

**Minutes of the Spring 2007 meeting of the
UMRCC Water Quality Technical Section**

March 20, 2007

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The Spring 2007 meeting of the UMRCC Water Quality Technical Section (WQTS) was held from 1:00 to 4:30 P.M. on March 20th in conjunction with the annual UMRCC meeting held from March 20-22 at the Treasure Island Resort & Casino, Welch, MN. The following persons attended the Technical Section meeting.

1.	Dave Bierman	Iowa DNR/LTRMP, Bellevue
2.	Rob Burdis	Minnesota DNR/LTRMP, Lake City, MN
3.	Cindy DiStefano	Missouri Dept. of Conservation, Columbia
4.	Terry Dukerschein	Wisconsin DNR, La Crosse
5.	Jim Fischer	Wisconsin DNR/LTRMP, La Crosse
6.	Bill Franz	U.S. EPA, Region 5, Chicago
7.	Shawn Giblin	Wisconsin DNR, La Crosse
8.	Tex Hawkins	USFWS, Winona
9.	Kyle Herdina	Prairie Island
10.	Kraig Hoff	Wisconsin DNR/LTRMP, La Crosse
11.	Dave Hokanson	Upper Mississippi River Basin Association, St. Paul
12.	Louise Hotka	Minnesota Pollution Control Agency
13.	Jeff Houser	Upper Mississippi Environmental Science Center/USGS, La Crosse
14.	Kent Johnson	Metropolitan Council Environmental Services, St. Paul
15.	Dan McBride	U.S. ACE, Rock Island
16.	Teresa Newton	Upper Mississippi Environmental Science Center/USGS, La Crosse
17.	John Olson	Iowa DNR, Des Moines
18.	Jim Rogala	Upper Mississippi Environmental Science Center/USGS, La Crosse
19.	Kevin Slattery	U.S. ACE, St. Louis
20.	John Sullivan	Wisconsin DNR, La Crosse
21.	Scott Yess	USFWS, La Crosse
22.	Xiaoli (Shirley) Yuan	Upper Mississippi Environmental Science Center/USGS, La Crosse

Four of the five UMR state were represented at the meeting (IA, MN, MO, and WI); water quality agencies with Clean Water Act reporting responsibilities were represented by three states: IA, MN, and WI.

State/Agency updates

Iowa DNR, John Olson: John provided updates on the following: **Iowa's 2006 Section 303(d) list:** Iowa's draft 2006 303(d) will be made available in May for public notice. The draft list contains 270 waterbodies with a total of 351 impairments. After the public notice, the list will go

to EPA Region 7 for review, approval, and disapproval. Impairments on the Iowa reach of the UMR are basically the same as in the past with arsenic/DW impacts at Ft. Madison, Keokuk, and Davenport and the bacterial slime problem downriver from Clinton. New impairments include aquatic life impairments for aluminum upriver from Keokuk and from Burlington (based on IL-EPA data) and the addition of primary contact recreation impairments for segments identified by IL-EPA as impaired (covers most of the Iowa reach of the UMR except upriver from Guttenberg to the IA/MN state line). **Fish Tissue Monitoring:** As part of the U.S. EPA's Regional Ambient Fish Tissue (RAFT) monitoring program, fish samples were taken from eight locations on the Iowa reach of the UMR in late summer/early fall 2006: one location near Lansing, three locations near Dubuque, two near Davenport, one at Muscatine, and one at Keokuk. Results of this monitoring should be available sometime this spring. IDNR staff suspect that a number of advisories will be issued due to levels of mercury or PCBs that now exceed Iowa's trigger levels for a one-meal/week advisory; some of these advisories will likely be on the Iowa reach of the UMR. **Upper Mississippi River Basin Association WQ Task Force:** Iowa DNR continues to participate in the WQ Task Force. Recent activities have included work on sediment-related water quality criteria for the UMR and development of consistent designated uses for the river. **Missouri River Interstate Water Quality Workshop:** Although this group received a good start with their meeting in Omaha in May, 2006, there has been no activity since that meeting. This lack of activity is due, at least in part, to staff changes at EPA Region 7.

Wisconsin DNR: John Sullivan: Our department has prepared **draft guidance for classification, assessment and management of Wisconsin surface waters**. Some of this guidance may be applicable to the Mississippi River. Work on phosphorus standards is ongoing. It is expected that the proposed standards will go out for public review in late summer. A **report summarizing long term trends of sediment trap samples** will be out later this spring. It will describe long term changes in PCBs, metals and nutrients based on monitoring conducted at LD 3 (Red Wing, WI) and LD 4 (Alma, WI). Significant reductions in many of these chemicals are evident during the monitoring period (1987-2005). **Wisconsin and Minnesota continues to participate with EMAP sampling on the river**. This includes a new approach for evaluating aquatic vegetation, especially submersed aquatic vegetation in the reach from Pool 1 to 11. We expect this vegetation monitoring will further our assessment of suspended sediment/turbidity problems on the river.

Missouri DOC, Cindy DiStefano, Columbia: The 2007 Fish Advisory was issued by the Missouri Department of Health and Senior Services. The following is a summary of the fish consumption information:

Missouri and Mississippi rivers

- • One meal per month: Shovelnose fish tissue all sizes (excluding eggs) due to PCBs and chlordane.
- • Do not eat: Sturgeon eggs collected from these waters due to PCBs and chlordane.
- • One meal per week: Flathead, Channel and Blue Catfish greater than 17 inches due to PCBs, chlordane, and mercury.
- • One meal per week: Carp species greater than 21 inches due to PCBs, chlordane, and mercury.

Statewide

- • One meal per month: Largemouth, Spotted, and Smallmouth Bass greater than 12 inches for sensitive populations due to mercury.
- • One meal per week: Carp greater than 21 inches for sensitive populations due to mercury.
- • One meal per week: All other sport fish (all sizes) not covered under an advisory for sensitive populations, per EPA's recommendation, because all fish have various levels of mercury.

The full advisory can be found at:

<http://www.dhss.mo.gov/NewsAndPublicNotices/07FishAdvisory.pdf> .

Proposed 2004/2006 303(d) List: The proposed 2004/2006 303(d) List went to the Missouri Clean Water Commission on March 7, 2007, The Mississippi River is not on the list. The list can be found at: <http://www.dnr.mo.gov/env/wpp/proposed-2006-303d-pn.htm>

Bill Franz, U.S.EPA Region 5, Chicago: Regionally Applied Research Grants (RARE);

Within EPA there has been a program that the Office of Research and Development has support for the past several years. This program is designed to support research efforts of the Regional offices. Projects are identified by Regional EPA staff who must find a collaborator from one of the EPA ORD facilities to support the project. These projects are competed within each region, and there is up to \$100,000 of funding for two years for the projects selected by the EPA Regional Science Team. This past December Bill Franz, EPA Chicago, and Joel Allen, ORD Cincinnati, proposed a series of biomonitors on the Upper Mississippi River system to augment the existing monitoring system as well as to provide a warning system for pollutants that may not be identified by traditional monitoring probes. It is the intent of this project to demonstrate the capabilities of using biomonitors, their reliability and the ease of use and ability to serve as a warning mechanism in the event of a spill, accident or act of terrorism. **Clean Water Act and Habitat Restoration and Enhancement Workshops:** EPA and the Corps of Engineers will be working with the Upper Mississippi River Basin Association to sponsor a couple of workshops that bring together the river restoration experts and the water quality staff to share information and to understand the two programs. Under the Clean Water Act if a segment of the river is not meeting its designated use the can list it as being impaired. On many occasions some of the river biologists and aquatic biologists have expressed concern about the quality of the Mississippi River and indicated that the fishery is impaired. Being impaired has a unique meaning under the Clean Water Act and there is a need to make sure that the water quality staff in the States and the river biologists understand each other and are communicating their concerns between each other. It is the intent that the workshops be hosted during the late summer and fall of 2007. **EMAP-GREAT Rivers Initiative:** EPA's EMAP GREAT Rivers Initiative has suffered a significant funding cut. The funding cut will result in no additional field work for 2007 and 2008. The data that has been collected for the Missouri, Ohio and Upper Mississippi rivers will be analyzed and assessed and a final report will be prepared. However, work that was planned to be initiated this summer on the lower Mississippi River will not be done. The staff from the States that did the collecting of samples and species as well as those staff members who planned on using this data to assist in the assessment of the health of the rivers and to use the data for 303(d) and 305(b) decisions need to contact EPA's Duluth lab to discuss with them and to encourage them to address the concerns that they have regarding water quality and ecological trends on these three rivers.

Kent Johnson, Metropolitan Council Environmental Services (MCES): River and Stream

Monitoring Activities: In 2007, no major changes are anticipated in the MCES large river monitoring program, covering the Mississippi, Minnesota, and St. Croix Rivers in the seven-county Minneapolis - St. Paul Metropolitan Area. MCES staff are finalizing a report that presents the results of an extensive river bed sediment survey conducted during the 1998-2001 period. The survey was based on the sediment quality triad approach that employs three assessment protocols to evaluate the basic characteristics of sediment and the extent of possible sediment contamination. The three protocols are physical and chemical analysis of the sediment, benthic macroinvertebrate analysis, and sediment toxicity-testing. Sediment samples from each monitoring site were evaluated as follows:

- • Grain size (particle size) analysis
- • Chemical analysis of trace metals, organo-chlorine compounds (OCs), polycyclic aromatic hydrocarbons (PAHs), cyanide, total organic carbon, and acid-volatile sulfide/simultaneously-extracted metals (AVS/SEM)
- • Pore-water analysis (chemical analysis and acute toxicity-testing with *Ceriodaphnia dubia*)
- • Benthic macroinvertebrate analysis
- • Toxicity-testing, using the “10-Day *Hyalella azteca* Survival Test” and “10-Day *Chironomus tentans* Survival and Growth Test”

On the Mississippi River, 13 sediment monitoring sites were established at main channel and backwater locations along the 82.5 mile reach from river mile UM 848.5, just upstream of Lock and Dam Number 1 to river mile UM 766.0 at the southern end of Lake Pepin in Wabasha County, MN. On the Minnesota River, two monitoring sites were established at main channel locations along the 35.9 mile reach from river mile MI 39.4 near Jordan, MN to river mile MI 3.5 near the confluence of the Minnesota and Mississippi Rivers. On the St. Croix River, two monitoring sites were established at main channel locations along the 22.2 mile reach from river mile SC 23.9 in Stillwater, MN to river mile SC 1.7 near the confluence of the St. Croix and Mississippi Rivers at Prescott, WI. It is anticipated that a final report on the sediment survey (“Physical, Chemical, and Biological Characteristics of Mississippi, Minnesota, and St. Croix River Bed Sediments in the Twin Cities, MN Area during a 1998-2001 Survey”) will be available by the end of 2007. The survey results were presented via PowerPoint at the March 20, 2007 UMRCC Water Quality Technical Section meeting. All survey data will also be incorporated into the UMRCC sediment contaminant database housed at the Upper Midwest Environmental Sciences Center in Onalaska, WI.

MCES is currently building and organizing a database for all river biological monitoring data (periphyton, phytoplankton, zooplankton, and macroinvertebrate) collected during the 1979-2003 period. When the database is complete and functional, all biomonitoring data will be conveniently accessible via the MCES Environmental Information Management System (EIMS) (<http://es.metc.state.mn.us/eims/>). Organized availability of the biomonitoring data will also facilitate an assessment of this long-term information. With the arrival of a new staff member in February 2007, large-river biomonitoring work may resume in 2007, after a three-year hiatus.

MCES conducted major low-flow surveys of the Mississippi and Minnesota rivers during the July-September 2006 period. Low-flow monitoring data for the Mississippi River (Lock and Dam No. 1 through Lake Pepin) were used to calibrate an advanced eutrophication model developed by LimnoTech. The Minnesota Pollution Control Agency (MPCA) will use the model

for the Lake Pepin TMDL, which is addressing turbidity and phosphorus impairments in the lake. Low-flow monitoring data for the Minnesota River (Jordan, MN to the mouth) are being used by the US Army Corps of Engineers to develop and calibrate a CE-QUAL-W2 water quality model. MCES, MPCA, and several local partners will use the model as an assessment tool for evaluating current water quality impairments (dissolved oxygen and turbidity) in the Metro Area reach of the Minnesota River, and determining future load and wasteload allocations. Given favorable conditions, additional Mississippi River low-flow monitoring work may be conducted in Pool 2 and Lake Pepin this summer (2007).

In 2006, the St. Croix Basin Team developed a basin-wide monitoring plan (“Monitoring Plan for the St. Croix River: 2006”), in part to measure a 20 percent reduction in total phosphorus loading to Lake St. Croix by 2020. The monitoring plan has been updated for 2007. As a part of the 2007 plan, MCES and the US Geological Survey will be establishing new flow monitoring stations at Stillwater, MN (SC 23.3) and Prescott, WI (SC 0.3). During the March-October period, MCES will be conducting weekly analysis of numerous water quality variables, including dissolved oxygen, pH, temperature, fecal coliform bacteria, turbidity, T-Tube transparency, nutrients (total phosphorus, total dissolved phosphorus, ortho-phosphate phosphorus, total particulate phosphorus, total nitrite/nitrate nitrogen, and ammonia nitrogen), total and volatile suspended solids, and chlorophyll-a.

In 2006, MCES and MPCA signed an inter-agency agreement that establishes a cooperative approach to TMDL planning efforts for Minneapolis-St. Paul Metropolitan Area streams (all tributaries to the Mississippi, Minnesota, and St. Croix Rivers). MCES is already monitoring 26 streams in the Metro Area. Under the agreement, MCES will provide additional monitoring and SWAT modeling support to the MPCA, as well as coordination with many local partners. Numerous Metro Area streams have been listed as impaired (dissolved oxygen, fecal coliform bacteria, turbidity, chloride, and impaired biota), with TMDL planning underway.

MCES Reports:

Several new (or recent) monitoring reports are available on the Metropolitan Council website:

“2004 Stream Monitoring and Assessment Report”, which provides flow, water chemistry, and macroinvertebrate data and information obtained for 26 streams in 2004.

The report can be found at:

<http://www.metrocouncil.org/environment/RiversLakes/Streams/StreamResults.htm>.

“A 2005 Study of the Water Quality of 172 Metropolitan Area Lakes”, which provides information on physical conditions, Secchi depth, water chemistry, and recreational suitability for lakes throughout the 7-county Minneapolis/St. Paul region. The report can be found at: <http://www.metrocouncil.org/environment/RiversLakes/Lakes/index.htm>.

Two new Minnesota River monitoring reports are available on the Minnesota River Basin Data Center website at <http://mrbdc.mnsu.edu/>:

“State of the Minnesota River Water Quality Summary: 2000-2005”, which summarizes and evaluates stream flow and water quality data collected at 18 tributary streams and mainstem Minnesota River locations during the 2000-2005 period.

“Progress on a Long Voyage: Decades of Effort Show Improvement in Minnesota River Water Quality”, which provides an overview of what has been accomplished to improve and protect water quality in the Minnesota River and its tributaries.

Data:

The Metropolitan Council’s Environmental Information Management System (EIMS) is a system for providing timely and reliable information for environmental planning and decision-making for the Twin Cities Metropolitan Area (TCMA) of Minneapolis and St. Paul, Minnesota. MCES developed the EIMS to provide access to environmental data, analysis, and documents from various sources through a single, integrated system. EIMS came on line in June 2005. Water quality data from regional rivers, streams, lakes, and wastewater treatment plants are now directly available at: <http://es.metc.state.mn.us/eims/>.

Coordinator’s Report: Scott Yess, USFWS, Onalaska:

Scott, in his first “official” coordinator’s report, provided updates on the following UMRCC-related topics:

Newsletter: although hard-copies are no longer distributed, the UMRCC Newsletter is published every three months and is sent to approximately 600 e-mail addresses. Scott would like to add updates from the UMRCC Executive Board and Tech. Section chairs to future Newsletters.

Library: All holdings are listed in the library database at www.Mississippi-River.com/UMRCC. The library is now physically located at the Fish & Wildlife Office in Onalaska, WI. Although the library database receives a lot of use, the library itself does not, and Scott questions whether we should keep it. Scott encourages state and federal staffs to send in their publications and reports to keep the library current.

Web Page: Although little change has occurred over the 10-year life of the UMRCC web page, the UMRCC Newsletter and UMRCC publications continue to be made available though the web page.

Database: Last year, the database was converted Microsoft Access which has allowed more flexibility in entering data and creating subsets (e.g., for the Newsletter and for Tech. Sections).

Outreach: New information displays have been developed to be used at conferences and workshops as a means to educate the public on UMRCC activities. Also, an avid UMRCC supporter constructed a pamphlet rack for distribution of UMRCC literature and publications at meetings and workshops.

Publications/Reports: UMRCC Annual Proceedings documents for the years 2001 through 2006 have been completed by Tom Boland (Iowa DNR, retired). These Proceedings documents will be available through the UMRCC web page; approximately 50 hard copies will be sent to libraries along the UMR. The report “Distribution and Relative Abundance of Upper Mississippi River Fishes” is in the process of being updated. Three meetings of UMR biologists have been held to compile updated information. The tasks of spreadsheet formation, entering of new data, updating the T&E table, and text preparation have been contracted to Tina Bodensteiner. Mike Steuck and Dan Kirby (both Iowa DNR) have also agreed to write portions of the report.

River-related Issues: Harvest of shovelnose sturgeon continues to increase in states where such harvest is allowed due to demand for sturgeon roe. The MICRA Executive Board has recommended closing harvest of shovelnose sturgeon in its range overlap with the federally-endangered pallid sturgeon. This issue is also being discussed by the UMRCC Fish and Law Enforcement tech. sections. The North American Benthological Society (NABS) has requested UMRCC endorsement of their request that U.S. EPA incorporate new scientific information on ammonia toxicity to freshwater mussels in any updates of the EPA ammonia water quality criteria document (last updated in 1999). John Olson (former WQ Tech. Section chair) is drafting a letter in support of the NABS position. Invasive species: letters have been drafted and sent to federal agencies and political representatives on the need to repair, operate, and fund electronic barriers on the Chicago Sanitary and Ship Canal. Currently, this barrier is seen as the best option for slowing the spread of exotic species between the Great Lakes and Upper Mississippi basins. UMRCC, however, believes that the best long-term solution is to permanently sever the connection between these basins. UMRCC also drafted and sent a letter to the Aquatic Nuisance Species Task Force (chaired by FWS and NOAA) supporting the *Management and Control Plan for Asian Carps in the United States*. Tex Hawkins (FWS, Winona) has introduced a proposal to designate the UMR National Wildlife and Fish Refuge as a Wetland of International Importance under the Ramsar Convention which promotes wetland conservation throughout the world. The Ramsar Convention explicitly protects sovereignty of the contracting parties and cannot usurp management prerogatives at any level. This designation would complement current refuge designation as a Globally Important Bird Area (IBA), which, in turn, complements newer state-designated IBAs encompassing the bluffs and lower tributary floodplains that border the refuge.

Resolutions: The Wildlife Tech. Section has recently discussed the issue of connectivity in the UMR system, and the Section believes that UMRCC should develop a resolution regarding its definition and use of connectivity as a river management tool. Mike Griffin (Iowa DNR) is working with representatives of the Fish Tech. Section on a draft proposal. The resolution on monitoring and evaluation of habitat restoration projects was discussed by the Executive Board which decided that the draft resolution should be revised to emphasize resource benefits. Ron Benjamin (Wisconsin DNR) has agreed to revise the draft.

Presentations:

EMAP/GRE fish IBI metrics: how do we measure “fishability” in great rivers? Terry Dukerschein, Wisconsin DNR/LTRMP, La Crosse.

We analyzed fish community data from the Upper Mississippi River (UMR--Pools 2—Open River Reach) collected by the Long Term Resource Monitoring Program (LTRMP—Pools 4—Open River), the Environmental Monitoring and Assessment Program – Great Rivers Ecosystems (EMAP-GRE—Pools 2—Open River), and Wisconsin’s non-wadeable stream monitoring program (WDNR—Pools 3-11). Each of these programs uses day electrofishing to sample fish communities, but protocols and sampling designs differ. We calculated Index of Biotic Integrity (IBI) scores per metrics calibrated for Wisconsin rivers by Lyons *et al*, 2001 and compared results among programs. We used non-metric multi-dimensional scaling (NMDS) and univariate plots of the data to examine statistical differences among the programs and to suggest factors that might have contributed to those differences. The combined dataset provided significant discrimination between all five IBI scoring categories (very poor to excellent), but IBI scores calculated from the EMAP 2004-2005 dataset suggested that three rating categories might be more suitable for that program. NMDS yielded significant differences between the WDNR

program and the other two programs, but not between EMAP and LTRMP. Both EMAP and LTRMP span the entire Upper Mississippi River mainstem, whereas WDNR encompasses only Wisconsin waters. In Wisconsin waters, IBI scores from all 3 protocols increased or remained stable from north to south. However, in the context of the entire UMR, IBI scores for both LTRMP and EMAP-GRE declined from north to south. Ten years of LTRMP sampling generally demonstrated consistent scores through time except for the area near Bellevue, Iowa, a recognized zone of ecological transition. Plots of individual metrics against river mile suggested that some metrics (i.e. round-bodied suckers) in the Lyons IBI may be affected by geographic range limitations of the species selected for those metrics. In addition, we present selected Ohio River Fish Index (ORFI—Emery *et al*, 2003) metrics along with totaled scores for the 2004-2005 EMAP-GRE data only. These ORFI metrics and scores show trends consistent with those of the Wisconsin IBI (Lyons *et al*, 2001) on the upper Mississippi River.

Evaluation of light penetration on navigation pools 8 and 13 of the UMR. Shawn Giblin, Wisconsin DNR/LTRMP, La Crosse

The availability of light can have a dramatic affect on macrophyte and phytoplankton abundance in virtually all aquatic ecosystems. The Long Term Resource Monitoring Program (LTRMP) and other monitoring programs often measure factors that influence light extinction (non-volatile suspended solids, volatile suspended solids, and chlorophyll) and correlates of light extinction (turbidity and secchi depth), but rarely measure light extinction directly. Light extinction, secchi depth, transparency tube, turbidity, total suspended solids, and volatile suspended solids data were collected in 2003 on Pools 8 and 13 of the Upper Mississippi River. Regressions were developed to predict light extinction based upon secchi depth, transparency tube, turbidity, and total suspended solids. Transparency tube, secchi depth, and turbidity all show strong relationships with light extinction and can be used to effectively predict light extinction. Total suspended solids do not show as strong a relationship to light extinction when tributaries are included, but the relationship improves when examining the main channel data only. Volatile suspended solids were shown to have a greater influence on light extinction than non-volatile suspended solids. The data were compared to recommended criteria established for light extinction, secchi depth, total suspended solids, and turbidity by the Upper Mississippi River Conservation Committee to sustain submersed aquatic vegetation in the Upper Mississippi River. During the study period, the average condition in Pool 8 met or exceeded all of the criteria and the average condition in Pool 13 failed to meet any of the criteria. This report provides river managers with an effective tool to predict light extinction based upon readily available data.

Physical, chemical, and biological characteristics of Mississippi, Minnesota, St. Croix river bed sediments in the Twin Cities, MN, area during a 1998-2001 survey. Kent Johnson, Metropolitan Council Environmental Services, St. Paul.

During a 1998-2001 survey, Metropolitan Council staff conducted extensive monitoring of sediment at 17 sites along the Mississippi, Minnesota, and St. Croix rivers. Sediment samples were evaluated using the “sediment quality triad” approach, which analyzes physical/chemical composition, assesses toxicity to aquatic life, and identifies resident benthic invertebrates. The survey results revealed that Twin Cities river sediment quality is generally good, with minimal impacts on aquatic life. However, differences in sediment quality are apparent between the three major rivers, and local “hot spots” are of concern in riverine lakes (Pig’s Eye Lake, Lake Pepin, and Lake St. Croix).

Establishing a biomonitoring network on the UMR. Bill Franz, Upper Mississippi River Team Manager, U.S. EPA, Region 5, Chicago

Within EPA, the Office of Research and Development has a program that it supports in each Region to stimulate Regionally needed projects. This program is the Regionally Applied Research Efforts, (RARE) projects. For 2007 Dr. Joel Allen, EPA, ORD Cincinnati, and Bill Franz designed a project that would use biological organisms to be part of an early warning monitoring network on the Upper Mississippi River.

SCIENCE & ENVIRONMENTAL ISSUES: The upper Mississippi River (UMR), the section of river from the headwaters in Minnesota to the confluence with the Ohio River near Cairo, Illinois, serves as the source water for more than 30 public water supplies that supply drinking water for several million Americans. Pollution often results in toxic effects that can only be measured using biological means. Only living material can integrate all of the factors that influence toxicity. Physical and chemical measures of water quality parameters are precise, but are not by themselves sufficient to characterize toxicity. Recent developments in Online Toxicity Monitor (OTM) technologies provide tools to measure toxicity as manifested in biota.

Some 30 million people inhabit the basin and many people and businesses rely on the Upper Mississippi River for drinking water, recreation, food resources, cooling/process water, and transportation. The establishment of a contaminant warning system (CWS) on the Upper Mississippi River is needed to help protect this important National resource contributing to the ultimate environmental outcome of safe, high quality drinking water and functional ecosystems. Potential sources of contamination are the numerous petroleum and chemical pipelines crossing the river and barge traffic. Spills from these sources, whether accidental or deliberate, could threaten both the source water resource and ecological habitat of the Upper Mississippi River. An early/contaminant warning System would not prevent a spill from occurring, however it could alert water quality managers to the incident allowing for a rapid response to protect drinking water supplies and public health as well as potentially reducing damage to ecological systems in case of a natural disaster or deliberate placement of a toxic agent into the river.

Contaminant Warning Systems (CWSs) are used by water utilities to detect sudden changes in source water quality and by regulatory/response agencies for identification of hazardous substance spills or impaired water quality conditions. The early detection of these conditions allows water utilities and regulatory/response agencies to respond quickly and thereby minimize the potential impacts to the water supply, citizens, and industry that utilize the river. CWSs have been developed on several source water rivers in the United States, including the Ohio River, the Lower Mississippi River, and the river network surrounding Washington, D.C.

RESEARCH OBJECTIVES: The proposed project will implement a CWS on the Upper Mississippi River using OTMs to provide a simple and cost-effective method to alert and warn the water supplies on the River that a change in water quality has occurred which merits further investigation due to its potential to harm public health in municipalities downstream using the River as a drinking water source. This project will use a bivalve OTM, coupled with physical and chemical parameters in the development of a monitoring network for the Upper Mississippi River. This biomonitoring network could also be used by the TMDL program in determining whether or not a water quality impairment has occurred. Through the biomonitor an impact upon the biota could be identified even if there is no ambient water quality monitoring to indicate an impairment. Similarly, the attainment of the implementation of a TMDL could be determined through the use of the biomonitors.

APPROACH: Working in cooperation with the Upper Mississippi River Early Warning Monitoring Network (UMREW MN) a series of OTMs and physical and chemical monitors will be strategically located at up to five locations, on the Upper Mississippi River between the Quad Cities and Cairo, Illinois to provide the greatest coverage relative to identified vulnerabilities. Data collected will be telemetered to a data server allowing for real time analysis and access. The CWS will integrate an electronic alert system to inform the broader UMREW MN. Comparisons of OTM and physical/chemical data as well as operation and maintenance costs will be made to determine OTM efficacy.

The first year of funding is for \$100,000 and will support the deployment of three monitoring units. The first of the units will be installed at the Minneapolis Drinking Water Plant at Fridley, Minnesota. The unit should be in place in June and there will be about a month of field testing of the unit. Once the bugs have been addressed the additional two sites will be selected. No decision has been made on the location of these sites at this time. If the Region 5 EPA Regional Scientist determines that significant progress has been made on the project an additional \$100,000 for a second year of research could be allocated to the project.

UMRBA Water Quality Activities: Update and Looking Forward. Dave Hokanson, UMRBA, St. Paul

The Upper Mississippi River Basin Association (UMRBA) is a five-state association (IA, IL, MN, MO, and WI) that was formed by a joint resolution from the governors of the five member states. The UMRBA has its origins in 1981 with the formation of the Upper Mississippi River Basin Commission, also formed by the governors of the five states. The UMRBA has a number of federal partners (e.g., USACE, USFWS, USGS, EPA, NRCS, and DOT) and is involved in areas such as water quality coordination, ecosystem restoration, spill planning and response, navigation, and floodplain management. UMRBA does not have regulatory authority.

Water quality-related activities are primarily conducted through two interstate groups: the UMRBA Water Quality Task Force formed in 1998 and the UMRBA Water Quality Executive Committee formed in 2006. Projects of these groups have included (1) uniform interstate assessment reaches for the UMR (based on UMRCC WQ Tech. Section recommendations), (2) coordination of impaired waters listing, (3) consistency in fish consumption advisory protocols between the UMR states, (4) sediment related water quality criteria, (5) early warning monitoring, (6) consistent designated uses for the UMR, and (7) organizational options for water quality management.

Thus far, the experience of the UMRBA WQ Task Force and WQ Executive Committee have shown that water quality coordination on the UMR is important but difficult. The agencies involved, however, have shown a commitment to cooperation and coordination. In order to accomplish goals, involvement of both the program (technical) staff (WQ Task Force) and the policy staff (WQ Executive Committee) is needed. Depending on the task at hand, other state staff need to be involved (e.g., for discussions on designated uses for the UMR). The process of water quality coordination has proved to be a dynamic one, with ongoing changes in methods, conditions, priorities, and personnel. The experience thus far with the WQ Task Force and WQ Executive Committee suggest that there may be a role for a lead agency for Clean Water Act-related activities on the UMR.

Ongoing water quality coordination activities include (1) continued work on fish consumption advisories and sediment-related water quality criteria, (2) preparation for 2008 Section 305(b) assessments and Section 303(d) (impaired waters) listings, and (3) early warning monitoring. New activities include (1) an investigation of the relationship between the Clean Water Act and ecosystem restoration, (2) discussions on uniform designated uses for the UMR, and (3) possible expansion of UMRBA's role in Clean Water Act programs through establishment of the appropriate structure and funding mechanism.

Selection of new chair and location of Fall 2007 meeting:

Cindy DiStefano (Missouri Department of Conservation) is the new chair for the WQ Technical Section. The date and location of the Fall 2007 meeting will be determined at a later date.