



Upper Mississippi River Basin Association
2011 Water Quality Program Progress Report
Protecting Water Quality through Interstate Cooperation

SUMMARY

The Upper Mississippi River Basin Association (UMRBA) and its five member states are pleased to report that 2011 was a year of significant progress in their collaborative efforts to enhance water quality protection on the Upper Mississippi River (UMR). Over the course of the year, several projects and products were completed, including important reports on nutrients and biological assessment. Much of the progress was made possible with state funding under Section 604(b) of the Clean Water Act (CWA), using appropriations from the American Reinvestment and Recovery Act of 2009. An interagency personnel agreement with the U.S. Environmental Protection Agency (U.S. EPA) also allowed the states to advance their work on designated uses for the UMR.

In all, this year's work establishes an excellent foundation and provides some specific tools for the states' efforts to improve CWA implementation on the UMR. For more information and to obtain copies of the reports described here, see UMRBA's water quality web page at www.umnba.org/wq.htm.



Protecting water quality is a key to maintaining the Upper Mississippi River's multiple uses, allowing it to function as a diverse ecosystem, water supply, recreational area, and commercial artery.

(Photo courtesy of the Wisconsin Department of Natural Resources)

Background: Water Quality and the Upper Mississippi River

Protecting water quality is critical in sustaining the Upper Mississippi River as a diverse ecosystem, water supply, recreational area, and commercial artery. UMR water quality has greatly improved since the passage of the Clean Water Act in 1972, but challenges remain in addressing unresolved and emerging issues, and in preserving water quality gains. The UMR also presents numerous issues for CWA implementation, including its multiple state and federal jurisdictions, physical and biological complexity, and multiple uses.

The Role of UMRBA and Its Water Quality Work Groups

The Upper Mississippi River Basin Association was established in 1981 by the Governors of the five UMR states (Illinois, Iowa, Minnesota, Missouri, and Wisconsin) to facilitate dialog and cooperative action among the states and to work with federal agencies on river programs and policies. UMRBA's Water Quality Task Force (WQTF) includes state and federal CWA program staff and addresses technical & regulatory issues, while the Water Quality Executive Committee (WQEC) is composed of CWA program administrators and provides policy-level coordination. These two groups work in tandem to enhance the consistency and effectiveness of water quality programs on the UMR, in keeping with the expressed vision of the UMR Governors (see below).

The Governors' Vision for Clean Water Act Implementation on the UMR

"We are committed not only to the protection of the River's water quality, but we are also committed to doing so in a coordinated manner.....We are therefore supporting the coordination of water quality monitoring, assessment, and standards for the Upper Mississippi River by the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin and the Upper Mississippi River Basin Association. This approach will allow the Clean Water Act to be implemented on the Upper Mississippi River in a more coordinated and consistent fashion than has ever been possible previously."

From the Statement of the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin on Water Quality Protection for the Mississippi River (August 2, 2007)

PROGRESS: 2011 Activities & Accomplishments

UMR CWA Biological Assessment Implementation Guidance Document Project

Background: Biological measures are often seen as the most direct and meaningful tools for assessing a water body's health. On large rivers, biological assessment has proven challenging and biology has not been part of the states' UMR assessments to date. However, the states are interested in leveraging recent advancements in biological methods and data sets to begin integrating biology into their CWA assessments of the UMR.

Approach: To lay a foundation for biological assessment on the UMR, the WQTF sought to:

- Identify scientific and regulatory issues likely to arise upon implementation.
- Review the suitability of available biological protocols for assessing aquatic life use attainment in the main channel.
- Provide guidance to the states on implementing biological assessment.

UMRBA engaged the Midwest Biodiversity Institute (MBI) as a contractor to assist in this project. A diverse project participant group, including the WQTF, other water quality program staff, and representatives from other river programs and entities, provided important input during project work sessions and reviewed drafts of a guidance document and supporting reports. The guidance document was also presented for discussion via two web conference stakeholder sessions in August and September 2011.

Status and Outcomes: MBI completed the *UMR CWA Biological Assessment Implementation Guidance* document, along with two supporting reports and a summary flyer, in September 2011. Major findings and recommendations from the project include:

- CWA biological assessment on the UMR can be accomplished using existing tools, with some minor modifications. Specifically, a monitoring design similar to that of U.S. EPA's Environmental Monitoring and Assessment Program-Great Rivers Ecosystems (EMAP-GRE) is recommended. Further, aquatic life use attainment can be effectively assessed using existing multimetric indices for fish, macroinvertebrates, and vegetation, though some adjustments are needed and index recommendations vary by floodplain reach.
- The states should develop a UMR-wide CWA monitoring strategy incorporating biology and utilizing the recommended monitoring design and indices. The states should consider programmatic options for implementing such a strategy, identifying the costs and technical pros and cons of each option.
- The states should also develop and utilize a data management system to support their ongoing water quality monitoring and assessment on the UMR.



Indices for macroinvertebrates, fish, and vegetation can be used to help determine CWA aquatic life use attainment on the UMR.

(Photos courtesy of US Geological Survey, US Fish and Wildlife Service, and the National Park Service, respectively)

CWA Designated Uses

Background: Designated uses (e.g., aquatic life, recreation, drinking water) are a foundational component of CWA water quality standards. Current designated uses for the UMR are not fully consistent across the states and do not capture variations within the UMR's diverse ecosystem and physical structure. The WQEC and WQTF therefore initiated efforts to examine designated uses and identify refinements

that may improve both water quality outcomes and interstate consistency.

Approach: Efforts in 2011 focused primarily on aquatic life uses. In particular, the WQTF sought to better characterize the UMR's diverse aquatic habitats and account for the River's spatial (e.g., backwaters vs. main channel) and temporal variations (e.g., spring high flow vs. summer low flow) in

aquatic life use definitions, while improving interstate consistency. To do so, the WQTF examined chemical, physical, and biological data and developed a UMR “classification structure” identifying aquatic areas that may merit distinct consideration and treatment under the CWA.

A report presenting the data compiled and the proposed classification structure was circulated for review by both CWA program staff and other UMR managers and scientists. The report is now being finalized. This work was supported via a two-year intergovernmental personnel agreement with U.S. EPA and aligns with the biological assessment guidance document project as described earlier.

Separately, the WQEC initiated an exploration of questions related to human health uses on the UMR. In part, these discussions were intended to address

issues raised by a draft total maximum daily load (TMDL) proposed by U.S. EPA Region 7 in 2010 for arsenic impairment on portions of the UMR. In response to the draft TMDL, UMRBA formed an *ad hoc* group of state and federal CWA staff and that group discussed a range of issues raised. The group drafted an issue paper for the WQEC’s consideration. The issue paper is primarily focused on arsenic issues, but is designed to also illuminate larger issues regarding UMR human health use designations.

Status and Outcomes: The aquatic life designated use report should be finalized and available by the end of 2011. The arsenic-focused human health uses issue paper is being reviewed by the WQEC and should also be finalized by the end of 2011.

Nutrients: UMR Nutrients Report and Cross-Programmatic Workshops

Background: Nutrients are often identified as among the most significant UMR water quality challenges. The WQEC and WQTF identified a need to bring together UMR-specific data and research in a CWA context and use this understanding to inform decisions about nutrient monitoring, standards, and reduction efforts. The groups also saw a need to encourage cross-programmatic dialog regarding nutrient-related water quality issues on the UMR.



Off-channel algal blooms in are one of the nutrient impacts observed on the UMR.

(Photo courtesy of the Wisconsin Department of Natural Resources)

Approach: Responding to the needs identified, UMRBA completed two efforts in 2011:

- The report *Upper Mississippi River Nutrient Monitoring, Occurrence, and Local Impacts: A Clean Water Act Perspective* compiles and synthesizes information regarding the monitoring and occurrence of key nutrient parameters on the UMR and in its basin. It also discusses nutrient trends over time and impacts to CWA designated

uses. In addition to guidance received from the WQTF, this effort was aided greatly by input from an interagency, interdisciplinary project participant group.

- In August and September 2011, UMRBA held two cross-programmatic workshops to examine nutrient-related water quality issues on the UMR. Information regarding both CWA and agricultural conservation programs was presented and discussed. A total of 63 individuals, representing a variety of agencies and organizations with roles related to UMR nutrients, participated in the workshops.

Status and Outcomes: The report, *Upper Mississippi River Nutrient Monitoring, Occurrence, and Local Impacts: A Clean Water Act Perspective*, was completed in September 2011. Report recommendations include the following:

- Nutrient monitoring protocols should be more consistent and data sharing improved among UMR programs. Moreover, a CWA-focused UMR monitoring strategy, including nutrient parameters, is needed.
- Shared methods of tracking UMR nutrient impacts, including fish kills and algal blooms should be further developed and expanded.
- Successful nutrient reduction efforts must address both point and nonpoint source contributions, and ongoing collaboration is needed to expand and build upon successful agricultural conservation practices.
- States should consider several factors in any efforts to develop numeric water quality criteria for nutrients, including: the need for both

nitrogen and phosphorus values, the potential that target values may vary for different areas of the river, the role of response variables in assessment, criteria's role as part of a broader approach to nutrient reduction, and the need for some measure of consistency in the states' UMR criteria.

- State nitrogen and phosphorus discharge monitoring requirements should be consistent.
- Further dialog should be pursued with UMR water suppliers regarding nutrient issues.

The report summarizing discussions from the two nutrient-focused workshops highlights several common themes, including the following:

- The general outlines of nutrient problems and solutions for the UMR and its basin are known, but the specifics are somewhat less certain.

Other Water Quality Efforts

In addition to work on the special projects described above, WQTF members continued their longstanding baseline collaboration in 2011, including consultation on assessments and impairment listings, and provided updates on criteria development, TMDL implementation, and nutrient and nonpoint source

- Numerous factors make nutrient reduction efforts uniquely challenging for the UMR and its basin.
- Engaging the public at large and specific stakeholder groups is essential for success.
- Monitoring and data are critical components of successful nutrient reduction programs.
- The Mississippi River Healthy Watersheds Initiative (MRBI) has been successful and should be built upon.
- A "message" or "voice" for the UMR generally, and for nutrients specifically, needs to be developed in order to inform and influence national policy and budget decisions.
- Partnerships are critical for success.
- Continuing the conversation regarding UMR nutrient issues is important.

pollution issues. Both the WQEC and WQTF also continued to engage other UMR stakeholders in 2011. This has included interfacing with agricultural groups, water quality NGOs, ecosystem restoration programs, agriculture departments, and others.

NEXT STEPS: Priorities for UMRBA's Water Quality Program in 2012

Advance Efforts to Develop a UMR CWA Monitoring Strategy

A common theme emerging from recent efforts is the need for a comprehensive, CWA-focused monitoring strategy for the UMR. UMRBA will be working with the WQTF on a project funded by Illinois EPA to create such a strategy. This effort will continue through 2012 and into 2013 and will be informed by the outcomes of the recent biological assessment, aquatic life use, and nutrient projects.

Continue to Explore Nutrient and Nonpoint Source Pollution Issues

Considering the outcomes of the recent nutrient report and cross programmatic workshops, the WQEC and WQTF will consider potential next steps in addressing UMR nutrient and nonpoint source pollution issues from a CWA perspective.

Build Connections with Stakeholder Groups

The WQEC and WQTF will continue their efforts to maintain and enhance communications and connections with UMR water quality stakeholder groups.

Seek Long-Term, Stable Federal Support for the States' UMR Water Quality Work

To date, UMRBA water quality work has been supported by annual state contributions and short-term state and federal grants. However, the need remains for an ongoing, stable federal funding source comparable to the federal commitment to other large, nationally significant aquatic ecosystems.

For More Information

For more information about UMRBA's Water Quality Programs, please visit our water quality web page at <http://www.umrba.org/wq.htm> or contact Dave Hokanson, UMRBA Water Quality Program Director (651-224-2880 or dhokanson@umrba.org).

