August 9, 2022

Upper Mississippi River Basin Association

163rd Quarterly Meeting

Agenda
with
Background
and
Supporting
Materials

Hampton Inn-Downtown
St. Paul, Minnesota

163rd Quarterly Meeting
Hampton Inn
St. Paul, Minnesota

Upper Mississippi River Basin Association

August 9, 2022

Agenda

Time		Topic	Presenter
9:30 a.m.		Call to Order and Introductions	*Tim Hall, Iowa DNR*
9:35	A1-13	Approval of Minutes of May 24, 2022 Meeting	
9:40	B1-35	Executive Director's Report	*Kirsten Wallace, UMRBA*
9:50		Climate Initiatives in the Midwest	
	C1-2	• Midwest Climate Collaborative	*Heather Navaro, MCC*
	C3-4	• USGS Climate Adaptation Science Center	*Olivia LeDee, USGS*
10:30		Break	
10:45		Flood Vulnerability	
		• National Flood Insurance Program Risk Rating 2.0	
	D1-2	— Overview of new pricing methodology	*Ceil Strauss, Minnesota DNR*
	D3-6	— Perspective on potential implications to UMRS	*Bob Beduhn, HDR and ASFPM*
	D7-9	• Iowa Agriculture Flood Vulnerability	*Ibrahim Demir and Enes Yildirim, University of Iowa*
11:10	E1-2	Missouri River Flood Projects	*Jennifer Hoggatt, Missouri DNR*
11:30 a.m.		UMRBA Reaches 8-9 Monitoring Pilot	
	F1-6	• Data Results and Implementation Feasibility Evaluation • PFAS Monitoring	*Lauren Salvato, UMRBA* *Jeff Wenzel, Missouri HHS and* *Katrina Knott, Missouri DoC*
12:00 noon		Lunch	
1:00 p.m.	G1	Navigation and Ecosystem Management Report	*Andrew Goodall and Marshall Plumley, USACE*
1:30		Navigation Report	
		• District-Based Channel Condition Reports	*USACE Districts*
	H1-6	• Sediment Budget Scoping Project	*Nicole Manasco, USACE*
	H7-14	• Waterborne Competitiveness	*Paul Lewis, ENO Center for Transportation*
2:45		Invasive Carp/Copi	*Loren Wobig, Illinois DNR*
	I1-4	• Illinois Name Change	
	I5-6	• Brandon Road	*Rick Pohlman, Illinois DNR*

(Continued on next page)

3:00 Administrative Issues

- FY 2024-2025 UMRBA Dues
- Future Meeting Schedule

J1

3:15 p.m. Adjourn

ATTACHMENT A

Minutes of the May 24, 2022 UMRBA Quarterly Meeting

(A-1 to A-13)

Minutes of the 162nd Quarterly Meeting of the Upper Mississippi River Basin Association

May 24, 2022
Web-Based Conference Meeting

Tim Hall called the meeting to order at 9:30 a.m. Participants were as follows:

UMRBA Representatives and Alternates:

Rick Pohlman	Illinois Department of Natural Resources
Chad Craycraft	Illinois Department of Natural Resources
Dave Glover	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
Sam Hiscocks	Iowa Department of Transportation
Barb Naramore	Minnesota Department of Natural Resources
Dru Buntin	Missouri Department of Natural Resources
Jennifer Hoggatt	Missouri Department of Natural Resource
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
Joe Summerlin	U.S. Environmental Protection Agency, Region 7 (on behalf of Ken Westlake)
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Mark Gaikowski	U.S. Geological Survey, UMESC

Others in Attendance:

Terra McParland	Illinois Department of Natural Resources
Kirk Hansen	Iowa Department of Natural Resources
Megan Moore	Minnesota Department of Natural Resources
Erin Fanning	Missouri Department of Natural Resources
Bryan Hopkins	Missouri Department of Natural Resources
David Frantz	U.S. Army Corps of Engineers, HQ
Renee Turner	U.S. Army Corps of Engineers, MVD
James Lewis	U.S. Army Corps of Engineers, MVD
Jim Cole	U.S. Army Corps of Engineers, MVD
Leanne Riggs	U.S. Army Corps of Engineers, MVD
Thatch Shepard	U.S. Army Corps of Engineers, MVD
Terry Birkenstock	U.S. Army Corps of Engineers, MVP
Angela Deen	U.S. Army Corps of Engineers, MVP
Zachary Kimmel	U.S. Army Corps of Engineers, MVP
Col. Jesse Curry	U.S. Army Corps of Engineers, MVR

Kim Thomas	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
Rachel Hawes	U.S. Army Corps of Engineers, MVR
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Casey Lewis	U.S. Army Corps of Engineers, MVR
Davi Michl	U.S. Army Corps of Engineers, MVR
Rachel Perrine	U.S. Army Corps of Engineers, MVR
Bre Popkin	U.S. Army Corps of Engineers, MVR
Chuck Theiling	U.S. Army Corps of Engineers, MVR
COL Kevin Golinghorst	U.S. Army Corps of Engineers, MVS
Lt. Col. Jason Sears	U.S. Army Corps of Engineers, MVS
John Peukert	U.S. Army Corps of Engineers, MVS
Michael Feldmann	U.S. Army Corps of Engineers, MVS
Abby Hoyt	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
Brian Johnson	U.S. Army Corps of Engineers, Regional Planning Division North
Steve Schaff	U.S. Environmental Protection Agency, Region 7
Kraig McPeek	U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services
Lauren Larson	U.S. Fish and Wildlife Service, Illinois-Iowa Field Office
Sara Schmuecker	U.S. Fish and Wildlife Service, Illinois-Iowa Field Office
Laura Muzal	U.S. Fish and Wildlife Service, Illinois-Iowa Field Office
Matt Mangan	U.S. Fish and Wildlife Service, Illinois Ecological Services
Kelly Warner	U.S. Geological Survey, Central Midwest Water Science Center
Kristen Bouska	U.S. Geological Survey, UMESC
Jennie Sauer	U.S. Geological Survey, UMESC
Mark Fuchs	National Oceanic and Atmospheric Administration, St. Louis
Albert Ettinger	[No Affiliation]
Kim Lutz	America's Watershed Initiative
Rob Schultz	Audubon
Lindsay Brice	Audubon
Tera Hohmon	Audubon
Nat Miller	Audubon
Heidi Lane	HNTB
Doug Daigle	Lower Mississippi River Sub-Basin Committee (Hypoxia Task Force)
Brian Stenquist	Meeting Challenges
Maisah Kahn	Mississippi River Network
Rick Stoff	*Our Mississippi*
Christine Favilla	Sierra Club
Bruce Brinkman	Upper Mississippi, Illinois, and Missouri Rivers Association
Kirsten Wallace	Upper Mississippi River Basin Association
Mark Ellis	Upper Mississippi River Basin Association
Natalie Lenzen	Upper Mississippi River Basin Association
Lauren Salvato	Upper Mississippi River Basin Association
Andrew Stephenson	Upper Mississippi River Basin Association

Minutes

Rick Pohlman moved and Steve Galarneau seconded a motion to approve the draft minutes of the February 22, 2022 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 February 2022 quarterly meeting. Wallace provided a few highlights as follows:

Staffing announcements – Natalie Lenzen joined UMRBA staff as Operations Manager effective April 11, 2022. Lenzen's previous experience includes serving as an accountant, project manager, executive assistant, and personal banker. Natalie holds a Bachelors in Business Administration from Bemidji State University emphasizing on management.

UMRBA has hired Erin Spry to fill a new two-year position of UMRBA Project Specialist. Spry will start May 31, 2022. In this role, Spry will assist in implementing UMRBA project-specific priorities such as research, communications, and developing opportunities and means for interagency collaboration and coordination. Spry's area of work will primarily focus on water quality and quantity as well as ecosystem health. Spry's previous experience includes serving as a hydrologist for Minnesota Departments of Natural Resources and Agriculture and as a wildlife technician for the Minnesota Department of Natural Resources. Spry holds a Bachelors in Geology from University of Minnesota.

Wallace explained the update needed to the UMRBA Personnel Manual to include the Project Specialist position. Barb Naramore moved and Jennifer Hoggatt seconded a motion to amend UMRBA's Personnel Manual in accordance with the annotated version provided to the Board on February 18, 2022 by Kirsten Wallace.

Navigation and Ecosystem Sustainability Program – Wallace underscored the value of an April 26-28, 2022 meeting among NESP's implementing agency partners. Partners had robust conversations around partnering expectations and organized a set of next steps. Partners discussed the magnitude of the investment opportunities over a 15-year planning horizon, broad implementation challenges, and new ways of doing business that will be require to meet the opportunities. Wallace thanked Brian Stenquist of *Meeting Challenges* for providing facilitation support.

Administration-Related Business – Wallace pointed to UMRBA's March 2022 to April 2022 financial statements provided on pages B-5 to B-8 of the agenda packet. Jennifer Hoggatt moved and Barb Naramore seconded a motion to approve the Association's budget report and balance sheet as included in the agenda packet. The motion was approved unanimously.

UMRS Ecosystem and Navigation Management

Upper Mississippi River Restoration

Marshall Plumley provided a report on the Upper Mississippi River Restoration (UMRR) program. Plumley summarized the content and layout of the 2022 UMRR Report to Congress. The anticipated schedule includes the first reviews by MVD and HQ in June to July 2022 with their second review

occurring in fall 2022. The Corps is currently on schedule to submit the final report to HQ and ASA(CW) in late November 2022.

Plumley reported that the 2022 UMRR Ecological Status and Trends Report is scheduled to be published in late June 2022. The report summarizes analyses of 25 years of long term monitoring data on the UMRS. Plumley emphasized that the long timeframe of monitoring now allows an incomparable ability to detect long term trends, understand variation over time, and observe complex river patterns.

Plumley explained that UMRR is currently undertaking an implementation planning effort focused on its long term resource monitoring. The purpose is to work within the current 2015-2025 UMRR Strategic Plan to identify a) specific information and research needs not currently being met and b) actions that need to be taken to met those information needs. The benefit of this planning is having a set of needs prepared if and when additional funding may be allocated to LTRM.

Plumley noted that Section 317 the Senate EPW Committee's 2022 Water Resources Development Act measure calls for increasing the annual appropriation authorization for UMRR habitat rehabilitation and enhancement projects from $40 million to $75 million. It does not include an appropriation authority increase for LTRM.

Plumley discussed a 10-year schedule for implementing UMRR's habitat projects, illustrating on a graphic the various projects moving through planning, feasibility, construction, and monitoring. Plumley reported that UMRR completed seven habitat projects since 2016 (last report to Congress) benefitting 15,400 acres of nationally-significant habitat. An additional seven projects actively being constructed are estimated to benefit 24,140 acres of habitat and 12 projects currently in the feasibility stage are estimated to benefit 60,675 acres of habitat.

Plumley reported that, as part of the 2022 UMRR Report to Congress development, the UMRR Coordinating Committee is evaluating a set of eight implementation issues. Andrew Stephenson provided a summary of the issues with their respective options for addressing them, as follows:

- *Project partnership agreements (PPAs)* – Key impediments to non-federal cost share sponsors of UMRR habitat projects include the terms requiring the sponsor to assume complete liability for constructed projects (except for when fault or negligence is proven) and operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) in perpetuity.
- *Non-traditional sponsors* – Engaging non-traditional cost-share sponsors could substantially increase UMRR's restoration opportunities.
- *External communications* – Engaging and collaborating with organizations and individuals (not directly involved with UMRR but that affect UMRR's vision and mission) should be of equal priority to UMRR's restoration and monitoring activities.
- *Federal easement lands* – Some lands suitable for land acquisition encumbered by NRCS easements (e.g., Wetland Reserve Program) were precluded per a rule change. However, a recent policy change may have modified the subject requirement.
- *Watershed input and climate change* – Changing hydrologic conditions affect the distribution and composition of species and habitat throughout the UMRS.
- *Floodplain regulations* – Floodplain regulations affect UMRR habitat projects in multiple ways by requiring them to avoid rises above a state or federal requirement.

- *Water Level Management* – A variety of policy and other issues have precluded implementation of pool-scale water level management, including the Corps' 50-year period of analysis for evaluating project costs and benefits.

Stephenson said the UMRR Coordinating Committee will also develop an issue paper related to land acquisition.

Sabrina Chandler reported that USFWS and NRCS are planning to test the new rule pertaining to federal easements on a project outside of the UMRS. While the outcome may shed light on the potential for HREPs, Chandler acknowledged that the Corps legal counsel may hold a different interpretation and HREPs may pose unique implications.

Mark Gaikowski suggested considering an implementation issue assessment regarding diversity, equity, and inclusion when considering efforts to engage and support potential non-profit entities as cost-share sponsors of habitat projects. In response to the Board's agreement, Kirsten Wallace suggested bringing the issue to the UMRR Coordinating Committee during its May 25, 2022 quarterly meeting.

Navigation and Ecosystem Sustainability Program

Andrew Goodall reported on the status of the L&D 25 lock modernization and L&D 22 fish passage projects, both funded through Infrastructure and Investment and Jobs Act (IIJA). A project delivery team is established for the L&D 25 project, and the first construction contract is scheduled to be awarded in FY 2022. The Corps is scheduled to begin coordinating with industry June 15. Scoping design of L&D 22 fish passage has started and pre-project monitoring will be started as soon as fish tags are received.

Goodall reflected on the April 26-28, 2022 in-person meeting. The purpose was to initiate partner consultation as directed in NESP's authorization. A draft meeting report will be provided soon to partner participants for their review. An important take away from the meeting was the sense of "shared accountability" among federal and state agencies in making NESP successful. Next steps include securing funding agreements to support partner agencies' roles and responsibilities in implementing NESP.

Goodall reported on the spending allocations under the NESP FY 2022 appropriation of $45.1 million. [Note: Subsequent to the meeting, the Corps announced on May 25, 2022 that it allocated another $12.1 million to NESP in its FY 2022 work plan, bringing NESP's total FY 2022 allocation to $57.2 million.] Project areas include La Grange lock modernization, systemic mitigation, small-scale navigation efficiency improvements, and ecosystem projects. Of the ecosystem projects, four projects are scheduled to be awarded construction contracts in FY 2022. MVD recently approved several new ecosystem projects for which funding will be used to begin feasibility planning.

Fischer underscored the value of the April 2022 NESP partnership meeting and expressed appreciation to the approach agreed upon by partners to implement NESP through the approach of shared accountability. Fischer thanked the Corps for leading the meeting and to Brian Stenquist for his facilitation support. Megan Moore echoed Fischer's comments, and observed that the meeting strengthened trust among the partnership. Moore expressed appreciation for how the meeting unfolded and its facilitation. Moore's key take away is that systemic mitigation for the navigation improvements will require ecological expertise and planning.

Stephenson read a comment from Christine Favilla that she submitted in the chat forum. Favilla called for the Corps to conduct a supplemental programmatic environmental impact statement given the significant

deviation from the proposed action provided in NESP's NEPA. Additionally, Favilla called for the Corps to follow the requirements for employing an independent external peer review for L&D 25 lock modernization as the project exceeds the $200 million threshold. Favilla asked for a timeline for employing these reviews. Goodall replied that the Corps is currently evaluating NEPA and ESA compliance. Goodall said the Corps will provide the results and any next steps when available.

Brian Stenquist provided observations on the April 2022 NESP meeting. Stenquist said partners were very engaged resulting in very rich discussion. Stenquist applauded Andrew Goodall and Kirsten Wallace for creating an effective meeting design. The important conclusions are that NESP will only be successful with its robust, committed partnership, that we must be bold and awesome, and that agency staff cannot just do more of the same things faster and succeed. In response to a question from Stenquist, Goodall confirmed that the NESP partners will determine priorities and the program will be implemented accordingly.

Inland Waterways Users Board Report

David Frantz pointed to Section 2002 of WRDA 2014, through which Congress directed the Corps to develop a 20-year capital investment strategy and update the strategy every five years. The purpose is to organize a risk-informed portfolio investment approach to lock construction and major rehabilitation that maximizes system performance. The strategy provides a nationally consistent and repeatable approach across the entire inland marine transportation system for buying down risk and improving system reliability as well as mitigating economic impacts to marine stakeholders.

Since the publication of the 2020 Capital Investment Strategy Report, several policy and funding events have affected the schedule and sequence of lock projects. This includes a shift in the Inland Waterways Trust Fund cost share of projects and construction new starts of projects through IIJA and annual appropriations. Additionally, the FY 2023 President's budget includes $39.3 million for Chickamauga Lock. Therefore, the Corps is currently undergoing an update of the investment strategy using the same categories, filters, and prioritization process as used in developing the 2020 strategy. As a result, the Category 1 projects were updated to reflect recent new starts and appropriations. The Category 2 projects are the same as the 2020 version with the addition of Brazos River Floodgates and Colorado River Locks. All of NESP locks are included in Categories 1 and 2.

Frantz reviewed the process for updating the 2022 strategy. As part of the process, the Corps met with navigation industry representatives on March 28 to review the 2020 report and to discuss the process for updating the report. The draft updates were briefed to the Inland Waterways Users Board on April 20. The Corps is currently reviewing and revising the strategy based on the Board's feedback, including to develop a new initial baseline scenario. The Corps plans to update the Inland Waterways Users Board at its next meeting fall 2022.

Kirsten Wallace recalled that, at the April 2022 Inland Waterways Users Board meeting, the Corps described its preference for maintaining a cushion in the Inland Waterway Trust Fund to support cost overruns associated with Kentucky Lock. Wallace asked how the Kentucky Lock project might impact NESP. Frantz explained that the Trust Fund revenue is around $115 million to $120 million annually, and the Corps considers spending those monies among the set of projects in construction. There needs to be sufficient balance in the Trust Fund to support any new project. L&D 25 will not be affected by Kentucky Lock cost overruns because it was fully funded through the IIJA. Frantz added that OMB has supported smaller investments in major rehabilitation projects that can be completed in two to three years.

UMRS Bottomland Forest Birds

Nat Miller provided background on Audubon and its interest in partnering with the Upper Mississippi River partnership to protect, enhance, and restore important floodplain forest habitat for birds. Miller cited new evidence that nearly 3 billion of the U.S. bird population (or 30 percent of the population) was lost over the last 50 years. While steep declines have occurred in all habitats, nearly 25 percent of those birds lost were forest birds. Miller also underscored the research conclusions that conversation is effective. Investment in conservation results in wildlife population increases and endangered species recovery. Miller said monitoring bird populations is crucial for assessing conservation work and communicating the value of conservation investment.

Tara Hohman discussed Audubon's efforts on the Upper Mississippi River System, including avian monitoring and science, the benefits of birds and their habitats, habitat restoration and management and the benefit of conservation to forest species and surrounding communities. Hohman explained that Audubon initiated a partnership with the Corps about 10 years ago building from the NESP UMR System Forest Stewardship Plan, which called for conserving bird populations through active forest management. The Plan acknowledged that birds act as important indicators of forest health and condition. Hohman said the overall project goals were to develop a rigorous, scalable landbird monitoring program that is compatible with existing projects. Additionally, Audubon is employing responsible data management methods in order to maximize the value of data over a long term. Audubon intends to use the information to evaluate the relationships between birds and habitat and influence management methods. Hohman said Audubon staff at the Riverlands Center near St. Louis monitors birds over roughly 49,000 acres of bottomland forests, and in 2020, initiated a similar with the Corps by employing avian monitoring over 11,000 acres in Minnesota.

Hohman illustrated the outcomes of Audubon's avian monitoring program. The standardized bird surveys are used to develop bird-density estimates and assess trends over time, to prioritize habitat across the UMR watershed, and to fill data gaps for managing floodplain forests for birds and associated wildlife.

Hohman underscored the value of partnerships to Audubon. Fore example, Audubon's avian monitoring data is integrated into the Corps' forest inventory and its results are used to inform forest management. Bird-related prescriptions benefit the forests, birds, and other associated wildlife. Hohman explained that long term datasets are the only reliable way to track populations and habitat trends over time.

Hohman said Audubon is calling for building intensive coverage necessary for adaptive management and spatial prioritization, including through localized, intensively-surveyed hotspots scattered along the UMR. Surveyors must be trained using similar or comparable protocols. The hotspots should be located in areas with ongoing or future bird and/or vegetation monitoring with planned forest management or restoration.

In response to a question from Jim Fischer, Hohman said electronic listening devises have several challenges that do not make them a better option than trained surveyors. In response to a question from Joe Summerlin, Miller said there is some new research in Canada correlating bird loss with insect populations. There is more to be learned about the ability to correlate avian monitoring with estimating impacts to insects.

Sabrina Chandler recognized the tremendous work being conducted by Audubon. Chandler said Audubon's partnership has been uniquely valuable to the USFWS, providing research and other resources that USFWS would not be able to recreate on its own. Chandler said she is excited to see the partnership continue and the work that will be accomplished together through partnership.

State Reports on American Rescue Plan Act Funds

UMRBA Board members provided the following report on their use of American Rescue Plan Act funds in ways related to the UMRS, as follows:

Illinois – Loren Wobig reported that Illinois mostly allocated its American Rescue Plan Act funds to human services-related priorities. The state is also investing significantly in dam safety within its coastal program. Wobig said Illinois increased the money available in its revolving loan funds that are managed by Illinois EPA. Illinois is also allocating resources to assist communities in determining their water infrastructure needs and assisting them in applying for the respective grants.

Iowa – No report.

Minnesota – Barb Naramore reported that Minnesota allocated its American Rescue Plan Act funds in two broad categories: immediate COVID-19 response and replenishment and repayment of the unemployment insurance trust fund. Naramore noted that the Minnesota legislature was not able to overcome an impasse with respect to its allocations of Infrastructure Investment and Jobs Act. It is unknown if the legislature will reach an agreement and what that agreement might provide for infrastructure investment in Minnesota.

Missouri – Jennifer Hoggatt reported that Missouri is making available $410 million in Community Water Infrastructure Grants as listed below. Missouri views water infrastructure projects as being responsive to an identified need to achieve or to maintain and adequate level of service. Hoggatt explained that Missouri will apply competitive scoring criteria that will favor communities having affordability challenges. Missouri created a one-stop shop web portal for all state of Missouri grants supported through American Rescue Plan Act funds.

Hoggatt said American Rescue Plan Act funds were used to establish the Missouri Hydrology Information Center. Goals for the Center are to:

- Enhance surface water monitoring and predictive capability to protect life and property
- Expand soil moisture mapping
- Expand water resources mapping and imagery
- Display readily-accessible weather conditions

Dru Buntin added that the grants are 100 percent paid, not requiring a cost-share. The grants will be important for communities to meet environmental regulations. The challenge for replacing lead service lines is knowing where they exist. The first step needs to be developing an inventory. Hoggatt and Buntin explained that Missouri is planning to install 50 soil moisture monitoring sites around the state; it currently has 17 sites.

Matt Vitello reported that Missouri will also be using American Rescue Plan Act funds to restore Columbia Bottoms by realigning the levee. Missouri is partnering with the Corps and the respective levee district. Initial investigations are underway. It is estimated that the project could reconnect 2,000 acres to the Missouri and Mississippi Rivers. Per the state's guidelines associated with its American Rescue Plan Act, project expenses must be obligated by 2024 and spent by 2026.

Wisconsin – No report.

UMR Basin Charter

Lauren Salvato provided context by explaining that UMRBA's Board has directed the Association to convene state experts to assess the Charter's current provisions and identify any recommended revisions to the Charter to ensure that it advances the Charter's stated principles. Salvato explained that the *ad hoc* group formed to evaluate the Charter implemented a three-phase scenario exercise in spring 2022 for the purposes of better understanding 1) how the states' unique approaches and authorities to regulating water use may influence implementation of the Charter and 2) evaluate important contextual questions around the Charter's provisions. Phase one focused on individual states developing potential scenarios within their respective state boundaries. In phase two, the states reviewed proposals from the other four states. And, in phase three, state agency reviewed several prepared questions. As a result, the *ad hoc* group is proposing to the UMRBA Board for its consideration the following recommendations for next steps:

- Evaluate options for revising the Charter's provisions, including relating to:
  - Definitions for diversion (e.g., HUC 2) and consumptive use
  - Geographic extent of impacts considered (e.g., mainstem of Upper Mississippi River or entire basin)
  - Tribal communities, tribal land acknowledgement, and tribal treaty and/or legal rights to basin water
  - Priority uses of water
- Develop a cumulative impact assessment of the UMR basin (including water budget, consumptive uses and diversions out of the basin) considering current impacts and future vulnerabilities
- Develop educational materials about the UMR Basin Charter and the basin's water budget and water uses as well as legal issues relating to the Charter.

In response to a question from Barb Naramore, Salvato said the *ad hoc* group has not yet put thought into the appropriate resolution of the water budget. Salvato anticipates scoping would involve defining the resolution along with scoping a process, costs, and timeline for developing a water budget. Loren Wobig asked if the group considered low flow standards or parameters for defining low flows. Wobig added that it would be helpful to understand if and how other UMRBA member states consider low flow. Salvato said the group is recommending the cumulative impact assessment to understand vulnerabilities, such as low flows during drought, and that the assessment might inform any recommendations for low flow considerations in the Charter. Wobig added that the comparison of states approaches would be valuable regardless of the vulnerability assessment. Naramore explained that Minnesota evaluates flows based on what is estimated to be a sustainable average base flow without long term implications. In addition to low-flow scenarios, Minnesota weighs what could be withdrawn without adversely affecting industry and other uses. Salvato acknowledged that the group touched on these types of questions. While the group has also used the Great Lakes Charter for reference, it has thought about these types of questions in relation to the UMR basin as a large riverine system rather than a lakes system. Salvato said she would relay the Board's questions and thoughts to the group as they flesh out the recommendations.

Illinois Silver Jackets Projects

After providing context of the Silver Jackets program, Terra McParland described the various benefits of Silver Jacket's investments in Illinois. Silver Jackets fosters multi-agency collaboration, providing funding for projects that, through interagency action, advance progress from risk assessment and awareness to risk reduction or management. Of the Silver Jackets' funded projects, 25 percent of projects raise flood risk awareness, 41 percent of projects prompt flood risk action, and 32 percent of projects reduce or manage flood risk.

McParland explained that Illinois has strategically focused its resources for the purposes of developing structure-specific risk data statewide. Illinois recently published a new interactive web viewer that illustrates "structures at flood risk" (SAFR) – i.e., potential flood depths and costs associated with various flood events. The web viewer provides an inventory of structures with associated flood risk information with corresponding estimated economic damages within communities as well as individual structures.

McParland discussed Illinois' efforts to define hazards (using studies, LiDAR, and depth grids) and assets (using building inventory, assessor's data, and survey data) as well as estimate economic losses. McParland said this work is complete on the Upper Mississippi and Illinois Rivers, and that Illinois plans to expand the database throughout the state. McParland illustrated the utility of the interactive web viewer, including its scalability and visual depictions of flood and economic risk information.

McParland explained that Illinois' intended applications for the data are to target mitigation, identify and quantify potential losses (including through hot spot analysis), and prioritize buyouts as well as to develop plans for hazard mitigation, community flood mitigation, and future land use. Future plans for enhancing the web viewer include adding new results studies, archiving historical data, migrate the web viewer to new platforms as they become available, expedite studies and lower their costs, and establish data sharing protocols. McParland illustrated Illinois' other mapping tools to assist in informing flood risk: elevation finder tool and dynamic inundation mapping.

Loren Wobig suggested that UMRBA overlay the economic risk information with the Corps' new hydraulic modeling to strategically select geographic areas to build resilience. Shawn Sullivan observed that having clear understanding of the states' objectives helps the Corps assess how its authorities might be helpful.

McParland expressed appreciation to all of the partners who have participated through the Illinois Silver Jackets, including those who have developed project proposals and helped advance joint priorities.

In response to a question from Mark Gaikowski, Wobig said the SAFR database allows for analyses of flood risk planning at various spatial scales. In other words, homeowners, renters, or business owners can use the information to evaluate their own risk assessments. Communities can use the information to base planning decisions. And, the tool can provide a means for evaluating particular scenarios at a regional scale with a better quantifiable understanding of economic impacts at various flood magnitudes.

Federal Fiscal Reports

U.S. Army Corps of Engineers

Col. Kevin Golinghorst provided remarks on behalf of the St. Louis District, underscoring the importance partnerships in all areas of the Corps' work. Col. Golinghorst reported on recent funding allocations and policy decisions related to the St. Louis District's current workload – i.e., NESP L&D 25, East St. Louis levee repair, and the consolidated closure of L&Ds 24-27. Col. Golinghorst reported that the District received $175 million through the Infrastructure Investment and Jobs Act (IIJA) and Disaster Relief Supplemental Appropriations Act of 2022 (DRSSA). Those funds will be used to fulfill backlog maintenance needs.

Renee Turner provided an update to MVD's overall programmatic efforts and current budget development activities. Turner explained that the Corps is currently executing the FY 2022 program under significant funding through the annual appropriations, IIJA, and disaster relief supplemental. Final spending numbers are still unknown as the Corps' still has yet to publish its FY 2022 work plan, which is anticipated to be released this week. The work plan will likely have additional funding to the Division and Upper Mississippi River Districts. MVD is also defending the FY 2023 program, noting the delay in the President's release of the budget.

Turner explained broader funding trends for MVD since FY 2021 as well as for Upper Mississippi River projects and programs. Turner gave more details on the currently-funded 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 reiterated that the Corps anticipates receiving even more funding to the basin through the FY 2022 work plan.

U.S. Geological Survey

Mark Gaikowski reported that planning continues for the Mississippi River Science Forum that will be held in winter 2022/2023. According to the appropriations legislation, the Forum must occur before March 2023. USGS also continues to implement the Illinois River Next Generation Water Observing System (NGWOS), focusing on procuring and employing equipment. In subsequent years, NGWOS will focus on data collection and observations as well as analysis. Bipartisan Infrastructure Law investments through USGS support biosurveilance and invasive species monitoring at ports of entry. USGS's Water Resources allocated about $1 million to work in the Upper Mississippi River System related to aquatic invasive species, microplastics, and new or improve sensor systems.

Gaikowski reported that USGS is continuing its efforts to develop the American Conservation and Stewardship Atlas to develop and track a clear baseline of information on lands and waters that are conserved or restored. The purpose is to measure the progress of conservation, stewardship, and restoration efforts in a manner that reflects the goals and principles of the America the Beautiful Initiative.

Gaikowski explained that UMESC is continuing to test the underwater acoustic deterrent system for invasive carp. Over 1,300 invasive and native fish species have been tagged. Collectively, the tagged fish have shown how they interact with the lock structures and barges. Gaikowski noted that UMESC has tagged mooneye fish, which are preferred host fish for mussels. UMESC hopes to learn more about their interaction in an effort to improve the success and survival of native mussels. In response to a question

from Kirsten Wallace, Gaikowski explained that USGS is working with the Corps to ply the telemetry dataset to L&D 22 for use in the project's adaptive management component.

Gaikowski added that UMESC is undergoing a renovation. Ultimately, the Water Quality lab will double in size.

U.S. Fish and Wildlife Service

Sabrina Chandler reported that the Bipartisan Infrastructure Law authorized appropriations to DOI of $30.6 billion to be executed over five years, with $455 million of that funding allocated to USFWS for programs related to the America the Beautiful Initiative. The funding is mostly allocated in other areas of the nation outside of the UMRS. Chandler noted potential opportunities within the UMRS to benefit from the $200 million to the National Fish Passage Program.

Chandler reported that USFWS is just notifying the regions of their respective allocations under the FY 2022 appropriations process. The allocations to Region 3 are as follows:

- Ecological Services: $8 million
- Aquatic habitat: Not available yet
- Refuge system: $37.7 million
- Deferred maintenance: $18 million

Chandler reported that USFWS is anticipating significant shortfalls in FY 2023 per the President's budget. USFWS is under a hiring freeze, and it will be tough for USFWS to engage in NESP and UMRR under current staffing levels.

Administrative Issues

UMRBA FY 2023 Budget and Dues

In response to a suggestion from Tim Hall, Steve Galarneau moved and Rick Pohlman seconded a motion to approve the draft FY 2023 UMRBA budget amendment as provided to the Board on May 24, 2022. This approval includes setting FY 2023 dues at $63,500 per state. In response to a suggestion from Barb Naramore to make the two actions separate, the motion was withdrawn.

Barb Naramore moved and Rick Pohlman seconded a motion to set FY 2023 dues at $63,500 per state. The motion was approved unanimously.

Steve Galarneau moved and Jennifer Hoggatt seconded a motion to approve the draft FY 2023 UMRBA budget amendment as provided to the Board on May 24, 2022. The motion was approved unanimously.

Future Meeting Schedule

August 2022 — St. Paul, Minnesota

- UMRBA quarterly meeting — August 9
- UMRR Coordinating Committee quarterly meeting — August 10

November 2022 — Quad Cities

- UMRBA quarterly meeting — November 15
- UMRR Coordinating Committee quarterly meeting — November 16

February-March 2023 — Virtual

- UMRBA quarterly meeting — February 28
- UMRR Coordinating Committee quarterly meeting — March 1

With no further business, the meeting adjourned at 2:47 p.m.

ATTACHMENT B

Executive Director's Report

- **Executive Director's Report** *(B-1 to B-6)*
- **UMRBA USACE Section 729 Withdrawal Letter (6/8/2022)** *(B-7 to B-8)*
- **UMRBA 2022 Water Resources Development Act Letter (7/13/2022)** *(B-9 to B-13)*
- **UMRR 2022 Ecological Status and Trends Report**
    - **USACE and USGS Joint Press Release (6/22/2022)** *(B-14 to B-15)*
    - **Full Report:** https://pubs.usgs.gov/of/2022/1039/ofr20221039.pdf
- **UMRBA Water Level Management 2022 Workshop Report Excerpts (7/20/2022)** *(B-16 to B-20)*
- **UMRBA USEPA Chloride Resolution Letter (6/23/2022)** *(B-21 to B-26)*
- **ICWP, WSWC, NWSA Federal Water Sub-Cabinet Engagement Letter (6-24-2022)** *(B-27 to B-29)*
- **Treasurer's Quarterly Statement (8/1/2022)** *(B-30)*
- **FYs 2022 & 2023 Budget Report and Balance Sheet (6/30/2022) [Note: This does not include year-end adjustments.]** *(B-31 to B-36)*

Executive Director's Report
August 2022

UMRBA STAFF

Erin Spry joined UMRBA staff as a Project Specialist effective May 31, 2022. Spry will assist in implementing UMRBA project-specific priorities such as research, communications, and developing opportunities and means for interagency collaboration and coordination. Spry's area of work will primarily focus on water quality and quantity as well as ecosystem health.

UMRBA hired Michaela Crowley and Kennedy Domerchie as GIS and Planning Assistants to support ongoing Inland Sensitivity Atlas (ISA) work for USEPA Region 5. They started on May 17, 2022 and June 7, 2022, respectively.

ADVOCACY

WRDA 2022 Priorities

On June 8, 2022, UMRBA submitted a letter to Rep. Sam Graves that explains UMRBA's withdrawal of its request to partner with the Corps utilizing its Section 729 letter. The letter is provided on pages B-7 to B-8 of the agenda packet.

On July 13, 2022, UMRBA submitted to Congress its priorities for the 2022 Water Resources Development Act. The letter is provided on pages B-9 to B-11 of the agenda packet. In particular, UMRBA called for Congress to:

- Reform of the Corps' project partnership agreements
- Increase the Upper Mississippi River Restoration program's annual authorized appropriation
- Utilize the Corps' existing authorities to implement water level management on the Upper Mississippi River System
- Authorize a routine hydraulic evaluation of flow frequency probabilities and water surface profiles on the Upper Mississippi River System
- Permanently adjust the cost share of inland waterway construction and major rehabilitation projects to 25 percent from the Inland Waterway Trust Fund and 75 percent from the general Treasury

Congressional Staff Meetings

On July 19-20, 2022 meetings, UMRBA staff met with Congressional offices who are members of the Senate and House Appropriations Committees, Senate Environmental Public Works Committee, and/or House Transportation and Infrastructure Committee. The meetings focused on UMRBA's priorities related to the Navigation and Ecosystem Sustainability Program, Upper Mississippi River Restoration program, and hydraulic modeling (i.e., flood frequency profiles) as well as the 2022 Water Resources Development Act. Waterways Council joined some of the meetings.

ECOSYSTEM HEALTH

Upper Mississippi River Restoration

Ecological Status and Trends

On June 22, 2022, UMRR published the third ecological status and trends report. The report includes information on long term changes in water quality, aquatic vegetation and fish from six study areas spread across the Upper Mississippi and Illinois Rivers. The report also summarizes trends in possible drivers of long-term changes in the river including river discharge and floodplain land cover. USACE and USGS issued joint press release, which is provided on pages B-14 to B-15 of the agenda packet. UMRBA staff worked with UMRR partners to coordinate complimentary dissemination of the press release through their respective media connections and other communications channels.

2022 UMRR Report to Congress

On July 19, 2022, Marshall Plumley forwarded to the UMRR Coordinating Committee the MVD's comments on the second draft UMRR 2022 Report to Congress. The team of authors is currently working to revise the report based on those comments, and is preparing for a second in-progress review in August 2022 as well as an updated schedule. UMRBA's involvement in the report development is provided through a support services contract specific to the 2022 UMRR Report to Congress.

Implementation Issues Assessment

On July 12, 2022, UMRBA staff submitted to the UMRR Coordinating Committee a series of implementation issue papers. The papers addressed watershed inputs and climate change, federal easement lands, engaging non-traditional project sponsors, and external communications, floodplain regulations, project partnership agreements, and water level management. The UMRR Coordinating Committee is scheduled to convene a call on August 31, 2022 to resolve remaining questions and establish broad consensus on recommended actions.

2015-2025 Strategic Plan

During the May 25, 2022 UMRR Coordinating Committee meeting, UMRBA staff presented results of the survey distributed to the UMRR partnership at-large regarding the 2015-2025 UMRR Strategic and Operational Plan. The purpose of the survey was to seek input regarding progress achieved since 2015, priorities for the next five years, and the issue areas to include in the 2022 Report to Congress. A report on the survey results is anticipated to be submitted to the UMRR Coordinating Committee in summer 2022. A meeting will be convened to review and discuss the results.

LTRM-Related Initiatives

UMRBA staff are participating in an implementation planning process for LTRM, focusing on the potential to expand knowledge of the UMRS and to inform ecosystem restoration and management. The objective is to work under the umbrella of the UMRR 2015-2025 Strategic Plan to identify specific unmet information and research needs and determine a set of priority actions to address those needs. Planning meetings occurred on June 2, June 16, July 7, July 21, and August 4.

Navigation and Ecosystem Sustainability Program

UMRBA staff have participated in Navigation and Ecosystem Sustainability Program (NESP) efforts to develop a Charter for interagency cooperation and secure funding agreements to support UMRBA and its member states participation in the program.

Water Level Management

UMRBA published a report on July 2022 regarding priority actions for implementing water level management. The report describes the process of structured decision making that was used to determined priority actions as well as an evaluation of the issues and agency perspectives. The Water Level Management Regional Coordinating Committee tasked an *ad hoc* group to reach partnership agreement around a set of basic recommendations as to when, where, and why WLM should be used as an ecosystem restoration tool in the UMRS. The group met in series of six virtual meetings between April 2021 and August 2021. Report excerpts of the Executive Summary and priority actions (or recommendations) are provided on pages B-16 to B-20 of the agenda packet.

RESILIENCE PLANNING

Upper Mississippi, Illinois, and Missouri Rivers

UMRBA staff attended UMIMRA's June 17, 2022 annual meeting in Quincy. The agenda included presentations from the American Farm Bureau Federation, Corps' Levee Safety and P.L. 84-99 Program, and weather outlook for 2022 and longer term climate trends as well as District-based updates and a briefing on the Navigation and Ecosystem Sustainability Program.

USGS Extreme Precipitation Workshops

USGS UMESC is planning for a three-day workshop in spring 2023 to bring together resource managers and scientists from across the Upper Mississippi River Basin (UMRB). USGS's goal is to address the management challenges that will result from projected increases in extreme precipitation events across the region, and in particular to find ways to implement nature-based solutions to these challenges. This workshop is sponsored by the USGS Midwest Climate Adaptation Science Center (MW CASC). Kirsten Wallace has joined a small advisory committee to help plan for the workshop.

NAVIGATION

Navigation and Ecosystem Sustainability Program

On June 29, 2022, the Corps convened navigation industry representatives in St. Louis for the purposes of hearing their input on NESP's small scale efficiency improvements – e.g., mooring cells and switchboats. UMRBA staff participated in the meeting remotely.

National Waterways Foundation

As a Trustee of the National Waterways Foundation, Wallace virtually participated in the Foundation's June 10, 2020 meeting. With funding support from the National Waterways Foundation, the Eno Center for Transportation recently published a report on May 24, 2022 that discusses the threats to U.S. inland waterways transportation competitiveness. The report's executive summary is provided on pages H-7 to H-12 of the agenda packet. Through six cases of major freight rivers around the world, the report evaluates U.S. and foreign governance, freight flows, investment levels, and role in the global

supply chain. The report discusses two major threats to the U.S. inland waterways strategic trade and military advantages as follows:

- Underinvestment in the system's infrastructure, maintenance, and operations has degraded the service levels on the rivers, making it less reliable and less competitive. Investments from the federal government over the past decade have made substantial progress in increasing reliability and clearing the maintenance backlog; but continued prioritization of projects that support efficient operations will be necessary to increase shipper confidence.
- While the United States has been upgrading domestic inland waterway infrastructure, other countries have been doing the same for their own military and commercial advantage. Investments in economic development and infrastructure have boosted traffic on rivers like the Amazon and Yangtze. Some of this investment comes from state-owned enterprises in countries like China, which could put American exporters at a competitive disadvantage.

Corn Belt Port Statistical Area

On June 16, 2022, UMRBA attended the Corn Belt Ports meeting in Quincy, Illinois and brief its members about UMRBA's navigation program. Key highlights included the UMRBA Navigation Assets Inventory, the states' support for the Navigation and Ecosystem Sustainability Program, and UMRBA's collaborative leadership in advancing long term resilience planning. Other briefings included reports on USACE Rock Island and St. Louis Districts, NESP, state DOTs, and port districts located within the Corn Belt Port Statistical Area.

HAZARDOUS SPILLS COORDINATION, MAPPING, AND PLANNING

Oil Pollution Act (OPA) Planning and Mapping

UMRBA delivered an updated regional geodatabase with newly completed GIS data layers to USEPA Region 5 on August 5, 2022. On behalf of USEPA Region 5, UMRBA added to ISA boat access data information about river stages at which select boat ramps become unusable. This data will inform response strategies in high water conditions. UMRBA also continues to work on the Minnesota ISA update.

Staff participated in Mapping Group web meetings on June 6, July 11, and August 1, 2022.

UMRBA is working with USEPA Region 5 to analyze worst-case discharges for Minnesota counties found outside of existing planning areas. The analysis will be the basis for integrating these counties into planning areas in the future.

Upper Mississippi River Hazardous Spills Coordination Group

A major focal area for the UMR Spills Coordination Group is updating the UMR Spill Response Plan and Resource Manual (UMR Plan). Staff incorporated updates from members also produced updated maps for the document. The draft UMR Plan has been distributed to the Spills Group for final review. Following which, a final version of the UMR Plan will be routed to member agencies for signature. This is anticipated to occur in September 2022.

WATER QUALITY

WQEC/WQTF Joint Meeting

The UMRBA WQEC and WQTF met jointly on June 8-9, 2022 in Davenport, Iowa. The agenda topics included the UMRBA Interstate Water Quality (CWA) Monitoring Program, emerging contaminants, nutrient reduction, and environmental justice.

Hypoxia Task Force

UMRBA staff participated in the press event held jointly by the Iowa Department of Agriculture and Land Stewardship and USEPA announcing $60 million in federal funding through the Bipartisan Infrastructure Law to the Gulf Hypoxia Program. On Thursday, June 9, 2022, USEPA issued guidance to the Hypoxia Task Force member states for developing cooperative agreements for utilizing those funds, which are spread over a five-year timeframe. The HTF Coordinating Committee meet on June 13, 2022 with a primary focus on the guidance terms.

Chloride Management

UMRBA sent a June 23, 2022 letter to USEPA Assistant Administrator for Water Radhika Fox, transmitting the UMRBA Chloride Resolution and seeking partnership in managing chloride sources, improving knowledge, and developing communications strategies and messages. The letter is provided on pages B-21 to B-24 of the agenda packet.

Reaches 8-9 Pilot

UMRBA published the Interstate Water Quality (CWA) Monitoring Plan Reaches 8-9 Pilot Condition Assessment and Evaluation Report in July 2022. The pilot was implemented by the states of Illinois, Iowa, and Missouri in 2020 and 2021 on a 109-mile segment of the UMR from its confluence with the Iowa River in southeastern Iowa (across the UMR from New Boston; river mile 434) downriver to L&D 21 at Quincy (river mile 324.9). The Condition Assessment summarizes the monitoring results and the Evaluation Report discusses the successes and lessons learned regarding the technical, logistical, budgetary, and personnel aspects of the pilot's implementation. The report also includes considerations for scaling up monitoring to the entire UMR mainstem. Excerpts from the Condition Assessment and Evaluation Report are provided on pages F-1 to F-6 of the agenda packet.

Harmful Algal Blooms

UMRBA staff participated in the USEPA Region 5 HAB conference call on July 28, 2022.

COLLABORATION

Minnesota DNR Roundtable

Kirsten Wallace attended the June 9, 2022 Minnesota DNR Roundtable in Brooklyn Center. The Roundtable includes a discussion between Governor Tim Walz and DNR Commissioner Sara Strommen, briefings from two DNR divisions (ecological and water resources and fish and wildlife), and several smaller breakout sessions focused on various topics relating to the Roundtable's theme of investing in the future of conservation,

Interstate Council on Water Policy

On June 24, 2022, the Interstate Council on Water Policy (ICWP) sent a letter to the members of the federal Water Sub-Cabinet asking for routine engagements for the purposes of to improving federal and state coordination and implementation of important water resource initiatives. The Western States Water Council and National Water Supply Alliance joined as co-signatories to the letter, which is available on pages B-25 to B-29 of the agenda packet.

America's Watershed Initiative

America's Watershed Initiative's (AWI's) Report Card Committee is holding a series of meetings with USACE to discuss a plan to review the current AWI Report Card and AWI's our goals for future report cards and opportunities to partner. Kirsten Wallace is currently serving as a Co-Chair of the Committee and, in that capacity, is participating in the discussions.

As a member of the AWI Board of Directors, Wallace joined AWI's Executive Director Kim Lutz and other Board members on July 18, 2022 in Washington, D.C. for meetings with leadership of various positions within the Administration. The purpose was to discuss policy pathways to address the Mississippi River Watershed's key challenges, namely flooding, water quality, climate, and transportation. Meetings were held with officials within USDA, White House, and USACE ASA(CW).

FINANCIAL REPORT

[Note: At the time of the agenda packet publication, UMRBA Treasurer Jason Tidemann's has not yet provided his statement of review for UMRBA's financial statement for the period of May 1, 2022 to June 30, 2022. This agenda packet will be updated with that statement when it becomes available.]

Attached as pages B-30 to B-35 are UMRBA's FY 2022 budget report and balance sheet. As of June 30, 2022, ordinary income for FY 2022 totaled $783,893.81 and expenses totaled $818,298.27 for net ordinary income of -$34,404.46. As of this date, UMRBA's cash assets totaled $703,814.61.

UMRBA
Upper Mississippi River Basin Association

June 8, 2022

The Honorable Sam Graves
U.S. House of Representatives
Committee on Transportation and Infrastructure
2165 Rayburn House Office Building
Washington, D.C. 20515-6256

Dear Representative Graves:

In response to your request, I am writing on behalf of the Upper Mississippi River Basin Association (UMRBA) to explain its withdrawal of a cost-share partnership through the U.S. Army Corps of Engineers' (Corps') Section 729 planning authority. In part, this decision was made in light of new planning guidance for, and Corps interpretation of, the Section 729 planning authority that no longer made it suitable for the work ahead. Importantly, however, following a successful two-year planning partnership with the Corps, UMRBA has a greater sense for how the various capacities of all relevant federal agencies, universities, nonprofit entities, landowners, and others will each play an important role in setting objectives, goals, providing intelligence and collectively making decisions necessary for resilience planning at the Upper Mississippi River Basin scale.

In 2021, UMRBA and the Corps developed the Keys to the River Report that a) provides clarity around the issues affecting the Upper Mississippi River System's resilience to floods, drought, and sediment; b) identifies the most effective set of actions for which federal, state, local, and private partners can take now to improve resilience; and c) sets forth a more detailed purpose statement with goals and objectives for long term planning.

This partnership resulted in important progress for the region. Specifically, more people and communities are connected to the issues, the concerns of their neighbors, the ongoing programs and projects, and the potential work ahead. We have a better understanding of the many people and communities that have yet to be brought into decision making. HEC-RAS is now complete for the Upper Mississippi River System and plans are prepared for updating the Corps' flow frequency models. NOAA is working through its cooperative institutes to develop climate modeling for the Upper Mississippi River basin. Through financial support from USEPA, UMRBA is convening keys sets of agricultural stakeholders for the purposes of accelerating the adoption of multiple, layered conservation practices.

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www.umrba.org

And, the larger partnership of state and federal agencies and the various sets of keys stakeholders have a clearer understanding for the complex challenge of integrated water resources planning and management and a shared vision for how we might work together to leverage resources and expertise to build resilience into the system.

We greatly appreciate your commitment to ensuring that we have the right tools and resources to envision and plan for cooperative action. We are eager to work with your office to envision and support the work of UMRBA, federal agencies, and other stakeholders in advancing flood, drought, and sediment management needs.

Please reach out to me at 651-224-2880 or kwallace@umrba.org with any further questions.

Sincerely,

Kirsten Wallace, Executive Director
Upper Mississippi River Basin Association

UMRBA
Upper Mississippi River Basin Association

July 13, 2022

The Honorable Tom Carper
The Honorable Shelley Moore Capito
U.S. Senate
Committee on Environment and Public Works
410 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable Peter DeFazio
The Honorable Sam Graves
U.S. House of Representatives
Committee on Transportation and Infrastructure
2165 Rayburn House Office Building
Washington, D.C. 20515-6256

Dear Senators Carper and Moore Capito and Representatives DeFazio and Graves:

As Congress develops its priorities for the Water Resources Development Act (WRDA) of 2022, I am writing to offer our five member states' perspectives on the bill's provisions for your consideration in reconciling the Senate and House measures. Formed by the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin in 1981, UMRBA represents its member states' common water resource interests and works collaboratively with the federal and state agencies as well as the navigation industry, environmental organizations, local communities, and others who work directly to improve the Upper Mississippi River System. UMRBA's member states are strongly committed to the principles of sustainability and multi-use as the foundation of the river's management. Thus, we are pleased that Congress is moving to address important water resource needs in a comprehensive measure that incorporates those same principles.

To ensure effective, multi-purpose management of the Upper Mississippi River System, UMRBA respectfully requests that Congress include provisions in WRDA 2022 to:

Project Partnership Agreements — Create a more equitable and reasonable approach to non-federal cost share agreements by:

A) Replacing the current blanket indemnification requirement with a more shared approach to liability. Indemnifying a third party (including the federal government) is in direct conflict with many states' constitutions and laws. It requires the non-federal party to promise financial resources for an indeterminate liability that might occur at an unknown time, at an unknown cost, and for an unknown reason. Many state constitutions preclude agencies from obligating funds without an encumbrance against an appropriation and do not allow for incurring any indebtedness of any nature on

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behalf of the state until an appropriation for it has been made by the legislature. In addition, indemnification requires a state to assume liability beyond the extent to which many states' tort law permits.

B) Establishing a defined cap on operations and maintenance obligations. The current PPAs legally obligate non-federal sponsors to undefined and unbounded operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) obligations for the water resource project. This is challenging for non-federal sponsors to legally assume because 1) the projects have a period of analysis of 50 years and 2) given the dynamic nature of the river ecosystem, ecosystem management needs will undoubtably change beyond the projects period of analysis.

Upper Mississippi River Restoration — Increase the annual authorized appropriation levels for the Upper Mississippi River Restoration (UMRR) program to $75 million for habitat rehabilitation and enhancement projects and $40 million for long term resource monitoring. This request for increased funding includes an adjustment for inflation as well as additional capacity and capability to meet increasing ecosystem rehabilitation needs and monitoring needs in light of changing hydrology and invasive species. Enclosed is a fact sheet summarizing the justification for the increased annual funding authorization to UMRR.

Water Level Management — Direct the Corps to utilize its existing authorities to implement water level management on the Upper Mississippi River System consistent with ecological goals determined by relevant federal agencies and states. We would encourage that the term "pilot" be stricken from the language in Section 339 of the House WRDA 2022 to reinforce that the Corps has the authority to implement water level management at its discretion.

The authority to implement water level management is provided in the Corps' operations of the 9-foot navigation channel, the Upper Mississippi River Restoration (UMRR) program, and the Navigation and Ecosystem Sustainability Program (NESP). Engineering Regulation 1110-2-240 clearly states that environmental pool management is within the Corps' Congressionally-directed authority to provide a 9-foot navigation channel on the UMRS. UMRBA provides a convening forum for resource agencies and conservation and navigation representatives to discuss policy and technical issues related to WLM. We would welcome a conversation with Congress about a recent agreement among resource agencies for implementing water level management through an adaptive management framework.

Hydraulic Evaluation — Authorize a routine hydraulic evaluation of flow frequency probabilities and water surface profiles on the Upper Mississippi River System as provided in Section 220 of the House Transportation and Infrastructure Committee WRDA 2022 measure. Accurate and accessible information is necessary for developing a systemic flood resiliency plan and for improving management capabilities. Flow frequency probabilities and water surface profiles are foundational needs for facilitating informed deliberations regarding the future of flood management. These modeling tools inform flood forecasting,

management, mapping, response, mitigation, attenuation, and ultimately, decision making related to policy and funding needs.

Inland Waterway Trust Fund — Permanently adjust the cost share of inland waterway construction and major rehabilitation projects to 25 percent from the Inland Waterway Trust Fund and 75 percent from the general Treasury. This adjustment will accelerate the completion and improve the efficiency of lock construction and major rehabilitation projects, including the remaining six lock projects included in the Navigation and Ecosystem Sustainability Program.

Thank you for your consideration of this request. Please contact me at 651-224-2880 or kwallace@umrba.org if you have questions or would like to discuss UMRBA's position in further detail.

Sincerely,

Kirsten Wallace
Executive Director
Upper Mississippi River Basin Association

cc: Upper Mississippi River Delegation

Enclosure

Upper Mississippi River
Basin Association
ILLINOIS, IOWA, MINNESOTA, MISSOURI, WISCONSIN

Contact: Andrew Stephenson, Policy and Programs Director
(651) 224-2880, astephenson@umrba.org

Upper Mississippi River Basin Association
WRDA 2022 Request:
Upper Mississippi River Restoration
Annual Authorized Appropriation

The Upper Mississippi River Restoration (UMRR) program fulfills the direction of Congress to manage the Upper Mississippi River System (UMRS) as a nationally significant ecosystem. UMRR was the first federal program to combine ecosystem restoration, monitoring, and science on a large river system. With over 35 years of successful operation, UMRR is one of this country's premier ecosystem restoration programs. UMRR involves close collaboration among federal, state, and public partners and effectively combines ecological restoration and a built-in long term monitoring and research enterprise. UMRR focuses primarily on two core elements:

- Planning, construction, and evaluation of fish and wildlife habitat rehabilitation and enhancement projects
- Long term resource monitoring, computerized data inventory and analysis, and applied research

Each element strengthens the other and, together, their integration is a critical part of achieving UMRR's vision of a healthier and more resilient UMRS that sustains the rivers' multiple uses.

Request for WRDA 2022

1) Increase annual appropriation authorization for UMRR habitat rehabilitation and enhancement projects (HREPs) from $40 million to $75 million.

   Benefit to the Nation:

   UMRR has improved critical fish and wildlife habitat on 112,000 acres through 59 projects. These projects restore natural water velocities and depths, improve vital sediment transport and distribution, create islands of varying elevations to restore natural floodplain features, and provide capabilities to mimic natural water level conditions. Collectively, these processes support a wide range of fish and wildlife while improving the river's overall ecological integrity.

   Value of the increased appropriation authorization:

   Additional annual funding would allow UMRR to construct more projects more efficiently, including by awarding larger and more comprehensive construction contracts. This can help decrease mobilization and demobilization costs due to fewer separate contracting actions, maximize agency and partner review efforts, and can result in more competition, more competitive bids, and additional opportunities for small businesses. Assuming flat funding at $33.17 million, UMRR plans to construct 24 projects benefitting 76,000 acres through FY 2031. Increased appropriations could accelerate these restoration activities.

2) Increase annual appropriation authorization for UMRR long term resource monitoring (LTRM) from $15 million to $40 million.

Benefit to the Nation:

UMRR combines environmental long term resource monitoring (LTRM), research, systemic data acquisition, and modeling to provide a solid scientific foundation upon which many agencies base management actions and policy for the Upper Mississippi River System. UMRR's monitoring and science efforts have produced the most extensive fisheries dataset for a great river in the world, the largest aquatic vegetation dataset in the world, and tracked spatially and temporally dynamic water quality changes over nearly three decades of monitoring. LTRM captures the impacts from invasive carp expansion to the abundance and diversity of native fishes, trends in nutrient concentrations, plant community changes and recovery in portions of the river system, and forest loss across the system. LTRM also provides important insights and tools that aid habitat restoration. As the only large river with extensive long term monitoring of its ecosystem, greater understanding of this system helps to inform river management throughout the nation and across the world.

Water quality, vegetation, and fisheries are monitored annually through a network of six state-operated field stations, which are located on the Upper Mississippi River in Pool 4 (Lake City, Minnesota), Pool 8 (La Crosse, Wisconsin), Pool 13 (Bellevue, Iowa), Pool 26 (Alton, Illinois), and the Open River reach (Cape Girardeau, Missouri), as well as the La Grange Pool of the Illinois River (Havana, Illinois).

Value of the increased appropriation authorization:

Additional annual funding would allow the UMRR to conduct systemic monitoring of other critically important major resources in the system such as mussels and macroinvertebrate populations, support needed analysis to forecast changes to the river's ecosystem resulting from changing hydrologic conditions, and develop new tools and models to better understand and manage the ecosystem. Additional funds may also help address the notable spatial gap in monitoring from Pools 13 to 26. Monitoring in this stretch of the river could expand our knowledge of the spread of invasive carp as well as ecological and water quality changes in response to climatic, hydrologic, and watershed land use changes.

About the Upper Mississippi River Basin Association — The Upper Mississippi River Basin Association (UMRBA) is a five-state interstate organization formed by the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to coordinate the states' river-related programs and policies and work with federal agencies that have river responsibilities. The UMRBA is structured as a 501(c) non-profit association, with the Board of Directors composed of all duly Governor-appointed representatives and alternatives. For more information about UMRBA, visit its website at www.umrba.org.

- 2022 (19)
- 2021 (29)
- 2020 (49)
- 2019 (37)
- 2018 (45)
- 2017 (36)
- 2016 (38)
- 2015 (64)
- 2014 (56)
- 2013 (120)
- 2012 (31)
- 2011 (31)
- 2010 (35)
- 2009 (9)

All Entries

Upper Mississippi and Illinois Rivers Experiencing Widespread and Regional Changes

USACE ROCK ISLAND DISTRICT

Published June 22, 2022

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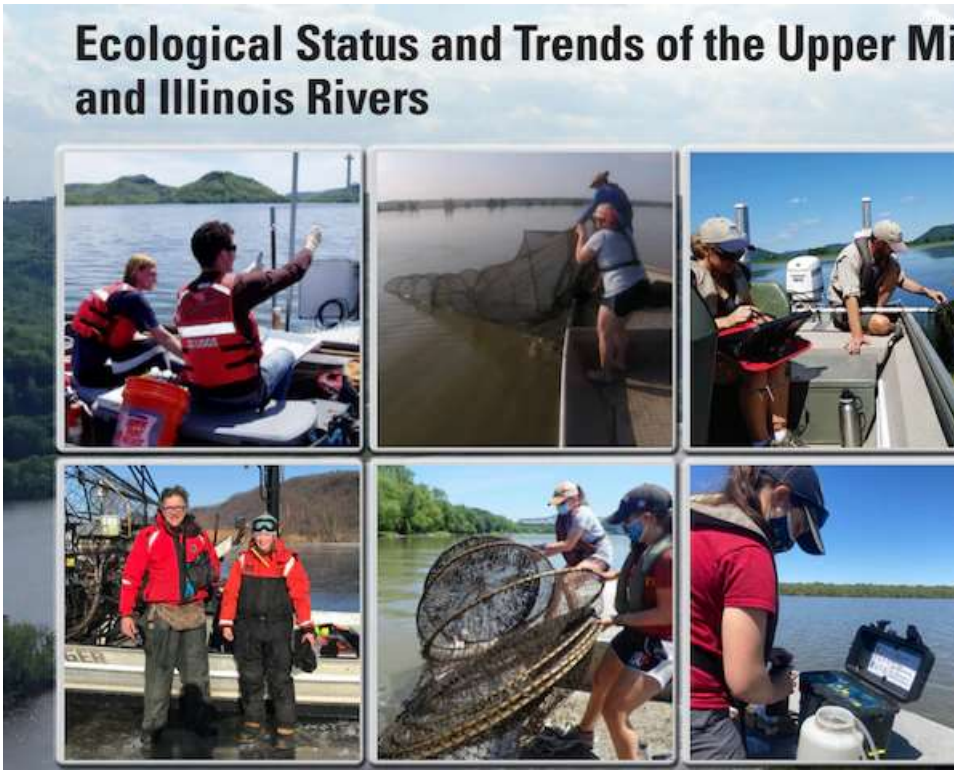

PHOTO I

2022 Status and Trends Report Cover Image

PRINT | E-MAIL

ROCK ISLAND, Illinois --The U.S. Army Corps of Engineers, Rock Island District; and the U.S. Geological Survey, in partnership with others, have released a report regarding the **Ecological Status and Trends of the Upper Mississippi and Illinois Rivers**.

The Status and Trends report is the third of its kind produced as part of the Upper Mississippi River Restoration (UMRR) program and includes information on long term changes in water quality, aquatic vegetation and fish from six study areas spread across the Upper Mississippi and Illinois Rivers. The report also summarizes trends in possible drivers of long-term changes in the river including river discharge and floodplain land cover.

“Long Term Resource Monitoring is a primary element of the Upper Mississippi River Restoration program and a critical part of helping us better understand and restore our nationally significant river system,” said Marshall Plumley, U.S. Army Corps of Engineers UMRR regional program manager. “Completion of this third Status and Trends report is a testament of the UMRR partnership and its dedication to building a healthier, more resilient Upper Mississippi River System that can sustain the river’s multiple uses.”

In the Water Resources Development Act of 1986, Congress authorized a program to provide fish and wildlife habitat rehabilitation and enhancement in the Upper Mississippi River System. The act also implemented long-term resource monitoring and research efforts, including the use of state-of-the-art scientific methods to understand changing environmental conditions within the river system. The Status and Trends report describes what was learned from that monitoring.

resiliency efforts of this important river system. The understanding of river function we learn from the UMRS extends our ability to address large river issues nationally and internationally."

Key findings from the report include:

- There is more water in the river more of the time with high flows lasting longer and occurring more frequently throughout the system. Water flow is an important factor affecting the quality and quantity of habitat.
- Floodplain forest loss has occurred across most of the system. Healthy floodplain forests provide important habitat for wildlife, and they support outdoor recreation opportunities and access to clean water for millions of people.
- In most of the river system, water in the main channel has become clearer. In parts of the river system, water has become clearer and aquatic plants more abundant, improving habitat for some fish and wildlife. Reduced sediment in the river allows sunlight to reach deeper into the water and promote plant growth. Plants slow the water and anchor sediment, further improving water clarity and triggering additional plant growth.
- Concentrations of nutrients, notably nitrogen and phosphorus, remain high, exceeding U.S. Environmental Protection Agency benchmarks. However, total phosphorus concentrations have declined in many of the studied river areas.
- The river system continues to support diverse and abundant fishes. Popular sport fishes have increased in parts of the river system. However, there have been substantial declines in forage fish which serve as important food for larger fishes and other animals. Invasive carps have substantially affected the river ecosystem where they have become common.

"The Upper Mississippi River flows across five states and tribal lands, multiple agency jurisdictions, the footprint of scores of nonprofit organizations and is central to navigation, agriculture and many essential economic sectors," said Kirsten Wallace, executive director of the Upper Mississippi River Basin Association, which facilitates interagency consultation among UMRR's member agencies. "Understanding what is going on in and around the river is needed to inform decisions and guide investments. The Status and Trends Report is just that—a rigorous, scientific assessment of the ecological conditions of the system."

The Status and Trends report is prepared by the Upper Mississippi River Restoration (UMRR) program, which is a partnership of federal and state agencies, non-governmental organizations and individuals working together to support Upper Mississippi River System ecosystem rehabilitation, research and monitoring. Previous Status and Trends reports were released in 1998 and 2008.

A digital version of the report is available at: www.mvr.usace.army.mil/UMRR. For more information on the Upper Mississippi River Restoration program's monitoring element, please visit: Long Term Resource Monitoring.

Related Link: **Ecological Status and Trends of the Upper Mississippi and Illinois Rivers**

Contact

Rock Island District, Corporate Communications
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or

Marisa Lubeck, USGS
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Release no. 22-016

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UMRR Upper Mississippi River Restoration USACE USGS
Rock Island District St. Paul District St. Louis District

Executive Summary

The Water Level Management Regional Coordinating Committee tasked an *ad hoc* group to employ structured decision making (SDM) practices to reach partnership agreement around a set of basic recommendations as to when, where, and why WLM should be used as an ecosystem restoration tool in the UMRS. Between April 2021 and August 2021, the Upper Mississippi River Basin Association (UMRBA; www.umrba.org) hosted a series of six virtual meetings for the *ad hoc* group to evaluate the issues, explore agency perspectives, and develop shared recommendations for WLM implementation. This report describes the process and outcomes of the SDM exercise.

The *ad hoc* group reached a unified recommendation that the three USACE Districts should each implement water level management (i.e., actively manage for lower water levels with depths and duration to be determined) in one pool considered to be in "good" ecological condition and one pool considered to be in "poor" condition and assess the impacts of those actions by using a collaboratively developed adaptive monitoring framework lead by UMRBA and associated scientists.

The *ad hoc* group agreed upon and sequenced a suite of seven recommendations that would allow USACE Districts to implement WLM to achieve ecological objectives. Ultimately, the recommendations will be submitted to the UMRBA Board and USACE Division and District leadership. These recommendations are not binding on federal and state governments.

The *ad hoc* group recommends that USACE Districts allow operationalizing WLM when needed to achieve ecological objectives. This includes incorporating the ability to implement water level management in pool operating manuals and other long term planning documents (i.e., 25 years to 50 years) so that it can be used when managers decide it is an appropriate tool to meet ecological objectives. The *ad hoc* group agreed that WLM should be applied under certain ecological conditions and with clear expectations of desired outcomes that will be developed through continued partnership and study.

To ensure proper implementation of WLM, the *ad hoc* group recommends the use of a new decision-making exercise for characterizing pool condition and for developing an adaptive management framework to promote learning and improve decision making. It is essential that the adaptive management and monitoring framework, including analyses of expected value of perfect information, is established and employed prior to WLM implementation.

In response to uncertainty expressed during the SDM sessions, the *ad hoc* group evaluated several ecological monitoring measures that could help assess the ecological benefits and risks of WLM related to maintaining pools in "good" ecological condition. However, establishing firm targets and acceptable levels for the ecological measures were beyond the scope of this SDM workshop.

The next steps for UMRBA and the District-based WLM teams include establishing ecological goals for WLM, developing alternative system models, identifying specific and quantifiable targets and monitoring metrics, conducting expected value of perfect information analyses to aid in selecting metrics, and developing monitoring plans. SDM might be utilized to reach collective agreement among river management agencies for each of those next steps.

Recommendations

The following recommendations from the *ad hoc* group are intended for the primary decision makers, who are noted in parentheses for each recommendation.

1) Incorporate the option for using WLM to improve ecological function and integrity as a routine function in long term (about 25-50 years) planning documents and USACE pool operating manuals. (USACE)

2) Establish a "WLM team" in the USACE Rock Island District, analogous to the St. Paul District's Water Level Management Task Force and the St. Louis District's Environmental Pool Management Team, to improve coordination of WLM planning, implementation, and analysis across Districts. All three District-based teams should interact to share information and use the adaptive management framework across the system. The WLM teams could also develop an initial list of prioritized pools for implementing WLM. (USACE, WLM teams)

3) Continue with decision analysis prior to operationalization of WLM. The WLM teams would benefit from facilitation by a trained decision analyst to further establish stated ecological goals for WLM, define specific and quantifiable targets and within-pool ecological conditions necessary to set WLM in motion, address definitions, system models, concerns, risk tolerance, and expected value of information for candidate measures within an adaptive management and monitoring framework. (UMRBA, the *ad hoc* group, WLM teams)

4) Develop and implement an adaptive management and monitoring framework for ongoing learning and achieving stated ecological objectives with a trained decision analyst. Next steps include but are not limited to: (UMRBA, the *ad hoc* group, WLM teams, Upper Midwest Environmental Science Center (UMESC))

    a) Develop system models and specific, quantifiable performance measures to assess pool conditions that help determine when and where to conduct WLM and allow for assessment of the effects of WLM implementation when it occurs

    b) Conduct an expected value of information analysis on each measure prior to implementation

    c) Develop effectiveness monitoring in an adaptive management and monitoring framework with analyses led by UMESC

5) Characterize the ecological condition of each pool (poor versus good) as an aid in selecting and prioritizing pools within Districts for WLM. (UMRBA, the *ad hoc* group, WLM teams)

6) Following additional decision analysis and development of evaluation protocols as recommended in 3 and 4, conduct WLM in one pool in "good" condition and one pool each in "poor" condition in each District following the agreed upon process. (USACE, WLM teams)

7) After recommendations 1–6 are achieved, use the lessons learned to determine whether WLM achieved the ecological objectives or future desired conditions, and create an operation plan and schedule for WLM implementation. (USACE, WLM teams)

Outcomes and Next Steps

Alternative 5 was the highest ranked alternative by the *ad hoc* group, which was to maintain "good" pools (e.g., Pools with 25–50% aquatic vegetation in the </= 1.5 m photic zone) and apply WLM to one degraded pool such that two pools are treated in each District approximately each year. Alternatives 6 and 7 were very close in rank to 5.

At the end of the workshop, the participants agreed: 1) WLM can serve as an effective restoration tool to meet the fundamental objectives described herein, and 2) there is evidence, though somewhat limited, regarding the importance of WLM in maintaining pools in "good" ecological condition.

When reflecting on the initial results, a critical uncertainty was raised within the a*d hoc* group. Specifically, there was some disagreement within the a*d hoc* group regarding the treatment of "good" pools, with the benefits of applying WLM to pools currently in "good" ecological condition unclear. There is limited evidence regarding the effects of WLM in the unique riverine floodplain ecosystem of the UMRS, especially in areas already in good condition. Whereas concern was raised about "overtreating" pools already considered "good" that may cause ecological degradation or high cost, the notion was also raised that reintroducing low water variability via WLM may provide worthwhile ecological benefits to pools in good condition.

Participants discussed the phenomenon of periodic, albeit rare, low water conditions during the growing season had resulted in naturally variable low water levels, suggesting that WLM may not be needed in some years to achieve aquatic vegetation goals. However, the ecological benefits of drawdowns may only last a few to several years, and the repeated disturbance by WLM may be needed to maintain pools in "good" condition. Targeted research or adaptive management is needed to better understand the effects of natural hydrologic fluctuations and drawdowns on the prevalence and productivity of key aquatic plant species and additional ecological effects.

Prior to conducting WLM in a single pool in either "good" or "poor" condition, the a*d hoc* group and newly formed District "WLM teams" should work with a decision analyst to investigate which key uncertainties regarding ecological effects are most important for making future decisions regarding operationalization of WLM. Fundamental to this question is the degree to which more information will improve confidence in future application of WLM to pools in "good" condition. There was no dispute that WLM has potential to improve the ecological condition of pools in degraded condition, but uncertainties remain of whether drawdowns in good condition pools would have benefits or would do unintentional harm. A trained decision analyst who is familiar with adaptive management, value of information analyses, and risk analyses, should work with the *ad hoc* group to clarify what specific information will provide them with greater confidence in deciding whether to implement WLM in pools that are already in good condition. This same analyst should work with scientific experts and the *ad hoc* group to develop research projects or use adaptive monitoring and management to address critical uncertainties. Value of information analysis considers the effects of reducing or eliminating uncertainty (Canessa et al. 2015, Maxwell et al. 2015; Smith 2020) and is best led by a decision analyst in close cooperation with the *ad hoc* group and associated scientists. If the results from implementation in a couple of good pools fails to show any reduction in uncertainty, the WLM teams will want to re-evaluate before proceeding to conduct more WLM in "good" pools. It is important to note that some uncertainty will always remain and, at a minimum, will need to be accounted for in future decisions as

will the risk tolerance of each partner agency. Continued decision analysis is critical to working through the uncertainty prior to any future application of WLM.

Ultimately, the *ad hoc* group agreed to select one vegetated pool (from among pools considered in "good" condition) in all three Districts to implement WLM as part of a controlled, thorough, and objective scientific evaluation. The *ad hoc* group agreed that USGS should lead the design of the investigation with the aid of a trained decision analyst. The *ad hoc* group seeks improved confidence regarding when and how WLM might affect species diversity and vegetative abundance (e.g., areal extent, seed, and tuber biomass) as well as what additional ecological costs and benefits might be expected (see Fundamental Objectives and Fig. 1a – 1d). Future studies should also examine recolonization of submergent vegetation after water levels return and continue for several years. Reducing uncertainty may be achieved by learning how key state variables and ecological functions respond to WLM (e.g., number of species, areal extent by plant growth form, seed and tuber biomass, turbidity, total suspended solids, shoreline protected, denitrification, fish spawning and rearing, floodplain forest seedling survival, etc.). The same prediction-learning framework should be followed for WLM conducted in pools in "poor" condition as well. Following this path would advance the scientific understanding of the ecological effects of WLM, help resolve the primary uncertainties within the *ad hoc* group, and aid operationalization of WLM in the UMRS.

Conclusions

The SDM process helped the *ad hoc* group (as river restoration practitioners and scientists) clarify their fundamental objectives for WLM as a restoration tool and to articulate fears if WLM resulted in a poor outcome. The process allowed the *ad hoc* group to acknowledge their concerns and reach an agreement on a best path forward. The primary recommendation is to compile and evaluate insights gained from WLM that is thoughtfully applied to select pools both in "good" and "poor" conditions. By implementing WLM coupled with learning, we can better understand which fundamental and means objectives can be fulfilled from WLM in this unique, large river floodplain system. The initial knowledge gained from WLM trials, as well as more SDM analyses, can further guide recommendations for effective operationalization of WLM in the UMRS.

UMRBA
Upper Mississippi River Basin Association

June 23, 2022

Radhika Fox
Assistant Administrator
Office of Water
United States Environmental Protection Agency
1200 Pennsylvania Ave, N.W.
Washington, DC 20460

Dear Assistant Administrator Fox:

On behalf of the Upper Mississippi River Basin Association (UMRBA), I am pleased to share its recently-adopted resolution regarding chloride contamination in the Upper Mississippi River Basin (see enclosure). The resolution describes long term trends, impacts, and current management efforts and calls for a robust set of strategies to accelerate efforts to reduce chloride loading, improve our understanding of chloride impacts, and communicate the issues and management challenges and opportunities.

UMRBA is the Governor-established forum for interstate water resource planning and management and interstate on the Upper Mississippi River System, representing its member states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Within a layered approach to managing water quality, UMRBA is the leading interstate, regional collaborative to assist the states in implementing the Clean Water Act and nutrient reduction strategies.

As put forward in the resolution, UMRBA respectfully requests a partnership with U.S. Environmental Protection Agency (USEPA) in reversing the trends in chloride levels. Specifically, this includes assisting the states by:

- Improving the scientific understanding of chloride-related impacts to designated uses in surface and groundwater.
- Partnering in the development of a communications strategy for the purposes of informing government officials, decision makers, and applicators about chloride trends, negative effects of excessive use, and best management practices to minimize runoff.
- Prioritizing USEPA resources on chloride-related monitoring and research as well as implementing best management practices to reduce salt usage and addressing policy needs.

7831 East Bush Lake Road, Ste 302
Bloomington, MN 55439
651-224-2880
www.umrba.org

We understand that USEPA is currently updating federal chloride and sulfate aquatic life use criteria and we look forward to working with USEPA to understand the changes and the potential implications for the states.

UMRBA is finalizing a second, collective effort to understand water quality trends in the Upper Mississippi River, titled How Clean is the River? The first report was published in 1989 and led UMRBA to focus its work on heavy metals and sediment. This new analysis includes water quality data from 1989 to 2018 and supports UMRBA's current focus on nutrients and chloride. It found that chloride increased by at least 35 percent across the Upper Mississippi River basin. While water quality between 1989 and 2018 has generally improved, there are pollutants of concern that have varying trends. Enclosed for your reference is the report's executive summary.

We respectfully request an opportunity for UMRBA's Water Quality Executive Committee to meet with you to discuss the chloride resolution, water quality trends, and approaches for us to work together in addressing mutual water quality goals for the river and the watershed. Association staff will follow up with your staff to facilitate such a meeting.

Sincerely,

Kirsten Wallace
Executive Director

Enclosure

cc: Debra Shore, Region 5 Administrator
Meg McCollister, Region 7 Administrator
Deborah Nagle, Office of Water, Office of Science and Technology Director
John Goodin, Office of Water, Office of Wetlands, Oceans, and Watersheds Director

UMRBA
Upper Mississippi River Basin Association

Resolution Adopted February 22, 2022

Chloride Contamination in the Upper Mississippi River Basin

Whereas the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin work collaboratively through the Upper Mississippi River Basin Association (UMRBA) with the goal of advancing their shared commitment to protecting and improving the water quality of the Upper Mississippi River;

Whereas winter de-icing salt application and municipal wastewater treatment discharge into surface waterbodies throughout the Upper Mississippi River watershed are resulting in rising chloride levels;

Whereas state chloride monitoring programs beginning as early as 1961 have observed that chloride concentrations are increasing in the Upper Mississippi River Basin;[1]

Whereas the U.S. Environmental Protection Agency has declared that chloride concentrations greater than 230 mg/L (chronic exposure) and 860 mg/L (acute exposure) impact aquatic organisms and the ecosystem by interfering with osmoregulation, inhibiting vegetation growth, impairing reproductive cycles, salinizing soils and groundwater, and ultimately reducing the biodiversity in a waterbody;

Whereas U.S. Environmental Protection Agency ambient aquatic life water quality criteria numbers for chloride were published in 1988;

Whereas chloride contamination mobilizes metals and nutrients in soils and pavements, corrodes infrastructure, (e.g., roadways) and de-icing accelerates rusting of automobiles;

Whereas existing solutions for reversing chloride contamination are limited and expensive;

Whereas road salt application techniques exist that minimize chloride runoff while ensuring public safety and substantially reducing winter road maintenance costs for municipalities, cities, states, and private applicators;

Whereas Minnesota's *Smart Salting* program (applicator training and certification for private contractors) shows that strategic applications can reduce road salting rates by 30 percent to 70 percent in the Twin Cities Metro Area;

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[1] References to state-specific chloride trends:
Illinois EPA: http://www.umrba.org/il-epa-amb-chlor.pdf
Iowa DNR chloride trends: http://www.umrba.org/ia-dnr-chlor-trends.pdf
Minnesota PCA: https://www.pca.state.mn.us/sites/default/files/wq-s1-71.pdf
Missouri DNR: http://www.umrba.org/mo-dnr-chloride-trend-analysis.pdf
Wisconsin DNR: https://wisconsindnr.shinyapps.io/riverwq/

Whereas states may offer limited liability protection to road salt applicators against ice-related injuries and property damage to provide incentives to minimize salt application;

Whereas the general public is mostly unaware of trends in chloride contamination and the associated impacts as well as methods to minimize chloride runoff;

Therefore, Be it Resolved, UMRBA urges the U.S. Environmental Protection Agency to improve the scientific understanding of chloride-related impacts to designated uses in surface and groundwater;

Therefore, Be it Resolved, UMRBA will work with its member states and the federal agencies with water quality responsibilities to develop and implement a communications strategy for the purposes of informing government officials, decision makers, and applicators about chloride trends, negative effects of excessive use, and best management practices to minimize runoff;

Be if Further Resolved, UMRBA will work collaboratively with state and federal water quality and transportation agencies as well as local units of government and private organizations to secure resources needed for monitoring and research as well as implementing best management practices to reduce salt usage and addressing policy needs, such as reducing liability and providing training to private applicators.

How Clean is the River?

Jeff Janvrin, Wisconsin DNR

UMRBA Upper Mississippi River Basin Association

A 30-YEAR EVALUATION OF WATER QUALITY IN THE UPPER MISSISSIPPI RIVER BASIN

EXECUTIVE SUMMARY

The Upper Mississippi River Basin is a nationally significant economic, environmental, social, and cultural resource that requires balanced, integrated, and collaborative management. **How Clean is the River?** provides valuable insights for those who manage this resource and all who rely upon it.

A product of the Upper Mississippi River Basin Association (UMRBA), **How Clean is the River?** is the result of a second, collective effort to understand water quality trends in the Basin, which includes Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The first report was published in 1989 and led UMRBA to focus its work on heavy metals and sediment. This new analysis includes water quality data from 1989 to 2018 and supports UMRBA's current focus on nutrients and chloride.

Based on review of 23 water quality parameters grouped into four categories—nutrients, heavy metals, salts and pathogens, and physical—the new analysis finds that **water quality between 1989 and 2018 has generally improved, while there are pollutants of concern that have varying trends**.

Decreases in legacy heavy metals, sediment, and phosphorus, for example, show that **public and private investments in managing water quality are beneficial and that the approaches taken have been effective**.

Nitrogen, chloride, and contemporary or emerging pollutants of concern, however, are rising and require a five-state approach to develop effective solutions.

How Clean is the River? underscores the value of coordinated and comprehensive water quality monitoring for the Basin. In combination with UMRBA's Interstate Water Quality Monitoring Program, the report's findings will allow the five Basin states to more effectively identify problem areas, target management actions, and measure progress in protecting water quality.

See the report at umrba.org/howcleanriver.
To learn more, contact **Lauren Salvato,** *UMRBA's Policy and Programs Director, at* lsalvato@umrba.org

The **Upper Mississippi River Basin Association** is the Governor-established forum for discussion, study, and evaluation of Upper Mississippi River-related issues of common concern to the Basin's states.

Representing its member states of Illinois, Iowa, Minnesota, Missouri and Wisconsin, UMRBA:

- **Facilitates cooperative planning and coordinated management** of the region's water and related land resources.
- **Creates opportunities** for the Basin states and federal agencies to exchange information.
- **Develops regional positions** on river resource issues and serves as an advocate of the Basin states' collective interests before Congress and the federal agencies.

KEY FINDINGS:

What's in the Report?

How Clean is the River? suggests progress in the Upper Mississippi River Basin—and frames challenges and questions for the future.

Nutrients (Total Phosphorus, Total Nitrogen, Nitrate & Nitrite, Ammonia, Chlorophyll-a)

Although phosphorus reduction goals are yet to be met, phosphorus continues to decline in the Basin due to successes of the Clean Water Act. Ammonia, a fraction of total nitrogen, is also generally decreasing. Ammonia can be toxic to aquatic life.

These are important improvements in water quality because excess nutrients cause algae overgrowth, which can harm water quality, food resources, habitat, and decrease oxygen concentrations, all which have an effect on aquatic life and outdoor recreation opportunities.

Excess nutrients in the river originate from various sources, including agriculture, stormwater runoff, and wastewater. Achieving nutrient reductions requires a multifaceted approach.

Even with these successes, there are some concerns. Despite efforts to reduce nitrogen and phosphorus pollution to the Gulf of Mexico Hypoxic Zone, total nitrogen is increasing. Nitrogen originates from nonpoint sources, such as urban and agricultural runoff, or pollution runoff from a broad area. The Hypoxic Zone receives attention nationwide because of its low oxygen levels—conditions that are not suitable for aquatic life to survive. Local problems with excess nutrients cause the overgrowth of algae and result in diminished recreational opportunities.

Heavy Metals (Aluminum, Arsenic, Lead, Zinc, Copper, Mercury, Cadmium)

Significant successes have resulted from implementation of pollution reduction efforts under the Clean Water Act. There has been a general decrease in heavy metals, which are both naturally occurring from underlying geology and human-made from manufacturing and industrial processes.

Still, while well below the maximum contaminant level set by the federal Safe Drinking Water Act, lead is increasing in Pools 15 and 17 near the Quad Cities in Illinois and Iowa and New Boston, Illinois, respectively. The reasons for this are not completely understood and warrant investigation and research.

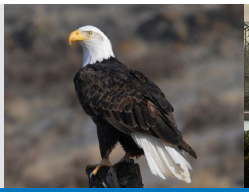
Salts and Pathogens (Chloride, Sulfate, *E. coli*, Fecal Coliform)

Chloride increased at least 35% in the Basin. The primary source is salt used to de-ice roads during winter. While road salt makes transit safer for people, too much of it is toxic to aquatic life that live in water bodies. Other dominant chloride sources include household water softeners and fertilizers.

Physical (Temperature, Conductivity, Total Suspended Solids, pH, Turbidity, Dissolved Oxygen)

There have been decreases in total suspended solids of at least 40% across the Basin. Turbidity and dissolved oxygen have also decreased. These reductions allow for light to reach aquatic vegetation, increasing its growth and thereby providing habitat and food for aquatic organisms.

Left: USFWS; right: Preston Keres, USDA



June 24, 2022

Members of the Water Sub-Cabinet
Tanya Trujillo—Co-Chair
Radhika Fox—Co-Chair

Sent via email

Dear Ms. Trujillo and Ms. Fox:

The Interstate Council on Water Policy (ICWP), the National Water Supply Alliance (NWSA), and the Western States Water Council (WSWC) appreciate the participation of the Water Sub-Cabinet agencies during our recent Washington DC Roundtable on April 7, 2022. The States, interstate commissions, regional and local water management agencies represented by our three organizations truly appreciate the strong partnership we've enjoyed with federal agencies over the decades, and the annual Roundtable embodies that relationship.

The questions posed to the federal agency representatives during the session were targeted to address issues covered during the earlier two days of the Roundtable. Attendees from our three organizations were disappointed that there was no opportunity for direct interaction or Q&A. Our members are leaders in national water policy and state/federal coordination and wish to elevate our interactions with the Water Sub-Cabinet. This follow-up letter is designed to identify some of the general areas of interest that we were unable to raise following the scripted portion of the meeting, as well as to propose a path forward to improve dialog between the Water Sub-Cabinet agencies and our three organizations.

While there are a multitude of water management topics which have both a federal, state and local nexus, our top priorities that we believe would benefit from being addressed in a concerted, coordinated fashion are the following:

Drought — Federal drought programs, such as NIDIS and relationships to Agency Climate Action Plans and efforts of the National Drought Resiliency Partnership (NDRP)

Our members are very interested in the planned roll-out of the provisions of the Administration's Climate Action Plan. Many of the individual work plan items reach beyond the jurisdiction of a single federal agency. How will efforts undertaken as outlined in the Climate Action Plan be coordinated? How will alignment with State Water Plans be assured?

Our members note that the NDRP is named the "National", not Federal, Drought Resiliency Partnership and was envisioned to have participation outside the federal family. How does the NRDP, in conjunction with the Water Sub-cabinet, propose to include non-federal participation?

During his remarks at the April 7th session, Roger Pulwarty mentioned tying the work of NOAA/NIDIS with the Climate Action Plan and with state and tribal drought plans. Our members

would like to hear more details about this effort and work together on this important priority, as well as how the federal agencies might align their water programs and policies to reduce duplication, streamline processes, and generally make government more efficient.

Infrastructure Spending: State Revolving Funds, alignment with State water plan priorities, implementation of funding directed to underserved communities

We understand there will be a focus within the SRF programs to prioritize underserved communities and note that our members are already embracing such efforts. In the interest of efficient coordination and implementation, how will alignment be assured to work cooperatively and effectively with State partners? How are States and interstate basin commissions involved with determining the priorities for funding directed to disadvantaged and underserved communities? How will alignment with State Water Plans be assured? Additionally, how will implementation plans for the Infrastructure Investment and Jobs Act balance the needs of aging infrastructure/deferred maintenance backlog with new projects and initiatives? In some instances, addressing long overdue maintenance, repairs, and replacement is more cost effective and timely.

We appreciate that several of the Water Sub-Cabinet agencies meet at regular intervals with the state agencies that are implementing programs related to that specific agency and we appreciate these working relationships. However, our memberships see a communications gap in understanding how the interagency federal Water Sub-Cabinet members' internal coordination will also benefit States, interstate commissions, regional and local water management agencies, and other stakeholders. It's not that we doubt that the Sub-Cabinet is making progress and achieving commendable internal coordination; it's that we, as partners, have not experienced, been apprised of nor directly engaged as a partner in that coordination and implementation.

Accordingly, it's our hope that the leadership of the Water Sub-Cabinet agencies sees the value of developing closer participation and implementation relationship with our stakeholders, to ensure that the huge investment planned under the Infrastructure bill is delivered in the most efficient and beneficial ways possible. Ultimately, cost-effective successful implementation of many of these critical assistance programs will depend on filling this coordination gap.

As a solution, we propose initiating a reoccurring, scheduled meeting between the Water Sub-cabinet Principles, our three organizations and perhaps other water policy-related organizations as appropriate to improve federal/state coordination and implementation of these and other relevant water initiatives. We suggest a semi-annual meeting schedule with topics tailored specific to each agency's jurisdiction, as we believe there are ample topics in which we all hold a shared interest to warrant a 90-minute meeting. These meetings would also be a good opportunity for the Water Sub-cabinet to provide updates and for the Water Sub-cabinet agencies to hear from our stakeholders on how implementation can be improved and instituted as true partnerships. If the Water Sub-cabinet could elucidate their highest priorities to the States, and if those priorities aligned with the priorities of the States, a strong implementation effort would result.

Our memberships enjoy a cooperative working relationship with the federal agencies represented in WestFAST. We suggest working through WestFAST to set up our first semi-annual meeting. Please don't hesitate to get in touch with any one of our organizations in the meantime should you have any questions.

Sincerely,

Tony Willardson
WSWC Executive Director

Beth Callaway
ICWP Executive Director

Dave Mitamura
NWSA Executive Director

CC: Principal Members of the Water Sub-Cabinet
National Drought Resilience Partnership member agencies
WestFAST members

Natalie Lenzen

From: Tidemann, Jason (DNR) <jason.tidemann@state.mn.us>
Sent: Monday, August 1, 2022 10:40 AM
To: Kirsten Wallace
Cc: Natalie Lenzen
Subject: RE: UMRBA April 2022 to June 2022 Treasurer Report

Hello Kirsten,

As Treasurer, I have reviewed the monthly financial statements for the period 4/1/22-6/30/22. Activity reported on the Balance Sheet, Profit/Loss Budget Overview, Check Register, Visa statements and Open Invoices Report provide a reasonable and consistent representation of the monthly financial activity for the referenced period.

Jason Tidemann

Upper Mississippi River Basin Association
FY 2022 Profit & Loss Budget Overview
Accrual Basis — **July 2021 through June 2022**

	Jul '21 - Jun 22	Budget	$ Over Budget
Ordinary Income/Expense			
Income			
Contracts and Grants			
USEPA NRS Workshops	11,410.60	4,300.00	7,110.60
COE (UMRR)	64,986.42	91,242.82	-26,256.40
COE (RTC)	26,800.00	56,000.00	-29,200.00
EPA (OPA)	189,108.13	225,000.00	-35,891.87
Interstate WQ Pilot	80,464.15	86,400.00	-5,935.85
WQ Trends Report	0.00	5,500.00	-5,500.00
Missouri DoC (WLM)	901.79	7,000.00	-6,098.21
Total Contracts and Grants	373,671.09	475,442.82	-101,771.73
State Dues			
Illinois Dues	61,500.00	61,500.00	0.00
Iowa Dues	61,500.00	61,500.00	0.00
Minnesota Dues	61,500.00	61,500.00	0.00
Missouri Dues	61,500.00	61,500.00	0.00
Wisconsin Dues	61,500.00	61,500.00	0.00
WQ Assessment	102,500.00	102,500.00	0.00
Total State Dues	410,000.00	410,000.00	0.00
Interest Income			
Short Term Interest			
Short Term (Checking)	132.07	0.00	132.07
Short Term (Savings)	90.65	60.00	30.65
Short Term (Sweep)	0.00	1.00	-1.00
Short Term (CD)	0.00	4,000.00	-4,000.00
Total Short Term Interest	222.72	4,061.00	-3,838.28
Total Interest Income	222.72	4,061.00	-3,838.28
Total Income	783,893.81	889,503.82	-105,610.01
Gross Profit	783,893.81	889,503.82	-105,610.01
Expense			
Gross Payroll			
Salary	365,983.53	337,357.86	28,625.67
UMRBA Time Wages	8,846.10	12,000.00	-3,153.90
OPA Wages	83,601.46	153,900.00	-70,298.54
Benefits	89,818.76	84,339.47	5,479.29
Benefits UMRBA Time	8.91	1,200.00	-1,191.09
Benefits OPA	3,560.95	4,037.30	-476.35
Total Gross Payroll	551,819.71	592,834.63	-41,014.92
Payroll Expenses			
SocSec Company	33,987.35	36,755.75	-2,768.40
Medicare Company	7,897.74	8,596.10	-698.36
SUTA (Minnesota UC)	297.00	296.42	0.58
Workforce Enhancement Fee	297.00	296.42	0.58
Total Payroll Expenses	42,479.09	45,944.69	-3,465.60
Travel	12,854.25	12,000.00	854.25
Space Rental			
Office Rental	55,666.43	51,000.00	4,666.43

Upper Mississippi River Basin Association
FY 2022 Profit & Loss Budget Overview
Accrual Basis — **July 2021 through June 2022**

	Jul '21 - Jun 22	Budget	$ Over Budget
Total Space Rental	55,666.43	51,000.00	4,666.43
Reproduction			
Copy Service	645.16	1,360.00	-714.84
Printing	0.00	500.00	-500.00
Total Reproduction	645.16	1,860.00	-1,214.84
Meeting Expenses	20,904.75	15,000.00	5,904.75
Supplies	4,443.61	3,000.00	1,443.61
Equipment			
Equipment (Maint./Rental)	2,402.59	1,600.00	802.59
Total Equipment	2,402.59	1,600.00	802.59
Legal and Financial			
Insurance	7,939.95	6,200.00	1,739.95
Legal and Tax Services	18,255.00	17,000.00	1,255.00
Bank Charges	69.00	10.00	59.00
Total Legal and Financial	26,263.95	23,210.00	3,053.95
Telephone/Communications	14,469.46	6,500.00	7,969.46
Postage	157.56	1,200.00	-1,042.44
Other Services	4,003.00	7,000.00	-2,997.00
Publications	9,751.00	19,000.00	-9,249.00
State Travel Reimbursement			
Illinois	497.00	5,000.00	-4,503.00
Iowa	222.54	5,000.00	-4,777.46
Minnesota	0.00	5,000.00	-5,000.00
Missouri	467.51	5,000.00	-4,532.49
Wisconsin	0.00	5,000.00	-5,000.00
State WQ Travel	0.00	3,500.00	-3,500.00
Total State Travel Reimbursem...	1,187.05	28,500.00	-27,312.95
OPA Expenses			
Equipment OPA	0.00	1,000.00	-1,000.00
Equipment (Maint./Rental) O...	9,336.09	6,500.00	2,836.09
Travel OPA	828.64	2,800.00	-1,971.36
Other OPA	0.00	800.00	-800.00
Total OPA Expenses	10,164.73	11,100.00	-935.27
Interstate WQ Expenses			
Travel Interstate WQ	0.00	500.00	-500.00
Data Collection/Analysis Int...	50,748.46	58,200.00	-7,451.54
Other Interstate WQ	135.06	1,000.00	-864.94
Total Interstate WQ Expenses	50,883.52	59,700.00	-8,816.48
Total Expense	818,298.27	879,449.32	-61,151.05
Net Ordinary Income	-34,404.46	10,054.50	-44,458.96
Net Income	**-34,404.46**	**10,054.50**	**-44,458.96**

Upper Mississippi River Basin Association
FY 2023 Profit & Loss Budget Overview
Accrual Basis — **July 2022 through June 2023**

	Jul '22 - Jun 23	Budget	$ Over Budget
Ordinary Income/Expense			
Income			
Contracts and Grants			
USEPA NRS Workshops	0.00	60,000.00	-60,000.00
COE (UMRR)	0.00	85,716.00	-85,716.00
COE (RTC)	0.00	11,000.00	-11,000.00
EPA (OPA)	0.00	250,000.00	-250,000.00
Total Contracts and Grants	0.00	406,716.00	-406,716.00
State Dues			
Illinois Dues	0.00	63,500.00	-63,500.00
Iowa Dues	0.00	63,500.00	-63,500.00
Minnesota Dues	0.00	63,500.00	-63,500.00
Missouri Dues	0.00	63,500.00	-63,500.00
Wisconsin Dues	0.00	63,500.00	-63,500.00
WQ Assessment	0.00	102,500.00	-102,500.00
Total State Dues	0.00	420,000.00	-420,000.00
Interest Income			
Short Term Interest			
Short Term (Savings)	0.00	60.00	-60.00
Short Term (Sweep)	0.00	1.00	-1.00
Short Term (CD)	0.00	4,000.00	-4,000.00
Total Short Term Interest	0.00	4,061.00	-4,061.00
Total Interest Income	0.00	4,061.00	-4,061.00
Total Income	0.00	830,777.00	-830,777.00
Gross Profit	0.00	830,777.00	-830,777.00
Expense			
USEPA NRS Workshops			
Meeting Expenses	0.00	30,000.00	-30,000.00
Communications	0.00	8,000.00	-8,000.00
Supplies	0.00	1,200.00	-1,200.00
Travel Assistance	0.00	17,500.00	-17,500.00
Travel	0.00	2,000.00	-2,000.00
Total USEPA NRS Workshops	0.00	58,700.00	-58,700.00
Gross Payroll			
Salary	17,088.50	404,600.00	-387,511.50
UMRBA Time Wages	1.75	5,000.00	-4,998.25
OPA Wages	6,211.90	62,634.00	-56,422.10
Benefits	4,272.13	101,150.00	-96,877.87
Benefits UMRBA Time	0.00	500.00	-500.00
Benefits OPA	174.24	6,263.40	-6,089.16
Total Gross Payroll	27,748.52	580,147.40	-552,398.88
Payroll Expenses			
SocSec Company	1,720.41	35,969.14	-34,248.73
Medicare Company	727.84	8,412.14	-7,684.30
SUTA (Minnesota UC)	133.16	290.07	-156.91
Workforce Enhancement Fee	22.94	290.07	-267.13

Upper Mississippi River Basin Association
FY 2023 Profit & Loss Budget Overview
Accrual Basis — **July 2022 through June 2023**

	Jul '22 - Jun 23	Budget	$ Over Budget
Total Payroll Expenses	2,604.35	44,961.42	-42,357.07
Travel	1,619.60	25,000.00	-23,380.40
Space Rental			
Office Rental	0.00	53,000.00	-53,000.00
Total Space Rental	0.00	53,000.00	-53,000.00
Reproduction			
Copy Service	0.00	1,360.00	-1,360.00
Printing	0.00	500.00	-500.00
Total Reproduction	0.00	1,860.00	-1,860.00
Meeting Expenses	0.00	30,000.00	-30,000.00
Supplies	0.00	3,000.00	-3,000.00
Equipment			
Equipment (Maint./Rental)	0.00	1,600.00	-1,600.00
Total Equipment	0.00	1,600.00	-1,600.00
Legal and Financial			
Insurance	0.00	6,200.00	-6,200.00
Legal and Tax Services	0.00	13,000.00	-13,000.00
Bank Charges	0.00	10.00	-10.00
Total Legal and Financial	0.00	19,210.00	-19,210.00
Telephone/Communications	16.11	6,500.00	-6,483.89
Postage	0.00	1,200.00	-1,200.00
Other Services	0.00	5,000.00	-5,000.00
Publications	0.00	40,000.00	-40,000.00
State Travel Reimbursement			
Illinois	0.00	5,000.00	-5,000.00
Iowa	0.00	5,000.00	-5,000.00
Minnesota	0.00	5,000.00	-5,000.00
Missouri	0.00	5,000.00	-5,000.00
Wisconsin	0.00	5,000.00	-5,000.00
State WQ Travel	0.00	3,500.00	-3,500.00
Total State Travel Reimbursem...	0.00	28,500.00	-28,500.00
OPA Expenses			
Equipment OPA	0.00	1,000.00	-1,000.00
Equipment (Maint./Rental) O...	0.00	6,500.00	-6,500.00
Travel OPA	0.00	1,000.00	-1,000.00
Other OPA	0.00	800.00	-800.00
Total OPA Expenses	0.00	9,300.00	-9,300.00
Total Expense	31,988.58	907,978.82	-875,990.24
Net Ordinary Income	-31,988.58	-77,201.82	45,213.24
Net Income	**-31,988.58**	**-77,201.82**	**45,213.24**

Upper Mississippi River Basin Association
Balance Sheet
Accrual Basis — **As of June 30, 2022**

	Jun 30, 22	
ASSETS		
Current Assets		
Checking/Savings		
Checking HT 2732		110,211.31
Savings HT 2575		187,241.49
Investment		
CD	406,361.81	
Total Investment		406,361.81
Total Checking/Savings		703,814.61
Accounts Receivable		
Contract/grants		
Invoiced/Billable	138,122.82	
Total Contract/grants		138,122.82
Total Accounts Receivable		138,122.82
Other Current Assets		
Prepaid Expense		
Office Rental Prepaid Expense	3,868.01	
Total Prepaid Expense		3,868.01
Total Other Current Assets		3,868.01
Total Current Assets		845,805.44
Fixed Assets		
Accum. Deprec. UMRBA		-33,321.09
Accum. Deprec. OPA		-21,703.53
Accum. Deprec. WQ		-1,290.00
Accum. Deprec. 604(b)		-568.95
Accum. Deprec. STC		-2,989.68
UMRBA Equipment		33,455.89
OPA Equipment		21,705.26
WQ Equipment		1,290.47
604(b) Equipment		568.95
STC Equipment		2,989.68
Total Fixed Assets		137.00
TOTAL ASSETS		**845,942.44**
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities		
Credit Cards		
Visa Chase 5294		5,368.83
Total Credit Cards		5,368.83
Other Current Liabilities		
Deferred MO DoC (WLM) Revenue		4,206.05
Office Expense Liabilities		
Travel Expense	-1,619.60	
Total Office Expense Liabilities		-1,619.60
Payroll Liabilities		
Social Security		
SocSec Company	1,391.75	
Total Social Security		1,391.75
SUTA (Minnesota UC)		-479.62
Workforce Enhancement Fee		105.38
Accrued Payroll		22,447.72

Upper Mississippi River Basin Association
Balance Sheet
Accrual Basis — **As of June 30, 2022**

	Jun 30, 22
Accrued Vacation	54,764.70
Accrued Vacation FICA	4,189.50
Total Payroll Liabilities	82,419.43
Total Other Current Liabilities	85,005.88
Total Current Liabilities	90,374.71
Total Liabilities	90,374.71
Equity	
Retained Earnings	789,972.19
Net Income	-34,404.46
Total Equity	755,567.73
TOTAL LIABILITIES & EQUITY	**845,942.44**

ATTACHMENT C

Climate Initiatives in the Midwest

- **Midwest Climate Collaborative Overview** *(C-1 to C-2)*
- **USGS Midwest Climate Adaptation Science Center Background (7/22/2022)** *(C-3 to C-4)*

Midwest Climate Collaborative founding members

Academy of Science St. Louis SINCE 1856
City of Ann Arbor
American Lung Association. Clean Air Choice.
be building energy exchange Kansas City
be building energy exchange St. Louis
CAPITAL AREA rpc
Carleton
CITY OF CARMEL A PARTNERSHIP FOR TOMORROW INDIANA
CLIMATE ACTIONKC
CLIMATE CO CENTRAL
THE CITY OF COLUMBUS ANDREW J. GINTHER, MAYOR
DONALD DANFORTH PLANT SCIENCE CENTER
earth charter INDIANA
ENERGYCARE Saving Lives By Degrees
City of Evanston
INDIANA UNIVERSITY
IUPUI
CITY OF KANSAS CITY, MISSOURI
LOYOLA UNIVERSITY CHICAGO
Preparing people to lead extraordinary lives
MILLIPORE SIGMA
MISSOURI BOTANICAL GARDEN
MISSOURI HISTORICAL SOCIETY
MOST POLICY INITIATIVE
The National Great Rivers Research & Education Center
The Nature Conservancy
NORTHLAND COLLEGE
Northwestern University
THE OHIO STATE UNIVERSITY
Missouri Gateway CHAPTER
PRINCIPIA COLLEGE
SAINT LOUIS SCIENCE CENTER
Saint Louis Zoo Animals Always®
SOUTHERN ILLINOIS UNIVERSITY EDWARDSVILLE
St. Louis
THE UNIVERSITY OF CHICAGO
UNIVERSITY OF MICHIGAN
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
WISCONSIN UNIVERSITY OF WISCONSIN-MADISON
Washington University in St. Louis

MIDWEST CLIMATE COLLABORATIVE

VISION

The Midwest Climate Collaborative envisions a carbon neutral, climate resilient, interconnected Midwest region.

MISSION

To facilitate the development of a coherent Midwestern response to the climate crisis through acceleration of climate action, knowledge generation, and leader development led by a cross-sector collaboration of key organizations throughout the Midwest.

CONNECT

midwestclimatecollaborative.wustl.edu

midwestclimatecollaborative@wustl.edu

Join our Newsletter

MCC PROJECTS

Connecting, amplifying, building capacity

Midwest Climate Research Agenda
Bridging the gap between research & practice

Climate Asset Map
Leveraging successes and sharing resources

Educator Community of Practice
Connecting, sharing resources, and preparing future leaders

Tracking Climate Commitments
Supporting ambitious, science-informed mitigation and adaptation targets

Student Sustainability Conference
Bringing together undergraduate students across campuses to discuss and develop climate action

Climate Ambassadors
Connecting the scientific community to decision-makers and building capacity for greater engagement

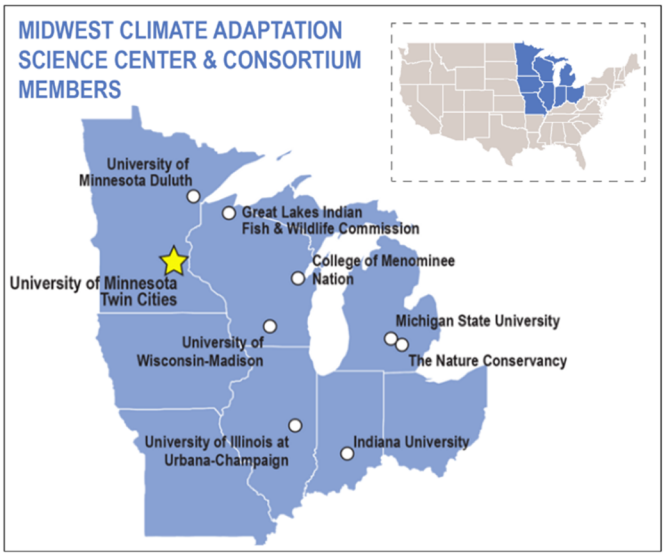
U.S. Geological Survey
Midwest Climate Adaptation Science Center (MW CASC)
Background
July 22, 2022

Mission: To deliver science to help wildlife, ecosystems, and people adapt to a changing climate.

Science Priorities: Informed by advisory committee and listening sessions with engaged resource managers, Midwest CASC research focuses on:

1. **Heavy precipitation events and drought** - Heavy precipitation events, flooding, and drought alter the condition, structure, services, and management of natural resources
2. **Loss of winter** - Warming winters, altered snow patterns, and increased variability affect fish and wildlife populations, habitat management, and nature-based recreation
3. **Altered hydrological regimes** - Changes in temperature, flows, and connectivity alter high-value fish populations, at-risk aquatic organisms, and culturally important resources
4. **Novel terrestrial landscapes** - Shifts in vegetation and human responses to climate change alter the suitability of the landscape for priority and at-risk wildlife populations
5. **Barriers to and opportunities for adaptation** - Climate change alters the feasibility of management goals and suitability of management tools

Consortium:



The Midwest CASC consortium includes five research universities (University of Minnesota Twin Cities, Indiana University, Michigan State University, University of Illinois at Urbana-Champaign, University of Minnesota Duluth, University of Wisconsin-Madison), including four Land Grant universities with Cooperative Extension programs; a nationally-recognized Tribal college (College of Menominee Nation); an Intertribal agency (Great Lakes Indian Fish and Wildlife Commission); and The Nature Conservancy–a non-profit leading climate adaptation in the region. The Midwest CASC provides funding annually for collaborative synthesis research, graduate fellowships, a summer undergraduate research program, and climate research projects.

Key Activities:

- **Funding Climate Impacts and Adaptation Research.** The MW CASC puts out a regular call for proposals to fund research on climate impacts and adaptation in the Midwest. This research seeks to: produce regional science products (such as data sets, reports, fact sheets) to help understand climate change effects, assess risk and vulnerability, fill information gaps, and integrate climate into planning and prioritization activities.
- **Synthesis Research Projects.** Synthesis projects summarize knowledge from scattered sources into formats useful for conservation and management, creating products such as review papers, guidebooks, and workshops. These efforts engage collaborative groups of consortium researchers and managers to fill high-priority information needs.
- **Community of Practice.** Synthesis projects often inspire corresponding communities of practice, where groups of like-minded researchers, managers, and/or conservation professionals share information on priority topics. These communities become important professional networks, spawn workshops and insights papers, and help expand the impact of CASC science.
- **Early Career Professional Development.** The MW CASC supports a variety of management-focused professional development opportunities to support a diverse next generation of climate science adaptation professionals. These includes funding for postdoctoral researchers, graduate fellowships, and a cohort-based Undergraduate Research Experience for students underrepresented in the sciences

- **Supporting Tribal Climate Adaptation Capacity.** The MW CASC works with consortium members and other federal partners to support Tribal climate adaptation efforts in the region. These activities include hosting a Bureau of Indian Affairs Tribal Climate Resilience Liaison, who connects Indigenous communities to relevant climate information and decision support tools, and intentional recruitment from Tribal colleges and universities for research fellowships.

Current MW CASC Funded projects:
17 current projects underway (more **here**):

- **6 Fisheries:** recruitment in Lake Michigan, growth and production for sustainable management, resilience of sport fish in lakes, thermal ecology and range decline, stocking supply/demand dynamics, restoration of native coregonines
- **5 Wildlife:** waterfowl habitats and distributions, butterfly declines, resiliency of winter-adapted species, moose management
- **1 Forestry:** climate informed restoration
- **2 Non-local beings:** Aquatic and woody non-local beings ("invasives")
- **3 Cultural/societal impacts:** HABs, tribal wild rice management, public perceptions and acceptance for adaptation

New MW CASC Funded Project in the Upper Mississippi River Watershed:
Workshop: Natural Solutions to ecological and economic problems caused by extreme precipitation events in the Upper Mississippi River Basin (Ryan Burner, U.S. Geological Survey)
Natural solutions to climate change, such as watershed forest restoration, are an increasingly important method for both ecosystems and people to adapt to the challenges posed by extreme rainfall events and flooding. To reduce climate risk, particularly in the vulnerable Mississippi River watershed, natural resource managers require up-to-date climate science, interdisciplinary dialogue, and new science-management collaborations to foster adaptation. In response, this project will host a workshop to share the latest understanding of extreme rainfall events, assess opportunities and barriers to the implementation of natural solutions, and award micro-grants to foster interdisciplinary collaborations to advance climate adaptation in the region.

Climate-driven connectivity between prairie-pothole and riparian wetlands in the Upper Mississippi River Watershed: Implications for wildlife habitat and water quality (Owen McKenna, U.S. Geological Survey)
Climate driven increases in magnitude and frequency of extreme precipitation events exacerbate the stress of changing agriculture production in the Upper Mississippi River Basin, impacting aquatic ecosystems and impairing water quality. These aquatic ecosystems include the prairie pothole wetlands that confer many benefits to ecosystems and people, including waterfowl habitat, flood management, and nutrient reduction. This project will assess changes in connectivity and how wetlands reduce nutrient inputs to local watersheds. The results will inform a decision support tool to inform multi-benefit protection and restoration of wetlands.

Characterizing climate-driven changes to hydrology and floodplain forests in the Upper Mississippi River to inform management (Molly Van Appledorn, U.S. Geological Survey)
Climate driven changes in hydrology and flooding threaten the health and functionality of floodplain forests of the Upper Mississippi River, which represent critical habitat to hundreds of species including birds, mammals, amphibians and reptiles. Future flooding could undermine conservation efforts by managers to maintain the health of these forests as widespread losses of these ecosystems are already underway. This project will integrate process-based modeling to better understand the impacts of changing frequency and magnitude of floods on forest structure and composition. The results will identify locations that are resilient to climate change to inform effective allocation of scarce management resources.

For more information, contact:
Olivia LeDee, Ph.D. Acting Director
USGS Midwest Climate Adaptation Science Center oledee@usgs.gov

ATTACHMENT D

Flood Vulnerability

- **National Flood Insurance Program Risk Rating 2.0**
  - **FEMA Press Release (4/1/2021)** *(D-1 to D-2)*
  - **ASFPM Interactive Maps of Insurance Premiums**
    - **Press Release (9/20/2021)** *(D-3 to D-6)*
    - **Link to Interactive Map:** http://no.floods.org/rr2changes

- **Iowa Agricultural Flood Vulnerability Press Release (4/5/2022)** *(D-7 to D-9)*

FEMA Updates Its Flood Insurance Rating Methodology to Deliver More Equitable Pricing

Release Date: April 1, 2021

WASHINGTON— FEMA is updating the National Flood Insurance Program's pricing methodology to communicate flood risk more clearly, so policyholders can make more informed decisions on the purchase of adequate insurance and on mitigation actions to protect against the perils of flooding.

The 21st century rating system, Risk Rating 2.0—Equity in Action, provides actuarially sound rates that are equitable and easy to understand. It transforms a pricing methodology that has not been updated in 50 years by leveraging improved technology and FEMA's enhanced understanding of flood risk.

"The new pricing methodology is the right thing to do. It mitigates risk, delivers equitable rates and advances the Agency's goal to reduce suffering after flooding disasters," said David Maurstad, senior executive of FEMA's National Flood Insurance Program. "Equity in Action is the generational change we need to spur action now in the face of changing climate conditions, build individual and community resilience, and deliver on the Biden Administration's priority of providing equitable programs for all."

The National Flood Insurance Program provides about $1.3 trillion in coverage for more than 5 million policyholders in 22,500 communities across the nation. Understanding the magnitude of even the smallest changes of a program of this scale, FEMA devoted thousands of hours to develop the new pricing methodology to ensure equity and accuracy.

In developing the new rates, FEMA coordinated with subject matter experts from the U.S. Army Corps of Engineers, U.S. Geological Survey and the National Oceanic and Atmospheric Administration along with experts from across the insurance industry and actuarial science to ensure alignment with federal regulations, systems, guidance and policies.

The new methodology allows FEMA to equitably distribute premiums across all policyholders based on the value of their home and the unique flood risk of their

FEMA

property. Currently, many policyholders with lower-value homes are paying more than they should and policyholders with higher-value homes are paying less than they should.

To provide more equity, FEMA now has the capability and tools to address rating disparities by incorporating more flood risk variables. These include flood frequency, multiple flood types—river overflow, storm surge, coastal erosion and heavy rainfall—distance to a water source and property characteristics such as elevation and the cost to rebuild.

The cost to rebuild is key to an equitable distribution of premiums across all policyholders because it is based on the value of their home and the unique flood risk of their property. This has been an industry standard for years.

FEMA is conscious of the far-reaching economic impacts COVID-19 has had on the nation and existing policyholders and is taking a phased approach to rolling out the new rates.

- **In Phase I**: New policies beginning Oct. 1, 2021 will be subject to the new rating methodology. Also beginning Oct. 1, existing policyholders eligible for renewal will be able to take advantage of immediate decreases in their premiums.
- **In Phase II**: All remaining policies renewing on or after April 1, 2022 will be subject to the new rating methodology.

FEMA continues to engage with Congress, its industry partners and state, local, tribal and territorial agencies to ensure clear understanding of these changes.

For the latest information on Risk Rating 2.0, visit fema.gov.

FEMA

(https://floodsciencecenter.org/)

New Interactive Maps Provide Visibility into Flood Insurance Premium Changes Coming with FEMA's Risk Rating 2.0

Press Release

Sept. 20, 2021

Get an accurate national and local snapshot of projected rate decreases and increases with interactive online tools

The Association of State Floodplain Managers (ASFPM), in collaboration with The Pew Charitable Trusts, today unveiled interactive maps that show where flood insurance rates are expected to decrease, increase, or remain the same — and by how much — under the Federal Emergency Management Agency's (FEMA) new pricing structure: Risk Rating 2.0: Equity in Action.

Starting October 1, Risk Rating 2.0 will fundamentally change the way FEMA rates a property's flood risk and prices insurance for the more than five million National Flood Insurance Program (NFIP) policyholders.

The new methodology incorporates more flood risk data variables to more accurately reflect a property's individual flood risk, including the frequency and types of flooding, such as river overflow, storm surge, coastal erosion, and heavy rainfall — and the distance to a water source along with property characteristics, such as elevation and the cost to rebuild. Including a property's replacement cost value in the new methodology was a major component in the delivery of equitable rates.

ASFPM developed the maps as a more user-friendly format for floodplain management professionals, practitioners, and local leaders to gain greater insight into the new rating system so they can better understand and communicate what's occurring in their communities.

"There is a fair amount of information available on Risk Rating 2.0 but getting that data out of spreadsheets is challenging. This new tool should help," said **Chad Berginnis, ASFPM's executive director**. "Floods are this nation's most frequent and costly natural disasters and the trends are worsening. It's important that people know their risk and buy flood insurance to help protect their homes and businesses. It's equally important that communities take steps to minimize flood risk."

ASFPM used datasets from **FEMA's NFIP policyholder information (https://www.fema.gov/flood-insurance/risk-rating)** to create the easy-to-use data visualization tool. The data are broken down across four categories — ranging from a decrease in premiums to an increase of $20/month or more. A color-coded scale indicates the percentage of policyholders in each category.

The state-level interactive map at **no.floods.org/rr2changes (http://no.floods.org/rr2changes)** breaks down projected premium changes for each state and territory. The interactive map also includes corresponding pie charts and data tables that provide policy and percentage change breakdowns.

For those who wish to take a deeper dive, there is also an interactive map by zip code for existing single-family home policies at **no.floods.org/rr2sfh (https://no.floods.org/RR2SFH)** and for all existing NFIP policies at **no.floods.org/rr2all (https://no.floods.org/RR2All)**.

The data compares a snapshot of policyholder premiums from May 31, 2020 with Risk Rating 2.0 premiums, applying statutory increase limits. The comparison does not attempt to estimate premium increases that might have occurred without the new Risk Rating 2.0 pricing methodology.

“These interactive maps will help local leaders and government officials understand how the new and more equitable flood insurance rates will be distributed,” said **Laura Lightbody, director of The Pew Charitable Trusts’ flood-prepared communities initiative**, which provided support for development of the maps. “In many cases, people have been overpaying for flood insurance; these maps show us that almost 1.2 million policyholders will see decreases very soon.”

This is the program’s first pricing update in more than 40 years.

“Under Risk Rating 2.0, FEMA is fixing longstanding inequities in the NFIP’s flood insurance pricing and establishing a system that is better equipped for the reality of frequent flooding caused by climate change,” said **David Maurstad, senior executive of the National Flood Insurance Program.** “Risk Rating 2.0 is not just a minor improvement, but a transformational leap forward that enables FEMA to set rates that are fairer and ensures rate increases and decreases are both equitable.”

According to FEMA, only 4% of policyholders nationwide are expected to see substantive increases. In a **national rate analysis (https://www.fema.gov/flood-insurance/risk-rating)** of current policyholders, FEMA has said 23% will see premium decreases; 66% will see, on average, premium increases of $0-$10/month (which is around what the average is now); 7% will see, on average, premium increases of $10-$20/month; and 4% will see, on average, premium increases of $20 or more per month.

Individual policyholders should contact their insurance agent for a personalized quote.

Background on Risk Rating 2.0

Risk Rating 2.0 will deliver rates that are actuarially sound, equitable, easier to understand, and better reflect an individual property's unique flood risk. By communicating flood risk more clearly, the new methodology should help policyholders make more informed decisions on the purchase of adequate insurance and on mitigation actions to protect against flooding.

FEMA is implementing the program in two phases:

- **Phase I –** New policies beginning Oct. 1, 2021 are subject to the new pricing methodology. Also beginning October 1, existing policyholders are able to take advantage of immediate decreases in their premiums when the policy renews.
- **Phase II –** Renewals of the remaining existing flood insurance policies will be written to the new plan starting April 1, 2022, allowing policyholders an additional six months to prepare for any adjustments.

About ASFPM

Founded in 1977, the Association of State Floodplain Managers (ASFPM) is a scientific and educational nonprofit organization dedicated to reducing flood loss in the nation. ASFPM and its 38 chapters represent approximately 20,000 state and local officials as well as other professionals engaged in all aspects of floodplain management and flood hazard mitigation, including management of local floodplain ordinances, flood risk mapping, engineering, planning, community development, hydrology, forecasting, emergency response, water resources development, and flood insurance. Visit us at **www.floods.org (https://www.floods.org/)**.

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UI researchers create map showing flood risk for Iowa farmland

Researchers at the University of Iowa have created the first set of maps examining the flood risk for all farmland in Iowa. Photo by Justin Torner.

BY: RICHARD C. LEWIS | 2022.04.05 | 11:55 AM

As farmers ready for planting season, a new study examines the flood risk for all cropland in Iowa.

The study from IIHR–Hydroscience and Engineering at the University of Iowa is the first to detail the flood risk to farmland statewide. The researchers used flood maps developed at the

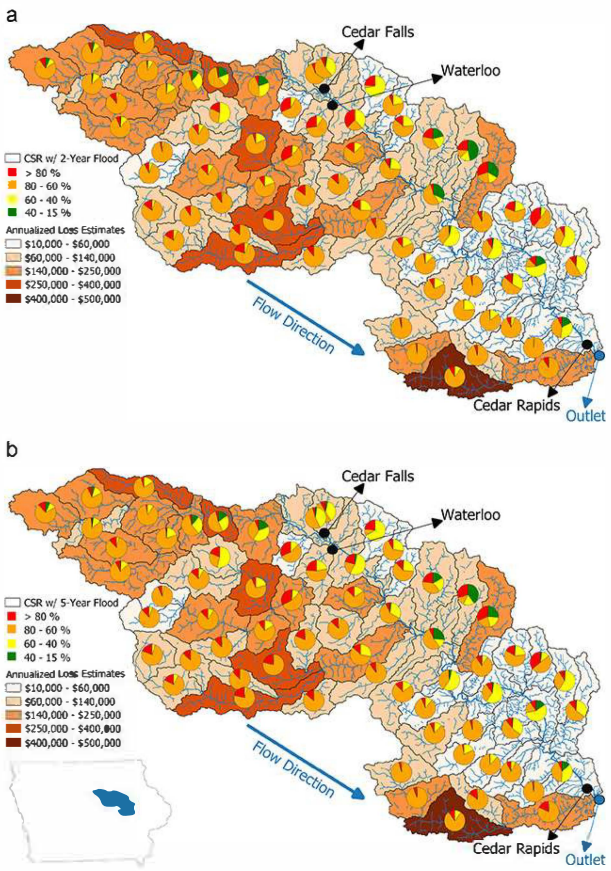
Iowa Flood Center, and incorporated data from the Federal Emergency Management Agency (FEMA) and the U.S. Department of Agriculture to create the crop flood-risk analysis.

Among the main findings:

- Nearly 450,000 acres of Iowa farmland are located in a two-year flood return period, meaning there's a 50% chance the land will flood in a given year. That's less than 2% of the total farmable land analyzed in the study.
- Iowa agriculture sees crop losses, on average, of $230 million a year due to farming that takes place in flood-prone areas.

The researchers also identified four watersheds as most vulnerable to flooding and crop losses: Middle Cedar in east-central Iowa, North Raccoon and South Skunk in central Iowa, and West Nishnabotna in southwest Iowa.

The new agricultural flood-risk maps developed by the IIHR researchers can be updated to reflect changes in climate; changes in land use, such as a shift in farming in a location; and changes to the landscape, such as the addition of a road or other infrastructure, to give a continuous picture of the flood potential for farmland across the state.



Researchers at the University of Iowa created comprehensive maps showing flood risk for farmland throughout Iowa. The map above shows the flood risk, crop yield, and annual average losses for farmland under two time intervals in the Middle Cedar watershed, which includes Cedar Falls/Waterloo and Cedar Rapids. (Click image to enlarge.)

"It's a comprehensive approach to help create solutions with information that helps farmers take a clear-eyed look at their land and for policymakers and others to use as a starting point to determine how Iowa's landscape can be best used to reduce flooding," says Enes Yildirim, graduate research assistant at IIHR and the study's corresponding author.

The researchers analyzed nearly 25 million acres of agricultural land in Iowa and farming operations from 2016 to 2020 to classify the flood risk according to eight scenarios: 2-

year, 5-year, 10-year, 25-year, 50-year, 100-year, 200-year, and 500-year return periods. Cropland located in a 2-year return period has a 50% chance of flooding in a given year; farmland in a 5-year return period has a 20% of flooding in a given year; while farmland in a 100-year return period has a 1% chance of flooding in a given year.

The researchers then incorporated flood maps from FEMA and the U.S. Army Corps of Engineers along with data from the USDA, including crop type, yields, costs and price, planting frequency, and a corn suitability rating, which indexes a farmland's productivity.

"We have taken all this information from federal agencies and have tailored it to create a more dynamic picture about the current agricultural flood risk in Iowa," says Ibrahim Demir, associate professor in civil and environmental engineering at Iowa and a study co-author.

Iowa has seen its fair share of flooding. Since 1953, 29 flood-related disaster declarations have been issued for the state, according to FEMA. Major, if not historic, flooding has occurred four times over the past decade and a half alone—in 2008, 2014, 2016, and 2019.

The new maps seek to address objectively the flood stress points, by showing farmland that is prone to chronic flooding and has low productivity yields compared to other areas.

"We highlight the $230 million in average annualized losses to show that there is farmland that is frequently exposed to floods and has a low corn suitability rating—why not consider changing its use?" Yildirim says. "That, of course, would require further conversations, but you have to look at the costs and benefits of continuing to farm that land."

Policymakers also can entertain what to do with farmland that is prone to regular flooding but is highly productive. That is especially true for cropland in the West Nishnabotna region in southwest Iowa, the researchers found.

"The West Nishnabotna is a region that has a high corn suitability rating but also is exposed to regular flooding," Yildirim says. "So, it might need extra protection from flooding to maintain food production, such as building a levee, for example."

The researchers found rotating crops had a negligible impact on flood losses.

The study, "Agricultural flood vulnerability assessment and risk quantification in Iowa," was published online Feb. 26 in the journal *Science of the Total Environment.*

The University of Iowa and the Iowa Water Center funded the research.

ATTACHMENT E

Lower Missouri River States Memorandum of Agreement (9/1/2020)

(E-1 to E-2)

Memorandum of Agreement

between

the State of Iowa, Kansas, Missouri, and Nebraska

Cooperation on Flood Recovery and Future Flood Control in the Lower Missouri River Basin

PURPOSE

This Memorandum of Agreement ("MOA") is entered into by and between the Governors of Iowa, Kansas, Missouri, and Nebraska (together, the "States") for the purpose of enhancing and promoting cooperation among the States to improve flood recovery and future flood control in the Lower Missouri River Basin. The Missouri River is a vital multi-purpose resource, and its surrounding lands provide some of the most fertile and productive farmland in the country. Many people rely on the effective and predictable operation of the Missouri River by the U.S. Army Corps of Engineers ("USACE") for protection of their lives, homes, livestock, crops, and futures. This MOA is intended to formalize the resolve of the States to cooperate in addressing these issues of common concern. The States also intend this MOA to serve as a reassertion of state leadership in guiding the federal government's management of the Missouri River, particularly by the USACE.

RESOLUTION

WHEREAS, the Governors of the States have pledged their support to cooperate on solutions to protect the Missouri River as a vital multi-purpose resource while protecting people and communities; and

WHEREAS, the relevant agencies of the States have additionally pledged their cooperation and support in fulfilling the purpose of this agreement; and

WHEREAS, the States have mutual concerns and responsibility to their citizens concerning the effective operation of the Missouri River system;

NOW, THEREFORE, the Governors of Iowa, Kansas, Missouri, and Nebraska do hereby agree jointly and cooperatively to direct their respective agencies, the Iowa Department of Natural Resources, the Kansas Water Office, the Missouri Department of Natural Resources, and the Nebraska Department of Natural Resources to:

1) Identify areas of joint study to improve flood recovery and flood control to mitigate impacts of future weather-related events;

2) Share information about actions taken by each state and their respective agencies, and coordinate actions to mitigate potential negative systemic impacts;

3) Advocate collectively for state leadership in guiding the federal government's management of the river;

4) Develop flood infrastructure and conveyance opportunities in a coordinated manner to ensure the most effective systemic outcome;

5) Meet regularly to share information, coordinate activities, and review progress. Meetings may occur in person or by teleconference, as may be most appropriate for the agencies; and

6) Report biennially to the Governors of the States on the status of this agreement, beginning with the first such report by December 31, 2019.

THE PARTIES FURTHER AGREE THAT:

1) This MOA shall become effective on the date of the final signature set forth below and shall continue in effect unless modified by mutual written consent of all parties or termination by one party upon a ninety-day written notice to the other parties;

2) Nothing in this MOA shall be construed as restricting or limiting in any way state sovereignty or the statutory authority or jurisdiction of any party or any agency from the States assisting with these efforts; and

3) Amendments to this MOA may be proposed by any party and shall become effective upon the written consent of all parties.

IN WITNESS WHEREOF, the Governors of the State of Iowa, the State of Kansas, the State of Missouri, and the State of Nebraska have hereunto set their hands.

Kim Reynolds, Governor
State of Iowa

Laura Kelly, Governor
State of Kansas

Michael Parson, Governor
State of Missouri

Pete Ricketts, Governor
State of Nebraska

ATTACHMENT F

UMRBA Interstate Water Quality (CWA) Monitoring Program Reaches 8-9 Pilot

- **Excerpts from Evaluation Report** *(F-1 to F-4)*
- **Excerpts from Condition Assessment** *(F-5 to F-6)*

Challenges, Solutions, and Recommendations

Database Management

Google Drive and ArcGIS online maps were utilized by the planning committee members. However, agency restrictions on folder sharing prevented some members from being able to use Google Drive. Common accessibility among implementing agencies to database platforms will likely always be a challenge.
The initial protocol was for field sampling staff to enter data monthly to ensure quality control and data assuredness. A significant amount of work was put into building the ability to copy-and-paste data into the Microsoft Access database for routine data entry by all participating individuals. However, the feature was not routinely utilized. Instead, Iowa DNR staff collected the data in partial year batches for storage and compiled all the data from each partnering agency at the end of the project in Microsoft Excel. In retrospect, the best approach would have been to manipulate the Access database after all data had been analyzed so the equivalent water quality parameters would be merged into a normalized format. The Access database would then serve only for data manipulation and calculation of indices of biotic integrity (IBIs).

Long term storage of data in Access is not recommended. Database management, in general, was significantly more time consuming than anticipated. It is recommended that future monitoring efforts submit data to well-established and maintained databases – e.g., WQX for long term storage. The database developed in this project would be best used as model for temporary storage and manipulation of future monitoring (i.e., how to store/manipulate varied water quality parameter types from different agencies for summaries/analysis and calculations of IBIs).

Laboratory Analyses

The Reaches 0-3 pilot committee suggested that future monitoring efforts utilize one laboratory for analyses to avoid challenges with inter-laboratory variability. While multiple laboratories were utilized in the Reaches 8-9 pilot, generally a single laboratory processed samples for a particular component. For example, Rhithron and Associates provided macroinvertebrate identification, Pace Analytical analyzed fish tissue samples, and USEPA Region 5 analyzed the PFAS samples. There were three state laboratories involved in analyses: Iowa DNR (cyanobacteria toxins), Missouri DNR (water chemistry), and Illinois EPA (water chemistry). There were some cases in which the same parameters were analyzed by two laboratories. Illinois EPA's routine fixed site monitoring locations were the same sites utilized for fixed monitoring during the pilot. During December, March, June, and September, Illinois EPA's quarterly sampling was conducted both for its ambient WQ monitoring program and the Reaches 8-9 pilot.

The Quality Assurance/Quality Control process was an extensive effort by the planning committee. For parameters analyzed by two different laboratories, the committee spent considerable time determining the best approaches for resolving differences in detections and non-detections from different laboratories as well as from the same laboratory (e.g., chlorophyll). Because laboratory variation could not be overcome, only samples processed within one laboratory were used in the Reaches 8-9 Pilot Condition Assessment.

In general, a significant portion of the pilot cost was spent on ensuring proper shipment of the samples for consistent laboratory analysis. Problems occurred with samples being lost by FedEx or not arriving at the proper temperature, either because of delays in shipment or because of errors in packaging samples. The technique for packing samples was refined to ensure that samples were not flagged for temperatures. Laboratory coordination and logistics were a larger time commitment than was anticipated. Laboratory staff provided sampling crews with pre-labelled bottles and chain-of-custody forms in monthly sampling kits. Those pre-planning efforts were significant but increased the efficiency of collecting sample in the field.

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Field Sampling

The Field Operations Manual served as a sampling plan but did not go into depth about sampling techniques. The Reaches 8-9 planning committee developed its own field standard operating procedures with guidance provided by the agency analyzing the particular sample. In September 2021, a field training was held for all sampling crews. This helped orient field staff on the samples being collected. A recommendation is to provide formalized coordinated training to ensure consistency in field sampling techniques.

The planning committee aligned sampling among all field crews to occur within the same week to increase efficiency of laboratory analyses.

Drinking Water Use Assessment

Sampling, as part of the drinking water use assessment, relied on the voluntary participation of public water supplies (PWS). Three PWS participated in the pilot from December 2019 through March 2020. While the Reaches 8-9 planning committee provided information well in advance of the start of pilot implementation, there were challenges with collecting samples properly. Samples were collected and sent to Iowa DNR (cyanobacteria toxins), USEPA Region 5 (PFAS), and Missouri DNR (remaining water chemistry). The logistics alone were confusing for PWS without the ability to train in person. Additionally, PFAS is particularly challenging to sample because it is very easy to cross-contaminate samples. When the COVID pandemic began, the Reaches 8-9 pilot was paused and, after it restarted, two of the three PWS were unable to participate due to staffing challenges. The planning committee adapted by combining the drinking water use assessment with fixed site sampling. In other words, field staff added drinking water sampling to the fixed site sampling. However, this meant that samples were not obtained at the PWS intake, and data were not collected on raw and finished samples.

Future efforts with PWS should include increased resources for sampling – e.g., sampling videos and in-person training. However, it is important to keep in mind that there are a wide variety of staffing capacity and fiscal resources among PWS on the UMR. Voluntary participation may make it challenging to retain participation.

IBIs

The results of the Wisconsin Large River IBI utilized for the Reaches 8-9 pilot warrant further investigation. The IBI was selected for use in CWA Reaches 0-11 as part of the dual-assemblage aquatic life use assessment. The results for Reaches 1-3 and 8-9 were grouped around the threshold of 50. Given the vast longitudinal differences in the reaches, the IBI may not be sensitive enough to detect changes in macroinvertebrate communities.

Overall Recommendations

UMRBA's Role

UMRBA provided project coordination of the Reaches 8-9 pilot. This involved coordinating logistics, contractual arrangements, reporting, and other activities. UMRBA staff convened monthly meetings of the Reaches 8-9 planning committee to organize implementation, including assigning roles and responsibilities, and identify and resolve implementation issues.

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Laboratory Analyses

The use of 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.

Shipping Samples

The cost to ship samples was significant for the Reaches 8-9 pilot (approximately $19,000). The use of one laboratory to analyze samples will result in high shipping costs. The planning committee recommends negotiating shipping rates to reduce costs.

Permanent Data Management System

Iowa DNR staff built and maintained a Microsoft Access database to house Reaches 0-3 and 8-9 pilot data. Database development took a significant amount of time (approximately three-fold higher than budgeted). The planning committee recommends housing UMR Interstate WQ Monitoring Plan data in an existing database that is routinely maintained and is publicly accessible.

Emerging Contaminants

The Reaches 8-9 pilot benefited from partnering with USEPA Region 5 to analyze PFAS samples. The planning committee and the UMRBA WQTF are interested in scoping an emerging contaminants monitoring plan for the UMR in 2022-2023.

Contractors and State Agency Capacity

The Reaches 8-9 pilot relied on contractors to carry out certain aspects of the work. For example, Missouri DNR contracted with Missouri DOC to conduct all field sampling for Reach 9. A contractor provided writing services for the Reaches 8-9 Pilot Condition Assessment. State agencies have varying abilities to participate in the pilot, and full-scale monitoring will require all five UMRBA member states secure additional personnel to provide the necessary capacity.

Public Water Supply Participation and Engagement

Half of the PWS in Reaches 8-9 participated in the drinking water use assessment prior to the COVID pandemic, and only one PWS was able to participate afterward. There were challenges associated with training PWS operators, ensuring correct sampling protocols, and maintaining participation. The COVID 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 capacities (e.g., personnel and budget) of the PWS along the UMR should be considered and factored into requests to participate in sampling.

Compatibility with Other Monitoring Programs

The Reaches 8-9 planning committee modified fish sampling transects to incorporate the Upper Mississippi River Restoration program's 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 transects to the same electrofishing distance as the original design provided a reliable IBI.

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The UMR Interstate Water Quality Monitoring Plan was designed using the USEPA's Environmental Monitoring and Assessment Great Rivers Ecosystem (EMAP-GRE) program. However, the planning committee recommends that further consideration be given to utilizing existing monitoring programs on the river, such as the Upper Mississippi River Restoration's LTRM methods, to leverage the data and methods.

Climate Change and River Conditions

The Reaches 0-3 pilot sampling occurred 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, over time, provide water quality assessments over a range of discharge conditions and increase confidence in the results.

Next Steps

Resolve Outstanding Questions

Before implementing the full scale UMR Interstate WQ Monitoring Plan there are a few outstanding questions that would need to be addressed. Total suspended solid (TSS) thresholds are utilized as a supplementary indicator of the aquatic life use assessment. The TSS thresholds in the Provisional Assessment were developed for stretches of the UMR above L&D 13 (UMRBA, 2017; Giblin, 2017). The UMRBA WQTF is in the early stages of considering TSS thresholds that are applicable to the southern impounded area of the UMR and plans to develop research questions.

The WQTF has debated adopting UMRR LTRM design as part of the UMR Interstate WQ Monitoring Plan. The discussion has raised several questions that warrant additional explanation, including:

- Can the LTRM design meet CWA needs?
- Does the Great Rivers Fish IBI meet CWA needs for sections of the river to which it is applicable? Does each method provide the sensitivity to IBI condition gradients?

The Open River IBIs for both macroinvertebrates and fish have not yet been tested. Both IBIs were developed for the Missouri River Basin. While the Missouri River and Open River (i.e., the unlocked portion of the river) have some similarities, it may be appropriate to test the IBIs before moving to full scale monitoring.

Revision of UMR Interstate WQ Monitoring Plan Documents

The UMR Interstate WQ Monitoring Plan should be revised to incorporate the insights gained from the two pilot projects. There are aspects of the Monitoring Plan that both pilot projects did not implement (e.g., follow-up sampling) that may suggest their removal from the overall monitoring design. The Provisional Assessment should be revised, and the Field Operations Manual would benefit from routine updates.

Scaling Up and Funding

The Reaches 0-3 and 8-9 pilots recommended full scale implementation of the UMR Interstate Water Quality Monitoring Plan. The UMRBA WQTF will continue to work with the Water Quality Executive Committee and the UMRBA Board to prepare for implementation and to secure the necessary resources.

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Discussion and Summary

As shown in Table 20, the condition assessments of the beneficial uses designated for assessment Reaches 8 and 9 of the Upper Mississippi River were generally assessed as "poor" or "fair." Only the aquatic life condition in Reach 9 was assessed as "good."

Table 20. Summary of the reach-level condition assessments for Reaches 8 and 9 based on chemical, physical and biological monitoring conducted in 2020 and 2021. NA = Not Applicable.

Beneficial Use	Reach 8 Condition Assessment	Reach 8 Issues:	Reach 9 Condition Assessment	Reach 9 Issues:
Aquatic Life	Poor	Poor biotic integrity of macroinvertebrate community	Good	*NA*
Recreation	Poor	Chlorophyll	Poor	*E. coli* and chlorophyll
Drinking Water	Poor	Cyanotoxins (microcystin)	Poor	Cyanotoxins (microcystin)
Fish Consumption	Fair	Levels of mercury in Largemouth Bass	Fair	One meal / month consumption advisory

Results of biological sampling conducted in summer 2021 at the 15 probabilistic sites in each assessment reach suggest that the biotic integrity of fish communities in both Reaches 8 and 9, as measured by the Great River Fish Index (Angradi et al. 2009a), are good, with all index values being above the assessment threshold (Figure 3, left). The biotic integrity of the UMR's aquatic macroinvertebrate communities in both reaches, however, as measured by the Wisconsin Big River index (Weigel and Dimick 2011), was lower than that of the fish community, with WBR index values in both reaches clustered around the assessment threshold (Figure 3, right). Less than 50% (38%) of the WBR index values for Reach 8 macroinvertebrate communities passed the assessment threshold, thus indicating a "poor" condition class for aquatic life uses. In Reach 9, 76% of the 15 WBR index values passed the assessment threshold, thus indicating an aquatic life condition class of "good."

The compressed timeframe of the pilot project (that is, from one to two years of fixed site monitoring versus the five years recommended in UMRBA's Provisional Assessment Methodology (UMRBA 2017) may have influenced the condition assessment of recreation uses. The high levels of chlorophyll monitored in summer 2021 at fixed sites in Reaches 8 and 9 led to the "poor" condition class assessment. Most of the chlorophyll data for the condition assessment of recreation uses came from the warm and dry summer of 2021 with the result that levels of algal populations—and thus levels of chlorophyll—were relatively high. Having additional chlorophyll data from years with more typical discharge regimes and levels inorganic turbidity would likely result in lower levels of chlorophyll and an improved condition assessment for recreation uses. In general, levels of indicator bacteria (*E. coli*) were low during the recreation season of 2021 with average and maximum levels of *E. coli* below their respective assessment thresholds (Figure 5). Levels of *E. coli* at the Quincy, IL, monitoring site, however, were elevated in summer 2021 such that both average and maximum levels exceeded assessment thresholds resulting in a "poor" reach-level condition assessment for Reach 9 recreation uses. Given full implementation of the UMR Interstate Water Quality Monitoring Plan, which would provide *E. coli* data from additional years of

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fixed site monitoring, the overall average levels and the percentages of samples exceeding the threshold for maximum levels could be lower and might show and improved condition class for recreation uses. The condition assessments of drinking water uses in both Reaches 8 and 9 were assessed as "poor," due to the levels of the cyanotoxin microcystin. However, the cyanotoxin thresholds used in this assessment (Appendix 7), which are intended to be applied to finished (treated) drinking water, were applied to raw (untreated) water. Due to the reduction in cyanotoxin levels during the water treatment process, the levels of microcystin seen in Reaches 8 and 9, although they do exceed the assessment thresholds, do not appear to constitute a threat to public health.

Levels of the other 63 drinking water contaminants monitored in both assessment reaches were below assessment thresholds. Only three of the 21 pesticides analyzed for the pilot project (atrazine, carbofuran, and hexachlorobenzene) were reported above analytical levels of detection, and none of the detected levels of those three pesticides approached their respective maximum contaminant level thresholds. None of the 23 volatile organic compounds analyzed were reported above analytical detection levels (see Appendix 9). Although frequently detected, levels of all 12 toxic metals were below assessment thresholds. Levels of nitrate were all less than one-half of the MCL of 10 mg/l. Again, the compressed timeframe of the pilot project may have influenced the condition assessments of drinking water uses.

The reach-level fish consumption condition class in both Reaches 8 and 9 was assessed as "fair." Average and maximum levels of PCBs in Common Carp were below the fair threshold in both reaches. Average levels of mercury in Reach 8, however, were at or slightly above the "fair" threshold of 0.2 mg/kg, thus suggesting a "fair" condition class assessment for fish consumption use. In Reach 9, levels of mercury were below the "fair" threshold. According to the UMRBA Provisional Assessment Methodology, however, the one meal/month consumption advisory issued by the Missouri Department of Health Senior Services (DHSS) for Missouri's entire portion of the Upper Mississippi River (Missouri DHSS 2022) suggests that the Reach 9 fish consumption uses should be assessed as "fair."

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ATTACHMENT G

Navigation and Ecosystem Sustainability Program Projects (7/14/2022)

(G-1)

US Army Corps of Engineers®

NAVIGATION AND ECOSYSTEM SUSTAINABILITY PROGRAM (NESP)

ST. PAUL DISTRICT- ROCK ISLAND DISTRICT - ST. LOUIS DISTRICT

NAVIGATION AND ECOSYSTEMS PROJECTS

The Navigation and Ecosystem Sustainability Program (NESP) is a long-term, dual-purpose program that integrates navigation improvements and ecosystem restoration together to provide Upper Mississippi River System once in a generation-type positive impacts.

The primary goals of the program are to increase the capacity and improve the reliability of the inland navigation system while restoring, protecting, and enhancing the environment.

This map shows both projects that are actively being implemented and future ecosystem projects that have been approved. NESP includes an additional 5 - 1200' locks, systemic mitigation, and hundreds of ecosystem restoration projects.

ACTIVE IMPLEMENTATION

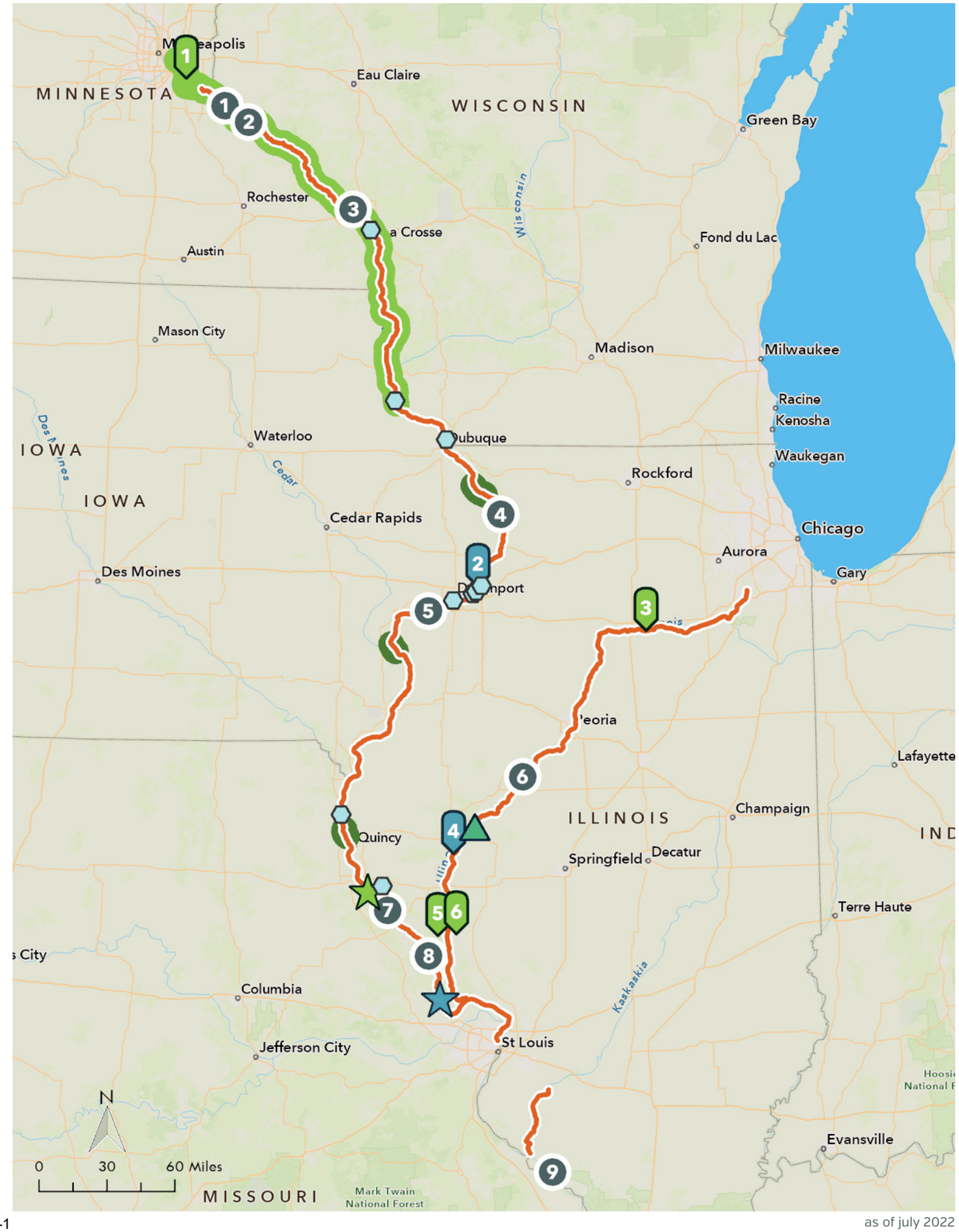
- Lock 25 New 1200' Lock
- Lock and Dam 22 Fish Passage Improvement Project
- 1 Pool 2 Wingdam Notching
- 2 Lock 14 Mooring Cell
- 3 Starved Rock Breakwater
- 4 Moore's Towhead System Mitigation
- 5 Twin Island - Island Protection and Enhancement
- 6 Alton Pools Islands - Island Protection and Side Channel Restoration

ECOSYSTEM PROJECTS - APPROVED

- WLM - Reduce Water Level Fluctuations
- Systemic Forest Restoration
- Multi-Pool Forest Restoration
- 1 North Sturgeon Lake
- 2 Wacouta Bay
- 3 Johnson Island
- 4 Sabula Lakes
- 5 Andalusia Island Complex
- 6 Liverpool Flowing Side Channel
- 7 Pool 24 Island Restoration - Denmark and Drift Islands Complex
- 8 Pool 25 Side Channels - Clarksville/Carroll Island Complex, Haugens Island/ Lower Pool 25 Complex
- 9 Middle Mississippi River Stone Dike Alterations Phase 1

NAVIGATION PROJECTS

- Mooring Facilities
- LaGrange New 1200' Lock Design
- Systemic Mitigation - throughout the Upper Mississippi River Basin



PARTNERS

USGS science for a changing world · UMRBA Upper Mississippi River Basin Association · U.S. Fish & Wildlife Service · Minnesota DNR · Missouri Department of Natural Resources · Wisconsin Dept. of Natural Resources · Illinois DNR · Illinois Department of Natural Resources

as of july 2022

ATTACHMENT H

Navigation Report

- **USACE Upper Mississippi River System Sediment Budget Proposal (6/2022)** *(H-1 to H-6)*

- **Waterborne Competitiveness (5/2022)**
  - **Link to Full Report:** https://www.nationalwaterwaysfoundation.org/foundation-studies/view-all-studies/profile/waterborne-competitiveness-u-s-and-foreign-investments-in-inland-waterways
  - **Excerpts of Executive Summary and Conclusions** *(H-7 to H-12)*
  - **Press Release** *(H-13 to H-14)*

Request for Proposals (RFP) for FY23
National Regional Sediment Management (RSM) Program

District/ERDC/IWR: Rock Island District
Initiative Title: How to Develop a Large River Sediment Budget Blueprint through Leveraging of Multi-Agency Partnerships
Is this resubmittal of a FY22 Stage 2 Proposal? Yes____ No_X___
Geographic Coordinates of Initiative Location: -90.563833, 41.516522 (coordinates are for MVR District Office, project spans multiple regions)
District POC: Nicole Manasco, CEMVR-EC-HQ, Supervisory Hydrologist
MSC RSM POC: Jodi Kormanik-Sonterre, CEMVD, Senior Hydraulic Engineers
Technical POC: Matt Zager – CEMVR-EC-HH, Supervisory Hydraulic Engineer
Financial POC: Gina Nugent – CEMVR-EC, Program Analyst

Bottom Line Up Front (BLUF): The Upper Mississippi River System (UMRS) is composed of five states: Minnesota, Wisconsin, Iowa, Illinois, and Missouri. It is both a significant ecosystem and commercial navigation system, with over 1,000 navigable river miles. The system is highly dynamic and continues to change. This proposal is an essential component to complete supporting tasks and develop a blueprint for a UMRS sediment budget, which is critical for in pursuing and implementing more efficient sediment management and beneficial use strategies.

1) Background: The St. Paul, Rock Island, and St. Louis Districts are responsible for providing a safe and reliable navigation channel on the UMRS. Congress recognizes UMRS as a nationally significant ecosystem and nationally significant commercial navigation system. The UMRS is a highly dynamic and altered system which poses various management challenges. Conversion of prairies, wetlands, and forests to agricultural land, has caused significant hydraulic changes (Kelley et al. 2021). According to Belmont et al. (2011), "the dominant source of sediment has shifted from agricultural soil erosion to accelerated erosion of stream banks and bluffs, driven by increased river discharge." Changes in flood magnitude, frequency, timing and duration have likely resulted in changes to sediment deposition and erosion dynamics (Belby et al, 2019).

The most recent sediment budget for the UMR reach of the UMRS was completed as part of the Cumulative Effects Study (CES) using data from the mid-1990's and earlier (WEST, 2000). Updates to the sediment budget for the Illinois River (IWW) reach have been published as recently as 2016 (Demissie, 2016), incorporating data through 2015. Updating these efforts is a substantial undertaking and requires methods research, an inventory of data and identification of data gaps, and consideration of leveraging opportunities to develop a scope for such an effort. This proposal seeks to complete these supporting tasks while engaging the multiagency partnership to develop a blueprint for a sediment budget, thus providing a foundational step to better understanding the fate and transport of sediment within the UMRS.

Integrating resiliency in the channel maintenance and ecosystem restoration programs require an understanding of the sources and processes that drive the fate and transport of sediment at both local and regional scales. In addition, WRDA 2020, Section 125 (c) requires Dredged Material Management Plans to include a "dredged material budget for each watershed or littoral system within the district." A systemic sediment budget provides a tool for effectively communicating the significance, or rather the insignificance, of in-water dredged material placement to stakeholders, likely improving regulatory approval of in-system placement of channel maintenance dredged material.

Numerous developments to both qualitatively and quantitatively describe these processes, sources, and sinks, at varying spatial scales have been made since the publication of the CES, warranting a reassessment of methods and available data and technologies to support an updated sediment budget for the UMRS (Schwarz et al. 2006, Fitzpatrick 2018, Rogalla et al. 2020a & b, Groten et al, 2019, Dean et al. 2022).

A recommendation for developing a system-wide conceptual model of hydrogeomorphic change has been recently addressed by Fitzpatrick (2018), however many of the tasks to support investigations of sediment transport and deposition made as part of the CES and by Gaugush et al. (2002) have not been implemented. For example, CES recommendations to evaluate suspended load and bedload contributions from gaged and ungauged tributaries; contributions from bank erosion; and changes in trapping efficiency of reservoirs will be addressed as part of this effort. The work proposed herein would produce a coordinated plan to apply existing data and strategically prioritize future work in the interest of developing a systemic sediment budget.

2) Regional Framework:
Laying out a blueprint for a sediment budget of this regional scale will provide the context necessary to understand the role different Dredge Material Management Program actions play in the overall sediment transport regime and identifying opportunities for beneficial use. The proposal will support implementation across St. Paul, Rock Island, and St. Louis Districts.

In addition to providing significant value to the Upper Mississippi River System, this effort will improve our understanding of sediment arriving to the Lower Mississippi River and MR&T program. Coordination among the three Districts facilitates compatible data collection efforts to support sediment budget work downstream (MR&T).

3) Leveraging Opportunities:
This effort will leverage a recently developed process-based hierarchical hydrogeomorphic classification system that is now being applied to map geomorphic change within the UMRS (Fitzpatrick 2018). Estimates of suspended sediment tributary loading to the UMRS from a regional USGS SPARROW model (Schwarz et al. 2006) overlain with maps of hydrogeomorphic setting will provide a broader context to inform fate and transport of these sources. Recent techniques such as the use of acoustic Doppler profilers (ADP) on the Lower Minnesota, Mississippi and Chippewa Rivers to measure suspended sediment concentration (SSC) will be considered in terms of strategic implementation (Groten et al. 2019 & Dean et al. 2022). Findings from a 20-yr backwater sedimentation rate will be considered when estimating backwater storage rates (Rogala et al 2018).

For FY22 and 23 this effort has received funding commitments from the National Ecosystem and Sustainability Program (NESP) and the Upper Mississippi River Restoration Program (UMRR) to support six team-member's attendance at the Workshop (Task 3). Tasks 1 and 2 will likely be completed through these programs prior to RSM receiving FY23 funds.

4) Potential Value Added:
In terms of the navigation mission, this project provides value in two significant ways. Upon completion of the sediment budget, DMMP team will be better able to describe the significance and impacts of placing material back into the system within a context of the overall sediment budget. This will likely lead to increased approval of thalweg and bankline placements sites over upland sites, extending the longevity of existing upland sites and reducing the number of new sites built. Upland sites can cost $2-5M and dredging costs/cubic yard increase about 20% when placing upland vs. in-water. In addition to the reduction in dredging costs, a detailed understanding and prioritization of data needs for the Sediment Budget will lead to data collection that can also be utilized to improve local channel maintenance decisions.

Beyond the navigation mission, a multi-agency coordinated effort will reduce data-collection and modeling redundancies providing potentially significant cost-savings to numerous programs, agencies, and the nation.

5) Stakeholder Participation:
RSM provides a unique opportunity to bring a variety of interested stakeholder and sediment experts into collaboration to plan a nationally significant effort. Multiple agencies (USACE, USGS, and state partners), funded through numerous authorities and programs, will take part in the proposed data acquisition and synthesis. Anticipated workshop representation will include multiple USGS and USFWS offices, Minnesota Department of Natural Resources (DNR), WI DNR, IA DNR, IL DNR, MODC, IL State Water Survey (ILSWS), University of Illinois, University of Iowa, Iowa State University, and University of Wisconsin, and others.

6) Accomplishments to Date: N/A
This is a new proposal. Efforts to begin this work are starting in FY22 under the NESP program. This proposal will build upon existing frameworks, models, and data generated through the existing partnerships as previously described.

7) Sediment Moved *through RSM*:
The average annual dredge quantity for the upper three Districts dredged an estimated 3.8 mcy per year from the UMR navigation channel. The proposal is essential to address challenges and hurdles for increased beneficial use applications in the URMS. Past RSM efforts were leveraged to construct the Pool 11, "Bathtub". Approximately 109,000 CY were used for construction of the site and mitigation area and 200,000 CY of future dredged material capacity. This material placed at the Bathtub site will contribution to future ecosystem restoration projects and other beneficial uses. Development of similar projects are necessary to support both the navigation and restoration missions and result in more sediment moved through the RSM framework.

8) Proposed FY23 Tasks:

Task 1: Sediment Budget Methods Research
Description: RSM team members will conduct a literature review of methods and technologies used to support the development of a large river sediment budget. This effort will detail the methods and assumptions used for recent efforts including CES UMR sediment budget, the ILSWS Illinois River sediment budget, and the attempted Lower Mississippi River sediment budget efforts, clearly identify any recommendations for future work and data collection needs. RSM team members will engage regional and national experts on the topic to ensure completeness of the effort. Research will consider methods with successful application to large river systems and those conducted on smaller basins and their potential for scaling up, as well as recent techniques such as the use of acoustic Doppler profilers (ADP) to measure suspended sediment concentration (SSC) (These results will be documented in a literature review that will be provided to workshop participants (Task 3).

Benefits: Primarily, through review of historic and recent efforts, data requirements, methodologies, and lessons learned can be incorporated into subsequent study tasks. Secondarily, by conducting the research USACE engineers deepen their understanding of current methodologies and have a chance to consider new techniques and explore new ideas. Finally, the written literature review will provide a concise reference document for the RSM program, ensuring easy knowledge transfer to others.

Cost: $0 to RSM (NESP will be providing ~$20k for this effort)

Products: Literature Review (white paper)

Task 2: Data Inventory
Description: RSM team members will conduct a data inventory of USACE, USGS, USFWS, state and other available data sets. Publications and reports synthesizing data collection results will be included in this inventory. The inventory will be highly attributed to include at least: data type, data owner/location, gage name if available, geographic location, geographic extent, spacing (if applicable) collection period, collection frequency and collection method. This data can be published to ArcGIS online to make it available for other District, Federal Agencies, and or the public, as is appropriate for the given data sets.

Benefits: A synthesized and attributed data inventory will help to identify data-gaps and necessary data-collection efforts to be coordinated during the workshop and detailed in the blueprint. In addition, this process will likely lead to discovery of previously lost/unknown datasets useful for other navigation, FRM, and ecosystem projects. Finally, a GIS published data inventory will greatly increase efficiencies for multiple agencies, programs, and users to find data, reducing the costs of independent searches for data sets or the creation of duplicate data collection efforts. The framework of the data inventory could also be used to capture attribution of future efforts providing benefits far into the future.

Cost: $0 to RSM (NESP will be providing ~$30k for this effort)

Products: White paper and geospatially referenced database of existing data.

Task 3: Stakeholder and Technical Expert Workshop-Identify Data Needs
Description: Regional and technical experts will convene for a 1–2-day workshop to discuss results of the literature review (Task 1) and data inventory (Task 2) to identify and prioritize data collection needs and draft a multi-agency blueprint to complete a UMRS sediment budget.

Workshop Goals
Draft literature review feedback
Identify spatial extent and period of interest for a sediment budget
Identify and prioritize data collection needs
Identify leveraging opportunities
Draft sediment budget blueprint

Benefits: This workshop will lay the groundwork for producing a systemic sediment budget blueprint (Task 4). Another workshop outcome will be the documentation of process for tech transfer to other large river efforts.

Cost: $75,000

Products: White paper to include inputs and outcomes of the workshop; list of agency programs and authorities that can contribute to and benefit from a systemic sediment budget; list of appropriate capabilities by agency and office; workshop process and lessons learned for others attempting similar efforts.

Task 4: Sediment Budget Blueprint
Description: Workshop white paper will be used as a basis to develop a blueprint for a sediment budget with recommendations for prioritized data collection and identified contributing partners. This blueprint will identify the preferred sediment budget methodology; identify data needs and responsible agencies and programs that can collect that data; provide a schedule and assignments for data collection; provide a schedule and assignments for completing the sediment budget, possibly through incremental efforts. An ideal outcome would be an MOA among agencies.

Benefits: The development of a coordinated plan among partners, to apply existing data and strategically prioritize future work in the interest of generating a sediment budget for the UMRS.

Cost: $30,000

Products: Scope

Task 5: Monthly RSM meetings, IPR Attendance and Presentation
Description: Two team members will attend monthly RSM meetings and will attend and present at the In-Progress Review Session (costs is based on in-person attendance)
Benefits: Team building, knowledge sharing, and technical transfer.
Cost: $15,000
Products: Participation and information sharing

9) Deliverables:

	Date
Sediment Budget Methods Research Literature Review	1/31/23
Data Inventory White Paper	1/31/23
Sediment Budget Multi-Agency Workshop	3/31/23
Attendance at IPR	8/31/23
Sediment Budget Blueprint	9/31/23

10) Budget and Schedule:

FY23 Budget Schedule:

Task	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Task Total
1													**$0**
2													**$0**
3					**$10k**	**$60k**	**$5k**						**$75k**
4								**$10**	**$10**	**$10k**			**$30k**
5			**$1k**								**$13k**	**$1k**	**$15k**
Monthly Total			**$1k**		**$10k**	**$60k**	**$5k**	**$10k**	**$10k**	**$10k**	**$13k**	**$1k**	
												Total	**$120k**

PROPOSED FY23 FUNDING (dollar amounts):

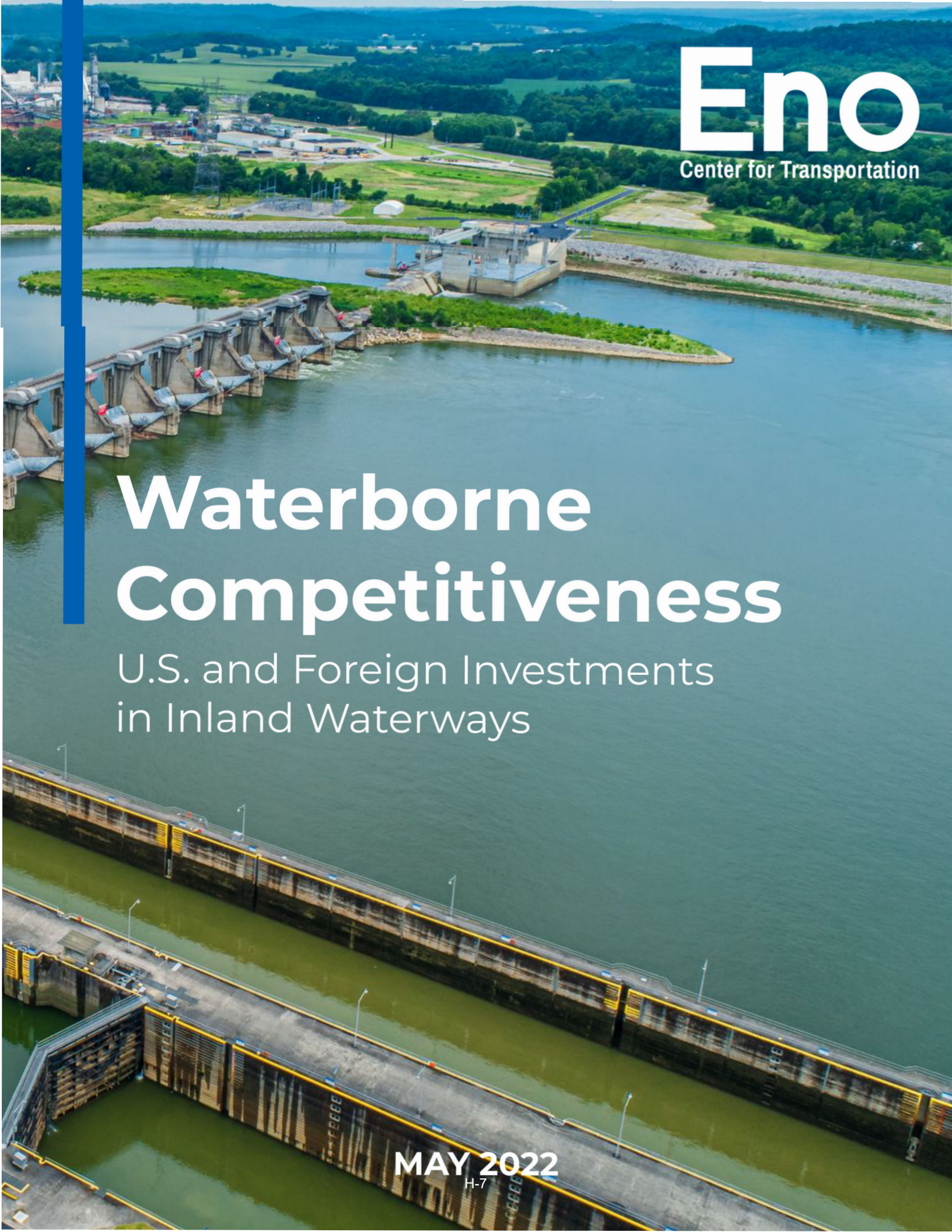
INHOUSE (MVR)	$60,000
Other USACE (MVP/MVS)	$60,000
CONTRACTUAL	$0
Other	$0
TOTAL	$120,000

11) RSM Team:

- Eddie Brauer, Hydraulic Engineer, MVD RTS River Engineering, CEMVS-EC-HD
- Michael Dougherty, Geographer, CEMVR-EGES
- Faith Fitzpatrick Research Hydrologist -Hydrogeomorphology, USGS-UMECS
- Jon Hendrickson, Hydraulic Engineer, MVD RTS Ecosystem Hydraulics and Water Quality, CEMVP-ECH-E
- Laura Keefer, Hydrologist, Illinois State Water Survey
- Timothy Lauth, Hydraulic Engineer, CEMVS-EC-H
- Jessica LeRoy, Hydrologist USGS-CMWSC
- Nicole Manasco, Supervisory Hydrologist, CEMVR-EC-HQ
- Sarah Schmuecker, Illinois-Iowa Field Office, USFWS
- Jayme Strange, Biologist-GIS Lab Manager, USGS-UMESC
- Molly Van Appledorn, Ecologist, USGS-UMESC
- Kirsten Wallace – Upper Mississippi River Basin Association
- Matt Zager, Supervisory Hydraulic Engineer, CEMVR-EC-HH

12) References:

Due to length requirements of submittal, a 2-page reference document is available upon request.



Eno
Center for Transportation

Waterborne Competitiveness

U.S. and Foreign Investments in Inland Waterways

MAY 2022

Executive Summary

The inland waterways network in the United States is a vital trade corridor serving energy, agriculture, and other freight shipments internally and for export. Major global events like the war in Ukraine and the resulting supply chain disruptions illustrate the importance of the system and create an urgent need for efficient movement of goods. While infrastructure investments in recent years have significantly improved the system, this report shows how competition from other global waterways could limit this success if quality maintenance and operations are not continued.

Several rivers and canals make up the 12,000-mile U.S. inland waterway network. These include the infrastructure that enables commercial navigation on the Mississippi River, the Ohio River, the Gulf Coast Intracoastal Waterway, and others. The network moves over 500 million tons of freight annually, constituting mostly bulk goods, and is a low-cost route for exporters. Inland waterway systems frequently carry goods that are too large for trucks or rail cars, such as windmill blades, booster rockets, and oversize machinery. The inland waterways are also strategically important for the military, moving vehicles and components for shipbuilding.

However there are two main threats to these strategic trade and military advantages. First, underinvestment in the system's infrastructure, maintenance, and operations has degraded the service levels on the rivers, making it less reliable and less competitive. Investments from the federal government over the past decade have made substantial progress in increasing reliability and clearing the maintenance backlog; but continued prioritization of projects that support efficient operations will be necessary to increase shipper confidence.

The second threat is external. While the United States has been upgrading domestic inland waterway infrastructure, other countries have been doing the same for their own military and commercial advantage. Investments in economic development and infrastructure have boosted traffic on rivers like the Amazon and Yangtze. Some of this investment comes from state-owned enterprises in countries like China, which could put American exporters at a competitive disadvantage.

To inform discussions about investments and the future of the U.S. inland waterway network, this research examines six cases of major freight rivers around the world, evaluating their governance, freight flows, investment levels, and role in the global supply chain.

In South America, the Amazon River is naturally navigable and although comparably little freight is moved on the river, freight volumes are growing rapidly as Brazil

develops its agriculture economy. Domestic and foreign companies are investing in port facilities to leverage the river's use as an export corridor. The Paraná and Paraguay river system provides access for shippers in Brazil, Paraguay, Bolivia, and Argentina. Unlike the Amazon, it already traverses through urban areas and farming areas, but waterway governance and management lack coordination between the countries. Relatively small investments could greatly increase its utility and use, but there are no current initiatives to make this happen.

The Rhine and Danube rivers in Europe are both heavily used for internal and export freight. Along with the member states, the European Union boosted investment in infrastructure and operations; and has strategically planned the Rhine to accommodate significant container-on-barge shipments. Moving high value goods requires high system reliability and coordination with landside infrastructure, and helps alleviate demand on congested parallel roadways and railways.

In Southeast Asia, China developed the Yangtze River into the world's busiest freight waterway, connecting industrial and farming hubs in the country's interior to the seaports in Shanghai. While the Chinese government manages investments on the waterways, local jurisdictions invest in port infrastructure, in some cases leading to overdevelopment. As the central government improves connections between these facilities and land-based modes of transportation, the river could see even more growth in traffic. The Mekong River has significant investments in hydroelectric dams, but relatively few investments in navigation. While the Mekong is used for exports in Cambodia and Vietnam, most dams are not navigable and, in some cases, threaten navigation by disrupting natural water flow.

These examples provide important lessons for policymakers and shippers in the United States. The United States benefits from having the inland waterways system contained within its borders and governance centralized with the federal government. The United States should use the advantage to build on the momentum of recent developments and investments to create more strategic, multimodal freight planning with inland waterways as a key part of that strategy. That investment, coupled with improved operational practices and a sound asset management plan, will be a significant boon to existing users and attract new shippers.

At the same time. the United States needs to carefully watch the development of other nations' freight waterway corridors with an eye toward economic competitiveness and national security. While freight traffic is relatively low on the Amazon and Paraná-Paraguay rivers, future development represents a significant threat to the cost-competitiveness of American exporters. State-owned Chinese companies are investing in facilities along river systems, but environmental backlash and lack of coordination

can limit growth. China's investments in intermodal facilities on the Yangtze could further enhance its use, particularly connecting to other Chinese cities and to railways that lead to Europe. China's involvement in the Mekong does not appear to prioritize freight shipments, but has clear geopolitical implications. Europe's already-developed systems are not a threat, but can be a model for prioritizing reliability and connectedness on the rivers.

If global investment in waterways-based trade outpaces similar investments in the United States it could have negative implications for economic competitiveness. To the extent that underinvestment in our waterway system makes it more vulnerable to disruption and less reliable in the service of commercial, governmental and military users, there could also be negative implications for national security. Ensuring sustained and smart investment in its inland wateray network is an important part of fulfilling the United States' multimodal transportation objectives.

5.0 Conclusions for U.S. Competitiveness

While the social, political, and economic forces at play in the other regions constitute a unique set of circumstances, there are valuable findings about practices in other regions that will inform U.S. policymakers, managers of the infrastructure, and the users of the system.

First, the United States benefits from having the inland waterways system contained within its borders and governance centralized with the federal government. Collaboration and coordination between countries that share a river system can be complex and challenging. Europe's rivers are well maintained and highly used despite disaggregated governance through leadership at the EU level. The USACE, in collaboration with Congress, manages the waterways and prioritizes investments. Leveraging the centralized governance to improve the inland system is much easier than coordinating across countries.

Second, the United States can benefit from more strategic, multimodal freight planning with inland waterways as a key part of that strategy. Europe's ability to move significant high-value cargo on the Rhine River is the result of a targeted policy strategy where that was the end goal. The region coordinated investments to improve operational reliability and connections to other modes, and the traffic followed. While it might not make economic rationale for significant container-on-barge operations in the United States or expanded subsidies to support it, such outcomes will not materialize unless there is an intentional, coordinated, and fully executed strategy.

Third, the United States needs to carefully watch the development of other nations' freight waterway corridors, particularly China, with an eye toward economic competitiveness and national security. While freight traffic is relatively low, possible development on the Amazon and Paraná-Paraguay rivers represent significant threats to the cost-competitiveness of American exporters. State-owned Chinese companies are investing in facilities along those rivers, but environmental backlash and lack of coordination can limit growth. China's investments in intermodal facilities on the Yangtze could further enhance its use, particularly connecting to other Chinese cities and to railways that lead to Europe. China's involvement in the Mekong does not appear to prioritize freight shipments, but has clear geopolitical implications. Europe's already-developed systems are not a threat, but can be a model for prioritizing reliability and connectiveness on the rivers.

Finally, the increased investment levels of the IIJA offer an opportunity to greatly enhance the reliability and usefulness of the inland waterway system. Now is the time to clear the backlog of projects that are desperately needed to bring some facilities into modern practice. That investment, coupled with improved operational practices and a sound asset management plan, will be a significant boon to existing users. Building on recent efforts to make the system more reliable and dependable for shippers, coupled with inland waterways being a key part of a national freight strategy, further private sector investment and traffic will follow. Strategic investment in domestic waterways will go a long way to securing low-cost options for American exporters and shippers.

NEWS RELEASE

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May 24, 2022

NEW STUDY EXAMINES COMPETITIVENESS OF U.S. INLAND WATERWAYS COMPARED TO WATERWAYS IN ASIA, SOUTH AMERICA, EUROPE

Provides conclusions for competitiveness, and national and economic security in the world market

Washington, DC -- The National Waterways Foundation (NWF) has commissioned a study, released today, titled ***Waterborne Competitiveness: U.S. and Foreign Investments in Inland Waterways***, conducted by the Eno Center for Transportation in Washington, DC.

The study focuses on the current state of the U.S. inland waterways system and compares it to others from around the world, using case studies of river systems from Europe (Rhine River, Danube River), Asia (Yangtze River, Mekong River), and South America (Amazon River, Paraná-Paraguay Rivers) to compare investment levels, commodity flows, governance, and investment priorities. The case studies also reveal the effects of foreign direct investments on internal and external good movement, including the role of investment in other uses such as damming for hydroelectric power, have on the capacity to move goods to global markets.

The study concludes that the ability for the United States to maintain a position of strength depends on a regular assessment of infrastructure needs and multimodal development strategies. Two factors in particular -- the aging infrastructure and competition from other countries' inland waterway networks -- pose a risk to the economic and national security advantage long enjoyed by shippers and the broader U.S. economy.

The case studies of six global rivers represent a unique set of political, economic, geographic, and social circumstances. Important lessons emerge about governance, investment priorities, and environmental pressures that offer lessons for U.S. inland waterways investment and multimodal freight policymaking.

The study concludes:

- The United States benefits from its inland waterways system contained within its borders and governance centralized with the federal government. Collaboration and coordination between countries that share a river system can be complex and challenging. Specifically, Europe's rivers are well maintained and highly used despite disaggregated governance due to leadership at the European Union (EU) level. The U.S. Army Corps of Engineers, in

collaboration with Congress, manages the U.S. waterways and prioritizes investments, which is much more efficient than coordinating across countries.

- The United States must watch the development of other nations' freight waterway corridors with an eye toward economic competitiveness and national security. While freight traffic is currently relatively low, continued development on the Amazon and Paraná-Paraguay rivers represents significant threats to the cost-competitiveness of American exporters. State-owned Chinese companies are investing in facilities along those rivers, but environmental backlash and lack of coordination can limit growth. China's investments in intermodal facilities on the Yangtze could further enhance its use, particularly connecting to other Chinese cities and to railways that lead to Europe. China's involvement in the Mekong does not appear to prioritize freight shipments but has clear geopolitical implications. Europe's already-developed systems are not a threat but can be a model for prioritizing reliability and connectivity on the rivers.

- The U.S. can benefit from more strategic, multimodal planning. Europe's ability to move significant high-value cargo on the Rhine River is the result of a targeted policy strategy and regionally coordinated investments to improve operational reliability and connections to other modes. Outcomes like this require an intentional, coordinated, and fully executed strategy to encourage the private sector to invest where it makes economic sense.

- Increased investment levels from the Infrastructure Investment & Jobs Act (IIJA) offer an opportunity to greatly enhance the reliability and usefulness of the U.S. inland waterways system. Clearing the backlog of U.S. projects is needed to bring some facilities into more modern practice. That investment, coupled with building on recent improvements to operational and maintenance practices, will be a significant boon to existing U.S. users.

"Low cost transportation on America's inland waterway system often provides the advantage that allows American farmers and manufacturers successfully compete in the world market. We must be alert to the investments being made in the waterways of other nations that can erode our advantage and, where necessary, invest to increase the efficiency of our system to stay ahead," said Matt Woodruff, Chairman of the National Waterways Foundation. "Eno's study thoroughly examines the state of other countries' inland waterways and provides some lessons learned for the United States. It also underscores that economic competitiveness is closely tied to national security, and U.S. domestic waterways network investment is vitally strategic," he continued. "It is concerning to note that China invests not only in its own waterways system but is making significant investments in waterways infrastructure in other countries with whom we compete."

"Examining other countries reveals the significant advantages that the U.S. inland waterway system brings to exporters, the military, and the broader economy," said Paul Lewis, Policy Director at the Eno Center for Transportation. "But it also highlights how important it is to monitor foreign investments in global rivers and sustain best practices for investment and operations to ensure that the U.S. system remains competitive."

The mission of the National Waterways Foundation is to develop the intellectual and factual arguments for an efficient, well-funded and secure inland waterways system. Visit www.nationalwaterwaysfoundation.org

Eno's vision is for a transportation system that fosters economic vitality, advances social equity, and improves the quality of life for all. Eno shapes public debate on critical multimodal transportation issues and builds an innovative network of transportation professionals. Visit www.enotrans.org

ATTACHMENT I

Invasive Carp/Copi

- **Illinois DNR Choose Copi Initiative**
  - **Press Release (6/22/2022)** *(I-1 to I-4)*
  - **Link to Choose Copi Website:** https://choosecopi.com/

- **USACE Brandon Road Interagency Project Newsletter (4-2022)** *(I-5 to I-6)*
  [Note: A new Brandon Road newsletter is scheduled for publication on August 3. This agenda packet may be updated with that newest version if available prior to printing.]

Illinois Department of
Natural Resources
One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov
JB Pritzker, Governor
Colleen Callahan, Director

FOR IMMEDIATE RELEASE
Wednesday, June 22, 2022

Contact
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Choose Copi: Eat Well and Do Good

State of Illinois renames and rebrands Asian carp

SPRINGFIELD – Following more than two years of consumer research and planning, the State of Illinois today unveiled "Copi," the new name for Asian carp. (Download videos, graphics, logos and photos for media)

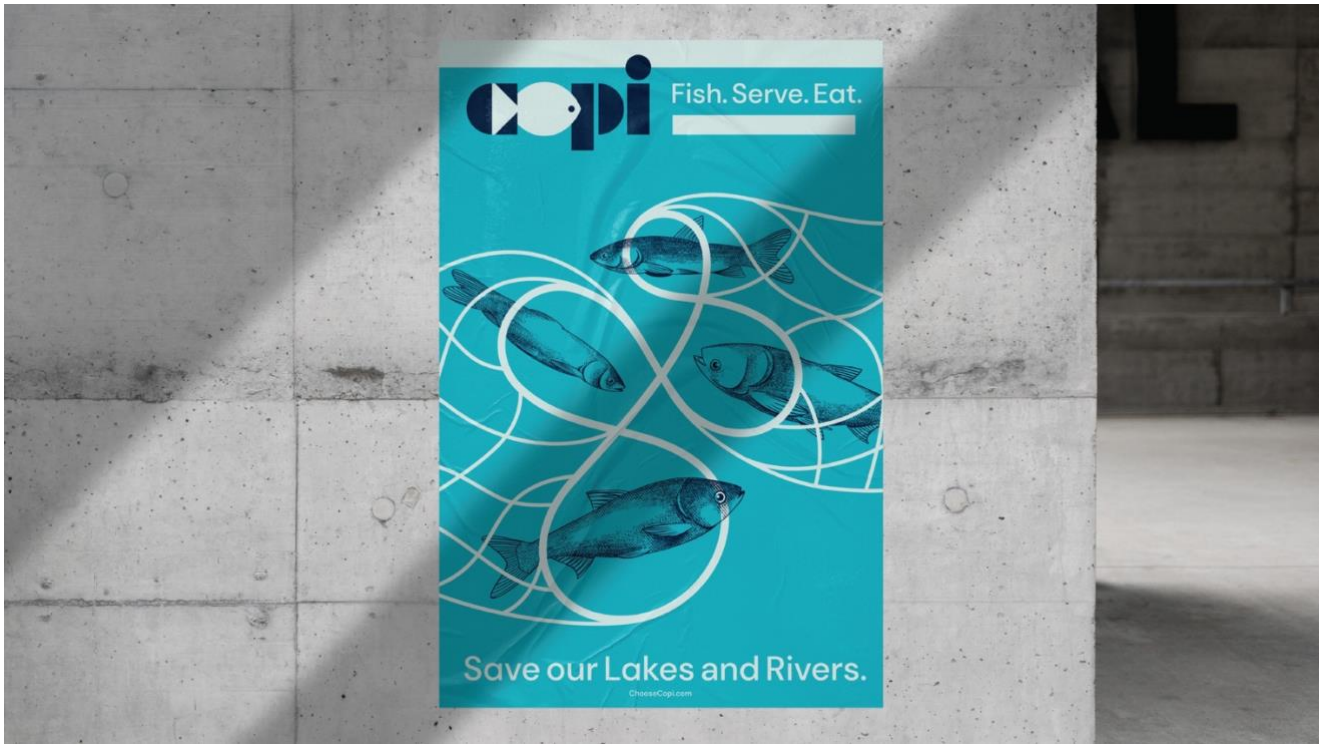
Copi is a freshwater, top-feeding, wild-caught fish that is mild with a clean, light taste.

The new name and brand are designed to address public misconceptions about this delicious top-feeding fish, which is overrunning Midwest waterways.

Copi (choosecopi.com) are mild, clean-tasting fish with heart-healthy omega-3s and very low levels of mercury. Increased consumption will help to stop them from decimating other fish populations in the Great Lakes and restore an ecological balance to waterways down stream.

"Enjoying Copi in a restaurant or at home is one of the easiest things people can do to help protect our waterways and Lake Michigan," said **John Goss, former White House invasive carp adviser**. "As home to the largest continuous link between Lake Michigan and the Copi-filled Mississippi River system, Illinois has a unique responsibility in the battle to keep invasive carp out of the Great Lakes. I'm proud of Illinois, its partners and other states for rising to this challenge."

The new name is a play on "copious" – as that's exactly what these fish are. By one estimate, 20 million to 50 million pounds of Copi could be harvested from the Illinois River alone each year, with hundreds of millions more in waterways from the Midwest to the Gulf Coast.



Save our Lakes and Rivers poster

Changing a fish's name has been a tried-and-true strategy for other fish. Orange roughy was originally known as slimehead; Chilean sea bass was known as Patagonian toothfish (it's not even a bass); and peekytoe crab was once known as mud crab. This strategy has been used for more than fish: exporters introduced Chinese gooseberries as "kiwi," for instance.

"Copi is a great name: Short, crisp and easy to say. What diner won't be intrigued when they read Copi tacos or Copi burgers on a menu?" said **Illinois Department of Natural Resources Director Colleen Callahan**. "It's a tasty fish that's easy to work with in the kitchen and it plates beautifully. Every time we've offered samples during the Illinois State Fair, people have walked away floored by how delicious it is."

As part of today's launch, 21 chefs and retailers have committed to putting Copi on their menus or in their stores, and 14 processors, manufacturers and distributors are making Copi products available.

"Copi is more savory than tilapia, cleaner tasting than catfish, and firmer than cod," said "Chopped" **champion and chef Brian Jupiter**, who revealed the new name and will serve Copi at his Ina Mae Tavern in Chicago. "It's the perfect canvas for creativity – pan fried, steamed, broiled, baked, roasted or grilled. Copi can be ground for burgers, fish cakes, dumplings and tacos."

A list of recommended recipes using Copi can be viewed at ChooseCopi.com.

Copi Po' Boy prepared by chef Brian Jupiter

Consumers can purchase Copi at the following locations:

- Ina Mae Tavern in Chicago: Copi po'boy.
- Dirk's Fish & Gourmet Shop in Chicago: Copi Cuban sliders and Copi bolognese.
- Gaijin in Chicago: Smoked Copi dish.
- Herb in Chicago: Copi appetizer.
- Calumet Fisheries in Chicago: Smoked Copi for carryout.
- Kelleher's Irish Pub in Peoria, Ill.: Copi slider.
- Carter's Fish Market in Springfield, Ill.: Deep-fried Copi.
- Cash Saver in Camden, Tenn.: Copi strips.
- Tabard Inn in Washington, D.C.: Copi Dim Sum.
- Cristaudo's in Carbondale, Ill.
- Sushi Grove in Buffalo Grove, Ill.: Copi sushi.
- A. Fusion in Matteson, Ill.: Variety of Copi dishes.
- Lakeway IGA in Paris, Tenn.: Copi strips.
- Schafer Fisheries Market in Fulton, Ill.: Variety of Copi items.
- Watson Lake Inn in Prescott, Ariz.: Custom prepared Copi dishes.
- Kubo Sushi and Sake Lounge in Elgin, Ill.: Copi sushi.
- The Meat Shoppe in Union City, Tenn.: Copi strips.
- The Norwegian in Rockford, Ill.
- Max's Deli in Highland Park, Ill.: Smoked Copi.
- Trolinger's in Paris, Tenn.
- Mole Village Restaurant in Chicago: Copi tacos.

Chefs and grocers can purchase Copi from the following processors, manufacturers and distributors:

- Kencor Ethnic Foods in Canton, Ill. (processor, manufacturer of Copi bouillon)
- River Sun Group in Chicago (processor, manufacturer of Copi cakes)
- Schafer Fisheries in Thomson, Ill. (processor)
- Third Generation SFD in Bronx, N.Y. (distributor, Fulton Fish Market)
- Seafood Merchants in Vernon Hills, Ill. (distributor for Illinois, Wisconsin)
- Sorce Freshwater/Midwest Fish Co-Op in East Peoria, Ill. (processor)

- Supreme Lobster in Villa Park, Ill. (distributor for Illinois, Indiana, Nevada, Michigan, Ohio, Wisconsin; possible air shipment nationally)
- Susie Q Fish Company in Two Rivers, Wis. (processor and retail)
- Two Rivers Fisheries in Wyckliffe, Ky. (processor)
- Chippin in Silver Springs, Md. (distributor)
- North American Caviar in Paris, Tenn. (processor)
- Fortune Fish & Gourmet in Bensenville, Ill. (distributor for, Illinois, Wisconsin, Missouri, Iowa, Indiana, Kansas, Michigan, Minnesota, Alabama, Florida, Mississippi, Arkansas, Nebraska, Louisiana and Texas)
- Gordon Food Service in Grand Rapids, Mich. (distributor, nationwide)
- Freshwater Fish Products in Bradford, Ark. (processor)

Illinois officials will apply to formally change the name with the U.S. Food and Drug Administration by the end of the year.

"Among the requirements to win federal approval for a name change is widespread use of the name, which is another reason why today's event is so important," said **Kevin Irons, the assistant fisheries chief for the Illinois Department of Natural Resources**, who specializes in invasive species. "So there is one thing that everyone can do to help save the Great Lakes: Call the fish Copi."

When sold in grocery stores, the packaging will describe the fish as carp and Copi until federal regulators approve the name change. The state also has applied to register the trademark so that industry groups will be able to develop standards and ensure quality control.

Copi were originally imported from Southeast Asia to the United States to help keep clean fish farm retention ponds in Southern states. But flooding and accidental releases in the 1970s allowed them to escape, multiply and migrate up the Mississippi River system.

Ever since, a collaboration of local, state, and federal government entities have worked to prevent the invasive species from entering Lake Michigan, which would threaten a $7 billion-a-year commercial fishing industry and a $16 billion-a-year tourism industry in the Great Lakes.

A recording of today's announcement will be posted at ChooseCopi.com later today.

US Army Corps of Engineers
Rock Island District

BRANDON ROAD INTERBASIN PROJECT

April 2022

QUARTERLY UPDATE

The PROJECT

The Brandon Road Interbasin Project is a complex ecosystem protection effort designed to prevent upstream movement of invasive carp and other aquatic nuisance species into the Great Lakes from the Illinois Waterway.

Brandon Road Lock and Dam near Joliet, Illinois, has been identified as the critical pinch point where layered technologies will be used to prevent movement of invasive carp populations into the Great Lakes.

The PLAN

The recommended plan involves a layered system of structural and non-structural control measures.

Structural measures could include technologies such as a flushing lock, an engineered channel with electric deterrent, underwater acoustic deterrent, and air bubble curtain.

Non-structural measures, implemented in conjunction with other federal agencies, could include public education and outreach, monitoring, integrated pest management, manual or mechanical removal, and research and development.

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In this issue

Project Status Update

Over the past three months, exciting progress has been made on the preconstruction engineering and design of the Brandon Road Interbasin Project. In mid-January, the U.S. Army Corps of Engineers, Rock Island District, received big news that new start construction funding for the Brandon Road Interbasin Project, in the amount of $226 million, was being allocated as part of the Infrastructure Investment and Jobs Act. This critical funding will allow for completion of the preconstruction engineering and design phase and construction of Increment I of the project, which includes site preparation, rock excavation, installation of an air bubble deterrent and narrow acoustic deterrent array as well as construction of a control building and upstream boat launch. Following the funding announcement, Senators Dick Durbin and Tammy Duckworth made a visit to the Brandon Road Lock and Dam to get an update on the project and see firsthand where features would be constructed.

Collaborative efforts including a value-based design charette and a navigation workshop were also held in the second quarter of fiscal year 2022. Discussion during the design charette focused on support buildings, equipment, site operations, utilities, and future considerations. At the navigation workshop, the team shared their finalized Engineering and Evaluation Report (EER), which used information and proposals gathered during multiple design charrettes, ongoing modeling and analysis, navigation workshops, and design team meetings, to evaluate the use of different layouts for the engineered channel. Based on the information gathered during this process, the team has narrowed the layout options and modeling and testing will be used to analyze their impacts and effectiveness through the remainder of this year.

At the USACE Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi, testing continues with the large-scale flushing lock and engineered channel models and fish monitoring and data collection is ongoing at Lock 19 in Keokuk, Iowa, where the U.S. Geological Survey and ERDC installed a test underwater acoustic deterrent last year. The information collected during the vital stage of preconstruction engineering and design is crucial to developing effective elements that will prevent invasive carp movement.

Personnel from Kaskaskia Engineering Group perform a field gradation test on material obtained from test pits during Phase I of the field exploration which included limited site preparation and geophysical testing. Test pits on the peninsula were performed to investigate the composition of the materials that make up the spoil piles which were placed during construction of the original navigation channel. Data gathered from the geophysical testing will be used to evaluate electrical resistivity of the subsurface.

Developing the Gauntlet

Although the preconstruction engineering and design phase has primarily focused on structural elements at Brandon Road Lock, it is important to point out that the recommended plan for the Brandon Road Interbasin Project includes a layered system of structural and non-structural control measures.

The Federal Risk Management Plan as laid out in the Chief's Report includes a 'Population Reduction Zone' below Brandon Road Lock and monitoring, management and control zones above Brandon Road Lock. The Monitoring and Response Work Group (MRWG), which is an interagency group of fisheries biologists and scientists, manages these zones and implements response actions when changes in the Invasive Carp populations are detected. The Brandon Road Report recognizes the importance of continuing these efforts into the future as the Brandon Road structural deterrents are constructed. Nonstructural measures, include public education and outreach, monitoring, integrated pest management, manual or mechanical removal, and research and development.

Many of the structural features being considered are new and innovative technologies that have never been combined to create a barrier of this magnitude. Thus, the continuation and implementation of nonstructural measures is critical to the effort to combat the transfer of aquatic nuisance species from the Mississippi River Basin into the Great Lakes Basin.

In the spirit of shared responsibility, the U.S. Fish and Wildlife Service, U.S. Geological Survey and Iliniois Department of Natural Resourcres will implement or coordinate implementation of nonstructural measures to the extent authorizations and appropriations allow. In the coming weeks and months, the Brandon Road Project Delivery Team will continue working with partner agencies on a plan for implementation of nonstructural measures to maximize effectiveness and risk reduction provided by the project.

States & Provinces Forum Update

The States and Provinces Forum, facilitated by the Great Lakes Commission, has continued to work together to share information and provide direction for successful implementation of Brandon Road Interbasin Project. The Forum met on November 30, 2021 to review progress provided by USACE and to discuss pathways forward for funding of project construction.

In December, the states requested full federal funding of the project for authorization in the Water Resources Development Act of 2022. The Forum will meet again in April 2022 to review the engineering planning progress and continue to discuss pathways forward for successful implementation of both structural and non-structural measures for the Brandon Road Interbasin Project.

Completed EVENTS

JANUARY 2022

Design Charrette #5

Quarterly Update Webinar

FEBRUARY 2022

Navigation Workshop #3

Upcoming EVENTS

APRIL 2022

Quarterly Update Webinar

JUNE 2022

Facilitated Partnering Meeting #3

Stay CONNECTED

Looking for more information about the Brandon Road Interbasin Project? Click the website link below or scan the QR code with the camera app on your mobile device to learn more about the project's next steps, key leadership involved, and how to contact the project team.

https://go.usa.gov/xtCV7

SCAN ME

ATTACHMENT J

Additional Items

- **Future Meeting Schedule** *(J-1)*
- **Frequently Used Acronyms (4-29-2022)** *(J-2 to J-8)*

QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE

NOVEMBER 2022	
Quad Cities	
November 15	UMRBA Quarterly Meeting
November 16	UMRR Coordinating Committee Quarterly Meeting

FEBRUARY-MARCH 2023	
Remote Meeting	
February 28	UMRBA Quarterly Meeting
March 1	UMRR Coordinating Committee Quarterly Meeting

Acronyms Frequently Used on the Upper Mississippi River System

AAR	After Action Report
A&E	Architecture and Engineering
ACRCC	Asian Carp Regional Coordinating Committee
AFB	Alternative Formulation Briefing
AHAG	Aquatic Habitat Appraisal Guide
AHRI	American Heritage Rivers Initiative
AIS	Aquatic Invasive Species
ALC	American Lands Conservancy
ALDU	Aquatic Life Designated Use(s)
AM	Adaptive Management
ANS	Aquatic Nuisance Species
AP	Advisory Panel
APE	Additional Program Element
ARRA	American Recovery and Reinvestment Act
ASA(CW)	Assistant Secretary of the Army for Civil Works
A-Team	Analysis Team
ATR	Agency Technical Review
AWI	America's Watershed Initiative
AWO	American Waterways Operators
AWQMN	Ambient Water Quality Monitoring Network
BA	Biological Assessment
BATIC	Build America Transportation Investment Center
BCOES	Bid-ability, Constructability, Operability, Environmental, Sustainability
BCR	Benefit-Cost Ratio
BMPs	Best Management Practices
BO	Biological Opinion
CAP	Continuing Authorities Program
CAWS	Chicago Area Waterways System
CCC	Commodity Credit Corporation
CCP	Comprehensive Conservation Plan
CEICA	Cost Effectiveness Incremental Cost Analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet Per Second
CG	Construction General
CIA	Computerized Inventory and Analysis
CMMP	Channel Maintenance Management Plan
COE	Corps of Engineers
COPT	Captain of the Port
CPUE	Catch Per Unit Effort
CRA	Continuing Resolution Authority
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program

CSP	Conservation Security Program
CUA	Cooperative Use Agreement
CWA	Clean Water Act
CY	Cubic Yards
DALS	Department of Agriculture and Land Stewardship
DED	Department of Economic Development
DEM	Digital Elevation Model
DET	District Ecological Team
DEWS	Drought Early Warning System
DMMP	Dredged Material Management Plan
DNR	Department of Natural Resources
DO	Dissolved Oxygen
DOA	Department of Agriculture
DOC	Department of Conservation
DOER	Dredging Operations and Environmental Research
DOT	Department of Transportation
DPR	Definite Project Report
DQC	District Quality Control/Quality Assurance
DSS	Decision Support System
EA	Environmental Assessment
ECC	Economics Coordinating Committee
EEC	Essential Ecosystem Characteristic
EIS	Environmental Impact Statement
EMAP	Environmental Monitoring and Assessment Program
EMAP-GRE	Environmental Monitoring and Assessment Program-Great Rivers Ecosystem
EMP	Environmental Management Program [Note: Former name of Upper Mississippi River Restoration Program.]
EMP-CC	Environmental Management Program Coordinating Committee
EO	Executive Order
EPA	Environmental Protection Agency
EPM	Environmental Pool Management
EPR	External Peer Review
EQIP	Environmental Quality Incentives Program
ER	Engineering Regulation
ERDC	Engineering Research & Development Center
ESA	Endangered Species Act
EWMN	Early Warning Monitoring Network
EWP	Emergency Watershed Protection Program
FACA	Federal Advisory Committee Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FDR	Flood Damage Reduction
FFS	Flow Frequency Study
FMG	Forest Management Geodatabase
FONSI	Finding of No Significant Impact
FRM	Flood Risk Management

FRST	Floodplain Restoration System Team
FSA	Farm Services Agency
FTE	Full Time Equivalent
FWCA	Fish & Wildlife Coordination Act
FWIC	Fish and Wildlife Interagency Committee
FWS	Fish and Wildlife Service
FWWG	Fish and Wildlife Work Group
FY	Fiscal Year
GAO	Government Accountability Office
GEIS	Generic Environmental Impact Statement
GI	General Investigations
GIS	Geographic Information System
GLC	Governors Liaison Committee
GLC	Great Lakes Commission
GLMRIS	Great Lakes and Mississippi River Interbasin Study
GPS	Global Positioning System
GREAT	Great River Environmental Action Team
GRP	Geographic Response Plan
H&H	Hydrology and Hydraulics
HAB	Harmful Algal Bloom
HEC-EFM	Hydrologic Engineering Center Ecosystems Function Model
HEC-RAS	Hydrologic Engineering Center River Analysis System
HEL	Highly Erodible Land
HEP	Habitat Evaluation Procedure
HNA	Habitat Needs Assessment
HPSF	HREP Planning and Sequencing Framework
HQUSACE	Headquarters, USACE
H.R.	House of Representatives
HREP	Habitat Rehabilitation and Enhancement Project
HSI	Habitat Suitability Index
HU	Habitat Unit
HUC	Hydrologic Unit Code
IBA	Important Bird Area
IBI	Index of Biological (Biotic) Integrity
IC	Incident Commander
ICS	Incident Command System
ICWP	Interstate Council on Water Policy
IDIQ	Indefinite Delivery/Indefinite Quantity
IEPR	Independent External Peer Review
IGE	Independent Government Estimate
IIA	Implementation Issues Assessment
IIFO	Illinois-Iowa Field Office (formerly RIFO - Rock Island Field Office)
ILP	Integrated License Process
IMTS	Inland Marine Transportation System
IPR	In-Progress Review
IRCC	Illinois River Coordinating Council

IRPT	Inland Rivers, Ports & Terminals
IRTC	Implementation Report to Congress
IRWG	Illinois River Work Group
ISA	Inland Sensitivity Atlas
IWR	Institute for Water Resources
IWRM	Integrated Water Resources Management
IWS	Integrated Water Science
IWTF	Inland Waterways Trust Fund
IWUB	Inland Waterways Users Board
IWW	Illinois Waterway
L&D	Lock(s) and Dam
LC/LU	Land Cover/Land Use
LDB	Left Descending Bank
LERRD	Lands, Easements, Rights-of-Way, Relocation of Utilities or Other Existing Structures, and Disposal Areas
LiDAR	Light Detection and Ranging
LMR	Lower Mississippi River
LMRCC	Lower Mississippi River Conservation Committee
LOI	Letter of Intent
LTRM	Long Term Resource Monitoring
M-35	Marine Highway 35
MAFC	Mid-America Freight Coalition
MARAD	U.S. Maritime Administration
MARC 2000	Midwest Area River Coalition 2000
MCAT	Mussel Community Assessment Tool
MICRA	Mississippi Interstate Cooperative Resource Association
MDM	Major subordinate command Decision Milestone
MIPR	Military Interdepartmental Purchase Request
MMR	Middle Mississippi River
MMRP	Middle Mississippi River Partnership
MNRG	Midwest Natural Resources Group
MOA	Memorandum of Agreement
MoRAST	Missouri River Association of States and Tribes
MOU	Memorandum of Understanding
MRAPS	Missouri River Authorized Purposes Study
MRBI	Mississippi River Basin (Healthy Watersheds) Initiative
MRC	Mississippi River Commission
MRCC	Mississippi River Connections Collaborative
MRCTI	Mississippi River Cities and Towns Initiative
MRRC	Mississippi River Research Consortium
MR&T	Mississippi River and Tributaries (project)
MSP	Minimum Sustainable Program
MVD	Mississippi Valley Division
MVP	St. Paul District
MVR	Rock Island District
MVS	St. Louis District

NAS	National Academies of Science
NAWQA	National Water Quality Assessment
NCP	National Contingency Plan
NIDIS	National Integrated Drought Information System (NOAA)
NEBA	Net Environmental Benefit Analysis
NECC	Navigation Environmental Coordination Committee
NED	National Economic Development
NEPA	National Environmental Policy Act
NESP	Navigation and Ecosystem Sustainability Program
NETS	Navigation Economic Technologies Program
NGO	Non-Governmental Organization
NGRREC	National Great Rivers Research and Education Center
NGWOS	Next Generation Water Observing System
NICC	Navigation Interests Coordinating Committee
NPDES	National Pollution Discharge Elimination System
NPS	Non-Point Source
NPS	National Park Service
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRDAR	Natural Resources Damage Assessment and Restoration
NRT	National Response Team
NSIP	National Streamflow Information Program
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O&M	Operation and Maintenance
OHWM	Ordinary High Water Mark
OMB	Office of Management and Budget
OMRR&R	Operation, Maintenance, Repair, Rehabilitation, and Replacement
OPA	Oil Pollution Act of 1990
ORSANCO	Ohio River Valley Water Sanitation Commission
OSC	On-Scene Coordinator
OSE	Other Social Effects
OSIT	On Site Inspection Team
P3	Public-Private Partnerships
PA	Programmatic Agreement
PAS	Planning Assistance to States
P&G	Principles and Guidelines
P&R	Principles and Requirements
P&S	Plans and Specifications
P&S	Principles and Standards
PCA	Pollution Control Agency
PCA	Project Cooperation Agreement
PCX	Planning Center of Expertise
PDT	Project Delivery Team
PED	Preconstruction Engineering and Design
PgMP	Program Management Plan

PILT	Payments In Lieu of Taxes
PIR	Project Implementation Report
PL	Public Law
PMP	Project Management Plan
PORT	Public Outreach Team
PPA	Project Partnership Agreement
PPT	Program Planning Team
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RCP	Regional Contingency Plan
RCPP	Regional Conservation Partnership Program
RDB	Right Descending Bank
RED	Regional Economic Development
RIFO	Rock Island Field Office (now IIFO - Illinois-Iowa Field Office)
RM	River Mile
RP	Responsible Party
RPEDN	Regional Planning and Environment Division North
RPT	Reach Planning Team
RRAT	River Resources Action Team
RRCT	River Resources Coordinating Team
RRF	River Resources Forum
RRT	Regional Response Team
RST	Regional Support Team
RTC	Report to Congress
S.	Senate
SAV	Submersed Aquatic Vegetation
SDWA	Safe Drinking Water Act
SEMA	State Emergency Management Agency
SET	System Ecological Team
SMART	Specific, Measurable, Attainable, Risk Informed, Timely
SONS	Spill of National Significance
SOW	Scope of Work
SRF	State Revolving Fund
SWCD	Soil and Water Conservation District
T&E	Threatened and Endangered
TEUs	twenty-foot equivalent units
TIGER	Transportation Investment Generating Economic Recovery
TLP	Traditional License Process
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TSP	Tentatively selected plan
TSS	Total Suspended Solids
TVA	Tennessee Valley Authority
TWG	Technical Work Group
UMESC	Upper Midwest Environmental Sciences Center

UMIMRA	Upper Mississippi, Illinois, and Missouri Rivers Association
UMR	Upper Mississippi River
UMRBA	Upper Mississippi River Basin Association
UMRBC	Upper Mississippi River Basin Commission
UMRCC	Upper Mississippi River Conservation Committee
UMRCP	Upper Mississippi River Comprehensive Plan
UMR-IWW	Upper Mississippi River-Illinois Waterway
UMRNWFR	Upper Mississippi River National Wildlife and Fish Refuge
UMRR	Upper Mississippi River Restoration Program [Note: Formerly known as Environmental Management Program.]
UMRR CC	Upper Mississippi River Restoration Program Coordinating Committee
UMRS	Upper Mississippi River System
UMWA	Upper Mississippi Waterway Association
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VTC	Video Teleconference
WCI	Waterways Council, Inc.
WES	Waterways Experiment Station (replaced by ERDC)
WHAG	Wildlife Habitat Appraisal Guide
WHIP	Wildlife Habitat Incentives Program
WIIN	Water Infrastructure Improvements for the Nation Act
WLM	Water Level Management
WLMTF	Water Level Management Task Force
WQ	Water Quality
WQEC	Water Quality Executive Committee
WQTF	Water Quality Task Force
WQS	Water Quality Standard
WRDA	Water Resources Development Act
WRP	Wetlands Reserve Program
WRRDA	Water Resources Reform and Development Act