

**Upper Mississippi River Basin Association
Water Quality Task Force Meeting
May 4, 2010
Rock Island, Illinois**

Meeting Summary

Participants

Gregg Good	Illinois EPA
Matt Short	Illinois EPA
Roy Smogor	Illinois EPA
Marcia Willhite	Illinois EPA
John Olson	Iowa DNR
Tom Wilton	Iowa DNR
Will Bouchard	Minnesota PCA
Marvin Hora	Minnesota PCA
Mohsen Dkhili	Missouri DNR
Jim Baumann (1)	Wisconsin DNR
John Sullivan	Wisconsin DNR
Bill Franz	US EPA, Region 5
Larry Shepard	US EPA, Region 7
Shannan Garretson	Iowa Environmental Council
Chris Yoder	Midwest Biodiversity Institute
Peg Donnelly	UMRBA/US EPA Region 5
Dave Hokanson	UMRBA
Nat Kale	UMRBA

(1) Participated by phone.

Call to Order and Introductions

The meeting of the Water Quality Task Force (WQTF) was called to order at 12:40 p.m. by Gregg Good. Introductions of all in attendance followed. Good noted that discussion of US EPA Region 7's draft arsenic TMDL would be added to the agenda.

Corrections to Previous Meeting Summary

Dave Hokanson asked whether there were any corrections to the summary of the January 2010 WQTF meeting. No corrections were requested.

(Note: Several corrections were provided by John Olson following the May meeting and were incorporated into the final version of the January 2010 meeting summary as posted on the UMRBA website at www.umrba.org/meetings/wqtf-summaries/wqtf1-10.htm.)

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

Minnesota

Marvin Hora said that Minnesota's 2010 303(d) list for the Upper Mississippi River (UMR) is unchanged from 2008, and that MPCA sent the 2010 list to US EPA in March. He noted that PFOS-related listings had remained the same, although he had previously mentioned at the January WQTF meeting that these might change. Hora also expressed Minnesota's concern with Region 7's draft arsenic TMDL for two segments of the UMR, noting that the impairment listing and draft the TMDL are based on total arsenic, while the water quality standard criterion is actually for arsenic (III). He added that the TMDL implied a potential zero arsenic waste load allocation for Minnesota dischargers.

Wisconsin

John Sullivan said that Wisconsin's 2010 list for the UMR will be similar to its 2008 list, although changes would be incorporated affecting mercury and PCB in-water related listings. He noted that listings associated with mercury and PCB concentrations in fish tissue would not be affected. Sullivan noted that the UMR PFOS impairment is only for assessment reach # 1 and does not extend below the Chippewa River. He said that the draft 2010 303(d) impairment list is available on the Wisconsin DNR website, but deferred any further comment on the list to Jim Baumann, who would be joining the meeting later by phone.

Iowa

John Olson said that Iowa's 2008 303(d) list is still undergoing review at US EPA Region 7, but is close to approval. He indicated that submission of the 2010 list is likely still months away. Olson said he anticipates the 2010 UMR listings will be similar to 2008 listings, except that localized nutrient (slime) and arsenic impairments may be removed from the list due to TMDLs currently being developed by Region 7.

Illinois

Good said that US EPA's final and complete approval of Illinois' 2008 303(d) list is still pending, due to nitrogen and siltation issues. However, these issues do not affect 2008 UMR listings. In regard to the 2010 303(d) list, Good said that Illinois plans to have its list to US EPA Region 5 by mid-July, noting that new data is driving changes on aquatic life use attainment in assessment reach # 13.

Matt Short passed out a summary of Illinois' recent CWA program activities, including proposed 2010 303(d) listings for the UMR. Olson asked what had triggered the dissolved oxygen listing on assessment reach # 13 and Mohsen Dkhili asked what the iron criterion was that triggered another listing in this same reach. Short said the iron criterion is 1000 µg/l and that more than 10% of water quality samples for iron had exceeded the threshold, triggering an aquatic life impairment. He explained that dissolved oxygen and pH were then listed due to a single sample exceeding, while TSS was added based on a statistical guideline.

Missouri

Dkhili said that there are not any UMR listings on Missouri's proposed 2010 303(d) list, which is out for public comment. He further explained that a consent decree was in place to address causes of the localized lead and zinc impairments on assessment reach #13, so these impairments are not on the 2010 list.

US EPA Region 7

Shepard reported that Region 7 is developing a TMDL to address Iowa's localized "slime" impairment in assessment reach # 7. Shepard also commented on the consent decree that would affect localized lead and zinc impairments in Missouri, noting that a permit to address these is forthcoming under the consent decree.

US EPA Region 5

Bill Franz said he did not have any other comments to offer from the Region 5 perspective.

Draft Arsenic TMDL

Olson gave background information on the draft arsenic TMDL developed by US EPA Region 7 and currently out for public comment. Olson explained that Iowa's arsenic criterion for human health protection, at 0.18 µg/l, is lower than that of other UMR states. The draft TMDL addresses two sections of the UMR that have been on Iowa's 303(d) list due to arsenic concentrations above this criterion.

Olson commented that most of the arsenic is likely naturally occurring, as it is part of geological formations throughout the region. He said that Region 7 has also made a linkage in the draft TMDL between a 2001 consent decree (*Sailors, et al v. EPA*) and the need to complete this TMDL. Olson noted that the draft TMDL's zero wasteload allocation for arsenic has raised considerable concern.

Hora said that, from Minnesota's perspective, a major issue is that the draft TMDL lists point sources in a number of states, including Minnesota, as potentially contributing arsenic. It is unclear what the impact of a zero waste load allocation would be on these facilities outside of Iowa. He added that Minnesota questions whether the determination of an impairment is valid, as it was based on the use of total arsenic data when Iowa's criterion is for arsenic (III).

Marcia Willhite stated that the WQEC had also discussed the draft TMDL during a recent conference call and identified the issues mentioned by Olson and Hora, including the concern regarding a zero waste load allocation. She said that Art Spratlin (Region 7 Water Division Director) had indicated that Region 7 would be checking with plaintiffs in the *Sailors* case to determine whether they view the consent decree as extending to the UMR arsenic issue. Willhite emphasized the situation is a "poster child" for the issue of disparate criteria among the UMR states, and that it also highlights the shortcomings of the TMDL process generally. She said she hoped that Region 7 would delay going forward with the TMDL and allow time to explore arsenic criteria and other issues raised by the TMDL.

Shannan Garretson asked whether there were any reports of illness associated with the levels of arsenic present. Olson said that he was not aware of any.

Short said it is possible to speciate in arsenic analysis and measure just arsenic (III), but that the Illinois data used by Iowa to determine the impairment was all total arsenic data. He added that Illinois may have arsenic (III) data as well. Hora reiterated that, since total arsenic data was compared to an arsenic (III) criterion, there is really no way to conclusively identify an impairment, particularly without knowing what the typical relative contributions of arsenic (III) and arsenic (V) are to total arsenic in the UMR. Franz asked Short if he could check into the availability of arsenic (III) data in Illinois. Short said that he could do this.

In response to a question from Shepard, Olson said that Iowa has not attempted to remove the impairment from its 303(d) list. Shepard observed that any de-listing attempt would likely require data demonstrating that there was not an impairment, adding that it is difficult to justify de-listing solely on the grounds that the original listing was in error. Hora and Willhite said that their states had been able to de-list in similar situations.

Hokanson said that the WQEC, in its conference call the preceding Friday, had expressed interest in developing a joint state comment letter through UMRBA. He said UMRBA staff will draft a comment letter for review and approval by the UMRBA Board and WQEC. The WQTF will also have an opportunity to provide input on the draft.

Lake Pepin TMDL and Related Efforts

Hora reported that a site-specific total suspended solids (TSS) standard of 32 mg/l for the "South Metro Mississippi River" (Pools 2, 3 and Upper Pool 4) is currently out for public comment. He indicated that comments received so far have been positive and that the proposal will go to the MPCA Citizens' Board for approval on June 22. Hora said that, if approved by the Citizens' Board, the proposal would then go to US EPA in late June for review.

In regard to nutrients and eutrophication, Hora said that MPCA will not be pursuing a site-specific standard for the Lake Pepin area, and instead will be seeking to integrate this with other, river-wide and state-wide efforts on nutrients. He said MPCA is taking this direction in part because staff felt that "we

didn't know as much as we thought" about UMR nutrients. Areas of uncertainty include the introduction of algae from the Minnesota River, less observed chlorophyll response than expected, input of chlorophyll from the upstream UMR, and the capacity to model phosphorus and chlorophyll relationships. Hora said that it became apparent a fuller river perspective was needed, rather than just looking at Lake Pepin in isolation. Sullivan concurred with these observations.

Other Agency and Organization Updates

Illinois

Good said Illinois EPA had purchased a new Lake Michigan monitoring boat and is conducting both probabilistic monitoring and site-specific monitoring at harbors.

Good said Illinois EPA is working with the Illinois Association of Wastewater Agencies (IAWA) on a statewide tiered aquatic life use (TALU) approach in response to a proposal from IAWA. He noted that this process will include meetings with members of the environmental community.

Good commented that Illinois has a nutrient standard applicable to lakes, and that this could be discussed later in the meeting during the nutrient-focused agenda item. He added that Illinois EPA is also developing a "bug IBI" for lakes.

Good also noted the ongoing concern regarding the potential entry of Asian carp into Lake Michigan. Franz commented that the Supreme Court declined to hear a lawsuit by several Great Lakes states seeking closure of locks connecting Lake Michigan to the Illinois River.

Minnesota

Hora said Minnesota will be doing its triennial standards review beginning in the fall. The review will include nutrient standards. He added that MPCA will be proposing a nitrate criterion for surface waters between 6 and 8 mg/l, based on toxicity to aquatic life.

Hora stated that newer data confirmed the PFC impairment for Pool 2 of the UMR, and that these more recent data showed levels similar to earlier rounds of monitoring. He also noted that, for one urban lake in the Twin Cities area, a single metal plating facility was determined to be the source of elevated PFC concentrations. He added that one problem MPCA has encountered in PFC sampling is compounds coming out of solution.

Iowa

Olson said Iowa is moving forward on its statewide use attainability analysis (UAA) process which includes numerous waterbodies statewide, but does not extend to the UMR.

Olson noted that Iowa had proposed a nutrient criterion for lakes with a depth greater than 3 meters that incorporated Secchi disk and chlorophyll measurements. Public objections resulted in the proposal's withdrawal. He also said that Iowa is just beginning the process of developing nutrient criteria for streams and rivers.

Missouri

Dkhili said Missouri is considering adopting the chloride criterion that Iowa has proposed. He asked Olson whether this criterion had been approved. Olson responded that he thought Iowa had approved the criteria. Dkhili said Missouri is also considering a single-sample approach to determining compliance with bacteria standards and is looking at the potential for a new ammonia criterion.

Dkhili reported that Missouri has developed nutrient criteria for lakes, but that these were not applicable to backwater lakes. He also said work has begun on nutrient criteria for streams and rivers, but that these were not going to be applicable to the Missouri or Mississippi Rivers. Dkhili further explained

that response to nutrients appears to vary by region within the state and that this is being considered in nutrient criteria development.

Dkhili commented that Dale Robertson of USGS had requested nutrient point source data for facilities in Missouri, but that facilities may not be monitoring for nutrients since there are no applicable nutrient criteria and consequently no monitoring requirements in permits.

Hokanson asked whether there was any update regarding whole body contact use designation for the UMR in the St. Louis area. Dkhili replied that, while the integration into Missouri standards of whole body contact in this area has not yet taken place, Missouri is planning to assess the reach for whole body contact on the next applicable cycle following the establishment of this use.

US EPA Region 5

Franz reported that Susan Hedman has been appointed Regional Administrator for US EPA Region 5. He also noted that Region 5 is paying close attention to the impacts of the BP oil spill in the Gulf of Mexico.

US EPA Region 7

No further comments were offered from US EPA Region 7.

Mississippi River Collaborative

Garretson mentioned the Collaborative has several reports available addressing state water quality standards as they apply to the Mississippi River. These reports can be found on the internet at: http://www.elistore.org/topics_list.asp?topic=Water_Pollution_Prevention. She also said that, going forward, the Collaborative will be placing an increased emphasis on nutrients and nonpoint source pollution issues.

Upper Mississippi River Conservation Committee- Water Quality Technical Section

Short gave a brief report on the Spring 2010 meeting of the Water Quality Technical Section (WQTS) and noted that John Sullivan is now the Chair of the WQTS. He also explained that the WQTS is carrying out an effort to catalog water quality data sources for the UMR. Short said that this is not intended to be a compilation of the data itself, but rather a comprehensive listing of UMR data sources and contacts.

UMR Aquatic Life Designated Uses Project

Peg Donnelly presented an update on the UMR aquatic life designated uses project, including a review of her summary of Long Term Resource Monitoring Program (LTRMP) water quality data and her synthesis LTRMP and related reports dealing with fisheries.

Temperature

Dkhili asked whether any of the states would list a water body as impaired based on temperature. Olson replied that Iowa does review temperature data, but that an actual listing related to temperature is fairly rare. Donnelly commented that temperature is used by Delaware River and Chesapeake Bay programs as one of their criteria approaches. Sullivan observed that most of the LTRMP temperature data is collected at 0.2 meters, but that depths can be greater in deeper waters. Good asked others about the typical depth associated with their temperature data. All replied that the depths can vary, but are typically close to the surface. Good asked why no impounded strata data was reflected for Pool 4. Donnelly replied that this data was treated differently by LTRMP (meaning that there is no impounded strata per se for Lake Pepin, but rather that it is different strata of "tributary delta lake").

Dissolved Oxygen

Dkhili asked what the frequency was for the collection of dissolved oxygen (DO) data. Donnelly replied that measurements were once a day. She asked the group whether a 10% exceedance was typically used to determine impairment. Short said that, for Illinois, greater than 10% of the data for a parameter need to be above a criterion for an impairment to be identified. Sullivan said that Wisconsin does not list for backwater and deepwater areas that do not meet DO criteria, as these areas typically have lower DO concentrations due to their physical characteristics. Donnelly asked whether the states have “natural conditions” clauses to address these types of situations. Sullivan said that this is one instance where it appears that criteria need to be developed that are protective of off channel and wetland areas. Donnelly observed that even though the Pool 8 backwaters are low DO areas, they have some of the best fisheries on the UMR.

Conductivity

Donnelly observed that, although the WQTF selected conductivity as one of the parameters to examine, it is difficult to draw conclusions from the data because there are no applicable water quality criteria to use for comparison.

pH

Dkhili asked what a typical criterion for pH is. Donnelly responded that a typical maximum level criterion for pH is 9. Good asked whether a pH level above 9 would be indicative of a nutrient impairment. Sullivan responded that it would be a contributing factor in a nutrient impairment. Will Bouchard commented that there needs to be both the presence of elevated nutrients plus a response (e.g., pH, DO flux) in order to identify a nutrient impairment.

Turbidity and Total Suspended Solids

Sullivan commented that the UMRCC’s recommendations for turbidity could be applied as far down the UMR as Pool 13. He added that Minnesota’s current method of measuring turbidity has been problematic and therefore it is better to look at total suspended solids (TSS) as a way of measuring light availability. Bouchard concurred, stating that MPCA is moving away from turbidity and towards TSS in its measurements. Donnelly asked the group members if they would like the data through Pool 13 compared against the UMRCC. Good responded that he thought this should be done.

Chlorophyll-a

Olson commented that, while there is no applicable water quality criterion, problems with chlorophyll-a are observed when levels of approximately 30 µg/l are reached. Good said that he is not sure why the data show chlorophyll concentrations dropping on the lower impounded and open river, unless turbidity is limiting light availability in these reaches of the river. Sullivan encouraged Donnelly to check on the methods used of chlorophyll-a measurements (fluorometric vs. spectrophotometric), adding that it was possible that differences between strata and pools could be attributed to differences in analysis method. Donnelly indicated that she would check on this.

Nitrogen

Hora commented that, since nitrogen is not typically limiting in the UMR, it is unlikely that any of the UMR states would propose nitrogen criteria to address eutrophication.

Phosphorous

Donnelly said that she had used Wisconsin’s proposed phosphorous criteria of 100 µg/l as a comparison point for this data.

Trends in Water Quality Data

Good asked Donnelly if, based on her work with the LTRMP water quality data, she sees any significant differences among strata. Sullivan observed that the important variations seemed to be taking place in

the backwaters. Donnelly said that the three areas where lateral differences appeared strongest were: 1) DO, 2) TSS, and 3) nutrient-related parameters. She added that longitudinal differences were more common, with a number of parameters exhibiting longitudinal patterns.

Synthesis of Fisheries Reports

Donnelly next began an overview of the fish-specific LTRMP and LTRMP-related reports she had examined. Smogor observed that the literature suggests it is significant when habitat explains more than 20% of the variation in fish assemblage data.

Sullivan asked Donnelly if she sees a need for different aquatic life uses in different parts of the river, based on her review of fisheries data thus far. Donnelly responded that longitudinal differences were most prominent. She also noted that differences in lateral strata are of varying significance, depending on species/guild and life stage. She said that some major distinctions (e.g., upper vs. lower impounded, channel vs. off channel) are emerging, but that there are some significant limitations in the data, particularly when viewed from the perspective of having data available in all 13 assessment reaches.

As Donnelly was not able complete presenting her LTRMP report synthesis during the time available, Good suggested that she circulate her presentation to the WQTF for review and then schedule a conference to facilitate any further discussion. All agreed to this proposal.

Recognition of Marvin Hora

The WQTF recognized the contributions of Marvin Hora of MPCA to the WQTF. Good thanked Hora for his service as past Chair of the WQTF and congratulated him on his upcoming retirement.

CWA Programs and the Long Term Resource Monitoring Program (LTRMP)

Hokanson said he has updated his summary document of how the states' CWA programs use LTRMP data and will circulate the updated version to the WQTF members for review. He said he will then revise the document based on review comments prior to the WQTF's next meeting.

Nutrient and Nonpoint Source Pollution Issues

Wisconsin Nutrient Standards/Notice of Intent to Sue

Jim Baumann reminded the WQTF that several environmental groups filed a notice of intent to sue with US EPA in November 2009, claiming that EPA had failed to ensure that Wisconsin had numeric nutrient criteria in place for nitrogen and phosphorous. He reported that Wisconsin DNR just received a letter from US EPA indicating that, if WI DNR does not complete a numeric phosphorous criterion by the end of calendar year 2010, then US EPA will act to establish such criteria. Baumann said that, if US EPA steps in, the process will likely be similar to recently took place in Florida.

In response to a question from Dkhili, Baumann said US EPA's letter only addressed phosphorous and did not reference nitrogen. Good asked whether WI DNR's preference is for the state to develop the criteria on its own, rather than having US EPA do it. Baumann said both WI DNR and stakeholder groups would prefer to have the state establish the criteria. Hora noted that implementation will fall back to the state, even if US EPA sets the criteria.

Wisconsin Nutrient Standards/Criteria Development

Baumann next described Wisconsin's ongoing efforts to establish phosphorous criteria, which he said were initiated approximately two years ago, independently of the notice of intent to sue. He indicated that the process has been slowed down somewhat by the need to consider permit implications of the criteria. Baumann said that comments from US EPA Region 5 called for effluent limits to be applied to 30-day averages. He indicated that, for the most part, comments from US EPA Region 5 and municipalities on Wisconsin's proposal have been positive. However, the municipalities are concerned

about TMDLs that may result from the establishment of the criteria. Baumann said that common themes in the comments include:

- 1) Wisconsin's nonpoint source pollution program needs to be upgraded.
- 2) More money needs to be invested in both point and nonpoint source controls.
- 3) Point sources should not be required to implement further controls until nonpoint sources are more thoroughly addressed.

Baumann observed that these comments really can not be addressed via the administrative rules process, under which the phosphorous criteria are being established.

Baumann said that the rule proposal will go before the Wisconsin Natural Resources Board in June 2010. If approved, the rule would go to the Legislature for required legislative review. He said that WI DNR hoped to complete the entire process before the end of Governor Doyle's term in early January 2011.

Good asked Baumann what nonpoint source pollution performance standards and prohibitions might be included. Baumann replied that a phosphorous index is being considered, along with TMDL-specific performance standards. Dkhili asked whether this might mean that a TMDL requirement would trump the standard. Baumann confirmed that this could happen – i.e., a TMDL could impose a more stringent standard. Dkhili asked if assessments would still be done based on the criteria. Baumann replied that the assessment would still be based on the criteria.

Hokanson asked Baumann to comment on the status of Wisconsin's 303(d) list, as Baumann had not been on the phone during the earlier 303(d) listing consultation. Baumann replied that Wisconsin sent its 2010 to US EPA Region 5 on March 30, 2010, but that US EPA has not yet acted on the list.

State Reports Regarding Nutrient Criteria Development

Willhite said Illinois is continuing to examine nutrient impacts, but so far the observed relationships between nutrient levels and responses (e.g., algal growth) have been weak at best for flowing waters. She said the state is conducting additional analyses. Willhite emphasized that its potential nutrient criteria must be able to match up a concentration to a response variable in order to be accepted and effective.

Dkhili reported that Missouri has nutrient criteria for lakes greater than 10 acres, but these criteria do not address oxbow lakes and floodplains. He explained that Missouri is also working on criteria for rivers and streams; but these will not apply to the Missouri or Mississippi Rivers, which Missouri is expecting US EPA to address. Dkhili also noted that USGS is in the process of refining SPARROW modeling to better distinguish between point and nonpoint source contributions.

As he had mentioned earlier, Olson said Iowa attempted to establish nutrient criteria for lakes greater than 3 meters in depth, but the effort had not been successful and the proposal was withdrawn. Wilton said that, for lakes, Iowa has taken the approach of separating contact recreation use from aquatic life use. He explained that Iowa had started with the contact recreation use first and heard from stakeholders that they wanted to protect swimming use in shallow lakes, so that is currently where Iowa DNR is focusing its lake efforts. For streams and rivers, Wilton said Iowa has assembled a technical advisory committee to initiate work on nutrient criteria and given the group a timeline of 12-15 months to develop criteria recommendations. Roy Smogor asked whether Iowa has done any work to develop biological indicators for lakes. Wilton replied that Iowa State is doing some of this work and that he could supply further information to interested individuals.

Hora stated that Minnesota has nutrient criteria for lakes in place. He said Minnesota will be proposing nutrient standards for streams in 2011, with the standards tailored to three different regions within the state. Hora also noted that protection of downstream waters is an important issue for the states to consider in their criteria development efforts. He said that it is very difficult to guarantee that a state's criteria will be protective of conditions downstream. Willhite concurred that this is an important issue and area for ongoing discussion. She continued by saying that, in Illinois, criteria are used for many purposes, including assessments, TMDLs, and permits. She asked Hora how Minnesota envisioned criteria being used. Hora responded that Minnesota is tying criteria to the designated uses (aquatic life and recreation) and also to permits. Willhite asked how Minnesota is incorporating response variables. Hora indicated that this would be a challenge for flowing waters as reliable models are not readily available.

Smogor asked Hora and Willhite to clarify their conversation in regard to response variables. They responded by explaining that criteria approaches should include not only a pollutant level for the criterion but also a way to link that level to observed response. Smogor replied that finding the response would seem to be the hard part. Willhite concurred, saying that this is especially challenging when "high" levels of nutrients do not appear to be triggering a response in particular waterbodies.

US EPA Mississippi River Basin Initiative

Franz said that US EPA's proposed Mississippi River Basin Initiative is part of the President's FY 11 budget. With Congress yet to act on FY 11 appropriations, it is unknown whether the initiative will remain in the agency's final budget. He explained that the funding would be used in Regions 5 and 7 to support grants and 15 FTEs with the effort designed to complement USDA's Mississippi River Basin Healthy Watersheds Initiative (MRBI).

US EPA National Nutrient Criteria Development Strategy

In regard to the Mississippi River, Franz said that US EPA is considering a "working up" approach, meaning focus on criteria would start at the Gulf of Mexico and move upriver. He indicated that Peter Silva, US EPA's Assistant Administrator for Water, was briefed the previous week on nutrient issues, but that no further word has thus far emerged from US EPA Headquarters. Franz also distributed a handout regarding Florida nutrient criteria development.

604(b) Project Discussion: Task 2 (Nutrients)

Hokanson reviewed the content of Task 2 of the 604(b) project, which is focused on nutrients, and asked WQTF members for their feedback and further thoughts as Nat Kale begins his work on this project element. Hora suggested that it may be useful to incorporate a summary of the states' current work on nutrient criteria into the report. Franz suggested that the report address the effect of nutrient criteria on wastewater treatment plants. Hora said that Minnesota's rule development process includes such an economic analysis.

Good encouraged the WQTF to focus on the five components of the project report described in the 604(b) proposal, which are:

- 1) A compilation/synthesis of existing UMR *mainstem* nutrient data for key parameters, likely including – but not limited to – phosphorus, nitrogen, and chlorophyll-a.
- 2) A compilation/synthesis of existing UMR *tributary* nutrient data for key parameters, likely including – but not limited to – phosphorus, nitrogen, and chlorophyll-a.
- 3) Based on the data compilation/synthesis, a discussion of trends in nutrient levels in the UMR mainstem and in UMR tributaries over time.
- 4) A compilation/synthesis of reported impacts to aquatic life and other designated uses occurring on the UMR mainstem, and nutrient levels associated with these impacts.

- 5) Recommendations for enhanced/improved nutrient monitoring on the UMR and its tributaries, based on the review of nutrient levels and reported impacts.

Good said he believes these five report components have value, and he is not sure how the suggestions by Hora and Franz fit into the report's framework. Willhite concurred, saying that the items laid out in the proposal seemed most foundational and important to address.

Sullivan said that, of all the proposed report components, he believes that # 4 (compilation and synthesis of impacts) is the most important and meaningful. He encouraged work to begin with this component. Sullivan also noted that many analyses of UMR and tributary nutrients data have already been completed. He urged that the WQTF report focus on synthesizing information which has already been compiled. Good commented that the important thing is for the topics to be covered, whether through original analysis or synthesis of work already completed.

Franz suggested that Kale communicate with Robertson of USGS to benefit from work already completed in support of the SPARROW model. Willhite suggested that Kale communicate with ORSANCO in regard to its work to examine causes and effects related to nutrients. Garretson encouraged the WQTF to work with the Mississippi River Collaborative throughout the process.

The meeting adjourned at 5:30 p.m.