April 7, 2021

Dear Data Integrity Workgroup committee members:

The next meeting of the Data Integrity Workgroup (DI) of the Chesapeake Bay Program (CBP) Scientific and Technical Analysis and Reporting (STAR) will be Tuesday, April 13, 2021. This meeting will be a virtual meeting in place of our normal face to face meeting due to the remaining COVID 19 restrictions. Meeting logistics are below:

Join by Webinar
Meeting Link:
https://umces.webex.com/umces/j.php?MTID=m47cd19cb18fed96149f8be78165706ef
Meeting Number: 120 322 9370
Password: DIWG

Or Join by Phone
Conference Line: +1-408-418-9388
Access Code: 120 322 9370
Meeting materials:
https://www.chesapeakebay.net/what/event/data_integrity_workgroup_april_2021_meeting

The meeting will be held from 10:00 AM to 1:00 PM. A draft agenda is attached. If you have any additions to the agenda, please bring them to the meeting.

Sincerely,

Bruce Michael
Cindy Johnson
DI Workgroup Co-Chairs

AGENDA
Data Integrity Work Group (DI)

Virtual Meeting

Tuesday, April 13, 2021
10:00 - 1:00

Announcements, Meetings, Conferences, Webinars:

- National Water Quality Monitoring Conference April 19-23 (Virtual)
- Atlantic Estuarine Research Society & New England Estuarine Research Society-Joint Conference - April 27-30 (Virtual)
- Enhanced Aquifer Recharge: Influence of Stormwater on Groundwater Quality and Aquifer Recharge - April 28 (Virtual)
- VAEE Virtual Mini Conferences - May 22, July 17 & October 23 (Virtual)
- Mid-Atlantic Climate Change Education Conference - June 28-July 1 (Virtual)
- CERF 2021 Is Going Virtual!1-4 and 8-11 November ABSTRACTS DUE- May 5th 2021
- A Community on Ecosystem Services (ACES), December 13 - 16, 2021. Bonita Springs, FL.

Action Items:

- ✓ Discuss potentially filling co-chair seat at the next meeting.
- ✓ Workgroup members are to reach out to Peter Tango (ptango@chesapeakebay.net) if interested in the overall effort of the STAC workshop or any particular workshop meetings.
- ✓ Once USGS finalizes their documentation on loss of scientific integrity, it will be posted to the DIWG CBP webpage.
- ✓ Jerry Frank will send out the Blind Audit Program final report from the last contract year.

Method Changes Affecting Historical Trends in Virginia **Johnson**
Fake title for farewell and kind words for Bruce Michael's retirement.

Cindy Johnson will continue as Co-chair/chair, and it is up to the workgroup if they would like to elect another co-chair. If anyone is interested in being co-chair with Cindy, please let her and Durga Ghosh know, and it can be brought up at the next meeting. Durga stated Bruce Michael had some suggestions for co-chair so she will follow up with those people.

Changes and update on Monitoring and Laboratory Analysis During the Pandemic including 2021 Monitoring Plans: Tidal and Non Tidal **All**
Bruce Michael provided an update for Maryland. They have been monitoring since last May the full mainstem monitoring. There is no significant changes, but there was recent

approval to hire the full complement of staff. Maryland did assessments on what to cut back on because they might be short staff, but they expect to be fully staffed soon. They are still following Center for Disease Control (CDC) restrictions and protocols for field work. Kristen Hyer commented they are doing well keeping up with everything. Storm sampling with NTN makes it tight, but hopefully, they are getting more people hired soon. They are starting the Tangier segment for data flow and continuous monitoring.

Jay Armstrong gave an update for Virginia Division of Consolidated Laboratory Services (DCLS). They have a normal routine process in 2021 and things appear to be going well.

Jerry Frank gave the update for the Chesapeake Bay Laboratory (CBL). He commented there is a staffing shortage, but otherwise, processing is good especially now that hours of operations are not as limited.

Suzanne Doughten from Old Dominion University (ODU) lab fully functional since last summer. For the field, they are allowing three people on research vessel. In May, they should be back to normal for field operations and fully staffed while following COVID restrictions and protocols such as driving separate vehicles.

Cindy Johnson stated Virginia Department of Environmental Quality (DEQ) struggles when there is a potential COVID exposure because the entire regional office is shut down. Some of the regional offices recent set up an emergency contingency plan to continue to sample under those conditions. DEQ also put out a call for wage employees this summer, hopefully, they will see an improvement in the amount of runs they can do. They didn't miss a lot of runs, but the extra staff will help.

Cynthia Stevenson gave an update for the Maryland Department of Health. They are fully functioning and fully vaccinated so they are running like normal.

Bruce Michael stated there are no significant changes to the monitoring program and what they are doing.

Advancing Monitoring Approaches to Enhance Tidal Bay Habitat Assessments – Response to PSC request for monitoring review. **Tango**

The Principal Staff Committee (PSC) was interested in understanding the CBP budget and funding for monitoring. Lee McDonnell shared this information at the last PSC meeting while sharing with them information on everything that goes into the monitoring program. The five monitoring networks discussed were tidal water quality, nontidal nutrients and sediment, Submerged Aquatic Vegetation (SAV), tidal benthic organisms, and citizen monitoring. In the presentation to the PSC, they acknowledged there is a history of resource stresses to sustain and grow the monitoring program, but there is research developments and innovations providing options to address capacity gaps. PSC recognized that the monitoring program needs to grow so they requested information on what is needed to improve the CBP monitoring networks.

Peter Tango commented STAR will lead this effort in collaboration with Scientific Technical Advisory Committee (STAC), CBP Goal Implementation Teams (GITs), and partners participating in the monitoring networks. The process will take 9 months to provide the PSC recommendations while answering 8 questions on the status and threats of the monitoring program. The eight questions consist of:

- Network status
    - Numerous summaries are available about the network status, and examples are available on the CBP website. Some of these summaries have not been updated to include changes in the monitoring network.
- Vulnerabilities
    - An example is a list of stations that may be lost due to funding or safety issues.
- Programming strategy
    - This question addresses what the cost is of sustaining existing operations which is available in the grant documents.
- Information gaps to fill
    - Use the gaps identified in the CBP Science Needs Database and assess if there are any gaps missing and how they can be addressed.
- Monitoring program options to fill gaps
    - Identify if current monitoring products can fill information gaps. This will be discussions at future workgroup meetings across the CBP and at newly accepted STAC Workshop.
- What innovations are available
    - Discuss utility and readiness of innovations, the data, and the products especially through the STAC Workshop to see how it can improve the monitoring program.
- Who – partners for addressing information gap data and products
    - Once the innovations are identified, the groups will provide a list or current and potential partners.
- Detail on financials for sustaining and growing network to meeting information needs
    - Provide a list that reflects the costs of these needs.

This will be a collaborative effort through multiple network groups along with supporting CBP groups including the DIWG. The proposed timeline is to capture the status and vulnerabilities of existing networks during Spring 2021, innovation assessment and financials of sustaining networks during Summer 2021, and evaluation limitations, financials for adopting innovations, and recommendations in Fall 2021.

DIWG can provide guidance on the status of citizen monitoring and labs collecting citizen samples, review on existing data sources feeding the new 4-dimensional interpolator and identify new innovations and new data sources to bring into the program. The workgroup can assess if the QA and data management processes are in place to bring in the new data sources.

Bruce Michael asked if states provided information on their funding contributions. Peter Tango said yes, but what it doesn't cover is that EPA and state contribute their own amounts. Then there is additional funding through other avenues and programs that add to the information need whether through the Department of Health or Department of Agriculture. Some of that information is not obvious, and Peter is trying to represent that in this effort. Bruce Michael said one of the challenges is estimating the potential cost of it all especially in the next five years. He suggested the individual partners to understand their current cost especially their lab costs.

Peter Tango will be back to present updates on this effort along with collecting information to help answer some of the questions he outlined.

Developing the Roadmap for Updating the Tidal and Nontidal monitoring and Assessment Program – approved STAC Workshop **Tango**

The STAC proposal on "Advanced Monitoring Options and Recommendations" was influenced by various long-standing gaps in the criteria assessment and a range of challenges. However, there is research going on in other venues to overcome these challenges. Peter provided an overview of different ongoing research such as vertical profiles to help measure dissolved oxygen and using satellite imagery for SAV, Kd, and chlorophyll assessment. These types of innovations will be assessed for their availability, use, and cost during the STAC workshops. The workshop will begin in Fall 2021 and continue in winter 2021 – 2022. The mini – meetings topics build from CBP workgroup meetings. The following topics will take a deep dive into what are the challenges and what is needed to address the gaps:

- Al algorithms for SAV assessment
- Protocol for acquiring different satellite-based data
- Status and progress on satellite-based CHLA
- 4-D interpolator development support needs
- Data interpretation options to address assessments

Peter said there are many opportunities to contribute. He asked for members to please reach out if interested in the overall effort or any particular workshop meetings. The STAC workshops will go well beyond the 9 months of revieing the monitoring networks for the PSC request.

USGS National Water Quality Laboratory News **Blomquist**

On March 16th, USGS issued a web release of loss of scientific integrity. It is available here. USGS is taking steps to evaluate the impact and formulating corrective action procedures. In addition, They also plan to publish an Open-file report on potential impacts to Chesapeake Bay science.

Bruce Michael thanked Joel Blomquist for bringing the issue to the DIWG's attention and explaining the details to highlight that impact of the issue being small for the Chesapeake Bay science. Bruce also stated once all the USGS documentation on this issue is finalized that the DIWG should maintain it on the Chesapeake Bay DIWG website.

QA Updates **Ghosh**

At the second quarter meeting, Durga present on the blank and duplicate data collected for Water Year (WY) ending 2020. The first graph shows the nontidal duplicate samples collected from 2012 – 2019/2020. The orange dot represents the CBP mandated number needed for compliance. All agencies are collecting the adequate number of duplicates. Maryland is uploading their data, and it is an ongoing process to upload them. The next graph shows the same time period for tidal duplicates, and again, all agencies are collecting an adequate number of duplicates. Durga also showed the RPDs from the nontidal duplicate data for TSS, but she has it available for all the parameters. She is looking for similar Coefficient of Variation (CV) values. There are some deviations, but it appears to be isolated incidents that occurred in the past. The CV values are clustered for the tidal duplicate data.

For blank data, all agencies are collecting adequate nontidal sample blanks, and she is waiting for the MD to upload their data. It is the same scenario for tidal blanks. The next graph shows all the nontidal blank data and the CBP recommended MDL. Durga does a 10x MDL calculation to make sure nothing is over that value because it would indicate issues. In the example graph for Ammonia, there are a few values over it, but these outliers were isolated incidents in 2012 and 2015.

All of the graphs Durga showed will be the type of graphs she presents moving forward at other second quarterly DIWG meetings.

Citizens Monitoring Update **Donovan**

The grant terms by the end of April because it has reached its 6th year.

Citizen science monitoring was more easily able to navigate COVID due to the use of personal vehicles and team members being within the same household. The Chesapeake Monitoring Cooperative is starting to have field trainings in person but have virtual trainings available. They also released their 2015 - 2021 Program Achievements which is available here.

The Data Explorer is available here. Data is available for water quality and benthic macroinvertebrates. Data is going to be pulled and used by CBP in April to be put in the CBP data hub.

Bruce Michael asked what was citizen monitoring's biggest challenge during COVID. Caroline Donovan said Chesapeake Monitoring Cooperative (CMC) training was delayed so some groups were delayed. Programs that were already up and running could go back out easily. CMC also didn't build capacity as easily because they didn't have the trainings until they made the virtual materials. There was also a reduced number days on the water or sampling because some didn't feel comfortable to go out to collect samples.

Mike Mallonee commented the CMC submitted their 2017 and 2018 water quality to DUET. It was improved and imported into CEDR, and it is now available in the CBP Data Hub.

Bruce Michael stated Mark Trice is working to get the MD data submitted to the CBP and making sure it is available for the Integration and Application Network Chesapeake Bay Report Card.

Coordinated Split Sample Program

- November 2020 Mainstem Results **Mallonee**
- December 2020 Tributary Results **Mallonee**

Mike Mallonee stated he received some 2021 Mainstem and Tributary data but not enough to include in the presentation.
For Nitrate and Nitrite, Mike received Anne Arundel Community College data.
The morning of the meeting, Mike received data for the tributary results from one of the providers and one provider did not submit data. Once he follows up with those providers, he will update the tributary results.
No concerns for the mainstem or tributary split samples.

Blind Audit Program Update **Frank**

The contract requires two rounds per year, but with COVID it was a little difficult. Jerry Frank sent out the call in late July, and almost all participants were able to participate in the make round despite the limited hours of operations and limited staffing. This has pushed a delay moving forward. The round they just received last week is the fall 2020 round even though it is currently springtime. They will receive another round of samples before the end June. He didn't distribute the final report from the last contract year so he will send it out to the group. For several of the parameters that have been problematic in the past, they are doing better across the cohorts. Please reach out to him if there are any questions on the blind audit program.

USGS Reference Sample Update **Sullivan**

Bruce Michael noticed Horn Point Lab had high z scores for the Total Nitrogen Low Concentration and High Concentration. He asked Jerry Frank if he had a relationship with Horn Point Lab. Jerry said they are using similar methodologies compared to his lab at the Chesapeake Biological Laboratory as far as he knows. He knows they participate in the Blind Audits, and he also stated they are having some COVID related staffing issues because they asked to sit out of the recent round of Blind Audits. Kristen Hyer also stated they did not participate in the mainstem split because of those staffing issues. She will follow up with them to see if they will participate in the next mainstem split.

No other concerns with the USGS reference samples.

Vertical Profiler for Assessing Hypoxia **Michael**

MD DNR and other organizations are starting a pilot project for deploying a vertical profiler to get the short-term criteria assessment over space and time. MD DNR is

working closely with MDE and Matt Stover to get a complete assessment of all designated uses assessed for criteria. When doing the assessment, they are missing some of the short – term duration criteria assessments so getting 15-minute readings is a timeframe they miss with other samples. They designated one of the MD segments, Fishing Bay, to get a profiler out there. Due to COVID and problems of getting enough staff to do routine monitoring, they are in the planning stage for this effort.

MD DNR continues to work with VIMs to do hypoxia tracking during the summer. They are making sure VA and MD are using the same methodologies for the interpellator so the results are more consistent and comparable across states and organizations. Next week they are meeting with VIMs to confirm methodologies, and they want to confirm this before hypoxia sets in which may be during the May cruise.
They are working on the forecast again this summer. Isabella Bertani created a more robust model using river input from all 9 RIM stations. Previously, only the Susquehanna river input was used in the model. By the next DIWG meeting, the forecast will hopefully be out. Bruce Michael is estimating the flows will be below average because it has not been a wet spring. Bruce asked Joel Blomquist if he anticipated having the flow data by the end of May. Joel said they are a little behind, but they should have it available. He also said Isabelle techniques incorporates wastewater loads which shows the biggest change in loads over the period.
Bruce Michael also stated last year, historically lower hypoxia compared to the previous two years mainly because 2018 and 2019 were very high flow years.

Topics for Next DI Meeting **All**
Bruce Michael suggested discussing the Hypoxia forecast.

Suzzanne Doughten commented participants in the CBP use the latchet flow injection analysis, but they are discontinuing it. They are looking into replacements for different equipment and previously had a presentation by SIA Lab based on West Coast about a different instrument.
Suzzanne also stated the freezer thermometer is from 0 to -30 degrees but it does not keep. They have had to replace it multiple times, and it was suggested to replace it with something other than a mercury thermometer. She asked if anyone had issues with them working not with a mercury thermometer. Jay Armstrong does not know of any issues. Durga Ghosh said she can look into alternatives.

Participants: Elizabeth Ward, Kim Blodnikar, Breck Sullivan, Peter Tango, Joel Blomquist, Durga Ghost, Mike Mallonee, Caroline Donovan, Jerry Frank, Bruce Michael, Cindy Johnson, Heather Wright, Renee Karrh, Suzanne Doughten, Keri Maull, Tammy Zimmerman, In Ji, Cynthia Stevenson, Rachel Pan, Kevin Minga, Jaclyn Mantell, Jay Armstrong, Kristen Hyer