



THE ABSTRACT

A Monthly Update from the Scientific and Technical Advisory Committee

July 2016

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Recent STAC News

June 2016 STAC Quarterly Meeting

June 7, 2016

O'Callaghan Hotel - Annapolis, MD

STAC Chair, Lisa Wainger (UMCES) began the first quarterly meeting of FY16 with a review of key outcomes from the March 2016 quarterly meeting and an overview of the day's agenda. During the meeting, STAC approved the recommendation of Martin Lowenfish (USDA-NRCS) and John Karl (J.K.) Bohlke (USGS) to Chesapeake Bay Program (CBP) Director, Nicholas DiPasquale (EPA) for two federal appointee vacancies on STAC. STAC members received an update of recent STAC-sponsored workshops and Management Board (MB) presentations, results of the Principal's Staff Committee (PSC) discussion regarding the establishment of an Independent Evaluator (IE) for the CBP, and the status of ongoing Midpoint Assessment reviews. STAC also heard a presentation from Michael Runge (USGS) who introduced decision science/analysis techniques, practical approaches to achieving goals, and useful tools and methods of decision analysis in work with Federal management facilities. Lara Fowler (PSU) and the Cross-Program Coordinator, Kristin Saunders (UMCES) used Runge's presentation to continue the ongoing discussion of Cross-GIT collaboration, and enhancing the capacity of GITs and Workgroups to meet their goals. STAC members discussed constraints to using decision science to address the concerns raised by Saunders and Fowler. The meeting also featured a working session, where groups met to begin work on FY16 workshops, outlining STAC's Executive Council (EC) report, and the possible development of a task group focused on living resources. Groups provided brief report outs to the membership to conclude the day's meeting. The next quarterly meeting will take place on September 13th-14th at an undetermined location in Annapolis, MD.

Upcoming STAC Quarterly Meetings

- **2016 STAC Quarterly Meeting Dates**
 - September 13-14th
 - December 6-7th

Other Activity Updates

STAC FY16 Workshops

Planning for FY16 workshops began June 1st.

- 1) *An Analytical Framework for Aligning Chesapeake Bay Program Monitoring Efforts to Support Climate Change*
- 2) *Chesapeake Bay Program Modeling Beyond 2018: A Proactive Visioning Workshop*
- 3) *Legacy Sediment, Riparian Corridors, and Total Maximum Daily Loads (TMDLs)*
- 4) *Quantifying Ecosystem Services and Co-Benefits of Nutrient and Sediment Reducing Best Management Practices (BMPs)*
- 5) *Understanding and Explaining 30+ Years of Water Clarity Trends in the Bay's Tidal Waters*

For additional information about the workshops above, contact Rachel Dixon at dixonra@si.edu or visit the [STAC workshop webpage](#).

STAC Reports

STAC hosted seven workshops during the spring of 2016. The workshop steering committees are in the process of drafting activity reports that will be distributed to the Partnership over the next few months. Information regarding the workshops including agendas, presentation, and reports can be found on the workshop's [homepage](#).

Upcoming reports:

- 1) *Evaluating Proprietary BMPs: Is it time for a State, Regional, or National Program?*
- 2) *Conowingo Infill Influence on Chesapeake Water Quality*
- 3) *Linking Wetland Work Plan Goals to Enhance Capacity, Increase Implementation*
- 4) *Assessing Uncertainty in the CBP Modeling System.*
- 5) *Cracking the WIP: Designing an Optimization Engine to Guide Efficient Bay Implementation*
- 6) *The Development of Climate Projections for Use in Chesapeake Bay Program Assessments*
- 7) *Integrating and Leveraging Monitoring Networks to Support the Assessment of Outcomes in the New Bay Agreement*
- 8) *Comparison of Shallow Water Models for Use in Supporting Chesapeake Bay Management Decision-making (Part I and II)*

Update on STAC Peer Reviews

STAC is in the process of finalizing one review and planning for three others. STAC is anticipating approximately four additional reviews between now and 2017. Details of those reviews are listed below.

Chesapeake Bay Water Quality Criteria Addendum

The CBP's Criteria Assessment Protocol Workgroup (CAP WG), under STAR, requested a STAC review of the technical report "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and its Tidal Tributaries 2015 Technical Addendum." The review panel consists of the following members: Marjy Friedrichs (STAC Lead-VIMS), Mary Christman (U of FL), Ken Moore (VIMS), Malcolm Scully (WHOI), Jian Shen (VIMS), and Steve Weisberg (SCCWRP). The panel is still finalizing its review, suggesting a clarifying re-write of the addendum and requesting additional revisions to the document. Over the next few months, the review panel will work with the CBP to produce a new and improved document incorporating the panel's comments.

Nutrient Inputs to the Chesapeake Bay Watershed Model (Scenario Builder)

In late April, STAC leadership met with representatives of the CBP's Scenario Builder team to discuss the details of the upcoming review request for the nutrient inputs to the Chesapeake Bay Watershed Model (Scenario Builder). A review panel has been formed and an initial call was held on June 22nd. STAC members have seen the draft review questions and documentation, and have until July 1st to approve the review.

James River Chlorophyll *a* Criteria Re-evaluation

On May 20th, STAC received the official review request from the CBP for a review of the James River Chlorophyll *a* Criteria Re-evaluation. STAC members discussed the request at the June quarterly meeting and were sent the full package of review materials for approval on June 9th. STAC members were also asked to provide the following feedback to STAC Staff by June 24th: 1) suggested panel members/affiliations and a STAC lead, 2) the appropriateness of the timeline, and 3) the appropriateness of the draft review questions. **Results:** STAC members approved this review.

Boat Wake Wave Impacts on Shoreline Erosion

At the March quarterly meeting, STAC approved a responsive technical review request from the Chesapeake Bay Commission (CBC) on the potential impacts of boat generated waves on shoreline stability and attendant ecosystem properties, and provide advice on available policy actions to minimize adverse effects. A review panel has been formed and held an introductory call on June 16th. This review will take place over the next several months.

Remaining Reviews

STAC is also working closely with CBP representatives to plan for four upcoming independent scientific peer reviews. The remaining review requests are expected in the coming months. These STAC reviews will help inform the Partnership's 2017 Midpoint Assessment.

- 1) ***Application of WRTDS to watershed WQ trend analysis and explanations and General Additive Models (GAMs) to estuarine WQ trend analysis and explanations***
- 2) ***Phase 6 Chesapeake Bay Watershed Model***
- 3) ***Chesapeake Bay Water Quality/Sediment Transport Model (WQSTM)***
- 4) ***Approach being taken to factor climate change considerations into the 2017 Chesapeake Bay TMDL Midpoint Assessment***

For additional information regarding the reviews above, contact STAC Coordinator, Natalie Gardner at gardnern@si.edu or visit the [STAC review webpage](#).

Independent Evaluator

The PSC held a meeting on May 26th which featured a discussion options for the newly established IE. Prior to the meeting, a subset of STAC members drafted a document summarizing their comments on the establishment of a CBP IE. All concerns/comments were discussed with the PSC during that meeting. Wainger updated STAC members on the status of the decisions at the June quarterly meeting. Currently, no consensus was formed by the PSC but the preferred the National Academy of Science (NAS) option. The recommendation will move forward to the EC; expected to meet on September 27th.

Key Events

There are a number of relevant conference calls and meetings to which STAC members should pay special attention. All upcoming CBP related events can be found on the [CBP meeting calendar](#). Each listing provides logistical information and meeting materials, when available.

STAR Updates

STAR held a meeting on May 26th. Andrew Milliken (North Atlantic Landscape Conservation) and Mike Slattery (USFWS) highlighted new science providers whose work will benefit the GIT workplans. In addition, a presentation overviewing the 2015 SAV (submerged aquatic vegetation) status and continued challenges of funding the SAV survey was discussed with STAR. STAR discussed ways to support the survey.

STAR's Integrated Monitoring Networks (IMN) Workgroup recently held a meeting reviewing current storm sampling data within the non-tidal network, as well as the implications of this sampling for WRTDS modeling. The IMN Workgroup is also currently evaluating the monitoring communities' needs to structure future meetings based on these priorities and concerns in tidal and non-tidal monitoring.

The Climate Resiliency Workgroup held an in-person meeting in May focused on the key recommendations that came from STAC's Climate Change workshop. Presentations and discussions focused on the selection of 2050 sea level rise (SLR) estimates and the best approach to simulating effects of SLR on tidal wetlands in the modeling effort supporting the 2017 Midpoint Assessment. Progress was made with partners in selecting appropriate SLR estimates for the 2017 Midpoint Assessment. The June 20th Climate Resiliency Workgroup conference call continued the discussion of modeling SLR for tidal wetlands, with a focus on the Sea Level Affecting Marshes Model (SLAMM). The Climate Resiliency Workgroup has also kicked off an EPA GIT-funded project to develop a cross goal climate resiliency analysis matrix and decision making methodology. The project is being conducted by Tetra Tech and will focus on wetlands and protected lands outcomes in the Bay Agreement.

The Citizen-Based and Nontraditional Non-tidal monitoring group is currently forming a [rubric](#) for classification of nontraditional data providers within [the 3 Tier framework](#). This rubric will also help prioritize groups' data based on the CBP's needs. Input from the IMN Workgroup regarding criteria for prioritization is currently being incorporated, as well as identifying any monitoring gaps that these groups might be able to fill.

The Status and Trends Workgroup held a meeting on June 14th. The Workgroup will use the Indicators Framework to evaluate how existing indicators support the needs under the Bay Agreement, identify gaps, assist in developing new indicators, and ensure there are updated indicators for all Partnership products.

Additionally, the Workgroup is focused on assisting GIT coordinators and outcome leads who have started developing indicators to complete that process by providing feedback on monitoring, communications, visualization, and analysis issues.

The Integrated Trends Analysis Team (ITAT) held a meeting on May 11th to discuss shoreline hardening trends and impacts on water quality, living resources and associated habitats, as well as a discussion of linking research of the shorelines group with ITAT efforts. STAC members who enjoyed STAC's shoreline hardenings presentations might be interested in those made during ITAT's meeting. For more information on those presentations, contact Jeni Keisman (USGS) at jkeisman@usgs.gov.

Finally, the Modeling Workgroup's Modeling Team represented the CBP at this year's Chesapeake Modeling Symposium. Presentations were given on the Conowingo Dam, online tools for decision-making and transparency, and simulating climate change.

If you have any questions regarding STAR activities, please contact STAR Coordinator, Peter Tango at ptango@chesapeakebay.net or visit [STAR's webpage](#).

Other Advisory Committee Updates

Local Government Advisory Committee (LGAC)

At the June 9th-10th LGAC quarterly meeting, STAC member Kathy Boomer (PSU), gave a presentation entitled "Re-plumbing the Chesapeake Watershed: Improving roadside ditch management to meet TMDL Goals". The presentation was an overview of the October 9-10, 2014 STAC Workshop in Easton, MD. LGAC members expressed a strong interest in the finding and recommendations of this workshop and appreciated the opportunity to discuss them with a member of STAC. Local government responsibility for roadside ditch management is variable depending on the state and jurisdiction. LGAC members voiced strong opinions about ensuring comprehensive management of roadside ditches, particularly in situations where a ditch resides on private land. LGAC submitted their comments to Director DiPasquale for incorporation into the MB response to the workshop report. Members greatly appreciated Dr. Boomer's time and knowledge and thanked STAC for this effort, which they noted was of particular value to local governments.

In conjunction with the regular meeting, LGAC hosted a forum to develop recommendations for streamlining implementation of capital and maintenance projects that include green stormwater infrastructure. A report outlining recommendations developed by the group will be released in the fall. At the next LGAC meeting, September 29th-30th in Shepherdstown, WV, the issue of water quality trading will be examined and discussed.

GIT Updates

***The following updates are provided by the CBP. Some GITs do not have recent updates to provide at this time.**

Sustainable Fisheries Goal Implementation Team (GIT 1)

The Sustainable Fisheries GIT hosted their biannual full GIT meeting on June 2-3rd, 2016 at Virginia Commonwealth University (VCU) in Richmond VA. The meeting was structured around the team's two-

year workplans and included discussions on land use impacts on aquatic species health, ecosystem approaches to fishery management, the effects of climate change on blue crabs, and a summary of the latest science on the Atlantic sturgeon.

The results of the 2016 [blue crab winter dredge survey](#) were released in mid-April. The results show an overall crab abundance increase of 35% from the 2015 estimate. Spawning-age female crabs almost doubled in abundance, from 101 million to 194 million, above the overfished threshold of 70 million and slightly below the target of 215 million. The Chesapeake Bay Stock Assessment Committee is developing the 2016 Crab Advisory Report which utilizes crab survey data and harvest numbers to provide management recommendations for the Bay jurisdictions.

Last year, Tetra Tech developed a review and synthesis of habitat requirements for 13 lesser studied fish and shellfish species under a CBP contract to support the fish habitat management strategies. The project was expanded in 2016 to include additional data on habitat threats and stressors throughout egg to larval life stages to the selected aquatic species. Tetra Tech presented the completed project on June 30th.

Finally, the Fish Habitat and Forage Action Teams are organizing meetings to kick off implementation of the finalized workplans. Upcoming meetings will institute a schedule and plan for monitoring workplan actions and establish regular check-ins for the team to ensure actions are accomplished.

More information on the Fisheries GIT can be provided by Bruce Vogt (NOAA) at bruce.vogt@noaa.gov or on the [Sustainable Fisheries GIT webpage](#).

Habitat Goal Implementation Team (GIT 2)

The Habitat GIT reported that the Wetland Expert Panel is finalizing their draft report and preparing for a partnership review over summer 2016. In September 2015, the panel received approval from the Partnership for the recommended Phase 6 wetland land use classes of ‘Floodplain’ and ‘Other’. Recommendations for retention efficiency and acres treated for the wetland restoration BMP within separate physiographic sub-regions are soon to be completed. The panel will present recommendations to the Wetlands, Agricultural, and Watershed Technical Workgroups, as well as the Habitat and Water Quality GITs.

In addition, a SAV Technical Synthesis III (TS3) is progressing thanks to members of the SAV Workgroup. The TS3 will compile the latest research regarding SAV in the Chesapeake Bay and highlight new information. The anticipated completion date is December 31st, 2016. Topics to be covered are likely to include SAV restoration, abundance patterns, genetics, land use and fisheries effects, climate change, ecosystem services, and management implications.

For more information regarding the Habitat GIT, please contact Kyle Runion (CRC) at Runion.Kyle@epa.gov or visit the [Habitat GIT webpage](#).

Water Quality Goal Implementation Team (GIT 3)

The Water Quality GIT held conference calls on May 9th and May 23rd. During the calls the Water Quality GIT approved the proposal to exclude an explicit extractive land use in the Phase 6 Watershed Model. Areas known to be extractive will be simulated as “mixed open” and will be excluded from areas classed as agriculture or turf grass. The Water Quality GIT also endorsed a modified approach to addressing BMP panel policy issues, which was presented to the MB for approval. The approach emphasized the need to separate the science and policy issues, and to provide the sector Workgroup Chair

and GIT Chair with options for resolving the policy issues before proceeding with a parallel policy panel. Finally, the Water Quality GIT approved the proposed fractional land use methodology that will be used to help classify barren and herbaceous lands in the Phase 6 Model.

The Water Quality GIT held another call on June 27th. The meeting discussed the status and next steps towards developing the Phase III Watershed Implementation Plan (WIP) planning target methodology.

For more information regarding the Water Quality GIT, please contact Lucinda Power (EPA) at power.lucinda@epa.gov or visit the [WQGIT webpage](#).

Maintain Healthy Watersheds Goal Implementation Team (GIT 4)

The Healthy Watersheds GIT held a meeting on May 16th. Participants discussed near term workplan priorities, including ideas and strategies toward accomplishing several key workplan actions with tangible results in 2016. The focus of the discussion was on shared goal team action items that led themselves to cooperation with all goal team members, and next steps. Topics included assessment of the protected status of state-identified healthy waters and watersheds, a discussion related to approaches, methods and outreach strategies related to shared priorities, and how to better engage federal agencies that are not traditional CBP partners. In addition, with the new cycle of GIT Funding approaching, the Healthy Watersheds GIT is in the process of brainstorming project ideas that support progress towards accomplishing the Healthy Watersheds, Land Use Methods and Metrics, and Land Use Options Evaluation Outcomes.

For more information regarding the Healthy Watersheds GIT, please contact Tuana Phillips (CRC) at Phillips.tuana@epa.gov or visit the [HW GIT webpage](#).

Fostering Stewardship Goal Implementation Team (GIT 5)

The Fostering Stewardship GIT held a coordination meeting on June 1st. The meeting featured a discussion on: management strategy (MS) highlights; an overview of the Cross-Goal Team project from Cross-Program Coordinator Kristin Saunders with unique stewardship-related opportunities; an update on the process to identify and select 2017 projects for GIT funding; an overview of the BMP Effectiveness project and next steps for the Stewardship GIT; and discussion of future meeting topics.

The Diversity Workgroup is working on a GIT-funded Public Health project to conduct a watershed wide screening of existing fish advisory methods and develop more effective targeted messaging for minorities.

The Public Access Workgroup recently published its 2015 site count. The team is working with partners to find new potential sites, with a focus on reaching diverse communities, as well as enhancing access to the Potomac. The Public Access Workgroup continues to provide technical assistance in developing new public access sites, and work on a visual interactive mapping project of public access sites.

The Environmental Literacy group is working on a number of projects including School Grounds for Learning, an online component to help educators create plans and training modules to develop projects on school grounds. The Workgroup is partnering with the Chesapeake Bay Trust (CBT) to develop stronger school grounds projects through grants programs. In addition, the Education Workgroup leadership is meeting with states to develop ways to incorporate outdoor learning into Next Generation Science Standards.

The Chesapeake Conservation Partnership held a meeting on June 6th. The Land Conservation Partnership is currently working on a federal land and water funding request for developing priority parcels for protection, and working on a tool for identifying priority lands.

The Citizen Stewardship Workgroup is continuing to develop a comprehensive measurement tool and Stewardship Indicator framework that will measure individual and collective citizen stewardship efforts in all communities across the watershed. The Workgroup is also working to develop a case study database to share successful examples of programs to change behaviors to maximize funding and promote effectiveness.

For more information regarding the Fostering Stewardship GIT, please contact Amy Handen (NPS) at ahanden@chesapeakebay.net or visit the [Fostering Stewardship GIT webpage](#).

Enhancing Partnering, Leadership, and Management Goal Implementation Team (GIT 6)

Potential revisions to the CBP Governance Document have been collected. Current topics to be considered include: governance of Workgroups; decision-making methods; membership requirements and alternate representation; voting member eligibility; and increased emphasis on collaboration and cross-jurisdictional communication. The goal is to review the proposed revisions with the MB and produce a final update by July 2016.

The Budget and Finance Workgroup held its kickoff meeting on June 1st and will use members' backgrounds in finance and innovation, funding sources, economics, financial reporting, and knowledge of federal, state, and local government to work with the MB, EC, and Bay Program partners to achieve the goals and outcomes established in the Watershed Agreement. Members will also work to respond to the financial reporting requirements of the Chesapeake Bay Accountability and Recovery Act.

The Local Leadership Workgroup will be meeting on July 27th, where the contractor Ecologix will present findings from GIT implementation discussions. The group has begun to consider possible future project proposals, including creating a case-study of best practices and areas of opportunity, and exploring both state and locally led efforts to engage communities.

Doreen Vetter (EPA) and Regan Bosch (CSRA) presented findings and recommendations from the *ChesapeakeDecisions* Discovery Report at the June 7th Enhancing Partnering, Leadership, and Management GIT meeting. Some STAC members may recall participating in a *ChesapeakeDecisions* discussion following the March 2016 quarterly meeting. The GIT will work with the project management team to identify which issues and recommendations are both "inside" and "outside" the purview of the charge/purpose of *ChesapeakeDecisions*, and how to best address them.

For more information regarding the Partnering and Leadership GIT, please contact Allen at allen.greg@epa.gov or visit the [Enhancing Partnering, Leadership, and Management GIT webpage](#).

Focused on Science

STAC Report Still Making News Years Later in Toledo Newspaper

The Blade, a Toledo, Ohio newspaper, recently featured an article entitled, "Lake Restoration Consultant at issue" quoting the STAC review report entitled, "Comparison of Load Estimates for Cultivated

Cropland in the Chesapeake Bay Watershed.” In 2011, LimnoTech’s Chesapeake Bay report alluded that EPA was incorrect and out of bounds to create such a restrictive Chesapeake Bay TMDL. The LimnoTech report noted differences between the CBP and CB-CEAP models and recommended suspending implementation of the Bay TMDL. STAC was asked to conduct an independent review which found the LimnoTech report to have “poor scientific merit” and promoted a “false set of criteria.” This news article rouse due to environmentalists crying foul over Toledo’s decision to seek Lake Erie restoration advice from LimnoTech, Inc., an Ann Arbor consulting firm, because of the accusations that prompted STAC’s review back in 2011. Two local environmental groups question if the city is reluctant to seek a TMDL for Lake Erie stems from a long relationship with LimnoTech. Click [here](#) to read the full article.

Challenges associated with modeling low-oxygen waters in Chesapeake Bay: a multiple model comparison

VIMS Student paper published in Biogeosciences

STAC members Marjy and Carl Friedrichs (VIMS) have continually discussed the ongoing multiple hypoxia model comparisons in the Bay during STAC meetings. Many of those conversations inspired early work on this topic and are even incorporated into this article. M. Friedrichs shared the latest model comparisons paper published in Biogeosciences by her Ph.D. student Isaac D. Irby (VIMS). In addition to its publication, this paper also won the best student paper at VIMS this year.

The paper evaluates the relative performance of eight hydrodynamic oxygen models for the Chesapeake Bay. The work involved coordinating the efforts of fourteen co-authors, including M. Friedrichs, across eleven academic and governmental institutions, an extraordinarily complicated challenge for a student early in his career. The product presents an important result that simple oxygen parameterizations can perform just as well as more complex, full biogeochemical models in forecasting short-term hypoxia in the Chesapeake Bay. Click [here](#) to read the full paper.

Wastewater Sector Meets Nutrient Goals of ‘pollution diet’ a Decade Early

The U.S. Environmental Protection Agency (EPA) announced, on June 14th, that upgrades in wastewater treatment over the last twenty years have significantly lowered the amount of nutrient pollution entering the Chesapeake Bay, effectively meeting the sector’s 2025 goals under the Chesapeake Bay TMDL a decade early. Click [here](#) for more information.

Ecosystem Service Benefits of a Cleaner Chesapeake Bay

Chesapeake Bay Foundation publishing in the Journal of Coastal Management

Information on the economic benefits of natural resource improvement is an important, yet often overlooked, consideration in environmental decision-making. In 2010, the EPA established the TMDL that set regulatory limits for nitrogen, phosphorus, and sediment needed to restore the Chesapeake Bay. Meanwhile, the Bay jurisdictions developed implementation plans to achieve these limits. Environmental benefits of achieving the TMDL would accrue due to on-the-ground changes in land use and land management that improve the health, and therefore productivity, of land and water in the watershed. These changes occur both due to the outcomes of achieving the TMDL (i.e., cleaner water) and as a result of the measures taken to achieve those outcomes. This study quantified these changes, then translated them into dollar values for various ecosystem services, including water supply, food production, recreation, and aesthetics. It has been estimated that the total economic benefit of implementing the TMDL would be \$22.5 billion per year (in 2013 dollars), as measured as the improvement over current

conditions, or at \$28.2 billion per year (in 2013 dollars), as measured as the difference between the TMDL and a business-as-usual scenario. These considerable benefits should be considered alongside the costs of restoring the Chesapeake Bay. Click [here](#) to read the full study.

New STAC Member: Christopher Brosch

In June, STAC welcomed new gubernatorial appointee, Christopher Brosch (DDA). Brosch will replace STAC member, James Glancey (UDEL) as the Delaware appointee on STAC for the next four years. Brosch, 31, has valued agriculture since a young age and joined the National Future Farmers of America (FFA) organization at his high school. Brosch continued his agricultural career completing his bachelor's



at University of Maryland (UMD) and his Masters of Agricultural Science at Virginia Tech (VT). During Brosch's time at UMD and VT, he conducted research on runoff from manure application rates with tillage under nutrient management schemes. Brosch brings more than ten years of local, science based hands on expertise in agriculture, horticulture, and olericulture to the DDA Nutrient Management Program where he is currently employed. Brosch has regularly attended STAC meetings over the years and believes this will be an advantage while transitioning into his active role on STAC. Additionally, Brosch has also been working with various Chesapeake Bay water quality programs since 2007 and is currently serving on the CBP's Watershed and Technical Workgroup.

Brosch served as a UMD Extension Associate and Faculty Researcher at VT where he developed and refined agricultural simulations in the Bay Models. These efforts led to improved manure simulations, nitrogen fixation calculations and nutrient management planning credits in Scenario Builder. Brosch has spent more than five years finding new data sources for Scenario Builder, which STAC will be reviewing over the next few months. Brosch hopes that his expertise and networks within the CBP will help enable a thorough and comprehensive review of Scenario Builder. Brosch mentioned that he is satisfied to see that STAC is becoming more diverse in expertise and happy to provide more agricultural expertise to that niche within STAC. Brosch has been, and remains, an active member of regional agricultural science and modeling communities and has over a decade of experience in teamwork, leadership, facilitation and educational instruction utilizing creative approaches. All of Brosch's experiences, expertise, and skillsets will be a huge asset to him during his tenure on STAC. Of all those skills, Brosch still believes that his best attribute to STAC is yet to be discovered!