

STATE OF MICHIGAN, DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Nutrient Framework to Reduce Phosphorus and Nitrogen Pollution

Every year EGLE's Water Resources Division (WRD) receives reports about nutrient expression (i.e., extensive algal/plant growth) in rivers and streams as shown in Figure 1. However, WRD does not have a consistent method to track, monitor, and assess these conditions beyond some efforts at tracking/monitoring cyanobacteria blooms and algal toxins. Given the potential effects of nuisance algae and plants on water quality and designated uses, a more systematic monitoring and assessment is needed.

To meet this need, WRD created a work group to develop guidance for documenting and assessing the extent, duration, and frequency of nutrient-related conditions in streams. The overarching goal of the current work plan is to develop a consistent approach to identify nuisance algae/plant conditions in Michigan streams in support of advancing the implementation of Michigan's narrative nutrient criteria (Rule 323.1060(2)).

By January 2023, the work group will complete the following deliverables:

- 1) Protocol for evaluating the extent, duration, and frequency of nutrient expression conditions in streams.
- 2) Determining whether nutrient expression constitutes an impairment to designated uses in streams.
- 3) Protocols for responding to and documenting complaints of nutrient expression.

In 2020, WRD implemented a pilot study to survey eight streams (Figure 2) on a biweekly basis during the growing season (June through September), to evaluate nutrient expression over time (Figure 1). Data collection incorporated chemical (water chemistry), biological (algae and macrophyte) and physical (substrate coverage, canopy coverage, flow, etc.) variables.



Figure 1. Comparison of Pine River in 7/8/2020 (left) and 8/18/2020 (right), showing a significant increase in nutrient expression.

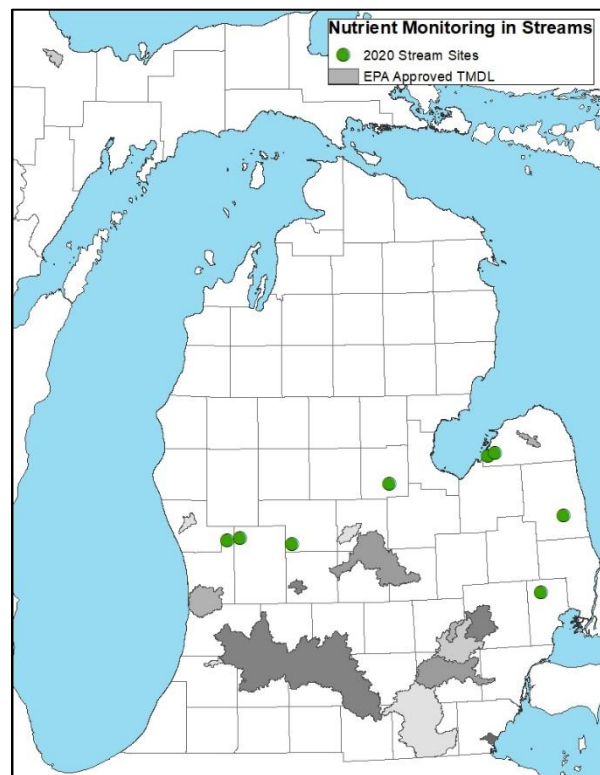


Figure 2. Locations of stream sites sampled in 2020 to assess nutrient impairment. Additionally, locations of watersheds for waterbodies with EPA approved nutrient TMDLs.