Continuous Monitoring Subcommittee

IEC Shared Waters Workgroup and HEP Water Quality Work Group

October 14, 2022

Location: Remote Meeting

Minutes

Attendees: Jim Ammerman, Ben, Mike Dulong (Riverkeeper), Roop Guha (NJDEP), Lingard Knutson (EPA), Katie Lamboy (CURB), Tom Laustsen (PVSC/NJHDG), Matt Lyman (CT DEEP), Ann Olsson (HRECOS) Rosana Pedra Nobre (HEP), Evelyn Powers (IEC), Beau Ranheim (NYCDEP), Melissa Sinisgalli (PVSC), Peter Tango (USGS-CBPO), and Cheryl Yao (MRRI)

Next Meeting: March/April 2023 – to be scheduled

Introductions and Agenda Overview

Evelyn Powers opened the meeting and reviewed the agenda.

Development of a High Frequency Hypoxia Monitoring Network in Chesapeake Bay

Peter Tango provided an overview of the Chesapeake Bay Program in their effort to address meeting their criteria for high frequency hypoxia monitoring. Monitoring has been ongoing since the 1980s with an increase interest in high resolution data to develop a four-dimensional view of what happens across the bay throughout the year. Increasing fish kills in the shallow water zones have led to the Program to be interested in monitoring hypoxia in deep water and shallow water zones. After a large fish kill in the Corsica River, an analysis was done between two existing monitored sites and while some insight was derived from the existing monitoring program it was clear that it did not give the full picture of what contributed to the hypoxic event. There had been efforts to use profilers, but it was clear that technology was a barrier to understand deep water habitats at 20 meter depth. In recent years, the Program has worked with EPA to release RfPs specific to what they were looking for to support pilot efforts at $50,000 grants. One group responded to the RfP noting that they had a system used in the ocean that could be applied to the bay. The system included a buoy and a tail of several sensors that were anchored down to 20 meters. The pilot was very successful in providing the Program with a vertical perspective of the water column and at a minimal cost in comparison to other available methods.

Overall, challenges still exist with monitoring. Identification of where you would want to place a sensor versus where you are allowed to (traffic considerations and permit limitations) is always a question to grapple with. You will need to define what accommodations are needed to make up for the fact that you will likely be unable to place the sensor exactly where you would want to. Also, these systems aren't meant to replace water quality grab sampling, but they do fill in the gaps of data when wet weather or extreme storm events occur to understand the temporal effects in hypoxia tracking. For the last year, the Program has been engaging partners across the bay, from local government, fisheries, to the public, to design a hypoxia monitoring program to benefit all the work being done in the region. An agreement between EPA and NOAA, has led to an investment by both organizations to deploy these vertical buoys in the deep water channel to determine the cost of operations and maintenance before deploying more sensors. With the BIL funding, they are aiming to implement 10 instruments across the bay in the future.

The Continuous Monitoring Subcommittee thanked Peter for his thorough presentation. Questions were asked about the vertical profilers, specifically how many DO sensors are placed at various depths and the type of equipment used in the tail. Peter shared that there is still more work to be done to determine the placement of DO sensors but are considering every 2 meters with a 1 meter reference site. The sensors are static at various depths and the single unit can handle multiple sensors. The equipment comes from a company out in Oregon who have been modifying the system through the pilot work. Maintenance is currently completed on a weekly basis during the summer months, however biofouling is a challenge and something that this second phase of the pilot will look to address. The Subcommittee also asked whether there are sites the Program is considering for redundancy, recognizing that you either want one or three sites for verification. Peter indicated that this is something that they will be seeking to explore.

A discussion was held around the differences between hypoxia area versus volume and which is a better metric to communicate. Peter indicated that they use a forecasting tool that provides an estimate of summer hypoxia events through the winter pollutant loads. Using data, the Program can compare the data to the forecast to determine accuracy but recognize that the number of days of hypoxic events and the total volume has a narrow range of uncertainty. Communicating the science has helped to understand which metrics are best to communicate, but that requires some experimentation within the region to determine which metric works best. In addition, a question on investment was asked. Peter indicated that there has been a lot of consideration around where the two sites for the second phase of the pilot needed to be located, this led to modifications to existing monitoring efforts as well as working to bring costs down while getting good or better information from investments.

Wrapping Up 2022 Season Updates

- Beau shared that NYCDEP was able to monitor well this season, visiting each site 30 times. There are still a few more weeks in the program and working on analyzing their data. The remote monitoring program had a lapse this year due to an expired contract that has held up the program. In the next three years, NYCDEP will be working on cyanide and bacteria monitoring mainly at their plant outfalls as part of their regulatory work. Beau is interested in any information about how to monitor for cyanide in saltwater. His staff believes that they can probably conduct the same freshwater method though unclear how well this will work.
- Matt shared that CT DEEP has finished up their summer surveys and did not experience many issues. They have hired a new staff member to extend the work of the program and has a request in for a new vessel to be able to achieve monitoring goals. Jim added that funding is coming from the Long Island Sound Study.
- Cheryl shared that MERI has changed their name to the Meadowlands Restoration and Research Institute but are still part of the New Jersey Sports and Exposition Authority. They have maintained three of their sites in the Lower Hackensack and recently upgraded their equipment. To address biofouling, they have transitioned from copper tape to a copper tube where the sensors sit. In reviewing the data, it does seem like there are no interferences with the copper tube and the method has reduced biofouling. MRRI is also working on a tide gate monitoring program to better understand flood prevent and notification to the public.
- Evelyn shared that IEC is adding new parameters into their monitoring program and recently received approval to their addendum. These new parameters will help with understanding ocean acidification.
- Rosana shared that HEP will be receiving funding from BIL and will be utilizing Year 1 and Year 2 funding to support additional monitoring. As approvals from EPA are received, HEP will reach out to members of this subcommittee for input in preparation to support future work.

Announcements

HEP's Conference will be held on November 29 through December 1st, with the first two days being fully virtual and the third date will be held in person. Additional information about the conference and how to register will be coming soon.