

Water Quality Standards Advisory Committee (WQSAC)

SUMMARY OF RECENT WATER QUALITY RELATED ACTIVITIES

Thursday, October 1, 2020

Hi everybody,

What we have heard from many of you, and have been experiencing ourselves here, is that we are all extremely busy. Therefore, instead of a WQSAC meeting this month, and in an effort to keep you informed, we have provided the following update of water quality standard related work we have been working on the past few months.

1) Legislative / Budget Update –

[HB496](#) passed the house and senate and was signed into law. The law clarified the requirement for setting dissolved oxygen standards.

2) EPA Update

- **Selenium technical support materials (TSMs):**
 - Documents are going through internal management review.
 - Target date for releasing the documents for public notice is 2020.
 - Target date for final release of the TSMs is summer 2021.
- **Missing parameters document:**
 - Hoping for end of 2020 or early 2021.
- **PFOA/PFAS for aquatic life:** Working on developing national recommended CWA 304(a) aquatic life criteria for PFOA and PFOS, as well as other PFAS chemicals, as data allow.
 - Held initial problem formulation meetings with states (organized by ACWA) to discuss development of water quality criteria.
 - Have begun data quality review of ecotoxicity data.
 - Working with ORD, OST to compile tissue and water data that can be used to calculate bioaccumulation factors for aquatic life and aquatic-dependent wildlife.
 - Expect evaluation of data available to develop aquatic life criteria by 2022.
- **PFOA/PFAS for human health:** Working to develop national recommended CWA 304(a) human health criteria for PFAS chemicals, as data allow.
 - OST working to compile data that can be used to calculate nationally representative bioaccumulation factors for edible fish tissue.
 - Evaluation of data available to develop HHC by 2021.
- **TSD for implementing the recreational criteria for microcystins and cylindrospermopsin:**
 - The draft TSD was developed in conjunction with an EPA-State workgroup.
 - The workgroup has begun addressing comments and aims to finalize the document by the spring of 2021.
- **TSD for implementing the aquatic life criteria for aluminum:**
 - The draft TSD was developed in conjunction with an EPA-State workgroup.
 - The workgroup has been addressing comments and aims to post the revised draft for a second round of public comment toward the end of 2020 and finalize it in 2021.
 - The revised document will cover the following six topic areas: (1) Adoption of the criteria into standards, (2) Technical questions about the criteria calculator and

analytical methods, (3) Capturing spatial and temporal variability to develop protective criteria values, (4) Handling missing/insufficient data when using the calculator, (5) Implementing the criteria into NPDES permitting, and (6) Implementing the criteria into assessments, listings and TMDLs.

- **Lake Nutrient Criteria Technical Support Manual:**
 - Aiming for a draft document for public comment in early 2021.
 - Received ~70 comments on the draft 304(a) criteria (on science underlying the model, data quantity, some comments on implementation) that are currently being reviewed and considered.
- **Updated criteria for chloride/sulfate:**
 - Current 1988 national criteria for chloride were derived based on toxicity test data of sodium chloride in laboratory-reconstituted water.
 - New toxicity data have become available for additional taxa (particularly for mussels and mayflies) and on the important effects of ion interactions on toxicity.
 - Updated criteria will account for the effects of water ionic composition in calculating chloride/sulfate criteria.
 - Unclear at this point if the criteria will be for individual parameters (chloride and sulfate) or a combination of the two
 - Hope to send draft criteria out for public comment in 2021.

3) PFAS - Squam Lake

The New Hampshire Department of Environmental Services (NHDES) Environmental Health Program (EHP) has reviewed the 2018 Squam Lake Fish Tissue Results for per- and polyfluoroalkyl substances (PFAS). Environmental sampling of other biota from Squam Lake have shown the presence of PFAS and other persistent chemical contaminants (e.g. polychlorinated biphenyls (PCBs)). In response to this information, smallmouth bass and yellow perch were sampled from Squam Lake to determine the risks from consuming these fish. NHDES previously recommended restricted fish consumption at Squam Lake due to elevated concentrations of PCBs¹ ([NHDES, 2020](#)). Based on current information, the concentrations of PFAS in smallmouth bass and yellow perch are not high enough to present a significant risk from consumption relative to the existing PCB advisory. Recreational fishers should follow the current guidance with respect to PCBs and limit their fish consumption from Squam Lake. There are no expected risks of PFAS exposure from the catch and release of fish from Squam Lake. The full report, [Human Health Risk Assessment of Fish Consumption and Detected PFAS at Squam Lake](#), may be accessed at the NHDES website

4) PFAS - Fish Sampling

In September, Governor and Council approved funds for freshwater (10-15 lakes) fish tissue analysis of per- and polyfluoroalkyl substances to proceed. Target fish will be from the top trophic levels that are commonly caught by anglers. The fillets as well as the viscera tissue will be analyzed and NHDES will keep reference samples for possible additional future analysis. The lakes from which fish are to be collected will also have water (epi-, meta- and hypolimnion) and sediment samples collected allowing for a first look at bioaccumulation factors in New Hampshire lakes. Target lakes and ponds will include popular fishing locations, mostly in the +/-100-400 acres size range in southern New Hampshire with one or two “reference” sites in other areas of the State.

¹ [NHDES. \(2020\). Human Health Risk Assessment of Fish Consumption and Detected PCBs at Squam Lake. Concord, NH: New Hampshire Department of Environmental Services, Environmental Health Program.](#)

5) PFAS – Shellfish Sampling

NHDES (the collectors) has partnered with Dartmouth and Clarkson University (the analysis labs) to analyze shellfish (oysters, softshell clams, mussels and razor clams) from estuarine waters. Some of the samples were collected in 2019 and some were collected this fall.

6) PFAS – Waste Water Sampling

In the absence of surface water quality standards for PFAS, DES WWEB wanted to perform an initial screening of all municipal WWTFs and select industrial WWTFs with NPDES permits for PFAS. We sampled for 23 PFAS compounds including PFOA, PFOS, PFHxS, PFNA at 72 municipal WWTFs and 25 industrial facilities. After some delays in sampling due to COVID-19, sampling is now complete with the exception of a few facilities. Grab samples were taken of the influent and effluent. This initial screening only gives us a snap shot in time of PFAS levels. Once we have all the data, we can compare results to see if any are “outliers”. For any “outliers” we intend to work with those facilities to possibly perform more testing, and also work on potential source identification and elimination. Ultimately, we would like to determine if there is a background level of PFAS in wastewater, however more data will likely be needed to determine this with confidence.

7) Alum Treatment – Nippo Lake

Nippo Lake has had ongoing cyanobacteria blooms. A watershed-based plan was developed for the lake to help guide actions to reduce phosphorus input to the lake. To help develop the plan, stormwater assessments were conducted for residential properties and roads, a septic system survey was conducted, benthic sediment sampling was implemented, and outreach to residents was provided. The lake loading model that was developed for the watershed plan demonstrated that 34% of the phosphorus loading is to the lake is internal to the system. The modeling and benthic sediment sampling confirm that to reduce the frequency of cyanobacteria blooms in the lake, external and internal sources of phosphorus must be controlled. The lake association has implemented a series of projects to reduce external phosphorus loading including construction of best management practices (BMPs) for roads and residential properties resulting in phosphorus load reductions of ~10 lbs/yr (~12%). The lake association continues to implement BMPs to reduce phosphorus from watershed sources. Now for the first time in 40 years, a New Hampshire lake is planning for an alum application in the spring of 2021 to control internal loading of phosphorus. NHDES has been working with Ken Wagner and Don Kretchmer to learn the jar testing process which helps ensure that the dosing is done in a manner that will not upset the pH balance of the system or result in toxic levels of aluminum in the waters.

8) Sampling in Preparation for Aluminum Criteria Update

After a bit of a delay, October will see the start of a year’s worth of sampling for the parameters that are needed to calculate water quality criteria per EPA’s 2018 aluminum 304(a) guidance. Dissolved organic carbon (DOC), pH, hardness and total recoverable aluminum will be sampled monthly for 12-months at 20 of the 40 trend monitoring sites; the remaining 20 trend sites will be sampled monthly during the summer of 2021. That dataset will go a long way to identify how the criteria could vary by season, region, watershed size and development patterns.

9) New Water Withdrawals in the Antidegradation Framework

Water Quality Certifications have been prepared for new surface water withdrawals from the Bellamy River in Dover and Webster Stream in Barnstead that align with “insignificant” antidegradation determinations (Env-Wq 1709.09). The purpose of the withdrawals is to supplement public water supplies. The certifications maintain instream flow variability consistent with the Natural Flow Paradigm

(NFP). That is, the river hydrograph just downstream of the withdrawal will mimic the shape of the upstream river hydrograph to the maximum extent practicable, while allowing for a manageable withdrawal operation thereby supporting the human and natural uses that depend on the river. Documents are available on the [NHDES Water Quality Certification page](#).

10) COVID-19 - Impact on Regular Monitoring Activities

Surface water monitoring was reduced by approximately ½ for summer 2020 due to the pandemic. Changes were primarily a result of logistical challenges including one person per vehicle and a need to reduce the number of staff in the laboratory to comply with social distancing requirements. During a typical summer we have 15-interns that assist us in completing our monitoring commitments. For the summer of 2020, only 4-interns were hired. As a result, only 12 (vs. 70+) freshwater beaches were monitoring. No river or lake monitoring occurred in our rotating watershed (synoptic) programs. VLAP participation was reduced by approximately 1/3 and those groups that did participate only sampled twice during the summer.

11) COVID-19 – Waste Water Sampling

In late summer, NHDES partnered with UNH to collect extra influent and effluent while out sampling for PFAS at wastewater treatment facilities in different parts of the state. Samples are being processed at UNH for SARS-CoV-2 biomarkers via ddPCR (droplet digital polymerase chain reaction). The resulting data can then be paired with the spatially identified human testing to confirm the effectiveness of wastewater testing as an early warning mechanism. If proven effective, this will be another tool to help control the virus spread in the coming months.

12) 2020 Draft 303(d)

The 2020 Draft 303(d) List, and assessment of all waters, is now just days away from release. The new version of the mapper now includes additional layers that can be turned on and will likely be helpful to the MS4 communities. Look for an announcement of the release of the draft and a “Virtual Data-Day”.