Minutes of the 159th Quarterly Meeting of the Upper Mississippi River Basin Association

August 10, 2021
Web-Based Conference Meeting

Tim Hall called the meeting to order at 8:01 a.m. Participants were as follows:

UMRBA Representatives and Alternates:

Rick Pohlman	Illinois Department of Natural Resources
Chad Craycraft	Illinois Department of Natural Resources
Loren Wobig	Illinois Department of Natural Resources
Tim Hall	Iowa Department of Natural Resources
Jake Hansen	Iowa Department of Agriculture and Land Stewardship
Katrina Kessler	Minnesota Pollution Control Agency
Jennifer Hoggatt	Missouri Department of Natural Resource
Chris Klenklen	Missouri Department of Agriculture
Matt Vitello	Missouri Department of Conservation
Steve Galarneau	Wisconsin Department of Natural Resources
Jim Fischer	Wisconsin Department of Natural Resources

Federal UMRBA Liaisons:

Brian Chewning	U.S. Army Corps of Engineers, MVD
Ken Westlake	U.S. Environmental Protection Agency, Region 5
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Scott Morlock	U.S. Geological Survey, Midcontinent Region
Verlon Barnes	Natural Resources Conservation Services

Others in Attendance:

BJ Murray	Illinois Department of Transportation
Gregg Good	Illinois Environmental Protection Agency
Randy Schultz	Iowa Department of Natural Resources
Katie Smith	Minnesota Department of Natural Resources
Megan Moore	Minnesota Department of Natural Resources
Rita Weaver	Minnesota Department of Natural Resources
Patrick Phenow	Minnesota Department of Transportation
Matthew Kirsch	Missouri Department of Natural Resources
Aaron Pruitt	Wisconsin Department of Natural Resources
Mike Halsted	Wisconsin Department of Transportation
Jim Cole	U.S. Army Corps of Engineers, MVD
Leanne Riggs	U.S. Army Corps of Engineers, MVD
Ben Robinson	U.S. Army Corps of Engineers, MVD

Thatch Shepard	U.S. Army Corps of Engineers, MVD
Renee Turner	U.S. Army Corps of Engineers, MVD
Angela Deen	U.S. Army Corps of Engineers, MVP
Steve Tapp	U.S. Army Corps of Engineers, MVP
Chris Erickson	U.S. Army Corps of Engineers, MVP
Aaron McFarlane	U.S. Army Corps of Engineers, MVP
Andy Meier	U.S. Army Corps of Engineers, MVP
Ann Banitt	U.S. Army Corps of Engineers, MVP
Kim Thomas	U.S. Army Corps of Engineers, MVR
Jodi Creswell	U.S. Army Corps of Engineers, MVR
Andrew Goodall	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Rachel Hawes	U.S. Army Corps of Engineers, MVR
Jon Klingman	U.S. Army Corps of Engineers, MVR
COL Kevin Golinghorst	U.S. Army Corps of Engineers, MVS
Michael Feldmann	U.S. Army Corps of Engineers, MVS
Jasen Brown	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Shawn Sullivan	U.S. Army Corps of Engineers, MVS
Greg Kohler	U.S. Army Corps of Engineers, MVS
Kat McCain	U.S. Army Corps of Engineers, MVS
Lance Engle	U.S. Army Corps of Engineers, MVS
Brian Johnson	U.S. Army Corps of Engineers, Regional Planning Division North
Sharon Sartor	U.S. Army Corps of Engineers, Headquarters
Bryan Taylor	U.S. Army Corps of Engineers
Jason Daniels	U.S. Environmental Protection Agency, Region 7
Neal Jackson	U.S. Fish and Wildlife Service, UMRCC
Sara Schmuecker	U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services
Matt Mangan	U.S. Fish and Wildlife Service, Illinois Ecological Services
Tim Yager	U.S. Fish and Wildlife Service, Winona
JC Nelson	U.S. Geological Survey, Midcontinent Region
Mark Gaikowski	U.S. Geological Survey, UMESC
Kristen Bouska	U.S. Geological Survey, UMESC
Jennie Sauer	U.S. Geological Survey, UMESC
Jeff Houser	U.S. Geological Survey, UMESC
Jennifer Dieck	U.S. Geological Survey, UMESC
Andrew Bohnenkamp	Natural Resources Conservation Service
Steve Buan	National Oceanic and Atmospheric Administration, NWS
Mike Welvaert	National Oceanic and Atmospheric Administration, NWS
Molly Woloszyn	National Oceanic and Atmosphere Administration, NIDIS
Crystal Stiles	National Oceanic and Atmospheric Administration, NIDIS
Olivia Dorothy	American Rivers
Jim Koeller	Illinois Farm Bureau
Sarah Rubenstein	Great Rivers Environmental Law Center
Gary Loss	HNTB
Carolyn Mahlum-Jenkins	League of Women Voters/Naiad Consulting
Doug Daigle	Lower Mississippi River Sub-Basin Committee (Hypoxia Task Force)
Linda Loomis	Naiad Consulting

Rick Stoff	Our Mississippi
Gretchen Benjamin	The Nature Conservancy
Doug Blodgett	The Nature Conservancy
Trey Cook	The Nature Conservancy
Brent Hoerr	Upper Mississippi, Illinois, and Missouri Rivers Association/Missouri Corn Growers Association
John Winkelman	Des Moines Levee District
Paul Rohde	Waterways Council Inc.
Tom Boland	Wood
Kirsten Wallace	Upper Mississippi River Basin Association
Mark Ellis	Upper Mississippi River Basin Association
Lauren Salvato	Upper Mississippi River Basin Association
Andrew Stephenson	Upper Mississippi River Basin Association
Janelle Gaun	Upper Mississippi River Basin Association

Minutes

Steve Galarneau moved and Rick Pohlman seconded a motion to approve the draft minutes of the May 25, 2021 UMRBA quarterly meeting as written. The motion was approved unanimously.

Executive Director's Report

Kirsten Wallace pointed to the Executive Director's report in the agenda packet for a summary of the Association's other work efforts since the May 2021 quarterly meeting. Wallace reported on new announcements since the packet publication and elaborated on a few key developments, as follows:

USEPA obligated $250,000 to UMRBA on August 3, 2021 to complete OPA work in FY 2022. This is an increase of $100,000 over the recent annual amount. The budget includes 75 percent of this award given that the funds would extend into UMRBA's FY 2023 budget – i.e., months of July 2022 through September 2022. The expenses are currently captured in OPA Wages. Mark Ellis and USEPA staff are scheduled to talk later this week on potential activities. This includes reflecting on the current draft form of a new five-year strategic plan. An initial scoping document of the strategic planning process is included in the agenda packet. The next strategic planning session is scheduled for August 17, after which we anticipate a draft will be ready for review by UMR Spills Group agencies and stakeholders. This strategic plan will likely drive the UMR Spills Group's priorities for work to advance with the additional funds.

Yesterday, on August 9, 2021, the Corps' contracting office provided UMRBA with a contract proposal for assistance in developing the 2022 UMRR Report to Congress. That work would involve drafting portions of the report and working with various program partner authors to pull together the report with a single voice. In particular, UMRBA will work with program partners in developing implementation issues assessments that will be used to inform conclusions and recommendations to include in the report. Katrina Kessler moved and Steve Galarneau seconded a motion to enter into a contract with the Corps for up to $70,000 to support the 2022 UMRR Report to Congress development. The motion carried unanimously.

Wallace provided an overview of recommended changes to UMRBA's FY 2022 budget, reflecting both income and expense estimates based on the USEPA and USACE contract. The draft budget was provided

to the UMRBA Board on August 9, 2021. Kessler moved and Galarneau seconded a motion to approve the draft FY 22 UMRBA budget amendment per the August 9, 2021 draft. The motion carried unanimously.

Wallace pointed to UMRBA's financial statements on pages B-15 to B-21 of the agenda packet. Tim Hall moved and Steve Galarneau seconded a motion to approve the Association's budget report and balance sheet as included in the agenda packet. The motion was approved unanimously.

Wallace reported that, on July 9, 2021, UMRBA received a notice from the USEPA External Civil Rights Compliance Office that it received a written complaint from Olivia Dorothy on behalf of American Rivers alleging UMRBA discriminated against communities of color living in the Mississippi River floodplain area based on race and national origin in violation of Title VI of the Civil Rights Act of 1964. The claim is that UMRBA knowingly and deliberately excluded the Black, Hispanic, and Hmong communities who live and work in the Mississippi River Basin floodplain areas from participating in the development of programs, projects and policies related to flooding along the Mississippi River. UMRBA is fully cooperating with USEPA and has hired legal counsel to assist staff in working through the process. The UMRBA Board believes that this claim is wholly without merit and expects a favorable outcome.

UMRBA staff are patiently, but eagerly, awaiting the arrival of Lauren Salvato first child expected in mid August 2021. Wallace said she will share the news with the UMRBA Board and WQEC and WQTF as appropriate.

Wallace reported that a new construction start for NESP is included in the House and Senate appropriations FY 2022 measures. Wallace expressed appreciation to the basin's Congressional members and partners on NESP, particularly WCI and TNC.

On behalf of UMRBA, Wallace testified to the House Select Committee on the Climate Crisis on Friday, June 11, 2021. The hearing focused on building resilient communities and also included the mayors of Madison, Los Angeles, and Atlanta. UMRBA testimony focused on how regional science, coordination, and planning can result in regional resilience. The testimony shared what we know about ecological resilience through the Upper Mississippi River Restoration (UMRR) program and underscored the interconnectedness of communities and river users/uses that require a collective effort at the regional or watershed scale. In addition, the testimony called for investment in UMRR, the Navigation and Ecosystem Sustainability Program (NESP), nutrient reduction strategies, and long term resilience planning.

UMRBA met in a July 15 virtual meeting with USEPA Office of Water's Office of Wetlands, Oceans, and Watersheds (OWOW) leadership. Staff were joined by UMRBA WQEC members Katrina Kessler and Chris Wieberg. UMRBA provided an overview of Upper Mississippi River management from a multi-purpose perspective, UMRBA's water quality program from its inception and today, and UMRBA's goals for working with USEPA.

Wallace expressed appreciation to Janelle Guan, who served as an intern for UMRBA throughout the summer. Guan supported UMRR and water quality-related initiatives.

UMRBA Resilience Planning

Tim Hall reported that members and alternates of the UMRBA Board held an in-person resilience planning retreat on July 27-29, 2021 at the Black Hawk State Historic Site in the Quad Cities. On behalf

of the Board, Hall expressed appreciation to Illinois DNR staff for hosting the meeting. The facility was very nice and could be a venue for future UMRBA quarterly meetings and other events.

Hall said the Board members had extensive discussion about resilience planning, the Keys to the River Report, and other issues that the states have been working through over the past few years as well as the stakeholder input received so far. A strength of UMRBA is its ability to convene the perspective of the five states and all people we represent within our states. Hall recognized the challenges of managing the river in a time of changing hydrologic and climate conditions and acknowledged the tremendous amount of work ahead of us. We need to continue to work to assemble resources. UMRBA recognizes and appreciates the partnership of the federal agencies that work with the states in managing the river. We want to facilitate more cooperative action between state and federal agencies as we work on resilience issues.

Hall explained that, during the retreat, Board members and alternates reviewed the short- and long-term actions in the areas of flood, drought, and sediment management in the draft Keys to the River Report and developed a list of key actions for UMRBA to implement over the next three years. The UMRBA Board is currently reviewing those priorities, bringing in other staff within the states to help us sort through the priorities. The Board anticipates having a more refined set of priorities and scope of work in about a month. We will use that scope to facilitate conversations with our partners, including how we can best achieve those priorities through collaboration.

Hall reminded that UMRBA remains committed to multi-purpose management, balancing the interests of river uses and users. The UMRBA Board wants to continuing developing relationships with stakeholders who are impacted by what happens in terms of how the river is managed. We need to continue to learn from peoples' perspectives; particularly how actions and issues uniquely affect people.

Hall said the UMRBA Board expresses its sincere appreciation to the Corps for the work we were able to accomplish through the planning assistance to the states (PAS) agreement. Several Corps leaders met with the Board the last day of the retreat in the morning of July 29, 2021. We appreciate their time, which resulted in a good start to conversations about how we work together through these issues.

Hall reflected on the value of talking with UMRBA colleagues face-to-face. Hall said he is looking forward to UMRBA's quarterly meeting being in-person when appropriate. Those meetings provide robust opportunity for facilitating partnership and exchanging information.

Steve Galarneau echoed Hall's perspective on the value of having the retreat held in-person. While teleworking offers opportunities that will be important to retain (e.g., expanding access to meetings), meeting in-person is important for building relationships and engaging with colleagues. Jim Fischer reflected on the past several years of UMRBA focusing on resilience planning and expanding stakeholder involvement. Fischer observed that it takes time to manage complicated issues on such a complex and large river system. Fischer said he believes that the Keys to the River Report is moving the partnership in the right direction. Acknowledging that the underlying drivers for flooding and sediment are similar, Fischer observed that actions targeted at improving our knowledge of existing conditions and forecasting future conditions will benefit both flood and sediment management on the river.

Rick Pohlman said our work must begin with knowledge to improve our assessment of resilience from which we can prescribe implementable changes. The work must be done with the involvement and communication among stakeholders. During the last two years, government agencies have started building relationships with, and expanding opportunities to, people and communities who may not have

had opportunities or ability to weigh into planning and decision making. Learning from those experiences and perspectives is important for increasing our knowledge base. In partnership through a cooperative action plan, we need to identify where the issues are occurring, how they can be alleviated, and how vulnerabilities can be addressed. Pohlman said he believes the work done to-date has successfully provide a foundation for a longer-term endeavor to improve the system in a cooperative manner.

Loren Wobig concluded that the retreat was a necessary event to help the UMRBA Board springboard from Keys to the River Report, by having a focused discussion on what things need to be worked through in the near-term and what needs additional time and resources to accomplish. Wobig acknowledged that there are a lot of resources at our disposal. Through partnership with the states, federal government, academic institutions, and nonprofit entities, we can build the partnership network to help us accomplish our goals.

Jennifer Hoggatt reflected that the retreat allowed the UMRBA Board to focus specifically on what the states collectively can effectively influence and how UMRBA and the states are best suited to move these ideas into tangible results. We acknowledge that stakeholders are weary of continued study and discussions and want to see actions that result in improved resilience. Hoggatt encouraged stakeholders to work collectively, acknowledging that everyone will play a pivotal role.

Jake Hansen said it was helpful to understand how the issues occurring in Iowa are relating in other states and that the states' approaches to solving them are similar. It was also helpful to deep dive on topics that the states collectively do not have time to address, including relatable, specific examples within our states that can be applied to the broader region – e.g., localized management of drought.

On behalf of Barb Naramore, Katrina Kessler said Naramore appreciated the conversation. Kessler said resilience issues can benefit from regional, interstate cooperation – i.e., leveraging experience, problem solving, and filling knowledge gaps. Collective action will benefit all of us.

Kirsten Wallace expressed appreciation to Brian Stenquist for his facilitation services during the resilience planning retreat. Stenquist helped to make the retreat productive, allowing for us to now find that time together to be valuable.

Northern Midwest Drought

Conditions and Impact Assessment

Molly Woloszyn provided an assessment of the drought conditions and associated impacts in the Upper Mississippi River basin. Woloszyn showed an image of the current drought status in the north central states per the U.S. Drought Monitor as of August 3, 2021. In Minnesota, 97 percent of the state is in drought with 35 percent of the state in extreme drought – i.e., D3. In Iowa, 54 percent of the state is in drought with 7 percent of the state in extreme drought. It is anticipated that the highest level of drought (i.e., D4) may be soon classified in Minnesota. Earlier this summer, D3 was present in northern Illinois and southern Wisconsin but there has been recent improvement. For context, Woloszyn added that there has been exceptional drought throughout the summer in the Missouri River Basin.

Woloszyn explained that some areas in Minnesota have experienced a fast acceleration (moving through three classifications) of drought severity over the summer – i.e., June 8 to August 3. The drivers are a combination of below normal precipitation and above normal temperature, both short term over the

summer and the past year. The NASA soil moisture anomaly from August 5 shows very low in Minnesota, ranging from 40- to 45-percentile below normal. Minnesota climatology office indicates that soil moisture levels this year are comparable to 2012. USDA topsoil reports are showing that 81 percent of Minnesota farmers are saying that their soils are short to very short. Stream flows are low in Minnesota and Iowa.

As an impact assessment, there has been limited water availability in places like Sioux Falls and Des Moines, water quality issues particularly in livestock ponds, some crop stress (overall good), and smoke and fire issues. Woloszyn mentioned that the National Drought Mitigation Center's Condition Monitoring Observer Report (CMOR) is where water users can submit a relatively easy survey to report localized conditions. It is a helpful tool to understand conditions on the ground.

Future conditions are estimated to be dry in Minnesota and northwestern Iowa with temperatures above normal continuing in August and throughout October. Significant fire potential extends from the Missouri River Basin into northern Minnesota.

Woloszyn explained that NIDIS' drought response is mostly providing information – i.e., overview of current conditions, impacts, and outlooks. NIDIS hosts webinars and disseminates drought status updates via email and on its drought.gov web portal, which includes regional and localized information. NIDIS also convenes partners within a state or among interstate regions and employs post-drought assessments of overall impacts and response efforts.

Kirsten Wallace thanked Woloszyn and the NIDIS team for their efforts in sharing information on the drought severity frequency and through a variety of forms. Wallace referred to the chat forum and read a question from Olivia Dorothy asking Woloszyn for her to speak about the drought occurrence in the context of the 2021 Intergovernmental Panel on Climate Change (IPCC) report. Woloszyn said current knowledge of climate change assumptions suggests that drought tendencies in the Midwest will most likely occur more quickly and with more intensity but with some occurring over a longer duration. NIDIS is currently funding studies to better understand drought trends in the Midwest and will make the findings available via the Midwest DEWS. Woloszyn said NIDIS is also willing to serve as in a more direct partnership with UMRBA, particularly with respect to research expertise.

State Planning and Response Efforts

Minnesota

Katie Smith reported that Minnesota is experiencing a serious hydrologic imbalance, with soil moisture reserves, groundwater supplies, and lake levels and stream flows being negatively impacted. Water-dependent industries, such as agriculture, public utilities, forestry, and tourism, are being profoundly affected. Minnesota is currently in the drought warning phase, estimating how the drought might continue to unfold based on current conditions. At least five to eight inches of precipitation over the next month are needed to significantly alleviate the drought.

Smith explained that Minnesota DNR's water management responsibilities include monitoring surface and groundwater conditions, appropriating water, regulating activities affecting public waters, and managing both floods and droughts. The agency uses both low flow suspensions, protected lake elevation, well interferences as protective standards, balanced around the priority of water use. The priority is placed on domestic water supply, small appropriations, agriculture irrigation and processing, power production, and other non-essential uses.

Acknowledging that low flows and levels are essential to healthy aquatic ecosystems, Smith explained that Minnesota's drought response triggers are designed to appropriately balance managing for ecological purposes and human uses.

Smith provided an overview of the five stages of the Minnesota Statewide Drought Plan. The state is currently operating in the drought warning phase, starting to implement water use restrictions, reductions, and conservation measures. Should conditions continue to decline, Minnesota would require water suppliers to further reduce water use and appropriators to further minimize non-essential water uses. Lastly, the emergency phase would include advice to the Governor of the need for an emergency declaration and to implement emergency operations plan. Minnesota would consider requesting that the Corps release water from Mississippi River reservoir. Further measures would including further reductions from public water suppliers, limiting water to the highest priorities, and providing water as needed. Smith also provided an overview of the suite of Minnesota's drought response efforts taken so far during this drought event, including implementing low flow conditions, communications, monitoring, and fire management. Smith elaborated on water appropriation suspensions standards, which are based on sustainability and protected flows. Staff are continuing to monitor watersheds to determine when the low flow threshold has been reached that would trigger the suspensions. Smith described the agency's extensive communications efforts, including to individual permittees, media, industries, communities, residents, and livestock producers.

Kirsten Wallace read a comment from Katrina Kessler in the chat forum reporting that, in early August, Minnesota PCA initiated a low water quality study of the Minnesota River to evaluate whether any progress has been achieved stemming from the Low Dissolved Oxygen TMDL.

Iowa 2021 Drought Mitigation and Response

Tim Hall recalled that 2018 and 2019 was the wettest two-year period on record for the state of Iowa, with 30 inches of rain above normal. At the opposite end of the spectrum, the state was exceptionally dry in 2020 and 2021. Iowa is located in a transitional zone, with dry conditions in northwestern Iowa and wetter conditions in southeastern Iowa. Hall explained that these situations are complicating communications and management. Hall observed that Iowa DNR has benefited from its efforts to build relationships over the past several years with experts and individuals and organizations that aid tremendously in managing these emergency situations.

Hall provided a deeper overview of the drought conditions in northwestern Iowa. This area is vulnerable to drought because of the higher concentration of livestock production and irrigation, resulting in an exceptional amount of demand on water resources. Rural water systems report that about 90 percent to 95 percent of their water is used for animal agriculture. Additionally, this area is the most limited in terms of available, usable groundwater. Water sources are restricted to shallow alluvial aquifer systems long streams and rivers, which is heavily influenced by precipitation.

Hall explained that, in late 2019, troubling signs of drought started to occur, particularly in northwestern Iowa. That triggered Iowa DNR and its partners to begin convening and planning for informational public meetings about these issues. Prior to the drought monitoring indicating severe conditions, Iowa had already been engaging with stakeholders, convening virtual meetings in January, March, May, and June 2020. Iowa DNR meets with affected and potentially affected water users and resource managers to share the current understandings of conditions and projections. Iowa DNR also issues a monthly water summary, which includes figures and text designed to be useful for the general public.

Iowa DNR will continue to work with federal agencies and partners to remain vigilant and communicate anticipated impacts to water users. Iowa has not had to issue any limitations to water users, but anticipates having to issue warning letters to irrigators if conditions worsen.

Ken Westlake asked whether aquifer recharge during the wet years of 2018 and 2019 aided water storage capacity in 2020 and 2021. In response, Hall confirmed that the dry conditions in 2020 and 2021 are similar. But the benefit of the water storage reserves built up during 2018 and 2019 in the shallow aquifers were used for water supply in 2020. This year, the state started dry and did not have the similar benefit of water reserves and that is why the state has been operating in more of an emergency mode.

Westlake asked how Iowa DNR manages surface water reservoirs as conditions flip from high precipitation to low precipitation. Hall explained that Iowa does not have substantial storage capacity to manage beyond the Corps' three reservoirs. The state relies substantially on precipitation. Hall mentioned that water facilities in northwestern Iowa have added resilience to their systems through off-stream storage capacity and low-head dams to create small reservoirs.

Illinois Starved Rock Harmful Algal Bloom

Gregg Good reported on the harmful algal bloom (HAB) occurrence at Starved Rock on the Illinois River in early June 2021. Good mentioned that Illinois EPA established its HAB monitoring program in 2013 and has made incremental improvements since then. Good also explained that the Starved Rock location is heavily influenced by nutrient inputs from Chicago and the Fox River.

The Corps had informed him of a potential HAB at Starved Rock on June 9, 2021, triggering Illinois EPA to collect samples on June 10 of all four associated toxins: microcystin, cylindrospermospin, anatoxin-a, and saxitoxin. Only microcystin was detected at the time. The results were shared publicly on June 16 with an official press release issued on June 17. USGS continuous monitoring near Starved Rock indicated a HAB occurrence.

Sampling on June 15-16, 2021 by Illinois EPA (one sample) and USGS Next Generation Water Observing System (three samples), with three of four samples detecting microcystin levels above the 8 ug/L threshold. These results were released publicly on June 22. Following precipitation events, USGS continuous monitoring showed no HAB occurrence by June 30.

Using USGS continuous monitoring values of temperature, discharge, dissolved oxygen, pH, chlorophyll, and phycocyanin fluorescence to infer whether a HAB event is occurring. Good emphasized the value of USGS continuous monitoring for detecting and monitoring HABs. He thanked the partnership involving the Corps, USGS, Illinois EPA, and the Illinois EPA laboratory.

Good said the USGS continuous monitoring information was used to trigger Illinois EPA's field sampling on June 30, which resulted in a non-detect of microcystin. On July 28, the Corps informed of another potential HAB again using USGS continuous monitoring. However, on August 4, the Corps was on the river and did not see signs of a HAB occurrence.

Good said he is looking forward to the advancements in HAB knowledge stemming from the Illinois River Next Generation Water Observing System.

In response to a comment in the chat forum from Matt Kirsch as read by Wallace, Good explained that Illinois EPA uses the USEPA standard of 8 ug/L for microcystin as a threshold for recreational use. The Illinois Pollution Control Board has not yet adopted standards for the other toxins.

In announcing that Good is planning to retire from Illinois EPA this winter, Wallace expressed sincere gratitude for Good's tremendous contributions to UMRBA's water quality program throughout his career. Good brings a very positive energy, drive, and ambition as a leader within UMRBA. Wallace wished the best to Good and his family in retirement.

Missouri Drought Mitigation Plan

Matt Kirsch provided an overview of Missouri's ongoing drought planning effort. Kirsch explained that the existing 2002 state drought plan is limited in scope. Substantial droughts experienced within Missouri since the report's publication have underscored the need for better preparation. In late 2020, Missouri initiated a major update to its statewide drought plan. Kirsch added that, while the state typically enjoys abundant water resources, water is not always acceptable or where it is needed to meet water use needs.

Kirsch listed Missouri DNR's goals for drought planning as follows:

- Describe the types of droughts that may occur and their impacts.
- Characterize regional vulnerabilities to drought.
- Assess resiliency to drought – i.e., how prepared are water users in mitigating impacts from, and responding to, drought?
- Quantify potential economic impacts from drought.
- Establish region-specific triggers for implementing drought mitigation and response actions that consider both current conditions and drought forecasts.
- Develop a portfolio of mitigation actions that may be effective in preventing or minimizing economic and social impacts from drought.

Kirsch added that Missouri DNR is expanding its soil moisture monitoring network in combination with ground water monitoring and is employing a study regarding the yield during drought at 50 drinking water reservoirs. The purpose being to help local communities with their drought planning.

Wisconsin

Aaron Pruitt provided an overview of the Central Sands Lakes Study, which was published in May 2021. By way of background, Pruitt characterized the Central Sands Lakes region as a shallow sand and gravel glacial aquifer that is heavily irrigated and supports production of potatoes and vegetables.

The area became famous in the late 2000s when regional lakes and waterbodies were making national news for essentially drying up. This triggered numerous studies to discover the reason for low water levels, eventually leading to the Central Lakes Study. But, by the time planning was organized and resources secured, the region experienced a hydrologic shift where those same waterbodies were facing high water levels and the public was concerned with flooding. The study continued with the specific intent to determine whether existing and potential groundwater withdrawals were causing significant reduction of the lakes' water levels to drop below average seasonal levels. The focus was further refined

to answering: to what extent do groundwater withdrawals affect lake levels and is this change "significant" to the lake ecosystems?

Because existing long term data showed that the lake levels experienced high fluctuations over time, Wisconsin DNR developed a groundwater flow model to tease apart the effects of weather and land use of water levels and to isolate the potential affects of pumping. The studies major findings were:

- The study lakes are well connected to groundwater.
- Lake levels naturally vary due to weather and geographical location.
- Average seasonal levels are somewhat irrelevant because of natural variability, which is beneficial ecologically.
- Agricultural irrigation accounts for over 95 percent of groundwater withdrawals in the lake model area.
- Recharge is important to understanding the groundwater system.
- Distance and pumping are the major factors that affect how high-capacity wells cumulatively drawdown levels on the study lakes.

Wisconsin DNR's resulting recommendation is to establish a regional water use management district composed of high-capacity well owners, landowners, county land and water representatives, and natural resource groups. This state-local partnership would allow for identifying the most impacted lakes and streams, set thresholds for surface waterbodies, and develop plans for reducing impacts from pumping. The regional district would provide oversight and coordination, and routine planning and implementation would occur on a five-year cycle.

Pruitt put forward that this presentation is a very brief synopsis of a very extensive study that occurred over multiple years. Pruitt acknowledged the contributions of many organizations that contributed to multiple teams. Pruitt reflected that the most pressing insight gained is the value of starting a long term data collection program before detecting a problem. The long term data available to use in this study was essential to understanding variability over time and using scientific data to understand the impacts of pumping on the lakes.

NIDIS Tribal Drought Engagement Strategy

Woloszyn provided an overview of NIDIS, which was established by Congress in 2006 to implement an interagency mandate to develop and provide a national drought early warning information system. The purpose was to move the nation from a reactive approach to a more proactive approach to managing drought risks and impacts. Congress authorized NIDIS to engage in partnerships with federal, state, tribal, and local partners as well as the private sector, academic institutions, and citizen scientists. Of particular note, in its 2018 reauthorization, Congress directed NOAA to develop a strategy for a national soil moisture monitoring network.

Woloszyn explained NIDIS's approach to drought early warning, providing the definition of early warning as "provision of timely and effective information that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response." The Drought Early Warning System (DEWS) includes observations and monitoring, predictions and forecasting, planning and preparedness, communication and outreach, and interdisciplinary research and applications. The Midwest DEWS covers the Upper Mississippi River basin.

The NIDIS Tribal Engagement Strategy was developed in collaboration with tribal nations located in the Missouri River basin and the Midwest Region. NIDIS views the principles of engagement as applicable in other parts of the country. Woloszyn explained that NIDIS has historically worked with tribal nations and provided funding and other resources to address drought vulnerabilities. But, NIDIS developed the 2021-2025 NIDIS Tribal Drought Engagement Strategy for the purposes of building a strategic and proactive approach to engaging with tribal nations and ensuring that their perspectives are integrated into NIDIS's work. The plan sets forth "guiding principles of engagement," including respecting tribal sovereignty, ensuring trust and reciprocity, and ensuring DEWS are culturally appropriate and useful for tribal nations. The plan's key outcomes and activities include the following:

- Interdisciplinary research and applications
- Prediction and forecasting
- Observations and monitoring
- Planning and preparedness
- Communications and outreach

NIDIS is placing a particular emphasis on expanding tribal engagement as a priority moving forward, including with tribal colleges and universities, alliances and networks, resource and water managers. Additionally, this includes coordinating with federal agencies and regional organizations.

Woloszyn announced that NIDIS recently hired Dr. Crystal Stiles to serve as a full-time tribal engagement coordinator. NIDIS has recently published a notice for a "coping with drought" grant competition, focusing on building tribal drought resilience. NIDIS is also hosting listening sessions with tribal nations to discuss the best ways to represent tribal needs on drought.gov.

Wallace congratulated Dr. Stiles on her new position and said UMRBA is looking forward to working with her in her capacity with NIDIS.

Drought Impacts on Arsenic in Private Wells

Melissa Lombard discussed the results of recent research regarding drought impacts on arsenic levels in private wells. The study was completed in partnership with the Centers for Disease Control and published in the Environmental Science and Technology in January 2021. The study explained that USEPA has a drinking water standard of 10 ug/L for public water supplies; although private wells are generally not regulated and water quality testing is the responsibility of individual homeowners.

Lombard said the research started with an original USGS groundwater arsenic model that was based on data from over 20,000 domestic wells. It showed regional difference in arsenic levels throughout the country, showing probability in Minnesota, Iowa, and Illinois where there is a greater probability of arsenic occurrences. The original model consisted of 42 predictor variables that are represented through USGS continuous data, with the most important variables being related to geologic indicators, geochemical data, and hydrologic/meteorologic variables. Using the original model, a scenario similar to the 2012 drought found that the likelihood of arsenic exceedances above the USEPA drinking water threshold increases throughout most of the continental United States. Estimates of domestic well population was then integrated to determine the number of people that may be exposed to the high arsenic levels. The analysis found that 2.6 million people are exposed to arsenic levels above the USEPA

threshold during average climate conditions and 4.1 million people during drought conditions. Additionally, longer duration of drought tends to increase the probability of high arsenic. A next step includes verifying the modeling results with field measurements.

Drought Prediction Project

Lombard provided an overview of the USGS Water Mission Area Drought Science Program, focusing on hydrologic drought (i.e., deficits in surface water and subsurface groundwater) with the following four major focal areas:

- Drought prediction methods research and development
- Prediction and early warning systems
- Impacts, risk, and resilience
- Science delivery

Minnesota River Water Storage

Rita Weaver reported that the Minnesota state legislature appropriated $1 million in FYs 2021 and 2022 to the Board of Soil and Water Resources to develop a water quality and storage program for the Minnesota River. Weaver provided an overview of Minnesota's existing suite of conservation and flood reduction programs, noting the state's emphasis on watershed planning. Weaver explained Minnesota's "One Watershed, One Plan" program, which convenes local decision-makers at a watershed scale to develop comprehensive water resource plans. The state oversees the program, but the funds are directly passed through to local entities that are responsible for all implementation aspects associated with the projects.

Weaver presented the Minnesota state statute that provides general direction and sideboards for the program. "Water quality and storage practices" is defined in state statute as "practices that sustain or improve water quality via surface water rate and volume and ecological management." The statute prescribes that the Water Quality and Storage Program "provide financial assistance to local units of government to control water volume and rates to protect infrastructure, improvement water quality and related public benefits, and mitigate climate change impacts." Weaver said the statute directs that priority be given to the Minnesota River and Lower Mississippi River basins.

Weaver discussed the Board of Water and Soil Resource's planned next steps for stakeholder engagement. Virtual sessions are being scheduled for September 2021 to seek input on a number of questions. Weaver acknowledged the substantial considerations involving a new storage program. For example, should funds be used for determining the best placement of storage projects (to have the best effect and avoid inadvertent negative consequences) or strictly to advance construction of completed plans that have already studied project benefits and other implications. Other considerations include types of practices, prioritization scheme, and whether funding should be allocated to advance drainage system improvements.

In response to a question from Lauren Salvato, Weaver said the Board of Soil and Water Resources has deliberated about whether and how prioritization should be given to applicants that are also working to advance other relating state and federal priorities – e.g., nutrient reduction.

Navigation and Ecosystem Sustainability Program

FY 2021 Status Report

Andrew Goodall provided an update on the progress in planning Navigation and Ecosystem Sustainability Program (NESP) in FY 2021 under the $5 million allocation. Navigation-related projects totaling $12.5 million include the L&D 25 lock wall modification, L&D 14 mooring cell, and Moore's Towhead systemic mitigation project on the Illinois River. Ecosystem restoration-related projects totaling $10 million include Twin Islands shoreline protection project, Alton Pool Islands, Pool 2 wingdam notching, and Starved Rock habitat restoration and enhancement. Goodall confirmed that all of these projects are anticipated to be construction-ready in FY 2021.

Goodall explained that NESP continues to advance design of L&D 22 fish passage. Public review of the project's tentatively selected plan is complete. The Corps District-based river teams are tasked with developing recommended ecosystem projects that advance priorities as established in the Navigation Feasibility Study. Goodall said a priority set of projects would be advanced to planning should NESP receive additional funding.

Olivia Dorothy recalled previous discussions during which the Lock 25 lockwall modification is suggested to be a part of the L&D 25 lock modernization. Dorothy questioned the UMRBA May 25, 2021 minutes in which Goodall is quoted as saying that the project is classified as a "small scale navigation measure." Dorothy asked for clarification and correction to the minutes if necessary. Kirsten Wallace said she will work with Goodall to review the recording of the May 25, 2021 and determine if and how a revision to the minutes is warranted. Wallace said the Board can use the November 2021 quarterly meeting as a place to correct the May 25, 2021 meeting minutes on record.

Dorothy requested that Goodall speak to the 2019 NESP economic update findings. Goodall reported that the economic update was transmitted to the ASA(CW)'s office in December 2019. Goodall explained that the District has not been provided authorization guidance to publicly release the report. The benefit-to-cost ratio of the navigation improvements is 0.19 to 1.13, which depend on the traffic forecast selected in the analysis. The analysis does not include the projected growth of containerized shipping on the river or a quantifiable impact of a single point-of-failure within the locked system such as the increases in shipping costs if a shutdown of the navigation system were to occur. Practically, the volume of tonnage moved on the waterways cannot be sufficiently handled by existing train and truck networks without major disruption. In response to a question from Dorothy, Goodall explained that the District followed the Corps' requirements for economic updates per engineering regulations. In response to a question from Dorothy, Goodall said he is not making a statement of the economic report's validity.

Water Level Management Recommendations

Lauren Salvato presented on the results of the Water Level Management (WLM) Regional Coordinating Committee's efforts to i) update the Navigation and Ecosystem Sustainability Program's 2004 Environmental Report 53 (re WLM) and ii) develop a suite of recommendations associated with WLM implementation. The major conclusions are that:

- The long term monitoring datasets on the Upper Mississippi River have allowed for a more robust analysis of acres exposed, dredging required, and success rate.
- Ecological benefits of WLM were analyzed using the Dabbling Duck Migration Model, determining that the average annual habitat unit resulting from water level management was

generally much lower than from other types of habitat projects generally constructed on the Upper Mississippi River.

- The WLM Regional Coordinating Committee is recommending implementing WLM in i) degraded pools to bring them up to "good" condition and ii) one pool in "good condition" per Corps District associated with a learning component.

Salvato reminded that UMRBA established the WLM Regional Coordinating Committee in 2018 for the purpose of developing a comprehensive plan to evaluate opportunities for more routine, systemic implementation of WLM on the Upper Mississippi River. UMRBA executed a three-year cost-share agreement under the Planning Assistance to the States (PAS) program to advance the Committee's WLM priorities. Specifically, the Committee's priorities were to update sections of the NESP Environmental Report 53 related to acres exposed, success rate, and dredging required; improve knowledge of ecosystem benefits associated with WLM; and develop ecological goals and objectives for implementing WLM. Salvato explained the major updates to the NESP Environmental Report 53, including the consideration of additional pools, a new definition of success rate, and updated methods for determining acres exposed and dredging required.

Aaron McFarlane reported on efforts to quantify ecological outputs of WLM to better estimate costs and benefits, creating a comparison of WLM among pools and to structural ecosystem restoration projects such as island building. Among the Corps' various habitat evaluation procedures (HEP) or evaluation techniques, the WLM Regional Coordinating chose to use the Dabbling Duck Migration Model because the variables measured correspond well with the direct effects of WLM – e.g., percent open water, plant community diversity, and important food plant coverage. McFarlane discussed the assumptions defined for analysis using the model. The modeling assumed that habitat benefits increased over one year during implementation and remain for five years before returning to the baseline condition in years 6 to 10. The conditions in years 11-50 are the same as existing conditions. The benefits are averaged over a 50-year period (planning project lifespan) divided by annualized costs to calculate the average annual habitat unit (AAHU).

McFarlane discussed the model outputs in individual pools and provided a comparison of Pools 2, 5, and 8. Pool 2, which is in degraded condition with little to no vegetation, is estimated to improve dramatically following a WLM event with an incredibly low cost per AAHU compared to a typical UMR habitat restoration project. Pool 8 shows a modest habitat improvement with a very low cost per AAHU. Pool 5 registers no habitat improvement until a two-foot drawdown scenario and has the most expensive implementation of all pools evaluated, but still has a reasonable AAHU. McFarlane reviewed limitations to the model analysis, but offered the important take away from the simplified analysis that WLM appears to be a reasonable, cost-effective way to improve habitat.

Salvato reported on the use of structured decision making through a series of virtual workshops held in May, June, and July 2021 to develop ecological goals and objectives recommendations for WLM implementation. Salvato said the workshop group included 15 participants, with each member tasked with representing the views of their respective agency. Salvato thanked Pat Heglund, who provided facilitation support for the workshops. Heglund is retired from USFWS Region 3 and is an early adopter of the structured decision making process. Salvato listed the following conclusions, which she acknowledged are currently under review among the partners:

- Incorporate the option for WLM as a routine function in long term (20-50-year) planning documents including pool operating manuals.

- Develop a process for categorizing the ecological condition of each pool (poor vs good), which can aid in selecting and prioritizing sections of the river for WLM.
- In general, use WLM as a tool to improve pools in "degraded" ecological conditions and maintain pools in "good" ecological condition.
- Establish a WLM team in the Rock Island District to select pools for, and oversee implementation of, WLM and utilizing an adaptive management framework.
- Develop a prioritized list of pools for WLM implementation in the next 25-50 years.
- Establish a unified, adaptive management framework for WLM, consulting USGS UMESC scientists and a trained decision analyst.
- Develop an agreed-upon adaptive management framework for all Districts to use that would maximize learning about systemic ecological responses and improve decision makers' understanding of when and where WLM will provide positive ecological benefits.

Salvato said next steps include advancing the recommendations stemming from the structured decision making workshops, explore policy and administrative hurdles, and advocate for WLM implementation within the Corps' authorities. Salvato added that the Corps and UMRBA will also be working with the implementing partners to finalizing the remaining tasks associated with the PAS agreement.

In response to a question from Karen Hagerty, McFarlane said the costs used to determine AAHUs are the anticipated dredging and handling expenses (at current costs). Hagerty asked about labor costs to implement WLM – e.g., gate manipulation. McFarlane said those costs are not typically a significant factor and added that the more substantial costs that are not included in the analysis are planning, partner coordination, and environmental compliance.

Jim Fischer noted that a stated goal of the structured decision making workshops was to identify "triggers" for initiating WLM and asked for an assessment on the success of reaching that goal. Salvato and Megan Moore explained that the absence of research regarding those threshold criteria is hindering partners' decision making for whether to try WLM in certain places. Moore hopes that the recommendation to explore WLM through experimentation will lead to the threshold analysis needed for more routine implementation. Gretchen Benjamin asserted that pools in "good" ecological condition might benefit from continued maintenance over the long term, utilizing the available restoration tools.

Forest Conditions and Restoration Opportunities

Andy Meier concluded that many of the trends observed in the 2012 NESP Systemic Forest Stewardship Plan remain today. Primary concerns are related to two main issues: the loss of diversity and loss of total forest area. More specifically, there has been a reduction in the prevalence of early successional forest species (cottonwood and willow), a process of forest opening (including conversion to more open forest) with breaking of the canopy and no regeneration, and a continued decline of total forest acreage that has been accentuated by recent high water events. For example, Meier showed images of Pool 9 forest loss, which is largely attributed to being tree harvesting in the 1970s (well before the recent high water) that has since converted to river bullrush and other non-forest cover types. Meier acknowledged observations of hard mast regeneration in the St. Paul District that is not currently reflected in the canopy, but recognized that hard mast regeneration remains an important factor driving forest health in the Rock Island and St. Louis Districts.

Meier recognized the tremendous work among partners in developing the NESP systemic forest stewardship planning framework. Meier provided an overview of detailed plans for forest management that NESP would implement under its authorities as well as other Corps authorities. He recalled that, following the interruption in NESP programmatic funding in 2010-2011, the Corps' operational funding was secured to finalize the 2012 Systemic Forest Stewardship Plan. It includes four main system-wide goals that stem from the NESP vision statement and overarching ecosystem goals, as follows:

- A functional, sustainable floodplain ecosystem that includes a mosaic of native vegetation communities sufficient to support important wildlife habitat
- Restore and maintain forest diversity, health, and sustainability on Federal lands
- Provide support for the restoration and maintenance of forest diversity, health, and sustainability on non-Federal lands
- Adaptive management: science-based decision-making

Meier underscored the value of the UMRS floodplain, which is a critical component of the overall, systemic vitality and resilience of river ecosystem with important connections to the aquatic systems. Given the overall forest loss since European settlement, Meier emphasized the importance of protecting the remaining floodplain forest to maintain the resilience of the entire UMR ecosystem. The forest improvements are relatively low cost, involving actions such as tree planting and invasive species control. Post-project O&M is also relatively inexpensive and infrequently needed.

Meier explained that work completed since 2012 can be used to illustrate the value and capacity to implement forest management at a systemic scale. Accomplishments since 2012 include the following:

- USFWS Refuge Comprehensive Conservation Plan and Habitat Management Plan
- Large-scale forest inventories on Corps-owned lands
- Partial forest inventories on USFWS-owned lands
- Programmatic forestry environmental assessment in the St. Paul District

Meier put forth the needs to develop landscape-scale, interagency prioritization process and secure the necessary funds to plan and implement specific forest restoration and management projects. Meier highlighted key datasets that will help systemic forest management planning – e.g., Comprehensive Forest Inventory and Forest Management Geodatabase. Meier emphasized that there is extensive information of the existing forest conditions. Since 2012, the development of the UMRS floodplain inundation model and systemic forest succession models are absolutely critical for systemic forest management and prioritization planning, including developing a system-wide assessment of existing conditions. These models can be integrated with a new forest habitat evaluation procedure model to bridge systemic insights with site-level prioritization.

Meier explained that the Corps' operational funding to support forest restoration measures on Corps-owned land is very small in comparison to the potential funding available for forest management through NESP. In addition to significantly increasing the restoration capabilities, it would expand the reach of forest management support to non-Corps federal and non-federal owned lands in the floodplain.

In response to a question from Olivia Dorothy, Jodi Creswell explained that a supplemental environmental assessment is anticipated to be published shortly related to the L&D 14 mooring cell. Bran Johnson added that the "finding of no significant impact" (FONSI) for the L&D 25 lockwall modification was deemed to be sufficient given the level of detail, but that may change as the project design develops.

Navigation Channel Conditions and Maintenance Activities

St. Paul District

Steve Tapp said 2021 was a busy year for dredging activities with 800,000 cubic yards dredged so far from the navigation channel. There have been no closures to the system over the navigation season. The St. Paul District began dredging on April 12, 2021, which is earlier than the average annual dredging start near the end of May. Six dredge plants were operated simultaneously from June through July, but there are now only two contract mechanical plants operating within the District. Additionally, a dredging crew at the McGregor Lake UMRR HREP are doing channel work as well. Tapp said the Dredge Goetz was transferred to the Rock Island District at the end of July. Tapp reported on the St. Paul District's placement site management activities, which include developing channel material management plans in Pools 2, 5, 4, 6, 9, and 10; unloading at current placement sites in Pools 6 and 7; and stabilizing placement sites in Pools 5A and 5.

Tapp explained the St. Paul and Rock Island Districts on improving the real estate process – e.g., seeking programmatic non-standard real estate agreements rather than using fee title. The request is at Division for review. The two Districts also jointly formed the Beneficial Use Work Group led by Zack Kimmel and Bre Popkn. Tapp said draft implementation guidance is anticipated by the end of August relating to Section 125 of WRDA 2020. Corps staff and partners have a lot of questions about the consideration of the full range of benefits in determining the Federal standard.

Tapp provided an overview of the St. Paul District's lock and dam maintenance activities occurring in FY 2021 and planned for FY 2022, which is particularly busy given a substantial increase in maintenance funds. The District is working with the Corps ERDC to help in communicating the value of navigation to the region and nation, including vessel traffic and destinations. Tapp showed a "heat map" of vessel traffic traveling to and from the District in 2019, showing connections throughout the Mississippi, Illinois, Ohio, and Tennessee-Tombigbee Waterways as well as the Gulf Intercoastal Waterway.

The St. Paul District is also comparing its dredging volumes and costs with other Districts, working with ports regarding their concerns and perspectives, and working towards building an outreach program to better improve the channel maintenance program. In response to a question from Steve Galarneau, the District is coordinating with the state DOTs regarding transportation related information gathering and outreach activities.

Rock Island District

Mike Klingman said the Rock Island District uses the Dredge Goetz and two strike crews on the Mississippi River and a 16-inch cutterhead pipeline and one strike crew on the Illinois Waterway. For the first time, the District is utilizing two new contract mechanical dredges on the Mississippi and Illinois Rivers but has experienced contracting challenges. Klingman explained that current conditions of the navigation channel are much better this season than the past two years, where shoaling extended across the channel. The District is currently tracking 20 locations for dredging on the Mississippi River with five

sites completed as of mid August. The Dredge Goetz was transferred to the Rock Island District in late July and is anticipated to operate within the District through the end of September. Internal crews were relied upon for channel maintenance, with the Illinois Waterway mechanical dredge began work on July 20. Pilot channels were established in two problem locations earlier this year. Klingman noted that funding is not a limiting factor this year.

Klingman said the Corps' placement site work is focused on the Spring Valley and Mackinaw River locations on the Illinois Waterway and L&D 20 and Pool 11 on the Mississippi River. Klingman provided an overview of beneficial use activities within the Rock Island District, which varies by locations. For example, there is substantial external utilization of dredged material in Pool 16. The placement site in Pool 18 is being used to support habitat restoration and the site in Pool 20 for levee repair through the PL 84-99 Program. The District has also used material to expand and rebuild islands.

Over 1,300 wingdams and closing structures are used in the Rock Island District to reduce dredging activities. The Corps is targeting chronic dredging areas to explore the potential for rock work to reduce future dredging needs. Rock is currently being placed on Harris Island in Pool 22 and case studies are being explored in Pools 11 and 13 with additional case studies anticipated for Pools 12 and 19.

Jim Fischer expressed appreciation for the update and for efforts in the Rock Island District to secure additional mechanical crews. Fischer asked if the dredging contract would be multi-year or need to be renewed annually. Klingman said the contract is a one-year contract with four additional option years, essentially serving as a five-year agreement so that the contracted crews can concentrate solely on channel maintenance dredging needs. This should allow in-house crews to focus on specific locations (e.g., Pool 11) and adding capacity at DMMP sites.

St. Louis District

Lance Engle provided a broad overview of the District's channel authority. Engle explained that river levels have been close to average but that forecasts estimate that river levels at St. Louis and the Illinois River may drop to three feet above minimum pool. The St. Louis District convenes weekly meetings of the channel maintenance project delivery team, issues a dredge schedule weekly and disseminates forecasted information to navigation industry, participates on bi-weekly meetings of the MVD shallow draft team, and routinely evaluates channel performance and structural maintenance. The Corps uses the Pathfinder and contract surveys to identify shoaling problems and set buoys.

Engle provided an example of the District's dredge schedule. The District primarily uses the Dredge Potter to meet dredging needs. The Dredge Potter completed work in Mel Price Pool and is currently operating in Pool 25 and is anticipating dredging at Schwanigan Island, various locations within the Middle Mississippi River, the southern Illinois Waterway, and the Southeast Missouri Port and Kaskaskia River tributary confluence. Thus far, 1.6 million cubic yards have been dredged within the District. The Corps communicates about channel locations and dredging activities through the weekly channel condition reports, navigation notices, virtual buoys/AIS ATONS, and dredging master plan web-map, which is available on arcgis.com.

Kirsten Wallace read a comment in the chat forum from Caroline Mahlum-Jenkins asking if the sediment is tested for contaminants prior to making it accessible for beneficial use. Wallace read a reply from Steve Tapp, explaining that the Corps has historically completed extensive testing. In general, the dredged material is composed of a very clean medium grain sand.

Matt Vitello thanked Engle for his efforts in making the Master Plan accessible via online. It is helpful and easy to work through. Engle referenced Matt Mangan's comment in the chat forum encouraging beneficial use in the St. Louis District. Engle said the Dredge Potter includes two types of pipleline: rigid and flexible floating, which is used on the open river. Successful beneficial use has been achieved at Manskers (river mile 103), but in other places, temporary islands built with dredged material lasted only a few weeks. Engle said there may be opportunities in the uplands on the Kaskaskia River.

Wallace read a suggestion from Mangan offered in the chat forum for the Corps to publish standardized annual reports across all the Upper Mississippi River Corps Districts that describe dredge quantities, beneficial use of dredged material, contaminants information, and so forth.

Federal Agency Reports

Kirsten Wallace explained that UMRBA's federal liaisons were asked to provide any relevant information from their respective agency, as available, regarding their FY 2022 funding outlook and the Administration's priorities related to climate and land conservation and equity.

U.S. Army Corps of Engineers

Renee Turner explained MVD's overall programmatic efforts and current budget development activities. Turner explained that the Corps is executing the FY 2021 program, waiting on Congressional action of the FY 2022 program, and actively working with the Army on developing the FY 2023 program. Turner discussed broader funding trends for MVD since FY 2019 as well as for Upper Mississippi River projects and programs. Turner gave more detailed information on the currently funding projects in the region, including NESP, Brandon Road, UMRR, Mel Price, East St. Louis, the Illinois Waterway major rehabilitation, and O&M work for the navigation channel throughout the system. Turner referenced the FY 2022 President's budget for an outlook of potential funding in the Upper Mississippi River basin, but acknowledged that the final appropriation is unknown particularly with the potential for community funded projects.

Turner noted that the Corps is currently evaluating how its programs and projects relate to the Administration's priorities for climate change and environmental justice.

U.S. Environmental Protection Agency

Ken Westlake said President Joe Biden published the detailed FY 2022 budget for the federal agencies in late May 2022. The budget proposes an $11 billion budget for USPEA in FY 2022, amounting to a 21 percent increase for the agency in comparison to the FY 2021 enacted levels. The Administration's priorities for the agency as reflected in the FY 2022 budget include climate change, environmental justice, improving infrastructure, supporting state and tribal partners, and rebuilding USEPA workforce. The budget proposes funding to hire an additional 1,000 new employees.

Westlake pointed out that the USEPA FY 2022 budget includes $3.2 billion in support for CWA and Safe Drinking Water State Revolving Funds. This funding level is a $460 million increase over the FY 2021 enacted levels. The American Jobs Plan and the Senate-passed infrastructure measure also includes significant funding for those programs. Westlake said the FY 2021 enacted appropriations and FY 2022 budget include a focus on replacing lead service lines. There are about 10 million homes in the United States that have lead service lines and 400,000 schools and daycares. Lead exposure is of particular risk to young children and pregnant women and their fetuses. This effort advances environmental justice

priorities given that lead service lines are more commonly found in older urban neighborhoods, which tend to be disproportionately low income and minority communities. Westlake said he anticipates substantial funding for this work as it will take many years of robust funding to get to 100 percent replacement of lead service lines, which is the Administration's stated goal.

Westlake explained that a key focus for the Administration is building resiliency into water and wastewater infrastructure in the face of continuing climate change. The FY 2022 budget includes $1.8 billion to address climate change, with about half of the funding targeted to advancing climate issues associated with environmental justice. Westlake acknowledged that environmental justice has been a priority of USEPA since the 12898 Executive Order established in 1994 to address environmental justice in minority populations and low-income populations. Environmental justice is supposed to be integrated into all of USEPA programs and a priority for all federal agencies. Westlake asserted that substantial investment is required to make those sweeping goals a reality. Westlake referred to the Justice 40 Initiative, which is the Biden Administration's goal of delivering 40 percent of federal investments to disadvantaged communities. For example, that can include financing infrastructure or USEPA permitting, inspection, and enforcement. Westlake acknowledge that, within USEPA Region 5, there is a substantial industrial base that is located in urban areas where the neighboring communities tend to be disproportionately low-income and minority. Westlake added that USEPA is also working with OMB to finalize its recommendation for the agency's FY 2023 budget.

In response to a question from Loren Wobig, Westlake suggested that the states have ongoing, candid conversations with their respective USEPA regional program contacts in developing the states' water support grants for the upcoming fiscal year. USEPA has always relied on the states for their expertise about prioritization of capital investments to local communities, particularly based on where the greatest needs exist for alleviating water resource challenges of underserved communities. Westlake anticipates that federal capital investment priorities would ultimately flow to the states through their revolving loan funds

Kirsten Wallace noted a comment from Olivia Dorothy asking about the status of the Mississippi River Restoration and Resilience Strategy. Westlake said he will provide an answer to Dorothy at a later date.

U.S. Geological Survey

Scott Morlock reported that President Biden's FY 2022 budget includes $1.64 billion for USGS, representing a substantial increase for the bureau. Overarching ties to DOI priorities include the Civilian Climate Corps, Great American Outdoors Act, National Parks and Public Land Legacy Restoration Fund, and Land and Water Fund. The FY 2022 President's budget would result in an increase for the USGS ecosystem mission area to support priorities related to HABs and invasive carp, build the cooperative research units' quantitative fisheries capacity in Upper Mississippi River Basin, and provide operational support to the climate adaptation science centers. Within the water mission area, the increase in funds would be allocated towards research PFAS in water supplies and aquatic invasive species in the Upper Mississippi River Basin, expansion of federal priorities streamgages, and monitoring for HABs.

Morlock explained that USGS is integrated within USEPA's budget to aid in developing the Mississippi River Restoration and Resilience Strategy, which includes hosting a Mississippi River Science Forum. Morlock expanded that the House FY 2022 Interior appropriations measure includes a directive to USGS to host basin-wide Mississippi River Science Forum with relevant federal agencies. This would be similar to a USGS effort in the Great Lakes, convening than 60 partners. The outcome is a report that was recently delivered to Congress. Morlock said he will share the report when it is made publicly available. Morlock said USGS

has had preliminary conversations with UMRBA about its potential role on the Upper Mississippi River as part of this process. Wallace noted that the UMRBA Board observed during its July 2021 retreat that our region is stronger when our partners and stakeholders are working together. Wallace said the science forum would align with UMRBA's stated goals of being science-informed while understanding the economic, ecological, and social dimensions of problems and solutions. UMRBA's role can include partnering in the convening and integrating expertise from individuals and organizations within the basin working on various water resources challenges – i.e., hazardous spills, water quality management, flood and drought resilience planning, and ecosystem restoration. Wallace confirmed that she notified the UMRBA Board about this request, and that the Board is interested in working through the scoping details.

Morlock noted USGS's engagement in a group of stakeholders considering a Lower Mississippi River monitoring strategy, also acknowledging UMRBA's participation.

U.S. Fish and Wildlife Service

Sabrina Chandler provided a link to the USFWS budget briefing as follows: https://www.doi.gov/sites/doi.gov/files/fy2022-fws-budget-justification.pdf. Chandler reported that the FY 2022 President's budget proposes a total of $3.6 billion for USFWS. This includes i) $1.6 billion of mandatory spending toward permanent funding, which are typically provided in the form of grants to states and tribes for fish and wildlife restoration, and ii) $1.9 billion for discretionary spending. The increase in discretionary spending is $331 million over FY 2021 enacted levels. The FY 2022 budget would support 9,072 FTEs, which is an increase of 917 FTEs from FY 2021. Relevant program funding in the FY 22 budget proposal to the Upper Mississippi River include:

- Ecological services: $332 million in FY 2022 budget, $270 million in FY 2021 enacted
- Fisheries: $255 million in FY 2022 budget, $207 million in FY 2021 enacted
- Refuge System: $584 million in FY 2022 budget, $503 million in FY 2021 enacted

Chandler noted that the FY 2022 budget amount allocated to the Refuge System would result in the largest appropriation since FY 2010. While the FY 2021 enacted appropriations resulted in an increase of $1.5 million for the Refuge System, due to a number of factors, the realized budget for the Refuges was flat compared to FY 2020. Chandler said she anticipates a similar occurrence in FY 2022, with the realized budget remaining flat compared with the FY 2021 enacted levels.

Chandler explained that USFWS is focusing on implementing a number of DOI pillars into its conservation mission. Principle Deputy Director Martha Williams charged our directorate nationwide to work together in interdisciplinary groups across programs to focus the Service's efforts on maintaining momentum and supporting the Administration's and DOI's priorities. The Directorate has established "pillar teams" focusing on building back better, racial equity and "JEDI" (i.e., justice, equity, diversity, and inclusion) as well as accessibility, climate, and wildlife conservation. Each team is self-governed and has implemented their charges somewhat differently, but each plays a key role in developing the USFWS FY 2023 budget formulation and a USFWS strategic plan. The four pillars are folded into larger "America the Beautiful" initiative, which is a strategy to address climate change impacts on the ground and address the national climate task force report concerning restoring "America the Beautiful." That initiative recommends a framework for a 10-year locally-led campaign to conserve America's lands and waters. Chandler said Biden Administration's initiative to restore 30 percent of land and water by 2030 is also integrated into the "America the Beautiful" initiative. The report focuses heavily on voluntary conservation measures; USFWS intends to work closely with the various stakeholders either through

management of natural resources or USFWS Refuge lands. USFWS is implementing number of ongoing activities focusing on three major problems: disappearance of nature, climate change, and inequitable access to the outdoors.

Chandler reported that the Land and Water Conservation total for USFWS is $99 million, with $50 million for line-item projects, $15 million for recreational access, $11 million for inholdings and emergencies. Chandler explained that the USFWS's Executive Diversity Committee, which was established in 2009, recently updated its charter and committee leadership. USFWS recognizes the need to broaden its level of staff engagement in equity discussions and activities. The USFWS Refuge System is working to advance equity principles by focusing on urban areas and meeting accessibility standards, providing remote opportunities for engagement, among other ways.

Natural Resources Conservation Service

Verlon Barnes reported that the FY 2022 President's budget includes $5.1 billion, roughly 10 percent increase from FY 2021 enacted levels but a 20 percent reduction from FY 2020 enacted levels. Conservation operations, which includes technical assistance, has increased slightly. There are slight increases for the Environmental Quality Incentives Program (EQIP) and Conservation Reserve Program (CRP) technical assistance programs while the Conservation Stewardship Program (CSP) is down significantly.

Barnes announced that he will likely be retired by the November 16, 2021 UMRBA quarterly meeting. Wallace expressed her appreciation to Barnes for his partnership and thoughtful and valuable contributions to UMRBA and UMRR.

Administrative Issues

Future Meeting Schedule

November 2021 — Location TBD

- UMRBA quarterly meeting — November 16
- UMRR Coordinating Committee quarterly meeting — November 17

February 2022 — Location TBD

- UMRBA quarterly meeting — February 22
- UMRR Coordinating Committee quarterly meeting — February 23

May 2022 — Location TBD

- UMRBA quarterly meeting — May 24
- UMRR Coordinating Committee quarterly meeting — May 25

With no further business, the meeting adjourned at 2:42 p.m.