**Upper Mississippi River Basin Association**

**Water Quality Executive Committee**

**and Water Quality Task Force Meeting**

**June 7-8, 2022**

**Draft Highlights and Action Items Summary**

**Tuesday, June 7**

**Approval of the WQTF Draft January 25-26, 2022 Meeting Summary**

The UMRBA Water Quality Executive Committee (WQEC) and Water Quality Task Force (WQTF) approved the January 25-26, 2022 draft highlights and action items summary.

**UMRBA WQ Task Force Updates**

*How Clean is the River? Report*

Lauren Salvato shared an update on the How Clean is the River? (HCR) Report. Dr. Kathi Jo Jankowski reached out about an issue that arose during the USGS review process for the Upper Mississippi River Restoration Status and Trends Report water quality results. The reviewer asked if the results included the WRTDS model update that accounted for "non-stationarity" trends (i.e., trends in the distribution of flows over time). In response, Jankowski re-ran the models for total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP). She noted that the biggest changes in results were for flux rather than concentration. [Note: the HCR results are reported in concentration]. Fortunately, the high-level summaries in the status and trends report are unaffected. Missouri DNR staff ran the updated model with data from the La Grange and Open River sites and following a discussion with the WQTF determined that re-running all the results was not necessary. The report will include a note that an older version of the model was used in the development of the trends.

There are a few remaining items to accomplish before beginning to work with a graphics designer and communication specialist: 1) an updated GIS map of the sites used to calculate trends, 2) appendices for readers that want to do a deep dive into pool-by-pool concentrations, and 3) additional graphics to display that lead increases in concentration are well below drinking water limits.

Kirsten Wallace said the HCR Report release could coincide with the Clean Water Act’s (CWA) 50th anniversary in October 2022 to point to the report conclusions and the success of the CWA.

**UMR Interstate WQ Monitoring**

*Reaches 8-9 Pilot*

John Olson said the Reaches 8-9 pilot was conducted to test the feasibility of the UMR Interstate Water Quality Monitoring Plan, a comprehensive CWA-like assessment. The non-regulatory approach to communicate water quality is done with the development of a “condition class” for each beneficial use of the river (aquatic life, recreation, drinking water, and fish consumption). Each condition class is evaluated as “good,” “fair,” or “poor.” During 2020 and 2021, sampling was conducted along roughly 100 miles of shared borders of the river with Iowa, Missouri, and Illinois from L&D 17 (at New Boston, IL) to L&D 21 (at Quincy, IL).

John Olson reviewed the results of the Reaches 8-9 Pilot Condition Assessment. The Aquatic Life condition class is based on Index of Biological Integrity (IBI) scores for fish and aquatic macroinvertebrates. Reach 8 received a “poor” condition class assessment due to only 5 out of 13 sites passing the macroinvertebrate index threshold, whereas Reach 9 received a “good” assessment due to 10 out of 13 samples passing the macroinvertebrate index threshold. The macroinvertebrate index was developed by Wisconsin DNR utilizing data from the major rivers bordering and within the state. The macroinvertebrate results hovered around the threshold and Olson suggester further investigation whether the index is suitable for the Upper Mississippi River.

The Recreation condition class was based on levels of *E. coli* and chlorophyll-α (chl- α). *E. coli* thresholds were based in USEPA recommendations and chl- α was based in user perception of nuisance surveys by the Minnesota PCA. Both Reaches 8 and 9 received “poor” assessments due to “very serious nuisance” threshold exceedances in both reaches and an *E. coli* threshold exceedance in Reach 9.

Olson stated the Drinking Water condition class was based in Safe Drinking Water Act criteria for pesticides, volatile organic compounds (VOCs), metals, nitrate, fluoride, and chloride. Cyanotoxins criteria and per- and polyfluoroalkyl substances (PFAS) health advisory levels were used to determine the condition class. Both Reaches 8 and 9 received “poor” assessments due to excursions of cyanotoxin detection above guidelines, while all other drinking water standards of the condition class received a “good” assessment. However, the assessment applies treated water criteria to raw and untreated water because the loss of participation of public water suppliers (PWS) after the COVID-19 pandemic begun. Olson said the levels of cyanotoxin detection were below the recreational threshold. The Reaches 8-9 pilot planning committee discussed the application of untreated water results to a treated water criteria extensively but ultimately the assessment of “poor” can be used as a cautionary notification, raising a flag for PWS to be aware of threats to drinking water.

The Fish Consumption condition class was based on levels of polychlorinated biphenyls (PCBs) and mercury found in fish fillets of common carp and largemouth bass and fish consumption advisories from states along the Upper Mississippi River. An additional analysis in the Condition Assessment is PFAS fish tissue data. The Missouri Department of Health and Senior Services (DHSS) had grant money to pay for the analysis. This was good opportunity to partner as DHSS was able to utilize the fish obtained in the Reaches 8-9 pilot. Olson said that there was no perfluorooctanic acid (PFOA) detected in fish tissue, and only perfluorooctane sulfonate (PFOS) were detected. The threshold was developed by Minnesota PCA as a site-specific indicator for fish consumption at 0.37 ng/g. The draft U.S. Environmental Protection Agency (USEPA) criteria are expressed in milligrams per kilogram and were developed as a toxicity indicator for fish communities, rather than consumption. Both Reaches 8 and 9 received “fair” assessments for the Fish Consumption condition class, based in a detection of mercury in largemouth bass in Reach 8 and a consumption advisory issued by the state of Missouri for Reach 9 fish.

Overall, all but one reach and condition received a “good” rating. Olson concluded that the time frame of the project could have influenced results. The low water period of early summer could have created a dissolved oxygen (DO) sag in Pool 19, affecting the invertebrate communities. Cyanotoxins and chl- α concentrations were likely impacted by the low water as well.

A picture containing table

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Amy Shields shared that USEPA has extended the public comment period for the published draft national recommended aquatic life criteria for PFOA in freshwater for an additional 30-days, through July 2, 2022. [The draft PFOA criteria document](https://www.govinfo.gov/content/pkg/FR-2022-05-03/pdf/2022-09441.pdf) contains acute and chronic criteria for freshwaters. The draft criteria document also contains chronic criteria expressed as tissue-based concentrations to protect aquatic life from PFOA bioaccumulation. The chronic freshwater and chronic tissue criteria are intended to be independently applicable and no one criterion takes primacy.

When asked about a hypothesis for the DO sag in Pool 19, Olson stated that the pool has a long residence time, and suspended solids dropping out of the water column likely lead to a rise in chl- α. The Des Moines River does not likely influence the DO as the relative contribution of the river is small. Karen Hagerty added that a large amount of aquatic vegetation in Pool 19 could be a possible factor. Kelly Warner asked if field samplers noticed microcystin pooling at the dams. Daniel Kendall noticed that plankton was visibly pooling at L&D 17 at New Boston. Schneiders asked if 60 µ/L is aesthetically objectionable greenness. Robert Voss replied that without a lot of suspended sediment, the water is very green. Kendall recalled that the fixed sites, 100mL of water were filtered, and the green was noticeable. Nicole Manasco suggested looking at Habitat Rehabilitation and Enhancement Project data collected in backwaters during 2021 to see if the low water year was an outlier in terms of chl- α concentrations.

*Reaches 8-9 Evaluation Report*

Lauren Salvato stated the goals of the Evaluation Report are to reflect on how the Reaches 8-9 pilot was implemented, including successes, lessons learned, and next steps. Now that pilot projects involving all the five UMRB states are wrapped up there is work to accomplish to before implementing the full scale UMR Interstate WQ Monitoring Plan. The outstanding questions and conclusions are as follows:

* UMRBA had different roles in the two pilots. For the Reaches 8-9 pilot, UMRBA staff convened monthly coordination calls and provided project coordination. The Reaches 8-9 planning committee recommends that UMRBA continue to serve as a centralized convening entity.
* Having one laboratory for water chemistry analyses is still a reasonable goal for ensuring consistency in laboratory results. The planning committee suggests using a contracted laboratory rather than a state laboratory given capacity constraints. However, using a contracted laboratory will increase the analytical costs.
* The cost to ship samples was significant for the Reaches 8-9 pilot (approximately $19,000). Analyzing samples with one laboratory means that shipping costs are inevitably high. The planning committee recommends negotiating shipping rates to reduce costs.
* Iowa DNR staff built and maintained a Microsoft Access database to house Reaches 0-3 and 8-9 pilot data. As this did take a significant amount of time (approximately three-fold higher than budgeted), the planning committee recommends housing UMR Interstate WQ Monitoring Plan data in a database that is maintained routinely and is publicly accessible.
* Partnering with USEPA Region 5 to analyze PFAS samples for the pilot was valuable to collect emerging contaminants data for Reaches 8-9. The planning committee and the UMRBA WQTF are interested in scoping an emerging contaminants monitoring plan for the UMR in 2022-2023.
* The Reaches 8-9 pilot relied on contractors to carry out some of the work for the pilot. For example, Missouri DNR contracted with Missouri DOC to conduct all the field sampling for Reach 9. A contractor was utilized to write the Reaches 8-9 Pilot Condition Assessment. State agencies have varying abilities to participate in the pilot, and full-scale monitoring will require hiring additional state agency staff to bring all five UMRB states up to capacity.
* Half of the PWS in Reaches 8-9 participated in the drinking water use assessment, and only one was able to participate after March 2020. There were challenges associated with training PWS operators, ensuring correct sampling protocols, and maintaining participation. The COVID-19 pandemic further strained PWS ability to participate in the Reaches 8-9 pilot. The planning committee recommends reassessing the ability to maintain PWS participation for the entirety of the sampling period. The variety of sizes of the PWS along the UMR should be considered and factored into requests to participate in sampling.
* The Reaches 8-9 planning committee modified the fish sampling transects to incorporate the Upper Mississippi River Restoration program’s Long Term Resource Monitoring (LTRM) design. The primary reasons were to increase fish survivability and reduce field sampling crew fatigue. The Reaches 0-3 pilot confirmed that splitting up transect, to the same electrofishing distance as the original design, was able to provide a reliable IBI. The UMR Interstate WQ Monitoring Plan was designed using the USEPA’s Environmental Monitoring and Assessment Great Rivers Ecosystem (EMAP-GRE) program. However, further consideration should be given to data compatibility with existing monitoring programs on the river, such as the Upper Mississippi River Restoration LTRM methods, in part to leverage the data and methods.
* The Reaches 0-3 pilot sampled during a high-water year on the UMR and the Reaches 8-9 pilot during a low-water year. Sampling more frequently as envisioned in the UMR Interstate WQ Monitoring Plan would allow for sampling during a range of discharge conditions and increase confidence in the results.

Salvato asked for direction from the WQEC and WQTF. If the two pilot projects have confirmed the value of the UMR Interstate WQ Monitoring Plan, then what next steps need to be taken to implement the plan in its entirety?

Hagerty shared that UMRR LTRM is piloting macroinvertebrate monitoring during summer 2023 and the Third UMRR Ecological Status & Trends report, available in June 2022, could help inform some of the outstanding questions. Kim Laing said Minnesota PCA is looking into developing its own statewide index for its five major rivers. PCA staff tested the Wisconsin Big River Index before the agency determined to develop its own. Laing suggested convening a call of the five states to discuss IBI options further. Schneiders suggested that as long as macroinvertebrate sampling is consistent then the data are still useful, even if the IBI is changed at a future time.

Wallace asked participants to think about how to fund the full implementation of the monitoring plan recalling that it could cost an estimated $5 million over five years. The guiding documents e.g., Provisional Assessment must be finalized in the near term. Concurrently, UMRBA staff can work with the WQEC to think about how to scale up state staff capacity. Dana Vanderbosch suggested breaking up funding the entire monitoring plan into smaller chunks. Shawn Giblin concurred and suggested moving forward with one component and then moving onto a different parameter before setting up the larger effort. The WQTF could determine the tiers or stages to implement. Wallace agreed with the approach to work with the WQTF to develop a scope of work and breaking up components of the overall monitoring plan.

**CWA Program Updates**

*Delisting Waters Discussion*

*Iowa –* Kendall said 50 impaired waters were delisted from the 2020 list of impaired waters. The rationale for the delisting was primarily due to water quality improvements (27 out of 50 water bodies) and total maximum daily load (TMDL) preparation and approval (9 out of 50 waterbodies). Many of the waters were delisted for chl- α and relisted due to turbidity. Kendall hopes this indicates an overall improving trend.

In 2022, there are 57 new impairments in 52 segments. Most of the impairments are for 1) fish consumption advisories: mercury (10/57), 2) pH (10/57), and 3) turbidity/Secchi Disk transparency (13/57). Kendall said that 13 years ago a clean water fund was created in Iowa, which enabled DNR to increase ambient water quality monitoring. However, when more monitoring occurs, there are more issues found. Overall, there is a lot of complexity associated with pollution. In response to a question from Schneiders about the role of environmental stakeholders, Kendall replied that environmental groups want DNR to keep pushing further on standards for parameters such as nitrate and microplastics. There is pressure to do more, but there is a lot of work needed to address the existing pollution problems.

*Minnesota –* Laing said there are 6,167 impaired waters in the 2022 impaired waters summary. The majority are due to mercury in fish tissue, fish bioassessments, benthic macroinvertebrate bioassessments, nutrients, and *E. coli.*  Waters in Minnesota are now meeting standards due to implementation of actions, but the pace of progress is slow. Delisted waters since the beginning of the program collectively make up one percent of the total impaired waters. Vanderbosch added that mercury impairments are statewide and mask a lot of the other impairing factors in the southern and western portions of the state that are dominated by agriculture. Regulatory programs are overburdened with requests to conduct additional monitoring but struggle with quantifying corrective actions. The hope is that Minnesota’s buffer laws and other corrective actions will have a positive impact on water quality over the next ten-year cycle.

Laing stated that while the buffer law has benefitted water quality, it is difficult to track which management practice is accountable for changes in water quality, and asked participants for advice on tracking nonpoint source (NPS) improvements. Chuck Theiling suggested correlating delistings with cover crops adoption. Voss added that if you do not have widespread adoptions of best management practices (BMPs), then it’s a game of statistics to determine NPS reduction. Laing said that professional judgement plays a role because it is hard to know whether BMPs in the watershed were enough and at what point investment in restoration was enough to lead to a delisting.

*Wisconsin –* Ashley Beranek said the average number of delistings is 22 waters. The most recent delistings were related to reductions in phosphorus and excess algal growth. A few waters were delisted for PCBs in fish tissue and TSS delistings occurred where restoration projects are being implemented.

*Missouri –* Voss said over the last three cycles of delistings have varied from 20 to 60 waterbodies. Missouri DNR has a history of new and revised standards that have caused delistings. TMDLs account for a quarter of the delistings. After the nutrient criteria were developed in 2020, a lot of waterbodies were listed. Corrective action occurs on a site-specific basis. There has been a recent push to encourage mining operations to clean up tailings, and delistings could result. Data availability is another challenging aspect. For example, when new data are acquired either by DNR or an outside entity, the water body appears to be improved. With another round of data, the waterbody goes back on the impairment list. This commonly occurs for bacteria listings.

Wieberg added that in the 2020 cycle, Missouri DNR had lakes listed as impaired under the combined criteria, which included eutrophication factors. Staff are trying to figure out how it works with multistage criteria and when to delist the waters.

**Emerging Contaminants**

*The Effects on Environmental Quality of Raising Plants and Growing Animals*

Dana Kolpin introduced the Food Integrated Science Team (Food IST), a multidisciplinary team of 35 USGS scientists and external collaborators across the public and private sectors, tasked with tracking the effects of growing, raising, and processing agricultural products. The Food IST prioritizes research on gaps in issues of global concern.

Kolpin reviewed select research topics, including one on understanding the effects of neonicotinoid use on environmental and human health. Neonicotinoids are the most heavily used insecticide class globally. They are popular due to their broad spectrum of applicability, their potency, and their systemic activity in the plant. The practice of seed treatment with neonicotinoid has tripled in the last decade. Nearly all corn and one third of soybeans are treated with a neonicotinoid prior to planting. Only two to twenty percent of the coating is taken up by the plant. The remainder of the coating is highly soluble in water and persistent in the environment. While early focus on neonicotinoids was on the concern of colony collapse disorder in bees, there is growing evidence that the insecticide effects a number of aquatic and terrestrial organisms, as well as humans. Researchers determined that stream transport of neonicotinoid was driven by planting and precipitation, the first time an insecticide was recorded in a spring flush pattern via treated seeds.

Thompson et al (2021) conducted study in Eastern Iowa and sampled 40 alluvial wells for the presence of neonicotinoids. Neonicotinoids were detected in 73 percent of samples, including detections of Clothianidin, Imidacloprid, and Thiamethoxam. In a study that conducted a comprehensive analysis of 437 organic chemicals in drinking water, the results included the presence of 51 pesticides and 42 pesticide compounds in tap water. For the first time, an insecticide was recorded as a primary contaminant in groundwater.

Farmers’ urine was also analyzed to understand and characterize exposure to contaminants. Neonicotinoids were detected in all samples, including neonicotinoids not used in the U.S. Because neonicotinoids are excreted within days of ingestion, there is evidence that neonicotinoid exposures are beyond exposure from drinking water and could also be related to diet, occupation, or household dust.

The next research topic Kolpin described was environmental exposures and effects on recycled liquid and solid waste to farmland. Land applied reuse materials (LARM) include livestock waste, municipal biosolids, and drill fluids. Food IST is investigating microbial activity, total number of PFAS, gastro related organics (GRO), and pesticides found in LARMs. PFAS found in biosolids are high relative to other LARMs, while GRO are found in high amounts relative to others. Pesticides were also observed in biosolids and animal waste.

Another set of studies involved food, beverage, and feedstock facilities, a unique and understudied contaminant source in the U.S. and worldwide. Federal and state programs require basic monitoring of TSS, biological oxygen demand (BOD), and nutrients. Phase one of the national assessment took place in 2019 and 576 organic chemicals, microbial analysis, and bioassays were monitored. Of the 576 organic chemicals monitored, 186 were detected. Frequently detected organics included twelve pesticides, five VOCs, three pharmaceutical compounds, two PFAS, and one hormone. Ubiquitous bacterial growth and antibiotic resistance was also found at the sample sites. PFAS were detected in relatively high concentrations, leading researchers to hypothesize that food, beverage, and feedstock facilities could be an environmental source.

Phase two of the food, beverage, and feedstock study, included seven facilities. Effluent samples were collected above and below outfalls. Results will be published within the fiscal year. Phase three focused on a food web study to characterize PFAS exposure in macrophytes, invertebrates, insects, fish, crayfish, spiders, and tree swallows. The study included a soybean and oilseed processing facility that was found to be releasing large amounts of PFAS in the phase one study.

Kendall asked about the consequences of reusing biosolids citing that Maine has a moratorium on biosolids. Consequently, the state does not have enough space in the landfill to take biosolids and asked if anything is solved by putting biosolids in landfills. Kolpin said that providing science could lead to reactionary action. Maine’s biosolid regulation has led to the shipment of biosolids to Canada, where leachate is collected and returned to wastewater treatment plants. The Food IST hopes the results of these studies enable regulating parties to make policy and regulatory decisions.

In response to a question from Giblin about which benthic organisms were evaluated with the tissue analysis, Kolpin responded organisms in the larval stage e.g., mayflies and caddisflies. Artificial substrate samplers were deployed for 30 days and then scraped off. Kick sampling was conducted as well. Early PFAS results in the minnow species were high, particularly in the territorial species. The highest PFAS concentrations occurred in organisms living near the outfall. Giblin asked whether the relative risk between of bifenthrin versus neonicotinoids exposure is understood. Kolpin believes that bifenthrin is more in bed sediment and may not be as mobile. While bifenthrin may be more toxic, neonicotinoids, by design, wipe out insects immediately. Steve Schaff asked if the neonicotinoid study involving farmers’ urine have been replicated in non-agriculture settings to understand whether imported foods being ingested pose a risk to the general population? Kolpin noted this study is the first he is aware of. Neonicotinoids are ubiquitous in farmers’ urine, but whether imports are a source of neonicotinoids is unclear.

Vanderbosch asked if consumer choices such as buying organic berries or purchasing bulk organic meat from a local farmer could all be undone if, for example, the cattle are drinking from streams loaded with PFAS. Is Kolpin and collaborators looking at the difference in organically grown food? Kolpin cited a study that just began and involves 11 organic dairy sites. He agreed it was a good research question.

Vanderbosch asked Kolpin for strategies encouraging municipalities to participate in wastewater studies. Minnesota has an ongoing fate and transport study but has had challenges getting participation because of fear of lawsuits. The solution has been to guarantee anonymity to municipalities. Kolpin agreed it is a challenge and while USGS is a non-regulating entity, researchers cannot guarantee anonymity if a Freedom of Information Act request comes in. Livestock groups were more difficult to work with but offering data for free was a helpful enticement. Kendall agreed that sample analysis is costly and can be a good motivator. In response to a question from Giblin about the laboratories used for analysis, Kolpin replied that organics are internally processed within USGS. For PFAS, Kolpin has used RTI and SGS AXYS laboratories. Between personnel and hiring issues, methods developed for PFAS have not been a priority, and that is why the analysis has been contracted. Kolpin mentioned that USGS is hoping to expand analytical capabilities for additional contaminants of emerging concern (CECs) such as microplastics and tire leachate.

*Facilitated Discussion*

Salvato shared that the WQTF has had discussions on how to develop a CEC monitoring plan for the UMRB. UMRBA staff reached out to USGS staff about how to begin scoping the design. The WQTF has been challenged by determining a list of CECs to target given the cost of laboratory analysis. Salvato asked the WQEC and WQTF to confirm this is a priority task for the WQTF to continue work. Wieberg said it is valuable and Vanderbosch confirmed. Missouri does not do a lot of CEC monitoring as many are not regulated in the state. The public is interested in CECs, especially microplastics, and what Missouri is doing. UMRBA can help Missouri fill the gap. Wieberg said Missouri has been directing some monitoring to smaller PWS. The upcoming Unregulated Contaminant Monitoring Rule 5 will target bigger PWS for PFAS. Wieberg mentioned the suit involving the Illinois general suing 3M for PFAS contamination at its Cordova facility. In Missouri PWS downstream PFAS was not detected. Salvato said that PFOS and PFOA are not likely to be an issue but would guess that perfluorobutanoic acid (PFBA) would have more detections at higher concentrations.

**Research**

*Simulating Food-Energy-Water and Ecosystems in the UMRB*

Dr. Kelsie Ferin described the FEWscapes program goal “to advance knowledge and support decision making for the security of food, energy, water and ecosystem (FEWE) in the UMRB.” In a changing climate how do FEWE systems help inform maintaining food affordability, increasing food production, clean energy availability, improvements to water quality, and increasing water quantity? Model development plays an important role in this project to answer broad questions about FEWE impacts and simulate policy and climate change scenarios into the future.

The Agro-IBIS model simulates cycles of water, carbon, nitrogen, phosphorus, and energy on independent grid cells. A hydrologic routing model called Terrestrial Hydrology Model with Biogeochemistry (THMB) was used to integrate runoff, as well as nitrogen and phosphorus in drainage water. The models are assessed via experimental studies and streamflow gages. Ferin said scenarios are being developed out to the year 2050. The model can be used to quantify indicators that are policy relevant, develop connections to outcomes and policies, and explore unintended consequences of policy. The FEWscapes program is also looking into how people perceive the performance of conservation practices, the effects of storms and floods, and network opportunities for governing bodies.

Salvato asked about the results of stakeholder input sessions conducted by the FEWscapes team in late 2021 and whether there would be additional meetings. Ferin said that the next round of focus groups will request feedback on example modeling scenarios that were developed as a product of the 2021 outreach. The goal is to continue to involve stakeholder input.

Wieberg said Missouri is struggling with how to conceptualize nutrient reductions and that the FEWscapes models could help answer these questions. Ferin said the FEWscapes research team hopes to model scenarios on what would be feasible for nutrient reduction on the landscape. Global climate data is going to be incorporated into the models during 2023 to account for changing climate conditions into the year 2050. Vanderbosch emphasized that any models that influence the agricultural community to increase conservation practice adoption and help state agencies understand how to encourage those types of practices would be incredibly helpful.

Warner asked for the major takeaways of what THMB and Agro-IBIS can offer that SWAT and SPARROW cannot. Ferin explained that the Agro-IBIS model simulates plant processes at the leaf level with an hourly timestamp. The water budget becomes much more refined due to the fine scale reporting of the model and the accounting of evapotranspiration, photosynthesis, and soil moisture. These measurements can be validated in the field.

**UMRB SedimentBudget**

Manasco shared that US Army Corps of Engineers Rock Island Districts as well as St. Louis and St. Paul Districts applied for funding to have a regional conversation on sediment budget for the UMRB. There is a need for current data as the last cumulative effects report was published in the 1990’s. Volumes of sediment are caught behind the dams, sediment is filling backwater areas, and as a result, the Lower Mississippi River is sediment starved. The Missouri River Basin reservoirs are a bigger contributor to the issue, but the UMRB is contributing to the issue as well. Wallace added that a sediment budget could be helpful for understanding how sediment moves during flooding and drought, which can also inform UMRBA’s resilience work. The funding is for partnership engagement, but NESP could be a possible funding source for monitoring to complement the update. Theiling said it is good to think about how the floodway is filling and how much sediment is trapped, thereby reducing efficiency over time. Wieberg shared that there are debates over the past four decades in Missouri on how sediment capture is occurring, and new data will help create a better understanding of those processes.

**June 8, 2022**

**Environmental Justice**

*2022-2032 CWA 303(d) Program Vision*

Rosaura Conde explained that the CWA Section 303(d) Program can be utilized to bridge water quality data and goals the actions needed for restoration. The draft 2022-2032 CWA 303(d) program vision has goals for 1) planning and prioritization, 2) data analysis, 3) protection, 4) restoration, and 5) partnerships: integration and engagement. The focus areas include environmental justice, tribal engagement, climate change, and program capacity building. Conde said the program is seeking to adequately consider environmental justice (EJ) in water quality assessment, impaired waters listing, and TMDLs to address disproportionality high impacts placed on underserved communities.

Sara Schwartz discussed EJ initiatives within the 303(d) program, organized into three parts: assessment and listing, TMDL prioritization, and TMDL development and implementation. The foundation of EJ and the 303(d) program is fair treatment and meaningful involvement. The upcoming 2024 Integrated Reporting Memo, intended to support states in development of their integrated reports as well as USEPA regional offices, will feature topics such as public engagement, participatory science, and information sharing and capacity building. Examples include building relationships with trusted local leaders to better understand the needs of communities related to EJ, translating education and outreach materials in multiple languages, hosting a mix of in person and virtual meeting options and providing recordings of the meetings. The memo will also encourage states to utilize data collected by volunteers in their assessment process. Lastly, the memo will encourage states increase their sharing and communicating of the information from the integrated reports with communities with EJ concerns. The outcome is to inform the public of the status of their waters and to engage the public in a meaningful way.

Schwartz described tools that may be of use to the meeting participants. The Watershed Index Online (WSIO) is a library of over 400 watershed indicators across the U.S. The 2021 update includes a suite of indicators related to environmental justice, such as percent minority population, percent linguistically isolated populations (i.e., lack of English proficiency), count of hazardous waste management plans within the watershed, and percent of assessed waters within the watershed. Another tool is the Recovery Potential Screening (RPS) Tool, used to compare watersheds based on priority setting characteristics, and incorporates WSIO indicators. USEPA recently released indicator reference sheets to define use of indicators and are currently developing RPS scenario factsheets. The last tool is the not-yet published Clean Water Act and Environmental Justice module.

In addition to the tools described, Schwartz provided links for a number of other resources:

* USEPA Equity Action Plan <https://www.epa.gov/system/files/documents/2022-04/epa_equityactionplan_april2022_508.pdf>
* USEPA 2022-2026 Strategic Plan: <https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf>
* Watershed Index Online and Recovery Potential Screening Factsheets: <https://www.epa.gov/wsio/indicator-reference-sheets>
* USEPA’s Collaborative Problem Solving Model: <https://www.epa.gov/sites/default/files/2015-02/documents/cps-manual-12-27-06.pdf>
* Confronting Disproportionate Impacts and Systemic Racism in Environmental Policy: <https://www.eli.org/sites/default/files/docs/elr_pdf/51.10207.pdf>
* Best Practices for Meaningful Community Engagement: <https://groundworkusa.org/wp-content/uploads/2018/03/GWUSA_Best-Practices-for-Meaningful-Community-Engagement-Tip-Sheet.pdf>
* EJSCREEN and EnviroAtlas Webinar June 15: <https://usepa.zoomgov.com/webinar/register/WN_YOOvmEutQR21H7Z5QEZxmA>

Schneiders asked if there are quality assurances processes in place to enable third-party organizations to provide data for studies. There is a significant training commitment to ensure the data are usable, and all of these processes will vary by state. Conde suggested the use of the WQX to submit data, and to make expectations clear when submitting data. Conde emphasized that accessibility was important not only to have an informed public, but also to give communities an opportunity to decide what happens to water bodies around them. Wieberg asked if objectives have been developed related to how states communicate with different areas of the population and if state agency programs are adequate to USEPA’s desired outcome. For example, how should Missouri DNR determine if its programs are doing well or can improve related to the amount of communication? Is communicating using the internet and in multiple languages adequate or should paper distribution be utilized? Wieberg asked for feedback. Conde replied that no one strategy will work across programs and populations but sympathized with Wieberg’s challenges. For now, Conde suggested focusing on making data accessible to have a more informed public and to empower communities to have a role what happens in their watershed. Information sharing will be highlighted in the 2024 memo because there is growing body of information and a good opportunity to expand information exchange between states and partners. One such forum for information exchange is the 303(d) program annual meeting that brings together states, tribes and territories from across the nation. The exchange can bring out the best strategies and tools and how they can be replicated across other communities. Conde offered to share communication tools and suggested emailing her if Wieberg is looking for more refined strategies.

Vanderbosch shared Minnesota’s struggle to meaningfully involve communities. Resources are a challenge and meaningful involvement suggests increased interaction. More information and communication are needed to help underserved communities understand how to engage in the regulatory process. Often the concern is related to the placement or expansion of a facility and the local zoning decision is already made by the time the entity applies for a water discharge permit. The tools referenced will be useful. Minnesota is developing web pages and educational pieces on how to effectively to engage in state agencies programs and policies impacting individuals and communities. Minnesota is striving to do more, but work is selective now given the resource constraints. Conde shared appreciation for Vanderbosch’s comment and suggested additional dialogue and discussion of opportunities to build out the toolbox.

*Actions to Support Environmental Justice in the Nonpoint Source Program*

Ellie Flaherty reviewed the near-term actions in the 2021 NPS Program Policy Memo: USEPA 1) acknowledges role of the Section 319 program in benefitting communities via watershed projects, 2) encourages states to prioritize actions in FY 22 to advance delivery of NPS benefits to disadvantaged communities, and 3) commits USEPA to take actions to support these goals, including ongoing dialogue with the NPS community. The actions will be implemented beginning in FY 2023.

Flaherty said the two guiding questions for the development of the NPS program analysis tools are 1) how is 319 project funding distributed when compared to underserved populations, and 2) how can this data be used to create future work? The data sources are water quality assessment, 319 funding data, and social indicators and water quality data. Data layers we utilized from the Climate and Economic Justice Screening Tool, EJScreen, and the National Landcover Dataset.

The data are hosted on the EPA GeoPlatform and will be available in the near term. Flaherty provided an example of how the tool could be utilized for directing funding and restoration. Hypoxia Task Force priority watersheds overlain with EJScreen indices reveals overlapping areas. Flaherty noted that the data are imperfect. Within each state are different circumstances, nuances, and biases in the data. For example, there maybe be biological, physical, and chemical reasons why funds are not targeted to a waterbody simply based on the number of impairments.

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Greg Searle asked if the limitations on the 319 project funds to the approval of nine key element plans applied to all states and tribes. Mike Scozzafava said the concern has come up during engagement sessions and USEPA is evaluating ways to help communities interested in NPS work to apply with less than a nine key element plan. Searle added that a lot of the healthy watersheds are in the northern part of the state, located in tribal territory. It would benefit Wisconsin to be able to integrate funding on tribal property or lands.

*Discussion*

*Minnesota -* Vanderbosch said Minnesota PCA has a few staff dedicated to serving as tribal liaisons. Wild rice is a priority to the Ojibwe, Dakota, and Chippewa. Overall, tribal coordination is robust and routine. Tribal priorities are incorporated into waters outside of tribal areas. Within PCA’s regulatory programs, the agency makes sure to prioritize permit issuance and compliance to spend equal amounts of time on permittees and discharges near EJ areas. It becomes logistically challenging to get compliance inspectors to the northern part of Minnesota. Tribal interests are well served but other communities need further support. Vanderbosch asked for resources on the definition of meaningful engagement.

*Missouri -* Wieberg said Missouri DNR staff are incorporating EJ into TMDL development, in part by using the EJ screen tool. There is a struggle with classifying EJ communities as there are many rural areas in the state that area largely Caucasian but still facing many disparities.

On the drinking water side of things, there are less than 10 public water suppliers able to adjust schedules of compliance or adjust water quality variances based on financial disparities. There is a variance approved for affordability factors. Challenges are in both the urban and rural settings. Missouri DNR has an effective permit processing rate and staff have not yet made changes to prioritize EJ efforts from a 303(d) or permitting standpoint.

Missouri does not have any federally recognized tribes in the state but does coordinate with surrounding states with tribal concerns e.g., Oklahoma.

Iowa – Schneiders shared that Iowa DNR’s legal coordinator is evaluating the entire agency on how to improve its EJ efforts. The state’s biggest activities relate to the Bipartisan Infrastructure Law funding and creating ways of evaluating equitable distribution of funds throughout the state. Iowa DNR will be requesting public comment in late June or July 2022.

Iowa DNR is working on providing translations on its website, state parks and beaches. It will be a lengthy effort and Iowa is engaging USEPA as a partner. Iowa has a credible data law that makes participatory science challenging to integrate into CWA assessments. The law requires certified labs, quality action project plans (QAPPS), and a minimum of seven samples in a given year. Smaller groups do not have the funding resources to meeting the requirements.

*Wisconsin* – Searle said Wisconsin is developing its own version of the EJ screening tool called the Wisconsin Environmental Equity Tool. The Evers administration created an EJ office at the Department of Administration. Wisconsin DNR is bringing in an EJ policy advisory. Statewide, Wisconsin just finalized a diversity hiring guide in hopes to recruit a diverse range of candidates. DNR also has a student diversity internship program.

Marcia Willhite said Wisconsin is in the early stages of how to incorporate EJ and inclusion into program planning. There are many more opportunities to conduct outreach more actively whether it is when DNR is working on triennial standards, putting together a vision for TMDLS and priority areas, or reaching out to entities for increasing data collection for the integrated report. Willhite would like to see more active outreach to tribal communities, rural areas, and urban neighbors that are not typically involved in DNR’s programs. The groups may have opinions about water quality e.g., what kinds of contaminants they are concerned about.

**Nutrients**

*USEPA Nutrient Memo*

Tom Wall reviewed portions of the USEPA Nutrient Memorandum published in April 2022 and emphasized the Biden-Harris Administration’s support of broader approaches, including advanced watershed planning tools to identify critical resources areas, and promoting state use of the revolving fund of $11.7 billion allocated to CWA State Revolving Funds (SRFs).

The Trump Administration focused on the area of trading and market approaches. The Biden-Harris Administration embraces and supports those strategies but wishes to emphasize a fuller set of tools to make progress on nutrient loading to the Gulf of Mexico. Other highlights of the memo include support for the Gulf of Mexico Program Office’s Farmer to Farmer Grant program and the One Water, One Approach. Additionally, the memo cites the importance of alignment with USDA Natural Resource Conservation Service (NRCS) programs which support to support states and tribes, using the CWA framework to make progress, and wastewater treatment plant (WWTP) optimization to reduce nutrient loads.

Willhite said in support of the memo’s statement of increased collaboration with the NRCS, one way to do that is to streamline data requests by allowing NRCS state offices to disseminate data to states to update their nutrient reduction strategies with Hydrologic unit code (HUC) 12 NRCS program data. Wisconsin makes the data request to the state NRCS office, but the state NRCS office still has to go through Headquarters to meet the request. Willhite suggested that Headquarters allow state NRCS offices to track practices by watershed and type and revisit the data management structure to better assist states to identify the kind of implementation that has already occurred and better plan what implementation is needed in the future. The current process involves an individual at Headquarters providing the 12 Hypoxia Task Force (HTF) states with NRCS data. Wall appreciated Willhite’s suggestion and said that USEPA is planning to look at its guidance and have a discussion with the HTF Coordinating Committee and USDA leadership to figure out a path forward.

Salvato conveyed interest in the memo’s mention of alignment of priority areas to address nutrient runoff. The WQEC has previously discussed alignment across state nutrient reduction strategies, Mississippi River Basin Healthy Watersheds Initiative priority watersheds, and National Water Quality Initiative Freshwater Protection grants. Wall said the time is right to make requests to NRCS leadership.

Schneiders emphasized his support of the memo’s conclusion about the value and need for building partnerships to advance nutrient reduction progress. One concern Schneiders shared is following the Stoner memo, a lot of conflict occurred over nutrient criteria and that ultimately led to pauses in WWTP upgrades. Despite the challenges, Iowa created partnerships and flexibility that leadership believes has been successful. Presently there are permit appeals, for example in Ohio over Lake Erie TMDL, that may unravel the progress and priority put towards building partnerships. Does USEPA have any thoughts to share? Wall sympathized with Schnieders’ concern and believes that offering alternative approaches to meeting nutrient criteria will allow for less contention among industry and others subject to CWA requirements.

Willhite provided background to her comment about the need for emphasizing and promoting partnerships between commodity purchasers and producers. Wisconsin DNR applied for a NRCS climate smart commodities grant to encourage the adoption of practices that both sequester carbon and develop markets for commodities produced in that way. DNR is struggling on how best to promote the adoption of both climate smart and water smart practices. Willhite suggested that the partnerships with commodity purchasers and producers will help provide the economic driver to middle and later adopters of agriculture conservation practices. This was the basis of the grant application. Wall referenced the Cedar Rapids, Iowa project funded by the Soil and Water Outcomes fund. Cargill purchased carbon credits and the City of Cedar Rapids bought water credits. Wall is interested in how to duplicate the Cedar Rapids project in other parts of the Mississippi River Basin watershed. Assistant Administrator Radhika Fox’s vision is that urban areas have nutrient reduction needs but you can also work with farmers in the watershed and get equivalent or even more nutrient reduction, carbon capture, and flood resilience benefits.

Wall highlighted the publication of the [CWSRF Best Practices Guide for Financial Nonpoint Source Solutions published in December 2021](https://www.epa.gov/system/files/documents/2021-12/cwsrf-nps-best-practices-guide.pdf). The document shows how states have conducted successful projects to address NPS. One barrier to the 319 program is the 40 percent statutory match. Case studies from Indiana show how repayment from SRF can be used as a nonfederal match. In Kansas, a farming cooperative bought cover crop inter-seeders using SRF monies. This jump-started cover crop implementation on thousands of acres of lands that had not the practices before. Wieberg shared appreciation for the examples provided in the publication. Missouri has struggled with motivating the SRF side to conduct NPS work when there are many other mandates. Wall offered help from USEPA staff to brainstorm ways to address NPS.

Vanderbosch said that Minnesota has struggled with promoting water quality trading. Cities and municipalities are concerned about having compliance with a permit hinged on the actions or inactions on lands that they do not own. Even with contracts in place, the process to secure payments and manage contracts, there is still hesitancy. Cities would much rather wait years for SRF money to be available to participate in a way that can be controlled. Minnesota has been focusing communication efforts on a changing climate and connection between climate change impacts and aging infrastructure. Even after three years of hosting the ag-urban partnership forum to bring together various aspects of water quality trading and different projects in development, no firm plans have results with any of the National Pollutant Discharge Elimination System permits. It is apparent that local partners are unsure of how to facilitate discussions. Vanderbosch said Minnesota PCA staff will likely reach out to USEPA for additional ideas.

Wieberg said for point source (PS) permittees trading is a way to help meet the permit obligations but there is not significant progress to reduce NPS in watersheds. If a municipality wants to address a water quality problem, it will have to step outside of the regulatory framework and have those conversations. It is not easy to convince citizens or rate payers to invest in caring for a watershed that is not necessarily their responsibility. Overall, Missouri will continue to promote trading, but Wieberg has not viewed trading as a tool to make significant progress. Kevin Kirsch shared a success in Wisconsin has been from the development of nutrient criteria for phosphorus (P). Facilities have low P limits of 75-100 µg/L, and TMDLs may have a higher requirement. The facilities are left to consider the economic requirement for reductions to overcome barriers identified. There is enough of a gradient of risk assessment and variation of what it would cost to upgrade a WWTP. Trading is not a major NPS implementation tool but an alternative tool for PS. Adaptive management is the closest thing Wisconsin has to address NPS in an entire watershed. The best example is the Yahara Wins project led by the Madison Metropolitan Sewer District.

**Administrative Items**

*Future Meetings*

The next WQTF meeting will be convened on October 4, 2022 in St. Paul, MN.

**Participants**

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| --- | --- |
| John Olson | Contractor, Iowa Department of Natural Resources (Retired) |
| Nicole Vidales | Illinois Environmental Protection Agency |
| Ryan Sparks | Illinois Environmental Protection Agency |
| Adam Schneiders | Iowa Department of Natural Resources |
| Dan Kendall | Iowa Department of Natural Resources |
| Dana Vanderbosch | Minnesota Pollution Control Agency |
| Kim Laing | Minnesota Pollution Control Agency |
| Chris Wieberg | Missouri Department of Natural Resources |
| Erin Petty | Missouri Department of Natural Resources |
| Robert Voss | Missouri Department of Natural Resources |
| Chuck Theiling | U.S. Army Corps of Engineers, Research and Development Center |
| Carl Schoenfeld | U.S. Army Corps of Engineers, Rock Island District |
| Karen Hagerty | U.S. Army Corps of Engineers, Rock Island District |
| Nicole Manasco | U.S. Army Corps of Engineers, Rock Island District |
| Ellie Flaherty | U.S. Environmental Protection Agency |
| Katie Flahive | U.S. Environmental Protection Agency |
| Rosaura Conde | U.S. Environmental Protection Agency |
| Sara Schwartz | U.S. Environmental Protection Agency |
| Tom Wall | U.S. Environmental Protection Agency |
| Whitney King | U.S. Environmental Protection Agency |
| Donna Keclik | U.S. Environmental Protection Agency, Region 5 |
| Janette Marsh | U.S. Environmental Protection Agency, Region 5 |
| Kathy Roeder | U.S. Environmental Protection Agency, Region 5 |
| Micah Bennett | U.S. Environmental Protection Agency, Region 5 |
| Tim Elkins | U.S. Environmental Protection Agency, Region 5 |
| Amy Shields | U.S. Environmental Protection Agency, Region 7 |
| Ann Lavaty | U.S. Environmental Protection Agency, Region 7 |
| Chelsea Paxson | U.S. Environmental Protection Agency, Region 7 |
| Madison Stieg | U.S. Environmental Protection Agency, Region 7 |
| Megan Maksimowicz | U.S. Environmental Protection Agency, Region 7 |
| Steve Schaff | U.S. Environmental Protection Agency, Region 7 |
| Zachary Leibowitz | U.S. Environmental Protection Agency, Region 7 |
| Dana Kolpin | U.S. Geological Survey, Central Midwest Water Science Center |
| Kelly Warner | U.S. Geological Survey, Central Midwest Water Science Center |
| Kelsie Ferin | University of Wisconsin Madison |
| Erin Spry | Upper Mississippi River Basin Association |
| Kirsten Wallace | Upper Mississippi River Basin Association |
| Lauren Salvato | Upper Mississippi River Basin Association |
| Coreen Fallat | Wisconsin Department of Agriculture, Trade, and Consumer Protection |
| Ashley Baranek | Wisconsin Department of Natural Resources |
| Greg Searle | Wisconsin Department of Natural Resources |
| Kevin Kirsch | Wisconsin Department of Natural Resources |
| Marcia Willhite | Wisconsin Department of Natural Resources |
| Mike Shupryt | Wisconsin Department of Natural Resources |
| Shawn Giblin | Wisconsin Department of Natural Resources |