Upper Mississippi River Basin Association

Water Quality Executive Committee and Water Quality Task Force Joint Meeting

June 1-2, 2016
Moline, Illinois

Meeting Summary

Participants

Gregg Good	Illinois EPA
Matt Short	Illinois EPA
Tony Dulka*	Illinois EPA
Terri Holland*	Illinois EPA
Adam Schnieders	Iowa DNR
John Olson	Iowa DNR
Mary Skopec*	Iowa DNR
Rebecca Flood	Minnesota PCA
Dana Vanderbosch	Minnesota PCA
John Hoke	Missouri DNR
Susan Sylvester	Wisconsin DNR
Brian Weigel	Wisconsin DNR
Ann Hirekatur	Wisconsin DNR
Gina LaLiberte*	Wisconsin DNR
Dustin Goering	National Weather Service
Jessica Brooks	National Weather Service
Leo Keller	USACE, Rock Island District
Linda Holst*	USEPA, Region 5
Meghan Hemken*	USEPA, Region 5
Amy Shields*	USEPA, Region 7
Kelly Warner	USGS, Illinois Water Science Center
Jeff Houser*	USGS, Upper Midwest Environmental Sciences Center
Robert Sinkler	The Nature Conservancy
Lori Stenzel	Illinois American Water Company
Bob Bohannon	City of Moline
Carol Hays	Prairie Rivers Network
Dru Buntin	UMRBA
Dave Hokanson	UMRBA
Matt Jacobson	UMRBA
Molly McDonald*	UMRBA

** Joined the meeting by phone.*

Call to Order and Introductions

The joint meeting of the Water Quality Executive Committee (WQEC) and Water Quality Task Force (WQTF) was called to order at 1:00 p.m. on June 1, 2016 by WQEC Chair Susan Sylvester and WQTF Chair Brian Weigel. Sylvester commented that there has been much activity by the water quality groups in the last year, in particular she noted collaboration with the Mississippi River Mayors via the Mississippi River Cities and Towns Initiative (MRCTI) and the harmful algal bloom (HAB) work group. Introductions by all meeting participants followed.

Approval of Previous Meeting Summary

Sylvester asked whether any corrections or modifications to the summary of the February 3-4, 2016 WQTF meeting were needed. None were offered and Gregg Good moved for the summary to be approved as written. Weigel seconded and the motion was approved by voice vote.

Interstate 305(b) and 303(d) Consultation

Illinois

Good reported that Illinois continues the process of moving toward finalization of its 2016 impairment list. He added that the 2016 UMR impairments as shown in the packet appear to be accurate, though he will let UMRBA staff know if there are any changes as the list is finalized. Weigel asked why 2016 fecal coliform impairments in Reaches 7, 9, and 12 were not present in 2014. Matt Short explained that an impairment is based on a five year moving data window. As such, when the underlying results change, a reach may move in or out of impairment status based on the most recent data. Dave Hokanson also noted that the phenol impairment for Reach 9 in 2014 is not present in 2016. Short said the explanation is the same as that for the change in the fecal coliform impairment – i.e., results of underlying data had changed for the most recent five year window.

Missouri

John Hoke said the Missouri Clean Water Commission had approved both Missouri's 2016 impairment list and its 2018 listing methodology. Hoke said Missouri is also considering use of a Lean Six Sigma process to help prioritize waters for restoration. Weigel observed that Missouri's prioritization process may be of interest to the other states and as such might be a good topic for a future presentation at a WQEC and/or WQTF meeting.

Iowa

John Olson reported that Iowa is currently working to finalize its 2016 list. He said the following modifications for the UMR are expected in Iowa's 2016 list:

- In Reach 7, adding a fish consumption impairment related to the presence of PCBs in Pool 15.
- Listing an impairment of indicator bacteria in Reach 7 in order to match Illinois' newly added fecal coliform impairment in this reach.

Minnesota

Dana Vanderbosch said Minnesota's draft 2016 list will be going through the public review process later this summer and then will be sent on to USEPA Region 5. She noted that the development of a new database has, in part, slowed down progress on the 2016 list. Vanderbosch added that work continues on the Lake Pepin TMDL.

Wisconsin

Weigel provided an overview of 2016 impairments statewide in Wisconsin, then focused in the UMR, noting the following in particular:

- Total phosphorus impairments have been added for Reaches 5 and 6.
- An impairment for Lake Pepin has been added due to total phosphorus and water quality use restrictions, where the water quality use restriction is associated with the elevated phosphorus levels.
- UMR tributary impairments have also been added for the Little Platte River (total phosphorus and degraded biological community) and the Bad Axe River (total phosphorus).

Weigel noted that, with the addition of the total phosphorus impairment in Reach 5, all of the UMR reaches bordering Wisconsin now have total phosphorus impairments.

Weigel also commented on the success of volunteer monitoring statewide in Wisconsin, noting a dramatic increase in the number of river and stream sites sampled by volunteers in recent years. Linda Holst asked whether Wisconsin uses volunteer monitoring data in determining impairments and Weigel replied that it definitely is used. He explained that volunteers typically collect chemistry data and Wisconsin DNR may follow up with additional chemistry and/or biological monitoring as needed.

Good asked whether volunteer monitoring is focused on total phosphorus alone or whether other parameters are also sampled. Weigel replied that parameters including total phosphorus, total Kjeldahl nitrogen, and suspended solids are part of volunteer monitoring. Olson asked where total phosphorus analyses are run. Weigel said these are conducted at the Wisconsin State Laboratory of Hygiene. Adam Schnieders asked how Wisconsin's volunteer monitoring program is funded. Sylvester explained that Wisconsin DNR pays the equipment and analytical costs, while relying on USEPA to provide funding to cover training costs. She emphasized that the training component, and USEPA's support, has been critical in making the volunteer monitoring program successful.

Weigel displayed a slide showing the increase in waters assessed by Wisconsin DNR – an 85% increase in river and stream miles assessed in the period between 2008 and 2016. Sylvester commented that, as more data is available and more streams are assessed, the number of impairments statewide has also been increasing. She said it has been challenging to communicate that the increased number of impairments does not necessarily indicate a change in water quality condition, but rather that increased information in now available regarding the state's waterbodies. Good and Olson concurred that their states face a similar situation, where an increased number of impairments is widely seen as reflecting a decline in water quality condition while it is really largely a reflection of increased data and an improved ability to assess waters. Weigel added that Wisconsin saw an immediate increase in total phosphorus impairments once its criteria was in place (beginning with the 2012 assessment cycle) and the state is now focused on how to prioritize work on the most problematic watersheds/waterbodies.

Schnieders asked whether Wisconsin's phosphorus criterion is applied independently, or whether biology is incorporated in making an impairment decision. Weigel replied that the criterion is currently applied independently, but that Wisconsin DNR is seeking to bring biology into the process. Sylvester concurred, adding the that administrative rule which established the criteria includes a nod towards the incorporation of biology, though USEPA has encouraged Wisconsin DNR to move forward with phosphorus impairments even in the absence of biology. Holst said if biology is incorporated along with phosphorus into a decision-making matrix, then from USEPA's viewpoint this could utilized in making impairment determinations. Schnieders asked what would happen if biology indicates there is not impairment on a previously listed waterbody. Sylvester said Wisconsin DNR would then seek to de-list that water body or segment.

TMDLs on the Mainstem UMR and Major Tributaries

Illinois

Good said there are not any substantive TMDL-related developments to report for the UMR or UMR tributaries in Illinois since the last report out given at the February 2016 WQTF meeting.

Missouri

Hoke said TMDL development is currently focused around metropolitan areas and in regard to the aquatic recreation use, noting that the first round of TMDL development in the St. Louis area had been sent to USEPA Region 7 and Headquarters for review. Hokanson asked if this would impact the

mainstem UMR. Hoke replied that this does include the mainstem UMR as well as the Missouri River upstream from its confluence with the Mississippi River.

Iowa

Olson described recent developments related to the localized bacterial slime impairment at Clinton, Iowa in UMR Reach 7. He said the ADM, owner of the facility associated with the impairment, has requested that sampling be done to determine if it is now meeting the conditions of its permit at this location. Olson said Iowa DNR will likely meet with ADM over the summer and, dependent on monitoring results, it is possible that this localized impairment could be removed. Hokanson asked how the TMDL worked in this case, and whether it required changes in process or equipment. Olson replied that there had been equipment changes in the plant which appear to have resulted in some improvement in water quality condition. In terms of tributaries, Olson said a basin-wide TMDL associated with bacteria presence is being developed for the Iowa River.

Sylvester asked whether any updates are available regarding the legal action initiated by the Des Moines Water Works. Olson replied that a trial originally scheduled for federal court in August 2016 has been delayed by the federal judge until June 2017. As such, there are no current updates related to the lawsuit.

Minnesota

Vanderbosch said there are no major updates to report on UMR or tributary TMDLs since the last meeting, other than the previously mentioned ongoing work on the Lake Pepin TMDL. Weigel said that Wisconsin DNR staff have been in contact with MPCA's Justin Watkins regarding the Lake Pepin TMDL, with the intent of enhancing interagency collaboration on the TMDL. However, he added, work on the Milwaukee River is currently occupying significant staff time for Wisconsin DNR staff working on TMDLs.

Wisconsin

Weigel provided an overview of TMDL development statewide, highlighting the following basins and waterbodies:

- Wisconsin River Basin (Phosphorus)
  - TMDL developed by DNR with EPA contractor support for modeling lakes and reservoirs.
  - SWAT model developed with calibration being completed. Draft model recently provided for stakeholder comment.
  - Developing allocation database.
  - Largest TMDL in the state, over 9,000 square miles.
- Upper Fox-Wolf Basin (Phosphorus and TSS)
  - Similar process to that as on Wisconsin River.
- Milwaukee River Basin (Phosphorus, TSS, and Bacteria)
  - Challenging process, involving a lot of municipal separate storm sewer systems (MS4) considerations.
  - Currently working with consultant on modeling.
- Lac Courte Oreilles (Phosphorus/Key-Element Plan)
- Lake Mallalieu (Phosphorus)
- Lake Pepin (TSS and TP)

Overall, Weigel noted that approximately 1/3 of the state's area falls under a TMDL. Kelly Warner asked if Wisconsin's SWAT modeling work is being done in-house. Weigel replied that this is the case, that modeling is being done in-house and has been ongoing for approximately two years. He said overall work on the Wisconsin River TMDL has been very much a learning experience and that both the point source and nonpoint source communities have been involved. Weigel said Wisconsin DNR has integrated some of the lessons learned from previous work on the Red Cedar River Basin.

State Nutrient Loss Reduction Strategy Updates

Wisconsin

Sylvester said Wisconsin DNR has hired Marcia Willhite, formerly of Illinois EPA, to lead work on Wisconsin's strategy implementation. Weigel highlighted a number of components associated with the implementation of the strategy as follows:

- "Nine Key Element" Watershed Plan Areas
  - Includes the St. Croix River (plan approved in 2015) and Red Cedar River (plan approved in 2016) watersheds
  - Follow the "nine key elements" for a watershed plan outlined by USEPA in determining eligibility for the use of CWA Section 319 funds.
- Nonpoint Grants
  - A total of $3.5 million to $5.5 million available statewide each year.
  - Support practices including targeted runoff management, manure storage, structural and cropping best management practices.
- Lake Grants
  - A total of $6.5 million available statewide per year, supported by tax on motor boat fuel.
  - Supports actions including management plans, water quality improvement, aquatic habitat improvement, aquatic invasive species prevention and control, and shoreline improvements.
- Farmer Led Council Grants
  - Became available in 2016 through Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP).
  - Must include at least five eligible farmers.
  - Maximum award is $20,000 per group, with a 50% cost share.
  - Can support group start-up costs, workshops and other education events, and incentive payments for conservation practices.
  - Has supported work in the Red Cedar and St. Croix watersheds to achieve phosphorus reductions through an innovative, farmer-directed conservation incentives program. This work has included collaboration with county land conservation districts, University of Wisconsin-Extension, and the McKnight Foundation.
- BMP Tracking System
  - Will compile and spatially display information cataloging BMPs implemented through the state (Wisconsin DNR and other agencies) as well as other partners (counties, etc.).
  - Intended to support programs including nonpoint grants, 319 program, TMDLS, nutrient strategy, and WPDES permit-linked elements (adaptive management, water quality trading, multi-discharger variance).
  - Should be up and running in summer 2017.

- Erosion Assessment for Agricultural Lands (EVAAL)
    - GIS-based model that uses readily available data to prioritize areas vulnerable to erosion and nutrient export.
    - Currently being used for county land & water management plans, nine key element watershed plans, lake management plans, adaptive management, and water quality trading.

In regard to the BMP tracking system, Warner asked whether individual farmers will report. Weigel replied that reporting is to be done by the counties. Hoke asked what the spatial resolution of the information will be. Weigel said it will be at the watershed level and that the information will be publicly available. Hoke asked whether any issues are anticipated related to land owner information. Weigel replied that the primary goal of the application is to display where practices are being implemented on the landscape, noting that since the application is not including federally-funded projects, there are not the same restrictions in place as affect NRCS and other federal programs, so information provided can be somewhat more specific than for federal programs.

Minnesota

Vanderbosch highlighted Minnesota's pollutant load monitoring network, which includes 80 locations used to determine watershed-level loading. She said Minnesota' Board of Water and Soil Resources (BWSR) is providing funds for BMP implementation to address sediment and nutrient loading and is working on a system of reporting for practice implementation. In regard to the implementation of Minnesota's buffer initiative, she noted that Minnesota DNR is currently in the process of developing maps which will illustrate the waterways where buffer requirements will be applicable. Rebecca Flood noted that, once applicability is delineated, land owners will have one year in which to install practices. Vanderbosch also said Minnesota has recently promulgated eutrophication standards applicable to rivers and is beginning the process of implementing these standards.

Flood reported that the Minnesota Agricultural Water Quality Certification Program has now engaged a total of 120 farms covering 85,000 acres. She noted that all farms in the program had to install some measure of BMPs. Additionally, Flood said the Minnesota Department of Agriculture (MDA) had recently entered in to a memorandum of agreement with Land O' Lakes, Inc. to help aid the implementation of the certification program. Schnieders asked if the program is focused on row crop farms. Flood replied that it primarily engages row crop farms, though it does include a variety of farm sizes. Schnieders asked what the reaction to the Certification Program has been in the agricultural sector, particularly among commodity groups. Flood said there is increasing participation and support, such as from the Minnesota Corn Growers. She added that individual producers are finding participation in the program to be a positive experience.

Vanderbosch said MDA is also working on requirements regarding fertilizer, with a focus on addressing fall fertilizer applications. Flood said MDA is utilizing Minnesota's Groundwater Protection Act as a legal basis for the implementation of fertilizer application requirements. Schnieders asked whether the rule had yet been released or is still in development. Flood replied that the rule is still in development, but that a draft could be shared with the group. Weigel asked who in Minnesota carries out groundwater monitoring. Flood replied that the Minnesota Pollution Control Agency, as well as the Minnesota Department of Agriculture and Minnesota Department of Health, conducts ground water monitoring.

Illinois

Good reported that Amy Walkenbach has taken over as the lead for Illinois' nutrient reduction strategy at Illinois EPA. He said that reporting will now be done every six months on the implementation of BMPs and outreach activities. Good said the agricultural community has become quite engaged and supportive, particularly in regard to the promotion of spring fertilizer application (rather than fall

application). He also noted that the Illinois Nutrient Science Advisory Council is working on its recommendations in regard to nutrient criteria.

Good said the Metropolitan Water Reclamation District of Greater Chicago has recently installed the world's largest nutrient recovery facility at their Stickney Water Reclamation Plant in Cicero, Illinois. He explained that the system is designed to recover nutrients and then process them for marketing as fertilizer. Linda Holst said she was at the opening ceremony for the recovery system, noting that Chicago waste water discharge has been identified as the single greatest point source contributor in SPARROW modeling for the Mississippi River Basin. As such, this is an important development and coupled with nonpoint source reductions under the nutrient reduction strategy represents significant progress in Illinois. Holst added that this system was significantly scaled up from previous ones, explaining that its capacity is 20 times that of largest previously installed recovery system. She added that other cities have expressed interest in installing similar systems. Schnieders indicated that Des Moines is looking to bring a similar process on line in 2018.

Iowa

Per previous discussion, Schnieders noted that the Des Moines Water Works lawsuit's federal court hearing had been delayed until 2017, adding that even though this case has garnered a lot of press coverage there is extensive collaboration happening in Iowa between commodity groups and point sources and the state's nutrient reduction strategy is implemented. He also reiterated Des Moines' plan to install a nutrient recovery system as has been done in Chicago, adding that this is a very positive development among point sources, as others in Iowa are also looking into the installation of such systems.

Also related to point sources, Schnieders said Iowa is now accumulating data to increase understanding of how well new/upgraded treatment plants are working to remove nutrients. He explained that a number of facilities have committed to enhanced treatment, but that there may be limits to what can be accomplished. Schnieders said Iowa is also looking at its existing water quality monitoring networks to evaluate whether they can answer questions regarding nutrients and effectiveness of point and nonpoint source actions. Related, he said 28 real-time water quality monitors have been deployed statewide by the University of Iowa, in addition to sensors maintained by USGS and USDA.

Schnieders said Iowa has essentially reached its capacity to deliver grants and as such is not planning to apply for the Regional Conservation Partnership Program (RCPP) in the next round of submissions. He said that, like other states and via the Hypoxia Task Force, Iowa is working on ways to improve its tracking of BMP implementation. This has included consideration of the potential use of LiDAR and other remotely sensed data as methods of measuring implementation.

Missouri

Hoke said Missouri has begun implementing a voluntary effluent monitoring program for point source dischargers, adding that this will become a requirement for large municipal dischargers in the future. He said a draft framework for water quality trading is currently under development and will soon be considered by the Missouri Clean Water Commission, with the hope of having finalized by late summer/fall 2016. Schnieders observed that one of the challenges Iowa has had in regard to trading is the establishment of a baseline. Hoke agreed that this is a challenge, but in general that Missouri is looking at baseline as the existing condition, whether or not BMPs are already in place.
Flood asked whether other states are encountering issues with trading and TMDL implementation. Sylvester said this has definitely been a challenge, with issues of fairness (i.e., who goes first) raised as well as the development of a trading ratio, since a 1-to-1 relationship does not seem to work. Hoke concurred that developing a trading ratio will be a challenge. Sylvester said Wisconsin offers both adaptive management and trading, and there has been more interest in adaptive management than trading. Schnieders said "reasonable assurance" is another challenge with trading, as it may be difficult

for a producer to assure that practice implementation will result in a specific reduction in nutrients. Weigel concurred there many challenges associate with trading, as identified in the preceding discussion.

USGS Midwest Continuous Nutrient Monitoring Network Initiative

Warner explained that the Midwest Continuous Nutrient Monitoring Network Initiative is being pursued collaboratively by the USGS' Water Science Centers in the Midwest states with a goal of aiding regional assessment of conditions using consistent methods and in particular assisting states and other stakeholders as Nutrient Reduction Loss Strategies are implemented. She noted that continuous monitors are able to detect conditions in a more comprehensive way, which has been shown to provide results different than those from traditional monitoring approaches (e.g., for nitrate in the Illinois River, a continuous data record yielded a cumulative nitrate load approximately 8.3 percent larger than the LOADEST-derived load).

In prioritizing sites for continuous monitoring installation, Warner said the following three criteria were considered: 1) basins covering the largest area, 2) whether a current USGS gaging station is present, and 3) whether historical data is available for the site. She then displayed a map of sites selected in Illinois, noting that the sites selected results in monitoring of almost 75% of the land area of the state and includes the following parameters: streamflow, turbidity, conductivity, dissolved oxygen, pH, nitrate and orthophosphate.

Warner displayed a map illustrating where USGS continuous monitoring sites had been established in the Upper Mississippi, Missouri, and Ohio/Tennessee Basins, as well as sites where additional sites would be desirable, but have not yet been installed.

Warner noted that challenges associated with continuous monitoring installations include infrastructure damage and sediment accumulation. However, given the benefits of continuous monitoring, it is very likely that the use of this technology will continue to expand. She noted that, in Illinois, the Illinois Corn Growers have funded the installation of three continuous monitors. Additionally, Warner noted that USGS is also expanding the use of continuous monitors in ground water applications.

Olson asked how phosphate monitoring is conducted at these installations. Warner said it is a Wet Lab chemistry technique which requires calculation and is site-dependent. Olson commented that, by comparison nitrate sensing seems more well-developed for the continuous monitors than phosphate. Warner concurred, saying work is ongoing to develop phosphate/phosphorus measurement techniques more compatible with continuous monitoring. Matt Short observed that phosphorus-related measurement/calculation is more complex than for nitrate and relationships can also vary seasonally.

Short asked whether there are any continuous monitoring stations on the mainstem UMR. Warner replied that there are stations at Clinton, Iowa and Cape Girardeau, Missouri on the UMR, as well as on the Ohio River at Olmsted and the Missouri River at Hermann. However, she added, there are no stations on the main stem below the Ohio River until Baton Rouge.

Partnerships and Collaboration

Mississippi River Cities and Towns Initiative (MRCTI)

Hokanson reported that MRCTI and UMRBA had executed a "Memorandum of Common Purpose" at MRCTI's Washington, DC meeting in March 2016. He indicated that the memorandum is part of the meeting packet and that it covers areas of shared goals in water quality and ecosystem restoration including support for:

- the USACE Upper Mississippi River Restoration (UMRR) program,
- the UMR states' nutrient reduction strategies,

- Clean Water and Drinking Water State Revolving Loan Funds (SRFs),
- Collaborative Clean Water Act (CWA) monitoring, CWA section 106 and 319 programs, UMRR long term resource monitoring, and USGS monitoring programs

Dru Buntin said UMRBA has continued to work with the MRCTI mayors and they develop their priorities in water quality and other issue areas. He noted that, subsequent to the signature of the Memorandum of Common Purpose, MRCTI staff had asked whether UMRBA would enter into a joint letter to Congressional appropriators in support of funding for SRF, 319, and USGS monitoring programs. A draft version of this joint letter was distributed to attendees. Weigel asked what the process would be in moving such a letter forward. Buntin explained that final approval would rest with UMRBA's Board, but that input from the WQEC and WQTF would be sought in the process as well.

Flood asked whether this letter would provide a platform in which to seek funding for shared UMR CWA Monitoring per the plan developed via the WQTF. Hokanson said this request could potentially be included though, since there is no specific authorized program for the UMR CWA monitoring, it may be difficult for appropriators to act on the request. He said creation of such an authorization/line item in USEPA's budget as a geographic program had been requested previously, but without success. However, these efforts pre-date the existence of the monitoring plan which could perhaps provide a more concrete rationale for the request. As such, this could be part of an advocacy message carried forward by MRCTI and UMRBA, perhaps through the bipartisan Mississippi River Caucus.

2016 Upper Mississippi River Conference

Hokanson introduced Robert Sinkler, Water Infrastructure Director with The Nature Conservancy (TNC) North America Water Program and former Commander of USACE's Rock Island District. Sinkler described the upcoming Upper Mississippi River Conference to be held in Moline, Illinois on October 13-14, 2016, noting that the conference has the objective of "raising the grade" received by the Upper Mississippi River Basin in the recent America's Watershed Initiative (AWI) report card.

Sinkler noted that the UMR Conference has been ongoing since 2007, having been sponsored by River Action and a number of other partners, including TNC. He said this year's conference seeks to move toward more of an action-oriented outcome, perhaps similar to MRCTI's policy platform, to address steps that could be taken to raise the grade in the various described in the AWI report card. Sinkler said a document is being prepared suggesting possible actions, which will then be presented to conference attendees for validation and refinement, with a goal that the conference identifies at least one action step in each of the report card areas. He emphasized that the UMR Conference is not an AWI event *per se*, but is designed to respond to the findings of the AWI report card.

Sinkler said conference attendance is expected to exceed 200 individuals, and that the UMR Conference is being scheduled to occur as part of a sequence of events including a gathering of TNC UMR staff and a meeting of the Society of Military Engineers.

Sylvester asked, in general, what appear to be productive path(s) forward now that the report card has been published. Sinkler observed that one way to proceed, and that this conference acts on, is for one of the sub-basins to step forward in identifying action items. He added that the UMR Basin may be best positioned among the Mississippi River sub-basins to move forward first. Additionally, Sinkler added, the UMR has not received funding investment similar to that provided to other larger aquatic ecosystems. Sylvester observed and suggested a Congressional champion for UMR funding is needed. Sinkler concurred, adding that advocacy can also occur in concert with that for other basins.

In regard to the Upper Mississippi River Conference, Sinkler said the goal is identify solid, science-based recommendations with broad support that can be moved forward to help raise the grade for the

Upper Mississippi River Basin. He added that the conference will not dwell on the report card process and results, but will emphasize moving forward to make improvements. Warner asked how these consensus recommendations will be identified. Sinkler replied that the conference will include facilitated discussions in each report card area intended to identify broadly-supported recommendations.

Web Tools to Support Water Quality Work Groups

Mapping Tools

Matt Jacobson provided an update and demonstration regarding the water quality viewer used to support implementation of the Minnesota-Wisconsin UMR CWA pilot monitoring project. He demonstrated the functionality of pilot project viewer, as well as a viewer structured to cover the entirety of the UMR (but carrying less detail and features at this time). Weigel suggested creating a linkage between the pilot project viewer and data being collected under the pilot project. Jacobson indicate he would explore this potential functionality.

SharePoint Site

Hokanson and Molly McDonald gave a demonstration of the recently-created UMR water quality SharePoint site. The site currently has separate pages dedicated to the Water Quality Task Force, MN-WI pilot monitoring group, and the UMR HAB work group. Hokanson said any comments and suggestions for improvement are most welcome and that login instructions would be sent out to the WQTF following the meeting.

The meeting adjourned for the day at 5:00 p.m. and reconvened at 8:00 a.m. on June 2, 2016.

Roundtable: Agency and Partner Reports

Wisconsin

Sylvester noted that there have been several organizational changes within Wisconsin DNR. This has included direct reporting of field staff to central office (Madison) staff, reductions in research and communications staff, and the splitting of the functions of the former Water Division into the Wildlife Division (fisheries functions) and Environmental Division (water quality and drinking water functions).

Sylvester also reported that Wisconsin's multi-discharger variance for phosphorus is currently under review by USEPA Region 5. Linda Holst noted that the region's review process would likely take 3-4 weeks, and that USEPA's goal in review is ensuring that there is sufficient written record to address potential legal challenges.

Weigel said Wisconsin is also moving forward with five rule packages, including recreational (*E. coli*-based) criteria and an anti-degradation rule. Schnieders asked Weigel describe some of the specifics of the anti-degradation rule. Weigel said this is primarily an update of an existing rule and which differs somewhat from federal approaches in regard to assimilative capacities and public communications. Hoke said Missouri is also in the process of updating its anti-degradation rule.

Illinois

Good said the State of Illinois has not yet passed a budget. In terms of the impact on monitoring, he said monitoring which has been able to continue is that supported with federal funds, and that most contracted vendors are not being paid. This situation, in combination with limited Illinois EPA staff resources to complete sampling, means that this year's approach to monitoring has been piecemeal. Good added that the position of Chief of the Bureau of Water has not yet been filled and it is not clear what the timeline will be for filling this position.

Minnesota

Flood said Minnesota's legislature has moved forward a regulatory certainty bill associated with the state's new eutrophication standards for rivers. She explained that this seen as a way to incentivize improved waste water treatment, where grants are made available and then regulatory certainty is provided for a period of 20 years. Schnieders asked if there is funding associated with this program. Flood replied that $5 million would be made available, with up to 80% of this in the form of grants. She indicated that approximately half a dozen facilities may be in the position to take advantage of this program. Flood added that Minnesota has also completed public hearings on an anti-degradation rule and is sending this along to USEPA. She said Minnesota PCA has also engaged in stakeholder meetings related to tiered aquatic life uses.

Iowa

Olson reported that Iowa has updated its water quality monitoring strategy document, and that this has included a recommendation for Iowa DNR to conduct monitoring on the Upper Mississippi River (UMR). Sylvester asked who is monitoring the UMR along its length in Iowa if Iowa DNR is not doing so. Olson replied that, for Clean Water Act purposes, Iowa DNR relies largely on data collected by Illinois EPA.

Olson also noted that Iowa is modifying its water quality criterion for E.coli, and will be removing a single sample maximum for E. coli. Schnieders said Iowa has also been working through economic efficiency issues associated with its anti-degradation rule.

Missouri

Hoke said Missouri's current water quality rulemaking effort is on hold, in part due to USEPA's disapproval of Missouri's proposed nutrient criteria for lakes. More broadly, he said, Missouri looking to update Section 304(a) criteria where these are now out of date in Missouri's rules. Hoke said Missouri is also revisiting ammonia criteria for those facilities discharging to small lagoons. Lastly, he noted that Missouri's parks and soils sales tax is up for renewal this fall. If renewed, this 1/10 of 1 percent sales tax would then remain in place for the next 10 years. Sylvester asked Flood how long the renewal period is for Minnesota's sales tax-supported funding mechanism. Flood replied that it comes up for renewal every 25 years.

UMRBA

Buntin noted that staff from the office of Representative Ron Kind (WI) had contacted him regarding the possibility of Mr. Kind re-introducing the Upper Mississippi River Protection Act. Buntin explained that this legislation, which includes a focus on sediment and nutrient monitoring on the UMR, had been previously introduced at several junctures in the past, and that staff is now seeking to make its provisions more congruent with current status and needs before any possible re-introduction. Buntin said UMRBA staff would work with Mr. Kind's staff to suggest potential updates and would also be in communication with the UMRBA Board, WQEC and WQTF as this process moves forward.

Revisiting the previous day's discussion regarding a joint letter with MRCTI, Buntin said staff would provide a draft for review very shortly after the conclusion of this meeting.

UMR CWA Assessment Feasibility Project

John Olson provided an update on the UMR CWA assessment feasibility project. He noted that three issues had been explored since the last WQTF meeting by individuals who had worked on the methodology development: 1) calculating values of total suspended solids (TSS) for use in aquatic life assessments as a supplementary indicator, 2) determining the role of replicate biological sample data in the aquatic life use assessment, and 3) how best to integrate data into the assessment that does not come from the *UMR CWA Recommended Monitoring Plan*.

In regard to the issue of TSS calculation, Olson reported that the methodology had been modified so that calculations based on fixed station monitoring would now utilize annual growing season medians rather than monthly medians.

Regarding replicate biological samples, which are being collected at a 10% rate during pilot implementation of the *UMR CWA Recommended Monitoring Plan*, Olson explained that the question had been raised as to whether the results of these samples should be considered in some way during the assessment process. After discussion regarding options including no use of the replicate sample results, randomized choice of result to use, and determination of which result likely to be most representative; it was decided that – at least for purposes of the pilot project where data is limited – these results should be available for consideration during the assessment process. Then after the pilot and review of all available data, a more prescriptive approach for the incorporation of replicate samples may be adopted.

Lastly, in terms of the use of data not from the *UMR CWA Recommended Monitoring Plan* in the *Provisional UMR CWA Assessment Methodology*, Olson noted that preliminary work by UMRBA staff had indicated fairly good agreement in results from data collected via protocols closely aligned with the *Recommended Monitoring Plan* (in time and space) and data collected using more disparate methods. Further, the states have previously indicated a desire to incorporate as much relevant data into the assessment process as possible, as is done in their own internal state assessment processes. However, the assessment text itself will not be changed at this time. Rather the intent is to integrate data flexibly into the assessment process and modify the methodology as needed in the future.

Olson added it is very likely that the methodology will be revised as a result of the pilot implementation of the monitoring plan currently being conducted by Minnesota and Wisconsin. Vanderbosch asked when an assessment resulting from the pilot project is expected. Hokanson replied that it is bit difficult to predict, given that this is the first time through the process, but he estimated the assessment should be available approximately one year after calendar year 2016 monitoring is completed, with review of data beginning in early 2017.

Innovative Watershed Approaches

Strategies for Engaging Agricultural Partners and the Role of Social Science in Watershed Work

Ann Hirekatur of Wisconsin DNR gave a two-part presentation regarding the effective engagement of agricultural partners in watershed work. The first portion of her presentation focused on general strategies for engagement and encouraging clean water practice adoption. The second portion of her presentation then discussed the specific application of these principles in TMDL work in the Wisconsin River Basin.

Hirekatur described traditional approaches to outreach and education to encourage new practices in a variety of sectors. She noted that these traditional approaches often assume that the provision of knowledge, accompanied by a change in attitude and/or economic incentives will result in a behavior change. However, these approaches often fail to identify important barriers to practice adoption. She also said that traditional educational materials, such as printed information, can also be very limited in their effectiveness. Additionally, Hirekatur pointed out that incentives need to be carefully considered, as it is important that the desired action will continue even if the incentive is no longer available.

Hirekatur proposed as an alternative and approach termed "Community-Based Social Marketing," which is designed to help uncover barriers to behavior changes and also institute specific measures to quantify behavior change. She described this approach as process including the following steps: 1) select behaviors, 2) identify barriers and benefits, 3) develop strategy, 4) pilot strategy, and 5) implement broadly and evaluate. In terms of identifying barriers, Hirekatur noted that there may be both internal (to the individual) barriers as well as structural (external) barriers to overcome, and that multiple methods may be needed to identify barriers. Then a strategy can be designed that will address

barriers. Additionally, she noted, social norms can be very influential in the adoption of new practices. As such, a public commitment by individuals to adopting a behavior can be a very powerful action.

Carol Hays asked whether, in addition to public commitment, public recognition is also potentially effective in encouraging behavior changes. Hirekatur agreed this can also be very effective mechanism of encouraging practice adoption.

Overall, Hirekatur observed that a common critique of voluntary programs is that they do not work, but it should be considered that the mechanisms we typically employ to promote such programs are very limited in their effectiveness – therefore we have an opportunity to look for ways to make voluntary programs work better.

Hirekatur next moved to discussion of the application of the community-based social marketing approach in TMDL work in the Wisconsin River basin. She noted that challenges present here have included diffuse regulatory authorities, a large geographic area, and multiple crop types. She described work undertaken in the basin, called the Wisconsin River Basin (WRB) Water Quality Improvement Project as including the following elements:

- Carefully identifying who to start with.
- Gaining commitments from innovators and early adopters to speak to others about the behavior.
- Helping make behavior more visible
- Delivering message through an individual (or organization) who has credibility with the audience you are trying to reach.
- Instead of a threatening messages, focusing on specific suggestions regarding what actions an individual can take.

She then described the members of the Healthy Soil, Healthy Water Partnership in the Wisconsin River basin, which includes producer groups, municipalities, state agencies, extension, and NGOs. Hirekatur also described the Healthy Soil, Healthy Water Workshop process, which included building on small-scale implementation, utilizing feedback from participants, and scheduling a followup workshop.

Hays asked if Hirekatur is seeing a spread of similar work, a focus on soil health, and practice implementation to other areas in Wisconsin. Hirekatur replied that this does appear to be happening and that a statewide focus on soil health is emerging. Hays asked how the state is planning to track success and practice implementation. Hirekatur said the BMP tracking system being developed in Wisconsin should be a very useful tool in tracking adoption. Hays said in Illinois the National Agricultural Survey is one tool that is being used to track practice adoption and that the process described by Hirekatur to promote adoption is something that holds great appeal for use in Illinois.

Weigel thanked Hirekatur for her presentation, saying that she made important points that the states need to consider as the pursue practice adoption, such as clearly identifying the desired outcomes, determining how to measure progress, and thinking about how best to support implementation.

Runoff Risk Advisory Forecast System

Dustin Goering of the National Weather Service (NWS) provided an overview of the Runoff Risk Advisory Forecast system developed by NWS in consultation with states, universities, and other federal agencies. He noted that nutrient reduction efforts, and the runoff risk concept, support numerous goals and objectives in both NOAA and NWS strategic plans, including: improving water quality, harmful algal bloom (HAB) and hypoxic zone reductions, developing decision support tools, building collaboration at local-regional-national levels, and leveraging existing NWS capabilities in new ways with new partnerships.

Goering explained that the focus of the tool is help prevent excess nutrient runoff by giving producers information about conditions that are most likely to lead to runoff – and hence when to avoid nutrient application. Interest in developing the tool has come from observations that significant percentages of annual runoff occur during specific seasons or weather events. He noted that in Wisconsin numerous well-publicized manure spills caused fish kills and well contamination during the winter of 2005-2006 caused the State Legislature to direct Wisconsin DATCP to implement online advisory system to assist farmers and applicators. The collaboration which emerged from this led to the creation of the Runoff Risk Advisory Forecast system. He noted that the collaboration began in 2009 and the tool first went live in 2011.

Goering noted that, following the tool's initial development in Wisconsin, interest has been growing and use of the tool is expanding into Minnesota, Michigan, and Ohio – with plans to extend it to all the Great Lakes states. The tool itself is also being refined from an initial proof-of-concept application to a "second generation" that will use a consistent modeling approach across the region and provide greater spatial specificity (i.e., 4 km x 4 km grid). In addition to expanding the use of the model, NWS' future plans include integrating social science tools to measure the adoption of Runoff Risk Advisory system by producers.

Iowa Flood Reduction and Water Quality Program

Schnieders gave a brief overview of the Iowa Watershed Approach, a statewide flood reduction and water quality program recently funded under a $97 million grant from the US Department of Housing and Urban Development. He said work will take place in nine watersheds across the state and has the following goals:

- Reduce flood risk
- Improve water quality
- Increase resilience
- Engage stakeholders through collaboration and outreach/education
- Improve quality of life and health, especially for vulnerable populations
- Develop a program that is replicable throughout the Midwest and the United States

Schnieders said kickoff meetings are currently taking place in the project watersheds and that work will take place over the course of the five year life span of the grant. In each watershed, this will include the following steps:

- Establish a Watershed Management Authority
- Develop a hydrologic assessment and watershed plan
- Deploy monitoring equipment
- Implement projects in the watershed to reduce the magnitude of downstream flooding and improve water quality
- Assess the project benefits based on monitoring and modeling data

He further explained that specific project types may include floodplain restoration or easements, farm ponds, terraces, buffer strips, bioreactors, wetlands, saturated buffers, storm water detention basins, and sediment detention basins. Hays asked whether specific projects are tailored to individual watersheds. Schnieders said watershed plans will be utilized to help design projects appropriate for individual conditions and needs.

Buntin commented that it is unknown whether similar funding from HUD will be available in the future. However, he noted that the Iowa project is very important as it can provide a model that could potentially be replicated elsewhere. Also, Buntin added that the project's inclusion of resilience as a goal is an innovative and compelling addition to more traditional approaches.

Schnieders suggested that if the group is interested in more detail regarding the project, it would be best to invite Larry Weber of the University of Iowa in for an extended discussion.

Harmful Algal Blooms (HABs) on the UMR

Hokanson reviewed the origin and status of the UMR HAB work group, noting that it had been established at the request of UMRBA's Board in early 2016 and now includes over 30 participants representing state and federal agencies, public water systems, and academic institutions on the UMR. He noted that the following had been among the activities of the group since its establishment:

- Held three conference calls (February, March, and May 2016)
- Drafted a capacities compilation for the 14 entities engaged in the work group (including program scope, staffing, monitoring, analysis methods, laboratory, and data sharing approaches for each entity)
- Exchanging press releases and other communication materials
- Developing a call list/communication plan

Hokanson noted that one question recently raised was whether agencies have typically observed increased reports of incidents following general awareness press releases. Good said this is a question Illinois EPA is interested in understanding better. Leo Keller said the Corps has observed increased reports from reservoirs following press releases, and that this happens in regard to other environmental issues, as well. Amy Shields said she had contacted CDC to determine whether they have done any tracking of issue. CDC's response was that they have not done any formal tracking of the relationship between public awareness messages and incident reports, but they have observed that a state's capacity to receive and document incidents does appear to be related to the overall number of incidents reported. Shields also noted that as CDC's One Health Harmful Algal Bloom System (OHHABS) application comes online and receives greater usage it may provide a more extensive database to provide insight into questions such as this.

Flood asked whether UMRBA's Board had set out specific goals, objectives, or products for the HAB work group. Hokanson and Buntin replied that the Board had not been specific in its request, but rather expressed a desire that the states be proactive and increase preparedness for a potential large-scale algal bloom. Good observed that Illinois EPA has already benefitted from the information exchange taking place in the group. He added that he has received a draft copy of ORSANCO's HAB plan and that it is brief document which could easily provide a starting point for a similar UMR plan. Good suggested that UMRBA could continue to provide value by acting as a coordinating body and that maintaining an email distribution list for use during HAB events would be valuable.

Hays asked whether a minimum, shared value had been established which would trigger notification among the states. Hokanson said this had not been done to date, though the draft communication protocol encourages states to contact one another when their own state's threshold for action has been exceeded. Holst noted that USEPA's recommendations regarding contact recreation criteria are expected later this year or in early 2017.

Sylvester asked when, seasonally, HABs are expected to occur on the UMR. Bob Bohannon said previous observations of microcystin have typically begun to occur in July, but that specific conditions

will determine the timing and extent of any blooms. Good asked Bohannon whether, in his opinion, blooms are indeed becoming more frequent or whether awareness of them has simply increased. Bohannon replied that the capacity to monitor blooms and algal toxins is really fairly recent, so this is challenging to evaluate – but there is also some evidence that blue-green algae is becoming more prevalent and is out-competing other species groups. Jessica Brooks added that shifting weather patterns, for example from El Nino to La Nina can potentially impact bloom occurrence.

Hokanson asked the WQEC, WQTF, and HAB work group members if they have any suggestions for how the work group might proceed forward most productively. Bohannon said one of the needs in this area is to promote greater communication, so to the extent the work group can do this, it holds great value. He added that understanding the capacities of individual entities is very helpful, as these capacities may need to be leveraged during a larger scale event. Bohannon suggested that, for example, monitoring capacities could be shared with smaller water systems that cannot afford to support monitoring on their own. Beyond monitoring, Bohannon commented that all participating entities would like benefit from improved modeling capacities in order to better predict the occurrence of HABs.

Bohannon also emphasized that Moline is upgrading its monitoring/analytical capacity and is certainly open to sharing any information it gathers with the work group. Lori Stenzel noted that American Water has begun HAB-related source water monitoring at its intakes and is also willing to share information gathered with the work group. Hokanson asked how frequently monitoring is being done at intakes. Bohannon said Moline plans to continue monitoring on an ongoing basis until a better understanding of occurrence and/or modeling tools are developed.

Hokanson suggested that, based on the discussion today and previous conversations of the work group, likely next steps would be: 1) to consolidate information gathered so far into a single document/plan, and 2) create a UMR HAB email listserv.

Next Meeting

Hokanson said the next meeting for the WQEC will be its joint meeting with the UMRBA Board in November, which will take place in St. Paul. For the WQTF, the next meeting would typically be held in September. Hokanson said he would be in contact with the WQTF members to schedule this meeting.

With no further business, the meeting adjourned at 12:15 p.m. on June 2, 2016.