2015 WATER SUCCESS STORY

Bureau of Water Quality

Surface Water Monitoring Strategy Aligns Resources with Watershed Needs

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Monitoring Data is Used for Many Program Purposes and to Plan Future Projects

What is the overall water quality of Wisconsin's approximately 15,000 lakes and 54,000 discrete rivers and streams? It is a question the DNR reassess every two years in its Water Quality Report to Congress. The report fulfills Wisconsin's federal reporting requirements under the Clean Water Act and utilizes monitoring data it has been collecting since the 1970's. Monitoring data is evaluated to answer a variety of questions about how Wisconsin's water resources are changing over time.

The DNR recently updated its monitoring strategy with the release of Wisconsin's Water Monitoring Strategy 2015-2020. This new strategy will help align DNR monitoring staff, partner organizations, and volunteers to collect water quality, habitat, and biological data for multiple program needs. Monitoring data is used by a variety of program activities and projects, from assessing waterbodies for overall condition to identifying stressors and impairments, to setting specific pollutant limits in wastewater permits or making decisions on activities that may affect water quality, to evaluating success of various management practices – see Figure 1.

Water Quality Monitoring Section Chief, Tim Asplund, commented on the updated monitoring strategy, "This was a collaborative work effort on the part of DNR staff from multiple programs to integrate various monitoring priorities. We started by asking ourselves, 'What types of questions will we need to answer in the future with monitoring data and where?' Those future questions led us to focus our efforts on more comprehensive monitoring of small watersheds, as well as directing work on high priority lakes and streams."

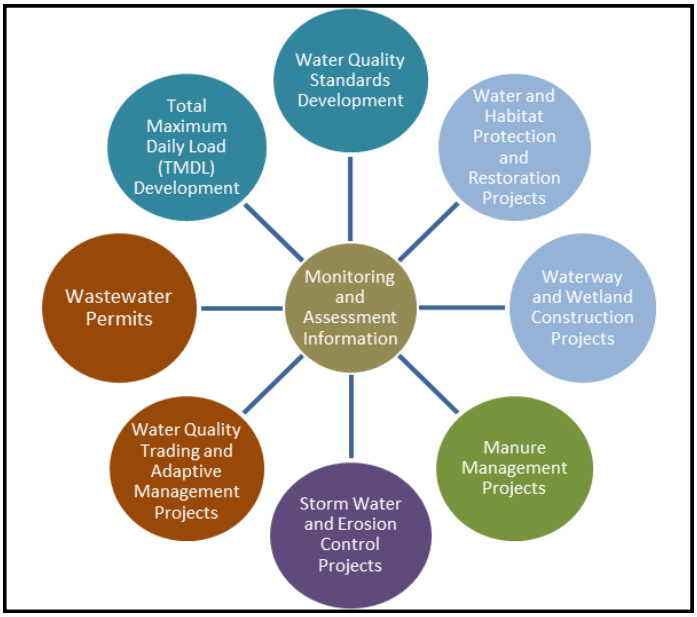

***Figure 1**. Program uses of monitoring and assessment information.*

Strategy Uses a Targeted Watershed Approach

The 2015-2020 monitoring strategy proposes monitoring approximately 20 "HUC 12" scale watersheds each year (approximately 30 square miles), and up to 50 "directed" lakes. How will lakes and watersheds be selected for monitoring under the new monitoring strategy?

Asplund noted how the interfacing of surface water monitoring data with a GIS-platform provided by the DNR's Surface Water Data Viewer (SWDV) helps to

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prioritize monitoring, restoration and protection efforts. The SWDV has the capability to overlay multiple data layers on a map and provide a big picture of how water quality concerns converge in certain areas – see Figure 2. Those are areas in a watershed where more targeted monitoring can help determine the sources of the pollutants that are causing poor water quality.

Many communities are planning watershed projects to reduce sediment and phosphorus in their local waterbodies and are asking the question, "What cost-effective pollutant reduction options should we consider and where should we install them?" Monitoring data and the SWDV helps answer those types of questions. The targeted watershed approach also allows the DNR to perform "success" or "effectiveness" monitoring to learn what types of water quality or habitat changes occur when pollutant control practices are used. This is the type of information communities need to evaluate cost-effective and innovative adaptive management and water quality trading projects within a watershed to meet phosphorus water quality standards enacted in 2010.

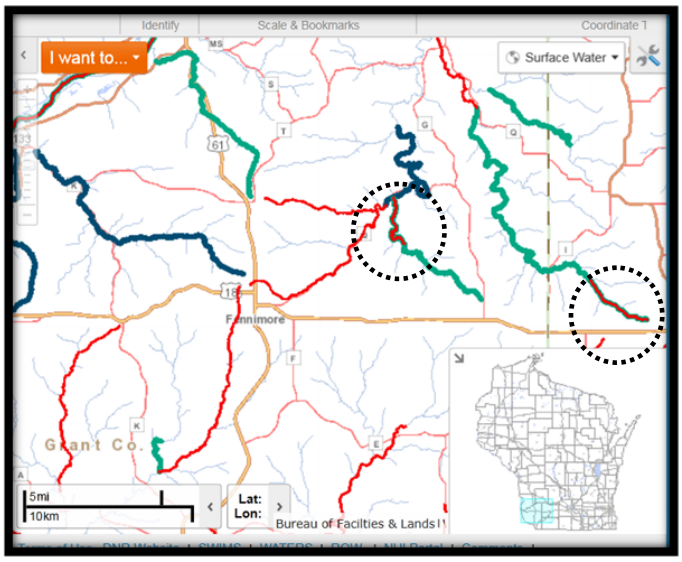

Figure 2. *The Surface Water Data Viewer took monitoring and assessment information and generated this map above showing sections of exceptional resource streams (green lines) that have impaired or poor water quality (red lines) – see the dashed circles on the map that show the red line over the green line. More targeted monitoring could help determine the source of the pollutants and management practices to improve water quality in these areas. Use the SWDV at: http://dnr.wi.gov/topic/surfacewater/swdv/*

Types of Data Collection are Prioritized

Asplund explained how the monitoring strategy consolidates DNR and volunteer stream monitoring, "Comprehensive data collection in a smaller area allows our water quality biologists to use their professional background and training to complete habitat assessments, fisheries assemblages and macroinvertebrate studies, which are all important pieces of data for determining the condition of water quality in streams and rivers. We can then recruit citizen stream monitors near the study area and train them to help collect water chemistry data with proper collection methods for laboratory analysis."

Monitoring across the state will also continue at specific sites to gather cumulative data over multiple years or decades. Many of these sites are considered "long-term trend" sites, or sites used to obtain information for baseline conditions. Baseline data helps water quality biologists determine whether there are natural changes occurring that may not be related to development or human changes on the landscape. Other sites may be monitored for certain periods of time. A report that evaluated multiple years of stream data was recently completed, The Condition of Wisconsin's Wadeable Streams: Natural Community Stratified Random Monitoring Program 2010-2013.

U.S. EPA Funding Helps Support Monitoring Efforts

Federal funding authorized in the Clean Water Act is used for most of the state's water quality monitoring activities and is supplemented with additional state funding. The new monitoring strategy meets U.S. EPA's 10 key elements of a comprehensive state monitoring strategy. Asplund concluded, "We now have a strong monitoring strategy to help us answer questions that will arise in 2020 and determine future waterbody protection and restoration work."