Upper Mississippi River Basin Association
Water Quality Task Force Meeting
January 30-31, 2013
Davenport, Iowa

Meeting Summary

Participants

Gregg Good[*, 2]	Illinois EPA
Matt Short[*, 2]	Illinois EPA
John Olson	Iowa DNR
Mary Skopec[2]	Iowa DNR
Tom Wilton[*, 1]	Iowa DNR
Ken Krier[*, 1]	Iowa DNR
Glen Skuta	Minnesota PCA
Will Bouchard[*, 1]	Minnesota PCA
Joel Chirart[*, 1]	Minnesota PCA
Mohsen Dkhili	Missouri DNR
Sam McCord[*, 1]	Missouri DOC
Dave Michaelson[*, 1]	Missouri DOC
Karen Hagerty[2]	USACE, MVR
John Sullivan	Wisconsin DNR
Linda Holst	US EPA, Region 5
Ed Hammer	US EPA, Region 5
John DeLashmit[*, 1]	US EPA, Region 7
Craig Thompson[*, 1]	US EPA, Region 7
Scott Haire [*, 1]	Metropolitan Council Environmental Services
Greg Swanson[1]	City of Moline
Bob Bohannon[1]	City of Moline
John Sloan	National Great Rivers Research and Education Center
Chris Yoder[*, 2]	Midwest Biodiversity Institute
Dave Hokanson	UMRBA

[*] *Joined the meeting by phone.*
[1] *Participated the first day only.*
[2] *Participated the second day only.*

Call to Order and Introductions

The meeting of the UMRBA Water Quality Task Force (WQTF) was called to order at 10:35 a.m. on January 30, 2013 by Chair John Olson. Introductions by all participants followed. Dave Hokanson gave a brief overview of the content of the meeting.

Approval of Previous Meeting Summaries

The WQTF adopted the summaries of the following three meetings without any changes: 1) September 12, 2012 WQTF-UMR Water Suppliers Meeting , 2) September 18-19, 2012 UMR Clean Water Act Monitoring Strategy Project Work Session, and 3) September 19, 2012 WQTF Meeting.

Interstate 305(b) Assessment and 303(d) Impairment Listing Consultation

Hokanson displayed the current comparison chart of the states' listings for the UMR. Each state provided comments on its assessment and listings as follows:

Iowa
Olson said Iowa's draft 2012 303(d) list is out for public comment through February 28, 2013. He offered the following modifications to the chart contained in the meeting packet: 1) an impairment of the aquatic life use due to cadmium should be added to UMR Reach 5, and 2) the bacteria impairment for Reach 8 should be removed. Olson explained that the addition of the cadmium impairment is due to newly available data provided by Illinois, while the removal of the bacteria impairment follows Illinois' delisting of the same reach for bacteria impairment. He added that the localized nutrient impairment in Reach 7, which has been addressed via a TMDL, is associated with a single facility and that this facility feels the impairment no longer exists as water quality conditions have improved. Olson said Iowa DNR is in the process of convening a panel including both DNR and facility representatives to determine whether to the impairment is in fact resolved.

Holst asked Olson if he knows why Illinois removed the bacteria impairment in Reach 8. Olson replied that his understanding is this removal is based on the availability of new data. (Note: No Illinois representatives participated in the meeting's first day, so they could not respond to this question.) Olson added that he was not sure whether US EPA Region 7 would concur with Iowa's decision to de-list this segment. John Sullivan said that the soon-to-be drafted UMR assessment methodology should address this type of situation and whether one state's listing (or delisting) should cause a neighbor state to follow suit. Mohsen Dkhili concurred, but added that even if this is clarified in the methodology, it does not guarantee US EPA acceptance of such decisions.

Wisconsin
Sullivan said Wisconsin's 2010 303(d) list is as depicted on the current chart. For 2012, he explained that the chart is consistent with what has been submitted to US EPA, but there is some potential that the phosphorus-related listings will change. He also requested that the impairment of the fish consumption use in Reach 4 also include the designation being tied to mercury levels in fish tissue for Pool 9, as had been done previously. Hokanson said he would amend the chart accordingly. Sullivan stressed the importance of making sure that the footnotes on the impairment chart accurately reflect the source of the information (e.g., from a specific draft of the 303(d) list, from WQTF meeting report-out, etc.). Hokanson said he would continue to update the footnotes whenever new information is added and asked WQTF members to double-check this information when reviewing drafts of the list.

Minnesota

Glenn Skuta reported that Minnesota's 2010 303(d) list has been approved by US EPA and that its 2012 list has been transmitted to US EPA and is awaiting approval.

Missouri

Dkhili said Missouri's 2012 303(d) list was approved by US EPA in November 2012. He added that it is appropriate to maintain the "TMDL approved" designations on the chart for PCBs, chlordane, lead, and zinc.

Other Listing Issues Discussion

Hokanson asked whether the WQTF continues to find value in the consultation process and UMRBA's maintenance of the 303(d) listing comparison chart. Olson replied that both the chart and the process continue to have value for the states.

Nutrient-Related Developments and Activities

Iowa

Olson presented an overview of Iowa's recently released draft Nutrient Reduction Strategy, which was available for public comment through January 18, 2013. He explained that Iowa's Department of Agriculture and Land Stewardship (IDALS) had led the development of the strategy, as it is Iowa's representative to the Gulf Hypoxia Task Force. Olson said IDALS' work on the strategy had been done in cooperation with Iowa State University (ISU) and the Iowa DNR, adding that ISU had conducted a nonpoint source-directed science assessment and Iowa DNR had developed the point source-focused portion of the strategy. He described the two primary objectives of the strategy as: 1) reducing Iowa's nitrogen and phosphorus loads to the Gulf of Mexico by at least 45%, and 2) improving and protecting Iowa's water with respect to nutrient impacts.

Olson said Iowa's general approach as laid out in the Strategy is to: 1) achieve nutrient load reductions through technology-based actions, while 2) continuing to assess and evaluate nutrient water quality standards. He described Iowa's Water Resources Coordinating Council (WRCC) as being the primary implementing body for the Strategy. Olson said the Strategy is notable as it clearly identifies both nonpoint and point sources as contributing to local and Gulf Hypoxia problems, a step that in itself is meaningful. Skuta asked whether the WRCC had been established specifically to implement the Strategy. Olson replied that the WRCC's mission extends beyond the strategy and includes opportunities for water quality improvements – and funding of those improvements – beyond the Strategy alone.

Olson described the point source component of the Strategy as following an approach developed by the State of Kansas. He said Iowa's point source Strategy will rely on existing rules rather than new rules, and focuses in on 102 major municipal facilities and 28 industrial facilities that discharge significant amounts of nitrogen and phosphorus. Skuta asked whether Iowa currently had many facilities treating down to 1.0 mg/l for phosphorus. Olson replied that some Iowa facilities do already treat to this level, but for others meeting the 1.0 mg/l laid out in the Strategy will require a new level of treatment. He noted that the implementation of the point source portion of the strategy includes a 10 year period of regulatory certainty for facilities that adopt changes to treatment as part of the strategy, meaning that they would not face additional regulatory requirements during that time period. Holst asked whether US EPA Region 7 is in concurrence with Iowa's inclusion of this regulatory certainty component. John DeLashmit said US EPA Region 7 is not endorsing this portion of Iowa's strategy (Note: US EPA Region 7's comment letter on the draft strategy asked that the Strategy clarify whether exceptions to the 10-year moratorium could be made if a TMDL or numeric nutrient criteria came into effect.)

Olson explained that the nonpoint source component of the Strategy relies on voluntary approaches, and that this had been the subject of much discussion regarding the Strategy. Dkhili asked how the 45% reduction in nitrogen and phosphorus loading to the Gulf of Mexico had been calculated. Olson said it is a simple extrapolation assuming that if Iowa reduced its loading by 45%, and all other states did as well, then the net result would be a 45% reduction in loading at the Gulf itself. Hokanson asked for clarification on the use of cover crops as a conservation strategy. Olson said an example of this is planting alfalfa rather than corn. Sullivan asked if the costs associated with conversation measures in the Strategy attempted to capture cropland losses for approaches such as the use of cover crops. Olson confirmed that cropland losses are included in cost estimates.

Holst asked whether the depreciation of the effectiveness of wetlands, or other techniques, over time is included in determining their value. Olson said he did not believe this type of depreciation was considered in the Strategy. Dkhili asked whether the Strategy considers an approach of placing buffers just along the Mississippi River, as opposed to being scattered throughout the watershed. Olson replied

that he did not think such an approach had been considered in the Strategy. Skuta asked whether a particular size of watershed is recommended in the Strategy in the identification of priorities. Olson said the units were likely smaller than HUC-8 watersheds, though he was not sure of the specific size recommended. Sullivan asked what data and information will be used to support prioritization decisions. Olson replied that he is not familiar with the specific information to be used.

Olson noted that US EPA Region 7 had included the following among its comments on the Strategy: 1) a request for more specifics on how conservation systems will be targeted to most vulnerable lands, 2) the need to describe the benefits of cover crops (e.g., increased water infiltration, minerals held in the soil, etc.), not just the costs associated (e.g., loss in corn yield), and 3) concern regarding the Strategy's lack of focus on numeric nutrient criteria.

Olson highlighted some of the most noteworthy aspects of the Strategy as follows: 1) collaboration between IDALS and Iowa DNR in Strategy development, 2) the science assessment of conservation practices, and 3) incorporation of both point source and nonpoint source components. He also noted that, because there is not a rulemaking associated with the Strategy, it is not affected in the same way by public comments as a rule would. As such, he explained, it is very likely that the final Strategy will closely resemble the draft Strategy.

Hokanson asked whether the point source component of the Strategy is considered mandatory and how that portion of the Strategy will be implemented. Olson replied that Iowa DNR's plan is to implement the point source elements of the Strategy via the NPDES permits of the major municipal and industrial facilities identified in the Strategy. Sullivan asked whether US EPA Region 7 is likely to have concern with this approach if compliance schedules are not established. Olson concurred that Region 7 is likely to express concern here, as it did in regard to the 10 year regulatory certainty-related moratorium.

Holst asked all the states whether they utilize technology-based controls for nitrogen in their programs. Sullivan said he was not aware of these being used in Wisconsin. Skuta said technology based controls have not yet been implemented in Minnesota, but that these may be a possibility for use in southeast Minnesota where a 10 mg/l nitrate limit (based on the drinking water maximum contaminant level) is employed.

Holst asked whether Iowa has ambient water quality data which will allow for the detection of water quality changes as the Strategy is implemented. Olson replied that such data sets do not exist now, but that Iowa DNR recognizes the need for this data collection capacity. He said Iowa DNR is currently discussing a rotating basin approach to monitoring, including upstream and downstream monitoring that incorporates biological parameter, noting that funding for this monitoring appears likely to be available. Olson added that, even if a biological improvement is not observed, reductions in nutrient levels alone will be considered important because this means less nutrient loading to the Gulf – an important driver for the Strategy. Skuta commented that, in Minnesota, the driver for action is Lake Pepin, with Gulf Hypoxia being relatively less important in spurring action.

The WQTF members requested that Hokanson circulate a copy of Olson's presentation to the group. Skuta observed that this type of information sharing in the WQTF is very beneficial. Holst asked whether all the states are using a 45% reduction target in the development of their strategies. Skuta replied that it is too early in the process in Minnesota to know for sure if this will be incorporated.

In regard to specific nutrient standards development, Olson said he does not expect this to be completed soon in Iowa, as the state's efforts to develop lakes criteria have stalled. However, he said that Tom Wilton of Iowa DNR is examining biological responses related to nutrients and may have some findings and recommendations available in the next few months.

Wisconsin

Sullivan said he had spoken with Jim Baumann, who is working on Wisconsin's nutrient reduction strategy, and that his update is based on this conversation with Bauman. He explained that Wisconsin is pursuing a single, unified strategy that will combine direction coming from the Gulf Hypoxia Task Force with US EPA's recommended nutrient reduction framework as laid out in the March 2011 memo from Acting Assistant Administrator for Water, Nancy Stoner. Work groups focused on targeting, tracking, and monitoring are being formed and a draft document should be available for review in March 2013. Sullivan explained that Wisconsin's strategy will address both nitrogen and phosphorus and will include a compendium of best management practices, including nitrogen-specific conservation practices. He said the Hypoxia Task Force goal of 45% reduction will likely be recognized in the strategy, but may not be the specific goal Wisconsin identifies. Sullivan added that any new rule-making is not expected in the near term. He said more information about Wisconsin's strategy should be available by the time of the WQTF's meeting in June 2013.

Minnesota

Skuta said a few of Minnesota's ongoing activities are fitting into its statewide strategy development, including a soon-to-be-completed statewide nitrogen study and the Minnesota Department of Agriculture's work on a statewide nitrogen management plan. In terms of water quality standards, Skuta said Minnesota plans to have phosphorus standards for rivers out for public comment this year, with the intent being to have the standards in place by the end of 2014. He noted that Minnesota is also pursuing nitrogen standards, but that the completion of these will likely trail the completion of phosphorus standards.

Sullivan asked whether Minnesota had recently promulgated sulfate standards. Skuta responded that Minnesota has had long-standing sulfate standards, but these had drawn more attention of late due to renewed interest in mining in the state – with the mining industry challenging the existing standard. Sullivan said that in Wisconsin a concern regarding sulfate and mining has been the protection of wild rice beds. He noted that sulfate may be a consideration for the development of UMR CWA monitoring strategy.

Missouri

Dkhili said Missouri has an ongoing stakeholder process in place related to nutrient strategy development and that it is hoping to secure a CWA Section 104(b)(3) grant to support further work on the strategy. He said two students have been employed to work specifically on the strategy and that he will likely be contributing to modeling and data analysis associated with strategy development. Dkhili explained that Missouri will pursue prioritization within the strategy by looking first at the HUC-8 level and then at the HUC-12 level. He said he expected a first draft of the strategy to be available in March 2013, with Steve Walker being the primary contact point for the strategy in Missouri DNR.

Regarding nutrient standards development, he said US EPA has only approved a subset of Missouri's lakes criteria. As a result, he said Missouri is "back to the drawing board" for all lakes greater than 10 acres, and has yet to address criteria for rivers.

Dkhili noted that he had been working with Walker on modeling associated with assessing the impact of MRBI projects. Specifically, he said he is using the Spreadsheet Tool for the Elimination of Pollutant Load (STEPL) model to look at likely load reductions from land use changes before and after BMP implementation. John Sloan asked what the origin of this model is. Dkhili replied that the STEPL model had been developed by Tetratech, adding that another model approach is a load duration curve, which incorporates flow – and the probability of certain flows – into the modeling process.

Holst said US EPA Region 5 is working on a compilation of ongoing nutrient strategy work by the states of the region and offered to share this with the WQTF in its efforts to compile information regarding UMR state strategy development. She also noted that the Association of Clean Water Administrators (ACWA) had recently put together a national, state-by-state summary of ongoing nutrient work. Hokanson said the WQTF would definitely be interested in anything Region 5 could share.

Next Steps

Based on the preceding discussion, Hokanson suggested the following as next steps for the WQTF in regard to nutrient-related information sharing:

1) UMRBA staff will draft up an initial summary table of UMR states' nutrient-related efforts.
2) Staff will integrate the information gathered by US EPA Region 5 regarding states' efforts when that information becomes available.
3) Staff will seek further input from the WQTF and states' staff working on nutrient reduction strategies.
4) The information summary will be a subject of discussion at the next WQTF meeting, which will also include updates from the states on their nutrient reduction strategies.

Macroinvertebrate Comparison Study

A number of individuals joined this portion of the WQTF meeting by phone. Among these was Will Bouchard of Minnesota PCA, who provided an update on the status of the proposed UMR macroinvertebrate monitoring and assessment comparison study.   He said the study will be limited to the Minnesota-Wisconsin shared reach of the UMR, noting that the disturbance gradient on this portion of the UMR is not a strong as it is for other parts of the river and, as such, the findings of the study may be somewhat limited in their applicability to the UMR as a whole. Bouchard said the study is planning to include a total of 30-40 sampling locations, selected from Metropolitan Council and EMAP-GRE sites.

Bouchard explained that a budget request for funds to support the study had been submitted within MPCA and that study standard operating procedures would be developed over the course of the next few months. He said the current study plan is to deploy artificial substrate samplers in summer 2013, retrieving them in the fall and taking a kick net sample at the time of retrieval. Bouchard said he is hopeful that funding will support a second year of sampling, in order to capture temporal variability. He explained that, if a second year of the study could be executed, then results would likely not be available until some time in 2015. Bouchard noted that an intra-Minnesota macroinvertebrate study will be conducted over a similar time frame which, along with macroinvertebrate sampling on the St. Croix River, may help provide reference conditions for the UMR.

John Sullivan said Wisconsin DNR would seek to also collect samples from major UMR tributaries to aid in establishing reference conditions. Olson asked what source of funding is being used to support the study. Skuta replied that MPCA is piloting large river biological monitoring, starting with the main stem UMR in 2013. Therefore, he said the study is presumably supported by this portion of MPCA's budget, which in turn has received support from Minnesota's Clean Water Legacy (i.e., sales tax) funding.

Skuta asked about the intra-Minnesota work mentioned by Bouchard, inquiring as to whether these sites will be sampled for both fish and macroinvertebrates. Joel Chirart replied that these intra-Minnesota sites will be sampled for both assemblages.

Hokanson asked Bouchard to comment further on the potential applicability of the study's results to other areas of the UMR. Bouchard replied that, while recognizing that there will be limits to extrapolation, that the study will likely have some applicability for other pooled portions of the river and that the artificial substrate samplers are likely to be a good tool for use on the Open River.

Sullivan asked whether a meeting of Minnesota and Wisconsin staff would be needed before the study could proceed. Bouchard said one more planning meeting would be necessary, along with a subsequent field training on sampling methods.

Skuta emphasized that sampling for macroinvertebrates on large rivers will be a new endeavor for Minnesota PCA staff and that MPCA will be taking on monitoring on a number of large rivers in the future, presenting challenges to field crews that are not used to working in this environment. Olson asked whether Minnesota is headed toward the establishment of a biocriteria for macroinvertebrates or whether its monitoring is more oriented toward assessment. Skuta replied that the monitoring is designed to produce assessments of large river reaches, such as the intrastate UMR from its headwaters to the Twin Cities. He said this will provide Minnesota with the most complete assessments it has had of its large rivers. Sullivan asked how Minnesota had determined sampling locations for its large river sampling. Skuta said a longitudinal design had been used, oriented around pour points and major dischargers.

UMR CWA Assessment Methodology

Hokanson noted that a brief handout, entitled *UMR CWA Assessment Methodology – Preliminary Thoughts and Considerations* had been developed to help guide this conversation. This handout identifies a series of issues to be considered in methodology development. The WQTF agreed to walk through these issues as a way of organizing its discussion regarding the assessment methodology.

Authority of the Assessment/Function in Assessment and Listing
Sullivan said he envisioned that UMR assessment would be factored in to the states development of their own 305(b) reports and 303(d) impairment listings, as Wisconsin has already done with EMAP-GRE data. Holst said she did not see the value in developing an assessment that could only serve 305(b) purposes, and that it is important for the assessment to lead to 303(d) listings. Skuta said his understanding is that the 305(b) function is that of a more general assessment and that the 303(d) piece is regulatory in nature. Dkhili stated that a 305(b) assessment is a necessary precursor for 303(d) listing. As such, he suggested that the states' initial efforts should be focused on agreeing what to "yellow flag" via a 305(b)-focused assessment as way to facilitate future agreement on what to "red flag" in 303(d) listings. He also identified a benefit of a shared assessment as a tool to aid in the identification of shared water quality standards for the UMR. Both Sullivan and Dkhili said that states may have different thresholds governing when they will consider results compelling enough to require a listing.

Sullivan said he envisions the UMR assessment as a 305(b)-type product that categorizes UMR reaches as attaining or not attaining and that provides guidance for the states in their development of their own 303(d) lists. He added that the states would need to recognize or reference the UMR methodology within their own states' methodologies. Skuta said that using the UMR CWA assessment for 303(d) purposes would trigger the need consider TMDL implications, adding that many of the stressors on the UMR are likely to be from non-point sources, as opposed to point sources, and therefore less amenable to the TMDL process. Olson said Iowa has made 303(d) listings when a reference condition has been identified and a calibrated IBI in place for a waterbody. As such, he said, a listing based on the type of information currently available for the UMR is possible.

Holst questioned how a 305(b)-type assessment can set the stage for action to address a problem. Olson responded that the next step following the assessment would be stressor identification, and that once

stressor(s) are identified, the 303(d) list can be created, TMDLs pursued, and permit limits assigned. He continued to say he felt that the UMR CWA assessment should therefore be a condition assessment which sets the stage for subsequent action. Sullivan observed that other groups, such as environmental groups, can always weigh in and push for listings based on any assessment developed.

Hokanson said he is hearing the following main themes in the WQTF's discussion regarding the authority of a UMR assessment:

- The states are in agreement that the assessment should be a 305(b)-type product.

- The choice to focus on 305(b) assessment will need to be accompanied by an explanation of the reasons this approach is being pursued (e.g., seen as a necessary precursor for further action, allowing for agreement at non-regulatory level before moving to regulatory level, differences among states in 303(d) decision processes, etc.).

- There is a recognition that US EPA and/or other groups may push the states to make 303(d) listings based on the outcomes of the assessment.

Olson asked Sullivan to confirm his earlier comment that Wisconsin would pursue a 303(d) listed based on data collected by the EMAP-GRE program. Sullivan replied that this is correct and in fact Wisconsin had already done so. Olson then asked Sullivan whether, in his opinion, if the UMR CWA assessment showed non-attainment for a reach then the states should convene to agree on whether or not the reach should be listed. Sullivan said that he envisioned that such bilateral concurrence would likely be necessary. Sullivan added that one constraint currently on shared listings is that states may differ in the need for stressor identification in the listing process and that the process of stressor identification is not foolproof.

Spatial Scope
Dkhili said he did not think that side channels should be included in the spatial scope of the UMR CWA assessment, as they are contained wholly within a single state. Sullivan observed that assessment results between the main channel and side channel will likely be similar in most cases. He noted that – at least in terms of ambient water quality – the main channel and said channels have very similar characteristics. Skuta and Dkhili suggested that the assessment be kept to the main channel, at least at this time. Sullivan cautioned that for vegetation, the current sampling method actually combines the main channel and side channels.

Assessment Unit
The WQTF chose to focus on the assessment unit for aquatic life, recognizing that there may be different units chosen to assess the other major uses (recreation, drinking water, and fish consumption). The WQTF reached consensus that he 13 interstate assessment reaches be used as the assessment unit for aquatic life, and possibly for others uses.

UMR Water Quality Data Management

General Discussion of UMR Water Quality Data Management
Hokanson said one of the outcomes of the Water Quality Executive Committee's meeting in November 2012 was a request that the WTQF take a detailed look at UMR water quality data management, both generally and specifically in light of the potential for new data to be generated under the UMR CWA monitoring strategy. Skuta said the WQTF should keep in mind the Hypoxia Task Force's Monitoring Collaborative effort presented by Mike Woodside of USGS at the previous WQTF meeting, as this may help address some of the questions regarding data management. He added that biological information, as would presumably be produced by the UMR CWA monitoring strategy adds to complexity to data

management. Olson concurred, saying Iowa has spent several years in development of a database to handle biological information.

Olson said his inclination regarding data management is not to create something entirely new, but rather to work from and with existing databases. Sullivan observed that, typically, the first thing that is done in conducting a CWA assessment is to pull all the information into a single database. Skuta said there is clearly a balance to be maintained between creating a single, stand-alone database and utilizing existing data sources.

Sullivan observed that some data has been lost over time because it is not in an actively maintained database, an example being the data assembled by Bob Meade of USGS. John Sloan said the National Great Rivers Research and Education Center (NGRREC) is working with University of Illinois in an effort to compile existing data sets and that his understanding matches what's being touched on this discussion – that there are numerous existing UMR data sets being maintained in multiple databases. Olson asked whether NGRREC has a contract in place at this time to pursue the work or whether the effort is in more of a scoping phase. Sloan said that a contract is not yet in place, but that the expectation is that the University of Illinois will handle the programming piece of the data compilation effort. He added that the Great Lakes Monitoring website (www.greatlakesmonitoring.org) is an example of the concept that NGRREC is pursuing.

Utilizing Data Collected by UMR Water Suppliers
Greg Swanson said that, ideally, UMR water quality data would be collected continuously at drinking water intakes and provided to interested parties. However, the reality is that it's probably necessary to start much simpler and as such, and as an outgrowth of his discussions with the WQTF in September 2012, he and Hokanson have put together a simple survey to gather information about the type of data currently being collected by UMR water suppliers. He said this survey would meet a near term goal in identifying what's currently being done and that perhaps data sharing could then focus on a few key parameters from among those currently collected.

Swanson said he had been in communication with Jerry Schulte of the Ohio River Valley Sanitation Commission (ORSANCO), and learned that Schulte manages a very basic data sharing program where utilities send in data and Schulte simply compiles the information and makes it available to all participating water suppliers. He contrasted this to water suppliers entering data into US EPA's STORET /WQX, which his utility has attempted, but found to be very burdensome. Swanson added that, from a utility perspective, the parameters likely to be of greatest interest include ammonia and total organic carbon (TOC).

Olson said the states' CWA programs are very interested in data that could be provided by water suppliers, even if it is only a few parameters. He noted that nitrate in particular would be a parameter of great interest for CWA programs. Sullivan asked Swanson which parameters most likely to have long-term record with water suppliers. Swanson replied that this is difficult to say across utilities, but the City of Moline has records reaching back to the 1940s, though changes in methods may be an issue. Sloan suggested that a focused project to compile all existing water supplier data might be a worthwhile endeavor.

Olson said Iowa DNR is considering adding cryptosporidium to its ambient water quality monitoring program and as such he is curious as to whether there is a particular threshold for cryptosporidium used by water suppliers. Swanson said that, under Safe Drinking Water Act (SDWA) regulations, certain levels of cryptosporidium trigger requirements for the utility to employ greater levels of pathogen inactivation in their disinfection process.

Skuta asked whether UMR water suppliers are routinely monitoring for the presence of pharmaceuticals in source water. Bob Bohannon replied that in the past year Moline has done three rounds of monitoring, with 20-30 samples per round. He said DEET, nicotine and a few other products were found at parts per billion levels during this monitoring.

The WQTF agreed that Hokanson and Swanson should work together to finalize the water suppliers survey and distribute it as a first step in exploring potential data sharing between UMR utilities and the states' CWA programs.

UMR CWA Monitoring Strategy: Initial Discussion

The WQTF next discussed the UMR CWA monitoring strategy, with an emphasis on identifying preliminary preferences for monitoring design and identifying questions to raise with project contractor Chris Yoder in the following day's discussion.

Sullivan said he favors probabilistic monitoring at the 13 assessment reach level using 15 samples per reach, the Probabilistic D2 option presented in the *Options and Considerations* document. Skuta said he views the Probabilistic D2 and Nonrandom Longitudinal Survey designs as the most promising options. He added that he would ask Yoder about the portrayal of followup monitoring in the *Options and Considerations* document, noting that while followup monitoring is only spelled out for the Nonrandom Longitudinal Survey design, it is likely that followup monitoring would take place for several of design options. Others agreed that followup sampling would likely be needed in designs beyond the Nonrandom Longitudinal Design.

Holst asked how followup monitoring would be applied if a Probabilistic A (30-50 sites river-wide) approach was employed. Sullivan and Skuta both answered that follow up monitoring would be difficult to implement meaningfully under this design, due to the limited number of initial samples, so this may be one of the designs where followup would not apply.

For the intensive pollution survey design, Sullivan said he is not confident that the individual sites' sample results can be aggregated up into a representative 13-reach level assessment, particularly given the prominence of point source discharges in this design. He added that the EMAP-GRE design was able to pick up the influence of tributary inputs like the Minnesota River and other major influences on water quality, such as Lake Pepin, illustrating that a probabilistic approach can be effective on the UMR in detecting water quality changes. Skuta added that in dealing with a large-scale resource such as the UMR it can be difficult to pinpoint particular impacts on water quality and as such there will likely be a limit to the precision that can be expected in water quality monitoring.

Skuta said nonpoint sources are the dominant factor affecting water quality on the UMR, and tributary inputs are particularly important. As such, he said he does not think the Intensive Pollution Survey design is well suited to the UMR, given its focus on point sources. Skuta explained that this concern is more important in decision making than the cost of monitoring alone. Holst asked Skuta how he able to say that point sources do not have important impact on water quality. Skuta replied that his experience suggests that dilution very much limits the impact of point sources on a river the size of the UMR. Holst said there may be cases of localized impact, where a pollution plume hugs the bank on the side of the river where a discharge occurs.

Sullivan said one context on the UMR where point sources may have significant impact on water quality is when these discharges occur in an off-channel area such as a backwater. He continued by saying that, in the flowing channel, it may be difficult to capture the impact from "bank-hugging" within any monitoring design due to timing of releases, changing flows, and other factors. As such, any design that

would seek to detect these types of effects would need to incorporate a lot of knowledge about the specifics of individual point source discharges.

In regard to followup sampling, Dkhili said that the "followup" process may not necessarily include more sampling, as there is often ancillary information available that can be examined in cases where a pollution issue is detected in initial sampling. As such, the specifics and extent of followup sampling may be situation-dependent.

Sullivan noted that, if the WQTF supports assessment at the 13 reach level, there would continue to be disconnect regarding the assessment of the fish consumption use—in that fish consumption advisories are typically issued at the pool level, rather than the assessment reach level. He said he would advocate for the issuance of fish consumption advisories at the assessment reach level.

Returning to the question of overall monitoring design, Olson said he supports the D2 probabilistic approach, which produces an assessment at the 13 reach level, adding that he prefers this to the intensive survey design. Sullivan noted that the probabilistic D2 approach, as well as other approaches, can be implemented at various levels of effort. For example, he said, the whole river could be sampled in two years, or just one or two assessment reaches could be sampled each year. Dkhili suggested a three year rotation followed by sampling to identify stressors.

Holst said she did not understand how followup monitoring is to be conducted under the strategy and whether it would be automatically undertaken or pursued at the discretion of the state. Dkhili replied that, before followup monitoring is conducted, any other available data would be examined and that it therefore may not always be necessary to conduct followup monitoring. Holst stated that if followup monitoring needs to be conducted, this would seem to eliminate any cost savings that may have been achieved by implementing less intensive designs.

Skuta noted that, in some cases, Minnesota has placed a waterbody on its 303(d) without a cause of impairment being identified. As such, impairment listing is not always dependent on the determination of cause via followup monitoring. Skuta added that he would like to see the confidence level and margin of error described in the report for both Probabilistic D1 and Probabilistic D2 designs, as he would like to understand the tradeoff being made if the WQTF were to pursue the lower intensity D2 option. He said this is question he plans to pose to Yoder during the subsequent day's discussion.

The meeting adjourned for the day at 5:30 p.m. and reconvened the next morning at 8:00 a.m.

UMR Monitoring Strategy: Options and Considerations Document

The project's contractor, Chris Yoder of the Midwest Biodiversity Institute, joined the meeting via phone to lead a discussion of the revised draft *UMR CWA Monitoring Strategy Options and Considerations* document. Yoder highlighted that modifications made to the document in response to WQTF input include the addition of the Probabilistic D2 and Nonrandom Longitudinal Survey designs, as well as the re-casting of the Sentinel Network as a Tributary Loading Network. Skuta asked when the WQTF would see a draft of the *Recommended Monitoring Plan*. Hokanson replied that this would be drafted by mid-May 2013, so that it will be available in advance of the joint WQEC-WQTF meeting taking place in early June 2013 in St. Louis.

Reference Sites
Yoder said it may be clearer to re-label these as "Index Sites" as their function is to provide representation of condition in various geographic areas along the UMR, and not necessarily pristine reference conditions. He noted that a similar approach had been taken in the UMR CWA Biological Assessment

project. Yoder explained that monitoring at reference sites would accompany most of the design options, except for the system-level design (Probability A).

Olson asked for clarification on the distinction between a reference site and an index site. Yoder replied that the main distinction is that the index approach is more focused on providing geographically diverse sites representative of regional conditions along the UMR than in identifying a traditional, least-impacted reference sites.

Karen Hagerty asked whether stream order is an important consideration in selecting reference sites. Yoder replied that the selection approach is widely inclusive and as such, streams of differing orders could be included. Hagerty observed that, on the Missouri River, a lack of sediment (rather than excess sediment) is a concern. She then asked whether UMR reference sites downstream from the Missouri River would recognize this. Yoder replied that this is definitely a consideration, although it is reflected more in the index calibration process than in reference sites per se.

Sullivan asked whether the reference sites inform the establishment of CWA attainment thresholds. Yoder replied that this could be one use of the reference site data, though it could also be applied more in terms of the potential attainability of various thresholds, rather than in the identification of the thresholds themselves. Sullivan asked if the sites would therefore need to be segmented according to the various reaches of the UMR. Yoder concurred, saying that this is what he meant by having a geographic spread in the reference sites.

Hokanson asked whether samples from the reference sites would be collected at the same time and on the same frequency as the other sample sites in a particular sampling design. Yoder replied that reference site sampling would be integrated into the other sampling for a design, so that it would take place the same time and frequency. However, he added, the Tributary Loading Network samples would likely be collected on a different timeline and frequency.

Tributary Loading Network
Gregg Good said the Monitoring Collaborative effort taking place under the auspices of the Hypoxia Task Force continues to focus on locations to keep in place/emphasize in collecting nutrient data throughout the basin. Mary Skopec emphasized the importance of not creating a new set of monitoring locations, but rather that the Tributary Loading Network discussion should focus on integrating with existing monitoring and supporting established sampling locations. Sullivan concurred, but noted that the monitoring strategy is a place to push for consistency in parameters sampled across tributary monitoring locations. Skopec said the WQTF may be able to glean ideas on parameters, methods, and frequency from the Monitoring Collaborative. Sullivan and Olson suggested using drainage area at the gaging station as a way to consistently portray this information in the Tributary Loading Network table. Yoder agreed, but said drainage area size should not be the only factor considered in deciding whether to recommend a location as part of the Tributary Loading Network. Sullivan asked that Lock & Dam 9 be included as a mainstem location within the Tributary Loading Network.

Assessment Considerations
Yoder described the contents of Chapter 7 of the *Options and Considerations* document, which includes a discussion of how the various monitoring designs support assessment of each of the major UMR designated uses and the general appearance of the assessment outcomes from various monitoring designs. He noted that, while the designs seek economically efficient use of sampling crews, none of them achieve a frequency of sampling for indicator bacteria (*E. coli*) that would be required under a literal interpretation of states' requirements for recreation use assessment.

Skuta asked why followup monitoring was only explicitly documented for the Nonrandom Longitudinal Survey design, and not for other designs. Yoder replied that followup monitoring could indeed be integrated into other design types, though it is important to consider how long it may take to execute followup monitoring as under some designs this might take one or two years. Skuta asked whether the followup monitoring is essentially for the purposes of stressor identification and, if so, wouldn't the Intensive Pollution Survey design also involve some followup monitoring. Yoder replied that followup monitoring is indeed intended for stressor identification, but that the Intensive Pollution Survey effectively builds this into initial monitoring, so that followup monitoring should not be necessary under this design. He said followup monitoring under the Nonrandom Longitudinal Survey would probably look a lot like the Intensive Pollution Survey, except that it would be applied to discrete sections of the river as needed.

Sullivan asked why the Nonrandom Longitudinal Survey uses a "best bank" approach in selecting sampling sites. Yoder replied that this follows the suggestion made by Minnesota Pollution Control Agency representatives in previous discussions. He added that the UMR has significant bank-to-bank variation and as such it may preferable to randomize bank selection for sampling. Yoder stressed that, at minimum, the issue of variation across the river needs to be addressed in the monitoring strategy, as both water quality and physical characteristics can differ significantly on opposing banks. Skuta said the intent of MPCA's "best bank" approach is to be equivalent to what was done in EMAP-GRE, allowing the field crew to select the bank that best meets sampling needs.

Olson asked whether the report's Table 7 implies that designs have relatively equal effectiveness in assessing across various uses, with the more intensive designs doing an increasingly better job of assessment. Yoder replied that this is largely true and it is important to pay attention to the level of spatial assessment supported under various options.

Holst asked how states might translate a system-level assessment, such as that produced by the Probabilistic A approach, into a state-level impairment listing. Sullivan replied that it would be up to the individual state, but that historically the states have made listing based on limited data sets, so it is possible a state might choose to list based on a Probabilistic A level of information. Yoder acknowledged that the states can and do list based on very limited sets of information, but that he would say a functional state-based assessment needs at least a Probabilistic C level of information to support it.

Holst said her main interest is in understanding what the states will actually do with the information produced by various monitoring designs. Sullivan said each state will need to consider the data produced in light of its assessment methodology and determine whether it can make an impairment determination using the available data. He added that Wisconsin had concluded that EMAP-GRE data provided enough information to support an impairment determination. Yoder said the *Options and Considerations* document does not address what a state *will do* with the information produced by monitoring designs, but it does address what *can be done* with this information.

Yoder noted that the less intensive designs can still support stressor identification, but that it cannot be tied to specific locations. Hagerty said it appeared that Probabilistic A and B would not support meaningful impairment listing for this reason. Yoder concurred, adding that this is an example of why it is important to consider the premise of the design in considering whether or not it to use its results for impairment listing purposes.

Good requested that percentages be added to the "Full" and "Non" attainment columns of the report's Table 9, to allow for easier comparison. The WQTF also noted that the river miles presented in Figure 11 and Table 11 were not consistent, even though each said it was describing the same river reach (i.e., assessment reaches 0 and 1). Yoder said he would re-check and revise these items.

Data Management
Skopec said one important consideration is consider data compatibility with US EPA's Water Quality Exchange (WQX) and other platforms, such the comprehensive data portal (www.waterqualitydata.us) demonstrated at the previous meeting.

Quality Assurance/Quality Control
Hagerty asked what the expectations would be for ancillary data collected outside of the monitoring strategy design per se. Yoder replied that the specifics would need to be determined but that it definitely will be important to establish QA/QC for ancillary data sets, such as information available from wastewater dischargers.

Developmental Needs
Hagerty said one reason LTRMP had dropped macroinvertebrate monitoring is that it did not work well in all river reaches. She cautioned the WQTF to consider this, as she is not sure that the methods being considered (kick-sampling, artificial substrate) will be effective throughout the UMR. Sullivan replied that EMAP-GRE demonstrated that kick sampling could work on the UMR and the states are investigating artificial substrate as an option also. Yoder said it is possible some of these types of questions can be answered as monitoring proceeds and should not preclude the implementation of the strategy in general.

Implementation Options and Costs
Yoder reminded the group that the costs estimates presented in the report assume a centralized monitoring entity to allow for comparison across options, but that ultimately monitoring may not be implemented in this way.

Skuta said followup monitoring costs should not be limited to just the Nonrandom Longitudinal Design option and should be considered for all applicable designs. Yoder said followup monitoring may also be applicable for Probabilistic B, C and D levels of design. The WQTF requested that followup monitoring costs therefore be added as a row on cost comparison tables and that such costs be estimated for all applicable options.

Hagerty asked whether cost estimates reflect inflation and other costs that will increase over time (e.g., staff salaries). Yoder replied that this was not explicitly accounted for in the development of estimates, at least for the purposes of comparison within this report.

UMR Monitoring Strategy: Recommended Monitoring Plan

The WQTF next addressed the development of its *Recommended Monitoring Plan*, which would offer the Task Force's recommendations for UMR CWA in light of the information presented in the *Options and Considerations* document.

Sullivan said his preference is a Probabilistic D2 monitoring design supplemented by targeted sampling where there are tributary inputs, point sources, and areas. Skuta asked whether the targeted monitoring could be included in the resulting assessment, as these are supplementary to the primary sampling design. Olson asked whether side channels would be included in the design. Sullivan suggested that side channel could be incorporated in the design. He added that it may be desirable to stratify the assignment of sites in an individual pool so that randomization does not result in the clumping of sample sites in the upper or lower portion of a pool. Holst and Dkhili both questioned whether such a stratification might raise statistical issues. Skopec said one way to potentially address this is to make each site a much larger area.

Hokanson asked whether the WQTF-desired design is really Probabilistic D1, but that resource considerations might be leading the WQTF to advocate for Probabilistic D2. Skuta replied that, in choosing between these options, it will be important to understand how they differ in terms of statistical significance and margin of error. Sullivan said Wisconsin felt it was able to make pretty conclusive statements on the reach level using EMAP-GRE data, which often had fewer than 15 samples per assessment reach. Yoder said he would look into the impact on confidence level and margin of error of moving from Probabilistic D1 to Probabilistic D2.

Good asked whether the WQTF needs to establish a certain confidence level as necessary for the monitoring strategy. Holst asked whether this would be relevant for resulting assessments and listing. Skuta said, at minimum, the WQTF need to take this into account in recommending a particular monitoring approach and, as such, it will be very important to have this information for the Probabilistic D1 and D2 options, as well as other options if possible. Skopec observed that UMR sample sites may not be entirely independent and this may have an impact on statistical considerations.

Several members of the WQTF expressed confusion regarding the "Implementation Cycle" column of Table 2 in the report. Yoder explained that, in general, the assumption is that sampling of the full UMR would be completed in five years, and that the "Implementation Cycle" column then describes when and how often sampling occurs during that time period for a particular option. For example, said that he assumed monitoring under the Probabilistic D2 option would take two years, and then there would be a three year break from monitoring. Sullivan said he would prefer that a full UMR round of monitoring be completed in two years, but that it might be possible to fall back to four or five years to complete if resources would not allow a more rapid pace of completion. Yoder and Hokanson said there would be clarification to the definition of "Implementation Cycle" on Table 2.

Hagerty asked whether Probabilistic D2 would likely include reference sites. Yoder replied that it would likely include 15-30 reference sites. The WQTF requested that reference sites be explicitly addressed on the report's Table 15, which describes the level of effort associated with various monitoring designs.

Hagerty asked whether, in cases where multiple samples are to be collected within a single round of sampling, all samples are collected in the same year and same index period. Yoder replied that this is indeed the case, with the intent being for collection of all samples in a single year and index period. Skuta said that, in Minnesota, a typical approach has been to collect all the biological samples on a single pass and then return, as needed, to collect additional samples.

In terms of the recreation use, Good said Illinois may be able to produce a 305(b)-type assessment using less than the stipulated number of *E. coli* samples, but that this would not be enough information to make a listing decision. Holst reiterated her concern with a monitoring strategy that does not necessarily lead the states to listing decisions. She said it may be hard to generate support and find funding for such an approach.

Olson noted that, in addition to the limitations regarding recreation, the monitoring designs being considered may not offer enough site-specific information to support drinking water use assessments. Hokanson asked whether, if a recommended "master" design could not fully support recreation and drinking water use assessments, it was worth collecting this type of data as part of the design. The response of the WQTF was that, even if these parameters are included in the master design, supplemental monitoring would likely be necessary. Olson said targeted indicator bacteria and drinking water parameter monitoring could be conducted at locations known to have pollution concerns. Skopec suggested that drinking water use-related monitoring could be targeted to just intake locations. She added that Iowa has used mobile labs very successfully and this could be one way to address recreation use sampling and analysis issues.

Sullivan asked whether fish tissue information to be collected under the strategy is intended to supplement or replace existing fish tissue monitoring. Hokanson said he views any data collected under the UMR CWA strategy as feeding into the states' established fish consumption advisory process.

Confirming Priorities and Next Steps

Hokanson summarized the action items emerging from the WQTF meeting, noting the following in particular:

- *Assessment and Listing Consultation:* Hokanson will update the UMR 303(d) comparison chart per discussion in the meeting.

- *Nutrients:* Holst will update Hokanson on US EPA Region 5's compilation of state nutrient reduction strategy work. Hokanson will begin compiling a summary of the UMR states' reduction strategy work, as well as other nutrient-focused efforts. Hokanson will distribute Olson's presentation regarding Iowa's nutrient reduction strategy to the WQTF.

- *Assessment:* The WQTF has determined an UMR CWA assessment methodology should result in a 305(b)-type assessment at the 13 reach level for the main channel. The methodology should document why these choices have been made, and what benefits and limitations are associated with these choices. The WQTF will continue to develop the assessment methodology as it completed work on its *Recommended Monitoring Plan*.

- *Macroinvertebrate Comparison Study:* Minnesota and Wisconsin will participate directly in the study. The WQTF will continue to hear updates on the study as it progresses.

- *Drinking Water Suppliers Collaboration:* Swanson and Hokanson will finalize data collection survey and distribute to UMR water suppliers.

- *UMR CWA Monitoring Strategy*: Yoder will revise the draft *Options and Considerations* document in light of input from the WQTF. The final *Options and Considerations* document will be completed by June 30, 2013. Hokanson will begin work on the *Recommended Monitoring Plan*, with input from the WQTF. A draft of the *Recommended Monitoring Plan* will be available in advance of the WQTF's June meeting with the WQEC.

With no further business, the meeting adjourned at 12:30 p.m. on January 31, 2013.