



Long Island Sound Study Water Quality Monitoring Meeting Notes Wednesday, March 28, 2018

Participants:

Jim Ammerman (Chair)—Long Island Sound Study (LISS)/New England Interstate Water Pollution Control Commission (NEIWPCC)
Charles DeQuillfeldt—New York State Department of Environmental Conservation (NYSDEC)
Richard Friesner--NEIWPCC
Lorraine Holdridge-NYSDEC
Peter Linderoth—Save the Sound (STS)
Matt Lyman—Connecticut Department of Energy and Environmental Protection (CT DEEP)
John Morrison—United States Geological Survey (USGS)
Jim O'Donnell—University of Connecticut (U Conn)
Leah O'Neill—United States Environmental Protection Agency (USEPA)
Evelyn Powers—Interstate Environmental Commission (IEC)/NEIWPCC

Advance Agenda

1. Program updates as needed
2. I am asking Evelyn Powers of IEC to provide brief updates on the IEC 25 Year Database and Review Project and the preliminary report. Also, a description of the Harbor Estuary Program's data availability map site under development.
3. The Implementation Team has asked us to review and set priorities for the proposed enhancement projects on the attached summary, so please come prepared to discuss the selected ones listed below. Primary discussions will focus on # 4, 8, 9, and 18, secondary discussion on # 5 and 7. However, any of them can be discussed as needed.
4. Other items, let me know if you have major items to add.

The meeting was convened to provide updates from partners and to review water quality monitoring-related enhancement pre-proposals prior to further consideration by the Implementation Team (I Team) and the Management Committee. Jim Ammerman asked for program updates starting with Leah O'Neill from EPA on the FY18 budget for the Long Island Sound Study (LISS). Leah mentioned a \$4M increase in Clean Water Act (CWA) Section 119 funding for the LISS to \$12M, as well as the regular CWA Section 320 funding of \$0.6M.

Evelyn Powers described the recent draft report and database of the Interstate Environmental Commission's (IEC's) 25-year data record of water quality data from Western Long Island Sound. The report was written and the database compiled by Industrial Economics Incorporated (IEC), an environmental consulting firm in Cambridge, MA. Jim O'Donnell noted that the report was well-prepared, the scientific analysis was simplistic, but the most valuable contribution will be the database once it is publicly available. Several other workgroup members have provided similar comments on the draft report. Evelyn noted that there will be a presentation of the report by IEC at the April 27th IEC Technical Advisory Committee meeting as well as ongoing discussions and report modifications until the contract ends on June 30. There is a potential for another IEC presentation or webinar before then, perhaps at the June STAC meeting. The database will ultimately be made publicly available on IEC's website, contact Evelyn for earlier access. (The

agenda item about the Harbor Estuary Program's data availability website was not addressed during the meeting but Evelyn later said in an email that it was temporarily on hold because of staff transitions at the Harbor Estuary.)

In another update, Jim O'Donnell mentioned that the Execution Rocks buoy was now back in place and online.

Pre-Proposal No. 7. Peter Linderoth provided an update about the Unified Water Study (UWS) organized by Save the Sound (STS). His discussion led into a detailed discussion of the UWS enhancement pre-proposal (No. 7), followed by the other ones on the agenda. For 2018 the UWS is funded by the Long Island Sound Funders Collaborative and the LISS Futures Fund, the pre-proposal seeks funding starting in May of 2019. This year they will have 20 community groups sampling 37 embayments for Tier 1 parameters (temperature, salinity, dissolved oxygen (DO), chlorophyll a, turbidity, and qualitative macrophyte samples). Sampling occurs on twelve dates every other week from May 1 until October, beginning within 3 hours of sunrise. Tier 2 parameters (nutrients, continuous DO, and video macrophyte surveys) will be conducted in 9 embayments by 3 groups. Currently the data is entered into a detailed Excel database at STS which can be made available on request, additional input on the format is welcome. The list of embayments for this year's Tier 1 monitoring will be available next week. Additional discussion of priorities for Tier 1 and Tier 2 embayments is encouraged.

The I Team had questions about the costs of the HOBO data loggers for Tier 2 continuous DO measurements, Peter said they would last a long time but would need battery replacements every 2-3 years. The Star-Oddi sensors for conductivity (salinity), temperature, and pressure (depth) may need replacement about every 2 years. There was further discussion between Peter and Jim O'Donnell about the accuracy and precision of such sensors vs. more costly ones. Another question of the I Team was about the alignment of the UWS measurements with Tetra Tech's endpoint recommendations. Peter mentioned the total nitrogen measurements in Tier 2 and the macrophyte surveys in both tiers as relevant parameters. Lorraine Holdridge noted that all the measured parameters were valuable from the perspective of LINAP (Long Island Nitrogen Action Plan).

Pre-Proposal No. 4. Matt Lyman summarized this pre-proposal which has two parts, a calculation of hypoxic volume for Long Island Sound and an app which would allow the user to "fly" through Long Island Sound and observe hypoxia impacts, surface to bottom temperature variations, and nearshore trash or other pollution. This app would serve as an outreach tool for the general public. Matt said that currently CT DEEP just reports the bottom area of hypoxia, with no calculation of the thickness. He said that a volume estimate would provide more information on the impact of hypoxia. Lorraine questioned this but Matt noted that the thickness of the hypoxic layer was important to how far animals would have to move to avoid it. Jim Ammerman asked Jim O'Donnell if such volume calculations were not already a part of his base proposal and Jim noted that he had done limited hypoxic volume calculations for select years but was not conducting long-term trend analysis. Jim O'Donnell suspects that hypoxic area and volume are generally correlated in Long Island Sound, unlike in the Chesapeake Bay which has deep basins. He generally supported the idea of volume calculations by CT DEEP, which Matt said could be done routinely every year with no continuing costs once the volume calculation tool was developed. Matt also said that these volume calculations could facilitate future hypoxia forecasts based on past volumes, though how this would occur was unclear. Matt said he had not discussed the outreach app with any of the Long Island Sound outreach staff at LISS or CT or NY Sea Grant but perhaps other CT DEEP staff had.

Pre-Proposal No. 8. Jim O'Donnell briefly described the pre-proposal for enhancements to the buoy array. He mentioned that both the ammonium and phosphate sensors were not working well and were no longer a major priority, though the nitrate sensors do perform well and provide important information. The light and chlorophyll *a* sensors were previously removed because of frequent maintenance and cleaning requirements, but they should be restored because they provide information on important science priorities. These instruments are reliable and last 3-4 years but require frequent maintenance. Additional maintenance is needed for the pH and pCO₂ sensors provided by separate EPA support for acidification measurements in National Estuary Programs (NEPs), especially since EPA has shown particular interest in the results of these measurements.

Pre-Proposal No. 9. Evelyn Powers summarized this pre-proposal for IEC winter sampling in Western Long Island Sound. This would extend their monitoring to all year around by adding 8 additional monthly surveys from September to May including all 22 of their stations, with half of them including nutrient measurements. Two of their stations, A4 and B3M overlap with CT DEEP stations, and there is additional limited overlap with New York City Department of Environmental Protection (NYCDEP) stations, though it is not clear that NYCDEP always measures bottom DO at all of their stations. (Evelyn said that she would check with Beau Ranheim at NYCDEP and provide more details on the overlap.) Jim O'Donnell mentioned that nitrogen decreases rapidly between February and April and that it would be useful to have this information from near the major nitrogen sources at the west end of Long Island Sound.

Pre-Proposal No. 18. Jim O'Donnell outlined this pre-proposal for a model and data-sharing system for Long Island Sound data based on the NOAA ERDDAP system. He mentioned his past development of the LISICOS database, which also includes CT DEEP data, and now uses outdated software and technology. The NOAA ERDDAP system is used by many organizations, including the NSF Ocean Observatories Initiative, USGS, NASA satellite data, and others. It uses modern community standards and should be able to incorporate all local data, including CT DEEP data, area and volume maps of hypoxia, and eventually measurements from the UWS. This or a similar data management effort later will be required to support the new modeling initiative just getting underway. Educational users could also develop web pages for more general use. Once the system is developed there should be minimal continuing costs for updating the system.

Pre-Proposal No. 5. Jon Morrison outlined the lower Connecticut River equipment replacement proposal followed by a brief discussion. The new Sonde will replace aging equipment for monitoring salinity which is near the end of its service life and add some additional capabilities (DO, pH, turbidity). In addition, a nitrate sensor would be added at the Old Lyme station. There is currently a nitrate sensor at the Middle Haddam station upstream, data from this sensor has just been published in a data report (<https://pubs.er.usgs.gov/publication/sir20185006>). Lorraine Holdridge mentioned that NYSDEC was pleased with the performance of the nitrate sensors on Long Island, 1 on the South Shore and 2 in the Peconics.

Pre-Proposal No. 1. The meeting concluded with a quick question to Matt Lyman from Jim Ammerman about whether Matt or others at CT DEEP had consulted with staff of the EPA National Coastal Condition Assessment. This Assessment has a similar benthic index to one proposed here and was mentioned in the pre-proposal. Matt said no, that the origin of this proposed index came from CT DEEP's similar freshwater invertebrate index, where the samples are collected by volunteers.

