Integrated Trends Analysis Team (ITAT)
Meeting

Wednesday, March 27, 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

- **Alex Gunnerson will send Elgin Perry an email detailing which exact plots and text we plan to use in the tributary summaries for this next round of updates.**
  - **Status: Complete.**
- **Alex Gunnerson will update the tributary summary tracking spreadsheet to make it easier to follow what has been completed and what still remains to be done.**
  - **Status: Complete.**
- **Alex Gunnerson will revisit the criteria decision matrix for deciding which tributary to update next and will share results with Breck Sullivan and Kaylyn Gootman.**
  - **After evaluating the criteria, including previous ITAT input, ITAT leadership decided to move forward with updating the York next, followed by the Potomac.**
- **Alex Gunnerson will reach out to Olivia Devereux to begin a conversation about automating other sections of the tributary summaries to speed up the update process.**
  - **Status: In progress.**

Meeting Minutes

10:00 – 10:05 **Welcome – Breck Sullivan** (USGS)

Announcements –

- Isabella Bertani will be presenting at the Nontidal Network Meeting (1-2:30pm) on April 17th on her work to gather and harmonize non-tidal stream water quality data from EPA's Water Quality Portal to use in watershed model calibration. This may be of interest to ITAT members. Isabella also presented at the STAR meeting on March 28th, 2024.
- A survey for the ITAT and FACTORs Team was sent out covering questions, such as proposed methods for moving forward with tidal-nontidal analysis and which location(s) should be considered for this work. This survey should have been completed by Friday, March 29th and the results will be used to inform future ITAT efforts.

Upcoming Conferences, Meetings, Workshops and Webinars

- Environment Virginia Symposium – April 9-11, 2024, Lexington, Virginia. Presentation Proposals were due August 31, 2023.

- National Conference on Ecosystem Restoration – April 14-19, 2024, Albuquerque, New Mexico. Abstracts were due September 1, 2023.
- Choose Clean Water Coalition – May 20-22, 2024, Ellicott City, MD. Session proposals were due January 19, 2024.
- Chesapeake Community Research Symposium – June 10-12, 2024, Annapolis, Maryland. Abstracts were due February 1, 2024. Early bird registration closes March 15, 2024.
- American Planning Association (APA) Virginia 2024 Conference – July 21-24, 2024, Williamsburg, Virginia. Session Proposals were due February 23rd.

10:05 – 10:50 **Tracking Downstream Water Quality Benefits of Urban Stream Restoration - Steve Hohman** (EPA Region 3)

Steve Hohman presented the results of a project to see how partial stream restoration activities and land use impact urban stream water quality using a high frequency spatial and temporal sampling methodology, synoptic sampling.

Summary

Steve Hohman began by providing context for this research project. This included describing urban non-point source pollution which leads to urban stream degradation, how stream restoration is believed to address these challenges, and how section 319 (the nonpoint source pollution program) of the Clean Water Act supports this work.

Steve described the two research questions of this project, which were:

- Does partial stream restoration influence downstream water quality?
- How far downstream are benefits observed?

Steve walked through the methods used to answer these research questions, including an explanation of synoptic stream monitoring which was integral to the success of this project. Steve used Paint Branch Creek as a case study to explain how the synoptic stream sampling was employed and what it revealed for two reaches that were restored.

Based on the results of this research study, Steve concluded that partial stream restoration can provide some observable improvements in water quality, but that watershed-scale drivers (like impervious surface coverage or stormflow) may overpower benefits from restoration activities. Synoptic sampling detected pollutant hotspots or buffering capacity related to specific land use features, which was necessary to inform these conclusions.

Discussion

Olivia Devereux asked how much of this stream is a concrete channel, either under roads or for other reaches? Steve replied that most of it is natural from what he saw while walking the stream and he did not see any burying, but there were a few overpasses near I-495 where he could not access the stream, so it is possible those portions were in a concrete channel.

Carol Cain asked what is the impervious percentage of the catchment? Steve said it varied spatially . In the upper reaches, it is about 10-12%, but as one moves downstream it approaches 25-30%, but it depends on the scale used to assess this question.

Peter Tango asked how long after disturbance were the bugs sampled? They respond quickly but not immediately, 2-3 years for example. Steve said the project was not set to sample after a certain disturbance. Steve noted it was very difficult to find restored reaches to sample. For example, the state of Maryland could only provide coordinates of restored sites, but it did not align with what Montgomery County provided.

Carl Friedrichs suggested ITAT members read the 2023 STAC workshop report on stream restoration practices because it focused on rural stream restoration. Carl appreciated listening to a presentation on urban stream restoration. Carl noted that stream restoration cannot mean everything to everyone, so even though the project presented today did not show much improvement for biological uplift, it did show improvement for streambank stabilization and public access. Steve agreed and said that there are many different interests from stakeholders and the urban environment can make things even more difficult because of less land availability and higher expenses. Steve stressed the importance of strong science communication skills to succeed in this aspect of the stream restoration field.

Elgin Perry said Steve mentioned the effects of storm events. Elgin asked if it is not feasible to sample during storm events and what the results might have been if there were sampling during a storm event? Steve said storm sampling was infeasible because he is based in Philadelphia and the site is in Maryland, so they needed to logistically plan when to go out because it was in collaboration with the University of Maryland. Additionally, there was no specific funding for this project so that was another constraint. Steve would have done storm water sampling if it was feasible. There was a goal to do a winter storm event, but there was no storm event in 2022. Steve would have expected some different results and increased concentrations across the ions. In the winter, they likely would have seen the flushing of the ions due to the salt application. Steve said some next steps involve using Principal Components Analysis to better understand which ions are clumped together and co-mobilized and analyzing some frozen samples.

Carol Cain asked if this project would continue into the future? Steve said the sampling has finished, but they chose Paint Branch because there was not a monitoring protocol developed for it. This way a future undergrad or graduate in the lab could continue the sampling process. There is another study looking at similar impacts of contaminant mobilization in streams and the team just received funding for looking at 6PPD concentrations in the mid-Atlantic.

Breck said at the beginning of the presentation Steve mentioned the need for this project since there is not a lot of monitoring done downstream from restoration but also acknowledged this cannot be done everywhere because it is not cost effective. Breck asked if Steve would support the need to continue doing these types of studies in other areas even if they could not be continued after the initial project? Steve said he sees a real benefit for synoptic sampling in developing watershed restoration plans and for monitoring results 2-3 years after implementation, especially in smaller headwater streams. Synoptic sampling can target restoration activities for watersheds via the identification of pollutant loading hotspots. Additionally, synoptic sampling can be

informative for understanding why the original restoration plan failed or why modeling was inaccurate.

Olivia said Russ Clark is the environmental person for the FDA facility that Steve could not get access to. Steve replied that he was able to get access to the FDA facility, but that it was a military installation, the Adelphi research facility, that he was not able to conduct stream sampling in. Olivia said she has tried to get access there in the past and was denied. Steve said that was his experience as well.

10:50 – 11:30 Tributary Summary Discussion – Breck Sullivan (USGS)

As a follow up to last month's brief announcement, participants discussed potential next steps to speed up the tributary summary update process.

Summary

Breck began by summarizing the state of the tributary summary conversation, specifically the tradeoffs and constraints currently influencing the update process. Breck first explained that the tributary summary updates are taking longer than had been originally hoped for.

1. Before updating the James, ITAT leadership had hoped that USGS would review one of the tributary summary documents and then let ITAT update the rest in quick succession with minimal review. Unfortunately, this is not possible. However, Breck believes ITAT will not have to proceed with a full-length review for future tributary summary updates since the new format was approved by using the James River. ITAT leadership will highlight sections that are nearly identical between tributary summaries and instead direct reviewers towards any new figures or data that vary from tributary to tributary. ITAT has yet to see how long this will take but will soon have an indication based on the speed with which the Rappahannock is reviewed. For the story maps, the USGS review should be even faster because it will be categorized as a presentation.
2. While Breck, Kaylyn, and Alex are working to update the tributary summaries, they all have many other roles that require their time. Additionally, ITAT members have been very busy with efforts like the 4-D interpolator, creating different indicators, and completing the annual tidal trends. ITAT has been trying to address this gap by bringing on externally funded interns (C-StREAM, Franklin & Marshall) to update the summaries and create corresponding story maps to broaden the audience for this work and engage with new partners.

Breck also provided a reminder of why ITAT is creating story maps to go along with the tributary summaries. These story maps broaden the audience for our work and help ITAT engage with new partners. When our C-StREAM intern from last summer (Anoosh) presented at the Rappahannock River Roundtable Symposium in October 2023, there was much interest in creating more story maps and learning more about the tributary summaries themselves.

Breck then outlined potential paths forward for updating the tributary summaries.

1. Some have suggested we automate all sections for tributary summaries to speed up progress. This is something that ITAT leadership would need help from ITAT members to accomplish as it is easier to update certain sections than others.
2. Another approach is to update tributary summaries in batches (grouped by region) on a quarterly schedule so decision makers wishing to take a more regional approach can compare across documents with the same time period for data. This would also require some level of support from ITAT members.
3. A third suggestion was to update the rest of the tributary summaries to the new format and hold steady at the same data period as published in the Rappahannock. In this case that would be the 2022 tidal trends and CAST data through 2022. After that, ITAT can update the rest of the tributary summaries again with the new data, which should be easier because the overall format will remain the same.

Olivia Devereux said the ability to compare across tributary summaries with the same time period is helpful, so getting them all into the same format and data range is key to living up to the original vision for these products. How we get there is flexible, whether that is through increased automation or finding time from an intern or someone working at the CBP.

Lew Linker asked how the modeling team can support this effort. Breck said that if any team members are able to help with the automation of figure generation or text writing, that would be very helpful. Lew said the modeling team has a very full plate with the 2025 model deadline rapidly approaching, so any request would need to be well defined in scope and not place a burden on their primary responsibilities.

Elgin Perry asked which plots are needed for updating the tributary summaries. Elgin said if there is agreement to update all the tributary summaries with data through 2022, then he would prefer to generate all the cluster analysis plots in one sitting to streamline the process. This would dramatically reduce the amount of work needed on Elgin's part. Alex replied that the tributary summaries are using Figure 12b "Group Plot by station for Tributary_Name Parameter_Name" for the following five parameters: Surface TN, Surface TP, Surface Chlorophyll a, Secchi, Bottom DO. Elgin said he does not think he is the best person for interpreting these plots in the tributary summaries because he is a statistician and not an estuarine scientist, although he is willing to do the interpretation if no one else will. Alex said that Kaylyn had expressed a willingness to do the interpretation, but he will need to check with her to make sure she has the capacity to do so.

Carol Cain asked what portions of the reports can/should be provided by state partners. Breck said some information is already provided by state partners in MD, VA, and DC.

Breck asked ITAT which tributary summary should be up next for updating. Breck said using the criteria matrix from when the James and Rappahannock were selected could be an appropriate next step. Alex welcomed ITAT members input on which criteria should be emphasized in this matrix for choosing which tributary to update next. Alex said it might be beneficial to stick with a Virginia tributary for consistency's sake or to choose a Maryland tributary to ensure equity with jurisdictions.

Olivia said she is willing to help automate portions of the tributary summaries in R, since that is what she is familiar with.

11:30 **Adjourn**

Next Meeting: Wednesday, April 24, 2024

Participants: Alex Gunnerson, Andrew Keppel, Anthony Timpano, August Goldfischer, Blessing Edje, Breck Sullivan, Carl Friedrichs, Carol Cain, Cynthia Johnson, Chris Mason, Efeturi Oghenekaro, Elgin Perry, George Onyullo, Helen Golimowski, James Webber, Jon Harcum, Lew Linker, Mukhtar Ibrahim, Olivia Devereux, Peter Tango, Steven Hohman, Tish Robertson, Tom Butler.