Continuous Monitoring Subcommittee

IEC Shared Waters Workgroup and HEP Water Quality Work Group

December 8, 2023

Location: Remote Meeting

Minutes

Attendees: Jim Ammerman (LISS), Jason Fagel (NYSDEC), Brittney Flaten (HRECOS), Chris Girgenti (RIPA), Biswarup Guha (NJDEP), Siddhartha Hayes (HRPT), Court Huston (USGS), Lingard Knutson (EPA), Peter Linderoth (Save the Sound), Matt Lyman (CTDEEP), Rosana Pedra Nobre (HRF/HEP), Nicole Peterson (BBP), Evelyn Powers (IEC), Dan Rearick (NYSDEC), Carrie Roble (HRPT), Ashley Smith (USGS), and Brian Wilson (Duro)

Next Meeting: TBD

Introductions and Agenda Overview

Evelyn Powers opened the meeting and reviewed the agenda.

Assessment of an in-situ Microbiological Sampler/Analyzer along the Harlem River

Ashley Smith discussed the challenges in NYC water quality due to CSO discharges and most fecal indicator bacteria (FIB) are largely particle associated so they settle in the sediment bed of the river. The sinking flux then results in changes of FIB concentration through sediment resuspension. Studies in the Hudson River have found that there are orders of magnitude in FIB concentration within the sediment can be greater than in the water, making sediment FIB a concern even during dry weather events. From 2019-2021, USGS conducted a study on water quality in the Harlem River at Mill Pond Park and Roberto Clemente State Park. Discrete samples were collected weekly in spring/summer for TSS, turbidity, water level, and FIB (enterococci). The study looked at whether boat wakes would cause FIB concentration to increase as sediment is resuspended. The 2021 data showed that resuspension immediately occurs once a boat passed the dock with turbidity increasing and a surface elevation dip.

Building on this work, USGS took another step towards studying sediment quality along the shoreline at the Cove in Roberto State Park for microbiological characteristics to inform future work on resuspension. USGS deployed an in-situ automated sampler and analyzer system (System Alert V2) for FIB at the floating dock. The system was programed to be triggered based on change in water level or turbidity once a day for *E. coli*. In addition, surface water grab samples were taken adjacent to the continuous monitoring station. YSI EXO2 sonde was added for temperature/specific conductance and turbidity. Using R programing and Windows task scheduler, USGS was able to pull data from the device every three minutes. The system has the capability to take 7 samples a day, but USGS set it for once a day. Data is still being analyzed, but Ashley shared some preliminary graphs though nothing can be determined just yet. USGS saw high levels of *E. coli* after turbidity events in some of the preliminary data. This is indicative of sediment resuspension is occurring and these events are increasing FIB concentrations. USGS is working with other USGS Water Science Centers to describe experiences and data release that will be accessible to the public.

Siddartha Hayes asked the depth of the cove by the floating dock? Ashley noted that the area is shallow so that during the low tide you can see the bottom layer. It would have to be at least 13 feet or so but would need to follow up to confirm. Peter Linderoth asked whether there has been any follow up on the actual pathogen types associated with the bacteria that concerns swimmers. USGS has not yet branched off into that specific area but could possibly be explored in conjunction with the MST work. Rosana Pedra Nobre asked how the +4 FNU threshold was determined and with what data? Ashley indicated that she looked at data from the continuous monitoring system placed at the site to see what the baseline of turbidity was and found that 4 was just the right number to trigger the System Alert VS without having it be triggered all the time. This FNU threshold had less to do with the boat wake and more about getting above the baseline. Peter Linderoth asked for further clarification on sampling comparisons. Ashley and Evelyn Powers indicated that there were grab samples done in conjunction with the System Alert VS, but prior to deployment there was a lab test completed at IEC.

> **Action:** Ashley Smith will share the results later with this group and can also ask any other questions about the device for those interested in the system.

Continuous Water Quality Monitoring: Community Partnership with Randall's Island Park Alliance (RIPA) and Duro

Chris Girgenti shared that RIPA has partnered with Duro for the last two years to help address the need to understand water quality around the park. Brian Wilson is the CEO of Dura UAS located in the South Bronx. Brian shared that they are very interested in long-term data sets and helping people address water quality needs where there is not enough data. They developed a Duro Sonde Network to provide a range of data visualization, comparison, and analysis features to make the data accessible to the NGO partners they are working with. Duro has several sites utilizing their equipment and services, including Randall's Island, Gowanus Bay, Harlem River, and one at Keyport, NJ. The dashboard development came out of a request by NGOs who do not have the capacity to take on the calibration and system learning also had the need to generate graphics to understand their water quality data.

While the Park is an MS4 area, the island is surrounded by CSO discharges in both the Harlem and East River. RIPA uses the data collected to inform in-water safety, inform shoreline restoration work, and look at storm events. The data cannot be used for the state 305(b) and 303(d) List of Impaired Waters and something that RIPA may investigate further, but the data does allow RIPA to assess the water quality towards NYSDEC waterbody classification. Chirs and Brian shared some examples of the data they have collected in the last two years. Looking at dissolved oxygen, most of the data shows DO above 4.0 mg/L though they did see DO dip in a two-week timeline in September. The data and the Duro Dashboard allow us to zoom into the data and see those changes every 15 minutes. Evelyn Powers shared that it was interesting to see the dip in DO in September on RIPA's data set as IEC saw a similar potential of hypoxia in September in the Western Long Island Sound. RIPA participates in the Citizen Water Quality Testing network to look at enterococcus data, where only two of the five sites monitored have the most probable number below 35. The pH levels are above the state threshold, and this is important for RIPA to consider shellfish restoration.

Chris asked the group how RIPA and Duro can work to make their data more useful at a broader scale? Lingard Knutson shared that the first step is to get the machinery certified by EPA, but once that is done most states should accept it. The second step would then be developing a QAPP which defines how you are taking the data and calibrating the system. Evelyn Power added that they are happy to help with QAPPs, but for E-Lap certification NYSDEC does not authorize continuous monitoring data. Jason Fagel added that Evelyn is correct and shared that Duro would need to demonstrate that their method is equivalent to the already approved systems. Beyond that, Duro would need a limited-use ATP which

requires a three-way approval (typically used by WWTP). Ashley Smith shared that they can't say outright whether a technology works and that is why the different centers are coming together to write on their experiences for the System Alert V2. A discussion was held around the importance of understanding water quality given that RIPA is located just outside of several footprints. Jim Ammerman echoed the importance of learning more about the East River and the more information is better.

Program Updates

- Jim Ammerman shared that Melissa Duvall has published a paper on the apparent increase of hypoxia in the most western part of the Long Island Sound and will share the paper with this group.
- Rosana Pedra Nobre shared that USGS has completed their 24-hour pilot study of DO in the Arthur Kill. The data is being analyzed with the anticipation of the data being available in the following week. HEP has been working with NYSDEC and NJDEP on this work with USGS and are anticipating to share the results in a meeting and gauge interest from this group whether they would like to be a part of the presentation.

Potential Topics for Future Meetings

Next steps of FIB Continuous Monitoring

Light attenuation and Kd

Continuous monitoring data portal update from EPA