Scientific, Technical Assessment and Reporting Team
(STAR) Meeting
Theme: Goal Implementation Team (GIT) collaboration and resourcing
Thursday, October 24, 2024
10:00AM – 12:00 PM
Meeting materials link
This meeting was recorded for internal use only to assure the accuracy of meeting notes.
Minutes

10:00 AM - *Welcome, Introductions & Announcements – Ken Hyer* *(US Geological Survey, USGS) and* ***Kimberly Van Meter*** *(Penn State) - STAR chair and vice chair,* ***Breck Sullivan*** *(USGS) STAR Coordinator,* ***Peter Tango*** *(USGS) CBP Monitoring Coordinator*

Announcements

- Intern opportunity: Yale Conservation Scholars Early Leadership Initiative. Applications for host sites are due December 8, 2024.
    - ***Comment:*** *Chris Guy:* Habitat Goal Implementation Team (HGIT) did a similar internship with Franklin & Marshall University (F&M) and found a lot of success with our intern and have a white paper almost to final draft for wetlands. It is a big-time commitment, but it is worth it (about ~1 hour a day for 10 weeks). I encourage GITs to look into having an intern, you just need a project that can fill those hours for the intern (~300 hours).
    - ***Response:*** *Kaylyn Gootman:* Integrated Trends Analysis Team (ITAT) has their second intern from F&M too and it is great experience to have them. We're looking at having an intern join us to work on data collected from participatory science water quality monitoring data and applying methodologies employed by ITAT in terms of tidal trends. More specifically, looking at the data coming from the Chesapeake Monitoring Cooperative (CMC) which includes working with Breck, Rebecca Murphy and others. We are still looking into whether this can be virtual and how pay works. We will report back more information to ITAT once we have some more answers.
- December STAR meeting will be December 19, 2024.

Upcoming Conferences, Meetings, Workshops and Webinars

- 12th US Symposium on Harmful Algae – October 27-November 1, 2024, Portland, Maine.
- Maryland Water Monitoring Conference – November 21, 2024, Linthicum, Maryland.

- Science Serving Communities: Community Workshop Advancing Climate Resilience in Maryland – January 8-9, 2025, College Park, MD.
- 14th National Monitoring Conference – March 10-12, 2025, Green Bay, Wisconsin.

10:10 AM - *Overview and discussion: GIT funding cross-GIT collaboration*

Description: Brief overviews of each GIT funded project will be shared, followed by discussion of collaboration across GIT funded projects. (Two of the projects are being funded through sources other than CBT but are still included for the discussion.)

Disclaimer: This will be a discussion based only on the GIT funded projects, NOT on the GIT funding process.

***1. Cluster Analysis Code Development** – Kaylyn Gootman (Environmental Protection Agency, EPA)*

The need that ITAT identified was requiring assistance to refine code developed by Elgin Perry (Consultant - Chesapeake Bay Program, CBP) used in running the cluster analysis of our tidal trends water quality trends. Our final deliverable is to have a completed code for ITAT members to use for producing results for various communication products.

What is cluster analysis? This analysis groups a set of items according to some measure of similarity. For instance, in the James Dissolved Oxygen (DO) tidal trends, we can see each of our monitoring stations has got a different trend designation, improving, degrading, or no trend (slide 3). By doing this analysis, we can group our stations and look at different aspects of our water quality information. This can be done in a lot of different ways, like DO concentrations, and will allow us to see similarities across years with similar flow.

Why do we need this? Our current method is to assess trends at stations through generalized additive models (GAMs, slide 4). GAMs essentially provide a summary of the data, where, for example, if you are looking at a simpler dataset, you often use mathematical relationships (like a linear relationship) to describe what's happening and project the future. However, our data is not so simple where we see variability across space and time, and GAMs describe the patterns observed at a fixed station. GAMs are good at capturing short-term trend events due to meteorology, Best Management Practices (BMP) implementation and other factors. However, GAMs are bad at capturing which stations are exhibiting similar trends.

On the other hand, cluster analysis methods includes the ability to group stations with similar trends to help in assessing whether BMPs are influential over broad geographical areas and differentiate regions where progress is satisfactory and vice versa.

This work does supports one of STARs functions by explaining ecosystem conditions and change by enhancing the understanding of spatial and temporal patterns. This work supports a Water Quality Standards Attainment and Monitoring (WQSAM) outcome to report trends in reducing the nutrients and sediment in the watershed.

It should be noted that the funding is going to different funding source – an existing Tetra Tech contract. This proposal did go forward to the Chesapeake Bay Trust in search of contract proposals.

Q: *Chris Guy:* Have you talked to the Management Board (MB) about this idea and what are their thoughts overall on the cluster analysis and techniques here? I hear there is a disconnect between the MB and the GITs.

- ***A:*** *Kaylyn:* we haven't brought forward cluster analysis to the MB even though this is a commonly used technique in the scientific literature and broader community. But if you think this is something worth bringing to their attention and how we might use this analysis to learn and help the collective efforts, we are all for it.
- ***Response:*** *Chris:* In thinking of the habitat tracker that was needed for the wetlands that we brought in front of the MB. This wasn't a GIT funded project, but a Bay Program funded project. The MB requested more back and forth despite having spoken with them 4 years prior and once annually to get their support. Overall, there has been comments of disconnect between the GIT funded projects and the priorities of the MB. So, it's not a bad idea to bridge these conversations.
- ***Q from chat:*** *Rachel Felver:* Do we know what Management Board's priorities are?
- ***Comment:*** *Ken:* I like that Kaylyn connected their work to existing science needs and it doesn't necessarily change things but make the code easier to work with – changing something that we have already been doing. The cluster analysis method isn't really the important part, rather the patterns we are trying to understand.
- ***Response:*** *Kaylyn:* This interpretive work allows us to understand not only what's changing but where things are changing similarly and helps us in extracting stories. So, it might be a good opportunity for engagement with the MB and a relatively new addition to the tributary summaries.
- ***Response:*** *Chris:* I can definitely see us using it for something like submerged aquatic vegetation (SAV) where we have a huge dataset and different species – maybe we will follow up with something like that later.

- ***Comment from chat:*** *Katherine Brownson:* And you are just analyzing existing data, not starting a new data collection effort which seems to be a point of tension with the MB.

Q: *Bruce Vogt:* one thing that really struck me at the end was the trends of DO. Thinking about our discussions around shallow water and prioritization of areas for living resources, I was wondering if any of these things would connect to that and might be an opportunity to assert this analysis to fishery survey data where it exists? To see if the water quality conditions are linked to all the changing survey data for fish.

- ***A:*** *Kaylyn:* The short answer is yes! It would be very interesting to look at.

Q: *Julie Reichert-Nguyen:* I understand that GAMs show trends over time and the cluster analysis will show this across multiple sites and the direction that the habitat may be possibly going in. I am curious about any connection with the work of the modeling workgroup and their climate change projections for the Total Maximum Daily Load (TMDL), how the future conditions would look like and inform decision-making so many years out?

- ***A:*** *Kaylyn:* We are looking at conditions and trends from the past and comparing multiple different variables including temporally and spatially. This helps pinpoint locations that are similar and different. So, I don't think it will necessarily help inform the future but more so inform what has happened in the past and resource investment.
- ***Response:*** *Julie:* In the Climate Resiliency Workgroup (CRWG) we've been trying to think of more long-term monitoring and how to support that in areas that need it. So, I am thinking that if this type of analysis allows us to see trends and combine this with living resources, there might be an opportunity to put some effort into seeing if we can locate funding or long-term monitoring within those areas.

2. ***Hypoxia Collaborative: Sampling Strategy and Design for Chesapeake Bay Habitat Assessment*** *– Peter Tango (USGS)*

This work is a collaboration between Peter Tango, Bruce Vogt, Jay Lazar, Kevin Schabow and the rest of the Hypoxia Collaborative Team. This reflects work going back 20 years in terms of our history for the need of high temporal density, water quality monitoring to fulfill the criteria assessment for DO criteria in the Bay that supports the state's abilities to inform their water quality standards. This was a gap recognized when the criteria were put together in 2003 for water quality assessments and required some advances in technology that we didn't have at the time – part of what inspired this proposal.

The criteria were built on fish relationships, shellfish relationships, and their habitats. We recognized that there are habitat suitability indices that have been the model used to look at changes in habitat and influences on fish populations, in space and time. We also understand that with water quality monitoring, the information to calibrate and verify at the temporal densities and locations was informative in understanding the ability of models to represent as closely as possible the conditions in the Bay.

Over the course of 20 years, the efforts of our partners and these scientific advancements, we were able to reflect on our ability to make those WQSAM and habitat assessments. With the help of another GIT proposal that we worked on with Bruce, we were able to bring in the types of technology that would allow us to capture the data in the open water habitats that have been difficult to get by temporal density information.

What came out of the 2021 - '22 Principal Staff Committee (PSC) monitoring report was a recommendation for the investment in high temporal density data collection in the open water habitats, building on success of the previous GIT funding. What was lacking was what the community was asking in that now we have the resources and multiple objectives, how are we going to apply those resources; where do they need to be in space; how long do they need to be out; and, what habitats can we represent? STAR had met on this almost a decade ago to reflect on the work done by some of our colleagues around the Bay on sampling design and what it would take to represent hypoxia in the Bay with limited resources and sampling sites.

After the PSC report in 2022, the EPA and the National Oceanic and Atmospheric Administration (NOAA) collaborated on funding up to 10 vertical arrays which complements and represents infrastructure that we can put in habitats in the open water of the Bay and in the middle channels of the tributaries to collect data that we've been missing to round out the DO assessments in habitat.

We have long term data, we have nearshore data, and now we have offshore arrays – how do we position these? How do we make the best use of our understanding of the hydrodynamics in the Bay, the behavior of hypoxia and where to put these to get our investments that best represents the conditions there? The understanding and the assessments of sampling design are to represent how do we get the best habitat assessment and understanding of the hypoxia that we are looking at. This includes the habitat conditions, salinity, temperature, and DO, meanwhile making the best return on investment as well as addressing multiple objectives between modelling, monitoring and fisheries water quality and science discovery needs.

This support is meant to help guide the sampling design with limited resources and to come up with a plan that looks at the next 10 years and says where we can put them, what's in effect the representation of the habitat and how are we going to share those resources.

Comment: *Bruce Vogt:* The current locations of the new hypoxia profile buoys are deployed in the Choptank and Potomac area and we are working on building additional buoys. The sampling design here will help determine where those could go and this would require partner support to maintain, to deploy and keep them running and providing data. So, we're going to be supporting building out the framework, but at this point, we are almost at our max for how many we can maintain but looking forward to the outcome of this to determine where the next ones go.

- ***Response:*** *Peter*: it took roughly three years to get the three clustered areas, and we have 92 segments. So, this proposal is meant to help us be more efficient in looking across all the segments with a plan and try to condense that time frame, recognizing that we're representing a lot of views, but looking for a method that will help us expand more efficiently the development of the locations and the deployments moving forward.

Comment: *Kaylyn:* If we go at the same pace of coordination, it's going to take us 50-100 years to figure it out. I see this as a great opportunity to leverage our partners, everybody's expertise, knowledge of where to work, where we can or can't work in the different segments. Getting everyone to the same table can bring the resources, the knowledge, the science and all the different monitoring equipment capabilities and trying to get the most bang for our buck.

- ***Response:*** *Peter:* The proposal included a give and take feedback. We work with the community already and this is supposed to be co-development with whoever gets such an award. So, it is very community centric in terms of its interactions and build out.

Comment from chat: *Bruce:* The current hypoxia buoys are in the Choptank and Potomac. These are maintained by NOAA. We are building out more to be deployed and maintained by other partners.

- ***Q from chat:*** *Melissa Sines:* Others may know the answer to this question, but who are "partners" that will be working to deploy and maintain buoys?
- ***A:*** *Bruce:* Right now, NOAA is maintaining the buoys but going forward, we will need more partners. I'm not sure who that would be at this point for the jurisdictions. Here is who on the collaborative team.

- ***A:*** *Peter:* "Partners" is generally inclusive of institutions and agencies that invest in the monitoring efforts to assess bay and watershed condition/health. These are typically higher education academic institutions (e.g., VIMS, UMCES, and others) and agencies we have coordinated with have included local, State, Federal and inter-jurisdictional commissions (e.g., Interstate Commission on the Potomac River Basin), and we coordinate with participatory science groups through the Chesapeake Monitoring Cooperative (CMC). It could include business, philanthropic individuals/groups, so we are not limiting ourselves to partners in monitoring, just highlighting what has supported community data collections to date but the boundaries are subject to stretching for the good of the realm.

Q: *Chris:* Same question about MB?

- ***Response:*** *Ken:* Maybe what we'll do is propose that we could bring a short overview like this to the MB. Maybe it's a good way to roll this out and make sure you know we get that kind of feedback.
- ***A:*** *Peter:* My short answer is to say that they have asked for data-driven decision support and this is fulfilling a 20-year need and this will continue to be a part of a long-term process.
- ***Response:*** *Bruce:* Peter said it was part of the Principals' Staff Committee (PSC) monitoring report too. One of the priorities that went forward in that. Thus, it did go through a review and prioritization process before it went to the PSC.

3. ***Beyond Bean Counting: Assessment of Best Management Practices (BMP) Tracking and Accounting Procedures for More Holistic Restoration Goals*** *– David Wood (Chesapeake Stormwater Network, CSN)*

This project came out of the Urban Stormwater Workgroup (USWG) at the Bay Program during conversations around Beyond 2025 efforts and trying to figure out ways to shift some of the emphasis away from strict tracking and accounting of just nutrients and sediments, and how can we bring in all the other outcomes and goals that we're trying to achieve.

The mechanisms that we have built for past efforts have been funded through the GIT process and co-benefit accounting and some of the tools that are in place. So, we worked with KC Filippino (co-chair of USWG) to answer how can we do an assessment of the way that BMPs are currently being tracked and accounted for by each of the different state agencies? How are data being passed? Looking specifically at the storm water sector as an example from the local governments, Municipal Separate Storm Sewer Systems (MS4), non-governmental organizations (NGOs), and community-based groups that are doing implementation. Moving up the ladder, are the States using

similar systems, and are they accounting for the same things? We can look at the similarities across these groups and where there might be some gaps.
The main objective is to understand what is missing in terms of opportunities for tracking potential sources of data that can help us understand where other priorities are being addressed – whether it is BMPs that are really kind of targeting flood mitigation or climate resilience objectives, some of the different habitat objectives that we're trying to account for, things that maybe aren't being captured in the database system. We look for opportunities to work with other workgroups and other partners and improve the processes that we're using for tracking and reporting progress towards the TMDL as well as other outcomes.

We aim to start with this assessment - an initial co-op review. There will be a number of interviews that hopefully will be conducted with folks at different stages in the data collection and assembly process to see where the barriers and gaps are and where there might be opportunities and recommendations to improve.

Comment: *KC Filippino:* I think knowing what works and what doesn't work well in Virginia and wanting to know what others are doing was something key to this and hoping that we could all share best practices and ways to report and make reporting easy. Also, to understand the depth and breadth of the practices going in the ground and how they benefit more than just nitrogen and phosphorus and sediment reduction.

I think the other piece of this is once we have the assessment complete, we hopefully want to get to an outreach component to the Water Quality Goal Implementation Team (WQGIT), USWG and others to share what we've learned and look for a chance to update implementation or ways of reporting that we can get work through as a partnership.
Q: *Chris:* how is the MB supporting this effort and has it been proposed to them.
A: *David:* I have not been directly to the management board with this. We've taken it to the GITs. There's a number of crossover representation with the WQGIT in terms of the management board and the GIT. There is some level of interest there, but I think that we could certainly do more in terms of getting direct support from the MB on this. This is more long-term.

- ***Comment:*** *Chris:* We want to move into something that would be more sustainable and to do that, we are going to need MB support, and this is something we must work towards.
- ***Comment from chat:*** *Katie:* I don't think there have been opportunities to brief the MB on most/all of these projects yet?

- ***Comment:*** *Ken:* Totally agree that we should try and highlight this. However, building off Chris' concerns, we'd need to be fairly strategic about framing the critical gaps that all these fill.
    - ***Comment from chat:*** *Peter:* Agreed Katie – this is the first summary presentation of all projects that I am aware of. A presentation to the MB could also prompt the conversation on the next round of GIT funding – we are still awaiting guidance from our leadership on the next round of GIT Funding, and now is around the time we would be organizing the new year of ideas in preparation of new proposals if we are sticking to an annual frequency process.

Comment: *Julie:* I know this work is related to the climate BMP work that I know your group's been supporting with storm water practices, but there is an Executive Council (EC) directive around that we've never really been able to fulfill. That was a priority at one point to understand and better track these BMPs, especially around their climate resilience. However, there has been little resources until the Request for Applications (RFA) has recently come out through the Rand Corporation for storm water. But for that holistic approach that we've been wanting, there hasn't been resources. So, I'm kind of excited that this project could get funded and maybe could lead to something. I just want to remind folks like this has been something for at least five years that keeps coming up in these executive directives and we really just haven't made the kind of headway that we've been wanting to make on it.

*4. **Assessment of BMPs as heaters and coolers for local water** (slide 9) – Katie Brownson (U.S. Forest Service, USFS) and Jeremy Hanson (Chesapeake Research Consortium)*

This is a project that Jeremy Hanson and I put in as a follow up from the Scientific and Technical Advisory Committee (STAC) Rising water temperatures workshop. Here are a subset of the findings from the workshop and the grounding for this GIT project (Slide 10). Our water temperatures are rising in the watershed and those rising water temperatures are having negative ecological impacts, especially for cold water species like brook trout. One interesting finding was that BMPs can influence water temperature in either direction. So, they can either contribute to cooling, or they can contribute to warming waters. This is especially true for practices that are creating shallow water areas that can heat up and then contribute heated runoff to the waterways.

In our analysis, we found that across the watershed, we're actually implementing more of these heating practices than we are of cooling practices. One of our key recommendations was that we need to better prioritize BMPs, that cool or moderate

water temperatures, including things like riparian forest buffers. Additionally, we need to pay particular attention to both vulnerable ecosystems and vulnerable communities. We recognize that we really didn't have a complete picture of the temperature impacts of BMPs. There are some that have a clear influence in one direction or the other, but there are a lot of others where we really weren't sure, and therefore are not included in our analysis or where they're so context dependent or design dependent that we couldn't draw a conclusion.

This project is really designed to take a more comprehensive look at our more commonly used BMPs to better understand their temperature impacts. Instead of going through the normal competitive process through the Bay Trust, USGS is going to be completing the work, so the funding is going into an interagency agreement. Thus, we have kind of a project team that's mostly USGS with a few of us at the Bay Program supporting the project as it goes along. The reason that we're going this route is that our main objective is to gain a better understanding of the temperature impacts of BMPs by using this expert elicitation process.

As Jeremy and I were putting this proposal together, we had a very well-timed fortuitous conversation with some folks at USGS who we learned were already doing something similar - looking at the impacts of a smaller subset of BMPs in specific geographies on a wider range of water quality parameters. When we put in the proposal, we suggested that rather than bidding it out and getting a random contractor to work on it, that maybe it would be best to put the funding into an existing interagency agreement and let the folks that are already down this track to continue to do the work. They won’t have to do as much, and it doesn't have to be as much time getting them up to speed on methodology and background.

The previous USGS project used a modified version of the protocol for expert elicitation. The current idea stands to investigate, discuss, estimate and aggregate. The idea is to be an iterative process with an extensive pre-elicitation stage to help make the actual elicitation as effective as possible. Second, there's a multi-phase elicitation stage, where the experts do their own initial individual scoring. Next, they get together and discuss their scoring and then they can refine or revise it based on the discussion. Lastly, all the results get aggregated and analyzed.

In summary, the goals are to analyze and identify the effects of common BMPs on instream temperature through these expert elicitation workshops (Slide 13). We also think it is important to build a communication stage into the process because ultimately we want this information to be used by managers to help inform their decision making, and we know that USGS does have some internal communications expertise, but we

may be tapping into the Strategic Engagement Team (SET) as well to help us as we start thinking in a bit more detail about the communications products that we want to develop.

The scope of work is still in development, but from what I saw, the plan is to have extensive cross goal team, cross workgroup engagement. We will be putting together a technical advisory committee to guide the pre-elicitation stage. Additionally, we will be recruiting a lot of folks from the goal teams and work groups to participate in these virtual expert elicitation workshops. Please stay tuned for more on that. The timeline is a two-year project, and the scope of the work is nearing the finish line. Once things get finalized and everything's official, this will go through to the end of Fiscal Year 2026 (FY26).

Comment: *Ken:* That STAC rising temperature report was so impactful across the partnership. It's really cool to see this is a next step to get a better handle on which BMPs we should be steering towards, and maybe which ones we should be thinking about differently and vulnerable communities as well.

- ***Response:*** *Katie:* it seemed like the heaters and coolers concept, really resonated, especially with the water quality folks and wanting to have a better understanding of the BMPs that they're using and their implications. I know the management board has been briefed on the water temperature workshop, Chris, but I don't know if they've been briefed on this specific project.
  This was identified as a priority by the WQGIT, of which there is a lot of crossover with the management board, but we haven't specifically talked to them about this project.

Q from chat: *Melissa Sines:* Can you clarify the term "managers/landowners"?

- ***A:*** *Katie:* For managers were thinking about the folks that are selecting the BMPs to use and hopefully be better informed about where it's appropriate to or like where they can prioritize cooling practices and where if they need to use heating practices, it might be less detrimental. Landowners are also implementing BMPs on their property, especially on big agricultural properties.
  One of the findings of the workshop was the need to really take a whole farm, whole property perspective. We recognize that sometimes those heating BMPs are really good for water quality and we're not saying we shouldn't use them ever, we're just saying we need to be thoughtful about their use and also be integrating more cooling practices in where possible to mitigate any additional warming effects.

Q: *Peter:* Really nice to see the Rising Temperatures work, and to continue the importance of it here. I don't recall if is there some is sort of synthesis available that also looks at living resource use and implications of these heaters versus coolers. Just thinking of the talk that we have about emphasizing living resources and whether there's something out there that acts as a step to this, or will any of that be considered? Or is this something to think about for the future knowing that we have this desire to focus more on living resources in addition? I know heating and cooling is a living resource issue, but whether the actual practices and their applications have had some living resource science associated with them in terms of their structure, placement and feedbacks.

- ***A:*** *Katie:* Yeah, that's a really good question, Peter. And I don't know if we'll get quite to that step in this particular project, but I know you know some of the other science needs that emerged from that workshop or, around the need to strategically create thermal refugia, especially in places where we have particularly vulnerable species - targeting some of those cooling practices and more strategic ways or creating better corridors and using BMPs to help create better conditions so species can move and access cooler waters, especially during aquatic heat waves. I think at this point it's going to be a bit more interactive and just looking at impacts on temperature generally and then implying the living resource benefit. But I totally agree that there could be a follow up that really takes it to the next level considering living resource impacts.

5. ***Training and Technical Assistance on Network Science*** *(slide 14) – Amy Handen (EPA) and Marisa Baldine (Alliance for the Chesapeake Bay)*

Amy Handen: Through our work with the GITs and WGs we recognized opportunities to enhance “better together” goals and outcomes across the teams. We brought forth network science training and technical assistance project to help us achieve the need to increase engagement and collaborative approaches to working together. In the September STAR Meeting, we saw a short film on Impact Networks, and this is the core to what this project is all about; creating opportunities of impact networks within our partnership structure.

What is an impact network? It's a way of working together, that brings together multiple types of organizations from different sectors and geographies in a way that these participating organizations collaborate and empower each other for a common purpose. To answer Chris' question, we're at a pivotal time in the partnership of rethinking our priorities and rethinking how we work together. So, SET thinks that this is a really timely project to help us think about how we can work better together.

The network mindset is different from a hierarchical mindset, and one is not better than the other. There are unique places and ways that these can be implemented, and so we just wanted to share that there are differences and perhaps some of these network mindset principles could be considered as we embark on phase two.

Marisa Baldine: The proposal that we put forward is a two-phase project. We were looking at what we could put forward as a proposal, and we really see this network training and functioning networks as kind of this undercurrent of what could really help all of our teams come together and work more effectively. I think that applies both to individual GITs and WGs, but also how we work together as a partnership. Thus, we first hosted a training for all of the Bay Program to look at healthy collaborative network characteristics and keys to function in networks. Second, we're looking at picking three to five different teams and doing a long-term technical assistance on trying to move forward with that network mindset.

Amy Handen: This continuum of collaboration and coordination (Slide 18) that you might have seen before, particularly the Habitat GIT (HGIT), has focused some time on network science and moving from the center that informs consulting and coordinating and moving towards the right where we are collaborating in multiple directions. The purpose of this project is to provide those skills and understand the characteristics that we can build together as a partnership so that we can move to the right if that is a desire of your GIT or WG. In summary, we aim to enhance our understanding of the principles of the network science to help us achieve that movement from the center to the right.

Comment: *Chris:* As you get into Phase 2, we have been doing this with the HGIT and we have been rolling this out and looking forward to a phase 4 and 5. We want to see if we can do this in a one-off meeting to talk about social science. The HGIT is committed to being a part of this. Please let the HGIT know how we can help.

Comment: *Julie:* I can see the CRWG being interested in participating in this at some capacity. Considering our marsh adaptation work that we've been supporting, we are trying to work more directly with partners implementing tidal wetland restoration or conservation efforts and trying to integrate climate change science. We just had a successful workgroup meeting with our Choptank partners. We're trying to move towards that collaboration and our October meeting was the closest.

We’re getting to the collaborate part of the spectrum where we actually work very closely with the vision, the Choptank partnership, and with our client resiliency workgroup members. The meeting and the conversations helped us identify the needs, follow-up actions and doing some cross pollination between our two workgroups. We could use persistence because this is something new that we're tackling - this sort of strategy.

Q from chat: *Peter:* Nice work to diversify our work approaches to achieve success, accelerate progress. Such efforts seem geared to effect behavior change, management change – something lacking in behavior change work is an effective assessment of the impact of the work to affect change. Is there any assessment of effectiveness built into this work? Asking about impact assessment to use to leverage greater use through identification of the value gained by CBP in adopting an alternative approach.

- ***A:*** *Amy:* Excellent point. This project could be a great opportunity to do some quantitative analysis of the impacts of this work.

6. ***Local Government Technical Assistance Inventory and Gap Analysis (slide 19)*** – Rick Mittler (Alliance for the Chesapeake Bay)

Rick Mittler, Local Leadership Workgroup Coordinator. The local leadership workgroup focuses specifically on the outcome of increasing the knowledge and capacity of local officials around water resources. Looking at technical analysis, technical assistance, inventory and gap analysis to help expand on that capacity.

This work has been brought to the MB. It came through the local government Advisory Committee's (LGAC) 2023 annual recommendations to the EC. It highlighted the need to expand local government technical assistance programs. The MB responded in 2024 saying that they would commit to collaborating with Chesapeake Bay Programs local government leadership, workgroup, LGAC, federal agencies and the states to identify and potentially expand upon local government assistance in the fiscal year 2024.

In summary, the MB said they were supportive of this, but they needed to see what's out there first. But we heard the need for this, this technical assistance, when we were speaking with local governments this summer during our clean water round.

I heard specifically from a person who's the town manager, Treasurer, clerk of Mount Crawford, VA. She expressed that technical assistance is critical for them to do any kind of water resource projects just due to their limited staffing and resources. In addition to this, the need for technical assistance has been shared throughout the local community workgroup through the local government advisory committee as a big sentiment that people are looking for in the local government space.

The goal of this project is to identify an inventory, existing local government technical assistance programs that specifically aligns with all of the Chesapeake Bay Watershed Agreement Outcomes. Our hope is that this will be utilized as a list to compare and standardize information around that technical assistance - looking at geographic scope, the funding sources, types of local governments served, types of services they offer, costs, etc. But primarily focusing on what are those key watershed agreement outcomes those technical assistances address?

With this information, we hope to define and analyze gaps in the regions, types of local government served, types of the services offered or again those gaps of where those different watershed agreement outcomes are not covered by those existing technical assistance programs.
We will produce a final report that will include recommendations to fill those gaps in technical assistance to local governments to help drive and increase implementation towards meeting those different outcomes. We feel that these recommendations will also serve to help inform state and federal decision makers to target those limited resources that are out there that support, increase or amplify those technical assistance programs that are meeting all of those watershed agreements. We can use this to support the work locally, so workgroups can share with the LGAC.
2023 LGAC Recommendation letter (link) and the MB response (link).

7. ***Phase 3B - Data Review and Development of Multi-Metric Stream Health Indicators - Physiochemical Metric Analysis (slide 23)*** – Sara Weglein (Maryland Department of Natural Resources, MD DNR) and Chris Guy (U.S. Fish and Wildlife Service, USFWS)

Chris Guy: To introduce the Habitat GIT proposals, we were funded three out of five submitted proposals. Out of the three that were funded, we had gone to the Quarterly Progress Meeting (QPM) and we had framed our proposals as asks, which led to the GIT funding to the MB.

Two of the five proposals were actually social science proposals – wetlands and fish passage. Fish Passage wasn't funded. Fish passage had gone in their QPM to the MB and did their presentation as being very successful and didn't frame their proposal as an ask, rather this is where we're going to go in the future with dams - this was not funded.

The other one that wasn't funded was a Toxics Workgroup proposal. This is why we believe it is very important that we need to not be focusing on things that we haven't brought in front of the MB and wording our presentations as asks.

Sara Weglein: Our project title is data review and development of multi metric stream health indicators. This is Phase 3B of a three-phase plan. This is included in our Logic and Action Plan 2020 through 2022. We're trying to better understand the drivers and stressors affecting stream health throughout the Chesapeake Bay watershed so that we can establish additional indicators of stream health to supplement the Chesapeake basin-wide index of biotic integrity for stream macroinvertebrates (Chessie Bibi).

Our goal is to find indicators that can be more responsive to management actions than the Chessie Bibi. Additionally, find indicators that will allow for better interim status tracking and course corrections with watershed management.

For some background on the Chessie Bibi, we have seen a 6% increase in stream health, however, that's only with one interval. We have only had one interval since our baseline interval. We also have some gaps in data coverage - 41.5% of all stream miles throughout the watershed did not have enough data for a Bibi rating for the first interval. Chessie Bibi is not perfect - It has these limitations.

As mentioned, we only have the first interval. There are five-year data collection cycles. The different jurisdictions that collect those benthic data are all on different schedules. So, every five years we put out data collection calls and we accept everything that has been collected over the past five years. Thus, it's five years until we get any feedback. Also, there are large areas without data and then we also have limited direct links of management actions to improvements in the biotic communities.

We want additional indicators. First, biological uplift, which is shown through an increased Bibi score, likely isn't going to be achieved immediately following management actions. However, those management actions can have a positive impact that lays the foundation for the future. Additional indicators will also provide more immediate feedback regarding management actions since we mention that uplift may not be achieved - we may not see an increase for a while. There are lots of reasons where it may take a little while to see the needle move - these organisms are on different life cycles and they are affected by different weather patterns.

The three phase management plan, phase one was completed by USGS. We identified the most significant stressors impacting stream health in the Bay. With phase two, we quantified the effects of certain management actions on those stressors and that was completed with 2020 GIT funding. Phase three is underway; we are looking at different nonbiological metrics that can complement the Chessie Bibi. It is important to emphasize we are not replacing, rather we are complementing.

Phase 3A was completed with 2021 GIT funding and we looked at stream geometry and water flow - hydrology, hydraulics, geomorphology, and how those parameters can be used as indicators. This came in the form of recommendations and recommendations for the development of a desktop hydromorphology assessment tool. Now at Phase 3B, we are looking to expand the analysis that was done in 3A to include water quality metrics. The next phase will be more in depth analysis of select metrics and really put together recommendations for indicators.

In summary, Chessie Bibi gives us what is going on in the watershed: is it healthy; is it supporting the biology; if a stream is not healthy, what exactly is going on? These are questions that we're really hoping to answer with these additional indicators. This has been presented to the MB and they were very supportive of continuing this work.

Comment: *Peter:* Just highlighting the work that was done for the Chessie Bibi, knowing that Bibi's are built on species sensitivity, so inherent in the Community data is the essence of what they are sensitive to - there are cold tolerant species, there are heat tolerant species. There is a lot of good information beyond just the score in the Bibi work, and we don't have another living resource-based watershed wide insight into how the watershed looks in that regard. It's pretty monumental.

This is really cool to be able to dive in and look at that sort of information. I think that was part of even the original outlook for the Strategy Review System (SRS) process and looking at having indicators, but then the factors analysis, which you are doing. So, I am just saying that I am supportive of the factors analysis, I think it fills in the additional gaps and really points us towards great management opportunities and directions.

Question: *Chris:* What other support would you like on the steering committee? If we are missing some expertise in working when we have the contractor in place that you would like?

- ***A:*** *Sara:* We do not have much experience with data mining. If there's anyone who has that experience and would be interested in being on the steering committee, that would be welcome.

8. ***Increasing Effectiveness of Landowner Engagement to Accelerate Wetland Restoration Across the Chesapeake Bay Watershed (slide 25)*** – Chris Guy (USFWS)

This project is the Wetlands Workgroup project, and it is the one I alluded to in the introduction. This is a social science project that is based on a previous GIT funded project funded that was a pilot project. The previous GIT funded project was strictly for Delmarva (Delaware, Maryland, and Virginia Peninsula) and was done only in Maryland and was awarded to The Nature Conservancy (TNC), in which they targeted local communities for wetland restoration, primarily farmers. They started with questionnaires asking: are you aware of the opportunities and practices for your land and the support that you can actually get from the government agencies and state agencies for doing these improvements to water quality around wetlands?
It turns out that 65% of the landowners in Maryland, which we do think it was a very progressive state and one that does good communication, had no idea these programs were available and 77% of the participants were very interested in engaging. Through that process, ~ 3-4 years ago, we were able to generate up to 500 acres of wetland restoration and enhancement that'll be completed within the next couple years (two to three years). In addition, we have a pipeline of over 100 potential applicants that are sitting back there.

At this point, the limitation is really capacity and funding to get these projects done. We view that as an extreme success, but it was a pilot in Maryland. So, the proposal was to expand and reproduce that to Pennsylvania and Virginia, which are two of the largest land masses in the Chesapeake and areas that are behind, except for West Virginia, on their goals for wetlands.

We went back and reflected on the questionnaire and identified the landowners, primarily working lands, and engaged them in this similar process. This was a priority for the MB - it was presented as part of our SRS, and they said go and do.

Q: *Ken:* You mentioned this is expanded now to the whole of the watershed or the whole of kind of the coastal wetland area?

- ***A:*** *Chris:* This is all nontidal wetland, not the tidal wetlands, and it's Pennsylvania and Virginia only. We haven't targeted New York or West Virginia or Delaware. So, it's still specific, but a little broader than before and these are priority areas, priority jurisdictions just because of their size, and given that we're so far behind. I don't think we can take on too much more. I think after this it'll be successful given what we've seen in Maryland. Then, we're going to have a laundry list of people it needs for. My biggest concern has been we created a list of about 100 land applicants in Maryland alone. We cannot serve 100 applicants at once, so people may be waiting 5 to 10 years. Are we going to lose them just because we said they can do this for you, but not now? This is one of the next barriers that we must explore.

Q: *Peter:* Given the success you've had in thinking about the challenges that we've had in reading the riparian vegetation goal and knowing that there's been work to expand that - is your model different from the riparian model in terms of how we engage people? It just sounds like you've got a super successful approach.

- ***A:*** *Chris:* You know, we've heard this forever that it's boots on the ground and working with the landowner. Well, we now invented this process that if we just go through this process, the landowners will be on board. You have to go 1 by 1 and have those conversations with each landowner. You have to get buy in. You got to go back to the next guy if they give it to their children. You have to go back to the children and have the same conversation over again and over. The hard part of developing the questionnaire that is very specific that will get them to respond. After that, it's the same process. In short, know we must work with the individuals and that's never going to change for this kind of work.

Q: *Amy:* what kinds of contractor are you seeking? What characteristics and qualities are you looking for from your contractor?

- ***A:*** *Chris:* We haven't got the list yet, but we're looking for previous experience doing this kind of stuff. This limits it down to probably the non-governmental

organizations (NGOs) that have done this work in the past. For instance, The Nature Conservancy (TNC) would be a strong candidate for this. I'm not really seeing where this would be a great fit for Tetra Tech, or somebody like that. Although they could do it, I don't think they would have the historic experience of that landowner engagement that we would need.

- ***Comment from chat:*** *Amy:* Chris, TNC is currently conducting research in VA and PA on barriers of landowners in engaging wetland programs. I recently talked to them about this research, lets chat about it.

Comment from chat: *Katie:* I can see a lot of alignment with landowner engagement for forest buffers and wetlands. In addition to the "boots on the ground" we've found that just having easy, flexible programs is effective. I'd definitely be interested in following this project as it goes along.

9. ***Chesapeake Bay Shallow Water Habitat Sentinel Site Program Development (slide 26)*** – Brooke Landry (MD DNR) and Chris Guy (USFWS)

Chris: This project really engaged the MB because it is everything we talked about. The SAV workgroup has developed through another GIT funded project a few years ago, a Sentinel site monitoring program. They're using largely volunteers for that to go out and look at these different sites. We had a conversation about how can we expand this and get Bay Program support and it was suggested to have key sentinel sites in both the nontidal and tidal portions of the watershed that we can go back to and have a multi metrics approach to monitoring it from the shallow water habitat perspective with a focus on primarily living resources - it doesn't preclude the physical or chemical parameters as well.

Last December (2023), we had this very spirited debate at the MB meeting, and they said, maybe this would be great for a STAC workshop. So, we put in for a STAC workshop, and STAC didn't agree in the first round – they encouraged us to come back in the second round. Instead, we decided we would approach it through GIT funding, and it did get funded. We now have funding to go through the analysis and look at sentinel sites across the watershed, both nontidal and tidal, to try and merge key places and create an index for how bay health is done – rather than a report card based on individual metrics. We think it could really marry well with the cluster analysis that we saw first.

There's a couple steps here: first, a literature and existing program review where we identify any data gaps; second, host a scoping workshop; third, have the full shallow water habitat Sentinel site program development; fourth, secure long-term funding. This last step is not part of the GIT funding, but it certainly needs to be part of it. We see

at that point a re-engagement with the MB and probably the PSC. The final step would be to implement the shallower sentinel site.

Comment: *Ken:* We spoke about the team that's putting together the PSC monitoring effort, where we're looking at ensuring long term funding for the core monitoring networks and we included some text in our charge about emerging priority monitoring networks - something like the sentinel site network. We're well aligned with that, that fifth goal about trying to secure long term funding. We're paying attention at that PSC funding strategy team. I appreciate that this includes nontidal as well. I think that makes it exponentially harder, but that's kind of the idea of a sentinel nontidal monitoring that has been on our mind for some time. It's really challenging, but I love that the team is willing to try so.

- ***Response:*** *Chris:* It's really neat that it came out of the SAV workgroup. I pushed them a little bit this way and then the MB wanted the focus to be on having an SAV sentinel site because we need that. I thought that's not going to get a whole lot of traction for additional long-term monitoring, unless we can add all these other areas there. We don't have a good idea of how we're going to include the nontidal portion of the watershed – which is why we're ecstatic that it is not a STAC funded project but a GIT funded project because that gives us access to consultants to broaden our horizon.
- ***Response:*** *Brooke:* In the context of the workshop that's going to be held as part of the project, it'll likely be two workshops within the project. We will have representatives from tidal and nontidal taking part in the workshop, and if it looks like something doesn't make sense to include, we won't include it and vice versa. This will be based on what the nontidal representatives can bring to the table and say what needs to be part of the program (or should be). For instance, how many sites would we want in nontidal areas, and things of that nature. We must sit down and figure it out.

Discussion questions:

- *What cross-GIT collaborations would enhance the value of these projects (not already mentioned)?*
- *In order to meet project objectives, what needs do you have from the following teams: GIS, Data Center, SET, STAR?*
- *Are there any existing resources or research to help inform the contractor?*

11:40 PM - *Funding Resources for GITs*

August Goldfischer (CRC)

Description: Overview of a spreadsheet compiling some funding resources available for GITs (link). This resource was created by Wuillam Urvina, former CRC Staffer, and added to by STAR. The spreadsheet will be shared in advance of the meeting.

Proposal: Add this information to a new page hosted on the Science Needs Database, organized in a similar manner to the Science Needs.

Discussion questions:

- Does the way the information is organized make sense to you?
- Are we missing any resources or information that would be helpful to you?
- What feedback do you have on the proposal to include this information on the science needs database?
- What would make this information easier to access?

August: A former staffer from the Stewardship GIT put together a really fantastic resource of multiple funding sources. I started to add a few things to it. Ultimately, we would appreciate feedback on whether the way the information is organized makes sense, if you see any kind of key resources that are missing, what would make this easier to access, etc.

Right now, it's in a spreadsheet format, but the idea from the STAR team is to make it available on the science needs database and organized in a similar manner. It's organized by the name of the funding opportunity, who's administering it, the funding source (such as federal, state, nonprofit, local, academic, etc.), the type of environmental action the funding source is focused on, the geographic focus, the criteria, link to the website, a short description of the type of project that it would be funding, who is eligible for this funding, the application due date, the general time frame for the funding cycle (annual, twice a year, once every other year), how much total money is available and if there are any like stipulations in that, and the best contact.

Q: *Chris:* I'm just wondering how often will this be maintained so that it's relevant and in terms of reach, is this mostly for the Bay program partners? How are we going to get it out there so that we're making sure people are actually using it or thinking about it?

- ***A:*** *August:* First, if we do end up adding it to the science needs database, we're looking into a way where anyone can update it at any time – making it crowdsourced. We'd also need a way to submit requests for removal, which then would come to the STAR team and then we could delete a funding source or alter it.

Second, we definitely need to make an effort to go beyond the Bay Program meetings as well and include it on other outreach opportunities, because it's a lot of great information.

- ***A:*** *Ken:* Right now, we are just in our initial phases to receive feedback on how helpful this resource is. Is it organized in a way that it's most helpful? However, we definitely need a communication strategy of how to get this out to our partners. Our sense is that the number of opportunities has grown so large that it's really tough for people to keep track of, so it seemed like this resource fit that gap. We just haven't sketched that out yet.

Q from chat: *Nick Staten:* What about a dedicated calendar people could subscribe to that had key deadlines in the calendar with reminders a month before, 2 weeks before, etc.?

Q: *Amy:* does this include some of the intern opportunities that we have increasingly been utilizing?

- ***A:*** *August:* No, not at the moment. But they can be added.
- ***Response:*** *Amy:* Because I think that's a great way for us to get some of our science needs accomplished is through some of these intern programs.

12:00 PM - Adjourn

Next meeting: November 21st, 2024

Attendees:

August Goldfischer (CRC), Peter Tango (USGS), Chris Guy (USFWS), Sophie Waterman (USGS), Ken Hyer (USGS), Mark Nardi (USGS), John Wolf (USGS), Nick Staten (CRC), Douglas Austin (EPA), Gabriel Duran (CRC), Marisa Baldine (Alliance for the Chesapeake Bay), Amy Handen (EPA), Tou Matthews (CRC), Rick Mittler (Alliance for the Chesapeake Bay), Melissa Sines (COF), Emily Young (ICPRB), Ann Foo (UMGC), David Wood (CSN), Kaylyn Gootman (EPA), Laura Cattell Noll (Alliance for the Chesapeake Bay), Katherine Brownson (USDA), Jamileh Soueidan (CRC), Ashley Hullinger (PA DEP), Dede Lawal (EPA), Meredith Lemke (NPS), Catherine Krikstan (UMCES), Caroline Kleis (EPA), Rachel Felver (Alliance for the Chesapeake Bay), Femeena Pandara Valappil (PSU), Bruce Vogt (NOAA), KC Filippino (HRPDC), Sara Weglein (MD DNR), Zhaoying Wei (UMCES), Melissa Fagan (CRC), Julie Reichert-Nguyen (NOAA), Cynthia Johnson (VA DEQ), Erin Chapman (EPA), Patrick Thompson (EnergyWorks), Suzanna Trevena (EPA), Ruth Cassilly (UMCE), Brooke Landry (MD DNR).