

January 1, 2014 –
December 31, 2014



BUREAU OF WATER QUALITY

JANUARY 1, 2014 — DECEMBER 31, 2014 2014 Water Quality Highlights

Tim Asplund, Keith Pierce and Jeff Jackson conduct a fish shocking survey on the Potato River. DNR photo.



2014—A Year in Review

The 2014 Annual Report contains a snapshot view of each of the Bureau of Water Quality program areas' impressive gains in protecting and improving water quality. Our water resources and wastewater staff constantly strive to integrate the many aspects of water quality protection and restoration into a cohesive program. I want to personally thank all the staff that have participated on teams, helped train new employees, and contributed their experience and knowledge towards our bureau's overall mission.



The Bureau of Water Quality also completed important paperwork reduction and streamlining projects in 2014 to enhance customer service. The Water Resources Program created a new online grant application form and updated grant guidance for all surface water grants. New application deadlines also ensure grant recipients are notified of successful projects early enough to allow for project planning before the summer field season is fully underway. Read more about surface water grants at: <http://dnr.wi.gov/aid/surfacewater.html>.

The Wastewater Program initiated changes to its wastewater plan approvals process. Certain types of projects can now be handled as expedited reviews. New forms were created for staff to quickly assess the nature of the project and route to the appropriate plan reviewer. An abbreviated facilities plan format was developed for minor modifications to municipal treatment plants and for sanitary sewer replacement and rehabilitation projects seeking [Clean Water Funds](#). It is expected that these changes will improve communication, clarify plan submittal requirements, and reduce review times. Information on the changes and the new forms are available on the wastewater plan review web page: <http://dnr.wi.gov/topic/wastewater/ExpeditedReview.html>.

The hard work, dedication and collaboration of our staff create the foundation for these successes. Congratulations to all of our staff for what we have achieved together.

Susan Sylvester, Director of Water Quality

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Edited by Julia Riley

Monitoring and Research Success Stories

Managing, protecting, and restoring Wisconsin's water resources contribute to the state's environmental quality and economic success. Our 15,081 lakes and 12,600 rivers and streams help fuel Wisconsin's \$13 billion tourism industry.

[Water Quality monitoring](#) staff collect data, make decisions based on science, track and document progress in restoring impaired waters, and educate the public about water quality and human health issues. These work efforts directly support the [department's mission](#), "To provide a healthy, sustainable environment and a full range of outdoor opportunities."

The statewide monitoring projects primarily conducted by our district staff help generate the data needed to evaluate whether the state is meeting water quality goals and protecting recreational uses and opportunities for future generations. These same staff also help local communities assess potential restoration projects and the benefits of management practices to prevent water quality pollutants.

Data collected and evaluated is stored in the [SWIMS](#) and/or [WATERS](#) databases. The [Surface Water Data Viewer \(SWDV\)](#) is the DNR's interactive web-mapping tool for a wide variety of datasets including chemistry (water, sediment), physical, and biological (macroinvertebrate, aquatic invasives) SWIMS data.

These are some of the highlights of monitoring and research accomplishments for 2014:

DNR Monitoring

- 50 [Natural Community Stratified Random Sampling \(NCSR\)](#) wadeable stream sites were monitored for fish, macroinvertebrates, qualitative habitat, temperature, pH, dissolved oxygen, conductivity, and one total phosphorus sampled during July-August.
- 43 [long-term trend stream sites](#) were monitored for fish, macroinvertebrates, quantitative habitat, temperature, and one suite of water chemistry during July-August.

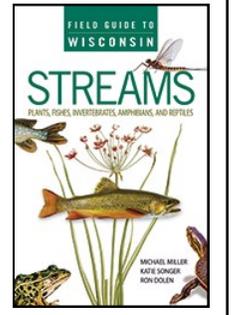
- 78 stream sites and 10 lakes that were suspected of being impaired, but lacked sufficient minimum data requirements to make an impairment decision were sampled for total phosphorus, macroinvertebrates and/or chlorophyll *a* in order to meet data requirements for an assessment decision.
- 22 [non-wadeable river](#) sites were sampled for macroinvertebrates.
- 63 lakes were monitored to continue evaluating [long-term trends](#) in water chemistry. These data records may be used to evaluate the long-term effectiveness of best management practices actions.
- Lake clarity continues to be estimated from satellite imagery and was used to generate assessments for 5,341 lakes.



Donn Edwards holds a musky collected in the Wisconsin River. This monitoring site was one of the 41 non-wadeable river sites across the state monitored during the summer and fall of 2014 to collect data as part of a U.S. EPA national survey. Read more about the project at: http://dnr.wi.gov/About/documents/Water/NRS_A2014.pdf

- Wetland surveys were completed to set thresholds for tiered [aquatic life uses](#) for the Lake Superior Basin.
- Working with the Natural Heritage Conservation Program, 40 least-disturbed wetlands were also identified and surveyed in [State Natural Areas](#) in 3 ecoregions of the state for tiered aquatic life uses. The sur-

A trio of state stream scientists co-authored and edited the newly-published [Field Guide to Wisconsin Streams](#). The guide contains information and photographs on stream plants, fishes, insects, frogs and reptiles.



veys helped identify threats and recommended management actions.

- 14 watersheds (approximately 90 sites) were monitored to assess the effectiveness of best management practices to control pollutants, watershed protection, and watershed planning. Watersheds were distributed across the state and chosen based on site-specific needs.

Citizen Monitoring Program

- The [Water Action Volunteers Stream Monitoring Program \(WAV\)](#) (exit DNR) trained 354 people to monitor in 40 training sessions. Trained volunteers made 490 collective site visits and monitored 98 sites for total phosphorus.
- Volunteers monitoring for chlorides and specific conductance made over 800 site visits at 72 stream sites in urban areas.
- [Level 1 WAV volunteers](#) monitored 300 sites and collectively made over 1300 site visits.
- A mobile-friendly website about volunteer stream monitoring was developed to share volunteers' results and activities with passers-by.

Database Tools

- New on-line tools were developed to display interactive watershed and basin data in maps, charts and graphs. See: <http://dnr.wi.gov/topic/watersheds/>.
- A new "mapping tool", the embeddable locator tool (eLT), was implemented along with a major spatial data model overhaul of SWIMS.

Water Evaluation and Assessment Success Stories

Staff evaluate monitoring data to [assess](#) where a specific river or stream falls on a continuum of water condition, which is the core assessment to determine if a waterbody is attaining its applicable [designated uses](#). DNR uses four levels of condition to represent waters' placement in the overall water quality continuum: excellent, good, fair, or poor.

Every two years, the DNR publishes a list of waters considered impaired under Clean Water Act Section 303(d).

[Impaired waters](#) do not meet [water quality standards](#) and may not support fishing, swimming, recreating or public health and welfare. Improvements to impaired waters may be addressed through the development of a [Total Maximum Daily Load \(TMDL\)](#).

A TMDL is the amount of a pollutant a waterbody can receive and still meet water quality standards. It is a pollution "budget" for a water body or watershed that establishes the pollutant reduction needed from each pollutant source to meet water quality goals. Highlights of accomplishments in water evaluation and assessment include:

Water Quality Reports/Data

- Wisconsin's 2014 online Water Quality Report to Congress ("2014 Integrated Report") provides descriptions of water quality programs, emerging issues and new initiatives, and summary reports of water quality conditions dynamically linked to DNR's databases. The Executive Summary highlights the assessment results of the 2014 Integrated Report. Read the report at: <http://dnr.wi.gov/topic/SurfaceWater/IR2014.html>
- Wisconsin's 2014 impaired waters list and supporting documentation were submitted to U.S. EPA via email on April 1, 2014.

- A [Healthy Watersheds](#) final report was completed for the project that identified healthy watersheds and characterized relative watershed health across the state to guide future protection initiatives. The report includes a series of maps and ranked scores for each catchment in the state. Staff are working on integrating the watershed scores into certain grant criteria to award points for projects that protect healthy, but vulnerable, watersheds.



Water Evaluation Section members left to right: Back—Ruth Person, Aaron Larson, Susan Sandford, Brian Weigel, Aaron Ruesch; Front—Theresa Nelson, Kristi Minahan, Sarah Yang, Anne Hirekatur, Ashley Beranek, David Evans. Staff completed the development of a new modeling tool named [EVAAL](#). The EVAAL model identifies agricultural fields that could be at high risk for erosion or gully formation and allows nonpoint source implementation planning to target these critical areas. Read more about the tool at:

<http://dnr.wi.gov/About/documents/Water/EVAAL2014.pdf>

Water Evaluation/Assessment

- A total of 5,607 waters had sufficient data to assess during the 2014 cycle. 4,836 waters (86% of those assessed) met all assessed designated uses.
- 959 waters had one or more impaired uses and a TMDL or an alternative restoration plan is needed.
- 47 waters had one or more impaired uses with an EPA-approved TMDL.
- 123 waterbodies were identified as

having fully attained water quality standards and were removed from the impaired waters identified by the DNR in 2002.

Water Quality Standards

- The public completed a ranking survey in August 2014 to help determine which water quality standard topics are priorities for the 2015-2017 [Triennial Standards Review](#).
- A rules workgroup met, assessed, and determined that the current chemical water quality criteria are protective of new use subcategories. There will be a few minor wording adjustments to clarify which of the existing water quality criteria apply to the changes in the [Fish & Aquatic Life Designated Use categories](#).

Total Maximum Daily Load (TMDL) Projects

- DNR continued its work on the [Wisconsin River Basin](#), [Upper Fox and Wolf Basin](#), and completion of the [Milwaukee Basin](#) TMDLs.
- The Wisconsin River TMDL modeling team created a [technical report](#) explaining the methodology deployed to define land cover and land management data in the Wisconsin River TMDL study area.
- The Upper Fox and Wolf Basin TMDL continued with data collection for [point source](#) discharges and characterization of [nonpoint](#) sources.
- DNR continued work on a TMDL for [Lake Pepin](#) to address total suspended solids (TSS).
- DNR staff worked with multiple WPDES permittees (see page 5) in TMDL areas that are considering [water quality trading](#) and [adaptive management](#) projects. See project map at: <http://dnr.wi.gov/topic/SurfaceWater/AmWqtMap.html>.
- Read the success story on new TMDL/watershed permitting guidance at: <http://dnr.wi.gov/About/documents/Water/WPDES2014.pdf>

Lakes and Rivers Success Stories

The DNR partners with the University of Wisconsin Extension and citizens around the state to help protect and maintain our lakes and rivers. Wisconsin's water resources provide some of the best recreational opportunities in the nation.

More than 600 [lake organizations](#) and thousands of volunteers play a leadership role in the stewardship of Wisconsin's water resources. DNR district staff provide technical support and training to various lake partners.

The fight against [aquatic invasive species](#) (AIS) in Wisconsin is truly a team effort. State agencies, universities, county governments, Native American tribes, lake associations, non-profit organizations, and volunteers all play a vital role in preventing the spread of aquatic invaders. Read about the success of [Project Red](#) to identify invasive species while boating.

Key accomplishments in the lakes and rivers program for 2014 were:

Lakes Assessment and Data

- New assessment methodologies ([WisCALM](#)) were integrated into program guidance to help determine appropriate water quality goals, targets for lake restoration efforts, and future lake monitoring needs.
- Over 109 more lakes were assessed in 2014 by identifying various reasons certain lakes did not have a natural community assigned due to missing data.
- A [lakes and aquatic invasive species data viewer](#) was released on the DNR web. These tools make it much more efficient for lakes and rivers staff and customers to spatially locate and map data and projects.
- Over 700 constructive responses were received in a SWIMS data user survey. The feedback will be used to identify redesign goals and new tools for the next 10+ years.
- Quality assurance checks were conducted on approximately 10% of water chemistry sites. Approximate-

ly 780 lake stations reported data collected by over 716 [citizen lake monitoring volunteers](#).

Surface Water Grants

- The Lake, River and AIS grant program materials were consolidated into a single electronic grant application form and updated grant application guidance document. Grant deadlines were also changed for better coordination of project activities. Together these grants are now being referred to as the [Surface Water Grants Program](#).

\$3,773,500 million in grants were awarded in 2014 to local communities for aquatic invasive species (AIS) prevention and control; over \$2,343,900 million was awarded for Lake and River Planning and Implementation Projects.

- Guidance for conducting lake assessments was drafted and included in the new [Surface Water Grant Application Guide](#).

Technical Training/Outreach

- Statewide training and equipment distribution for Secchi and chemistry lake monitoring volunteers took place during the spring 2014. Over 22 new chemistry sampling lakes were added to the network in 2014.
- The [Clean Boats/Clean Waters](#) volunteers and DNR staff contacted over 250,000 people and inspected 120,161 boats for aquatic invasive species prevention actions.
- Over 400 lake professionals and citizens attended the April 24-26 [Lakes Convention](#) (exit DNR) in Stevens Point. Workshops on



A new [Healthy Lakes grant](#) program featuring funding for five water quality and habitat improvement best management practices for developed shores was created. Members of the [Healthy Lakes](#) (exit DNR) workgroup included left to right: Pat Goggim, UW-Extension Lakes Specialist; Jane Malischke, DNR Environmental Grants Specialist; Pamela Toshner, DNR Water Resources Management Specialist; Carroll Schaal, DNR Lakes & Rivers Section Chief; Tom Onofrey, Marquette County Zoning Administrator; Dave Ferris, Burnett County Conservationist. DNR Photo. Read the success story at:

<http://dnr.wi.gov/About/documents/Water/LakeGrants2014.p>

shoreland assessment, basic limnology and aquatic plant management were offered.

- A 12-page color insert on aquatic plant management was featured in the DNR's Natural Resources Magazine. Read the story at: <http://dnr.wi.gov/wnrmag/2014/08/aquatic2014.pdf>
- Over 75 DNR & County staff attended three-day aquatic plant identification trainings at Kemp Natural Resources Station in June 2014.
- 32 [Lake Leader Institute](#) (exit DNR) graduates attended a two-day advanced training session at Green Lake on lake shoreland assessment and protection and opportunities to improve conditions.
- DNR program staff provided on-site and follow-up assistance to 9 newly-forming lake districts, 11 recently-formed lake districts, 3 newly-forming lake associations and 7 existing lake associations.
- 4 issues of "The Lake Tides" were distributed to over 26,000 people. Archived copies can be viewed at: <http://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/resources/newsletter/default.aspx>.

Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Program Success Stories

The cornerstone of water quality protection in the federal Clean Water Act is controlling pollutants in wastewater discharges. [Wisconsin Pollutant Discharge Elimination System \(WPDES\) Permits](#) help control the types and amounts of pollutants discharged into the state's waters and applied to the land. Proper treatment and control of wastewater, septage and biosolids are critical in protecting public health and maintaining the quality of our surface waters and groundwater.

The program issues and oversees 643 municipal and 339 industrial individual wastewater permits. DNR central office and district staff work hard to ensure that WPDES permits are issued or reissued in a timely manner to protect the environment and provide good customer service. Many of these permits require complex analysis by DNR scientists and permit drafters to determine the pollutant level threshold that may be allowed so that the discharge does not result in adverse impacts to water quality.

Sometime a permit is not issued on time, or "backlogged," because additional information is needed from the permittee to finalize the permit or a permittee is not in compliance with its current permit and must take corrective actions before a permit can be reissued. At the beginning of 2013, the permit backlog for "major" WPDES permits was 37.9%. Major municipal permits discharge 1 million gallons or more of treated effluent per day. At the end of 2014, the backlog for majors was reduced to 26.4%. Staff have made significant progress in reducing the backlog in 2014. Key successes include:

Permits

- 170 WPDES permits were issued during 2014. The permit backlog (including all municipal and industrial permits) was 24.7% in December 2014.
- The Milwaukee Metropolitan Sewerage District WPDES permit was modified. The modification required an increase in wet weather manage-

ment retention capacity from 5 million gallons to 12 million gallons during the term of the permit. Additional projects and initiatives will help reduce the risk and volumes of combined sewer overflows.

- 13 vessels were conferred ballast water permits.
- All 26 approved pretreatment programs, with 540 significant industrial users, have current permits.



Guidance was developed for implementing TMDLs (see page 3) in the WPDES program and achieving phosphorus and other pollutant reductions in a watershed. Watershed Assessment, Restoration and Protection team members took the lead in developing key WPDES permit program guidance. Team members left to right: Back-Corinne Billings, Andy Morton, Paul LaLiberte, Ann Hirekatur, Kari Fleming, Kevin Kirsch; Front—Kristi Minahan, Amy Callis, Lynn Morrison, Aaron Larson, Christina Isenring, Susan Sandford. Read the success story at: <http://dnr.wi.gov/About/documents/Water/WPDES2014.pdf>.

Inspections and Reviews

- 32 ballast water inspections were completed.
- 261 permitted-facility compliance evaluation inspections, and 93 laboratory audits to ensure data quality were completed by program staff.
- A compliance inspection was conducted in August 2014 of the City of Superior wastewater treatment plant that included follow-up on a plant upset and associated permit violations.

- 5 pretreatment programs were audited in Green Bay, Beloit, Waukesha, La Crosse and Milwaukee. Inspections at 8 industrial user facilities outside of delegated municipal pretreatment programs were also completed.
- 2.1 full-time equivalent septage staff license nearly 500 businesses every two years, certify and register more than 1200 individuals, review 100's of site approvals, provide more than 15 continuing education courses each year, and investigate numerous complaints.
- Staff reviewed over 600 submittals of plans and specifications for wastewater treatment plant upgrades, sewer extensions, and other wastewater treatment systems.

Enforcement

- 67 Notices of Non-compliance were issued.
- 29 Notices of Violation were issued.
- 24 enforcement conferences were held.
- 1 referral to the Department of Justice was made and 4 cases were concluded with [penalties assessed](#) and collected.

Rule Revisions

- The Bureau of Science Services and Water Quality worked together to revise Chapter NR 114, Wis. Adm. Code, relating to wastewater operator training and certification.
- Revisions to Chapter 211, Wis. Adm. Code, effective February 1, 2014, incorporated federal streamlining changes to reduce pretreatment requirements for regulated industries and delegated municipal treatment works.

Read the success story on the operator certification and pretreatment rule revisions that improve and streamline programs at: <http://dnr.wi.gov/About/documents/Water/Rules2014.pdf>.

The Bureau of Water Quality Program at a Glance

Bureau Description

The Bureau of Water Quality provides science-based monitoring, analysis, and regulation of discharges to waters of the state to protect and maintain the water quality in Wisconsin. It uses integrated management actions including:

- Strategic water quality monitoring
- Citizen monitoring training and support
- Watershed planning
- Water data management, evaluation, and analysis
- Water quality standards development
- Pollutant loading analysis and TMDL development
- Lakes partnerships coordination and education
- Lake planning and restoration grants
- Aquatic plant management
- Aquatic invasive species monitoring and grants
- Municipal / industrial wastewater sewerage system technical reviews and approvals
- Permit effluent limits calculations
- WPDES permit issuance and compliance monitoring
- Approvals for land application of septage, sludge and wastewater
- Wastewater treatment plant operator outreach and education



Water Quality Board supervisors/ staff members left to right: Back row – Vic Pappas, Rob McLennan; Third row–Brian Weigel, Ryan Raab, Greg Searle, Mike Vollrath, Paul LaLiberte, Tim Aartila, Adrian Stocks, Tim Asplund; Second row–Mike Luba, Tom Muga, John Kleist, Lonn Franson, Carroll Schaal; Front row–Julia Riley, Cherie Hagen, Susan Sylvester, Tim Ryan, Kelley O'Connor.

Mission Statement

Our mission is to provide clean, safe water and the highest quality protection and treatment of water for the citizens of Wisconsin, by adhering to state and federal requirements for water quality and environmental protection.

New Employee Training Promoted Collaboration and Consistency

The Water Quality program employs approximately 160 full-time permanent staff and 62 limited-term employees (includes seasonal staff) located across the state. Many experienced DNR staff are now retiring. As an example, approximately 32% of the Wastewater Program's full-time staff retired or left their positions during 2011-2014. The employees that retired took a vast amount of experience and knowledge with them.

Programs have worked hard to fill vacant positions. For some new employees, this is their first job in their career path. A cross-program training opportunity was developed for the new permanent full-time employees in the water programs to help build teamwork and collaboration.

Employee collaboration helps promote consistency in decision-making. Feedback from DNR customers reveals an expectation that DNR programs should be consistent statewide in how they review projects or issue permits.

The cross-program training provided employees in different locations across the state a chance to meet their colleagues,

learn what they do, and understand the types of information they use in decision-making. Program supervisors also provided overviews of how various programs overlap and when coordination between programs is needed. Read more about the training program at: <http://dnr.wi.gov/About/documents/Water/Training2014.pdf>.



Shawn Giblin demonstrates water quality sampling techniques at the Water Resources Program training as part of the 2014 Cross-Program Training.