

EPA EVALUATION OF WEST VIRGINIA'S 2022-2023 and 2024-2025 MILESTONES

Executive Summary

The Chesapeake Bay Program (CBP) partnership established the goal to have all practices and controls in place by 2025 that were necessary to meet applicable water quality standards in the Chesapeake Bay (Bay) and its tidal tributaries ("2025 Goal"). The CBP partnership, including the seven jurisdictions (Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia) and the U.S. Environmental Protection Agency (EPA) agreed to develop and implement a framework for holding each partner accountable for reducing nitrogen, phosphorus, and sediment loads to meet the 2025 Goal. EPA is providing this evaluation of West Virginia's 2022-2023 and 2024-2025 milestones to the CBP partnership and the public in accordance with its oversight role and responsibility under the CBP partnership's accountability framework.

In that role, EPA has evaluated West Virginia's statewide progress toward attaining its portion of the 2025 Goal. This evaluation includes an assessment of progress toward attaining nutrient and sediment goals at the state and state-basin level and progress toward meeting sector-specific programmatic commitments for the 2022-2023 milestone period. This evaluation also provides an assessment of sector-specific programmatic and numeric commitments (e.g., Best Management Practices (BMP) or BMP implementation targets) for the 2024-2025 milestone period and the status of the relevant water quality monitoring trends.

In reviewing West Virginia's final programmatic progress for the 2022-2023 milestones, the 2023 numeric progress, and the final 2024-2025 milestone commitments, EPA identified sector-by-sector strengths as well as areas for improvement. According to the data provided by West Virginia for the 2023 progress run, West Virginia achieved its statewide 2025 targets for nitrogen and sediment. Additionally, West Virginia achieved its statewide 2023 target for phosphorus and is on track to meet its 2025 target. EPA stands ready to assist West Virginia with implementing its 2024-2025 two-year milestone commitments.

Some notable strengths identified in this evaluation of West Virginia's 2022-2023 milestone progress and the final 2024-2025 milestone commitments include:

- Targeted animal waste storage facility construction and completed construction of ten facilities between 2022 and 2023.
- Held public meetings in Wardensville and Potomac State College that led to completed conceptual designs for the implementation of green infrastructure and will continue targeting projects for additional community infrastructure upgrades.
- Completed Elk Garden Town Park educational habitat and committed to further Diversity, Equity, Inclusion, and Justice (DEIJ) projects.

Some key areas that EPA expects West Virginia to address in the final 2024-2025 milestone period and beyond include:

- Increase planting of riparian forest buffers, utilizing West Virginia's formal riparian buffer strategy.

- Include updates with the 2024-2025 milestone progress that speak to the activities related to the Infrastructure Investment and Jobs Act (IIJA)/Bipartisan Infrastructure Law (BIL) investments. Significant funding has been provided to the Chesapeake Bay watershed jurisdictions and the milestone progress reporting should highlight the benefits and activities that result from those investments.
- Create a verification program for previously expired National Resource Conservation Service (NRCS) Conservation Practice 22 (CP22) riparian buffer contracts.
- Reissue the small Municipal Separate Storm Sewer Systems (MS4s) general permit.
- Accelerate BMP implementation in the agricultural sector, especially since several BMP implementation targets were not met in the 2022-2023 milestone period.

Looking Forward for Future Reviews of Progress

At the 2022 [Executive Council meeting](#), the Executive Council discussed the upcoming year of 2025—the target date the partnership set for achieving certain outcomes under the [2014 Chesapeake Bay Watershed Agreement](#). At that meeting, the Executive Council [charged the Principals' Staff Committee](#) (PSC) to recommend a critical path forward that prioritizes and outlines the next steps for meeting the goals and outcomes of the *Chesapeake Bay Watershed Agreement* leading up to and beyond 2025 with specific considerations for science, restoration, and partnership. Recommendations for actions beyond 2025 will be presented at the 2024 Executive Council meeting.

At the [September 2023 PSC meeting](#) the CBP partners agreed to define the targets to be met by 2025 as the Phase III planning targets, the 2025 targets for climate change, and Conowingo targets¹. Consistent with that decision, this evaluation measures progress toward the goal of meeting the 2025 planning targets and 2025 climate change targets. In doing so, this evaluation of West Virginia's 2022-2023 progress and 2024-2025 commitments uses the Chesapeake Assessment Scenario Tool (CAST) 2019, as agreed to by the CBP partnership.

In the next round of two-year milestones, progress will be measured using [CAST-23](#), and will include progress toward unaccounted additional loads and 2025 climate change conditions. In September 2023, the PSC approved the finalization and use of CAST-23 (update released June 2024) for tracking progress until the Phase 7.0 suite of modeling tools is complete (estimated in 2028). The PSC also determined that unaccounted additional loads (i.e., modeled load increases identified after the PSC adopted the Phase III planning targets in 2018) will be added to West Virginia's existing Phase III planning targets to create interim planning targets and that these will be addressed in the Phase 7.0 suite of modeling tools along with 2035 climate change loads.

In addition, in January 2024 the CBP partnership finalized the [Chesapeake Bay Total Maximum Daily Load \(TMDL\) indicator](#), which is a new indicator designed to combine monitored and modeled data to estimate the progress of annual pollutant loading rate reductions since 1995 in response to implemented management practices. This indicator was developed to address a CBP

¹ The PSC approved a phased approach for what can be achieved at Conowingo by 2025. Conowingo has a separate WIP and milestones to meet those targets.

partnership interest to compare modeled and monitoring data. This indicator may be used in future evaluations of progress.

Detailed Evaluation of Overall Load Reductions and Source Sectors

Load Reduction Review – Statewide and by Major River-Basin²

Each year, jurisdictions in the CBP partnership report on BMPs installed, tracked, and verified and the pollutant load reductions from wastewater treatment plants. Using CAST-19, this information (or “annual progress runs”) provides an estimate of how much nitrogen, phosphorus, and sediment has been reduced. When evaluating West Virginia’s 2022-2023 milestone implementation, EPA simulated nutrient and sediment loads using the CAST-19³ and wastewater discharge data reported by West Virginia and compared those simulated loads to where West Virginia’s progress should be by 2023 (90% of the statewide and state-basin Phase III planning targets).

According to the data provided by West Virginia for the 2023 progress run, West Virginia achieved its statewide 2023 targets for nitrogen, phosphorus, and sediment. These targets include adjustments for 2025 climate change as approved by the PSC. At the state-basin scale, West Virginia achieved its 2023 nitrogen, phosphorus, and sediment targets for the Potomac and the James basins.

Table 1. Loads and Targets for West Virginia based on CAST-19 and reported wastewater data.

Pollutant	2009 Progress Loads (M lbs/year)	2023 Progress Loads (M lbs/year)	2025 Planning Target Load (M lbs/year)	Additional Load due to 2025 Climate Conditions (M lbs/year)	2025 with Climate Target load (M lbs/year)	% of goal Achieved (90% is considered on track to meet 2025 with climate load)
Nitrogen	8.04	7.93	8.23	0	8.23	100%
Phosphorus	0.63	0.44	0.42	0.01	0.41	91%
Sediment	598	549	609	N/A	609	100%

West Virginia developed specific BMP implementation targets for the 2022-2023 and final 2024-2025 milestones for those practices identified in West Virginia’s Phase III Watershed Implementation Plan (WIP) that account for the majority of the nitrogen reductions. Table 2

² Major river-basin refers to the eight major river basins draining to the Chesapeake Bay, some of which are shared by more than one Bay jurisdiction. For example, the Susquehanna River is shared by New York, Pennsylvania, and Maryland; Pennsylvania-Susquehanna refers to the Pennsylvania portion of the river. The phrase major river-basin is interchangeable with "state-basin" in this document.

³ CAST-19 is part of the Phase 6.0 suite of modeling tools for the Chesapeake Bay.

provides a summary of West Virginia's 2023 progress compared to the 2009 baseline and the 2025 targets, as well as the final 2024-2025 commitments, for these priority BMPs.

Table 2. Progress toward Targets for West Virginia's priority BMPs (those that account for the majority of the nitrogen reductions).

BMP⁴	2009 Progress	2023 Progress	2024-2025 Milestone Target	2025 WIP Target
Forest Buffers on Fenced Pasture Corridor (acres in buffers)	2,554	1,502	None Identified	5,701
Animal Waste Management Systems – Poultry (animal units)	340,359	291,637	None Identified	377,447

The summary progress from the CBP partnership's modeling tools for 2009 and 2023 incorporate BMP credit duration. The CBP partnership decided to remove reported BMPs from the model simulation at the end of their established credit durations unless verified by the state as inspected and continuing to function as designed. West Virginia is expected to provide detailed programmatic milestones to support these BMP implementation targets. In the sector-specific sections below, EPA provides its evaluation of these programmatic milestones and the connection to increased implementation.

Source Sector Review

Agriculture

West Virginia is predominantly relying on agriculture BMP implementation to meet its 2025 targets based on its Phase III WIP. West Virginia continues to make incremental progress toward its goals and is on track to meet its statewide 2025 nutrient targets, however the EPA expects West Virginia to accelerate BMP implementation in the agricultural sector.

2022-2023 Milestone Achievements

- Targeted animal waste storage facility construction and completed construction of ten facilities between 2022 and 2023.

2022-2023 Milestones Not Achieved

- Did not achieve riparian forest buffer milestone. Hiring delays and a delay on the Farm Bill contributed to this milestone being carried forward and reduced for the 2024-2025 milestone.

⁴ BMP levels are units reported or planned by the jurisdiction. The levels are calculated using CAST-19 of the Phase 6.0 suite of modeling tools and include everything established or installed, reported, and functioning through the particular year, e.g., through 2009, or through 2023, etc., not just new reported implementation, unless otherwise noted.

- Did not finish creation of a verification program for previously expired NRCS riparian buffer (CP22) contracts. Hiring delays contributed to this milestone being carried forward to the 2024-2025 period.
- Did not achieve implementation goals for waste management systems, soil and water conservation plans, or pasture management.

2024-2025 Milestone Strengths

- Commits to maintaining a minimum of 6,000 acres of cover crop implementation, annually.
- Commits to hosting further field days and workshops to support conservation practice adoption and agricultural composting.

Key Areas to Address in the Final 2024-2025 Milestone Period and beyond

- Report progress on efforts to accelerate BMP implementation in the agricultural sector and identify what programs were implemented to achieve the implementation targets, especially since some BMP implementation targets were not met in the 2022-2023 milestone period.
- Amplify outreach to agricultural producers to verify nutrient management plans to achieve the 10% verification expectation.

Urban/Suburban Stormwater

2022-2023 Milestone Achievements

- Held public meetings in Wardensville and Potomac State College that led to completed conceptual designs for the implementation of green infrastructure.
- Worked with the City of Bolivar to try to adopt a voluntary ordinance for a 1" stormwater capture. Discussions are ongoing.
- Assisted communities in pursuing conceptual designs for green infrastructure retrofitting.
- Presented at West Virginia Stormwater Management webinar in coordination with Chesapeake Bay Trust.

2022-2023 Milestones Not Achieved

- Did not reissue the Phase II MS4 general permit.
- Did not develop a series of West Virginia Chesapeake Bay videos promoting stormwater BMP adoption. However, footage has been obtained to begin compiling the videos.

2024-2025 Milestone Strengths

- Commits to work to reissue the Phase II MS4 general permit.
- Targets continued implementation of green infrastructure across several communities.

Key Areas to Address in the Final 2024-2025 Milestone Period and beyond

- Reissue the Phase II MS4 general permit.
- West Virginia is expecting additional nutrient reductions from the stormwater sector by 2025 according to its Phase III WIP. EPA expects West Virginia to accelerate BMP implementation in the urban/suburban stormwater sector.

Wastewater Treatment Plants and Onsite Systems

2022-2023 Milestone Achievements

- Reviewed significant facilities quarterly and all upgraded facilities were operating beneath their permit levels.
- Continued submitting new septic connections and installations.

2022-2023 Milestones Not Achieved

- None.

2024-2025 Milestone Strengths

- Commits to continued reporting and cataloging of wastewater treatment plants activities, upgrade schedules, and compliance status.

Key Areas to Address in the Final 2024-2025 Milestone Period and beyond

- None.

Growth, Offsets and Trading

2022-2023 Milestone Achievements

- Updated and maintained offsets tracking and accountability in accordance with EPA requirements.
- Considered and, if appropriate, approved offset requests on a case-by-case basis.

2022-2023 Milestones Not Achieved

- None.

2024-2025 Milestone Strengths

- Commits to update and maintain offsets tracking and accountability in accordance with EPA expectations.
- Commits to consider and, if appropriate, approve offset requests on a case-by-case basis.

Key Areas to Address in the Final 2024-2025 Milestone Period and beyond

- Continue to establish a robust marketplace to encourage participation of non-traditional partners.

Climate

In 2020, the PSC issued a directive that by 2022 all jurisdictions would account for the additional nutrient loads due to 2025 climate change conditions in a Phase III WIP addendum, or in the two-year milestones, if it had not already done so in its Phase III WIP. All Bay jurisdictions met this goal in 2022 to update Phase III WIPs or milestones to address the 2025 climate change conditions. West Virginia addressed the 2025 climate change conditions in its Phase III WIP. The Bay jurisdictions maintained the commitment to meet the 2025 climate change conditions by 2025.

2022-2023 Milestone Achievements

- West Virginia met its 2025 climate change commitments through its Phase III WIP.

2022-2023 Milestones Not Achieved

- None.

2024-2025 Milestone Strengths

- West Virginia met its 2025 climate change commitments through its Phase III WIP.

Key Areas to Address in the Final 2024-2025 Milestone Period and beyond

- None.

Other (DEIJ and Outreach)

2022-2023 Milestone Achievements

- Constructed an educational habitat at the Elk Garden Town Park to support pollinator habitat and provide educational materials about ecosystem services.

2022-2023 Milestones Not Achieved

- None.

2024-2025 Milestone Strengths

- Targets DEIJ projects further by pursuing Green Streets, Green Jobs, Green Towns Grant applications for additional funding support.

Key Areas to Address in the Final 2024-2025 Milestone Period and beyond

- None.

Potential Federal Actions and Assistance

EPA remains prepared to assist each of the seven watershed jurisdictions in implementing the 2024-2025 milestones. EPA will work with each jurisdiction to develop specific oversight and assistance activities to provide prioritized support for implementation efforts, including funding, technical assistance and analysis, training, and regulatory reviews.

EPA plans to continue to commit staff, contractual and funding resources to support the seven watershed jurisdictions in implementing the 2024-2025 milestones and future two-year milestones. This support includes evaluation of the most-effective practices and locations, annual funding assistance to address priority implementation needs, evaluation of Bay jurisdictions' implementation capacity under various staffing, funding, regulatory and programmatic scenarios, local planning outreach, legislative and regulatory gap analysis, and monitoring trend analyses.

At the sector level, every jurisdiction, except the District of Columbia, is significantly off track in meeting its Phase III WIP commitments in the urban/suburban stormwater sector. Recognizing this, and that the stormwater sector supplies a significant portion of the nutrient and sediment loads to the Bay, EPA is exploring opportunities for increased oversight in this sector.

In addition, EPA will continue to work with federal partners to provide leadership and coordinate with Bay jurisdictions on WIP and two-year milestone implementation to reduce pollutants from federal lands. EPA will continue its commitment to track annual progress of the Bay jurisdictions and make those results available to the partnership and the public. [See: <https://www.epa.gov/chesapeake-bay-tmdl/epa-oversight-watershed-implementation-plans-wips-and-milestones-chesapeake-bay> and <https://www.chesapeakeprogress.com/>]

Monitoring Trends Summary

The CBP partnership's Chesapeake Bay Program Nontidal Water Quality Monitoring Network, supported by EPA, the U.S. Geological Survey (USGS), the Susquehanna River Basin Commission, and the Bay jurisdictions, generates water quality monitoring data in freshwater rivers and streams throughout the watershed that is analyzed by USGS for nutrient and sediment loads and trends. The most recent USGS results (www.usgs.gov/CB-wq-loads-trends) over the long-term period 1985-2020 and short term 2011-2020 for most stations were made available in January 2023. The analysis below mainly focuses on the short term 2011-2020 trends.

While identifying drivers behind individual trends is often complex, the monitoring results are worthy of West Virginia's consideration as it develops the programs and BMPs planned for the next two years. EPA's initial summary of how the monitoring results in West Virginia's watersheds can potentially inform planning are below.

- Trends at all of West Virginia's monitored watersheds are improving for phosphorus. Trends at two thirds of the monitored watersheds are improving for nitrogen, while the third has a degrading trend. Additional exploration of these trends can help clarify successful programs, policies, or practices in improving areas, and identify additional implementation options in areas showing no trend. All of West Virginia's monitored watersheds are predominantly a mix of agriculture and forested land.

A comprehensive effort has been made to compile and analyze data sets for the watersheds of the Chesapeake Bay Program Nontidal Water Quality Monitoring Network stations. For the first time, station-level monitoring and modeling results, available through the [Monitored and Expected Total Reduction Indicator for the Chesapeake \(METRIC\) tool](#), can be compared to help resource managers gauge expectations on the trajectory and pace of reduction progress at a localized scale.