Retrospective on Lessons Learned from the Chesapeake Bay Program Strategy Review System's 3rd Cycle with Suggested Adaptations to Address the Issues

Executive Summary

Overview

During the winter 2022-23, the Strategy Review System (SRS) Planning Team conducted a retrospective analysis to extract lessons learned from successes and challenges in the Chesapeake Bay Program (CBP) partnership's efforts to achieve *2014 Chesapeake Bay Watershed Agreement* goals and outcomes. The retrospective was informed through the lens of activities and products developed by Goal Implementation Teams (GITs), Workgroups, the Scientific Technical Assessment and Reporting Team (STAR), and the Scientific Technical Advisory Committee (STAC) during interactions with the Management Board while conducting the 3rd 2-year cycle of the SRS (May 2021-May 2023). Outcome leads and coordinators were surveyed for their insights.

Ten key lessons were identified by the SRS Planning Team (Table 1). Strategies to improve partnership successes and accelerate progress were recommended with each lesson. An extended discussion explaining the issues involved in the Lessons Learned and addressing Suggestions for Adaptation identified is provided in the Discussion section. Outcome-specific successes and challenges are summarized in Appendix A.

Table 1. 10 Lessons Learned and Adaptations to consider about the Chesapeake Bay Program (CBP) partnership's activities and efforts to address outcome achievement extracted from products of the Strategy Review System (SRS) 3rd cycle, May 2021-May 2023.

	Lessons Learned	Adaptations
1.	The Strategy Review System is successfully informing the implementation of the 2014 Agreement goal, but it could use strategic modification for improved return on investment	Strategically modify the current SRS process and living documents for use when planning and implementing activities beyond 2025
2.	Outcomes may be presented in the Agreement as if they are meant to have equal priority for dedicating resources, management activity and achievement. However, experience shows that attention and effort addressing the outcomes is unbalanced	Set an initial strategy for adjusting the present unbalanced distribution of resources affecting outcome achievement to realize more equity in support toward achieving all outcomes; Rebalance emphasis across outcomes more equitably; employ Structured Decision Making to help achieve rebalance and prioritization;
3.	Capacity limitations affect the rate of achievements;	Strengthen workforce; managing expectations should further be aligned with available capacity or support changes and investments to enhance capacity; help CBP agencies and partners access new resources to address targeted capacity limitations
4.	Outcomes do not live in silos (e.g., climate, diversity), they are interdependent requiring more cross-outcome integration to achieve success for all outcomes	Utilize systems thinking perspective when considering structure of outcomes beyond 2025

5.	Adaptive learning, working the right issue at the right level, growing the partnership, and having inclusive, strategic communication at all levels of the partnership are critical to successfully applying adaptive management that fosters desired progress	Science Communication translators are critical to messaging diverse audiences with technical findings for public consumption and decision-support; target the level of the partnership needed for the most effective messaging strategy before engaging on an issue
6.	COVID-19 changed how the partnership and watershed residents interact with the environment and with each other	Relationships with each other and with the environment are worth cultivating to expand support and sustain improvement in the health of the Bay and watershed.
7.	New science generated by the partnership for example monitoring and analysis, Scientific and Technical Advisory Committee (STAC) Workshops, academic research, and the Comprehensive Evaluation of System Response (CESR) report (STAC 2023) offer opportunities to evolve and refocus CBP work	Continue incorporating new science with CBP's application of adaptive management in partnership work and decision-making; increase attention and efforts to integrate new science findings and adapt CBP management
8.	Success with Bay restoration depends on addressing health and recovery for shallow water and deep water habitats	Retain deep water management targets while expanding management activity to better affect and improve shallow water habitat that has high value to living resources and people
9.	The recent Principals' Staff Committee (PSC) requested monitoring program review (2021-22) highlighted limitations and deficiencies in monitoring support across the 31 outcomes	Capacity is needed to support developing metrics, indicators, and robust sampling designs for data collection; monitoring program needs translated into funding estimates; partnership support solutions to sustain and grow programs
10.	Success with science, restoration and partnership depends on issue champions within the partnership	Identify champions to lead key efforts at all levels; empower champions to break down barriers; increase CBP partnership's awareness and capacity in order to capitalize on historic investments

Purpose of this Retrospective

The role of the information contained in the retrospective is to empower the partnership with shared knowledge about 1) what has worked well to support outcome progress and achievement while understanding the keys to those successes, 2) recognizing what efforts did not reach expectations, and 3) understanding what needs to change in order to adapt and accelerate success going forward. The lessons learned were gleaned from review of the extensive activities and products developed by teams championing each outcome in the 3rd SRS cycle. Therefore, the summary of findings represents an opportunity to use this shared learning experience to bolster and leverage the partnership's institutional knowledge and recent increase in investments towards more effective adaptive management actions supporting a cleaner, more sustainable Chesapeake Bay and watershed.

As the partnership plans and adapts its next steps, it has an opportunity to pivot on some key decision points based on the lessons learned and adaptations described in the Program Insights section (i.e., rebalance of resources, adopting enhanced monitoring, and improving community representation in stakeholder engagement) that could result in not just accelerating work but also planning for a more integrated and comprehensive management approach for the years beyond 2025. Such pivoting may result in some early and significant improvements in living resources, habitat and water quality in a way that meaningfully impacts a broader array of people in the watershed.

Introduction

The USEPA Chesapeake Bay Program's (CBP) mission is to study, protect, and restore the Chesapeake Bay (the Bay) and its watershed (the watershed) for people and the environment. The CBP's current framework for implementing its mission is the *2014 Chesapeake Watershed Agreement* (2014 Agreement), a document of 10 goals and 31 outcomes, signed by the CBP Executive Council (EC). The partnership uses a structured review and evaluation process called the **Strategy Review System (SRS)** to ensure transparency and accountability in managing its work. The SRS is designed as a series of two-year management activity and review based on the principles of adaptive management (Figure 1). Adaptive management means learning while doing; adapting future work based on logic and analysis of the ecosystem's response to management actions to better fulfill the science, protection, and restoration needs of the Chesapeake Bay and its watershed.

About the Strategy Review System (SRS): The Strategy Review System (SRS) runs on two-year cycles. Each cycle begins with a two-day Review Meeting and includes seven Quarterly Progress Meetings with the CBP Management Board. The Quarterly Progress Meetings provide regular opportunities for pre-defined cohorts of workgroups and Goal Implementation Teams (GITs) to report their progress to the Management Board, identify and explain their challenges, and request action or assistance. In turn, the Management Board reviews progress toward each of the outcomes of the Chesapeake Bay Watershed Agreement and supports necessary adaptations to the partnership's work.

Science needs identified by each cohort during each 2-year cycle are recorded and tracked in the CBP **Science Needs Database**.

Outcome progress is tracked and reported annually on **Chesapeake Progress**.
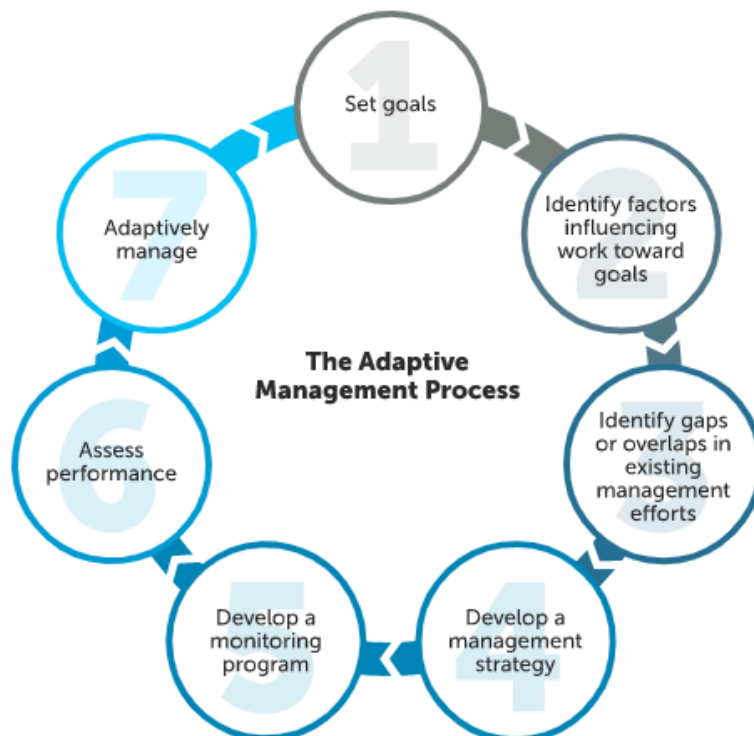

Figure 1. The Chesapeake Bay Program follows the principles outlined in the adaptive management cycle as a foundation to conducting the Strategy Review System (SRS) process. Image source: Chesapeake Bay Program

This retrospective synopsis is a reflection on lessons gleaned from activities and products generated during the 3rd cycle of the SRS, which occurred from May 2021-May 2023. It provides insights on programmatic keys to success identified by the CBP partnership (hereafter "the partnership") based on the lessons learned and provides guidance for the partnership to consider going forward (see 'Program Insights' below). Information summarized in Appendix A highlights important outcome-specific lessons learned, presented as successes and challenges experienced in the effort to make progress toward achieving their targets. This retrospective may serve as a resource to the partnership as they convene to prioritize and outline next steps for meeting the goals and outcomes of the 2014 Agreement leading up to and beyond 2025.

Information Resources Used to Develop Lessons Learned

Information sources used to develop the list of Lessons Learned focused on the following resources:

- all **Narrative Analyses** completed by each outcome lead,
- cohort presentations and discussions with the Management Board (MB) at their respective 3rd cycle Quarterly Progress Meeting
- reports and syntheses from CBP's Scientific and Technical Advisory Committee (STAC) and Scientific Technical Assessment and Reporting (STAR) team
- recommendations from STAC and STAR supported workshop reports, projects, and database
- feedback solicited from outcome coordinators and staffers, and the SRS Planning Team.

> **Narrative Analysis:** A component of the outcome management plan, the narrative analysis is a summary overviewing whether the partnership's assumptions about an outcome have changed during the 2-year period of the SRS cycle, and whether implemented actions are having their intended effect. It describes whether new information will impact what the partnership is doing to achieve an outcome and recommends adaptations or course corrections.

The CBPs Secret Sauce: A Recipe for Management Success

Thoughtful reflections on the lessons learned provides insight on the keys to success from partnership collaboration, coordination, and cooperation involved in achieving Bay and watershed restoration goals and outcomes. The process of developing the Lessons Learned offered further insight into characteristics of partnership work that have produced the greatest success in making substantive progress or achieving a goal or outcome. Such characteristics represent the ingredients behind CBP's **"secret sauce"** that fosters success. Ingredients in the "secret sauce" include:

- Clear, succinct, and prioritized goal and outcome statements
- Measurable outcome targets for tracking, understanding, and communicating progress
- A monitoring program that supports the status and progress assessments

- Goal and outcome champions aligned at the Executive Council (EC), Principals' Staff Committee (PSC) Management Board (MB), and Goal Implementation Team (GIT) level
- Geographic targeting and place-based work aimed at multiple benefits to the community and living resources
- Using the SRS process as the management process and tool for continuing to inform and adapt the existing 2014 Agreement goals and outcomes that improves the pace of restoration
- Using the existing **Governance Document** as a guide to making partnership decisions (see https://www.chesapeakebay.net/what/publications/cbp-governance-document)
- Human and financial resource capacity assigned and dedicated to fully support management efforts to achieve goals and outcomes of the 2014 Agreement.
- Dedicated funding or a nexus to innovative financing that supports planning, implementation, assessment, tracking and reporting
- Clear and meaningful incentives for stakeholders to partake in restoration activities (including pay for performance, crediting in the model, specific grant guidance etc.)
- Commitment and involvement of stakeholder interest groups who amplify the needs
- Intentional community engagement with an eye for including diverse voices
- Building and maintaining relationships within the partnership
- Aligned regional, state, and local environmental management
- Sustaining and enhancing the science-based foundation to support effective decision-making
- Clearly specified policies at the federal, state, and local level that are aligned and supportive
- Leadership with a vision, and
- Centering the work on benefits to people and living resources, not solely water quality

Program Insights: Lessons Learned from the 3rd SRS Cycle

The role of the information contained in the retrospective is to empower the partnership with shared knowledge about 1) what has worked well to support outcome progress and achievement while understanding the keys to those successes, 2) recognizing what efforts did not reach expectations, and 3) understanding what needs to change in order to adapt and accelerate success going forward. **Ten Lessons Learned** are presented with suggestions on Adaptations to Consider by the partnership going forward for addressing issues identified by the lessons and improving the rate of progress and success toward meeting goals and outcomes. A supporting narrative discusses and provides context to each of the lessons and considerations for deeper insights from the findings of this retrospective.

> **1. Lesson Learned**: The Strategy Review System is successfully informing the implementation of the 2014 Agreement goal, but it could use strategic modification for improved return on investment
>
> **Adaptations to Consider**: Strategically modify the current SRS process and living documents for use when planning and implementing activities beyond 2025

First and foremost, the CBP has learned that **the Strategy Review System** is **successfully informing the implementation of management activities supporting achievement of goals and outcomes in the 2014 Agreement** by applying adaptive management to advance outcome implementation. The 2014 Agreement and the partnership's Governance Document are living documents and have both been successfully updated since 2014 through integrating new science, implementing management actions that facilitate restoration, and leveraging partnership skills, knowledge, and resources. Through the first three cycles of the SRS process, the partnership has used the collective knowledge of the GITs to help implement these learnings towards achieving the 2014 Agreement's goals and outcomes. Towards this theme of integrating learnings, CBP has learned and heard emphasized several overarching lessons in the 3rd SRS cycle.

Moving forward, there are opportunities to strategically update the SRS process to continue to meet the adaptive management needs of CBP. For example, one partner observed that while STAC notes that the SRS system is most valuable at the GIT level, many of the GITs are not structured or staffed appropriately to benefit from being a target of the process. This is an organizational structure issue that could be addressed going forward. From this knowledge, if GITs were sufficiently staffed and focused on outcome attainment, then CBP management could make more collective progress towards outcome attainment. From another partners' perspective, the SRS system allows CBP to identify when it is not making appropriate progress, but the systems are not in place to make changes to address challenges. A third partner perspective suggests the SRS seems too detailed and specific for the current Management Board and having a Management Board that better acknowledged their responsibility to represent their agency broadly might allow for more strategic discussions of summary SRS materials. This partner suggests having Deputy Secretaries and Office Directors sitting on the Management Board.

> **2. Lesson Learned**: Outcomes may be presented in the Agreement as if they are meant to have equal priority for dedicating resources, management activity and achievement. However, experience shows attention and effort addressing the outcomes is unbalanced

Adaptations to Consider: Set an initial strategy for adjusting the present unbalanced distribution of resources affecting outcome achievement to realize more equity in support toward achieving all outcomes; Rebalance emphasis across outcomes more equitably; employ Structured Decision Making to help achieve rebalance and prioritization

Since the EC signed the 2014 Agreement, all outcomes have had equal priority on paper, and no official prioritization has ever been made. However, there has been an **inherent but unofficial priority towards water quality restoration** outcomes focused on success with the Watershed Implementation Plans (WIPs) and Total Maximum Daily Loads (TMDLs) because of their binding regulatory relationship to activities and responsibilities among the jurisdictions; **nonregulatory outcomes have had subsequently lower emphasis and priority**. **If the partnership wants to have a more balanced level of effort, increased attention and capacity is needed** to provide similar levels of support towards achieving all outcomes in comparable fashion with the water quality goals of the 2014 Agreement. Alternatively, if equity among outcome achievement is not the underlying inherent goal of the partnership, **a formal assessment and prioritization could be useful for 2025 and beyond.**

Structured decision making (SDM) could be an integral part of how the partnership tackles this issue of capacity in the short term but also help advance a structured and prioritized way of thinking about the work of the partnership post-2025, **particularly in identifying the tradeoffs and evaluating where the partnership might pivot its focus** based on the scientific learnings pointed to further in this document. **In addition to SDM, basic accounting and development of costs, deliverables, and roles and responsibilities for achieving each outcome could be a good first step.**

There is no formal assessment of the relative value of each outcome in achieving its respective goal nor in each goal in achieving the CBP's vision. While there are leaders who bring a broader perspective of focus, including time, attention, and resources, to include people, habitat and living resources outcomes, the partnership lacks an agreed-upon process that would provide a comprehensive vision for how to differentiate the relative value of each of the outcomes to better manage resources.

The importance of prioritization is escalated given the issues of limited capacity and limited resources. In many cases, **there is not an initial strategy for how to allocate funding, staff time, and other resources to outcomes**- an outcome is set without a cost estimate. Then as CBP approaches a deadline, resources are requested. In addition, **whenever one outcome is behind, there is not a systematic approach or strategy for how to reallocate funding and resources to help it catch up.** As the partnership works to fill the gaps from limited capacity and resources, how can the partnership best focus its time? In addition, given the recent influx of state and federal funds, where can targeting funds and increasing staff levels increase the partnership's capacity to do its existing work more comprehensively and allow it to take on new work?

The 3rd cycle learnings present additional factors to consider as CBP decides 1) whether to, and if so, 2) how to perform a formal prioritization of outcomes.

3. Lesson Learned: Capacity limitations affect the rate of achievements

Adaptations to Consider: Strengthen workforce; managing expectations should further be aligned with available capacity or support changes and investments to enhance capacity; help CBP agencies and partners access new resources to address targeted capacity limitations

Arguably the most common theme from the GITs and their associated workgroups is they lack **capacity** to fully meet their goals and outcomes. The partnership lacks capacity in terms of financial resources, personnel-hours and technical expertise to efficiently and fully accomplish its goals and outcomes.

Outcome teams, key implementation programs, and technical assistance needs are understaffed, and overall resources are stretched thin. This is in part due to the increase in workload, direction shifts, and expectations of the EC, Principals' Staff Committee (PSC), and Management Board without increasing the number of people or resources to accomplish them. In many cases, **ambitious goals have been set without providing the capacity needed to meet them**. Meeting capacity requires tradeoffs. Increased capacity could come from CBP agencies, but at the expense of the size of grants to the states. Otherwise, the cost is borne by the Federal and State agencies that staff the GITs.

Capacity is a critical path for advancement on the Program's outcomes. For example, research and analysis must be executed to set strategic scientific direction to make progress toward achieving the Stream Health Outcome (i.e., improve health and function of ten percent of stream miles above the 2008 baseline for the watershed), but there is not enough support within the GIT to accomplish these science needs. Therefore, lack of capacity significantly limits the partnership's ability to meet the 2014 Agreement goals and outcomes. Staff turnover is another related problem for several outcomes which is compounded by the need to **strengthen the workforce** that is being trained and represents the future resource pool to fill these openings. Another lesson in capacity limitation is **access to resources**. Access to new funding for projects, statistical assistance, modeling, and other program support functions is another approach the partnership uses to improve its work outputs. In summary, lack of workforce capacity and access to resources increases burnout for existing staff, creates work inefficiencies, and decreases the accumulation of institutional knowledge. Therefore, **current capacity limitations significantly limit the partnerships' ability to accelerate progress and meet the 2014 Agreement** goals and outcomes.

> **4. Lesson Learned**: Outcomes do not live in silos (e.g., climate, diversity), they are interdependent, requiring more cross-outcome integration to achieve success for all outcomes
>
> **Adaptations to Consider**: Utilize systems thinking and a more holistic approach when considering structure of outcomes beyond 2025

Another important lesson is recognition that **outcomes are interdependent** in the natural world, and there is an opportunity to make the CBP's strategy for managing them more interdependent as well. Cross outcome synergies exist, but more collaboration supporting multi-outcome benefits can be implemented.

Outcomes have been described and managed according to the presentation outline of the 2014 Agreement as siloed cohorts. Managing the work based on the outline structure of the agreement does not fully reflect a holistic view of the ecosystem and its complexities, or how, in many cases, individual outcomes and cohorts feed into or affect each other. As the partnership looks beyond 2025, it is important to frame existing outcomes as interdependent and holistic of people and the environment through ecosystem-based management and to work collaboratively within and across GITs to achieve them. It is equally important to have 2014 Agreement signatories and partners work collaboratively across their own agencies to represent a broad, holistic view. A conceptual model illustrating the relationships and interactions between achieving the 10 goals and 31 outcomes could serve as a guide to illustrate the interconnectedness across the work of each cohort and outcome. Examples of operational workgroup models for effectively interconnecting representative feedback from diverse department perspectives among the signatory delegation include Maryland's Bay Cabinet and Working Group, Virginia's cross-department collaboration group, and the Federal Office Directors.

One such example of **a cross-outcome synergy opportunity is climate change**. Climate is explicitly part of two outcomes. It is also a cross-cutting issue influencing the rate and path of progress towards achieving many of the other outcomes. However, the Climate Resiliency Workgroup faces obstacles to weave their work throughout the partnership. The role of climate factors (e.g. sea level rise, warmer bay and watershed water temperatures, increases in precipitation) and indirect effects of climate expressed in the ecosystem (e.g., living resources' ranges shifting north into the bay, or eliminating habitat for bay species like eelgrass, habitat shifts favoring success of non native species introduced into the system) in influencing outcome attainability can be more explicitly addressed for all outcome management efforts as the CBP looks towards 2025 and beyond.

Climate and diversity (i.e., diversity, equity, inclusion and justice or DEIJ) are topics that have benefitted from elevated priority by the recent EC directives. However, the partnership at all levels is viewed as having struggled with full integration of issues and concepts with climate and DEIJ in planning and management strategy development across the program. The challenge is partly because the topics have been **treated as an add-on rather than being absorbed as essential components for how to achieve success and accelerate progress to complete the work**.

Re-imagining existing outcomes in terms of relationships rather than silos has some success stories in the 3rd SRS cycle. One example is the effort to combine the Wetlands Outcome and the Black Duck Outcome due to the dependence of the species on this critical habitat. Stepping away from siloed management of outcomes, and engaging in more **systems thinking**, **SDM,** and holistic management towards the partnership's fundamental objectives will help the CBP accelerate progress in reaching 2025 goals and outcomes and adapting to the priorities beyond 2025.

> **5. Lessons Learned:** Adaptive learning, working the right issue at the right level, growing the partnership, and having inclusive, strategic communication at all levels of the partnership are critical to successfully applying adaptive management that fosters desired progress
>
> **Adaptations to Consider:** Science Communication translators are critical to messaging diverse audiences with technical findings for public consumption and decision-support; target the level of the partnership needed for this most effective messaging strategy before engaging on an issue.

There have also been important communications and partnership lessons from the 3rd SRS cycle. STAC notes that most of the **adaptive management learning and adapting is happening at the GIT level**. They note the importance of expanding that learning throughout the various levels of the partnership hierarchy and making sure the critical learning is used to inform policy and decision making at all levels, not just the GIT level. Essential in this expanded use of adaptive management is being intentional about **translating complex technical knowledge and information into terminology and language that resonates** with the intended audience of decision makers in terms they care about.

Building on the **success of the [local engagement strategy](),** more effort is needed to better communicate the information to get **the translation, interpretation, and synthesis utilized by decision-makers** to accelerate progress. In many cases, the challenges are not complex; rather, the outcomes are often not matched with agency representatives who have committed to achieving them in practice vs. in theory or concept. Given the current GIT-MB structure, often the "decision makers" are absent from the discussion. For example, **the enhancement of the land use high resolution data shows the rate of land conversion moving rapidly to tipping points that will not support living resources and healthy communities.** Incentivizing the use of these data through understanding key audiences, translating data

and science, and developing effective communication materials and strategies will provide a comprehensive view of ecological functions for managers to make informed monitoring-based decisions.

Another theme that shows up for numerous outcomes in the 3rd SRS cycle revolves around how **EPA and other federal agencies are limited in their direct influence over outcome attainability because many laws and policies are written in the United States at the local or State level**. Therefore, attention to audience and **actively reaching out and engaging with local, jurisdictional, and underrepresented stakeholders** is an important lesson to carry forward.

Another lesson is while the 31 outcomes are fairly granular, it takes continuing work to engage with the diverse stakeholders for each particular outcome. Several outcomes mentioned that holding **roundtables of stakeholders** has been very successful, highlighting the important lesson of bringing stakeholders together in person to achieve results. These **success stories highlight the importance of cultivating relationships and being inclusive**. Several projects have taught CBP that intentional, authentic engagement of community representatives needs to include compensation opportunities and alternative meeting schedules to remove barriers to participation. **Examples to consider to address barriers in participation and improve community representation in stakeholder engagement include compensating for travel costs, daycare, and lost wages**. Another lesson learned is language matters. Where practicable, it is important to use language that is suggested by the partnership's audiences because it helps stakeholders feel heard, engaged, and included in the work. One cross-outcome example is the effort that began in the 3rd SRS cycle to replace the word "citizen" from partnership group names because some stakeholders are not U.S. citizens.

> **6. Lesson Learned**: COVID-19 changed how the partnership and watershed residents interact with the environment and with each other
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> **Adaptations to Consider:** Relationships with each other and with the environment are worth cultivating to expand support and sustain improvement in the health of the Bay and watershed.

The 3rd SRS cycle overlapped with society's general trend of a return to "normalcy" where most forms of activity have now returned to pre-COVID-19 pandemic baselines. Societal response to the pandemic significantly affected the in-person aspects of partnership interactions, underpinning relationships nurtured in daily meetings, travel for workshops and conferences, and general office time. During the height of the pandemic, in-person work time was conducted exclusively in the virtual world. The legacy effect of the home-centered pandemic work life routine and virtual interactions continues to impact how we do the business of restoration. There remains a decreased level of in-person partnership work, even post-pandemic. This shift in working society continues to require an evolution and adaptation among agencies and colleagues across the partnership to cultivate the types of personal relationships that has made the program successful in the past. Another lesson or systemic change from the societal response to the trappings of the COVID-19 pandemic is people are spending more time outdoors in the types of habitat that the partnership is protecting. This creates opportunities and public interest in protecting and restoring more natural resources, as well as more stress on existing resources.

> **7. Lessons Learned:** New science generated by the partnership, for example, monitoring and analysis, STAC Workshops, academic research, and the CESR report, offer opportunities to evolve and refocus CBP work

> **Adaptations to Consider:** Continue incorporating new science with CBP's application of adaptive management in partnership work and decision-making; increase attention and efforts to integrate new science findings and adapt CBP management

Many different organizations within the partnership contribute to the science that underpins the restoration of the Bay, including local, State, and Federal agencies, Tribal nations, academia, nonprofits, and private sector organizations. While the partnership is fortunate to have such a robust science enterprise, leveraging the work of many across the enterprise in a coordinated fashion is necessary so that implementation of learning can occur as quickly as possible and maximum progress can be made toward the goals and outcomes. In the CBP, two primary organizations that work to do this are STAC and STAR. The new science generated, synthesized, and disseminated across the partnership through STAC and STAR have helped define existing and emerging challenges to accomplishing the partnership's work and modify approaches to the collective effort of restoration.

The CBP partnership learned several critical **science lessons during this cycle that may be considered in our work moving forward**. The partnership hosted STAC workshops on extensive topics like "[Rising Water Temperature Impacts](#)", "[Coordination of Science Activities for Managing PFAS](#)", "[Advanced Monitoring Approaches](#)", "[Outreach and Best Management Practices Improvements using Social Science](#)", "[Improving Modeling and Mitigation Strategies for Poultry Ammonia Emissions Across the Chesapeake Bay Watershed](#)", and "[Improved Crediting for Wetland Ecosystem Services](#)". The syntheses and reports from these workshops are just now being digested and will need to be incorporated into the various systems and decision support tools to inform policy as attention is turned to post-2025 planning.

STAC spent the last several years documenting a **Comprehensive Evaluation of System Response (CESR)** (STAC 2023). The final report has recently been approved by USGS and STAC representatives but has not been uploaded to a public site as of writing this document. However, experts and presentations have shared critical learnings in the report about how our system is responding to 40 years of restoration (Testa et al. 2023; Rose et al. 2023; Wardrop & Stephenson 2022, Wardrop & Stephenson 2022). Namely, **it is unrealistic to expect the Chesapeake Bay ecosystem to return to historic health**. Systems are non-stationary; they are changing in response to shifting baselines. We need to focus on managing for the likely future conditions rather than believe we can recreate a condition from the past. For example, rising temperatures, shifts in precipitation totals and intensity, and sea level rise - all indicators of climate change affecting the Bay and watershed - are dampening CBP's management response to load reductions (Batuik et al., 2023; STAC 2023). Dampening Chesapeake Bay's response to load reductions will only make it harder to achieve the desired recovery response targeted for a healthy bay and watershed in the future. Also, **improving water quality by implementing the WIPs may be sufficient for achieving some of the 2014 Agreement goals, but the WIPs were not structured or intended to meet all the goals.** Therefore, a more holistic view of the system is needed to achieve efforts in restoring the Bay for living resources and people.

Recent recommendations coming out of the STAC Rising Water Temperatures workshop as well as CESR have suggested **protecting places with optimal conditions now and investing in shallow water areas near tipping points for nutrient reduction to achieve a more timely and rapid response in habitat and living resources.** CESR and the STAC workshop on "Overcoming the Hurdle: Addressing Implementation of BMPS Through a Social Science Lens" suggest that CBP **needs to improve the effectiveness of its non-point source program**s and identify outcome-based incentive programs and combine them with **spatial targeting** and **innovation** to make effective use of limited resources. Continuing to identify these key

findings through monitoring, analysis, reports, and other efforts is important to improve the understanding of conditions and alter decision making based on new science.

> **8. Lessons Learned:** Success with Bay restoration depends on addressing health and recovery for shallow water and deep water habitats
>
> **Adaptions to Consider:** Retain deep water management targets while expanding management activity to better affect and improve shallow water habitat that has high value to living resources and people

CESR highlights how **17 out of 31 outcomes in the 2014 Agreement are in shallow water,** areas of recreation for stakeholders and critical habitats for living resources (STAC 2023). However, the current partnership approach is to focus implementation of nutrient and sediment reduction practices in places that will improve waters in the deepest portion of the Bay. The CBP has developed a "Most Effective Basins" map that included DEIJ criteria to guide practices to watershed areas that will provide the greatest benefit towards achieving the deep channel habitat goals. The rationale is if these waters, which are some of the most degraded, are improved, the rest of the tidal waters will also see benefits. However, science is telling us that CBP may be able to **boost the living resource response and accelerate attainment of the partnership's water quality standards by focusing more time and resources into rehabilitating the health of the shallow water areas** (STAC 2023).

The CBP has an opportunity to use the tidal and watershed water quality monitoring results to consider policies when moving beyond 2025 that expand the places for focusing nutrient and sediment reduction practices affecting change to these shallow water areas for the benefits of living resources and people. This shift will allow for a more holistic view for targeting reduction practices. Keeping DEIJ criteria would be an important component to targeting shallow water areas. Learning about the **need to better understand the shallow water-land transition zone** has prompted the need for investment in monitoring shallow area systems as well as modeling.

> **9. Lessons Learned**: The recent Principals' Staff Committee (PSC) requested monitoring program review (2021-22) highlighted limitations and deficiencies in monitoring support across the 31 outcomes
>
> **Adaptations to Consider**: Capacity is needed to support developing metrics, indicators, and robust sampling designs for data collection; monitoring program needs translated into funding estimates; Partnership support solutions to sustain and grow programs

A request from the PSC, initiated through SRS, asked for a review of the status of the CBP monitoring networks and recommendations on how to improve them. The report's key findings are twofold: **monitoring is critical to meet the 2014 Agreement goals, but monitoring is insufficient for many CBP outcomes** (Tango et al., 2022)**.** This urgently needs to be improved by 2025 for evaluating progress and identifying challenges towards meeting the goals and outcomes. CBP relies on indicator development, which is dependent on sustained and improved monitoring, to communicate progress to the partnership and public. Opportunities for funding exist, but it will require a partnership approach to address the vast scope of monitoring needs and sustain enhancements for the long-term.

The pursuit of new data collections and associated analysis methods is an active area of investigation for the CBP; however, developing approved protocols for interpretation, assessment and reporting extend the time between identification of new data streams and their application to inform management and policy decisions. **Partners need to be ready to adopt new protocols based on emerging science and**

new technology to establish a functional, operational monitoring program. Currently, NOAA and EPA are investing in new real-time buoy systems for a hypoxia monitoring program to collect data for supporting water quality standards attainment while simultaneously providing data for modern habitat suitability models and living resource indicators. These investments represent a comprehensive approach for targeting monitoring resources to activities that support assessment of multiple outcomes.

> **10. Lessons Learned**: Success with science, restoration and partnership depends on issue champions within the partnership

> **Adaptations to Consider**: Identify champions to lead key efforts at all levels; empower champions to break down barriers; increase CBP partnership's awareness and capacity in order to capitalize on historic investments

A final group of lessons learned are operations-based. One operations lesson from the outcomes is the challenge of engaging the right people in the work to achieve the desired results. This means **putting engaged champions in charge of GIT projects,** getting more consistent participation from jurisdictions, engaging with underrepresented stakeholders in the community, and making sure the partnership's work force is more representative of the watershed's population. For example, the Fish Habitat Workgroup observed that **the most effective and "championed" GIT projects tend to have a clearly outlined agency or contractor overseeing the project**. Another operational lesson learned is **working in smaller groups in between larger meetings** increased the amount of work done in the 3rd SRS cycle and makes the SRS process more successful. Another operations theme is the success of the Laboratories of Democracy theory. This is a political science theory that says local jurisdictions act as opportunities to trial-run policy for potential wider scale adoption (New State Ice Co v. Liebmann 1932). This is observed for example in the Toxic Contaminants Workgroup learning about Polychlorinated Biphenyls (PCBs) in schools in the watershed from PCB testing in schools in Vermont, a state outside of the watershed.

A final theme is recent and continuing historic investment in the Chesapeake Bay Program at the local, jurisdiction, and Federal level creates **a generational opportunity to invest in the partnership's goals**. However, **many are unaware of new Federal funding opportunities and/or lack capacity to access them or to be able to take on administrating and implementing new projects,** which discourages the right projects from getting to the right places. The CBP has heard from focus groups that making more money available or providing technical assistance for grant writing may not be enough to unlock financial opportunities for underinvested communities or organizations. The partnership needs to be creative in order to diversify who receives grants and where dollars are invested. Partnership managers and staff may want to consider these lessons learned in the 3rd SRS cycle when deciding how to use these new funds to optimize the CBP towards its 2014 Agreement vision.

Conclusion

The Chesapeake Bay Program is a unique multi-level, multi-agency, multijurisdictional partnership that protects and restores the Chesapeake Bay watershed through the principles of adaptive management. The 3rd SRS cycle provided an opportunity to identify areas and tasks that worked well and didn't work within the partnership. The lessons learned from these efforts may influence necessary adaptation in the future on how to adjust management strategies and accelerate progress towards achieving the 2014 Agreement. The CBP enters a pivotal time when key decisions will impact the rate of progress for outcomes leading up to 2025, but this time also provides a chance to shift directions for a more integrated and comprehensive approach for going beyond 2025 to ensure improvements in living

resources, habitat, and water quality in a way that meaningfully impacts a broader array of people in the watershed.

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Appendix A: Highlighted Outcome-specific Lessons Learned Derived from Efforts to Address Progress in Achieving the Outcomes in the 3rd Cycle:

Two outcomes from the 2014 Chesapeake Bay Watershed Agreement were sunsetted before the 3rd Strategy Review System (SRS) cycle began and are not included.

Information sources used to develop the list of successes and challenges of each active outcome focused on the following resources:

- SRS 3rd cycle Narrative Analysis
- SRS 3rd cycle Management Board presentations
- Archived SRS materials
- feedback solicited from outcome coordinators and staffers, and the SRS Planning Team.

1. **Blue Crab Abundance**
   Successes:
   - Current management framework is working
   Challenges:
   - Could use more financial and staff resources to meet science needs
     - Chesapeake Bay Stock Assessment Committee (CBSAC) is searching for ways to improve the stock assessment model and analytical process that do not require additional funding because the blue crab science needs typically do not meet Goal Implementation Team (GIT) funding criteria. Because these actions are more mundane and not immediately useful, CBSAC members are hesitant to volunteer for them and they do not get completed.

2. **Forage Fish**
   Successes:
   - Received National Oceanic and Atmospheric Administration (NOAA) and Chesapeake Bay Program (CBP) funding to address science priorities
   - Linked variability in forage abundance with Bay conditions
   - Prioritized indicators to better describe and communicate forage status
   Challenges:
   - Slowness in filling identified monitoring gaps, lack of capacity for the team to do so

3. **Oysters**
   Successes:
   - Developing a strong management framework up front was time well spent.
   - Oyster restoration is expensive up front, but the ecosystem service benefits (ex: denitrification, fish habitat) can make for a relatively quick return on investment.
   Challenges:
   - Partnership monitoring could likely be more resource-efficient and effective
   - Oyster restoration requires an expensive up-front investment

4. **Submerged Aquatic Vegetation (SAV)**
   Successes:

- Small-scale restoration protocol complete
- Partners are engaged in the shallow-water use conflict conversation
- Chesapeake Bay (CB) SAV Watcher Program is a successful means of crowd sourcing SAV data and engaging the public
- Advanced monitoring work with progress toward satellite-based assessments

Challenges:
- Restoration less successful in years of SAV decline
- Partners are engaged in the shallow-water use conflict conversation, but several questions and data gaps remain. Newer property owners are less knowledgeable.
- To withstand climate change impacts, sustained SAV recovery will require dramatic improvements in water quality, so need to consider more significant nitrogen, phosphorus, and suspended sediment regulatory reductions and region-specific management actions.
- CB SAV Watcher Program is successful but needs more resources and staff support.
- Chesapeake Bay Social Marketing (CBSM) project showed that waterfront property owners have a mixed response to SAV, so need to work with them accordingly.

5. **Riparian Forest Buffers (RFB)**

Successes:
- 2022 Leadership Workshop
- State RFB Action Strategies
- Standalone flexible buffer programs
- Filling information gaps: STAC Rising Temperatures workshop, Maintaining Forests in Stream Restoration project, Forestry Communications study

Challenges:
- Maintaining leadership engagement
- Conservation Reserve Enhancement Program (CREP)
- Current pace is inadequate to meet goals
- Verification is difficult, and costs model forest buffers every year
- Lack of capacity

6. **Toxic Contaminants Policy and Prevention**

Successes:
- A GIT Funding report led to a strategy shift to focus on the controlled removal of polychlorinated biphenyl (PCBs) in schools and in collaboration with the Sustainable Schools Outcome.
- Toxic Contaminants Workgroup (TCW) is learning from other jurisdictions in the United States
- TCW conducted a PCB roundtable at a TCW meeting. TCW believes this approach has substantial potential benefits and intends to pursue it.

Challenges:
- Leveraging Total Maximum Daily Loads (TMDLs) remains the major strategic regulatory element.
- No synthesis of jurisdictions' PCB in fish tissue monitoring data is available.
- There is a need to develop and roll out a strategy for using the fish consumption advisory infographic for signage and in centers for women of childbearing age
- GIT Funding report on the effect on PCB releases following upgrade of wastewater treatment plants concluded that PCBs are reduced through upgrades; however, PCBs are not destroyed but rather partition to biosolids. There is a need for coordinated finer-scale modeling.
- Lack of capacity

7. **Toxic Contaminants Research**

Successes:
- Synthesized scientific information to make fish and shellfish safe for human consumption

- Principals' Staff Committee (PSC) enhanced monitoring for PCB regional changes based on management actions
- Understand the influence of toxic contaminants in degrading the health of fish and wildlife
- Risk modeling
- Synthesize and promote science to help prioritize options for mitigation to inform policy
- Management relevant timelines to detect best management practices (BMP) response

Challenges:
- Cross-workgroup collaboration for actionable science
- Interaction with Sustainable Fisheries GIT on fish consumption advisories/story maps
- Consideration of toxic contaminants in fish habitat assessments
- Identifying appropriate method to link toxic contaminant BMP science to stakeholder tools

8. **Water Quality Standards Attainment and Monitoring**

Successes:
- Extensive analysis, reporting, publishing of water quality status & trends
- Targeting portal for multiple outcomes
- Engagement with jurisdictions on monitoring findings for policy implications
- Gained funding and additional partners to support capacity for parts of networks

Challenges:
- Data collection capacity less than requirements identified in Monitoring Report
- No tidal segment has been assessed for its full suite of water quality standards
- Incorporating ecosystem services based on water quality
- Limited application of monitoring results to 2025 Watershed Implementation Plan (WIP) Outcome
- CBP (Environmental Protection Agency) lacks resources to fund all monitoring requirements on its own
- Sustained funding plans with partners are not yet in place

9. **Watershed Implementation Plans (WIP) -2025**

Successes:
- Two-year milestones progress
- Actions with a clear workplan and frequent updates
- Actions with a clearly identified responsible party
- Individual progress within jurisdictions and organizations

Challenges:
- Unclear responsible party
- Misalignment of Water Quality GIT's time
- COVID-19
- Funding technical assistance and capacity
- BMP Verification
- Unaccounted additional loads

10. **Black Duck**

Successes:
- Most actions have been completed
- Current factors affecting progress are still accurate
- Science: updating the decision support tool (DST) model and releasing the U.S. Geological Survey (USGS) habitat vulnerability assessment

Challenges:

- Biggest obstacle is still tracking of wetland restoration acres towards the Outcome
- Tracking of restoration acres toward the outcome– present restoration efforts on agricultural lands may not necessarily be viable black duck habitat.
- Reconciling Black Duck outcome (151,272 acres) of primarily tidal marsh and Wetlands outcome (85,000 acres) of primarily restored agricultural land
- Can CBP use DST to guide restoration efforts to align these two outcomes? Will it work given climate change and land change pressures?

11. **Climate Adaptation**
Successes:
- Supported targeted outreach for green infrastructure conceptual plans with the Habitat Goal Implementation Team for under-resourced communities and Tribes
- Acquired funding for project to support partner coordination in identifying collaborative large-scale marsh adaptation projects
- Local engagement coordination leading to the incorporation of climate change content in local government educational modules and climate change-related webinars

Challenges:
- Adaptation tracking
- Past efforts to track resilience were too broad in scope
- Need to sort out how best to use the Climate Resiliency Work Group (CRWG) team to effectively track resilience enhancement - where can it add the most value? What is feasible?
- Lesson Learned: Narrowing focus on priority adaptation strategies (e.g., marsh migration, natural/green infrastructure) increased success in making progress on Climate Adaptation outcome.
- Climate adaptation is cross-cutting with many other outcomes and through cross-GIT collaboration, CBP can increase capacity to undertake larger, more impactful projects.

12. **Climate Monitoring and Assessment**
Successes:
- Supported the Rising Water Temperature Scientific and Technical Advisory Committee (STAC) Workshop effort
   - Partners gathered to review warming water temperature effects on habitats and living resources in the watershed and Bay and develop recommendations on science needs and management actions to better assess and prepare for temperature changes
- Piloted new climate staffer position - improved capacity to support climate change indicator efforts and cross-workgroup support on projects and workshops.
- Assisted cross-workgroup efforts in identifying BMP climate resilience uncertainties for stormwater, agriculture, and natural BMPs

Challenges:
- Climate change indicator work is time and staff resource intensive - need partners
   - Important to establish end purpose of indicator with potential users to make it worthwhile
   - Need other work groups' support in connecting climate change indicators with relevant ecological impacts to natural resource outcomes
- Capacity to support all monitoring and assessment needs - partnership support is needed
   - Connect with established networks - e.g., Mid-Atlantic Coastal Acidification Network
   - Prioritize work before engaging in a resource-intensive project

- o Need dedicated funding to support BMP climate change performance research/mechanistic modeling to further knowledge for Phase 7 Watershed Model and WIP strategies

13. **Wetlands**

Successes:
- 2022 Wetland outcome attainability workshop
- Wetland Workgroup (WWG) collaboration with Habitat GIT (HGIT)
- Wetlands Action Plans
- Climate Resiliency & Wetlands combined workgroup meetings
- GIT Funded marsh migration model study. Final report submitted Sept. 2022
- Worked with CBP geographic information system (GIS) staff to provide wetlands guidance on mapping
- GIT Funded work

Challenges:
- Staffing capacity and turnover

14. **Brook Trout**

Successes:
- Managers generally need precise information at the highest resolution possible
- EO 13508 – Brook Trout is one of the four indicator species "because they reflect the habitat health and hold great ecological, commercial and recreational significance (Exec. Order No. 13508, 2010)"
- Developed approach to track all watershed conservation/restoration activities
- Scientific progress in groundwater, stream temperatures, brook trout genetics

Challenges:
- Some delays due to pandemic
- No capacity to implement tracking tool for summarizing all watershed restoration activities
- Each state unique, no one-size fits all approach
- Primary Challenge: Resources available to the Brook Trout Workgroup (BTWG) and associated stakeholders are insufficient to adequately restore and sustain brook trout populations at the scale necessary to overcome the detrimental impacts to brook trout habitat across the watershed. While the connection of brook trout to Healthy Watersheds, Fish Passage, Forest Buffers, and Protected Lands through common hydrological and ecological processes are recognized, the BTWG lacks the capacity to implement or coordinate actions at the scale necessary to achieve the outcome

15. **Fish Habitat**

Successes:
- Higher resolution monitoring
- Living shoreline behavior change project. Toolkits for Maryland (MD), Virginia (VA), and Delaware (DE).
- Better communication with local government

Challenges:
- It is a challenge to include habitat considerations in fisheries management, local planning, and WIP BMP actions. There are two main audiences that require different tools/messages for each:
  - o Habitat/land managers: Tools could inform and guide planning and zoning as well as delineate high priority areas.

- o Fisheries managers need tools to incorporate habitat condition into assessments so they can adjust management for habitat influences. Ideally, ecosystem-based management, but presently feasible in single species management.
- The most effective and "championed" projects have a clearly outlined agency or contractor overseeing the project. Other projects required more "shepherding" from the workgroup chair and staffer(s) and received less engagement from the Action Team membership. This was a lesson about the importance of analyzing team capacity

16. **Fish Passage**

Successes:

- U.S. Fish and Wildlife Service (USFWS) led an effort to develop "Recommendations for Aquatic Organism Passage at Maryland Road-Stream Crossings (2021)." It addressed the lack of guidance for local and state highway agencies on the proper design and implementation of aquatic passage at road crossings

Challenges:

- Interest by dam owners is still a major challenge.
  - o Workgroup focused on ways to incentivize dam removal projects
    - ▪ Dam removal mitigation crediting
    - ▪ Workgroup members also have continued working with state dam safety programs to highlights the benefits of dam removal
- Funding needed to continue road-stream crossing assessments and study presence of target species
- The next step is implementing recommendations from 2021 USFWS aquatic organism study

17. **Healthy Watersheds**

Successes:

- Progress made toward understanding the spectrum of health and vulnerability with the Chesapeake Healthy Watersheds Assessment.
- Learned to incorporate stakeholders needs and user research into decision support tools.

Challenges:

- Translation and communication of science and resources to stakeholders.
- Consistent jurisdiction engagement participation at the GIT level

18. **Protected Lands**

Successes:

- People are placing an increased value on natural places and accessible open space

Challenges:

- Actions and goals should match staff availability and resources.
- Assigning a responsible party and securing funding are crucial for achieving performance targets.
- Urgent needs around the connection between public health and green space required adaptive management and the development of an action plan
- COVID-19 demonstrated the increased demand for accessible open space for all residents.

19. **Stream Health**

Successes:

- Success is achieved with:
  - o Engaged membership
  - o Meaningful, action-oriented discussions
  - o Dedicated resources (funding, personnel) to advance workplan
  - o Collaboration with other GITs/Workgroups (Healthy Watersheds GIT)

Challenges:

- Inconsistent or absent participation from State representatives

20. **Land Use Methods and Metrics Development**

Successes:
- Development of indicators for impervious surface and community tree cover
- Delivered the land use data through an interactive website and in multiple formats: raster, tabular change matrices, tabular county summaries.
- Published the high-resolution land use data as state-wide mosaics with citable references.

Challenges:
- Monitoring land use change over 4-8 years is too short of a period to:
  - Differentiate episodic events from persistent rates of change
  - Understand the drivers of change
  - Relate land use change to changes in water quality, watershed health, and communities
  - Assess progress for multiple outcomes: tree canopy, forest buffers, wetlands, black ducks, healthy watersheds, and climate resiliency
- Monitoring land use change every four years is too long an interval to:
  - Relate land use change to changes in water quality, watershed health, and communities and inform the development process
- Communication, translation, and engagement:
  - Resources needed to translate, format, package, and flow information through to trusted sources
  - Determine how to effectively engage locals directly

21. **Land Use Options Evaluation**

Successes:
- Collaboration and participation of related outcomes and workgroups, as well as their work/products has contributed greatly to progress on this outcome.
- Success is dependent on two-way input and direct involvement of locals requires a sustained pathway of mutual listening and learning.

Challenges:
- This outcome is qualitative; there remains a need to understand if our efforts are helping to reduce the rate of land conversion.
- Communication, translation, and engagement:
  - Resources needed to translate, format, package, and flow information through to trusted sources.
  - Determine how to effectively engage locals directly

22. **Local Leadership**

Successes:
- Peer to peer learning exchange tours continue to be highly successful
- Engagement with trusted sources and workgroup members
- Newly created editable educational modules allowed for state or regional customization
- Working in smaller groups in between larger quarterly meetings
- Making water issues relevant to local officials via a lens of public health and safety, infrastructure maintenance and finance, economic development, and education
- Engagement with planners has activated a network of 'teachers' for local elected officials

Challenges:
- The process of preparing the Local Leadership baseline survey was delayed by more than 3 years because approval was needed from the Office of Management and Budget.

- A suite of engagement opportunities is needed to reach a diversity of local elected officials
- Engagement with trusted sources continues to be essential
- Budget constraints
- Creating an indicator has proved to be time-consuming and challenging
- Many are unaware of new Federal funding opportunities and/or lack capacity to access them
- Virtual engagement expanded the quantity of local officials reached, but at some cost to quality

23. **Tree Canopy**

Successes:
- Putting new data to use
- Tree Canopy funding & policy roundtable

Challenges:
- Tree canopy losses are far outpacing current planting efforts. This points to the need to develop or strengthen new local and/or state policies
  - Learning more about drivers of loss and what approaches have been effective in maintaining/expanding canopy is a critical next step
- tree equity
- Tree nursery and workforce supply is not high enough to plant enough trees, must be grown
- Lack of capacity

24. **Environmental Literacy Planning**

Successes:
- Resources tailored to state priorities
- A more decentralized, localized, inclusive environmental literacy strategy
- Leadership Summit: education leaders shared lessons from their respective states.
- Using new and enhanced outdoor learning spaces during COVID-19.
- One key to success has been having a PSC-level state partner work with the CBP to host the event; this ensures alignment with state priorities

Challenges:
- Figuring out sustainable funding model
- Collecting and distributing examples

25. **Student**

Successes:
- Emergency grants for environmental literacy providers during the pandemic
- Creative new tools to offer modified outdoor learning experiences during and beyond COVID-19
- Champions in the pre-service teacher space
- Environmental Education (EE) Grant funding

Challenges:
- COVID-19 impeded efforts with education leadership
- Actions where the responsible party does not regularly attend Education Workgroup meetings and/or doesn't have a point-person that serves as that liaison are less likely to be on track.
- COVID-19 relief funds: huge opportunity for outdoor learning and other EE priorities to fit in, but unclear how many districts took advantage of it.
- Many experiences were diluted because of the natural limitations of meeting online

26. **Sustainable Schools**

Successes:
- Increased recognition of the benefits of outdoor learning
- Increased interest in climate change education due to increased outdoor time

Challenges:
- School closures/ re-openings disrupted learning
- Sustainability projects seen as "extras" as schools try to address learning losses after COVID-19
- Increase in disposable items due to COVID-19

27. **Diversity**

Successes:
- Actions within our control, including communicating with stakeholders and internal organizational culture, progressed in line with our plan.
- Teaming with other workgroups/GITs can be effective
- Individuals within the Bay Program are gaining confidence with diversity, equity, inclusion, and justice (DEIJ) topics
- Historically Black Colleges or Universities (HBCU) Memorandums of Understanding (MOU)

Challenges:
- External facing actions, including activities focused on environmental justice, faced barriers.
- Difficult to evaluate whether changes to grants expanded funding to DEIJ communities primarily because CBP does not have a baseline or a clear methodology for measuring change
- Institutional challenges in creating a diverse partnership workforce persist
- It takes effort to establish and maintain a relationship with HBCUs, even with an MOU in place.
- Diversity Workgroup will make an annual workplan to meet the goals of the MOU's interested parties
- Some individuals within the CBP still feel they lack expertise in implementing/ incorporating DEIJ
- Focus groups indicated confusion about CBP's structure, hierarchy, and overall purpose.
- Teaming with other workgroups/GITs takes time and effort

28. **Public Access Site Development**

Successes:
- Public access workgroup functions as a learning community
- GIT Funded project on the benefits and barriers to public access
- Pairing Public Access Outcome with other programs and other outcomes
- Lowering match requirements for grants/ weighting scoring criteria to support DEIJ communities

Challenges:
- Cost associated with maintenance impedes the implementation of new sites
- Workgroup members have limited influence on funding strategies because they are local

29. **Stewardship**

Successes:
- Elevating social science within CBP
- Sharing stewardship data as an indicator for Bay health helps to bring attention to the importance of and progress toward stewardship

Challenges:
- Lack of capacity / staffing changes
- Stewardship Index and behavior change website took more resources and time than anticipated
- Need to discontinue using the word 'citizen' in favor of a more inclusive term.
- Missed opportunity to coordinate with Diversity Workgroup – will going forward!
- Federal restrictions on surveying / collecting data are a barrier to measuring progress and tracking impact. The approval process is very slow

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