



**Chesapeake Bay Program**  
**SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE**  
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September 23, 2022

The Honorable Michael Regan, Chair  
Chesapeake Bay Partnership Executive Council  
200 Pennsylvania Avenue, NW  
Mail Code: 1101A  
Washington District of Columbia 20460

Dear Administrator Regan and Distinguished Members of the Executive Council:

The Chesapeake Bay Program (CBP) is globally recognized for its leadership in managing and restoring large aquatic ecosystems. The Scientific and Technical Advisory Committee (STAC) plays a vital role in the CBP's commitment to advancing science-based decision-making by coordinating a range of collaborative efforts to guide established priorities and characterize emerging concerns. During FY2022, STAC coordinated 5 workshops and published 4 reports. STAC continues its pledge to advancing science-based decision-making related to the CBP Program Goals with members hailing from 23 research-affiliated organizations across the Bay watershed. In 2022, STAC members contributed more than 5,000 hours, valued at more than \$500,000 to the Bay Program effort.

When the CBP established the 2025 implementation targets nearly ten years ago, CBP managers acknowledged that uncertainties regarding ecological threshold responses, lag times, and dynamic patterns in land use/land cover and climate change could complicate restoration efforts. However, the Bay system's response continues to lag significantly more than expected, with some indicators declining further despite our water quality project installations. Since the 2021 EC and advisory committees' meeting, STAC has continued to explore underlying causes and identify urgent information gaps that could limit our collective capacity to advance the CBP goals within the targeted timeframes. We explored these challenges at multiple levels of the Bay Program's adaptive management structure based on a review of STAC reports, workshops, meetings, and expert contributions shared in various CBP technical discussions. From these, we offer the following linked insights and recommendations to consider as the Partnership considers reevaluating its milestones.

*At the CBP Goal Implementation Team Level:*

- Voluntary best management practice (BMP) adoption remains far short of targets. Developing more effective outreach strategies is essential to increasing stakeholder willingness and capacity to implement priority BMPs across diverse communities, including the agricultural and urban sectors.
- Relatively small geographic areas impose disproportionate impacts on our Bay resources. Targeted rather than opportunistic BMP implementation is essential to achieving desired outcomes.
- The Bay Program's goals are inextricably linked and thus require simultaneous consideration when evaluating threats and restoration benefits. Accordingly, a process-based trade-off analysis framework considering all outcomes is essential to identify the most cost-effective opportunities for advancing the Bay Program's multiple goals under changing climate conditions (e.g., addressing water quality and habitat concerns while building resiliency to extreme weather events).

*At the CBP Management Level:*

- Degraded soil health and associated effects of reduced soil fertility, increased erosion, and elevated nutrient loss represents a significant concern among agricultural and urban turf management experts. BMPs that improve soil health largely overlap with those specified for water quality benefits. Further consideration of soil health as an integrative indicator of healthy watersheds would elevate key stakeholder concerns and highlight opportunities to provide on-site as well as downstream benefits associated with practice adoption.
- Historical and current hydrologic alterations have increased connectivity between contaminant sources and our waterways, speeding up water flows and pollutant delivery, and altering habitat conditions throughout our watersheds. Advancing a watershed planning framework focused on slowing down these flows using riparian buffers, floodplains, and coastal and non-coastal wetlands is essential to mitigating decades of overlooked human impacts and addressing multiple CBP goals.
- The Bay's condition varies widely among its sub-estuaries, where many Bay species of concern concentrate and water conditions are more sensitive to land management. Accordingly, increased CBP focus on nearshore environments is essential to engaging stakeholders and advancing restoration.
- Strengthening our understanding of how the Bay system will respond to CBP management under changing conditions requires an all-hands-on-deck collaboration and commitment to learning while implementing practices. Explicit efforts to improve connections among the jurisdictions, the Goal Implementation Teams, and the Partnership's science community are essential to advancing the CBP as efficiently and effectively as possible.

*At the CBP Executive Level:*

- BMP implementation levels and strategies vary widely across the CBP jurisdictions. The 2025 milestones provide an opportunity to reevaluate and refine CBP governance to better coordinate implementation strategies and address emerging challenges.
- Federal, state, and local commitment to restoring the Bay, enhancing climate resiliency, restoring impaired wetlands and waterways, and supporting regenerative agriculture have outpaced technical capacity to invest resources effectively. There is an urgent need to invest in strengthening and diversifying a technical and construction workforce that can help communities across the Bay watershed to advance our collective goals.

Finally, STAC is completing an assessment of how CBP policy actions have reduced pollutants, improved water quality, and enhanced abundant living resources, titled a "Comprehensive Evaluation of System Response" (CESR). The CESR report examines whether Total Maximum Daily Load (TMDL) implementation programs are producing the expected pollutant reductions and water quality response in the Bay. The report also provides a framework to assess how the Bay's living resources are responding to water quality changes by assessing the consequences and options for future policy choices. We aim to complete the report and disseminate lessons learned by December 2022.

Our recommendations reflect stakeholder concerns presented at the monthly Management Board (MB) meetings, participation in Goal Implementation Team (GIT) discussions, and collaborations with STAR (Scientific, Technical Assessment and Reporting team). STAC looks forward to continuing our support through collaborative workshops, focused seminars, and active participation in CBP initiatives.

On behalf of the STAC,

*Kathleen Boomer, Ph.D.*

Kathleen B. Boomer, Ph.D.

Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee

## **Attachment**

### **Summary of STAC Activities June 2021- June 2022**

STAC-sponsored Scientific and Technical Workshops (5)

- *Improve the Understanding and Coordination of Science Activities for PFAS in the Chesapeake Bay Watershed*
- *Evaluating a Systems Approach to BMP Crediting*
- *Improving modeling and mitigation strategies for poultry ammonia emissions across the Chesapeake Bay Watershed*
- *Advancing Monitoring Approaches to Enhance Tidal Chesapeake Bay Habitat Assessment including Water Quality Standards for Chesapeake Bay Dissolved Oxygen, Water Clarity/SAV, and Chlorophyll-a Criteria*
- *Understanding Genetics for Conservation and Restoration of Resilient Chesapeake Bay Brook Trout Populations*

### **Reports Published by STAC June 2021 – September 2022 (4)**

Links to reports are available on STAC's website at [chesapeake.org/stac](https://chesapeake.org/stac)

- *Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap*
- *Overcoming the Hurdle: Addressing BMP Implementation Through a Social Science Lens*
- *Rising Watershed and Bay Water Temperatures—Ecological Implications and Management Responses (Programmatic Workshop)*
- *Incorporating Freshwater Mussels into the Chesapeake Bay Restoration Efforts*

### **Planned Activities June 2022 – June 2023**

STAC-sponsored Scientific and Technical Workshops (5)

- *Using Local Monitoring Results to Inform the Chesapeake Bay Program's Watershed Model (Programmatic)*
- *Using Ecosystem Services to Increase Progress Toward, and Quantify the Benefits of, Multiple CBP Outcomes (Programmatic)*
- *The State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Inform Better Implementation, Assessment and Outcomes (State of the Science)*
- *Best Management Practices to Minimize Impacts of Solar Farms on Landscape Hydrology and Water Quality (State of the Science)*
- *Using Carbon to Achieve Chesapeake Bay (and Watershed) Water Quality Goals and Climate Resiliency: The Science, Gaps, Implementation Activities and Opportunities (State of the Science)*