Narrative Analysis

Version: August 12, 2022 (Dry Run)

WATERSHED IMPLEMENTATION PLAN (WIP) 2025 OUTCOME SEPTEMBER 15, 2022 QUARTERLY PROGRESS MEETING

ABSTRACT: Overall, our current outlook on the 2025 WIP Outcome is **off course.** Recent progress has increased. The latest data for 2021 shows that our 2025 sediment reduction targets have been met, while our nitrogen and phosphorus reduction targets have made significant progress yet remain off course to meet our goals in the time indicated. Actions completed tended to benefit from having a defined workplan and identified responsible parties who were committed to meeting that action. Challenges toward meeting our outcome include new science and data that increase growth in loads that was not originally anticipated at the development of the Phase III WIPs in 2019 and the remaining time to meet our outcome. In addition, the WQGIT overcommitted on actions and anticipates reducing its commitments to manage its work more effectively in the upcoming cycle.

1. Are we, as a partnership, making progress at a rate that is necessary to achieve this outcome? Would you define our **outlook** as on course, off course, uncertain, or completed? Upon what basis are you forecasting this outlook?

Outcome: "By 2025, have all practices and controls installed to achieve water quality standards as articulated in the Bay Total Maximum Daily Load." The Phase III Watershed Implementation Plans (WIPs), which are developed by the Bay watershed jurisdictions, in partnership with federal and local partners, provide a roadmap to achieve the targets associated with this outcome.

Overall, our current outlook on the 2025 WIP Outcome is **off course.** Recent progress indicates that our 2025 sediment reduction targets have been completed, while our nitrogen and phosphorus reduction targets have made significant progress yet remain off course to meet our goals in the time indicated. The Phase III WIPs, which are developed by the Bay watershed jurisdictions in partnership with federal and local partners, provide a roadmap to achieve the targets associated with the outcome.

Nitrogen – Off course

Between 2009 and 2021, nitrogen loads were reduced by 40 million pounds (3.4 million pounds of nitrogen reductions per year).

Over the past year (2020-2021), progress indicates that 77 percent of the nitrogen load reduced during that period was achieved in the agricultural sector. This was aided by practices and controls undertaken by jurisdictional partners. Initiatives included: increasing investment funds in Delaware's cover crop program; investment of funds into New York's verification program; increased efforts at educating county partners on reporting practices in Pennsylvania, improvements to report unreported practices in Virginia; and in Maryland, an increase in the nutrient management plan compliance rate.

Despite these successes, we are not progressing at a rate necessary to achieve the 2025 WIP outcome. The 2025 planning target for nitrogen is 215 million pounds, as indicated in Figure 1 by the black line.

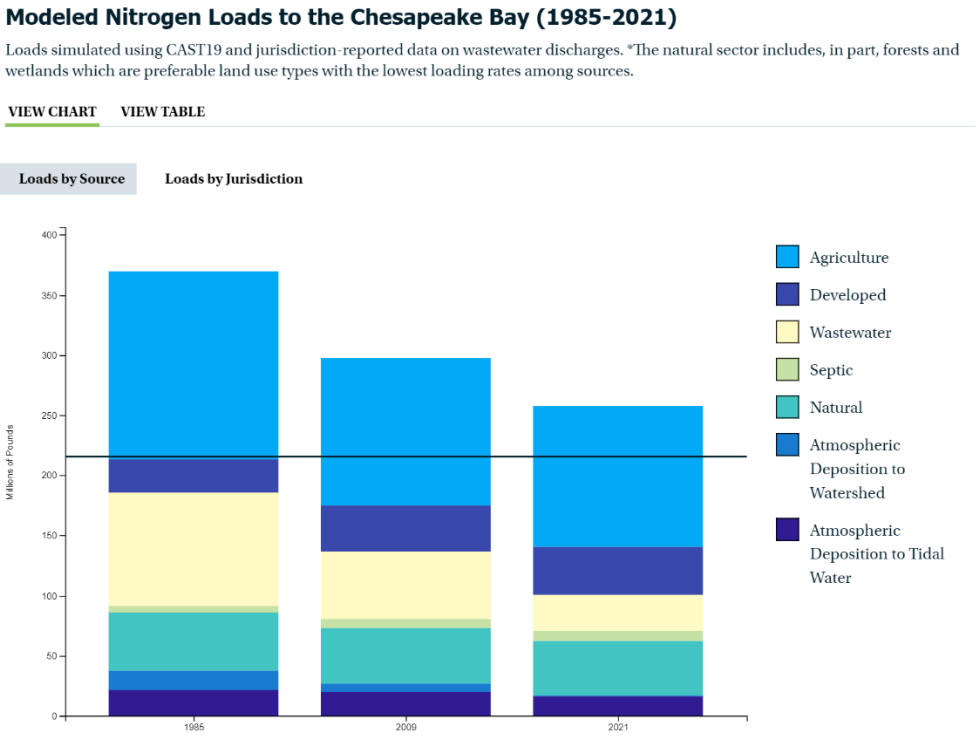


Figure 1. Modeled Nitrogen Loads to the Chesapeake Bay (1985-2021).
Source: Chesapeake Progress.

If we assume that the past rate of annual nitrogen load reductions across the watershed will be similar in future years, we are eight years off course. In other words, if our progress rate remains the same as in the past, we will hit the 2025 nitrogen planning target around 2033. To meet our nitrogen planning target in 2025, the rate of nitrogen reductions needs to increase three-fold, from 3.4 million pounds per year to about 11 million pounds per year for the years 2022-2025. To do this, the partnership needs to install more impactful practices and controls that results in more nitrogen reductions across the watershed.

Phosphorus – Off course

From 2009-2021, phosphorus was reduced by 2.5 million pounds (about 0.2 million pounds of phosphorus reductions per year). The target for phosphorus is 13 million pounds, as indicated in Figure 2 by the black line.

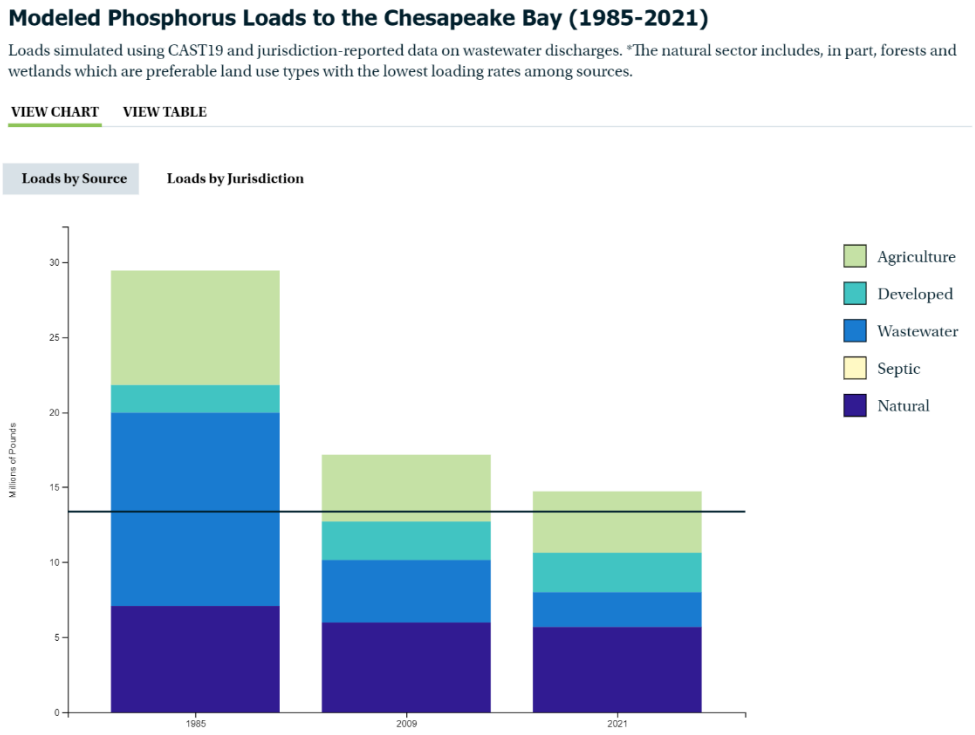


Figure 2. Modeled Phosphorus Loads to the Chesapeake Bay (1985-2021).
Source: Chesapeake Progress.

Relative to nitrogen, we are not as far off course from the 2025 phosphorus planning target. If we apply the same rationale as described above, we will meet the 2025 phosphorus planning target in 2028. To meet the 2025 phosphorus planning target, the rate of phosphorus reductions needs to increase from 0.2 million pounds per year to 0.35 million pounds per year for the years 2022-2025.

Sediment - Completed

We have completed the basin-wide sediment reduction target of 18,587 pounds per year as of 2021. This is four years ahead of schedule and illustrates partial success in meeting the outcome. Figure 3 shows the sediment load reductions in comparison to our 2025 reduction target.

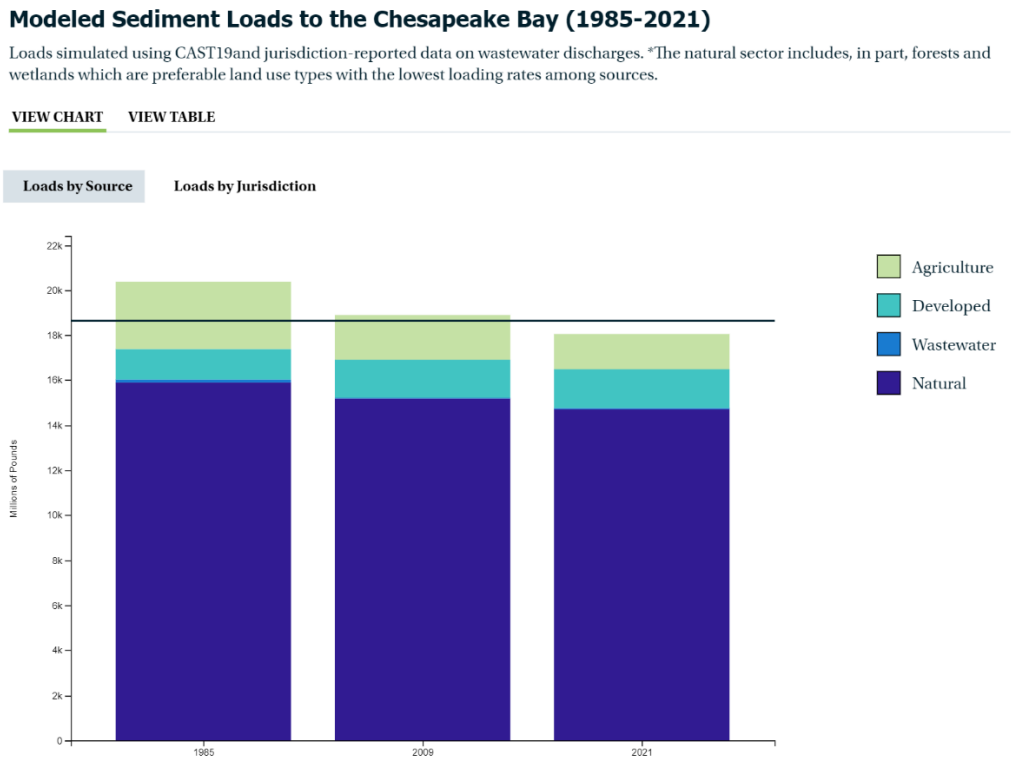


Figure 3. Modeled Sediment Loads to the Chesapeake Bay (1985-2021).
Source: Chesapeake Progress.

2. Looking back over the last two or more years, describe any scientific (including the impacts of climate change), fiscal, and policy-related developments that impacted your progress or may influence your work over the next two years. Have these resulted in revised needs (*e.g.*, less, more) to achieve the outcome?

To the extent feasible, describe your needs using the SPURR thought model, i.e., **S**pecific and actionable, **P**rogrammatic partner, **U**rgency of the needed action, **R**isk of not acting, **R**esources required. [Note from WQGIT Coordinator: Thus far we have an excellent outline of issues in our response, but we lack the details suggested with SPURR. We especially welcome specific feedback and suggestions that can help us articulate or describe such details from the WQGIT perspective, though we can proceed since some of those details may be outside our control. We also want to know if anything significant is missing from this list.]

Scientific:

The COVID-19 pandemic impacted partner ability to work directly with landowners and limited access to BMP implementation and verification during the past two-years.

Climate change projections estimated additional nutrient reductions needed by the partnership in order to achieve applicable water quality standards by 2025 and recognition that climate change loads will increase looking out to 2035 and beyond.

Conowingo Dam was found to be in steady state earlier than originally anticipated which resulted in additional loads that need to be reduced and the development of an additional Partnership WIP to address loads associated with the Conowingo Dam.

Partnership concerns are being elevated about certain data inputs that are used to inform the partnership modeling tools and assess progress. Workgroups are exploring these datasets and associated processing methodologies further to determine if there are alternative data inputs and assess their potential use within the partnership.

Phase 7 model development is underway and the WQGIT has worked with the Modeling Workgroup to define the tasks and timelines associated with six aspects of this effort, as seen on the associated Phase 7 development webpage. Additionally, there are efforts to understand the spatial resolution of the Bay TMDL, to refine nutrient speciation accounting, and to begin development of an estuarine model with improved shallow water simulation. While these are positive outcomes these will not be completed prior to 2025 and the benefit of this information will be available in Phase 7 of the partnership modeling tools.

The WQGIT intends to spend more time with the Water Quality Monitoring and Analysis Workgroup moving forward to better integrate water quality trend information with implementation efforts in the next LAP.

Fiscal:

Inflation has wide-ranging impacts for partners, notably with respect to the cost of materials and labor to implement BMPs, and similarly for the costs to operate and maintain BMPs and monitoring networks. This inflationary pressure is relatively recent and so the overall impact to restoration efforts is unknown/unquantified at this time.

While updated costs were included into CAST-2019, the cost estimates may not reflect current costs from recent inflation. CAST users can edit cost profiles when they create or edit scenarios. The Partnership will need to determine the frequency in which cost data is updated for the cost profiles provided for all users.

Since 2020 there has been a large influx of federal COVID relief as well as infrastructure dollars in 2022. Bay jurisdictions have continued to enhance and expand programs to support additional technical assistance to support BMP implementation across the watershed. The infrastructure dollars will support implementation and progress to meeting our outcome over the next several years. Jurisdictions continue to identify technical assistance support as a need in order to meet the outcome.

Additional federal funding was provided to support implementation in the Most Effective Basins (MEB), however that funding level has the potential to vary year to year.

Policy:

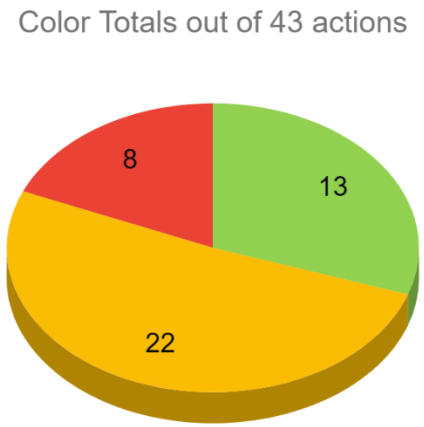
As noted in question 1, the average pace of reductions for nitrogen and phosphorus are not on a trajectory to meet the water quality goals by 2025. Policy decisions to incorporate scientific information and partnership decisions impact the ability to achieve the goal. While these decisions are important to achieving the water quality goals in the Bay, it results in an increased level of effort for the Bay partners to meet the goals. Over the past two years there were decisions related to Climate Change, Conowingo, and updated data inputs in CAST, that tend to result in an increased level of effort to reduce nutrients and sediment. All of these items cause a change in loads and impact our ability to meet the 2025 goal moving us occasionally closer to the goal and more often further from the goal with less time to implement additional actions to meet the targets.

Verification remains a challenge across the Partnership. The Partnership members worked diligently through the BMP Verification Ad-hoc Action Team to address various issues identified related to verification, such as credit durations. Significant issues were discussed; however, challenges remain from a lack of partnership agreement, lack of access to certain federal data, lack of resources to conduct verification, and potential issues with access to operations. These challenges remain and are beyond the control of the Action Team and the WQGIT. The BMP Verification Framework was approved by the PSC in 2014 and thus larger issues or changes to the Framework will require elevation to that level. Significant time is spent discussing verification concerns for existing BMPs which impacts the ability of the WQGIT to focus on accelerated implementation strategies to meet the WIP outcome.

3. Based on the red/yellow/green analysis of the actions described in your logic and action plan, summarize what you have learned over the past two years of implementation.

Overall, almost a third of the actions (13 out of 43) were achieved or are on track (green), with about half showing mixed progress (22 out of 43 as yellow) and the remainder encountered significant barriers or were not addressed (8 out of 43).

What worked well?



The WQGIT was able to complete several actions in our LAP related to the CAST modeling tool by following the CAST 2021 workplan and receiving frequent updates on progress on the workplan. There was also a substantial increase in outreach opportunities on leveraging available funding resources to fund nonpoint source implementation in the watershed through state revolving fund (SRF) programs and an EPA/NRCS workshop. In addition, EPA continue to provide funding for the Bay grants, the Most Effective Basin funding, and there was an increase in NFWF's funding. Additional infrastructure funding targeted in the Bay watershed will support implementation over the next several years. Actions that had a clear workplan and committed points of contact were easiest to track and had the most success in being completed during the two year timeframe. A significant number of our actions are yellow which demonstrates a fair amount of progress across a large number of action commitments, however, there are factors not always within the control of the WQGIT that impact the ability to complete the actions. . Individually, jurisdictions continue to enhance and expand programs available to support technical assistance in the watershed, however it remains a need that impacts meeting the 2025 outcome.

What didn't work well?

The WQGIT has learned a lot about how we can improve moving forward. While the WQGIT was able to narrow down our focus to 7 factors in our Logic and Action plan there were 40+ accompanying actions. This represented too many actions to make effective progress for each action in the short timeframe. Future LAPs should be more defined about the responsible party and limit actions that are beyond the control of the WQGIT or its workgroups, or specifically defined partners. When there was a clear responsible party or workplan for actions to be completed it was easier to track progress to completing those actions. Items assigned to the WQGIT as the responsible party without a clear champion were not as concise to track or appeared to identify the WQGIT by default.

Furthermore, we recognized through this process that there is misalignment in our LAP and where the WQGIT spent our time and focus over the two years. For example, we did not spend the WQGIT's time focusing and making progress on all 40+ actions – and we do not currently have a method to track which factors or actions account for the WQGIT's attention over time. Many of the actions were not the sole responsibility of the WQGIT and our associated workgroups. For actions associated with other responsible parties, it could be difficult to understand and track progress, particularly when intentional collaboration did not occur early on for a given action. This was exacerbated since we did not update or check on progress of actions as a group since the end of the last SRS cycle.

Going forward, the WQGIT should get a better understanding of responsibility level before we include an action in the WQGIT's plan. For example, is the WQGIT responsible, accountable, consulted, or informed on a given action.

4. Based on what you have learned through this process and any new developments or considerations described in response to question #2, how will your work change over the next two years? If we need to accelerate progress towards achieving our outcome, what steps are needed and what specific actions or needs are beyond the ability of your group to meet and, therefore, you need the assistance of the Management Board to achieve?

Moving forward we are proposing that the WQGIT prioritize fewer actions to focus our time and attention and to ensure success in completing more of these actions to support the 2025 outcome. WQGIT leadership intends to change how we manage our time by aligning agendas and efforts with the LAP and having more frequent discussions on progress. WQGIT could discuss the possibility of convening a series of agendas to focus on opportunities/tech transfer across jurisdictions to increase the rate of practices implemented to reduce nitrogen and phosphorus, especially considering the additional infrastructure funds that will be available for Bay jurisdictions starting later this year.

Considerations to realign the WQGIT efforts with both the goal and the outcome which can include:

- Convening more discussion on success stories to reduce pollutants to achieve water quality, what are the lessons learned and can other jurisdictions learn from success stories elsewhere in the watershed
- Spending more time on monitoring to understand the link between reducing pollutants and achieving water quality to support living resources and designated uses
- Increasing collaboration with our fellow Clean Water Cohort workgroups and STAR to explore opportunities to support projects that address multiple workgroup outcomes or actions
- Creating space in our agendas for jurisdictions and other partners to talk about opportunities to increase implementation efforts to achieve water quality standards
- Supporting workgroups exploring new or improved data for use in the Partnership modeling tools
- Improving communications and understanding of emerging information with a focus on how this updated information supports accelerated implementation and how we implement more effectively, such as climate resilient BMPs.

The WQGIT will adapt our approach to our water quality goal as noted above to spend our time more effectively on topics that will speak to accelerated implementation moving forward. However, we have also identified where there are challenges to meeting our assigned outcome that are beyond our control. There are changing factors within the Bay watershed such as climate change and increasing water temperature that result in growth in loads that impact meeting the 2025 WIP outcome on time.

The WQGIT and STAR intend to increase collaboration as part of our adaptive management to better align the water quality monitoring trends with the expected or modeled water quality trends. We can focus on understanding the water quality trends where water quality is improving and not, and the potential factors as to why. The recent monitoring report provided to the MB and the PSC proved valuable to identify a need to support our monitoring system. This adaptation is necessary to increase the connection for how the WQGIT spends our meeting time relative to the goal and outcome.

The Partnership as a whole (including the WQGIT) and the public would benefit from the Management Board developing early communication to explain or clarify what to expect as we approach 2025. The outcome is for practices in place, but does not equate to meeting water quality standards in 2025. Additional communication materials could clarify the challenges in meeting 2025 from factors such as

climate change. Messaging should focus on the positive impact from the implementation efforts over the years and recognize and identify where and why growth in loads occurs in order to target outreach and implementation to be more effective and efficient in meeting our outcome.

At this time we are waiting for the release of STAC's Comprehensive Evaluation of System Response (CESR) report, that is expected in coming weeks. The WQGIT has previously been briefed on the report, but the final version is still under review by STAC and the report authors. The findings and recommendations for that report will certainly be invaluable to the WQGIT, its workgroups and the broader partnership. We ask that the partnership discussions and communication of the report from its STAC authors be coordinated at a cross-GIT level, with input from the MB and GIT leaders to maximize the impact of the report, particularly within the WQGIT's and other GITs' development of updated SRS documents and plans.

[Note: we'll work with WQGIT on August 22 to identify additional MB "asks".]

5. What steps are you taking, or do you recommend, to ensure your actions and work will be equitably distributed and focused in geographic areas and communities that have been underserved in the past?

For this outcome, it should be acknowledged that water quality concerns for underserved areas and communities are more commonly stories of historic environmental injustice and unlikely to stem from excess nutrients and sediment. For the WQGIT to target its efforts on issues that intersect between water quality and environmental justice, the emphasis would need to shift toward community-specific concerns such as drinking water (lead pipes), toxic contaminants or contaminants of emerging concern, and other non-water-quality yet closely related issues such as inland flooding. However, in the context of nutrients and sediment, the WQGIT can still continually improve efforts, particularly through diversity, equity and inclusion efforts that can more effectively link TMDL-driven conservation and restoration to underserved areas that might welcome prospective benefits associated with those investments, such as fixed infrastructure, flood protection, workforce and economic development.

Most of our success in this area involves jurisdictional efforts to prioritize underserved areas. For example: Pennsylvania has provided additional outreach and preference towards environmental justice (EJ) and underserved communities in competitive grant programs; New York's Environmental Justice Grant Program and priority scoring for EJ communities in a variety of funding opportunities; Maryland's Trust Fund now prioritizing EJ as a co-benefit and using this metric when awarding implementation grants. In addition, for FY2021 and FY2022, EPA allocated an additional $1.25 million in their Most Effective Basins (MEB) funds to environmental justice areas.

The WQGIT did participate in many of the DEIJ related conversations during the last two years. As a GIT, however, we are struggling to understand how to implement equity related actions. In our current Logic and Action Plan, we included equity related actions under the "Communication and Coordination" factor. For example, one action focused on building on work of the DEIJ Action Team to identify and engage under-represented groups. During our last at-large member nomination process we did reach out to under-represented groups, but we did not get any nominations. We need guidance at a GIT and staff level to understand how we might better establish relationships and collaboration with individuals or communities that would create a WQGIT that is more reflective of residents in the watershed. The WQGIT can seek this guidance from the Stewardship GIT and the DEIJ Coordinator in in the short term. We recognize that all GITs and workgroups have room to grow in this space, and we will do our part to integrate the four focus areas of the DEIJ Implementation Plan into our next two-year logic and action plan.

Moving forward, we have identified potential areas of collaboration within the Bay Program to help ensure our work is more equitable. For example, the Scientific, Technical Assessment and Reporting (STAR) team and the Nontidal Network Workgroup are conducting a prioritization process for monitoring stations when funding levels may not support all locations. Filters such as geography and community representation are being considered. WQGIT members could use this information in their decision-making to assess equity in their own decision-making. Another example of potential collaboration is working with the Diversity Workgroup on project-siting criteria to help focus in EJ areas where that work could most benefit underserved communities. Collaboration with STAR and the Stewardship GIT may also serve as an avenue to understand how participatory science and community monitoring programs, such as data and emerging plans from the Chesapeake Monitoring Cooperative, may illuminate local stressors and inform targeting for restoration and EJ projects. Lastly, we see an opportunity to work with EPA and other CBPO staff to provide a space for dialogue about targeting, especially pertaining to the MEBs, to ensure underserved areas are accurately captured when combined with effectiveness ratios.