

Evaluation of West Virginia's Phase III Watershed Implementation Plan (WIP)

Executive Summary

The U.S. Environmental Protection Agency (EPA) is providing this evaluation of West Virginia's Phase III Watershed Implementation Plan (WIP). EPA's review of West Virginia's Phase III WIP found that West Virginia largely addressed the goals of the Chesapeake Bay Total Maximum Daily Load (Bay TMDL) and the additional expectations set by the Chesapeake Bay Program (CBP) partnership.

West Virginia's engagement of local agricultural partners, including non-governmental organizations, resulted in a "locally-driven" Phase III WIP. The state also invested in a thorough verification program that accounts for Best Management Practices (BMPs) implemented historically to the present. West Virginia is also targeting implementation and regulatory activities in those counties that are expected to experience the most growth between now and 2025. West Virginia's Phase III WIP emphasizes co-benefits¹ that heavily overlap with those benefits in the 2014 Watershed Agreement. In addition, West Virginia is proactively addressing additional nutrient loads due to climate change impacts through its Phase III WIP.

West Virginia's plan meets its numeric planning targets for nitrogen and phosphorus at the state and state-basin levels through the submission of BMPs and wastewater reductions. West Virginia's plan provides confidence in its narrative submission (i.e., adequate funding and programs) that it will attain the agriculture and stormwater load reductions by 2025 through the suite of BMPs proposed. In its evaluation of West Virginia's Phase III WIP, EPA identified that full implementation of West Virginia's plan is expected to achieve 100% of the statewide and state-basin (Potomac and James) Phase III WIP planning targets for nitrogen and phosphorus. State-basin targets were met through nutrient exchanges between basins. EPA will continue to monitor progress through milestone submissions to assure those goals will be achieved by the partnership-established goal of 2025.

¹ Co-benefits are those that not only result in water quality improvements but could address other 2014 Chesapeake Bay Watershed Agreement Outcomes (e.g., environmental problems, wetlands, or forest buffers), local water quality benefits, as well as economic and ecosystem services benefits generated from restoration activities.

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Background

The seven jurisdictions (Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia) in the Chesapeake Bay Program (CBP) partnership agreed to develop Watershed Implementation Plans (WIPs) in three phases to provide a framework for reducing nitrogen, phosphorus, and sediment loads to meet water quality standards in the Chesapeake Bay and its tidal tributaries. The CBP partnership established the goal to have all practices in place by 2025 that were necessary to achieve applicable water quality standards in the tidal Bay. The Chesapeake Bay TMDL (Bay TMDL), which is an informational planning tool, established goals to be met using the CBP partnership's timeline of 2025. In 2010, EPA worked with the CBP partnership to establish the Bay TMDL based primarily on the Phase I WIP commitments made by each of the Bay jurisdictions. West Virginia agreed to develop Phase II and Phase III WIPs to set out an adaptable approach for achieving the pollutant reductions and programmatic commitments that West Virginia intended to implement in each Phase so that it would meet its commitment to the CBP partnership's 2025 goals.

The CBP partnership agreed that EPA should help provide accountability and assess whether (1) each jurisdiction's WIP sets out sufficient commitments to meet the 2025 goals and (2) whether there is an adequate level of confidence that the jurisdiction will achieve those specific commitments. While EPA does not approve or disapprove a WIP, EPA provides the assessment for the benefit of the CBP jurisdictions, and, as appropriate, may provide additional recommendations for strengthening the WIP or its components. EPA evaluated West Virginia's Phase III WIP to assess whether West Virginia commitments will meet the 2025 statewide and state-basin Phase III WIP planning targets and whether West Virginia included sufficient information in the WIP to provide confidence that it will achieve these targets by 2025.

Overview

In reviewing West Virginia's Phase III WIP, EPA found the state addressed the goals of the Bay TMDL and the CBP partnership's expectations. Using the CBP partnership's suite of modeling tools, simulations indicate that full implementation of West Virginia's plan is expected to achieve 100% of the statewide and state-basin (Potomac and James) Phase III WIP planning targets for nitrogen and phosphorus. State-basin targets were met through nutrient exchanges between basins.²

Additionally, Phase III WIP planning targets for sediment were approved by the CBP partnership's Management Board on October 17, 2019 and recommended to the Principals Staff Committee (PSC) for final approval. In its Phase III WIP, West Virginia committed to provide an addendum to its Phase III WIP once the PSC approves these sediment targets. The Phase III WIP sediment targets will not affect the BMPs called for in the WIP and are not intended to be the driver for implementation moving forward.

Some of the notable strengths identified in the Phase III WIP include:

² Each jurisdiction has the option of adjusting its Phase III WIP state-basin planning targets through nutrient exchanges and/or exchanges with other basins within that jurisdiction. Consistent with commitments West Virginia agreed to through the CBP partnership, any adjustments to the state-basin planning targets must still result in all 92 Chesapeake Bay segments achieving the respective jurisdictions' Chesapeake Bay water quality standards under Phase 6 Chesapeake Bay airshed, watershed, and estuarine water quality/sediment transport model simulated conditions.

- West Virginia conducted a robust engagement effort with appropriate agricultural organizations and non-governmental organizations in developing the Phase III WIP.
- West Virginia insured coverage of the West Virginia portion of the Chesapeake Bay watershed expected to experience the most growth by post-construction stormwater management regulations.
- Construction of a new treatment plant operated by the Moorefield Regional Wastewater Authority to treat combined wastewater from the Town of Moorefield and two poultry processing significant industrial facilities, which accounts for a significant share of required nutrient reductions from this sector.
- West Virginia included a requirement that Publicly Owned Treat Works (POTWs) permittees develop plans of action to address and offset new growth when the average flow of treated wastewater reaches 90% of design flow.
- New information provided on partnerships, capacity, and programs to accelerate nitrogen reductions in the agricultural sector.
- Expression of local planning goals in the agricultural and stormwater sectors.

EPA's review also noted the following enhancement that could increase confidence that West Virginia's Phase III WIP will achieve the 2025 goals:

- West Virginia should provide more detail on how it will accelerate nitrogen reductions in the agricultural sector, given that West Virginia's planned level of effort in this sector is three times greater than what's been achieved since the release of the 2010 Bay TMDL.

EPA Oversight and Assistance³

As it has done since the release of the Bay TMDL, EPA will continue to commit staff, contractual, and funding resources to support the implementation of West Virginia's Phase III WIP and future two-year milestones. This support includes evaluation of the most-effective practices and locations, annual WIP assistance funding to address priority implementation needs, evaluation of West Virginia's implementation capacity under various staffing, funding, regulatory and programmatic scenarios, local planning outreach, legislative and regulatory gap analysis, and monitoring trend analyses. In addition, EPA will continue to work with federal partners to provide leadership and coordinate with West Virginia on WIP and two-year milestone implementation to reduce pollution from federal lands. EPA will continue its commitment to track annual progress of West Virginia and all the other Bay jurisdictions and make those results available to the CBP partnership. [See: <https://www.epa.gov/chesapeake-bay-tmdl/epa-oversight-watershed-implementation-plans-wips-and-milestones-chesapeake-bay>]

In our role to help West Virginia improve its accountability to the CBP partnership in meeting its commitment to the 2025 goals, EPA recommends the following be included in West Virginia's two-year milestones, beginning with the 2020-2021 milestone period:

³ This Evaluation is not a final agency action, and does not create any right, responsibility, or benefit, substantive or procedural, enforceable by law or equity. Pursuant to the Anti-Deficiency Act, 31 U.S.C. §§ 1341 and 1342, all commitments made by EPA in this Evaluation are subject to the availability of appropriated funds and budget priorities. Nothing in this Evaluation obligates EPA to obligate or transfer any funds.

Recommended Enhancements to the Phase III WIP (See Detailed Review)	Recommended Actions
Additional information to increase confidence that practices that account for most nitrogen load reductions will be implemented.	Develop numeric BMP implementation targets for the 2020-2021 milestone period for BMPs expected to account for at least 60% of the nitrogen reductions between now and 2025: <ul style="list-style-type: none"> • Animal Waste Management Systems • Forest Buffers – Streamside with Exclusion Fencing
Detail on how West Virginia will accelerate nitrogen reductions in the agricultural sector.	Develop specific programmatic milestones within the 2021-2022 milestone period for its key agricultural WIP initiatives including: <ul style="list-style-type: none"> • New strategies, legislative programs, incentive programs, compliance programs, and/or funding mechanisms to support increased implementation levels for the following BMPs: prescribed grazing, poultry mortality composting, forest buffers, conservation tillage, and soil conservation and water quality plans. • New strategies, legislative programs, incentive programs, compliance programs, and/or funding mechanisms to support accelerated implementation of soil health practices beyond holding field day educational events.
Detail on the strategy to address the list of local needs identified in the Phase III WIP.	Include specific milestones for the 2020-2021 period to clearly articulate how such a strategy will be developed and implemented to address local needs, including additional detail related to reductions to be achieved by 2025 without additional reductions from existing development.
Information on tracking and addressing trends for agricultural growth, particularly for livestock and poultry animals.	Develop programmatic milestones to describe more specifically how it will explore and develop options to enhance its poultry litter transport program.

Over the 2020-2021 milestone period, EPA plans to provide the following specific assistance to West Virginia to continue and, in some cases, increase the level of confidence in achieving the current Phase III WIP goals:

General

- Provide annual grant (e.g., Chesapeake Bay Implementation Grants, Chesapeake Bay Regulatory and Accountability Program grants, Local Government funding, etc.) and WIP assistance funding to West Virginia to support implementation of its Phase III WIP.

- Assist West Virginia in such actions as targeting practices in higher loading counties. EPA plans to continue to provide technical assistance, data, and tools to aid West Virginia in conducting assessments at local levels, including water quality monitoring data, model analyses, high-resolution land cover, improved stream networks, BMP opportunity layers, and application of management-relevant research findings.
- Track West Virginia's progress with its initiatives to support the state's iterative decision-making process.

Agriculture

- Continue to work with West Virginia to provide targeted financial assistance, if available, to support its agricultural initiatives.
- Continue to work with West Virginia's Department of Agriculture (WVDA) to develop approaches to measure and account for farmers' conservation efforts and the resulting environmental benefits.
- Continue to identify opportunities to coordinate and leverage federal (EPA and United States Department of Agriculture), state, and private funding to increase agricultural conservation practice implementation in West Virginia.
- Work to advance opportunities to provide grant funding directly to WVDA, particularly in those instances where it can improve the timely expenditure of federal funds to support environmental protection goals (e.g., Chesapeake Bay Program grants).
- Work with WVDA to host joint trainings for the agricultural community to ensure effective implementation of federal and state agricultural regulatory programs and to host EPA trainings for WVDA for delegated programs, upon request.
- Work with West Virginia to identify tools and activities to further program compliance and participation and improve communication and support to the agricultural community.

Stormwater

- Conduct National Pollutant Discharge Elimination System (NPDES) state inspector training for state agency staff, upon request.
- Provide technical assistance for the review and approval of Municipal Separate Storm Sewer (MS4) permits, upon request.
- EPA can, if requested:
 - Provide MS4 forums as an opportunity for local permittees to collaborate and exchange ideas on improved compliance with permit requirements.
 - Conduct green infrastructure workshops.
 - Recommend projects to prioritize in unregulated areas to address reductions needed in that portion of the sector.

Wastewater

- Assist West Virginia, as requested, with nutrient optimization and compliance assistance in this sector.

Trading and Offsets

- Continue to provide oversight and input into West Virginia's trading and offset approach by reviewing relevant draft regulations, policies, and NPDES permits.

Growth

- Provide a sector growth breakout for each sector based on state-submitted progress data for each milestone period.

Detailed Evaluation of Overall Load Reduction and Source Sectors

The following sections provide specific highlights of key strengths of West Virginia's Phase III WIP. These sections also highlight areas for enhancement to assist West Virginia in implementing its Phase III WIP and subsequent two-year milestones to provide confidence that West Virginia will have programs and practices in place by 2025 to achieve its Phase III WIP planning targets.

Load Reduction Review

When evaluating West Virginia's Phase III WIP numeric commitments, EPA modeled implementation scenarios through the CBP partnership's Phase 6 suite of modeling tools and compared those simulated nutrient⁴ loads to West Virginia's 2025 statewide and state-basin Phase III WIP planning targets.

Simulations using that scenario indicate that full implementation of West Virginia's plan is expected to achieve 100% of the statewide and state-basin (Potomac and James) Phase III WIP planning targets for nitrogen and phosphorus. State-basin targets were met through nutrient exchanges between basins.⁵

West Virginia also made numeric reduction commitments to address climate change (i.e., 0.24 million pounds of nitrogen and 0.02 million pounds of phosphorus). EPA determined that the additional climate change reduction commitments (with the associated nutrient exchanges and state-basin exchanges) will achieve dissolved oxygen water quality standards in the Chesapeake Bay and its tidal tributaries.

West Virginia proposes to achieve its pollutant reductions by implementing BMPs in the agriculture and stormwater sectors. West Virginia's Phase III WIP addresses each of the additional changing and local conditions identified by the CBP partnership.

Source Sectors**Agriculture****Key Strengths**

Key strengths in the Phase III WIP include:

- West Virginia conducted a robust engagement effort with appropriate agricultural organizations and non-governmental organizations.
- West Virginia indicated that the WVDA will continue to provide assistance for voluntary nutrient management plans (including sampling) into the future.
- West Virginia focused on priority agricultural practices that are desired by producers and good for both local and Chesapeake Bay water quality.
- West Virginia partnered with U.S. Fish and Wildlife Service and Trout Unlimited to offer fencing for Conservation Reserve Enhancement Program (CREP) contract recipients (and other Farm Bill program recipients) to help keep livestock out of the buffer area and away from the stream.

⁴ Phase III WIP planning targets for sediment are currently under review by the CBP partnership.

⁵ Each jurisdiction has the option of adjusting its Phase III WIP state-basin planning targets through nutrient exchanges and/or exchanges with other basins within that jurisdiction. Any adjustments to the state-basin planning targets must still result in all 92 Chesapeake Bay segments achieving the respective jurisdictions' Chesapeake Bay water quality standards under Phase 6 Chesapeake Bay airshed, watershed, and estuarine water quality/sediment transport model simulated conditions.

- West Virginia focused implementation of nutrient-reducing practices in Lost River and Cacapon River watersheds to address local water quality.
- West Virginia completed substantial work within the poultry industry to reduce nutrient loads.
- West Virginia placed commendable emphasis on BMPs with co-benefits through numerous references to stream health, local aquatic life, vital habitats, brook trout, flood control/mitigation, and recreational activities. As such, West Virginia focused on BMPs including forested buffers, exclusion fencing, and stream restoration in the Phase III WIP.
- West Virginia described a strong agricultural education and outreach component in the Phase III WIP.
- Additional information provided on how implementation in the agricultural sector will be strengthened through non-governmental partnerships, especially with the CREP; pay for performance approaches with riparian forest buffers; compliance related to CREP; and emphasis on conservation easements.
- Confirmed sufficient WVDA staffing and Natural Resource Conservation Service funding in place to maintain and update nutrient management plan acres.
- Detailed a strategy to encourage and fund animal waste management facilities and address storage capacity issues from increased animal density.
- Provided a more detailed explanation of how West Virginia will increase exclusion fencing and forest buffer implementation by 40% by 2025 when during the past five years acres under implementation have been essentially steady.
- Provided further explanation of the following components of West Virginia’s strategy for poultry litter:
 - In-house-built-up-litter option for poultry waste storage.
 - Alternative uses of poultry litter.
 - Manure transport out of Hardy County.
- Revised Table 2: Priority Planned Agriculture BMPs in its Phase III WIP to match BMP levels entered in the Chesapeake Assessment Scenario Tool.

Enhancements

EPA recommends West Virginia address the following in its 2020-2021 programmatic milestones to satisfy its CBP partnership commitments:

- Provide more detail on how it will accelerate nitrogen reductions in the agricultural sector. Examples where West Virginia could provide more detail include:
 - New strategies, legislative programs, incentive programs, compliance programs, and/or funding mechanisms to support increased implementation levels for the following BMPs: prescribed grazing, poultry mortality composting, forest buffers, conservation tillage, and soil conservation and water quality plans.
 - New strategies, legislative programs, incentive programs, compliance programs, and/or funding mechanisms to support accelerated implementation of soil health practices beyond holding field day educational events.

Stormwater

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia ensured coverage of the West Virginia portion of the Chesapeake Bay watershed expected to experience the most growth by post-construction stormwater management regulations.

- West Virginia investigated the Urban Tree Canopy ordinance in the Eastern Panhandle of West Virginia.
- West Virginia leveraged non-traditional funding sources for nutrient and sediment implementation through the Region 9 Bay Coordinator (e.g. Federal Emergency Management Agency Community Rating System for green infrastructure [GI] co-benefits, Drinking Water Source protection plans, targeting schools for future opportunities, and “Dig Once” Capital Improvement Plan strategy).
- West Virginia launched the Advancing Green Infrastructure Technical Assistance pilot program, which provides local communities with GI planning opportunity assessments as well as conceptual design plans.
- West Virginia leveraged grant money to fund positions (Region 9 Chesapeake Bay Coordinator, Potomac Basin Coordinator, 2 storm water specialists) for local technical assistance.
- West Virginia voluntarily adopted stormwater ordinances with construction and post-construction requirements similar to MS4 permittees by Jefferson County and a few non-regulated municipalities along the eastern panhandle.
- West Virginia implemented twice the Phase II WIP goal for stream restoration and plans to implement 75,000 more feet of restoration through 2025.
- West Virginia plans minor revisions to the Construction Stormwater Guidance manual, including reducing fertilizer application rates and phasing application of nutrients to reduce nutrient runoff from construction sites.
- West Virginia intends to use grant money to assist municipalities in developing Infrastructure Asset Management Planning programs and Capital Improvement Plans, as well as incorporating green infrastructure into public projects and spaces such as schools and parks.
- West Virginia DEP has two dedicated staff positions to carry out BMP verification duties in the stormwater sector.
- West Virginia elaborated on the role of the MS4 general permit into the state’s overall water quality strategy.
- West Virginia provided a strategy for how voluntary BMPs implemented in Morgan County will offset most of the nutrient and sediment load increases due to development, including the tracking, verifying, and reporting of these BMPs.

Enhancements

EPA recommends West Virginia address the following in its 2020-2021 programmatic milestones to satisfy its CBP partnership commitments:

- Provide additional detail related to reductions to be achieved by 2025 without additional reductions from existing development. Examples where more detail should be provided include a strategy to address the list of local needs identified in the Phase III WIP.

Wastewater

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia constructed a new treatment plant operated by the Moorefield Regional Wastewater Authority to treat combined wastewater from the Town of Moorefield and two poultry processing significant industrial facilities, which accounts for a significant share of required nutrient reductions from this sector.
- West Virginia commits to maintain permit compliance by significant facilities.

- West Virginia elaborated on the specific “guidance and support” to be provided to encourage priority activities identified by local wastewater authorities in the Phase III WIP.

Trading & Offsets

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia included a requirement that POTWs permittees develop plans of action to address and offset new growth when the average flow of treated wastewater reaches 90% of design flow.
- West Virginia accounted for prior wastewater offsets and trades in the Phase III WIP that occurred during the period of Phase II WIP implementation.
- West Virginia allows MS4 permittees to develop a payment-in-lieu program or offset mitigation to address runoff reduction and stormwater treatment requirements at the most difficult sites.

Federal Facilities

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia included a Federal Facilities section in its Phase III WIP and included a sector-specific discussion of what is expected from federal facilities.
- West Virginia explained its rationale for why federal facilities were excluded from local planning goals due to the small number of facilities and negligible pollutant loading.
- West Virginia continued to evaluate federal agency narratives and implementation scenarios.

Changing and Local Conditions

Growth

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia developed its implementation scenario on 2025 forecasted growth conditions, per the CBP partnership decision.
- West Virginia developed a custom Land Policy growth scenario focused on land conservation activities to reduce nitrogen by approximately 900 pounds. This modest impact is associated with generally low population growth rates in West Virginia’s portion of the watershed.
- West Virginia provided county-specific areal extent of agricultural and forest conservation that has occurred since 2013 and estimates of planned additional conservation through 2025 to support West Virginia’s custom Land Policy growth scenario.
- West Virginia included in all its NPDES permits for POTWs a requirement that permittees develop plans of action to address growth when the average flow of treated wastewater reaches 90% of design flow.
- West Virginia allows existing POTWs and industrial facilities to expand and be permitted to discharge increased flow if also upgraded with new nutrient reduction technology sufficient to maintain allocated loads.
- West Virginia employs an innovative approach to address pollutant loads through the promotion and use of biochar.
- West Virginia reported new septic installations and connections to POTWs in its annual progress submissions to verify the one-mile buffer assumption and overall minimal growth on septic systems.

- West Virginia provided more detail as to why the construction area discrepancy in the 2025 Current Zoning scenario is not anticipated to adversely impact West Virginia's ability to attain its Phase III WIP planning targets.

Enhancements

EPA recommends West Virginia address the following in its 2020-2021 programmatic milestones to satisfy its CBP partnership commitments:

- Although West Virginia identified a group would meet periodically to explore options to enhance its poultry litter transport program, additional information could be provided on how these options will be developed, selected, and implemented, and expected trends for agricultural growth, especially concerning projections of state-basin trends in livestock and poultry animals (e.g. numbers of animals, weights, etc.).

Climate

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia documented its jurisdiction-specific 2025 numeric climate change loads in its Phase III WIP and committed to address these numeric loads now, as opposed to its 2022-2023 milestones. West Virginia expects to account for the anticipated increase in loads due to climate change through its excess nutrient reductions.
- West Virginia included information on the Eastern Panhandle Regional Planning and Development GI retrofitting in nonregulated communities which will produce local flooding and Combined Sewer Overflow co-benefits.
- West Virginia provided additional details on state and local climate strategies and actions, including information on which BMPs may include climate co-benefits. This expectation is per the CBP partnership's decision on how to address climate change in the jurisdictions' Phase III WIPs.

Local Engagement Strategies

Key Strengths

Key strengths in the Phase III WIP include:

- West Virginia adequately described local engagement in both Phase III WIP development and implementation and identified educational and technical assistance programs that will be central to Phase III WIP implementation like watershed schools, GI design assistance, agricultural producer workshops, and equipment rental.
- West Virginia clearly defined stakeholders to be involved in Phase III WIP implementation, including agricultural, conservation, and nonprofit organizations (e.g. Cacapon Institute, Trout Unlimited, Eastern Panhandle Conservation District, and Potomac Valley Conservation District).
- West Virginia documented capacity and technical assistance gaps and needs by local partners to advance Phase III WIP implementation in multiple sectors including forestry, developed lands, and agriculture.
- West Virginia provided examples of successful working relationships and models to support Phase III WIP implementation (e.g. Trout Unlimited, West Virginia Conservation Agency, and WV Department of Transportation Division of Highways fish-friendly culverts partnership).
- West Virginia explained how local partners will be involved in the verification and reporting of BMPs, particularly in the agriculture and stormwater sectors.

Local Planning Goals

Key Strength

Key strengths in the Phase III WIP include:

- West Virginia developed measurable local planning goals below the major state-basin scale, per the CBP partnership decision, in the agriculture and stormwater sectors.

BMP Verification

Jurisdictions agreed to follow CBP partnership-approved BMP verification protocols when developing and implementing the Phase III WIPs. Because West Virginia is proposing to increase BMP implementation rates of some BMPs by 10-fold or more in the next six years, the state should ensure that implementation at this higher rate can be tracked, verified, and reported within that period in accordance with the agreed upon verification protocols, or by another method established by the CBP partnership.

Regarding plans to conduct an inventory of data for BMPs that have already been implemented, it is important that future reporting of this data include accurate implementation and inspection dates, following the CBP partnership's verification protocols, or by another method established by the CBP partnership.