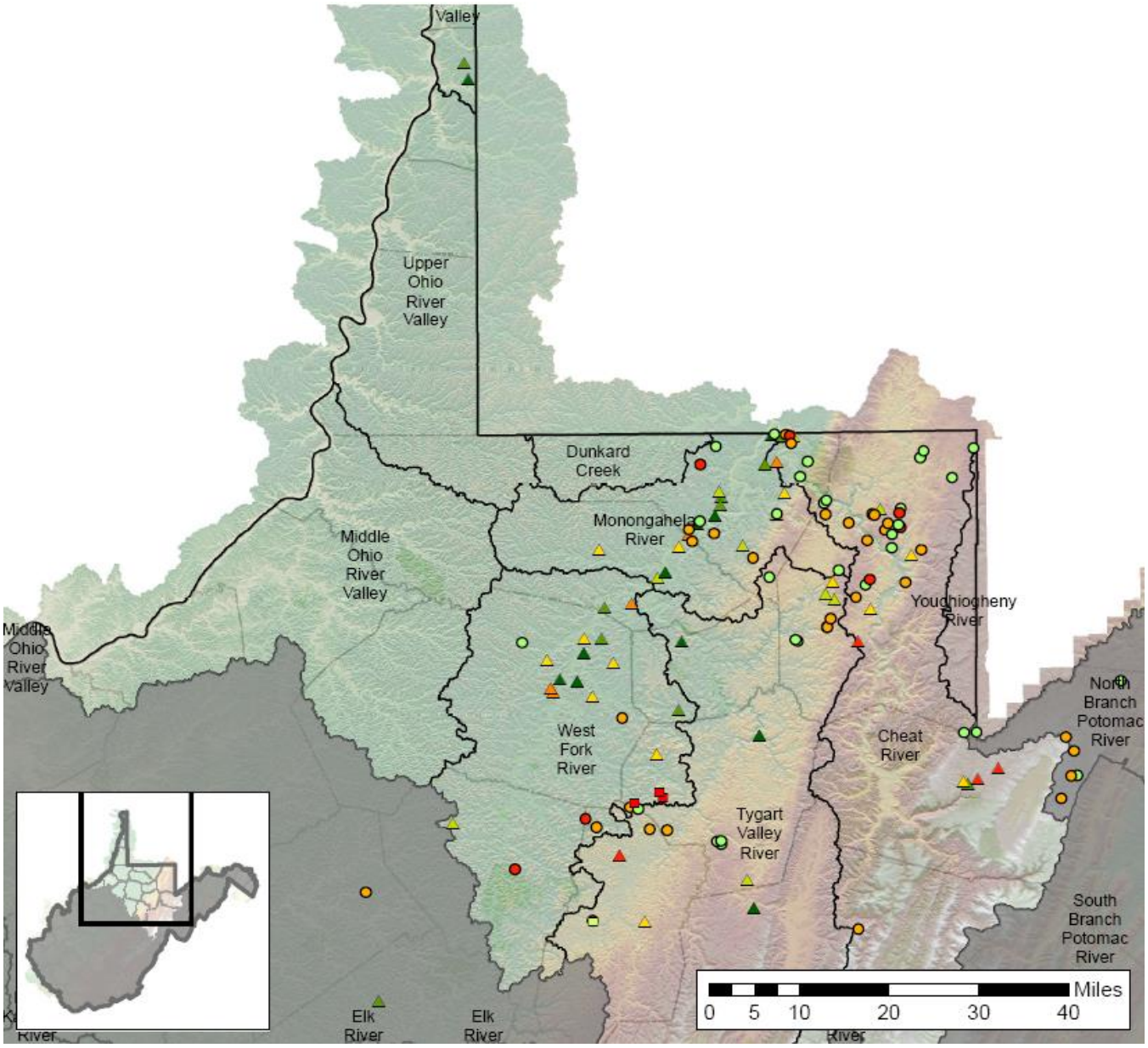
Appendix 2 – OAMLR and SRP Project Maps

Potomac





Northern



Northern Basin Upcoming Reclamation Projects

Special Reclamation (Land)
- 2014
- 2015
- 2016
- 2025

Special Reclamation (Water)
- 2014
- 2015
- 2016

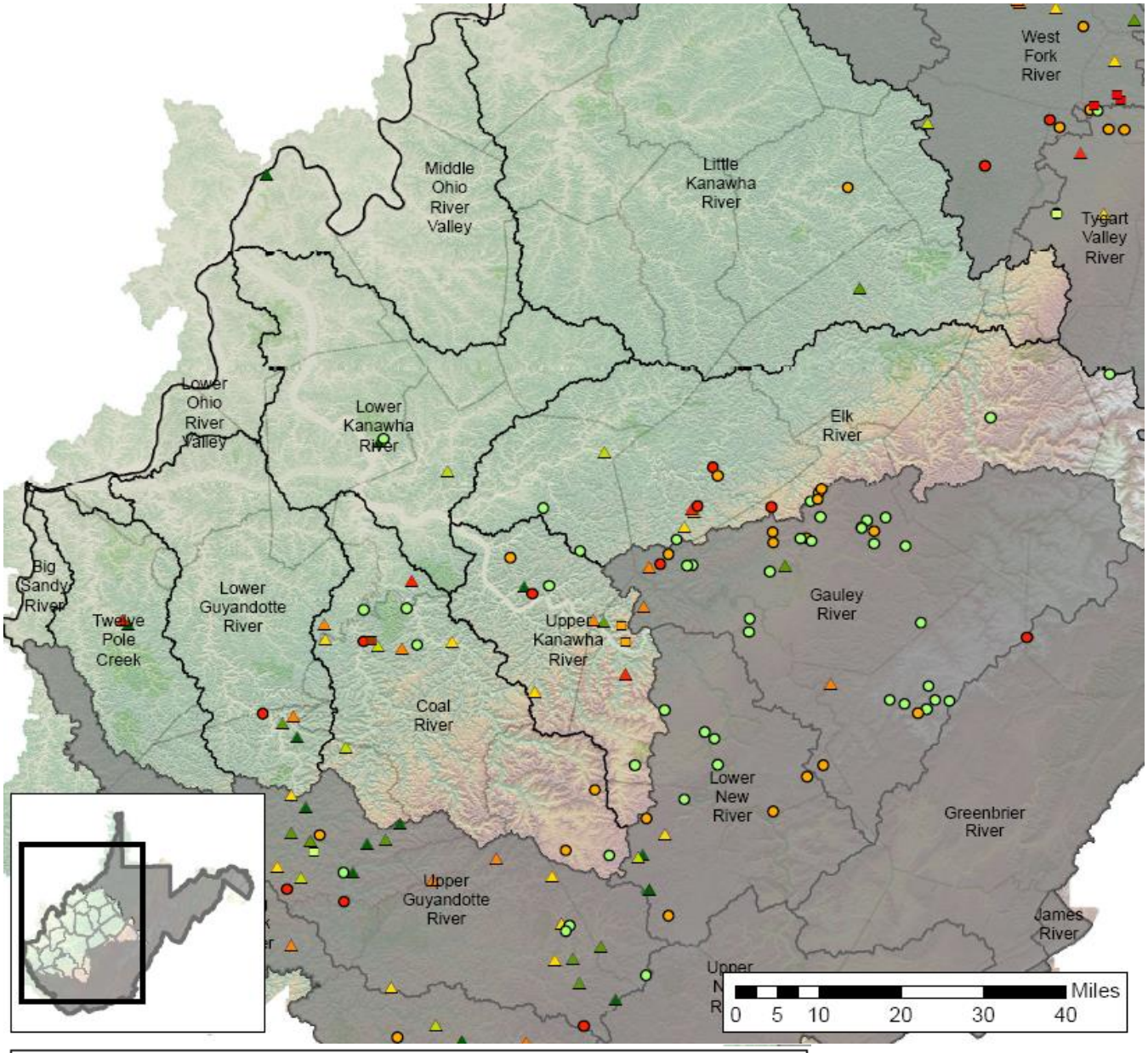
AML (Projected Construction Year)
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018

Major Watersheds

County Boundary

Elevation (m)
- High : 1641.13
- Low : 1

Western



Western Basin Upcoming Reclamation Projects

Special Reclamation (Land)
- 2014
- 2015
- 2016
- 2025

AML (Projected Construction Year)
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018

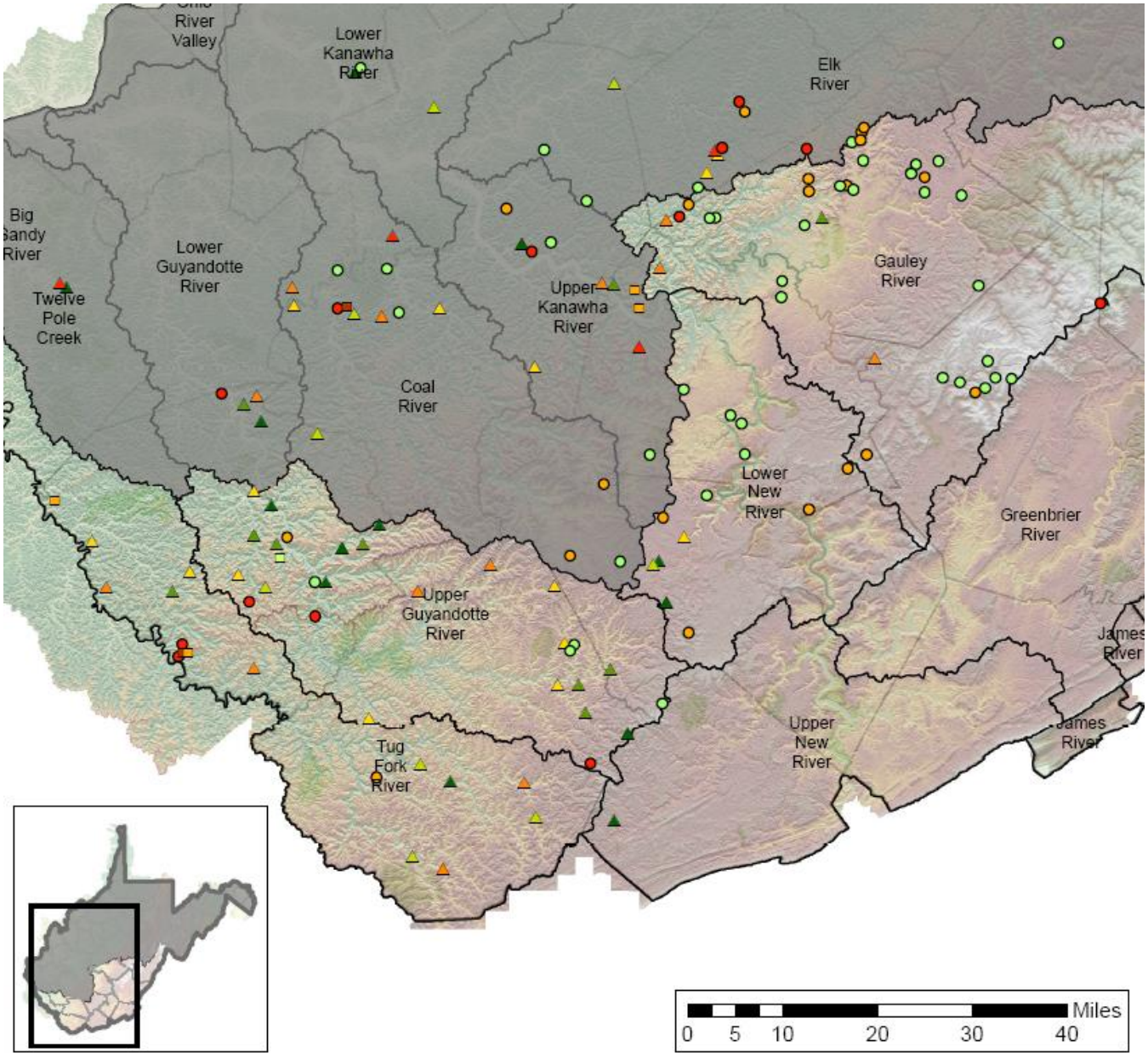
Special Reclamation (Water)
- 2014
- 2015
- 2016

Major Watersheds

County Boundary

Elevation (m)
- High : 1641.13
- Low : 1

Southern



Southern Basin Upcoming Reclamation Projects

Special Reclamation (Land)
- 2014
- 2015
- 2016
- 2025

Special Reclamation (Water)
- 2014
- 2015
- 2016

AML (Projected Construction Year)
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018

Major Watersheds

County Boundary

Elevation (m)
- High : 1641.13
- Low : 1

Appendix 3 – OAMLR and SRP HUC/Project information

Abandoned Minelands

PAD#	Year	PADNAME	HUC8	HUC12	HU_12_NAME
WV003918	2013	MACARTHUR SUBSISDENCE	5050004	50500040102	Headwaters Piney Creek
WV000183	2013	EAST LYNN II	5090102	50901020204	Lower East Fork Twelvepole Creek
WV001725	2013	VALLEY FALLS PORTALS	5020001	50200010708	Lost Run-Tygart Valley River
WV003205	2013	RIDENOUR COMPLEX	5020003	50200030309	West Run-Monongahela River
WV000336	2013	FISHER PORTALS	5020002	50200020602	Limestone Run-West Fork River
WV001535	2013	BISHOP PORTALS	5020003	50200030307	Cobun Creek-Monongahela River
WV006020	2013	WITCHER CREEK PORTALS AND REFUSE	5050006	50500060401	Witcher Creek
WV000288	2013	WEST COLUMBIA ""B""	5030202	50302020805	Broad Run-Ohio River
WV006242	2013	STOWE REFUSE PILE	5070101	50701010505	Buffalo Creek
WV000647	2013	MILAM RIDGE REFUSE PILE	5070101	50701010301	Barkers Creek
WV006165	2013	MALLORY (GIBSON) PORTALS	5070101	50701010504	Huff Creek
WV000627	2013	FLIPPING HOLLOW COMPLEX	5050002	50500020903	Laurel Fork-Bluestone River
WV003935	2013	NORTON HIGHWALL 1	5020001	50200010406	Roaring Creek
WV006283	2013	MOATSVILLE (WRIGHT) PORTALS AND DRAINAGE	5020001	50200010705	Hackers Creek-Tygart Valley River
WV005914	2013	WHEATLEY BRANCH (LUTHY) PORTALS	5070102	50701020101	Big Creek
WV004801	2013	GORE CLOGGED STREAM	5020002	50200020602	Limestone Run-West Fork River
WV000660	2013	INDIAN CREEK REFUSE PILE	5070201	50702010204	Sandlick Creek-Tug Fork
WV005350	2013	BRAEHOLM (EVANS) PORTALS & DRAINAGE	5070101	50701010505	Buffalo Creek
WV000993	2013	ABNEY REFUSE PILES	5050004	50500040102	Headwaters Piney Creek
WV005645	2013	COLLIERS SPORTSMAN CLUB HIGHWALL	5030101	50301010902	South Fork Cross Creek
WV005184	2013	STOLLINGS (WHITE) PORTALS	5070101	50701010508	Dingess Run-Guyandotte River
WV002151	2013	JEEP TRAIL PORTALS	5050008	50500080204	Heizer Creek
WV005916	2013	WEST FORK RIVER OPEN PORTALS	5020002	50200020602	Limestone Run-West Fork River
WV002448	2013	HILDERBRAND HIGHWALL	5020003	50200030307	Cobun Creek-Monongahela River
WV006486	2013	FAIRMONT (JACKSON ADDITION) SUBSIDENCE	5020003	50200030103	Outlet Buffalo Creek
WV001622	2014	ALBERT HIGHWALL #1	5020004	50200040203	Lower Blackwater River
WV006308	2014	AMIGO PORTALS	5070101	50701010103	Devils Fork-Guyandotte River
WV004811	2014	BLACK EAGLE REFUSE PILE	5070101	50701010103	Devils Fork-Guyandotte River
WV006513	2014	DAVIDSON HIGHWALL DRAINAGE	5020003	50200030309	West Run-Monongahela River
WV003960	2014	EBENEZER RUN HIGHWALL #9	5030101	50301010902	South Fork Cross Creek
WV002746	2014	GRAFTON #4	5020002	50200020401	Headwaters Simpson Creek
WV004080	2014	LANDO (EDWARDS) DRAINAGE	5070201	50702010401	Headwaters Pigeon Creek
WV001167	2014	LAUREL POINT STRIP	5020003	50200030308	Scotts Run-Monongahela River

WV006532	2014	LYBURN (MAYNARD) DRAINAGE	5070101	50701010507	Rum Creek-Guyandotte River
WV000871	2014	MARSH RUN PORTALS	5030203	50302030401	Headwaters Cedar Creek
WV001903	2014	MONTECARLO COMPLEX	5070101	50701010301	Barkers Creek
WV006561	2014	MOUNT UNION (STUMP)	5020003	50200030309	West Run-Monongahela River
WV000122	2014	ROBINETTE BRANCH	5070101	50701010505	Buffalo Creek
WV006037	2014	RT. 60 DRAINAGE	5050006	50500060304	Boomer Branch-Kanawha River
WV006236	2014	SUGARCAMP RUN BURNING REFUSE	5050005	50500050806	Headwaters Peters Creek
WV006216	2014	SWITZER (ELLIS) DRAINAGE	5070101	50701010402	Island Creek
WV005207	2014	VICKERS BRANCH (BUTCHER) DRAINAGE	5070102	50701020101	Big Creek
WV002449	2014	WAITMAN-BARBE HIGHWALL #1	5020003	50200030307	Cobun Creek-Monongahela River
WV006523	2014	WEST FORK RAIL TRAIL PORTALS	5020002	50200020604	Coons Run-West Fork River
WV006273	2014	WILLARD (SNYDER) PORTAL AND AMD	5020002	50200020602	Limestone Run-West Fork River
WV001141	2015	BEULAH CHAPEL PORTAL	5020003	50200030202	Outlet Deckers Creek
WV006492	2015	BROAD RUN PORTALS	5050007	50500070906	Morris Creek-Elk River
WV006109	2015	CAMDEN (HARTLEY) DANGEROUS SLIDE	5020002	50200020301	Freemans Creek
WV006007	2015	CAMP CREEK (KIRK) PORTALS	5050009	50500090502	Upper Little Coal River
WV006522	2015	CITY OF WAR MINE PORTALS	5070201	50702010104	Middle Dry Fork
WV005088	2015	CONLEY BRANCH (WHITT) LANDSLIDE	5070101	50701010402	Island Creek
WV005739	2015	CRAB ORCHARD (ACKLIN) PORTALS	5050004	50500040102	Headwaters Piney Creek
WV002190	2015	DONNIE THORN HIGHWALL	5020001	50200010601	Headwaters Three Fork Creek
WV006388	2015	FAIRMONT (DAC) S, CS AND P	5020003	50200030305	Little Creek-Monongahela River
WV001744	2015	HOPEWELL CHURCH REFUSE & DRAINAGE	5020001	50200010601	Headwaters Three Fork Creek
WV003731	2015	LILBERN PRITT HIGHWALL	5020001	50200010407	Mill Creek-Tygart Valley River
WV000728	2015	LITTLE DAYCAMP BRANCH REFUSE PILE	5070201	50702010205	Spice Creek-Tug Fork
WV006450	2015	Morgantown (Anderson) Portals and Highwalls	5020003	50200030308	Scotts Run-Monongahela River
WV001140	2015	OWL CREEK #2 HIGHWALL	5020003	50200030306	Booths Creek
WV004927	2015	PAGETON ""LAMBERT"" PORTALS	5070201	50702010201	South Fork Tug Fork-Tug Fork
WV002287	2015	PIGTAIL BRANCH DRAINAGE	5050009	50500090303	Outlet Spruce Fork
WV006488	2015	SOVERN RUN (ENGLAND) REFUSE AND PORTALS	5020004	50200040605	Lower Big Sandy Creek
WV005254	2015	Wolfpen (Carpenter) Portals	5050008	50500080201	Tupper Creek
WV006091	2016	BICKMORE AREA COMPLEX	5050007	50500070901	Leatherwood Creek-Elk River
WV006395	2016	BLOOMINGROSE (MILLER) DRAINAGE	5050009	50500090604	Drawdy Creek-Big Coal River
WV000267	2016	COAL BRANCH	5070102	50701020102	Crawley Creek-Guyandotte River
WV006482	2016	Cow Creek (Browning) Portals	5070101	50701010402	Island Creek
WV000002	2016	DAVIS COAL & COKE	5020004	50200040203	Lower Blackwater River
WV006584	2016	GLEN ROGERS MINE SHAFTS	5070101	50701010201	Laurel Fork
WV006524	2016	INDORE (OSBORNE) PORTALS	5050007	50500070902	Sycamore Creek-Elk River

WV006286	2016	ITMANN (BURDISS) DRAINAGE	5070101	50701010303	Cabin Creek-Guyandotte River
WV001884	2016	LARRY FREDRICK HIGHWALL & REFUSE	5020002	50200020504	Outlet Tenmile Creek
WV001206	2016	LAUREL RUN #3	5020003	50200030103	Outlet Buffalo Creek
WV005631	2016	LEFT FORK OF ELK CREEK AIR SHAFT	5070201	50702010401	Headwaters Pigeon Creek
WV001820	2016	LICK RUN PORTAL #4	5020004	50200040702	Pringle Run-Cheat River
WV005637	2016	LITTLE WHITESTICK CREEK REFUSE PILE	5050004	50500040103	Outlet Piney Creek
WV006506	2016	LODGEVILLE (POE) DS	5020002	50200020402	Outlet Simpson Creek
WV003940	2016	LAKE LYNN COMPLEX	5020004	50200040707	Cheat Lake-Cheat River
WV005289	2016	MCALPIN PORTALS & DRAINAGE	5020002	50200020602	Limestone Run-West Fork River
WV003007	2016	MORGAN HIGHWALL #46	5020004	50200040704	Roaring Creek-Cheat River
WV005721	2016	MORRISVALE (HOLESTIN) PORTALS	5050009	50500090501	Big Horse Creek
WV001111	2016	MUDLICK PORTALS	5070101	50701010501	Little Huff Creek
WV001200	2016	PARKER RUN #1	5020003	50200030305	Little Creek-Monongahela River
WV005057	2016	PEPPER PORTALS AND DRAINAGE	5020002	50200020203	Brushy Fork
WV000932	2016	PIERPONT REFUSE PILE	5070101	50701010102	Slab Fork
WV002272	2016	RED WARRIOR GOB AND SLIDE	5050006	50500060201	Headwaters Cabin Creek
WV001675	2016	SHINNS RUN PORTALS	5020002	50200020602	Limestone Run-West Fork River
WV005758	2016	SQUIRES CREEK REFUSE & PORTALS	5020001	50200010601	Headwaters Three Fork Creek
WV006553	2016	Tallmansville (Anderson) Portals	5020001	50200010304	Tenmile Creek-Buckhannon River
WV006268	2016	TYRONE (STIMMELL) PORTALS	5020003	50200030202	Outlet Deckers Creek
WV005452	2016	OLDFIELD BRANCH (HALL) DRAINAGE	5070201	50702010506	Miller Creek-Tug Fork
WV000074	2017	ALKOL PORTALS	5050009	50500090501	Big Horse Creek
WV001981	2017	BIG CREEK COMPLEX	5050005	50500050809	Rich Creek-Gauley River
WV006586	2017	Booths Creek (Browning Farm) Mines	5020002	50200020603	Booths Creek
WV002202	2017	BURDETTE COMPLEX	5050005	50500050606	Meadow Creek-Meadow River
WV000064	2017	CAMBRIA (NICHOLAS CO.) PORTALS	5050005	50500050702	Outlet Twentymile Creek
WV000084	2017	CANYON REFUSE	5020004	50200040707	Cheat Lake-Cheat River
WV006585	2017	CHATTAROY (KIRK) PORTALS	5070201	50702010506	Miller Creek-Tug Fork
WV001897	2017	CRANY MINE DUMP	5070101	50701010202	Headwaters Clear Fork
WV000600	2017	CUCUMBER AIRSHAFT	5070201	50702010102	Jacobs Fork
WV000841	2017	GLEN ALUM COMPLEX	5070201	50702010303	Long Branch-Tug Fork
WV000415	2017	GLEN AVENUE MINE DRAINAGE	5020002	50200020602	Limestone Run-West Fork River
WV000673	2017	LANDGRAFF REFUSE PILE	5070201	50702010203	Outlet Elkhorn Creek
WV005578	2017	Montgomery (WVUIT) Landslide	5050006	50500060306	Hughes Creek-Kanawha River
WV004150	2017	MAURIN MINE FIRE AND PORTALS	5020003	50200030305	Little Creek-Monongahela River
WV006512	2017	NORTH FORK (SPRY) DRAINAGE	5070102	50701020101	Big Creek
WV000939	2017	OLDHOUSE BRANCH REFUSE PILE	5070101	50701010203	Outlet Clear Fork

WV006508	2017	Perry Hollow Posey Portals and Dr	5020002	50200020602	Limestone Run-West Fork River
WV006349	2017	Ridgeview (Dunlap) Portals	5050009	50500090604	Drawdy Creek-Big Coal River
WV002052	2018	BICKMORE REFUSE #2 - Site 1	5050007	50500070901	Leatherwood Creek-Elk River
WV002127	2018	CHAFFEY RUN STRIP	5020004	50200040202	Middle Blackwater River
WV006575	2018	EAST LYNN (CLARK) PORTALS	5090102	50901020204	Lower East Fork Twelvepole Creek
WV003182	2018	ED GOWER HIGHWALL #2	5020001	50200010306	Fink Run-Buckhannon River
WV001258	2018	MEADOW FORK OPEN PORTALS	5050009	50500090605	Brier Creek
WV001808	2018	MOUNTAIN VIEW PORTALS	5020004	50200040702	Pringle Run-Cheat River
WV002128	2018	PENDLETON CREEK STRIP	5020004	50200040202	Middle Blackwater River
WV005846	2018	ROBSON (CALES) DRAINAGE	5050006	50500060301	Loop Creek

Special Reclamation (Water)

COMPANY	PERMIT	ACRES	COUNTY	SPREC_ACRE	YEAR	HUC8	HUC12	HU12_NAME
PUPS CREEK COALS, INC.	S-3006-94	221.31	Raleigh	90	2014	5050009	50500090201	Stephens Lake
WERNER MINING CO., INC.	S-2003-86	43	Barbour	43	2014	5020001	50200010408	Laurel Run-Tygart Valley River
CHICOPEE COAL COMPANY, INC.	S-3006-99	257.41	Nicholas	25	2014	5050005	50500050702	Outlet Twentymile Creek
GREEN MOUNTAIN ENERGY	U-4013-91	15.23	Wyoming	12	2014	5070101	50701010102	Slab Fork
LAKEVIEW COAL COMPANY	S-55-84	27	Monongalia	0	2014	5020004	50200040707	Cheat Lake-Cheat River
B & S CONTRACTING, INC.	U-3055-87	10	Nicholas	10	2014	5050005	50500050803	Outlet Muddlety Creek
BUFFALO COAL COMPANY, INC.	S-2003-03	266	Grant	60	2014	2070002	20700020202	Mount Storm Lake-Stony River
INTER-STATE LUMBER COMPANY, INC.	S-112-80	100	Preston	103	2014	5020004	50200040706	Bull Run-Cheat River
M & T MINING CO.	S-3026-89	171	Nicholas	114	2014	5050005	50500050803	Outlet Muddlety Creek
BELLE CONTRACTING, INC.	S-6020-87	108	Putnam	0	2014	5050008	50500080204	Heizer Creek
ROYAL COAL CO.	P-688	57	Fayette	33	2014	5050004	50500040303	Arbuckle Creek-New River
ROYAL COAL CO.	R-676	30	Fayette	30	2014	5050004	50500040303	Arbuckle Creek-New River
CRADDOCK & SON COAL CO.	S-68-83	94	Nicholas	45	2014	5050005	50500050806	Headwaters Peters Creek
BUFFALO COAL COMPANY, INC.	S-122-80	306	Tucker	78.5	2014	2070002	20700020201	Shields Run-North Branch Potomac River
VMS, LTD.	S-1045-87	162	Monongalia	40	2014	5020001	50200010601	Headwaters Three Fork Creek
STEWARTOWN COAL CORP.	67-78	80	Monongalia	4	2014	5020003	50200030309	West Run-Monongahela River
HUNT COAL, INC.	U-5071-86	10	Logan	10	2014	5070101	50701010506	Elk Creek-Guyandotte River
HIDDEN VALLEY COAL CO.	S-60-84	47	Preston	47	2014	5020004	50200040603	Beaver Creek-Little Sandy Creek
MOHIGAN MINING CO.	U-109-83	18	Monongalia	23	2014	5020003	50200030307	Cobun Creek-Monongahela River
B & S CONTRACTING, INC.	R-668	26	Nicholas	27	2014	5050005	50500050802	Headwaters Muddlety Creek
VALLEY MINING CO., INC.	S-17-82	62	Monongalia	5	2014	5020003	50200030202	Outlet Deckers Creek
E. J. & L. CO., INC.	S-3041-87	50	Raleigh	11	2014	5050004	50500040103	Outlet Piney Creek
PRINCESS CINDY MINING, INC.	30-79	137	Fayette	137	2014	5050006	50500060301	Loop Creek
PRINCESS SUSAN COAL CO.	S-6-85	216	Kanawha	0	2014	5050006	50500060305	Kellys Creek

ROYAL SCOT MINERALS, INC.	S-90-82	154	Greenbrier	75	2014	5050005	50500050601	Little Clear Creek
KEISTER COAL COMPANY, INC.	184-77	27	Barbour	13	2014	5020001	50200010408	Laurel Run-Tygart Valley River
LANDMARK CORPORATION	S-34-82	95	Boone	22	2014	5050009	50500090503	Lower Little Coal River
LODESTAR ENERGY, INC.	R-5-84	34	Wyoming	0	2014	5070101	50701010102	Slab Fork
VIKING COAL COMPANY	UO-519	10.92	Preston	10.92	2014	5020004	50200040703	Muddy Creek
PRINCESS SUSAN COAL CO.	S-6033-86	200	Kanawha	4	2014	5050006	50500060305	Kellys Creek
VALLEY MINING CO., INC.	S-64-83	160	Monongalia	161	2014	5020004	50200040707	Cheat Lake-Cheat River
ROYAL SCOT MINERALS, INC.	U-3046-88	26.4	Greenbrier	32	2014	5050005	50500050605	Mill Creek-Meadow River
TRIPLE A COALS, INC.	U-3046-87	25	Nicholas	20	2014	5050005	50500050801	Big Beaver Creek
ROYAL SCOT MINERALS, INC.	R-3078-86	30	Greenbrier	30	2014	5050005	50500050601	Little Clear Creek
ENERGY MARKETING COMPANY INC	O-44-83	71	Barbour	40	2014	5020001	50200010307	Pecks Run-Buckhannon River
LILLYBROOK COAL CO.	S-86-85	34	Raleigh	27	2014	5070101	50701010103	Devils Fork-Guyandotte River
TRIPLE A COALS, INC.	S-3028-87	121	Nicholas	124	2014	5050005	50500050801	Big Beaver Creek
CRANE COAL CO., INC.	S-27-83	8	Preston	8	2014	5020004	50200040703	Muddy Creek
BOLINGREEN MINING COMPANY	S-1024-88	21	Preston	16	2014	5020004	50200040705	Greens Run-Cheat River
ROYAL SCOT MINERALS, INC.	S-65-76	160	Greenbrier	19	2014	5050005	50500050603	Big Clear Creek
GLADE RUN MINING CO.	3-72	50	Grant	50	2014	2070002	20700020204	Abram Creek
EASTERN ENERGY INVESTS.	U-6012-88	5.35	Boone	2.5	2014	5050009	50500090606	Fork Creek-Big Coal River
HARVEY ENERGY CORP.	S-11-82	41	Fayette	25	2014	5050004	50500040303	Arbuckle Creek-New River
W & E LOGGING & COAL	S-20-82	70	Nicholas	50	2014	5050005	50500050801	Big Beaver Creek
FALCON LAND COMPANY, INC.	P-656	132	Nicholas	0	2014	5050005	50500050403	Laurel Creek
SOLITAIRE COAL CORPORATION, INC.	S-87-85	138	Webster	85	2014	5050007	50500070302	Headwaters Right Fork Holly River
DUSTY COALS, INC.	S-119-85	71	Nicholas	31	2014	5050005	50500050801	Big Beaver Creek
KODIAK LAND CO., INC.	S-3052-87	32	Fayette	2	2014	5050005	50500050805	Summersville Lake-Gauley River
JONES COAL INC	S-9-83	46	Preston	46	2014	5020004	50200040604	Middle Big Sandy Creek
HARVEY ENERGY CORP.	S-3030-89	44	Fayette	44	2014	5050006	50500060101	Packs Branch-Paint Creek
DECONDOR COAL CO.	U-147-82	7.25	Preston	7.25	2014	5020003	50200030201	Headwaters Deckers Creek
BENHAM GROUP, LTD.	120-79	180	Boone	93	2014	5050009	50500090604	Drawdy Creek-Big Coal River
BUFFALO COAL COMPANY, INC.	S-2011-92	59	Preston	12	2014	5020004	50200040501	Horseshoe Run
LEVEL LAND MINING CORPORATION	S-3031-90	24	Fayette	24	2014	5050005	50500050609	Glade Creek-Meadow River
MAURICE JENNINGS	S-61-83	52	Preston	9	2014	5020001	50200010602	Outlet Three Fork Creek
ROYAL SCOT MINERALS, INC.	56-81	300	Greenbrier	40	2014	5050005	50500050603	Big Clear Creek
MORGANTOWN ENERGY EXPORT COMPANY	U-8-83	12	Monongalia	12	2014	5020003	50200030308	Scotts Run-Monongahela River
BJORKMAN MINING CO.	S-37-81	35	Preston	35	2014	5020004	50200040702	Pringle Run-Cheat River
MOUNTAINEER FUELS, INC.	U-3083-87	10	Nicholas	10	2014	5050005	50500050801	Big Beaver Creek
CHICOPEE COAL COMPANY, INC.	O-6013-88	124.55	Clay	63	2014	5050007	50500070902	Sycamore Creek-Elk River
ROYAL SCOT MINERALS, INC.	S-99-83	11	Greenbrier	6	2014	5050005	50500050603	Big Clear Creek

MAURICE JENNINGS	53-78	65	Preston	8	2014	5020001	50200010501	Little Sandy Creek
GLORY COAL CO., INC.	UO-744	3	Harrison	1	2014	5020002	50200020503	Little Tenmile Creek
TRIPLE A COALS, INC.	S-96-85	262	Nicholas	26	2014	5050005	50500050801	Big Beaver Creek
BLACK DIAMOND MINING CO.	13-79	34	Nicholas	31	2014	5050005	50500050803	Outlet Muddlety Creek
ZINN COAL CO.	60-79	75	Preston	10	2014	5020004	50200040603	Beaver Creek-Little Sandy Creek
WETER CO.	S-71-79	56	Preston	57	2014	5020004	50200040706	Bull Run-Cheat River
JONES COAL INC	S-1030-86	23	Preston	23	2014	5020004	50200040604	Middle Big Sandy Creek
EASTERN ENERGY INVEST.	S-6029-86	297	Kanawha	0	2014	5050007	50500070908	Coopers Creek-Elk River
CHICOPEE COAL COMPANY, INC.	S-3002-98	124.52	Nicholas	35	2014	5050005	50500050702	Outlet Twentymile Creek
NATIONAL CONSTRUCTION COMPANY, INC.	S-2004-86	54	Barbour	5	2014	5020001	50200010408	Laurel Run-Tygart Valley River
BOOMERANG COAL, INC.	S-2015-06	10	Randolph	8	2014	5050007	50500070104	Sugar Creek
T & T FUELS, INC.	U-125-83	14	Preston	14	2014	5020004	50200040703	Muddy Creek
S. KELLY INDUSTRIES	51-78	40	Monongalia	40	2015	5020003	50200030306	Booths Creek
BALDWIN MINING COMPANY	D-75-82	9.62	Gilmer	9	2015	5030203	50302030308	Stewart Creek-Little Kanawha River
BORGMAN COAL CO.	EM-32	6	Preston	9	2015	5020004	50200040702	Pringle Run-Cheat River
STAR INDUSTRIES, INC.	R-3-81	38	Raleigh	38	2015	5050004	50500040103	Outlet Piney Creek
LODESTAR ENERGY, INC.	S-3006-89	122.79	Nicholas	34	2015	5050007	50500070501	Headwaters Buffalo Creek
SAN SUE COAL CO.	19-75	14	Nicholas	14	2015	5050005	50500050803	Outlet Muddlety Creek
FARKAS COAL CO.	34-81	10	Monongalia	10	2015	5020004	50200040707	Cheat Lake-Cheat River
BUFFALO COAL COMPANY, INC.	S-2001-86	595	Grant	26	2015	2070002	20700020202	Mount Storm Lake-Stony River
C. C. CONLEY & SONS, INC.	S-3046-91	195	Nicholas	15	2015	5050005	50500050806	Headwaters Peters Creek
DAUGHERTY COAL COMPANY, INC.	65-77	92	Preston	92	2015	5020004	50200040705	Greens Run-Cheat River
INTER-STATE LUMBER COMPANY, INC.	176-77	110	Preston	57	2015	5020004	50200040704	Roaring Creek-Cheat River
ROBLEE COAL COMPANY	U-2001-00	9.19	Upshur	2	2015	5020002	50200020303	Hackers Creek
ENERGY MARKETING CO. INC.	U-72-83	21.16	Barbour	18.61	2015	5020002	50200020201	Gnatty Creek
FRUSH ENTERPRISES, INC.	S-1008-89	76	Harrison	86	2015	5020002	50200020401	Headwaters Simpson Creek
LAROSA FUEL CO., INC.	S-1051-86	196.79	Marion	6	2015	5020003	50200030305	Little Creek-Monongahela River
CLASSIC RES., INC.	S-55-81	20	Fayette	15	2015	5050005	50500050604	Sewell Creek
JOHN GALT	D-76-82	8	Logan	4	2015	5070101	50701010507	Rum Creek-Guyandotte River
BARRETT FUEL CORP.	R-737	175	Raleigh	79.95	2015	5050009	50500090101	Headwaters Clear Fork
INTER-STATE LUMBER COMPANY, INC.	S-52-83	48	Preston	20	2015	5020001	50200010602	Outlet Three Fork Creek
CHEYENNE SALES COMPANY, INC.	O-11-83	22.1	Upshur	22.1	2015	5020001	50200010307	Pecks Run-Buckhannon River
CHEYENNE SALES CO., INC.	S-2009-96	48.28	Upshur	40.2	2015	5020001	50200010307	Pecks Run-Buckhannon River
TEMPLEMAN CONST. CO., INC.	151-75	25	Kanawha	25	2015	5050006	50500060404	Campbells Creek
THE MASTELLER COAL COMPANY	S-10-85	142	Mineral	122	2015	2070002	20700020207	Piney Swamp Run-North Branch Potomac River
ROCKVILLE MINING CO.	S-65-82	475	Preston	310	2015	5020004	50200040703	Muddy Creek
F & M COAL CO.	S-1026-87	167	Preston	167	2015	5020004	50200040705	Greens Run-Cheat River

INTER-STATE LUMBER COMPANY, INC.	S-39-82	31	Preston	4	2015	5020001	50200010602	Outlet Three Fork Creek
SMITH & STOVER	EM-29	25	Raleigh	25	2015	5050004	50500040102	Headwaters Piney Creek
LODESTAR ENERGY, INC.	S-3083-86	74	Nicholas	8.5	2015	5050005	50500050802	Headwaters Muddlety Creek
ROCKVILLE MINING CO.	65-78	158	Preston	145	2015	5020004	50200040703	Muddy Creek
ROCKVILLE MINING CO.	S-1035-86	120	Preston	93	2015	5020004	50200040605	Lower Big Sandy Creek
Z & F DEVELOPMENT CO.	S-21-84	28	Monongalia	28	2015	5020003	50200030304	Whiteday Creek
BUFFALO COAL COMPANY, INC.	S-53-80	375	Grant	115	2015	2070002	20700020202	Mount Storm Lake-Stony River
MERIDAN OF VIRGINIA, INC.	S-4005-89	99	McDowell	6	2015	5070201	50702010105	Lower Dry Fork
HARVEY ENERGY CORP.	S-35-81	22	Fayette	22	2015	5050004	50500040204	Meadow Creek
J.A.L. COAL CO., INC.	S-23-82	40	Monongalia	2	2015	5020003	50200030303	Indian Creek
JOCARR RESOURCES, INC.	U-3059-86	10	Nicholas	12	2015	5050005	50500050806	Headwaters Peters Creek
GREENDALE COALS, INC.	S-75-83	224	Clay	200	2015	5050005	50500050702	Outlet Twentymile Creek
F & M COAL CO.	46-79	130	Preston	116	2015	5020004	50200040704	Roaring Creek-Cheat River
J & N PROCESSING COMPANY, LLC	O-58-83	202.9	Raleigh	195	2015	5050009	50500090202	Upper Marsh Fork
INTER-STATE LUMBER COMPANY, INC.	S-96-82	25	Preston	7	2015	5020001	50200010601	Headwaters Three Fork Creek
EDWARD E. THOMPSON	S-1041-89	26	Monongalia	4	2015	5020004	50200040707	Cheat Lake-Cheat River
BUFFALO COAL COMPANY, INC.	S-2003-88	356	Tucker	160	2015	2070002	20700020202	Mount Storm Lake-Stony River
ROYAL SCOT MINERALS, INC.	31-72	400	Greenbrier	0	2015	5050005	50500050601	Little Clear Creek
BRADY CLINE COAL CO.	EM-97	11	Nicholas	6	2015	5050007	50500070501	Headwaters Buffalo Creek
JINKS MINING COMPANY	U-3031-93	15	Nicholas	8	2015	5050005	50500050801	Big Beaver Creek
SHARON COAL CO.	S-1028-87	160	Preston	3	2015	5020004	50200040706	Bull Run-Cheat River
RALEIGH COMMERCIAL DEVEVELOPMENT	149-79	70	Fayette	25	2015	5050004	50500040204	Meadow Creek
ROCKVILLE MINING CO.	237-76	50	Preston	44	2015	5020004	50200040705	Greens Run-Cheat River
ZY COAL CO.	S-30-80	62	Clay	0	2015	5050007	50500070502	Lilly Fork
BUFFALO COAL COMPANY, INC.	S-52-80	191	Grant	59.2	2015	2070002	20700020202	Mount Storm Lake-Stony River
THE MASTELLER COAL COMPANY	S-125-82	49	Mineral	10	2015	2070002	20700020207	Piney Swamp Run-North Branch Potomac River
SOUTHERN EAGLE MINING CORPORATION	U-32-84	11	Randolph	12	2015	5020004	50200040303	Taylor Run-Shavers Fork
WINCHESTER COALS, INC.	O-52-83	4.5	Logan	3	2016	5070102	50701020105	Fourteenmile Creek-Guyandotte River
SUMMERSVILLE FIVE BLOCK	S-3051-88	604	Nicholas	175	2016	5050007	50500070502	Lilly Fork
A S & K, INC.	S-1011-89	24	Monongalia	26	2016	5020003	50200030308	Scotts Run-Monongahela River
ROCKVILLE MINING CO.	S-91-85	125	Preston	50	2016	5020004	50200040703	Muddy Creek
ALPHAINE CORP.	S-6032-86	30	Clay	22	2016	5050007	50500070901	Leatherwood Creek-Elk River
LO-MING COAL CORPORATION	U-5049-87	12	Logan	4	2016	5070101	50701010402	Island Creek
PRINCESS SUSAN COAL CO.	S-76-82	67	Kanawha	0	2016	5050006	50500060401	Witcher Creek
CARSON ONE MINING, LLC	O-4-84	83	Upshur	75	2016	5020001	50200010303	French Creek
KEYSTONE COAL, INC.	S-84-83	100	Mingo	35	2016	5070201	50702010310	Blackberry Creek-Tug Fork
KEYSTONE COAL, INC.	U-186-83	19	Mingo	14	2016	5070201	50702010311	Mate Creek

ROBLEE COAL COMPANY	O-1009-93	51.48	Upshur	31.05	2016	5020002	50200020303	Hackers Creek
J. C. B. MINING, INC.	U-2006-88	9.99	Lewis	9.1	2016	5020002	50200020105	Polk Creek-West Fork River
LANDMARK CORPORATION	S-5069-88	184.52	Boone	30.5	2016	5050009	50500090502	Upper Little Coal River
ALAN BLOSSER	S-1010-87	12	Monongalia	12	2016	5020004	50200040707	Cheat Lake-Cheat River
SALYERS LEASING CORP.	U-5066-87	19	Mingo	9	2016	5070101	50701010506	Elk Creek-Guyandotte River
APPALACHIAN FUELS, LLC	S-3041-88	390	Clay	62.7	2016	5050005	50500050702	Outlet Twentymile Creek
ZY COAL CO.	91-79	64	Clay	0	2016	5050007	50500070503	Outlet Buffalo Creek
J. E. B., INC.	S-1063-86	56	Preston	56	2016	5020004	50200040702	Pringle Run-Cheat River
PINNACLE CREEK MINING CORP.	R-721	32	Wyoming	24	2016	5070101	50701010302	Pinnacle Creek
VICKIE ENERGY, INC.	U-53-85	14	Pocahontas	14	2016	5050005	50500050402	South Fork Cherry River
LOBO CAPITOL, INC.	UO-204	6	Preston	6	2016	5020004	50200040703	Muddy Creek

Special Reclamation (Land)

COMPANY	PERMIT	ACRES	COUNTY	SPREC_ACRE	YEAR	HUC8	HUC12	HU12_NAME
BELVA COAL COMPANY	R-591	45	Logan	60	2014	5070101	50701010507	Rum Creek-Guyandotte River
GLADY FORK MINING, INC.	U-60-83	33.07	Upshur	18	2014	5020001	50200010303	French Creek
KANAWHA DEVELOPMENT CORPORATION	O-14-81	48.67	Fayette	4	2015	5050006	50500060303	Smithers Creek
APPALACHIAN FUELS, LLC.	P-3019-08	10	Fayette	1	2015	5050006	50500060304	Boomer Branch-Kanawha River
KEYSTONE COAL, INC.	S-101-85	99	Mingo	22	2015	5070201	50702010310	Blackberry Creek-Tug Fork
QUINTAIN DEVELOPMENT, LLC	S-5033-96	369.25	Mingo	185	2015	5070201	50702010602	Jennie Creek-Tug Fork
ENERGY MARKETING CO., INC.	U-16-83	8.04	Barbour	3	2016	5020002	50200020201	Gnatty Creek
ENERGY MARKETING CO. INC.	UO-520	12.84	Barbour	7	2016	5020002	50200020202	Headwaters Elk Creek
ENERGY MARKETING CO. INC.	UO-885	67.11	Barbour	37	2016	5020002	50200020202	Headwaters Elk Creek
LANDMARK CORPORATION	S-5047-89	250.21	Boone	0	2025	5050009	50500090502	Upper Little Coal River
KEYSTONE COAL, INC.	U-5045-87	13.65	Mingo	0	2025	5070201	50702010310	Blackberry Creek-Tug Fork

Appendix 4 – TMDL development schedule

Group A

Subwatershed	Stream Name	Code	Trout	Impairments							
				pH	DO	Fe	Al	Cl	Se	Mn	FC
South Branch Potomac	UNT RM 1.38/UNT RM 0.30/South Branch Potomac River RM 21.86	WVPSB-1.9-A-1									X
South Branch Potomac	Buffalo Creek	WVPSB-5									X
South Branch Potomac	Dumpling Run	WVPSB-9-B									X
South Branch Potomac	Anderson Run	WVPSB-18									X
South Branch Potomac	Mudlick Run	WVPSB-18-A				X					X
South Branch Potomac	UNT/Mudlick Run RM 2.88	WVPSB-18-A-0.8									X

South Branch Potomac	UNT/UNT RM 1.62/Mudlick Run RM 2.88	WVPSB-18-A-0.8-B									X
South Branch Potomac	Turnmill Run	WVPSB-18-A-1				X					X
South Branch Potomac	Walnut Bottom Run	WVPSB-18-B									X
South Branch Potomac	UNT/South Branch Potomac River RM 40.44	WVPSB-21-T									X
South Branch Potomac	UNT/South Branch Potomac River RM 59.19	WVPSB-21.5									X
South Branch Potomac	UNT/UNT RM 2.27/South Branch Potomac River	WVPSB-21.5-E									X
South Branch Potomac	UNT/UNT RM 4.07/South Branch Potomac River RM 59.19	WVPSB-21.5-G									X
South Branch Potomac	Mill Creek	WVPSB-25									X
South Branch Potomac	Johnson Run	WVPSB-25-A									X
South Branch Potomac	North Mill Creek	WVPSB-25-B									X
South Branch Potomac	Stony Creek	WVPSB-25-B-1				X					X
South Branch Potomac	Brushy Run	WVPSB-25-B-2				X					X
South Branch Potomac	South Mill Creek	WVPSB-25-C									X
South Branch Potomac	Robinson Run	WVPSB-26-A									X
South Branch Potomac	UNT/Robinson Run RM 2.84	WVPSB-26-A-4			X						X
South Branch Potomac	South Fork/Lunice Creek	WVPSB-26-D	X		X	X					X
South Branch Potomac	Big Star Run	WVPSB-26-D-2	X								X
South Branch Potomac	Powers Hollow	WVPSB-28-0.2A									X
South Branch Potomac	Jordan Run	WVPSB-28-A									X
South Branch Potomac	Laurel Run/Jordan Run	WVPSB-28-A-2	X								X
South Branch Potomac	Deer Run	WVPSB-35									X
Upper Kanawha	Mission Hollow (Venable Branch)	WVK-46									X
Upper Kanawha	Chappel Hollow (Chappel Branch)	WVK-46-A									X
Upper Kanawha	Lower Donnally Branch	WVK-48				X					X
Upper Kanawha	Pointlick Fork	WVK-49-F							X		
Upper Kanawha	UNT/Pointlick Fork RM 2.26	WVK-49-F-4							X		
Upper Kanawha	Rattlesnake Hollow	WVK-49-I							X		
Upper Kanawha	Georges Creek	WVK-50									X
Upper Kanawha	New West Hollow	WVK-58-B.8-1						X	X		
Upper Kanawha	Wet Branch	WVK-61-C							X		
Upper Kanawha	Longbottom Creek	WVK-61-F						X			
Upper Kanawha	Laurel Fork/Longbottom Creek	WVK-61-F-2						X			
Upper Kanawha	Coal Fork	WVK-61-H						X	X		
Upper Kanawha	Laurel Fork	WVK-61-H-1							X		
Upper Kanawha	Left Fork/Laurel Fork	WVK-61-H-1-A							X		
Upper Kanawha	UNT/Left Fork RM 1.99/Laurel Fork	WVK-61-H-1-A-4							X		
Upper Kanawha	UNT/Coal Fork RM 4.63	WVK-61-H-3						X	X		
Upper Kanawha	Toms Fork	WVK-61-K							X		
Upper Kanawha	Tenmile Fork	WVK-61-L							X		
Upper Kanawha	UNT/Tenmile Fork RM 1.22	WVK-61-L-0.5							X		
Upper Kanawha	UNT/Tenmile Fork RM 3.98	WVK-61-L-4							X		
Upper Kanawha	UNT/Tenmile Fork RM 4.17	WVK-61-L-5							X		

Upper Kanawha	Kellys Creek	WVK-64				X					X
Upper Kanawha	Horse mill Branch	WVK-64-A		X						X	X
Upper Kanawha	UNT/Horsemill Branch RM 0.50	WVK-64-A-1		X			X				
Upper Kanawha	UNT/Horsemill Branch RM 0.83	WVK-64-A-2		X			X				
Upper Kanawha	UNT/Horsemill Branch RM 1.58	WVK-64-A-4		X		X	X				
Upper Kanawha	Frozen Branch	WVK-64-B							X		X
Upper Kanawha	Sugarcamp Branch	WVK-64-C		X						X	
Upper Kanawha	Hurricane Fork	WVK-64-K							X		X
Upper Kanawha	Goose Hollow	WVK-64-L									X
Upper Kanawha	Cedar Creek	WVK-65-Q		X			X				
Upper Kanawha	Mossy Creek	WVK-65-Y									X
Upper Kanawha	Long Branch	WVK-65-Y-2									X
Upper Kanawha	North Sand Branch	WVK-65-HH-1									X
Upper Kanawha	Maple Fork	WVK-65-HH-1-A				X					X
Upper Kanawha	Hughes Creek	WVK-66				X			X		
Upper Kanawha	Barn Hollow	WVK-66-B.6							X		
Upper Kanawha	Graveyard Hollow	WVK-66-B.7							X		
Upper Kanawha	Sixmile Hollow	WVK-66-D							X		
Upper Kanawha	Bullpush Fork	WVK-72-B							X		
Upper Kanawha	Burnett Hollow	WVK-72-B-2									X
Upper Kanawha	Riffle Hollow	WVK-72-B-4							X		
Upper Kanawha	Fourmile Fork	WVK-72-F							X		
Upper Ohio North	Mahan Run	WVO-96									X
Upper Ohio North	UNT/Mahan Run RM 2.04	WVO-96-A									X
Upper Ohio North	UNT/Holbert Run RM 1.26	WVO-99-B									X
Upper Ohio North	Laurel Hollow (Muchmores Run)	WVO-105									X
Upper Ohio North	Middle Run	WVO-107									X
Upper Ohio North	Marks Run	WVO-108									X
Upper Ohio North	UNT/Marks Run RM 0.89	WVO-108-A									X
Shenandoah Hardy	UNT/Capon Run RM 4.49	WVSNF-1-A				X					X
Shenandoah Hardy	Crab Run	WVSNF-2				X					X
Shenandoah Hardy	UNT/Crab Run RM 3.97	WVSNF-2-N				X					X
Shenandoah Hardy	UNT/Crab Run RM 5.65	WVSNF-2-T				X					X

Group B

Subwatershed	Stream name	Code	Trout	Impairments						
				pH	DO	Fe	Al	Be	Mn	FC
Tygart Valley	Tygart Valley River	WVMT	X			X			-	X
Goose Creek	Goose Creek	WVMT-4		X		X	X		-	X
Lost Run	Lost Run	WVMT-5				RE			-	X
Wickwire Run	Wickwire Run	WVMT-8							-	X

Otter Creek	Otter Creek	WVMT-9							-	X
Berkeley Run	Berkeley Run	WVMT-11				X			-	X
Berkeley Run	Shelby Run	WVMT-11-A				RE			-	X
Berkeley Run	Long Run	WVMT-11-B				X			-	X
Berkeley Run	Berry Run	WVMT-11-B-1				X			-	X
Three Fork Creek	Three Fork Creek	WVMT-12		X		RE				X
Three Fork Creek	UNT/Three Fork Creek RM 2.02	WVMT-12-0.5A							-	X
Three Fork Creek	Rocky Branch	WVMT-12-A								X
Three Fork Creek	Raccoon Creek	WVMT-12-C		X		X	X			
Three Fork Creek	Little Raccoon Creek	WVMT-12-C-2				RE				X
Three Fork Creek	Laurel Run	WVMT-12-D	X							X
Three Fork Creek	Martins Run	WVMT-12-E								X
Three Fork Creek	Lick Run	WVMT-12-F		X			X			
Three Fork Creek	Fields Creek	WVMT-12-G	X	X		X	X			X
Three Fork Creek	Brains Creek	WVMT-12-G-2	X			RE				X
Three Fork Creek	Birds Creek	WVMT-12-H		X		RE	X	X		
Three Fork Creek	Squires Creek	WVMT-12-H-1		X		X	X	X		
Three Fork Creek	UNT/Squires Creek RM 2.40	WVMT-12-H-1-B		X		X	X			
Three Fork Creek	UNT/Birds Creek RM 0.64	WVMT-12-H-2		X		X	X			
Three Fork Creek	UNT/Birds Creek RM 2.57	WVMT-12-H-4					X			
Pleasant Creek	Pleasant Creek	WVMT-15								X
Sandy Creek	Sandy Creek	WVMT-18								X
Sandy Creek	Little Cove Run	WVMT-18-D								X
Sandy Creek	Little Sandy Creek	WVMT-18-E		X		X	X			
Sandy Creek	Maple Run	WVMT-18-E-1		X		X	X			
Sandy Creek	York Run	WVMT-18-E-2								X
Sandy Creek	Left Fork/Little Sandy Creek	WVMT-18-E-3		X		X	X	X		
Sandy Creek	Left Fork/Sandy Creek	WVMT-18-G				RE				X
Sandy Creek	UNT/Left Fork RM 4.58/Sandy Creek	WVMT-18-G-2								X
Sandy Creek	UNT/Sandy Creek RM 10.47	WVMT-18-H								X
Sandy Creek	UNT/UNT RM 0.56/Sandy Creek RM 10.47	WVMT-18-H-1		X						
Stony Run	Stony Run	WVMT-19.5								X
Big Cove Run	Big Cove Run	WVMT-20								X
Teter Creek	Teter Creek	WVMT-23	X							X
Teter Creek	Glade Run	WVMT-23-A								X
Teter Creek	Raccoon Creek	WVMT-23-B								X
Teter Creek	Stony Run	WVMT-23-B-1								X
Teter Creek	Brushy Fork	WVMT-23-C	X							X
Teter Creek	Mill Run	WVMT-23-F	X							X
Teter Creek	Jimmy Run	WVMT-23-G		X						
Laurel Creek	Laurel Creek	WVMT-24	X	-	-		X			
Laurel Creek	Frost Run	WVMT-24-A				RE				X

Laurel Creek	Bonica Run	WVMT-24-B								X
Laurel Creek	Sugar Creek	WVMT-24-C			X					X
Laurel Creek	Glady Creek	WVMT-24-C-0.5				X				X
Laurel Creek	Whitman Run	WVMT-24-C-1.5								X
Laurel Creek	Hunter Fork	WVMT-24-C-3.5								X
Laurel Creek	Long Run	WVMT-24-C-4								X
Mitchell Run	Mitchell Run	WVMT-25								X
Hackers Creek	Hackers Creek	WVMT-26				X				X
Hackers Creek	Taylor Drain	WVMT-26-A				X				X
Hackers Creek	Foxgrape Run	WVMT-26-B				X				X
Hackers Creek	Little Hackers Creek	WVMT-26-C				X				X
Fords Run	Fords Run	WVMT-27		X		X	X			X
Shooks Run	Shooks Run	WVMT-28								X
Anglins Run	Anglins Run	WVMT-29				RE				X
Laurel Run/Tygart Valley River	Laurel Run/Tygart Valley River	WVMT-32								X
Laurel Run/Tygart Valley River	Bearcamp Run	WVMT-32-D		X						
Buckhannon River	Buckhannon River	WVMTB	X			RE				X
First Big Run	First Big Run	WVMTB-1								X
Cottrill Run	Cottrill Run	WVMTB-2				X				X
Big Run	Big Run	WVMTB-3				X				X
Lick Shoals Run	Lick Shoals Run	WVMTB-4								X
Pecks Run	Pecks Run	WVMTB-5				X				X
Pecks Run	UNT/Pecks Run RM 2.24	WVMTB-5-0.8A				RE				X
Pecks Run	Little Pecks Run	WVMTB-5-B				RE				X
Pecks Run	Mud Run	WVMTB-5-C				RE				X
Sand Run	Sand Run	WVMTB-7								X
Sand Run	Laurel Fork/Sand Run	WVMTB-7-A								X
Sand Run	Left Fork/Sand Run	WVMTB-7-B								X
Big Run	Big Run	WVMTB-8				X				X
Childers Run	Childers Run	WVMTB-9								X
Turkey Run	Turkey Run	WVMTB-10				RE				X
Turkey Run	Sugar Run	WVMTB-10-A				RE				X
Fink Run	Fink Run	WVMTB-11				X				X
Fink Run	Brushy Fork	WVMTB-11-A				X				X
Fink Run	Mud Lick	WVMTB-11-B				X				X
Fink Run	Wash Run	WVMTB-11-B.5								X
Fink Run	Bridge Run	WVMTB-11-B.7			X	X				X
Little Sand Run	Little Sand Run	WVMTB-13			X					X
Little Sand Run	Left Fork/Little Sand Run	WVMTB-13-A								X
Ratcliff Run	Ratcliff Run	WVMTB-14								X
Stony Run	Stony Run	WVMTB-15								X
Hickory Flat Run	Hickory Flat Run	WVMTB-16								X

Cutright Run	Cutright Run	WVMTB-17				X				X
Cutright Run	Lick Run	WVMTB-17-A				X				X
French Creek	French Creek	WVMTB-18				X				X
French Creek	Bull Run	WVMTB-18-B			X	X				X
French Creek	Blacklick Run	WVMTB-18-B-2		X		X	X			
French Creek	Mudlick Run	WVMTB-18-B-3			X	X				X
French Creek	Grand Camp Run	WVMTB-18-C	X				X			X
French Creek	Laurel Fork/French Creek	WVMTB-18-D	X							X
French Creek	Morgan Run	WVMTB-18-F				X				X
French Creek	Grub Hollow	WVMTB-18-G				X				X
French Creek	Brush Run	WVMTB-18-H								X
French Creek	Slab Camp Fork	WVMTB-18-I				X				X
French Creek	Left Fork/French Creek	WVMTB-18-K								X
Trubie Run	Trubie Run	WVMTB-19								X
Sawmill Run	Sawmill Run	WVMTB-20				X				X
Laurel Run/Buckhannon River	Laurel Run/Buckhannon River	WVMTB-24								X
Tenmile Creek	Tenmile Creek	WVMTB-25	X			RE			X	
Tenmile Creek	Right Fork/Tenmile Creek	WVMTB-25-A	X			RE				X
Panther Creek	Panther Creek	WVMTB-27	X	X						
Swamp Run	Swamp Run	WVMTB-29		X		RE				
Herods Run	Herods Run	WVMTB-30		X						
Right Fork/Buckhannon River	Right Fork/Buckhannon River	WVMTB-31				RE				
Right Fork/Buckhannon River	UNT/Right Fork RM 12.18/Buckhannon River	WVMTB-31-K		X						
Left Fork/Buckhannon River	Left Fork/Buckhannon River	WVMTB-32				RE				
Left Fork/Buckhannon River	Smooth Rock Lick Run	WVMTB-32-A		X						
Middle Fork River	Middle Fork River	WVMTM	X			X				
Hooppole Run	Hooppole Run	WVMTM-3				X				
Devil Run	Devil Run	WVMTM-4	X	X		RE				
Service Run	Service Run	WVMTM-5		X						
Hell Run	Hell Run	WVMTM-6	X	X		RE	X			
Short Run	Short Run	WVMTM-7	X	X			X			
White Oak Run	White Oak Run	WVMTM-8		X		RE				
White Oak Run	UNT/White Oak Run RM 0.44	WVMTM-8-A		X			X			
Gum Run	Gum Run	WVMTM-9								X
Gum Run	UNT/Gum Run RM 1.18	WVMTM-9-B								X
Laurel Creek/Middle Fork River	Laurel Creek/Middle Fork River	WVMTM-10	X							X
Laurel Creek/Middle Fork River	Brook Run	WVMTM-10-A		X						X
Right Fork/Middle Fork River	Right Fork/Middle Fork River	WVMTM-11	X			X				X
Right Fork/Middle Fork River	Jenks Fork	WVMTM-11-E	X	X						
Kettle Run	Kettle Run	WVMTM-12		X			X			
Lick Run	Lick Run	WVMTM-15		X						
Cassity Fork	Cassity Fork	WVMTM-16	X	X		X	X	X		

Cassity Fork	Panther Run	WVMTM-16-A	X			X	X			
Cassity Fork	UNT/Panther Run RM 0.62	WVMTM-16-A-1	X	X			X			
Cassity Fork	Mulberry Fork	WVMTM-16-B		X						
Stonecoal Run	Stonecoal Run	WVMTM-20	X	X			X			
Pleasant Run	Pleasant Run	WVMTM-21	X	X						
Schoolcraft Run	Birch Fork	WVMTM-25-A	X	X			X			
Birch Fork	Rocky Run	WVMTM-26-B	X	X			X			
UNT/Tygart Valley River RM 58.40	UNT/Tygart Valley River RM 58.40	WVMT-33.6				X				
Mill Creek	Mill Creek	WVMT-35	X		X	X				X
Shooks Run	Shooks Run	WVMT-35.5								X
Island Run	Island Run	WVMT-36				RE				
Beaver Creek	Beaver Creek	WVMT-37		X		RE	X			
Zebs Creek	Zebs Creek	WVMT-38	X							X
Laurel Run	Laurel Run	WVMT-39	X			RE				
Big Laurel Run	Little Laurel Run	WVMT-40-A	X	X			X			
UNT/Tygart Valley River RM 72.55	UNT/Tygart Valley River RM 72.55	WVMT-40.5		X		X	X			
Grassy Run	Grassy Run	WVMT-41		X		X	X			
Roaring Creek	Roaring Creek	WVMT-42		X		RE	X			
UNT/Tygart Valley River RM 76.87	UNT/Tygart Valley River RM 76.87	WVMT-42.5				X				X
Roaring Creek	UNT/Roaring Creek RM 4.09	WVMT-42-0.8A		X		X	X			
Roaring Creek	Flatbush Fork	WVMT-42-B	X	X			X			
Roaring Creek	UNT/Flatbush Fork RM 0.78	WVMT-42-B-0.5		X			X			
Roaring Creek	UNT/Flatbush Fork RM 1.80	WVMT-42-B-1		X			X			
Roaring Creek	UNT/Roaring Creek RM 11.0	WVMT-42-E		X						
Leading Creek	Leading Creek	WVMT-43				X				X
UNT/Tygart Valley River Rm 81.92	UNT/Tygart Valley River Rm 81.92	WVMT-43.8				X				
UNT/Tygart Valley River Rm 82.27	UNT/Tygart Valley River Rm 82.27	WVMT-43.9				X				X
Leading Creek	Craven Run	WVMT-43-A								X
Leading Creek	Davis Lick	WVMT-43-H				X				X
Leading Creek	Laurel Run	WVMT-43-O								X
Chenoweth Creek	Chenoweth Creek	WVMT-45	X							X
Chenoweth Creek	Isner Creek	WVMT-45-A								X
Kings Run	Kings Run	WVMT-48								X
Dodson Run	Dodson Run	WVMT-49								X
UNT/Tygart Valley River RM 92.85	UNT/Tygart Valley River RM 92.85	WVMT-51.8				X				X
Sea Run	Sea Run	WVMT-56								X
Jones Run	Jones Run	WVMT-58								X
Dry Run	Dry Run	WVMT-63								X
Mill Creek	Mill Creek	WVMT-64	X							X
UNT/Tygart Valley River RM 105.69	UNT/Tygart Valley River RM 105.69	WVMT-64.2				X				X
Mill Creek	McCall Run	WVMT-64-0.5A								X
Mill Creek	Right Fork/Mill Creek	WVMT-64-A								X

Mill Creek	Meatbox Run	WVMT-64-E	X	X			X			
Mill Creek	Potatohole Fork	WVMT-64-F	X	X			X			

Group C

Subwatershed	Stream name	Code	Trout	Impairments					
				pH	DO	Fe	Al	Mn	FC
Meadow River	Meadow River	WVKG-19			X	X			X
Meadow River	Dogwood Creek	WVKG-19-A	X						
Meadow River	Hedricks Creek	WVKG-19-B							
Meadow River	Arrowwood Creek	WVKG-19-C		X					
Meadow River	Brackens Creek	WVKG-19-J	X	X					
Meadow River	Piney Creek	WVKG-19-L-1		X					
Meadow River	UNT/Burdette Creek RM 1.35	WVKG-19-L-2				X			
Meadow River	Toms Creek	WVKG-19-M		X					
Meadow River	Laurel Creek/Meadow River	WVKG-19-N	X	X					
Meadow River	UNT/Laurel Creek RM 1.88	WVKG-19-N-1		X					
Meadow River	Kates Creek	WVKG-19-O		X					
Meadow River	Surbaugh Creek	WVKG-19-O.7	X	X					
Meadow River	Meadow Creek	WVKG-19-P							X
Meadow River	Old Field Branch	WVKG-19-U-2-C	X	X					
Meadow River	Little Clear Creek	WVKG-19-V	X						
Meadow River	Beaver Creek	WVKG-19-V-1							X
Meadow River	Otter Creek	WVKG-19-W			X	X			
Meadow River	Callahan Branch	WVKG-19-W.4				X			
Meadow River	Methodist Branch	WVKG-19-W-1				X			
Meadow River	Smoot Branch	WVKG-19-W-2							X
Meadow River	UNT/Otter Creek RM 2.81	WVKG-19-W-4							X
Meadow River	Buffalo Creek	WVKG-19-Y				X			
Rockymarsh Run	Rockymarsh Run	WVP-3	X						X
Rockymarsh Run	UNT/Rockymarsh Run RM 3.99 (West Fork)	WVP-3-B							X
Warm Spring Run	Warm Spring Run	WVP-10							X
Warm Spring Run	UNT/Warm Spring Run RM 10.05	WVP-10-L							X

Note: Group D impairments will not be finalized until September 2015.