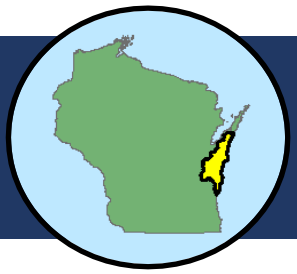


Northeast Lakeshore Total Maximum Daily Load

Water Quality Monitoring Efforts

WISCONSIN DEPT. OF NATURAL RESOURCES

Monitoring summary

In November of 2019, the Wisconsin DNR, in partnership with citizen scientists and the Lakeshore Water Institute at University of Green Bay, Manitowoc Campus, wrapped up a multiple year stream monitoring effort involving the measurement of stream flow and collection of water chemistry samples at 41 sites within the NE Lakeshore TMDL basin. Completing this monitoring is one of the first major steps for development of a TMDL. The data from this monitoring will be used to calibrate a watershed model that estimates baseline (current) conditions of stream flow, phosphorus loading, sediment loading, and relative contributions of each pollutant source in the 300 + subbasins within the NE Lakeshore area. Results of the watershed modeling then inform how much pollutant reduction is needed to reach TMDL goals.

Now that stream monitoring is complete, the DNR will begin to summarize results. Results will be shared at stakeholder meetings throughout the NE Lakeshore basin in mid-2020 and also summarized on the NE Lakeshore TMDL website. Please subscribe to the NE Lakeshore TMDL email list to receive announcements for these meetings. This article describes the types and amount of data that was collected for the NE Lakeshore TMDL stream monitoring effort.

What type of data was collected?

Water Chemistry

Water chemistry samples were taken for phosphorus, suspended solids (sediment), and nitrogen. Phosphorus and suspended solids data will be paired with continuous discharge records to calculate stream loads for watershed model calibration. A stream load represents the amount of a substance that a stream transports during a given time period (day, year, ect.). Additionally, some stream locations were sampled for specific types of phosphorus and nitrogen, which can assist with TMDL implementation efforts by providing a better picture of the nutrient processes occurring in the watersheds and waterways.

Stream flow

Continuous discharge records are created by developing a relationship between water level and water flow at each site. Continuous water level data is gathered by installing a pressure sensor in the stream that records data every hour. Then, flow measurements are taken during various flow conditions (examples pictured left) to develop the unique relationship between water level and stream flow at each site. At high flows, an acoustic doppler current profiler (pictured right) is used measure stream flow with the operator safely outside of the stream.

What about nitrogen?

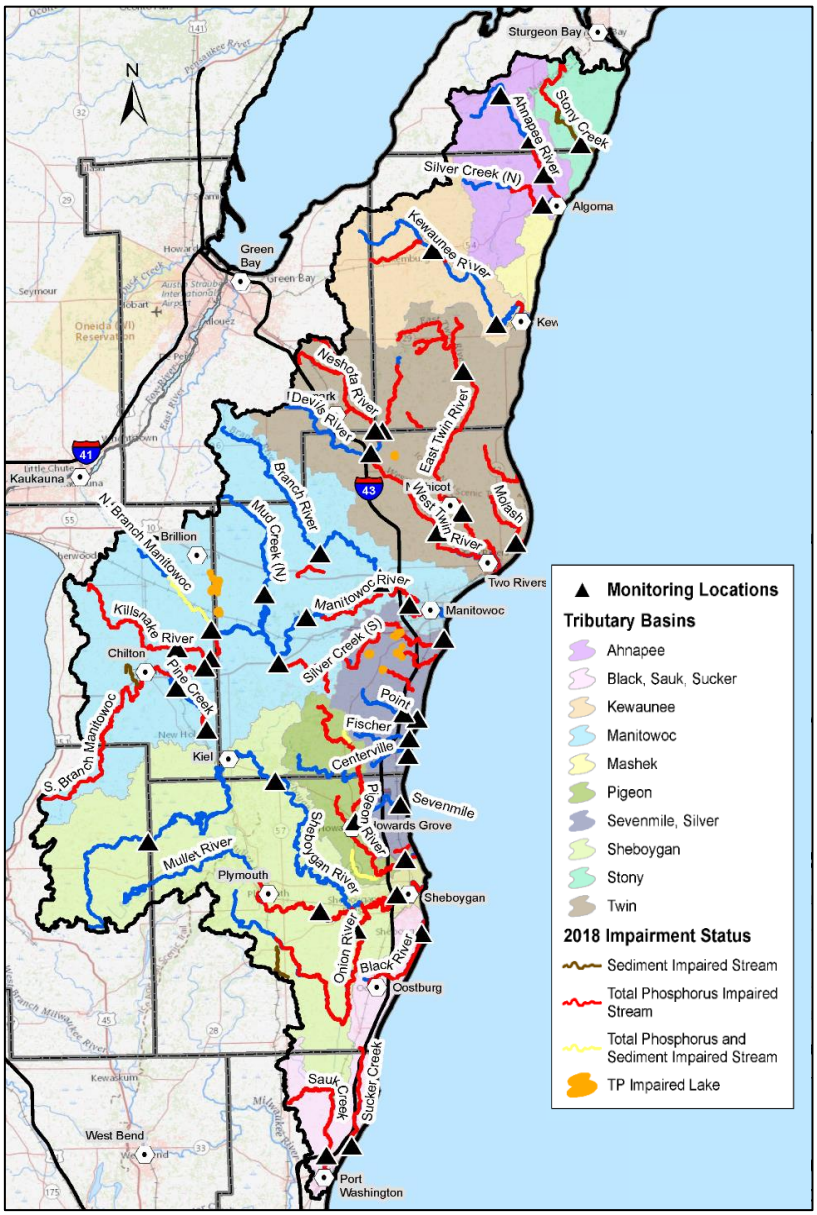
As directed by the legislature, nitrogen water quality data was collected during the NE Lakeshore TMDL stream monitoring effort to provide a broad understanding of nitrogen runoff amounts and sources. Nitrogen data will supplement TMDL implementation efforts by further informing the strategies and best management practices needed for water quality improvement. However, explicit TMDL allocations and percent reductions will not be created for nitrogen because there is not currently established water quality criteria for nitrogen.

Northeast Lakeshore Total Maximum Daily Load

Water Quality Monitoring Efforts

Monitoring locations and sampling effort

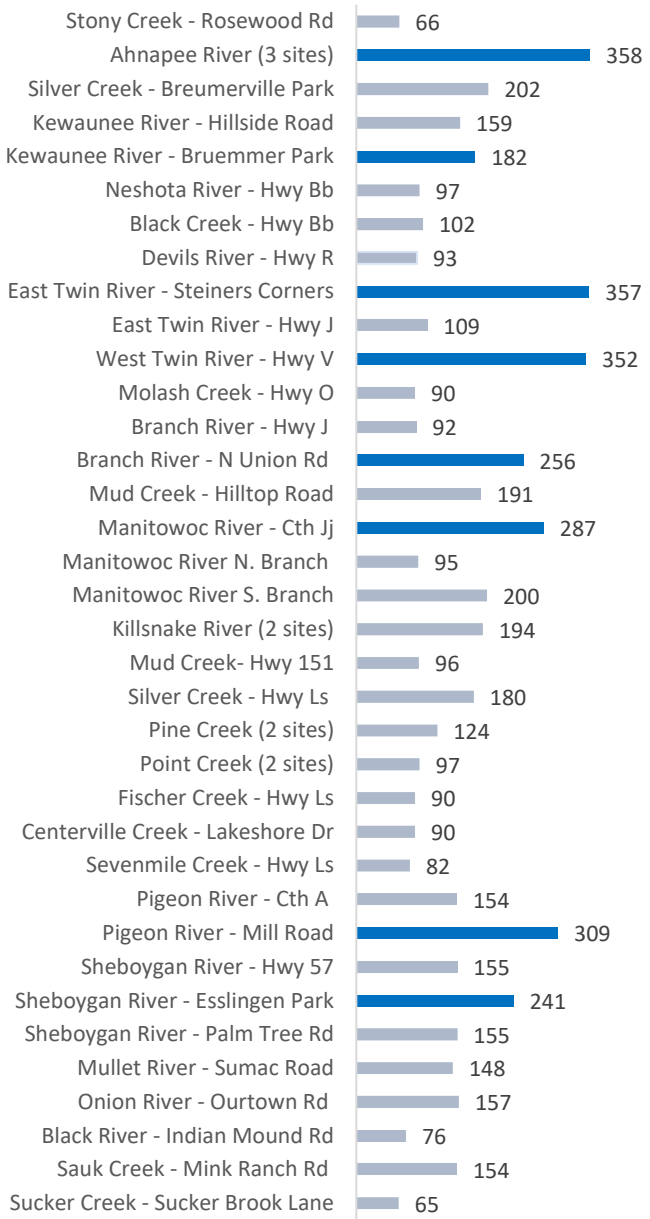
Throughout the NE Lakeshore TMDL area, 41 stream sites were monitored for stream flow, or water chemistry, or both. Sampling was conducted at all locations for at least two years. Water chemistry monitoring was done on at least a monthly basis from May to October. Some locations were sampled more frequently or throughout the entire year. At 21 of the 41 monitoring sites, both water chemistry and stream flow data were collected. Sediment and phosphorus loads will be calculated at these sites and used for model calibration. At the remaining 20 sites, water chemistry was measured and provides an additional data set for model calibration and validation.



Total number of water chemistry samples collected for the NE Lakeshore TMDL monitoring effort (2017 – 2019)

Standard sampling parameters: Total Phosphorus, Total Suspended Solids, Total Nitrogen

Additonal sampling parameters: Total Phosphorus, Total Suspended Solids, Total Nitrogen, Ammonia, Nitrate, Dissolved Phosphorus,



For more information on the NE Lakeshore TMDL, contact:

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Or visit: https://dnr.wi.gov/topic/TMDLs/NELakeshore.html