

**Summary of the Spring 2015 meeting of the
UMRCC Water Quality Technical Section**

**March 26, 2015
St. Charles, Missouri**

Chair: John Olson, Iowa Department of Natural Resources
Phone: (515) 725-8385; john.olson@dnr.iowa.gov

Summary finalized on May 5, 2015

The Spring 2015 meeting of the UMRCC Water Quality Technical Section (WQTS) was held from 10:30 AM to 3:40 PM on March 26th at the St. Charles Convention Center in St. Charles, Missouri. The following persons attended the Technical Section meeting.

1.	Michelle Balmer	Iowa DNR, Des Moines
2.	Jen Kurth	Iowa DNR, Des Moines
3.	John Olson	Iowa DNR, Des Moines
4.	Doyn Kellerhals	IRBS, Illinois Natural History Survey, Havana
5.	Bill Huber	Minnesota DNR, Lake City
6.	Will Bouchard	Minnesota Pollution Control Agency, St. Paul
7.	Molly Sobotka	Missouri Dept. of Conservation, LTRMP, Jackson
8.	Michael Brennan	National Great Rivers Research & Education Center, East Alton
9.	Dave Hokanson	UMRBA, St. Paul
10.	Elizabeth Bruns	U.S. ACE, Rock Island

STATE/AGENCY UPDATES

Iowa DNR, John Olson:

Iowa's 2014 Section 303(d) list: Iowa's draft 2014 Section 303(d) list remains in preparation. The aquatic life impairments due to cadmium and the drinking water impairments for arsenic for the Iowa portion of the UMR will be de-listed (removed) from Iowa's Section 303(d) list. Impairments remain, however, for the bacterial slime problem downriver from Clinton and for aluminum. Upper Mississippi River Basin Association WQ Task Force: Iowa DNR continues to participate in the WQ Task Force. Recent activities have included work WQ assessment methodology to support the UMRBA's CWA WQ monitoring strategy for the UMR. Nutrient Criteria: Iowa DNR continues to develop recommendations for numeric nutrient criteria for Wadeable streams and rivers. Information was presented on the lawsuit brought by the Des Moines Water Works against three Iowa drainage districts due to high levels of nitrate.

Minnesota Pollution Control Agency, Will Bouchard:

U.S. EPA has approved and Minnesota has adopted river eutrophication standards that include phosphorus as a stressor variable and chlorophyll-a, BOD, and diel DO fluctuation as response variables. Nitrogen is not included in the eutrophication standards, but Minnesota continues work on aquatic life criteria based on nitrate toxicity. MPCA plans to begin CWA 303(d) listing based on these river eutrophication standards for the 2016 Integrated Reporting cycle. For the UMR, listings will be based on a total phosphorus concentration of greater than 100 ug/l when levels chlorophyll-a, BOD, or diel DO fluctuation also exceed their respective eutrophication criteria. Minnesota's wastewater treatment community has filed a lawsuit regarding the new eutrophication standards. Minnesota's nutrient reduction strategy has a target of 45% reductions in nitrogen and phosphorus over a long-term schedule; this strategy has been well-received in Minnesota. In cooperation with the Wisconsin DNR, MPCA continues planning efforts for the 2016 pilot project to implement UMRBA's CWA monitoring strategy for the UMR. MPCA is also revising their ammonia and chloride standards and is working on adoption of tiered aquatic life uses (TALU) with a goal of March 2016.

Minnesota Department of Natural Resources, Bill Huber:

There is concern over the lack of progress in correcting water quality problems via the TMDL process.

Missouri Department of Conservation, Molly Sobotka:

Missouri DNR is considering proposal for nitrate toxicity criteria to protect freshwater mussels.

U.S. Army Corps of Engineers, Rock Island, Elizabeth Bruns:

UMRR HREP Monitoring

- Performance evaluation monitoring was performed during the winter at the following HREPs: McCartney Lake (Pool 11), Mud Lake (Pool 11), Sunfish Lake (Pool 11), and Andalusia Refuge (Pool 16).
- Baseline monitoring was performed at Pool 12 Overwintering (Stone Lake and Tippy Lake), Beaver Island (Pool 14), Steamboat Island (Pool 14), Boston Bay (Pool 18), and Keithsburg Division (Pool 18) projects.

UMRR HREP Feasibility & Construction

- Section members currently serve on product delivery teams for the feasibility studies of Beaver Island (Pool 14) and Keithsburg Division (Pool 18) HREPs.

- Construction is ongoing at the Pool 12 Overwintering (Sunfish Lake) HREP and the Huron Island (Pool 18) HREP.

Transparency Tube Measurements at District Locks

- Transparency tube measurements were taken at District LDs during the growing season. The data are available to the public and can be viewed on the rivergages.com website. The potential for having LD employees document mayfly emergence is being worked out with District Operations management.

Personnel Changes

- Dave Bierl retired from the Corps on January 2, 2015. Supervisory duties for the Water Quality & Sedimentation Section at the Rock Island District are being performed through three temporary details until the position is filled permanently at the beginning of next year. Nicole Manasco is the current supervisor. Leo Keller will take over in May and Elizabeth Bruns in September.

Shawn Giblin, Wisconsin DNR (via e-mail):

Our department continues to work with MPCA to implement a pilot for the UMRBA's CWA Monitoring Strategy beginning in 2016. Details regarding budgets, logistics, and implementation are currently in development. Adult zebra mussel monitoring was added to the veliger monitoring for 2014; data attached. Water quality monitoring (including continuous temp/DO) was conducted this winter in Pettibone Lagoon (Pool 8), Capoli Slough (recent HREP in Pool 9), Lake Onalaska (Pool 7- in response to a fish kill coincident with oxygen supersaturation), and the Trempealeau Lakes (Pool 7). The Pettibone Lagoon sampling was conducted to achieve optimal conditions for overwintering fishes in this backwater complex. A pump system is delivering main channel water to the backwater; this presents a unique opportunity to learn more about optimizing flow rates for overwintering fishes. In regard to the Lake Onalaska fish kill, if anyone else observed backwater fish kills prior to Christmas, I would be interested in comparing notes. WDNR responded in conjunction with IA DNR to the ethanol spill in Pool 11 in early-February. A number of relatively simple improvements need to be made in advance of the next spill to improve response. WDNR conducted pesticide sampling at LD9 in 2014 for organophosphate/organonitrogen, neonicotinoid, and organochlorine compounds in conjunction with WI Department of Agriculture, Trade and Consumer Protection (DATCP). Pesticide sampling will be conducted at LD3 and LD9 in 2015 to look at differences upstream and downstream of Lake Pepin. Thanks to Prairie Island Indian Community Staff for assisting with the LD3 pesticide sampling effort. Light penetration monitoring occurred at LD8 and LD9 in 2014 and will continue in 2015. This dataset is becoming a rather valuable dataset to demonstrate the extent of shifts that can occur on the Mississippi and highlights the need for total suspended solids reductions; data attached. New hires: Deanne Drake, vegetation specialist at LTRMP field station; John Kalas, water quality specialist LTRMP field station.

Illinois Natural History Survey, Doyn Kellerhals:

INHS is in the planning stages regarding the Emiquon floodplain restoration project. LTRMP staff continue with WQ sampling.

Iowa DNR, Jen Kurth:

There is reduced funding for TMDL development, and monitoring budgets have been cut.

Upper Mississippi River Basin Association, Dave Hokanson:

UMRBA administrators are attempting generate momentum for the Navigation & Ecosystem Sustainability Program (NESP). UMRBA continues to be involved with the economic profile project for the UMR; a draft version of the profile may be available during 2015.

Coordinator's Report: Scott Yess, USFWS, Onalaska: (see annual UMRCC *Proceedings* document for the full report).

PRESENTATIONS:

Developing a biotic index for freshwater mussels in Iowa. Jen Kurth, Iowa DNR, Des Moines.

Iowa DNR's current water quality assessment approach for freshwater mussels is based on a comparison of species richness values between surveys conducted in the mid-1980s, the late 1990s, and from 2011 to present. A decline in species richness of greater than 50% between the mid-1980s survey and the late 1990s survey has been used to identify Section 303(d) impairments. A biotic index comprised of seven metrics is proposed to improve the ability of this assessment approach to determine the status of Iowa's freshwater mussel communities. These metrics are species richness, relative abundance of T&E species, CPUE, % of top 3 species, fish host tolerance, Shannon-Weiner diversity index, and a reproductive factor.

Update on UMR WQ monitoring strategy. Dave Hokanson, Upper Mississippi River Basin Association, St. Paul.

The UMRBA's Water Quality Task Force continues work on a Clean Water Act monitoring strategy for the Upper Mississippi River. Documents describing monitoring options and the recommended monitoring plan have been completed, and a pilot monitoring project to implement this plan will be conducted by Minnesota and Wisconsin and is scheduled for 2016. The monitoring plan includes probability-based sampling as well as fixed and targeted site sampling. The monitoring strategy also includes a

nutrient/sediment tributary loading network. The WQTF is currently preparing an assessment methodology to determine the water quality condition classes (good, fair, poor) for each of the four uses designated for the UMR: recreation, aquatic life, drinking water, and fish consumption. Other activities related to the monitoring strategy include a data mining/virtual pilot project, exploring database/data management options, continued outreach, and exploring funding & support opportunities.

**Update on the Great Lakes to Gulf Virtual Observatory. Michael Brennan,
National Great Rivers Research and Education Center, East Alton.**

The Great Lakes to Gulf Virtual Observatory is a geospatial web-based application that provides access to environmental monitoring data throughout the Mississippi River watershed. The focus is on long-term WQ datasets. Data are organized by data source and by hydrologic unit codes (HUCs 2 through 12). Summaries of data are available from monitoring locations with graphical and raw data summaries available. The site allows comparison of up to three WQ parameters from two sites. Search features include shape and polygon tools to allow the user to draw boundaries around sites of interest and to review the data from these sites. These data can then be downloaded.

**The Dubuque ethanol spill, February 2015: lessons learned in terms of water
quality concerns. John Olson, Iowa DNR, Des Moines**

On February 4, 2015, a train derailment north of Dubuque, Iowa, resulted in a spill of approximately 55,000 gallons of denatured ethanol into the Upper Mississippi River. The river was ice-covered at the time of the spill. In terms of water quality concerns, the initial response was to (1) sample the UMR for dissolved oxygen for ~10 miles downriver and (2) collect samples of fish for tissue analysis to determine the safety of fish for human consumption. Review of the literature on ethanol spills showed relatively low toxicity to aquatic life with the major concern being delayed depletion of dissolved oxygen due to bacterial metabolism of the ethanol. Because ethanol mixes with water, recovery of ethanol from spills into rivers is not possible. Ethanol spills and major fish kills on the Rock River in Illinois in 2009 and on the Kentucky River near Lawrenceburg, KY, in 2000 were caused by this delayed depletion of dissolved oxygen. Literature review and personal inquiries showed that ethanol is unlikely to accumulate in fish tissue due to its water solubility and rapid metabolism. Further, analytical methods for ethanol in fish tissue do not exist. Although some mortality of fish and freshwater mussels occurred at the Dubuque spill site, no extensive fish kills or other water quality impacts were observed. Iowa DNR staff that investigated the kill, however, said that any impacts that did occur would have been impossible to observe due to ice cover on the river. The cold water temperature and large volume of water in the river also likely mitigated impacts from the spilled ethanol. Due to the increasingly large volume of ethanol being transported by rail, future spills are likely.

Discussion on improving ethanol spill response: diagnosing and monitoring water quality issues (this summary includes items discussed at the WQTS meeting as well as items from e-mails following the February 4th spill near Dubuque):

A discussion on how to better respond to ethanol spills produced the following suggestions:

- Prepare a fact sheet on ethanol spills
- Develop a list of contacts for various aspects of spills; e.g., contact information for water control staff at the ACOE for information on flow rates and time-of-travel in the UMR.

Some feel that such contact lists are of minimal use because staff don't have them on-site and because, sometimes, cell phone service is not available at the spill site (which was the case with the Dubuque spill).

- State staff should conduct water quality monitoring to verify results of monitoring conducted by the railroad's environmental consultants.
- Develop phone trees (probably inter- and intra-state) to contact sampling staff as soon as a spill is known to have occurred.

Some feel that state fisheries and environmental agencies are notified relatively late in the spill response compared to the railroad company and their environmental consultant. For example, Iowa DNR was notified of the Dubuque spill by the public before receiving official notification.

- Improve communication with the public. That is, there is much concern (anger) and confusion in the public regarding these spills.
- Need a model to predict movement of ethanol downriver. That is, ethanol does not move uniformly downriver, so some method is needed to determine where acute toxicity impacts are likely to occur.

The meeting adjourned at 3:40 PM.