Integrated Trends Analysis Team (ITAT)
and Nontidal Network Workgroup (NTN WG)
Meeting

Wednesday, April 24, 2024
10:00 AM – 11:30 AM

Meeting Materials: Link

This meeting was recorded for internal use only to assure the accuracy of meeting notes.

ACTION ITEMS

- **Isabella Bertani will work with the NTN team as needed to review the methods and data used in the Nontidal Water Quality Data Gathering Project.**
- **Monitoring Data Communication Discussion**
  - **Peter Tango, Kaylyn Gootman, and Breck Sullivan will work with Rachel Felver and Marisa Baldine on a session proposal for the Watershed Forum**
    - **Discuss the proposal with Marisa and Rachel (complete the poll from Marisa).**
    - **Attend office hours (before May 16). Schedule a meeting with one of the organizers here.**
    - **Submit a session proposal by May 19.**
  - **Contact Laura Cattell Noll about the potential of a local government roundtable hosted by LGAC.**
  - **Contact KC Filippino about incorporating local perspectives into the development of Virginia tributary summaries.**

MEETING MINUTES

10:00 – 10:10 **Welcome – Breck Sullivan** (USGS) and **Kaylyn Gootman** (EPA)

Announcements –

- ITAT leadership is working to develop a more formalized communication strategy for the tributary summaries and tidal trends. After a draft has been completed, it will be shared with the CBP communications team and Strategic Engagement Team (SET) to gather feedback. ITAT will also have a chance to weigh in on this topic.
- Breck, Kaylyn, and John Clune met to discuss the results of the tidal-nontidal analysis survey from March. They are planning out potential steps forward and will be in contact with ITAT about opportunities to engage.

- There will be no ITAT meeting in May. We instead encourage everyone to attend the Chesapeake Community Research Symposium (see below) in early June.

Upcoming Conferences, Meetings, Workshops and Webinars

- Choose Clean Water Coalition – May 20-22, 2024, Ellicott City, MD. Registration is open.
- Chesapeake Community Research Symposium – June 10-12, 2024, Annapolis, Maryland. Abstracts were due February 1, 2024. Registration closes May 31, 2024.
- American Planning Association (APA) Virginia 2024 Conference – July 21-24, 2024, Williamsburg, Virginia. Early Bird registration closes July 5th.
- American Planning Association (APA) Maryland 2024 Conference – October 22-24, 2024, Ellicott City, Maryland. Session Proposals are due May 31st.

10:10 Nontidal Water Quality Data Gathering Project – *Isabella Bertani (UMCES)*

Isabella has been working on gathering and harmonizing nontidal stream water quality data from EPA's Water Quality Portal to use in watershed model calibration. Isabella's presentation focused on notifying monitoring agencies and Goal Implementation Teams of this effort so that, if they choose, they can provide any type of feedback, such as making sure that this effort is not missing important monitoring stations that they would like to see used in the CBP watershed model.

Summary

Isabella explained that as part of the Phase 7 effort to improve the watershed and estuarine models, the modeling team worked to expand their calibration dataset for the watershed model. In the past, they've received water quality data for streams and rivers in the nontidal portion of the watershed that is curated by someone now retired. For this round of model revision, however, they needed to expand their calibration data set themselves, so they decided to develop automated workflow to reduce time spent on it in the future. They turned to the EPA water quality portal as the main data source, since it is the largest repository of water quality data in the country. This effort was also partly motivated by a STAC workshop which involved talking to local monitoring agencies about their needs, concerns, and feedback on how the modeling team should be using data in the watershed model. Local monitoring representatives said it is very important that their data are used as much as possible to calibrate the Bay Program model, and they wanted to have a transparent and streamlined process

to submit their data to the modeling team for watershed model calibration. So, the modeling team set out to gather as much water quality data as possible for the nontidal portion of the Bay watershed. This data will be used for: dynamic watershed model calibration and verification, CalCAST calibration, and other applications such as machine learning.

They gathered data at over 13,000 stations across the watershed with Nitrogen, Phosphorous, and/or Suspended Sediment data. This data has gone through quality assurance/quality control checks and is a standardized dataset that represents water quality across the nontidal portion of the Bay. As part of phase 7 efforts, they also have a page showing different spatial layers that relate to data or model characteristics with the phase 7 suite of models. Only a small subset of the stations passed the criteria to be used in dynamic model calibrations (about 3-400 stations depending on the parameter). The other purpose is they need to estimate loads so they can calibrate the statistical model, CalCAST. They're using the statistical method called Weighted Regression on Time, Discharge and Season (WRTDS) to estimate loads. For a particular water quality record to pass basic model performance criteria to estimate WRTDS loads, certain criteria have to be met, and they have estimated 260 stations which meet these criteria. This is an improvement from the number used in the phase 6 model (only 77 stations). They not only estimated loads at those stations but also assessed model performance (WRTDS load estimation performance). Just because a certain water quality parameter passes load estimation doesn't mean it's statistically reliable enough to be used. They have a set of stations that passed and some that maybe pass and then others that did not pass and will most likely not be used in the calibration data set.

With the new stations included after this data gathering process, they are considering a broader spectrum of drainage area. They're including water quality stations representing smaller drainage areas which weren't represented previously. The project's next steps are to continue presenting and gathering feedback on this data set. Isabella said to feel free to get in touch with her (ibertani@chesapeakebay.net) and she'll be happy to share the data; the data is not yet posted publicly as it's still undergoing internal review. Isabella said she is looking for feedback from monitoring agencies who are looking to have their data represented. She is looking for answers to whether the project is missing any important stations; if it is missing data within a station; should they exclude any stations; and did they incorrectly identify constituents.

Isabella wrapped up the presentation by sharing that the team plans to re-do this data pull from the Water Quality portal in 2025, before the final stages of Phase 7 model development.

<u>Discussion</u>

Alex Soroka asked if Isabella has completed the dataset recreation, since USGS is currently recreating the historical dataset for the nontidal network and would be interested to learn about her experience. Isabella said it is complete but has not yet been reviewed. Alex asked if Isabella would publish the dataset, and if so, when? Isabella said she plans to publish the data later since there are other pressing Phase 7 Model Development priorities right now, namely CalCAST. Isabella said the review period will likely be extensive because it was a large undertaking. In the meantime, Isabella will share the data with whoever is interested, so they should contact her for access (ibertani@chesapeakebay.net). Alex Soroka said it would be very valuable for USGS to compare how this project included data and the differences in methods.

Doug Moyer suggested having a discussion with the modeling team and the NTN team to see how they can best support this effort. Specifically, Doug would like to compare how the model uses the load estimation information with the NTN, so those results are consistent in representation. Doug said it will be important for the stakeholders to know that we don't have two different data sets being used to represent an NTN site. Isabella said that for NTN stations, we are using NTN data, which the modeling team considers to be the gold standard. The data was retrieved from the water quality portal, loads were estimated, then Isabella compared her estimates with the NTN data which mostly showed a one-to-one basis. In situations where the water quality portal does not align with the NTN, those data are discarded, and the NTN data is utilized. Isabella said they have tried to maintain as much consistency as possible with NTN sites.

Doug mentioned there's a decision tree that must be followed to appropriately aggregate individual species to get to TN and TP. It would be helpful to ensure we are treating these data similarly because there are multiple options at times to come up with TN and TP and we need to follow particular methods to make them compatible with WRTDS. A major factor is the presence or absence of storm samples, specifically if there is enough information to estimate loads for these particulates and if the storm flow condition is represented well. Isabella said criteria for inclusion in WRTDS comes from USGS researchers Gretchen Oelsner and Jennifer Murphy, such as a minimum percentage of stormflow samples (15% of the period). Isabella said she would welcome review from Doug and Jeff Chanat on those models which are listed as a maybe and stormflow criteria. Isabella said she contacted James Colgin and Chris Mason to get a copy of the aggregation rules and has used that for 99% of the stations included in this effort.

Kaylyn Gootman asked if all CBP monitoring data eventually go into the EPA water quality portal. Alex Soroka said they do, but sometimes they get added by different agencies so you can end up with duplicates. You can often parse out

who added these data because the source of data is often incorporated in the station names. There is also a column for analyzing agency.

Breck Sullivan asked if the collection from Hampton Roads was spear headed by the Scientific and Technical Advisory Committee (STAC) local monitoring workshop? If so, why isn't it included in the water quality Portal? KC Filippino said yes but also the purpose of the monitoring network in the first place, almost 15 years ago, was to collect data from Hampton Roads to be used in the model eventually. KC said getting the data into the model was catapulted by the STAC workshop, as well as many other monitoring networks for urban and agriculture. Here's a link to our network, courtesy of USGS. And here's a link to the STAC Workshop page, with a download link available on that page. KC Filippino expressed her appreciation for Isabella's work on this topic and her participation in the STAC workshop. KC said the collaboration between USGS, the Planning District Commission, MS4s localities, and the sanitation district has made this work possible. Isabella said including these Hampton Roads stations will take some time because it will require some changes to segmentation in the model because the sewer sheds are not in alignment with the catchments.

Amanda Shaver asked if Chesapeake Monitoring Cooperative (CMC) data is being included in this project, such as Tier 3 data. Breck confirmed that CMC data is pulled into the partnership's data hub. Isabella said she has a script that ensures the data in the datahub is also in the water quality portal and have discovered that there is significant overlap. Therefore, Isabella has been using the water quality portal. Kaylyn said the data from the CMC goes through their portal then is shipped over the to CBP. It would be nice to know how much CMC data makes it over so that we can communicate that metric to our partners in CMC collecting the data. Isabella said she decided to use the water quality portal because it includes more data than the CBP data hub and she wanted to cast the widest net possible. Isabella said she will check to make sure all this data is also included in the water quality portal. Mike Mallonee said CMC has provided datasets to the CBP data hub since 2017, which includes tidal Tier 3 data but not nontidal Tier 3 data. Peter Tango explained that Tier 3 is the regulatory usage level, while Tier 1 and Tier 2 are well documented but not at the threshold needed for regulatory usage. Peter said Isabella should be in a good position. Kaylyn said knowing the overlap between the water quality portal and the CBP portal, including what percentage of data is used for calibration, would be helpful to share with partners. Peter added that it might be worthwhile to utilize Tier 2 data for a verification check on performance or exploration of hotspots, even if it cannot be included in the water quality model calibration.

Qian Zhang asked if those stations considered good for load estimation (221 for nitrogen, 145 for phosphorus, 152 for sediment) are also considered good for Flow Normalized (FN) trend estimation? The criteria that Doug described will

reduce the total count of stations, but it will still be more than NTN. Is there a possibility of adding a new category of stations to the Monitored and Expected Total Reduction Indicator for the Chesapeake (METRIC) tool (website link), recognizing that they are not part of the existing NTN. Isabella said not all of these stations will be considered appropriate for flow normalized trends because this effort includes data that have as little as three to five years of data. However, we can consider these data for the METRIC indicator, especially once they are included in the Dynamic Watershed Model.

Kaylyn asked what changes would be required to convert some of the stations currently rejected from WRTDS to a usable state for the watershed model? Isabella said sampling programs that incorporate sufficient numbers of stormflow samples. Doug agreed and said that how the stormflow samples are collected matters as well. For example, the centroid bucket method is biased low because the heavier particulates are left out, compared to how the NTN's isokinetic integrated sampling method collects these data. Isabella provided the caveat that this data has more bias than the NTN and is not curated or rigorous to the same extent because it is much more extensive, but it has been checked for quality assurance to the extent possible.

10:30 – 11:30 Brainstorming for a STAC Workshop Proposal on Monitoring – All

There are ongoing conversations at the Chesapeake Bay Program, including the NTN WG and Chesapeake Monitoring Cooperative (CMC) about submitting a STAC workshop proposal to discuss the communication of monitoring data. Peter Tango briefly outlined the intentions behind this STAC workshop proposal. ITAT and NTN WG members were asked to brainstorm and provide input on this early-stage draft proposal, including input on how members envision the communication strategy for NTN WG's and ITAT's data products.

Summary

Peter Tango began by outlining the original idea the NTN WG had been discussing, which focused on ensuring relevant monitoring data is accessible to managers and decision-makers. This is in alignment with the SIMPLE team's efforts to use storyboards in communicating lessons from the monitoring data. Since USGS is releasing their historical aggregation of NTN data in the fall, there was discussion of how to best communicate this new product, in addition to other monitoring efforts. Some key questions the team was asking include: are these monitoring data still meeting your needs; do we need to do something different to assess progress with the monitoring data; should the monitoring data be included in CAST; how do we use our monitoring data to balance the roles of monitoring information versus modeling output; how do we support both Bay-wide and local monitoring efforts?

Peter said in talking with the CMC, NTN WG, and now ITAT, we recognize there is need to weave these groups together in responding to calls to better use monitoring data from the Management Board and Beyond 2025 Steering Committee. Peter said the conversation today might begin with the question of if a STAC workshop is an appropriate venue for this conversation, and then move into how we would adjust our communication strategy to be less top-down and more bottom-up when possible.

Breck shared two findings from the Beyond 2025 ERG Report (outside contract for CBP evaluation) that are relevant for these topics on the communication of our science:

- "F2: There is a question of transparency in how the Program operates, especially in regard to using science for decision-making and in how Goal Implementation Teams (GITs) function. During the group discussions, the importance of transparency was mentioned in discussing aspects that make an effective partnership/collaboration. A number of participants across the groups, however, noted that transparency is lacking in both how the GITs function and in how science is used in the decision-making process."
- "F12: The Program has produced a vast amount of data and scientific findings, but it can improve access to those data and findings. In discussing science, a number of group discussion participants noted that the Program's data, information, and scientific findings are vast. However, they also noted finding information can be difficult."

Jeremy Hanson asked if there is a link to the previous SIMPLE document or effort that Peter mentioned, as Jeremy could benefit from a visual. Alex Gunnerson shared this link with Jeremy: https://www.usgs.gov/centers/chesapeake-bay-activities/science/summarizing-science-inform-management-chesapeake-bay.

Who is the audience for these monitoring products?

Rachel Felver said a big tenet of social science is understanding your audience needs and building what they need. If you figure out who you want to be using your data, then I would start with those local partners. Rachel then asked who the audience is for this potential workshop? Specifically, who are the decision makers you are envisioning? Are they high level folks like elected officials or are they more technical managers? Peter replied that the SIMPLE team asked jurisdictional managers via survey about how the information can be presented and developed into tools. This informed the development of storyboards to answer state identified questions. Peter is not sure if the target audience base is still as narrow or if it should be expanded, but that is a question to discuss. Olivia said in CAST we try to compare the monitoring and modeling explicitly. We have done webinars on the connections of these topics. Olivia said CAST has a reliable audience of a few thousand that receive some of these products through regular

newsletters, so they may be part of this audience. This group includes some local planners. Peter said the suite of new indicators and tools included in CAST have been helpful connectors to reach across a broad variety of stakeholders.

Kaylyn asked if we should change from the usual method as we see the same people at CBP meetings. Perhaps we should target outreach towards more local partners (like planners or other implementers) and pursue a more bottom-up approach to showcase tidal and nontidal data. Peter said in a harmful algal bloom STAC workshop, they utilized this approach and incorporated business and industry representatives which changed the dynamic and those in attendance. Kaylyn noted that the paradigm “if we build a tool, the partnership will use it” has failed based on the experience of the CBP, so we need to work with partners to build tools that help them. Kaylyn said perhaps this discussion is suited for an in person gathering where partners can share their needs.

KC Filippino said we would welcome less tools and 'Bay-scale' products and more one-on-one engagement through funding and direct connections to the issues being worked on at the local level. For example, we've been working on this monitoring network for 15 years, collecting data, but it may still not be enough. That's troubling, considering the local financial investments made. How can the science being done at the local level be truly meaningful at the Bay scale? That's the ultimate question, is that a STAC workshop question though?

Gary Shenk said Scott Phillips used to be upset that partners did not use the monitoring data directly. However, in Gary’s view, these people are already using monitoring data if they are using CAST, as these data are baked into decision support tools. To answer stakeholder questions, we need an integrated ecosystem of decision support tools that apply monitoring and modeling data when appropriate. Gary said he has two key points:

1. We build these structures of monitoring, research, synthesis, large statistical analysis, and models that inform decision making and you can't do any one of those things without all the others.
2. It would be really nice to know what implementers and local decision makers are interested in, how they get their information, and how they use their information.

Olivia Devereux said the purpose of the Tributary Summaries was to bring together modeling and monitoring data for watershed and tidal trends. Those summaries provide the context that Gary mentioned is important. It digests the data for people, rather than just throwing data up/out at people. KC Filippino said these summaries would be better served with input from the locals. The assumptions made when assessing the data don't always take into account other factors, monitoring programs, local programs, etc. Breck mentioned this was brought up in the survey she mentioned at the beginning of the meeting, and we are working to figure out how to get that local input in the tributary summaries

because we just don't have the capacity to do it ourselves. Plus, the locals know it better than us! We welcome any suggestions! KC Filippino said for specific tributaries in VA, she can hook ITAT up with the local groups, scorecards, action/implementation plans, roundtables, etc. These could directly inform some of the findings in the summaries.

Is a STAC workshop the appropriate venue for this conversation?

Kaylyn noted that STAC reserves funds for two categories of workshops:

> Programmatic Workshop: Workshop outcomes will provide the CBP and the Partnership with actionable recommendations. Workshop participants will assess where, when, who, and how science can be implemented within the Partnership and prioritize these recommendations. Recommendations should follow the 'SPURR' format. This will provide the CBP Partnership with a clear next step to take action on the recommendations.
>
> State of the Science Workshop: A STAC Workshop with the focus on gathering various stakeholders to examine a topic from an interdisciplinary perspective with an aim to assess the state of the science, gaps in knowledge, and science needs. Recommendations should include research recommendations and strategies to address gaps in the science.

Breck asked what would be the ultimate goal of the STAC workshop? Are we just trying to convene partners we don't normally interact with? This would influence whether or not we pursue a STAC workshop.

Jeremy said any STAC workshop proposal would need to distinguish its objectives from the recent STAC workshop on local monitoring.

Peter said from the social science research, it can be very difficult to track the use of this information and how it influences decision making. Peter said understanding how partners are receiving their information and how we can overcome hurdles to their usage is a different question from developing indicators that track improvement in utility of tools.

Gary said having a STAC workshop will likely not bring new people into these conversations because they would need compensation for time and travel. This was attempted for the climate change 3.0 STAC workshop in May 2024 and was not successful in bringing in new participants because of the lack of compensation. This should be a limitation we are cognizant of as we decide if we should invite local decision makers to an event we host or if we attend meetings they are already at. Peter Tango agreed and said the format at STAC workshops has been a series of presentations followed by discussion, but this topic seems less inclined to benefit from this structure. Rachel Felver agreed that a STAC

workshop will likely yield the same voices. Rachel suggested the following alternatives:

- Contact Laura Cattell Noll (LGAC coordinator) about the potential of holding a local government roundtable in different areas of the watershed.
    - KC Filippino said Virginia already has watershed roundtables that meet semi-regularly. You could tap into those. Always welcome down here!!!
- Submit a proposal for the Chesapeake Watershed Forum, as a wide range of implementers will be in attendance. Rachel and Marisa Baldine offered to support the development of a session proposal. Watershed Forum proposals will be accepted from April 1 to May 19.
    - Jeremy Hanson asked if this session can determine if a STAC workshop or GIT funding request is made next year to build on the objectives/outcomes.
    - Helen Golimowski shared that the watershed forum has office hours so you can talk through your proposal and receive feedback before you submit, which is highly encouraged.

Kaylyn noted that spending time on the ground in watersheds is key to understanding the needs of stakeholders and the overarching factors at play. It is also worth highlighting topics which stakeholders care about, like the landscape, living resources, and climate change so the focus is broader than just water quality.

Tammy Zimmerman said as part of the NTN WG, we struggled with whether this rose to the level of a STAC workshop. Tammy supported Rachel's suggestion for an alternate venue. Jeremy added that STAC workshops can be flexible and don't have to be the stereotypical ~2 consecutive days in person. You could do hybrid, or listening sessions in different areas, as the budget allows.

Tammy Zimmerman said as part of USGS status and trends group, they will soon publish a document tracking seven key parameters across the watershed. They are looking at ways to communicate this information to stakeholders and the community. The roundtables and watershed forum sound like a great way to engage with new partners.

Kaylyn said the timing and location of these events is key. Holding outreach events on Saturday mornings when more people are available can expand who participates.

Rachel mentioned that the Strategic Engagement Team (SET) meetings are another forum to continue discussions on this topic.

11:30 **Adjourn**

Participants: Alex Gunnerson, Alex Soroka, Amanda Shaver, Andrew Keppel, Anthony Timpano, August Goldfischer, Breck Sullivan, Carol Cain, Chris Mason, Cindy Johnson, Claire Buchanan, Doug Austin, Doug Chambers, Doug Moyer, Efeturi Oghenekaro, Elgin Perry, Gary Shenk, George Onyullo, Helen Golimowski, Isabella Bertani, Jeremy Hanson, Jon Harcum, John Clune, Joseph Morina, Kaylyn Gootman, KC Filippino, Lucretia Brown, Marisa Baldine, Meighan Wisswell, Mike Lane, Mike Mallonee, Mukhtar Ibrahim, Nicholas Santoro, Olivia Devereux, Peter Tango, Qian Zhang, Rachel Felver, Rebecca Murphy, Renee Karrh, Rikke Jepsen, Roger Stewart, Tammy Zimmerman, Tom Butler.

Next Meeting: Wednesday, June 26, 2024