

Continuous Monitoring Subcommittee

IEC Shared Waters Workgroup and HEP Water Quality Work Group

April 7, 2023

Location: Remote Meeting

Minutes

Attendees: Jim Ammerman (LISS), Melissa Duvall (EPA), Michael Flood (EPA), Lingard Knutson (EPA), Katie Lamboy (CURB), Ann Olsson (HRECOS), Rosana Pedra Nobre (HEP), Evelyn Powers (IEC), and Beau Ranheim (NYCDEP)

Next Meeting: Friday, December 8, 2023

Introductions and Agenda Overview

Evelyn Powers opened the meeting and reviewed the agenda.

Narragansett Bay Fixed-Site Water Quality Monitoring Network

Heather Stoffel came to the University of Rhode Island (URI) as a graduate student and has been working with the Narragansett Bay monitoring program to work towards similarities across the different agencies since. Heather shared that some stations date back from 1995, but ~2005 is when most of the stations were added as the network was created. The monitoring focuses on critical areas primarily for assessment purposes on point-source discharges from May-October, annually. The main driver of the program has been hypoxia levels and the most impaired waters are focused on the upland portion of the estuary. There are about nine partners that have been supporting the Fixed-Site Water Quality Monitoring Network which has a start up cost of \$100,000-150,000 per buoy in addition to an annual maintenance per station of \$5,000-8,000.

In their cost-benefit analysis, not all buoys and land based stations are capturing the exact same data and are not necessarily uploading the data continuously (some stations are uploaded once a day with all the continuous data). URI uses the data for their weekly blogs, while the agencies and the WTPP Commissions are looking at it for responses/assessments as well as permit compliance needs. The system works well for an event response, but every two weeks URI goes out to do a spatial survey and compares the data to weather/tidal information. Most of the system is using YSI EXOs (water temp, salinity, DO, pH, chlorophyll, turbidity, and depth) and for the spatial surveys they are using Seabird 19 Plus (DO, salinity, chlorophyll, nitrate, and phosphate). Data is collected every 15 minutes and transferred to a base station computer 1-2 times per day with the buoys being seasonal and the land-based stations operating year round. Each individual agency is given the option of sharing their data in real-time. Heather indicated that they are interested in conditions that lead up to hypoxia and fish kills. At times, they also look at it for storms, in some cases they had to remove buoys during hurricanes but at times, they have been able to keep the systems in place without experiencing any damage. To reduce the download time lag, they often clear out the station's memory at the beginning of the season so that they are not reuploading the past year's datasets. They modified the lower end of the buoy to reduce wiring entanglements which help with the maintenance schedules.

Maintenance is the responsibility of each partner and URI is also contracted with a partner to maintain some of the stations. Maintenance is done every 3-4 weeks for complete checks such as batteries, solar panels, cables, antenna, any parts, and visually inspect to check for damage. Common issues that they run into include scratches on the optics, the wiper not functioning as well, the C/T sensors and their pins get pushed by the wiper, the DO membrane needs to be replaced (also every 2 years) and the same caps for the pH sensors also need to be replaced. There have been other issues such as the buoy being flipped over, water getting into the cables, vandalism, and lines being cut. To limit the data from fouling, URI purchases and modifies the systems to use copper-based materials and protective sleeves. During the summer, while conducting other sampling efforts, URI goes out and checks the systems once every 10-14 days. Biofouling in the summer is a constant issue. All QA/QC procedures and additional information about the network are available here: <https://dem.ri.gov/environmental-protection-bureau/water-resources/research-monitoring/narraganset-bay-assessment-1>.

URI does correct data for fouling and data spikes based on the guidance by the partners, but they do note this and include it in their metadata file for that year, along with the corrected data and raw data. The data is then distributed to each lead-agency which then shares the data in various ways such as blogs, real-time, reports, and daily observations. Heather recommended for successful monitoring networks it is important to design with your long-term goals in mind, ensure that you have the staff and field time to support a network for a long-term basis, and proper maintenance. If you do not have a budget this really limits your ability to collect good data.

A discussion was held around how sondes are stored in the URI labs. Heather shared that they first remove all the batteries and sensors from the sonde to reduce eroding. Everything gets wiped down. They replace the O-ring and store the pH sensor in a pH-4 solution. They store the DO sensor wet as it helps the lab reduce their time to reuse the system when needed. The DO sensor gets stored with the little sponge that it comes with, the cap replaced, and stored it in its solution. The C/T sensor gets stored dry. The wipers get removed, to prevent any issues with the sensors, and they also remove the plugs for the sensors. A question was also asked about the data collected during the storms. Heather shared that during Hurricane Irene some of the stations that were in the embankments were in place and they were surprised to see how low salinity came to be. Normally, the lowest they have seen salinity has been around 20 but they saw a level of 15 during the storm and then they saw this large chlorophyll growth that happened after the storm passed and the chunk of 'bad' water flush out. It also showed URI where the low-DO waters end up leaving the estuary post-storm in different pathways than they had thought.

Program Updates

- Rosana Pedra Nobre shared that HEP has released three 2023 Request for Proposals in areas of Climate Resiliency, Public Access, and Habitat Restoration. Please feel free to explore the RFPs [here](#) and share with your network of partners. Informational webinars, details for eligibility, and deadlines are detailed on our website.
- Evelyn Powers shared that IEC has started a monitoring network with NJDEP back in 2021. For 2023, they are proposing to include continuous monitoring sites, two in the Hackensack River, one in the Passaic River, and one in the Arthur Kill.
- Jim Ammerman and Melissa Duvall have been working on some data management issues that they are trying to resolve for the Long Island Sound with existing data.
- Rosana Pedra Nobre informed the group that HEP has been working with NYSDEC, NJDEP, and USGS to conduct a pilot DO study in the Arthur Kill this summer. The pilot will look at running a 24-hour sonde up and down the Arthur Kill along with several transects to improve our understanding of the fluctuation of DO. A final report will be shared in early 2024.