Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC)
June 15-16, 2021 Quarterly Meeting Minutes
Webinar Meeting

Tuesday, June 15th

Attendance:

Members: Adel Shirmohammadi, Alix Dowling Fink, Andy Miller, Brian Benham, Bill Dennison, Chanceé Lundy, Chris Brosch, Ellen Gilinsky, Eric Smith, Greg Noe, Jason Hubbart, Jeremy Testa, Katherine Bunting-Howarth, Kathy Boomer, Kirk Havens, Kenny Rose, Kurt Stephenson, Lara Fowler, Larry Sanford, Lee Blaney, Leah Palm-Forster, Leonard Shabman, Mark Monaco, Mike Runge, Tess Thompson, Tom Ihde, Tom Johnson, Weixing Zhu, Zach Easton

Guests: Abril Hunter (FSU), Bailey Bosley (TU), Breck Sullivan (CRC, STAR), Caitlyn Johnstone (The Alliance), Crystal Zhao (JHU), Diana Esher (EPA), Gary Shenk (USGS), Jennifer Starr (The Alliance), JK Bohlke (USGS), Joshua Ramirez (Harrisburg University), Karl Blankenship (Bay Journal), Katie Delph (MSU), Lee McDonnell (EPA), Lew Linker (EPA), Melissa Fagan (CRC), Rachel Lazzaro (NOAA), Renee Thompson (USGS), Sunnidae Gallien (SERC)

Administration: Annabelle Harvey, Denice Wardrop, Meg Cole

Call to Order, Announcements—*Andy Miller (STAC Chair – UMBC)*
Andy Miller (UMBC) called the meeting to order at 1 pm. Miller requested a motion to approve the March 2021 Quarterly Meeting Minutes and the May 2021 Executive Board Meeting Minutes. Both documents are approved.

DECISION: The March 2021 Quarterly Meeting Minutes and May 2021 Executive Board Minutes are approved.

Recap of STAC March 2021 Quarterly Meeting—*Andy Miller (UMBC)*
Miller (UMBC) recapped recent STAC business with major action items resulting from the STAC March 2021 Quarterly Meeting and a summary of the June Principals' Staff Committee (PSC) meeting.

Starting with the March STAC Quarterly, Miller briefly reviewed the meeting agenda and outcomes as well as the STAC membership update. By September, there will be five At-Large vacancies including two Pennsylvania Gubernatorial openings. STAC Staff continues to develop a strategy for recruiting nomination from a wider more-diverse network by working with the Diversity Workgroup and Action Team. Representatives from the Chesapeake Bay Program (CBP) Diversity Equity Inclusion and Justice (DEIJ) Action Team presented at the March meeting on the development of the DEIJ strategy, team "vision", draft implementation plan, and the

establishment of the Community Advisory Board (CAB). STAC Member feedback largely supported the effort of incorporating DEIJ principles into the Program but debated whether the CAB should be integrated into an existing group.

Miller discussed the STAC Workshop Request for Proposal (RFP) FY21 results, which included the approval of five workshops for the coming fiscal year. Two workshops required follow-up from their respective steering committees based on STAC Member comments and suggestions. Following this decision, the Climate Change and Resiliency Cohort presented to Membership on the group's current science needs and Strategy Review System (SRS) progress. The Climate Change and Resiliency Cohort has four outcomes: Wetland, Black Duck, Climate Monitoring and Assessment, and Climate Adaptation. Members volunteered to fill select knowledge gaps by sharing projects and data evaluating similar concerns and suggested in future discussions, cohorts quantify for STAC Membership their science need as either a request for knowledge, tools, and/or resources. At the end of the first day, Brooke Landry (MD DNR) and Peter Tango (USGS) reported out on the STAC FY19 workshop entitled, *Exploring Satellite Image Integration for the Chesapeake Bay SAV Monitoring Program*. The workshop examined the role of high-resolution Commercial Satellite Imagery (CSI) in fixed-wing aircraft aerial imagery and how this may enable the long-term sustainability and efficacy of the Chesapeake Bay Program's monitoring efforts.

Day 2 of the March Quarterly was devoted to the STAC effort, Comprehensive Evaluation of System's Response (CESR). Kurt Stephenson (VT) began the meeting with an overview of CESR objectives and direction, after which the CESR Steering Committee members and workgroup leads reported out on their respective progress. Workgroups met to work on their sections during the first workgroup breakout and at the second, representatives from each workgroup joined others to provide feedback on current products and make connections across sections. At the end of the meeting, there was a STAC-wide discussion to identify themes, outcomes, and next steps.

After a review of the March Quarterly Meeting, Miller listed major conclusions from the June Principals' Staff Committee (PSC) meeting including the approval of the Executive Council Directive on Climate Change. The order contains policy statements on the Program's plans to incorporate climate risks into all management strategies while focusing on needs of vulnerable populations and connecting the Bay restoration goals to emerging opportunities in climate adaptation, mitigation, and resilience. There was a discussion of the CBP budget and growing priorities as well as a conversation on existing monitoring funding needs. A 9-month review is planned to address questions on the current CBP monitoring network, such as possible vulnerabilities and costs to sustain and grow the existing network. Relevant to recent STAC conversations, there was an update on the Conowingo WIP Development. Public comments discussed were on dredging, climate change, consideration of equity, among other issues. STAC submitted a letter of comment in January 2020 stating there is a need to better understand dissolved orthophosphate at Conowingo. Ellen Gilinsky (Gilinsky LLC) requested information on the status of the Chesapeake Bay Program director position, Gary Shenk (USGS) estimated the role may take nine months to one year to fill.

Introduction for September QM Conowingo Discussions —*Andy Miller (UMBC)*

Miller presented an introduction to the history of and issues related to the Conowingo Dam infill and its effects on the Chesapeake Bay. Though he has not completed independent research on Conowingo, Miller was a member of the 2014 review team for the Lower Susquehanna River Watershed Assessment (LSRWA). The presentation provided a historical background of Conowingo and associated sediment and contaminant loads and regulations. Unresolved scientific questions not yet addressed by watershed partners include further research on increasing orthophosphate concentrations and potential risks associated such as Harmful Algal Blooms.

Weixing Zhu (SUNY Binghamton) commented on the importance of examining the reservoir as an ecosystem in order to better understand how it operates from a biogeochemical perspective; Shenk cited recent work done by the CBP Modeling Team with respect to loadings to the Bay and estuarine dynamics, especially impacts from recent, large storms. On this note, Lara Fowler (PSU) questioned whether a compilation of high flows from more frequent and intense localized rainfall events was visible on a system-wide scale. Referencing a 1976 publication entitled, "The Effects of Tropical Storm Agnes on the Chesapeake Bay Estuarine System", Larry Sanford (UMCES) emphasized the main ecological impact to the Bay was a massive flooding of freshwater from the storm that wiped out many oyster beds and recommended the book as a reference.

Kathy Boomer (FFAR) shared a concern that the discussion around Conowingo reinforces the notion that the reservoirs have a significant impact on the Lower Susquehanna River system when in actuality, the watershed contributing area to the basin is more significant and factors such as land use and human activities should be examined further. Boomer argued the main impacts to the system is forced low-flow conditions during dry months, which can have a major influence on the biogeochemistry of the system.

Update on STAC COVID-Impacts Mini-Workshop Sessions*—Lara Fowler (PSU)*
The STAC mini-workshop sessions on COVID-19 recently convened and Fowler provided an update on workshop findings. The purpose of this effort is to better understand and identify impacts, changing dynamics, and learning opportunities in order to inform current and future efforts to reach management targets. Staggered over three weeks, the impacts of COVID-19 on local government, fisheries and aquaculture, and nutrient dynamics were explored respectively. Observed synergies across all sessions included staffing and funding changes, recreational impacts, greater need for emergency preparedness and resiliency programs, an emphasis on equity and inclusion, and the importance of long term and multidisciplinary data. Next steps include summarizing the workshop results and sharing these insights with key decision makers while starting to look at longer terms trends.

To add to the presented findings, Miller stressed disruptions may not be seen as expected throughout the watershed and proposed working with the CBP Communications Office to relay these results to the public. Sanford pointed out most changes were localized and microeconomic. If there are little observed effects in the long-run from COVID-19, it may support human activities are not significant in the short-term. The Local Government session was co-hosted by The Alliance and Jennifer Starr (The Alliance) referenced a result from the workshop highlighted by the pandemic is an overall need for more recreational activities in

more urban environments. Renee Thompson (USGS) stated there are opportunities to respond to the identified synergistic needs with existing Program resources such as the CBP dashboard, the Chesapeake Healthy Watershed Assessment, and the CBP high resolution land use data. STAC Members are requested to submit feedback on workshop findings and provide ways to utilize insights gained to advance the CBP mission.

ACTION: STAC members are encouraged to submit feedback on workshop findings and provide ways to utilize insights gained to advance the CBP mission. Please email STAC Staff directly with your comments and suggestions.

STAC Climate Synthesis Update—*Jeremy Testa (UMCES)*
Jeremy Testa (UMCES) provided an update on the completion of the STAC-sponsored project entitled, "*Quantifying the impacts of post and future climate and eutrophication on the dynamics of dissolved oxygen in the shallow waters of the Chesapeake Bay*." The team explored Chesapeake Bay shallow water monitoring data with the motivation of understanding spatial differences between oxygen variability related to climate and biological variables. The report found a diversity of control on oxygen variability, though there are regional similarities among controls. Also, key factors of oxygen variability such as temperature, photosynthetically active radiation (PAR) and chlorophyll-a interact with other forces (wind and nutrient loading), and chlorophyll-a has both positive and negative effects on hypoxia.

In response to data shown on Calvert County septic systems, Adel Shirmohammadi (UMD) expressed concern over aging on-site waste treatment designs collapsing from increased wet conditions, high water tables and other symptoms of climate change; Testa replied he was unaware of the state of these systems, although he was interested in looking into it further. An observation from the STAC mini-workshop on the impacts of COVID-19 on nutrient dynamics was increased septic system issues from more individuals working from home, Fowler mentioned. As climate change raises both the temperature and the water level, Miller wondered if the change in fraction of depth might cause dissolved oxygen to decrease. Testa explained this effect may be localized and there is a limit to warming in the deep basin, while stratification further complicates this issue. Brian Benham (VT) asked about the most surprising result of the analysis, Testa replied that the significance of photosynthetically active radiation (PAR) on day-to-day variation.

Chesapeake Bay Program Science Needs: Local Action Cohort
—Breck Sullivan (STAR, CRC); Julie Mawhorter (USDA), Renee Thompson (USGS)
Breck Sullivan (STAR) along with representatives from the Local Action Cohort presented on the group's current science needs and Strategy Review System (SRS) progress. The Local Action Cohort has four outcomes: Tree Canopy, Land Use Options and Evaluation, and Land Use Methods and Metrics Development. This cohort presented their progress to Management Board in February and submitted their science needs to STAR in March. In April, the Local Action Cohort sent in their final management strategy and logic and action plan; by June, the submitted documents were approved.

STAC Members were interested in the upcoming Tree Canopy Funding and Policy Roundtable slated for Summer 2022 and requested more information as the event nears. Julie Mawhorter (USDA) is hopeful for contractual financial support and stated the roundtable would convene after the updated USGS Chesapeake Bay Trends report is published. Denice Wardrop (CRC) requested information on how to estimate early signs of tree canopy loss – Mawhorter stated they are working with a GIS-specialist at the Maryland Forest Service on a preliminary land cover analysis. Results show in urban Maryland counties, tree canopy loss far exceeds the gain. Bill Dennison (UMCES) updated the group that the 2020 Chesapeake Bay Watershed Report Card now includes data on tree canopy. Fowler mentioned two opportunities for connection: Penn State's Global Building Network is focused on the built environment but now is examining the potential for tree canopy in urban environments, and the emerging need and benefit of recreational spaces in urban environments due to a shift in lifestyle brought on by the pandemic.

Following a review of the outcomes, Land Use Option and Evaluation and Land Use Methods and Metrics Development, Denice Wardrop (CRC) asked about the product schedule for stakeholder needs and data availability. Wardrop suggested leveraging the seven institutions connected to the Chesapeake Research Consortium (CRC) and/or PSU GIS-students in partnership with the Local Action Cohort to provision science and answer existing science needs. Renee Thompson (USGS) provided links to the Chesapeake Bay Open Data Portal, Chesapeake Bay Watershed Data Dashboard, Chesapeake Bay Environmental Justice and Equity Dashboard, Chesapeake Healthy Watersheds Assessment. For outreach and communication purposes, Shirmohammadi proposed speaking with cooperative extension groups at land-grant universities as they have connections throughout the state. Shirmohammadi further suggested agent-based modeling for evaluating stakeholder needs to calculate regional management decisions and volunteered his expertise.

ACTION: STAC members are requested to submit feedback on the Local Action Cohort. Please either email STAC Staff or Breck Sullivan (bsullivan@chesapeakebay.net) directly with your comments and suggestions on the following questions:

- Do you or any of your colleagues have interest in contributing to addressing one of these needs?
- Do you want more information to come back to STAC from any groups on specific needs/projects?
- Are these needs appropriate? Do you see something missing?
- Do you have recommendations on ways to improve our engagement with you through this process?

All Science Needs are available on the database, accessed here.

STAC Membership Process Update—*Annabelle Harvey (CRC), Andy Miller (UMBC)*
Annabelle Harvey (CRC) gave an update on the STAC Membership Process, focusing on proposed changes and evaluation criteria. Prior to the meeting, STAC Members were provided the following documents to review: draft At Large Membership process document, draft At Large Nomination Call document, and STAC Member Expertise Spreadsheet.

Proposed changes to the nomination process are in part an effort to diversity STAC nominees and Membership. In the past, existing STAC Members nominated individuals onto the Committee based on expertise, availability, and experience but with new process changes, STAC will release a Bay-wide call for both nominations and self-nominations. These submissions will be collected by STAC Staff and presented to Executive Board (EB) for review based on expertise using the STAC Member Evaluation Form. From here, STAC Leadership will reach out by email and phone to selected nominees to gauge interest, availability, and confirm expertise.
In September 2021, 5 At Large STAC Members will be rotating off the Committee. Using the current STAC Member Expertise Spreadsheet, Members are requested to anonymously submit and prioritize their "top 3 needed expertise" on STAC via a Google form; needed expertise previously highlighted are the following: environmental justice, social and behavioral science, economics, estuarine (physical/biogeochemical and living resources), urban and wastewater treatment, and agriculture. Members are also asked to assess the current evaluation criteria (expertise, professional experience, diversity, availability/interest, and leadership interest/experience).

Following a summary of the new nomination process, Kurt Stephenson (VT) disagreed there is a need for environmental evaluation but argued that economics expertise is lacking on STAC. In an effort to group nominations, Kirk Havens (VIMS) suggested minimum criteria for each applicant; Gilinsky agreed and emphasized nominee experience and knowledge of the Bay. Brian Benham (VT) proposed using language such as "terminal degree" to establish minimum criteria although other members pushed back on an educational requirement and instead favored experience. Havens and Tom Ihde (Morgan State) argued against "leadership expertise" as STAC is a forum for individuals to gain early experience and a Member's affiliated network is as important as their individual experience.

Sanford and Mark Monaco (NOAA) both recommended additional details on member time commitment. Kenny Rose (UMCES), Sanford and Miller all agreed the emphasis is on STAC to convince new members to donate their time and expertise. To achieve this, Sanford suggested interviewing current members on their experience while Rose proposed adjusting the survey to better persuade top-tier candidates to sit on STAC. On the other hand, some Members underscored diversity as the main driver for this cycle's recruitment and relying heavily on expertise and experience may exclude valuable people not already part of established networks. Finally, STAC Members discussed participating in relevant events to educate others about STAC and its mission as well as tap into networks (such as the Chesapeake Bay Program's Diversity Equity and Inclusion and Justice Network) to solicit nominees.

ACTION: **STAC Members** are requested to provide comments on most needed expertise and proposed evaluation criteria using this Google form.

- STAC Membership Term List
- Current STAC Expertise

Wednesday, June 16th

Members: Adel Shirmohammadi, Alix Dowling Fink, Andy Miller, Brian Benham, Bill Dennison, Chanceé Lundy, Chris Brosch, Ellen Gilinsky, Eric Smith, Greg Noe, Jason Hubbart, Jeremy Testa,

Katherine Bunting-Howarth, Kathy Boomer, Kirk Havens, Kenny Rose, Kurt Stephenson, Lara Fowler, Larry Sanford, Lee Blaney, Leah Palm-Forster, Leonard Shabman, Mark Monaco, Mike Runge, Tess Thompson, Tom Ihde, Tom Johnson, Weixing Zhu, Zach Easton

Administration: Annabelle Harvey, Denice Wardrop, Meg Cole

Introduction, Comments, and Q&A with Diana Esher (EPA, Acting Regional Director for Region 3)

In the role of EPA Mid-Atlantic Region Acting Regional Administrator (ORA), Diana Esher (EPA), provides the overall direction and management of the region. ORA is responsible for planning, programming, implementation, control, and direction of technical and administrative aspects of Region 3 programs and activities. Esher provides technical oversight of the Region's Equal Employment Opportunity and Special Emphasis Programs. Additionally, the Region's Office of Public Affairs and the Office of Communities, Tribes and Environmental Assessment are housed within ORA.

STAC Staff distributed a survey to STAC Membership prior to the Quarterly Meeting to gather questions for Esher to address. While answering the collected responses, Esher reinforced the Bay Program's commitment to adaptive management and accelerating the pace of Bay restoration in the watershed. The ORA acknowledged water quality alone is not the only stressor for achieving and maintaining sustainable fisheries which is why physical habitat is part of the Partnership Agreement. NOAA and the USFWS are critical members of the partnership and the CBP relays on their expertise for leadership in living resource management. Lastly, Esher underscored the importance of monitoring in response to recent analysis (USGS) of nutrient trends in the river networks suggesting that implemented nonpoint source controls aren't generating the expected reductions. Bill Dennison (UMCES) noted that although the Bay Program budget is funded, most of the budget is allocated to implementation over monitoring on the ground. Esher agreed with this concern and stated the PSC is working to elevate logistical challenges to support monitoring more fully. Shirmohammadi supported Dennison's point and stated a long-term, regional monitoring program would be beneficial.

Comprehensive Evaluation of System Response (CESR) —*Kurt Stephenson (VT), Leonard Shabman (Resources for the Future), Denice Wardrop (CRC)*

Kurt Stephenson (VT) updated STAC on the Comprehensive Evaluation of System Response (CESR) document progress. Currently, writers are working on their respective individual workgroup sections (Watershed Response, Estuary Response, and Living Resource Response) and the final section, Implications. The Steering Committee drafted framing questions for each section and shared them with the Membership. Wardrop added that the framing questions are meant to orient each section and do not necessarily require answers, Rose agreed and supported using the drafted questions to organize the Living Resources section. Rose stated the response of living resources to specific aspects of the water quality criteria is difficult to deduce and even more so, the effect of the TMDL on a subset of water quality on living resources. Lew Linker (EPA) suggested pointing to the progress made on living resources while discussing imposing factors such as climate change, lag times, etc. Rose added the workgroup is completing a section on the approach of similar large-scale restoration projects towards living resources and Fowler suggested speaking with experts from the Baltic.

Leonard Shabman (Resources for the Future) explained plans for Section 6, Implications. Member feedback on the "Attainability and Costs of WQS" curve was varied. Eric Smith (VT) suggested a third axis for response. Kathy Bunting-Howarth (NY Sea Grant) stated living resources were not represented on the graph, as "percent achievement of WQS" does not mean fish will thrive; Wardrop proposed a new graph with a desired living resource response on the x-axis. Miller raised that one of the biggest uncertainties is not knowing the actual shape of the line you might be on and both Greg Noe (USGS) and Shabman agreed, highlighting the implication of the curve shape. Sanford suggested switching the axes so the independent variable is cost and amplified the possible change of response in water quality to feedbacks. On the graph, this would shift the curve to the right unrelated to cost and requires a regular and robust monitoring program; Shirmohammadi recommended the use of historical trends in cost of progress to help inform the shape of the curves. Without a consistent monitoring program, Dennison stated the Bay submerged aquatic vegetation (SAV) resurgence would not have been well understood and that a management direction is to target systems or factors that have discernible tipping points.

On communicating to the public, Mike Runge (USGS) thought it would be helpful to clarify whether gaps in system response are due to not doing enough or investing resources in the wrong areas. Wardrop appreciated this rewording and related it to the second reframing Implications question on possible management/policy investments to improve system response. JK Bohlke (USGS) emphasized the possibility of lag times and the importance of addressing the reality in this watershed document.

To finish the CESR working session, Wardrop described the process design objective. The overall purpose of the CESR report is to provide defensibility, efficiency, and consensus so that the partnership is supported in decision-making as it approaches the 2025 deadline. In August, the CESR Writer's Group will meet to review the current draft and construct the Summary and Implications sections.

ACTION: CESR Steering Committee will continue to meet to examine framing, messaging, and connections within the document. Workgroups may contact the STAC Staff and/or the CRC to begin producing graphics and conceptual diagrams.

Wrap Up

The September STAC quarterly meeting will be remote and take place on September 13th and 14th. At this meeting, there will be updates on the following: the PSC's requested improvements to monitoring networks, STAC Membership process, and the Comprehensive Evaluation of System Response (CESR). A one-hour discussion with representatives from Exelon regarding the Conowingo Hydroelectric Generating Station is planned for the afternoon of Day 1, followed by presentations on recent findings on Conowingo from representatives at USGS and UMCES. Five At-Large STAC Members will be rotating off and a Chair Transition will occur in September.