

February 28, 2023



Upper Mississippi River  
Basin Association

165th Quarterly Meeting  
42nd Annual Meeting

**Agenda**  
with  
Background  
and  
Supporting  
Materials

**Virtual Meeting**



# Upper Mississippi River Basin Association

February 28, 2023

## Agenda

Time	Topic	Presenter
9:00 a.m.	Call to Order and Introductions	<i>Tim Hall, Iowa DNR</i>
9:05	A1-A14 Approval of Minutes of November 15, 2022 Meeting	
9:10	B1-B11 Executive Director's Report	<i>Kirsten Wallace, UMRBA</i>
9:30	C1-C5 Interbasin Diversion Consultation <ul style="list-style-type: none"><li>▪ Annual Reporting</li><li>▪ Cumulative Impact Assessment Progress Report</li></ul>	<i>UMRBA Board Members UMRBA Staff</i>
9:50	D1-D27 Navigation Channel Management <ul style="list-style-type: none"><li>▪ USACE Beneficial Use Implementation Guidance Update</li><li>▪ OSIT Recommendations</li><li>▪ Emerging Contaminants Monitoring</li></ul>	<i>Richie McComas, USACE Jodi Creswell, USACE Bre Popkin, USACE and Lauren Salvato, UMRBA</i>
10:30	Resilience Planning	
	E1-E11 <ul style="list-style-type: none"><li>▪ Iowa Drought Plan</li></ul>	<i>Tim Hall, Iowa DNR</i>
	E12-E15 <ul style="list-style-type: none"><li>▪ Illinois Water Plan</li><li>▪ 2023 UMRS Flood and Drought Forecast</li><li>▪ 2023 Outlook for Water Levels to Support Navigation</li></ul>	<i>Loren Wobig, Illinois DNR Steve Buan, NWS Joan Stemler, USACE</i>
11:30 a.m.	F1-F4 Multi-Benefit Conservation Practices <ul style="list-style-type: none"><li>▪ Outcomes from November 2022 Workshop</li></ul>	<i>Lauren Salvato, UMRBA</i>
12:00 noon	Lunch	
1:00 p.m.	G1-G6 Navigation and Ecosystem Sustainability Program and Upper Mississippi River Restoration Program <ul style="list-style-type: none"><li>▪ Fiscal Update</li><li>▪ Program Efforts</li><li>▪ State Priorities</li></ul>	<i>Andrew Goodall and Marshall Plumley, USACE Kirk Hansen, Iowa DNR</i>
1:40	H1-H8 Nongovernmental Program Initiatives <ul style="list-style-type: none"><li>▪ Mississippi River Basin Monitoring System</li><li>▪ Mississippi River Basin Framework for Improving Ecosystem Health</li><li>▪ Mississippi River Partnership Initiative</li></ul>	<i>Bryan Piazza, The Nature Conservancy Eileen McLellan, Environmental Defense Fund Kim Lutz, America's Watershed Initiative</i>
2:30	I1-I8 Administrative Issues <ul style="list-style-type: none"><li>▪ Election of Officers</li><li>▪ Future Meeting Schedule</li></ul>	
2:45 p.m.	Adjourn	

**ATTACHMENT A**

**Minutes of the November 15, 2022**  
**UMRBA Quarterly Meeting**

*(A-1 to A-14)*

**DRAFT**  
**Minutes of the 164th Quarterly Meeting**  
**of the**  
**Upper Mississippi River Basin Association**

**November 15, 2022**  
**Davenport, Iowa**

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
Loren Wobig	Illinois Department of Natural Resources
Tim Hall	Iowa Department of Natural Resources
Jake Hansen	Iowa Department of Agriculture and Land Stewardship
Barb Naramore	Minnesota Department of Natural Resources
Patrick Phenow	Minnesota Department of Transportation
Dana Vanderbosch	Minnesota Pollution Control Agency
Matt Vitello	Missouri Department of Conservation
Steve Galarneau	Wisconsin Department of Natural Resources
Jim Fischer	Wisconsin Department of Natural Resources
Brian Weigel	Wisconsin Department of Agriculture, Trade and Consumer Protection

Federal UMRBA Liaisons:

Brian Chewning	U.S. Army Corps of Engineers, MVD
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges

Others in Attendance:

Kirk Hansen	Iowa Department of Natural Resources
Randy Schultz	Iowa Department of Natural Resources
Brad Parsons	Minnesota Department of Natural Resources
Kevin Stauffer	Minnesota Department of Natural Resources
Nick Schlessler	Minnesota Department of Natural Resources
Megan Moore	Minnesota Department of Natural Resources
Neil Rude	Minnesota Department of Natural Resources
Ashley Ellis-Smith	Mississippi Interstate Cooperative Resource Association
Ray Wolf	National Weather Service
Zachary Liebowitz	U.S. Environmental Protection Agency
David Busse	U.S. Army Corps of Engineers
Mandy Michalson	U.S. Army Corps of Engineers
Lance Engle	U.S. Army Corps of Engineers
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



Samantha Thompson	U.S. Army Corps of Engineers, MVD
Adam Ziegler	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
Marissa Laches	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
Davi Michl	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
Michael Feldmann	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Greg Kohler	U.S. Army Corps of Engineers, MVS
Courtney Cheever	U.S. Department of Agriculture, Minnesota NRCS
Peter Caffarelli	U.S. Department of Agriculture, Transportation Services
Richard Henderson	U.S. Department of Agriculture, Transportation Services
Greg Conover	U.S. Fish and Wildlife Service
Neal Jackson	U.S. Fish and Wildlife Service
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
JC Nelson	U.S. Geological Survey, Midcontinent Region
Jenn Lacey	U.S. Geological Survey, Midcontinent Region
Jim Dunker	U.S. Geological Survey
Olivia Dorothy	American Rivers
Kim Lutz	America's Watershed Initiative
Lindsay Brice	Audubon
Paul St. Louis	Clean Choice Energy
Gary Loss	HNTB Corporation
Aimee Andres	Inland Rivers, Ports and Terminals
Carolyn Mahlum-Jenkins	League of Women Voters
Doug Daigle	Lower Mississippi River Sub-Basin Committee (Hypoxia Task Force)
Nancy Guyton	Neighbors of the Mississippi
Chris Smith	Northern Grain Belt Ports
Rick Stoff	<i>Our Mississippi</i>
Bryan Hopkins	The Nature Conservancy
Gretchen Pfeiffer	The Nature Conservancy
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
Erin Spry	Upper Mississippi River Basin Association

## Minutes

Jim Fischer moved and Dana Vanderbosch seconded a motion to approve the draft minutes of the August 9, 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 work efforts since the August 2022 quarterly meeting. Wallace stated that the last quarter was a productive period for UMRBA filled with engagements to build partnerships. Wallace provided a few highlights as follows:

On October 5, 2022, UMRBA met with Corps Headquarters leadership in Washington, D.C. to discuss UMRBA's priorities relating to UMRR, NESP, and a flow frequency analysis for the UMRS as well as resolving the current project partnership agreement (PPA) impasse. UMRBA representatives included Tim Hall, Loren Wobig, Rick Pohlman, and Chad Craycraft. Waterways Council and The Nature Conservancy joined the meeting.

In early August 2022, UMRBA along with National Oceanic and Atmospheric Administration (NOAA) and the University of Minnesota's Institute on the Environment (UMN IonE) announced a new project this fall to explore how to enhance climate resilience in communities along the Upper Mississippi River from Minnesota to Missouri. UMN IonE hosted a first meeting of this new partnership on September 20-21, 2022. Representing UMRBA were Melissa Kuske of Minnesota DNR, Jason Conn of Iowa DNR, Kirsten Wallace as Association staff, and Brian Stenquist of *Meeting Challenges*.

Wallace explained that the Corps and each agency named in NESP's authorizing legislation are coordinating in developing scopes of work to support their respective roles in NESP's implementation. The Corps has standing MOAs with USGS and USFWS that allows for transferring funds to those agencies, and is establishing MOAs with the individual states and UMRBA to facilitate the transfer of funds in future years. For FY 2022, USGS has offered to utilize its cooperative grants authority to transfer \$200,000 to the individual states and UMRBA. In response to a request from Wallace, Rick Pohlman moved and Jim Fischer seconded a motion to authorize Wallace to enter into a cooperative agreement with USGS for up to \$200,000 to support UMRBA's roles in implementing NESP over a one-year term.

The UMRBA Board and the UMRBA Water Quality Executive Committee met with USEPA Regions 5 and 7 Regional Administrators on November 8, 2022 in St. Louis. Meeting topics included the UMRBA Interstate Water Quality Monitoring, basin-wide nutrient management, environmental justice, climate resilience, lead and copper rule, and national primary drinking water regulations for PFAS.

On November 9-10, 2022, UMRBA convened the Multi-Benefit Conservation Practices Nutrient Workshop in St. Louis, Missouri. This is the first in a series of two workshops that UMRBA will convene for the purpose of enhancing the collaborative nature of conservation practice implementation and accelerate nutrient reduction in the Upper Mississippi River Basin.

Tim Hall pointed to UMRBA's July 2022 to September 2022 financial statements provided on pages B-13 to B-17 of the agenda packet. Pohlman moved and Brian Weigel seconded a motion to approve the Association's budget report and balance sheet as included in the agenda packet.

## Report from UMRBA Water Quality Executive Committee

Dana Vanderbosch congratulated the UMRBA member states on implementing the first steps of the ten-year plan and the passage of the Chloride Resolution in February 2022.

UMRBA's Upper Mississippi River Interstate Water Quality Monitoring Plan achieved a successful pilot through a collaboration among the Illinois EPA, Iowa DNR, Missouri DNR, Missouri DOC, Missouri HHS, and USEPA. UMRBA published two reports that evaluated the effectiveness and feasibility of the pilot; an analysis of the monitoring results to inform the states' CWA programs and an evaluation on the process of collaborative, interstate monitoring. Vanderbosch thanked the Missouri DNR for graphic support for those publications. The WQEC is currently determining the states' ability to resource the full implementation of the monitoring plan, which was a major focus of the November 8, 2022 meeting with USEPA Regions 5 and 7.

The UMRBA workshop held on November 9-10, 2022 in St. Louis focused on accelerating the multi-benefit methods of conservation practices. The conversations facilitated by the workshop were robust and dynamic, and attendees generated ideas that could be implemented regionally. Around 80 people attended the workshop, representing several dozen organizations. A second workshop is being planned for fall 2023 in the Minnesota. On behalf of UMRBA, Vanderbosch expressed sincere appreciation to USEPA its financial support of the workshops and to UMRBA staff for shaping the workshop and applying creativity and developing options for reflection.

UMRBA serves as the Hypoxia Task Force Sub-Basin Committee for the Upper Mississippi River Basin. The Infrastructure Investment and Jobs Act appropriated funding to the Gulf Hypoxia Program for the first time that includes financial support to the Sub-Basin Committees. The WQEC and state representatives are considering roles and responsibilities that UMRBA will serve in the upcoming years and will be focusing on developing a work plan for UMRBA to utilize its forthcoming allocation through the program.

In light of the UMRBA water quality ten-year program plan and the establishment of the Hypoxia Task Force, the WQEC is re-examining its Charter with respect to its scope, meeting frequency, and membership.

## Illinois River Next Generation Water Observing System (NGWOS)

Jim Duncker presented a project update on the USGS Integrated Water Science activities in the Illinois River Basin. USGS's priority issues for the Illinois River Basin include increasing understanding of the cycle of nutrients and identifying communities of harmful algal blooms (HABs) by looking to historical data and establishing a baseline of available data.

The Next Generation Water Observing System (NGWOS) combines remote sensing, test beds, intense sub-basin monitoring, and basin wide monitoring to create a comprehensive picture. To expand NGWOS capabilities within the Illinois River Basin, USGS installed 16 new supergages, eDNA monitors, and HAB imagery monitors. Synoptic sampling is employed quarterly and has expanded to HUC 8 tributaries. FLAME continuous downstream water quality surveys were implemented throughout the Illinois River, creating snapshots of water quality conditions in the main stem of the river. Using this methodology, USGS successfully captured a June 2021 HAB event on the Illinois River at Starved Rock via discrete sampling, sonde data, and remote imagery.

USGS is currently refining this technology to be usable for remote sensing – i.e., retrieving water quality data from satellite imagery. This project is being initiated within NGWOS pilot basins and is planned to be expanded to a national scope.

In 2022, USGS flew the first airborne electromagnetic (AEM) survey on the Fox River. The AEM collects continuous surficial geology data up to 100 meters, showing drift thickness and buried bedrock valleys in the river basin. Most of the Illinois River Basin will be flown in the next year.

Integrated Water Availability Assessments (IWAAs) is the second component of the USGS IWS program for the purpose of examining the supply, use, and availability of the nation’s water. The goal for IWAAs is to create a common set of products in coordination with NGWOS and the and Integrated Water Prediction (IWP), to address regionally important science gaps, and to produce investigation, data, and enhanced assessments of water availability. The purpose for the Illinois River Basin NGWOS is to create a real time spatially and temporally continuous HABS forecasting capability based off of the NGWOS data collection effort. This phase was initiated in 2022.

USGS has completed compilation of data for the Illinois River Basin from supergages, synoptic surveys, FLAME sampling, remote sensing, and eDNA data. Now, USGS is currently in the modeling phase. This includes assessing existing models in conjunction with USGS models and datasets to forecast water availability impacts.

In response to a question from Chuck Theiling, Duncker stated that he was unsure if the electromagnetic mapper could detect drain tiles but offered to follow up with an answer at a later date. Duncker said the mapper was more suited to detect changes in glacial aquifers. In response to a question from Kirsten Wallace, Duncker explained that NGWOS data are transferable across the Midwest, especially in a corn and soybean setting.

Wallace asked about USGS’s plans to use NGWOS to assess social and economic factors. Duncker responded that USGS is examining non-riverine urban flooding in the Illinois River Basin, including in areas within underserved communities in Chicago. USGS is working with Harwood Heights to build a flood warning dashboard for its public works department. USACE, Illinois DNR, and the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) are involved in the effort. Kelly Warner added that IWAAs will have two phases with the second phase involving modeling different water uses and the socio-economic impacts of those activities.

Tim Hall asked if either the Delaware or Colorado River Basin NGWOSs have lent important insights that can be utilized by the Illinois River NGWOS. Duncker stated that each of the NGWOS basins focus on local priority information needs. The Delaware River project is working to limit salt intrusion and the Upper Colorado River is working to retain snowpack and water supply. Although their subject matters do not overlap, the Illinois River Basin NGWOS has benefitted from their advanced stages particularly in terms of learning from them in how they engage stakeholders.

Lauren Salvato asked if there will be opportunities to review the science plan for the Illinois River Basin NGWOS. Duncker explained that the science plan has changed over time into individual plans for the NGWOS and IWAAs projects. Both science plans are still in the drafting phase. The implementation plan for IWAAs will be completed and available by December 31, 2022.

## USACE Harmful Algal Bloom Program

Kirsten Wallace pointed to pages D-1 to D-8 of the agenda packet, which includes a provision in the Senate and House negotiated version of the 2022 Water Resources Development Act (WRDA) that would add the Upper Mississippi River Basin as a priority geographic area for the Corps' Harmful Algal Bloom (HAB) Demonstration Program. Wallace observed that Congress is proposing an approach for attaching the Senate and House negotiated version of WRDA 2022 to the National Defense Authorization Act measure, making it likely that this provision will be enacted. Therefore, a presentation on the HAB demonstration program is timely and relevant.

Mandy Michaelson explained that HABs are increasingly being reported across the nation, impacting water resources. In WRDA 2018, Congress directed the Corps to enact scalable solutions to reduce the frequency and severity of HABs. In 2020, the Corps began hosting HAB listening sessions and initiated interagency workshops focused on freshwater research and development. In 2022, Congress appropriated included \$10.5 million for HAB research and development and \$4 million to the HAB demonstration program.

Michaelson explained that the Corps is focused on prevention, detection, and management. Michaelson provided examples of projects under the HAB demonstration project, including treating cyanobacteria present in sediment, UV and ultrasound mitigation, mechanical intervention, and creation of a real-time information transmittal process to alert managers to the presence of HABs. HAB Interception, Transformation, and Treatment System (HABITATS) field work in New York and Florida have successfully harvested HABs and converted the algal biomass to biofuels via hydrothermal liquefaction. UV-based mitigation to reduce cyanobacteria populations have been successfully demonstrated in lab environments at University of Illinois. A field pilot to test the technology is planned for summer of 2023 in Ohio. Bacterial remediation via enzymes to neutralize microcystin by transforming it into a weaker form is under development at the USACE Engineer Research and Development Center (ERDC).

WRDA 2020 Section 128 directed the Corps to deliver a HAB demonstration program, intended to implement innovative technologies into the field. Over 30 research projects were awarded. Michaelson pointed to the Corps' HAB demonstration program to learn more about the program, including the funded freshwater HAB research projects: <https://ansrp.el.erdc.dren.mil/HAB.html>.

Bryan Hopkins observed that some of the lab-based methods shown in the program are fairly aggressive, and asked about the wider ecosystem impacts of those methods. Michaelson explained that the lab investigations are focused on understanding non-intended impacts.

Wallace asked the WQEC to think about how the HAB demonstration program might be utilized within the Upper Mississippi River System for any suggested roles for UMRBA in relation to the program.

Kelly Warner asked how the Corps defined HABs with respect to converting HABs to biofuel and whether there might be economic impacts of biofuel production. Michaelson stated that the legal definition of a HAB is a toxin-producing bacteria, which typically means a cyanobacteria but could also apply to an out-of-control green algae bloom. In regards to economic impacts, data related to economics, performance, and efficiency are being collected. The Corps is collaborating with USGS in developing a case study of the associated economics. It is anticipated that the report will be released by the end of the calendar year.

## Navigation Report

### *Container-on-Barge Shipping*

Aimee Andres of Inland Rivers, Ports and Terminals presented a new database, using OpenTug's digitized platform, that allows multiple small freight carriers to combine small loads to create a full load for barge shipping on the river. IRPT is an association of many stakeholders including ports, terminals, shippers, carriers, and other transportation-related entities. Andres is currently coordinating with inland destinations to establish infrastructure aides for the short-term.

### *Illinois Waterway Major Rehabilitation*

Adam Ziegler presented on the major rehabilitation of the Illinois Waterway. Consolidated closures in 2023 are required for infrastructure work that is not performed during times of industry shutdown to minimize impacts to shipping schedules. The Corps awarded two major construction contracts for Brandon Road and Dresden L&Ds in FY 2022. Brandon Road and Dresden L&Ds require installation of miter gates and machinery. Previous work to prepare for installation at Brandon Road L&D included bulkhead slot installation to facilitate dewatering.

The consolidated closure is scheduled to begin June 1, 2023; gates are anticipated to be closed for 120 days until September 30, 2023. Contractors are beginning work to prepare for construction.

The Corps is advancing designs on Marseilles L&D, focusing on electrical crossover installation to facilitate electrical updates in future contracts. Installation of miter gates and machinery at Starved Rock and Marseilles L&Ds is anticipated to occur in FY 2025 or later.

### *Low Water Impacts to Shipping*

#### Lower Mississippi River Condition Report

Cody Eckhardt reported that the Mississippi River is in low flow status due to extreme and exceptional drought in some areas. Two dredges are currently active in St. Louis, and two dredges are in Memphis dredging the main stem and the Memphis harbors. Vicksburg has one dredge on the main stem and one on the Red River, and New Orleans also has a dredge on the main stem and in the harbor.

The Mississippi River at Memphis and Cairo has set record low water. The National Weather Service anticipates rainfall in the 28-day forecast. Compared to 2012 and 1988 drought, water levels at the Cairo gage have been lower than in recorded at the same time in 2012 and 1988. However, water levels are increasing and nearing 1988 levels. Shippers have reported difficulties in transporting fertilizer north.

Saltwater intrusion has become a problem with saltwater getting into drinking water intakes on the Lower Mississippi River. A saltwater barrier sill has been built at an elevation of -55 feet to keep the channel open to barge traffic while reducing intrusion.

Reservoirs can be managed to add some water to the system, but legal limitations exist. The Corps is releasing water from the Missouri, Mississippi, and Ohio River basin reservoirs to aid flows on the main stem in support of navigation. The Corps has increased its communication with industry and is working hard to maintain depth where possible. The U.S. Coast Guard is working to move buoys as water levels change, and virtual buoys have been added to help pilots navigate the channel. Dredging continues on

the mainstem with dustpan dredges, which are self-propelled and do not interfere with barge traffic. This is especially important in the southern reaches of the Lower Mississippi River where dredges deal with increased traffic and heavier currents. Eckhardt pointed to the installation of dikes south of Cairo that have resulted in less overall dredge need.

#### Middle Mississippi River Condition Report

Joan Stemler stated that the previous 10-daily low water record was surpassed in October at the St. Louis gage. A few rain events have helped to return to normal river levels since then. The Mississippi River between St. Louis to Cairo has been particularly low. Mel Price will be held at 0.5 feet above regulated flows to aid in low flows downriver by using extra storage to prevent low dips. This method will be incorporated into the new low water plan for this stretch of the river. MVD has approved deviations to the Lake Shelbyville and Carlyle Lake reservoirs water control plans; winter drawdowns will be delayed, and extra water will be used in winter during critical conditions. The extended forecast for the Middle Mississippi River shows dam release reductions beginning November 21, 2022. The first impacts of these reductions will be realized mid-December 2022. Without management intervention, the latest long extended forecast is predicting a -5.2 river stage at that same time. The weather predictions issued by NOAA indicates precipitation patterns will change in the near future; all factors indicate that river ice gorging may be needed during a heavy ice season.

#### Middle Mississippi River Dredging Status and Outlook

Lance Engle provided a report on dredging operations in the St. Louis District during the low water conditions. The dredging season of the Middle Mississippi Region began July 7 with the Dredge Potter, completing 24 locations with 3.6 million cubic yards of material. The Corps transferred the Dredge Jadwin from the Vickburg District to the St. Louis District, dredging 900,000 cubic yards. The Dredge Goetz was transferred from the St. Paul District for 30 days. The contracted Dredge Bill Holmen worked at the Kaskaskia River tributary in September and mechanical dredgers from the Rock Island and St. Louis Districts were used when required.

Pool 24 was excavated at Cottonwood; this location needs support every other year. No dredging was required in Pool 25, which is unusual. Pool 26 was dredged less than typical as well; three locations were dredged at the lower end of the pool and one location just south of L&D 25. Dredge Potter worked in the Illinois Waterway for a limited duration prior to being withdrawn due to low water. Dredge Goetz worked for 30 days on the Illinois Waterway at river miles 79-75 and 66. Dredging also occurred at Mel Price L&D at the lower auxiliary approach and Pool 27 at the mouth of the Missouri River confluence at Hartford.

The Dredge Potter removed 4.3 million cubic yards in the open river stretch of the Mississippi River. The Dredge Potter is currently operating at river mile 38. The Dredge Jadwin worked at river miles 103, 16, and later at river miles 1.3, 47, and 16. The Dredge Goetz started at the upper Chain of Rocks canal entrance in early October and just completed the lower entrance. Due to the amount of traffic on the river, the Dredge Goetz is only operating where space is available.

The Southeast Missouri Regional Port at Cape Girardeau was dredged by Dredge Bill Holmen to full dimension to prepare for low water conditions. Both Dredge Bill Holmen and Dredge Potter should be in St. Louis harbor by Thanksgiving. Dredge Goetz will be dredging to river mile 159 and will be operating into early December. In anticipation of low water this winter, dredging is being planned to establish full river dimension for shipping at -5.2 stage.

## Economic Implications of Low Water and Other Factors

Rich Henderson stated that supply chain issues are a priority focus of the USDA Agricultural Marketing Service. As railroad strikes became more likely in the summer and fall 2022, shippers began to shift transportation to barge but encountered limitations due to low river stage. As of October 17, 2022, low water resulted in a 24 percent to 30 percent reduction in tons handled per barge. Barge rates are increasing dramatically because of high demand, lack of capacity, and shipment delays. Currently, barge rates are 145 percent higher than last year at this time and 128 percent higher than the three-year average. As a result of delays, future rates are also increasing. The number of unloaded grain barges at New Orleans are lower than last year (2021), even with the effects of hurricane Ida, and the five-year average.

Pete Caffarelli presented the impacts of the low water on the price of agricultural products. The number of grain inspections below the Mississippi River Gulf are much lower than average; low volumes are a direct result of low water issues. This increases prices of Gulf exports, pushing them above prices at Portland. Storage capacity of agricultural products has increased to compensate for the lack of capacity in barge transport.

Railroad transportation grain volumes appear to be increasing in response to less availability of barge transportation. Recent weeks show an increase of rail car activity, but overall activity remains low. The last year has been poor for rail service due to a major merger, regulatory proceedings, and the potential labor strike. Agricultural transportation was particularly challenging in 2022 due to low water levels, poor rail service, and limited options with other modalities. USDA does not expect prices to improve any time soon.

Paul Rohde characterized current barge transport as a stabilized crisis. Although barge transport can continue, rainfall is needed. Near-term contracts are improving transportation, and industry continues to work with the Corps to minimize impacts. Rohde commented that many upstream bound barges are empty. Downstream bound tows could see increases pending the Memphis gage levels.

The economic impact of reduced traffic been underscored in national and regional media coverage. Barge transportation offers between \$7 billion to \$9 billion in shipping cost savings every year. AccuWeather estimated that low water on the Mississippi River resulted in additional shipping costs of \$20 billion, but Rohde suspects it could be greater. Opportunity cost loss is another factor. The global market is changing, and the impacts to the American economy have not yet been fully realized.

## **UMRR and NESP Reports**

### *Navigation and Ecosystem Sustainability Program*

#### FY 2023 Report and FY 2024 Capability Outlook

Andrew Goodall stated that funds were transferred to USGS and USFWS for program support. The Corps is working with UMRBA and the individual states to transfer funding to support their roles and responsibilities, including by establishing memorandums of agreement (MOAs).

Goodall reported that the Rock Island District has forwarded to MVD a recommendation for the Advisory Panel. NEPA compliance evaluation is ongoing. A construction contract was awarded in September for the new lock at L&D 25. The design contract for L&D 22 fish passage has also been awarded, and fish monitoring activities initiated.



Goodall pointed to pages F-1 of the agenda packet for a map of ongoing programmatic activities. Construction awards are expected to be enacted in the near future for Pool 2 Wingdam Notching and Lock 14 Mooring Cell. The remaining projects that are currently considered as “active implementation” include Starved Rock Breakwater, Moore’s Towhead System Mitigation, Twin Island, and Alton Pools Islands. Construction of all of these projects are anticipated to begin within 90 days or in the next fiscal year.

Approved ecosystem projects for planning include North Sturgeon Lake, Wacouta Bay, Johnson Island, Sabula Lakes, Andalusia Island Complex, Liverpool Flowing Side Channel, Pool 24 Island Restoration, Pool 25 Side Channels, and Middle Mississippi River Stone Dike Alternations (Phase 1). MVD has also approved planning for seven additional mooring facilities and a design work for LaGrange. In 2023, the Corps plans to advance data collection and understanding of mitigation needs under NESP.

### L&D 22 Fish Passage Monitoring

Kara Mitvalsky reported that, on September 26, 2022, the Corps awarded to a contract complete the design of L&D 22 Fish Passage. The Corps anticipates awarding a construction contract in FY 2024. Project plans include a rock ramp fishway to provide rest areas for fish and a bridge to allow pedestrian traffic overhead with gates to control activity. A debris boom will keep ice and debris from entering the structure at all water stages. A research center will be built nearby to host researchers and equipment for monitoring and adaptive management.

Mark Cornish stated that monitoring activities will be updated with the help of the Fish Passage Science Team, which includes experts from USFWS, USGS, state natural resource agencies, and the Corps. The team is focused on developing science plans for NESP as a whole, and are not limited to activities at L&D 22. The team’s recent activities include:

- Hosted an October 12 open house
- Participated in interviews that will be highlighted through a promotional video
- Developed research questions to inform fish passage designs and to ensure monitoring data can be used in other future modeling efforts

Anticipated tasks for Science Team in 2023 include:

- Designing the research center design
- Initiating pre-project monitoring
- Developing PIT-tag fish monitoring
- Designing a systemic ecological model to estimate the impacts of fish passage at each L&D on the Mississippi River

Over 330 fish have been tagged this year at L&D 22. The University of Michigan is integrating telemetry data by river reach, and is currently connecting with experts in the Great Lakes and Ohio River systems to understand their knowledge about fish movement between larger bodies beyond locked riverine systems.

Cornish noted that there has been interest in the impact to invasive carp from the L&D 22 fish passage. Spawning populations already exist above and below L&D 22. This site may allow testing of new

technologies without disrupting navigation and may be an opportunity to capture and remove fish from the system.

The Corps has developed a science plan and will develop designs and integrate components for an operational monitoring system over the next ten months. Cornish stated that the fish passage team has been collaborating with state and federal natural resource agencies in all their work. The program will need to use partnership connections to plan for future fishways and to find clever ways to move native fish and stop invasive species from moving through.

### General Discussion

In response to a question from Olivia Dorothy, Goodall reported that there is no new update regarding environmental compliance. Goodall offered to connect directly with Dorothy to answer questions. Dorothy raised concern that the Corps is meeting with navigation industry and not providing that same opportunity for engagement with other stakeholders with respect to NESP. Goodall explained that the Corps is exploring opportunities for public input. In the interim, stakeholders can provide formal input via the District-based river teams. In response to a question from Dorothy, Goodall stated that the Corps is evaluating the current programmatic EIS and will provide an update when ready. Additionally, the Corps has taken no further action related to the former ASA R.D. James' 2019 memo regarding the NESP economic update.

Jim Fischer asked for the temporal extent of data collection needed to inform other similar efforts in the basin. Cornish responded that the science team is currently evaluating that question. Statistical analysis on the L&D 22 are underway to accelerate the process. In response to a clarifying question from Andrew Stephenson regarding the small passage design, Cornish explained that the science team is evaluating three adaptive management studies to assess whether a 50 percent reduction of the wing or a restructure of the bottom of the fishway further from the tailwaters of the dam would be effective for fish passage. Construction in the tailwaters can be difficult.

Tim Hall asked Andrew Goodall how the Advisory Panel would relate to UMRBA. Goodall stated that the Advisory Panel will include membership as identified in NESP's authorizing legislation. Ultimately, the ASA(CW) is responsible for selecting the Advisory Panel representatives. Goodall stated that one representative of each state would be incorporated, but Goodall was not positive about UMRBA's role in that designation. The timing of determination is unknown.

Jim Fischer noted that the Advisory Panel has a Congressionally-defined role in NESP's project selection process. Fischer asked Goodall how the Advisory Panel operationalizes that role and how that relates to the roles of the NESP Coordinating Committee and river teams. Goodall stated that the Advisory Panel is involved in selecting projects and providing strategic direction for NESP. Fischer expressed concern with the length of time it will take to establish and populate the Advisory Panel, particularly as that may affect NESP ramping up in the near term. Goodall stated that river teams are currently being asked to identify projects. The intention is to proceed under that approach until the Advisory Panel is operational. Chad Craycraft asked for an update on changes to the Advisory Panel based on federal and state agency input. Goodall acknowledged that the UMRBA Board is reviewing the Advisory Panel proposal. The Corps will review and consider UMRBA's input. Dorothy noted that the river teams do not encompass formal roles for nongovernmental organizations in the same manner as the Advisory Panel's membership. Goodall replied that, while the river teams are providing an interim solution, the longer term plan is to recommend that the ASA(CW) establish the Advisory Panel as provided in NESP's authorizing legislation.

### *Upper Mississippi River Restoration (UMRR) Program*

Marshall Plumley explained that the District is implementing UMRR at a \$55 million planning scenario while operating under the existing FY 2023 continuing resolution. The President's FY 2023 budget and the House and Senate FY 2023 energy and water appropriations measures each include \$55 million for UMRR. Under this funding scenario, UMRR is anticipated to advance planning on nine habitat projects, design on eight habitat projects, and construction on eight habitat projects.

The 2022 UMRR Report to Congress was transmitted to Headquarters for review on November 9, 2022. Plumley anticipates that the report will be delivered to Congress in December 2022. Plumley expressed gratitude for partners' work involved in developing and commenting on the report.

The Report to Congress focuses on the tenets of the UMMR partnership: leading, innovating, and partnering. The report includes recommendations to integrate ecological resilience concepts and the Habitat Needs Assessment II into the program's habitat restoration work, to work with individuals and organizations whose actions affect the Upper Mississippi River ecosystem, and to continuously improve habitat restoration projects based on insights from constructed projects. The Corps is currently gathering letters of support to include as an appendix to the report.

Bryan Hopkins encouraged UMRR to integrate conservation-focused nongovernmental organizations into the program to leverage their expertise and capacity. Kirsten Wallace congratulated UMRR on its success and asked the Coordinating Committee to look for opportunities to communicate UMRR's accomplishments within their agencies and among their partners. Plumley mentioned that the Corps is planning to develop a four-page handout associated with the 2022 UMRR Report to Congress similar to the handout that accompanied the 2016 report. Chad Craycraft emphasized the value of UMRBA in supporting the Coordinating Committee members throughout the report development process.

### **Brandon Road Interbasin Project**

Rick Pohlman presented an Illinois perspective of the Brandon Road update, and the system of deterrents to prevent the upstream movement of invasive carp. Illinois and Michigan formed a partnership, and Illinois agreed to be a non-federal sponsor of the project. Michigan is planning to contribute \$8 million and Illinois is planning to contribute \$2.5 million to provide the necessary cost-share for the project construction. Polman mentioned that Congress is considering modifying the cost-share contribution in WRDA 2022.

The Corps' project partnership agreement (PPA) continues to be a major hurdle. Accelerated funds from Illinois have been offered to keep the project moving. The states plan to continue to enforce regulatory provisions about floodway construction.

The project area is complicated in that it encompasses properties owned by a private entity, Illinois DOT, and Illinois DNR, as well as a stormwater easement. The private parcel must be acquired for project O&M and construction; due to a dispute about testing for soil contamination, the process to purchase the property is delayed and at an impasse.

Pohlman underscored Illinois DNR's charge to enforce administrative codes on construction in a floodway and public waters. A challenge for the project is determining mitigation procedures with water regulators. A visitor center has been proposed to inform the public about the project.

Construction will occur in phases. Phase 1a includes installation of leading-edge acoustic and bubble deterrents. The plans for Phase 1a are 65 percent complete; review is currently underway. Support buildings will be constructed adjacent to the barrier.

Pohlman announced that Illinois is now referring to invasive carp as “Copi,” in part to promote fish consumption as a means for reducing populations. The name “Copi” was derived from the carp’s “copious” population.

### **Mississippi Interstate Cooperative Resource Association**

#### *Mississippi River Proposal*

Ashlee Smith introduced MICRA, explaining that the organization was formed in 1991 by fishery agencies throughout the Mississippi River basin. Membership includes fisheries chiefs within MICRA’s member states. Membership also includes federal and tribal representatives. Smith proposed a partnership between UMRBA and MICRA, pointing to the overlap in membership and areas of interest.

Brad Parsons, who is Minnesota’s fisheries chief and MICRA Chair, said MICRA was created to support the needs of fish species across state geographic boundaries and to represent the joint interests of states. MICRA supports projects like Brandon Road, but the group also hopes to enhance efforts throughout the Mississippi River basin.

Smith explained MICRA’s concerns with uncertainty surrounding the implementation of federal appropriations dedicated to managing aquatic invasive species. Currently, funds are allocated to USFWS, which has administered a large portion of funding to states at variable amounts. Due to the expanded scope and variable funding, there now is a great need for a dedicated funding source and a more formal interagency consultative body.

MICRA is proposing federal legislation to establish a Mississippi River Basin Fisheries Commission (MRBFC) to prioritize resources. The MRBFC is based on the Great Lakes Commission but is nonbinding and nonpartisan. The proposal suggests that each state’s chief of fisheries will serve as its respective state’s delegate to the MRBFC. The legislation also includes a competitive grant funding authority to support priority work of member states and nongovernmental organizations.

Smith noted that, MICRA is increasing its advocacy for the MRBFC legislation, and requested that the UMRBA Board consider submitting a letter of support for the legislation.

Parsons added that the states have agreed to a strategic plan for MICRA, largely due to the nature of interjurisdictional management of aquatic invasive species. Parsons stated that the existing infrastructure could be stronger together with federal funding to support the work, and a commission to support and improve cooperation among states and federal agencies.

Greg Conover stated that MICRA hopes the commission will move the group from communication and coordination into collaborative management. The MRBFC could create, implement, and evaluate management plans for sub-basins moving forward.

In response to Smith’s earlier request of the UMRBA Board, Tim Hall directed Association staff put forward a request to the Board with respect to whether the Association would express support for MICRA MRBFC proposal.

## Administrative Issues

### *UMRBA FY 2024-2025 Dues and Water Quality Assessment*

In response to a prompt from Kirsten Wallace, Rick Pohlman moved and Jim Fischer seconded a motion to set state dues and water quality assessment for fiscal years 2024 and 2025 at \$67,000 and \$21,600, respectively. The motion was unanimously approved.

### *Future Meeting Schedule*

February-March 2023 — Virtual

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

May 2023 — St. Paul, Minnesota

- UMRBA quarterly meeting — May 23
- UMRR Coordinating Committee quarterly meeting — May 24

August 2023 — La Crosse, Wisconsin

- UMRBA quarterly meeting — August 8
- UMRR Coordinating Committee quarterly meeting — August 9

With no further business, the meeting adjourned at 4:00 p.m.

## **ATTACHMENT B**

### **Executive Director's Report**

- **Executive Director's Report** *(B-1 to B-5)*
- **Treasurer's Quarterly Statement (2/14/2023)** *(B-6)*
- **FY 2023 Budget Report and Balance Sheet (2/14/2023)**  
*(B-7 to B-10)*



## **Executive Director's Report February 2023**

### **ADVOCACY**

#### *Administration and Congressional Meetings*

On December 12, 2022, UMRBA met with USFWS Deputy Director for Operations Wendi Weber to discuss USFWS's capacity to participate in the Upper Mississippi River Restoration (UMRR) program the Navigation and Ecosystem Sustainability Program (NESP) as well as other UMRBA-related priorities. The meeting included a discussion of the UMRR long term resource monitoring program and the value of the Refuge system to the ecosystem restoration work through UMRR and NESP.

On December 13, 2022, UMRBA met with Congressional staff regarding UMRBA's priorities related to UMRR, NESP, USFWS Refuge System, project partnership agreements, and the Gulf Hypoxia Program.

On February 8, 2023, UMRBA participated in a series of Congressional meetings hosted by Waterways Council focused on members located in Minnesota and Wisconsin. A primary objective for this Congressional outreach was to request their support for NESP by requesting funding for the program in the FY 2024 appropriations process. UMRBA staff met with additional member offices on February 9 as well as Corps Headquarters and OMB staff.

### **COMMERCIAL NAVIGATION**

#### *National Waterways Foundation*

Kirsten Wallace serves as a Trustee of the National Waterways Foundation, and attended its December 6, 2022 meeting in Paducah, Kentucky. In addition to routine business, the agenda included a discussion of future research projects such as updating the state waterways profiles and improving knowledge related to the inland waterways workforce.

#### *Waterways Council*

The Waterways Council held its Annual Waterways Symposium on December 7-8, 2022 in Paducah, Kentucky. The agenda included Waterways Council's year-in-review, political and financial briefings, an economic outlook, and updates from the Corps on their national and regional navigation programs.

UMRBA also attended the Waterways Council's annual meeting on December 7, 2023 in Washington, D.C. The agenda included Waterways Council's work plan for 2023 and an overview of Congressional activities.

### **ECOSYSTEM HEALTH**

#### *Upper Mississippi River Restoration*

#### Environmental Justice

On January 25, 2023, UMRR convened members of the UMRR Coordinating Committee and staff within partner agencies who work on environmental justice. The purpose is to consider UMRR's roles in

environmental justice. As a first step, an *ad hoc* group was formed involving UMRR Coordinating Committee agencies to share their respective agencies' perspectives on approaches and best practices, methods, and tools related to environmental justice in their work.

#### Ecosystem Status and Trends Communications

UMRBA staff are coordinating the development of a series of five two-page flyers related to findings presented in the 2022 UMRR LTRM status and trends report and are creating a plan for disseminating flyers to the UMRR partners, key target audiences, and media outlets. Topics include fisheries, water quality and nutrients, floodplain forest loss, aquatic vegetation, and sedimentation. During various stages of development, flyers are reviewed by the report authors, UMRR Communications and Outreach Team, and A-Team. Final draft versions are presented to the UMRR Coordinating Committee. The fisheries, floodplain forest loss, and sedimentation flyers are complete and are available on pages G-1 to G-2 of this agenda packet as well as online here:

<https://umrba.org/document/ecological-status-and-trends-flyers>.

#### Long Term Resource Monitoring Implementation Planning

UMRR is employing an implementation planning process for LTRM, focusing on the potential to expand knowledge of the UMRS and to inform ecosystem restoration and management. In part, an objective for this effort is to identify and prioritize research needs under increased potential for additional funding following the authorized increase in WRDA 2022. Through this process, UMRR partners prioritized information needs in four broad categories: floodplain ecology, hydrogeomorphic change, aquatic ecology, and restoration applications. Possible actions to address information needs include employing short-term research studies, adding capacity for analyzing existing LTRM data, spatially expanding baseline monitoring, and adding new long term monitoring components. UMRBA staff are participating in biweekly meetings of the *ad hoc* team of LTRM implementation planning leaders and supporting those meetings by developing summaries of the discussions and designing agendas.

#### *Navigation and Ecosystem Sustainability Program*

UMRBA staff continue to participate in interagency efforts to implement the Navigation and Ecosystem Sustainability Program (NESP). This includes developing a charter for interagency cooperation, securing funding agreements to support UMRBA and its member states participation in the program, and participating in discussions of program execution.

The NESP partnership held a workshop focused on developing a standardized process for planning NESP ecosystem restoration projects. The workshop was held in St. Louis on November 29, 2022 to December 1, 2022. Topics included partners' various roles and responsibilities, using conceptual models, and risk informed planning.

On January 12, 2023, the Nature Conservancy hosted a meeting at the Riverlands Center among Waterways Council, Ducks Unlimited, Audubon, and UMRBA to review NESP's ecosystem restoration and management authorities and to develop collective goals and strategies for advocating for NESP throughout the FY 2024 appropriations process. As a product of that meeting, UMRBA worked with those partners to develop a flyer for communicating about NESP throughout the appropriations process. The flyer is available on pages G-4 to G-5 of the agenda packet.

### **RESILIENCE PLANNING**

#### *UMR Basin Charter (Out-of-Basin Diversions)*



The UMRBA *ad hoc* UMR Basin Charter review team has developed a process for developing a water availability cumulative impacts assessment. The effort will require the states to align their consumptive use data and to develop consumptive use coefficients. During a February 10, 2023 meeting, the UMRBA Board agreed to the *ad hoc* team's recommended path forward. The UMRBA individual member states are working internally to identify capacity within existing staff or determining whether to seek funding support.

#### *Midwest Climate Summit*

UMRBA participated in the Midwest Climate Collaborative's second Midwest Climate Summit in St. Louis on February 21-23, 2023. The goal of the Summit is to convene climate leaders, researchers, and professionals for the purposes of expanding knowledge, accelerating climate action, and catalyzing new partnerships.

#### *Extreme Precipitation Workshop*

UMRBA staff continue to serve on a planning group for the Midwest Climate Adaptation Science Center's workshop regarding natural solutions to ecological and economic problems caused by extreme precipitation events in the Upper Mississippi River Basin. The event is scheduled for March 21-23, 2023 and will be hosted at the Forest Products Laboratory in Madison, Wisconsin.

### **HAZARDOUS SPILLS COORDINATION, MAPPING, AND PLANNING**

#### *Oil Pollution Act (OPA) Planning and Mapping*

The Minnesota statewide ISA update is nearly complete; data acquisition problems delayed two data layers that are now in process. UMRBA continues to work on the Illinois statewide ISA update. UMRBA incorporated partial updates from the Great Lakes Commission (GLC) for Indiana, Michigan, and Ohio into the regional geodatabase. The most recent geodatabase was delivered to USEPA Region 5 on February 6, 2023.

UMRBA staff participated in Mapping Group conference calls on December 5, 2022 and February 6, 2023 and Inland Zone planning calls with USEPA Region 5 on November 17, 2022, December 15, 2022, January 19, 2023, and February 23, 2023.

UMRBA updated the Red River Sub-area Contingency Plan to the standard format used by USEPA Region 5 to help identify planning gaps and needs within the area. UMRBA staff participated in planning calls for the Greater St. Louis Sub-area held on December 5, 2022 and the Great Rivers Sub-area held on February 23, 2023.

#### *Upper Mississippi River Hazardous Spills Coordination Group (UMR Spills Group)*

The UMR Spills Group completed the update to the UMR Spill Response Plan and Resource Manual. Several agency signatures for the plan's memorandum of understanding remain outstanding. The plan will be submitted to USEPA Regions 5 and 7 upon receipt of the final signatures.

The UMR Spills Group is currently focused on preparing for an April 4, 2023 hybrid meeting that will be held near St. Louis.

## **WATER QUALITY**

### *Water Quality Task Force*

The UMRBA Water Quality Task Force (WQTF) met virtually on January 25, 2023. The agenda includes a series of presentations regarding the Fast Limnological Automated Measurements (FLAMe) on the Illinois River, fish tissue monitoring, and harmful algal blooms.

### *Nutrient Management*

#### Hypoxia Task Force

The Hypoxia Task Force convened on December 14-15, 2022 in Washington, D.C. This included sessions of the Executive Committee and the Coordinating Committee as well as a public meeting. The agendas included focus on climate impacts on nutrient loading, the support of sub-basin committees and land grant universities, and updates from federal and state member agencies.

#### Agriculture Nutrient Policy Council

UMRBA attended a symposium on December 14, 2022 in Washington, D.C. jointly hosted by Agricultural Nutrient Policy Council (ANPC) and National Association of Clean Water Agencies (NACWA). The symposium included a call for watershed collaboration from Iowa Secretary of Agriculture Mike Naig and USEPA Office of Water Deputy Assistant Administrator Bruno Pigott, briefings on the foundational elements of collaborative watershed projects, and case studies on watershed collaborations. The symposium also hosted a panel of state, federal, and private agricultural conservation leaders.

### *Conferences, Workshops, and Meetings*

UMRBA participated in the USEPA Region 5 Water Quality Managers Meeting on December 3-5, 2022 in Chicago, Illinois. Some of the topics discussed were volunteer monitoring, environmental justice and monitoring, data management, and 2018-2019 data collected by the National Rivers and Stream Assessment.

UMRBA participated in the January 5-6, 2023 Harmful Algal Bloom (HAB) Research Symposium. Sessions included HAB monitoring and forecasting, HAB detection and treatment, ecology and human health, and case studies.

The Iowa Learning Farm's hosts regular webinars as a means of facilitating access to current conservation, water quality, and soil health information. Iowa Learning Farms featured UMRBA's forthcoming How Clean is the River? Report in its November 30, 2022 webinar series.

## **COLLABORATION**

### *Interstate Council on Water Policy*

On January 26, 2023, UMRBA staff briefed the Interstate Council on Water Policy (ICWP) Planning Committee on UMRBA's planning assistance to the states (PAS) partnership with the Corps, USFWS, USGS, states, and non-governmental entities. The purpose of the PAS was to update knowledge on benefits, costs, and risks associated with implementing water level management as well as reaching consensus on an implementation plan among the resource agencies. ICWP's Planning Committee was

interested in learning from the UMRBA partnership's experience, particularly for the ability to involve several entities in accounting for non-federal in-kind cost-share contributions.

### **FINANCIAL REPORT**

Attached as page B-6 is UMRBA Treasurer Jason Tidemann's statement regarding his review of UMRBA's financial statement for the period of October 1, 2022 to December 31, 2022.

Attached as pages B-7 to B-11 are UMRBA's FY 2023 budget reports and balance sheet. As of February 14, 2023, ordinary income for FY 2023 totaled \$621,262.73 and expenses totaled \$555,642.18 for net ordinary income of \$65,620.55. As of this date, UMRBA's cash assets totaled \$176,203.71.

## Natalie Lenzen

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**From:** Tidemann, Jason (DNR) <jason.tidemann@state.mn.us>  
**Sent:** Tuesday, February 14, 2023 2:43 PM  
**To:** Natalie Lenzen  
**Subject:** RE: UMRBA October 1 - December 31 Treasurer Report

Hello Kirsten,

As Treasurer, I have reviewed the monthly financial statements for the period 10/1/22-12/31/22. 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

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**From:** Natalie Lenzen <nlenzen@umrba.org>  
**Sent:** Tuesday, February 14, 2023 2:24 PM  
**To:** Tidemann, Jason (DNR) <jason.tidemann@state.mn.us>  
**Subject:** UMRBA October 1 - December 31 Treasurer Report

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Jason –

I would like to request your statement of review of our October 2022 through December 2022 financials for the Treasurer's report in the February 28, 2023 UMRBA Board meeting packet.

Please let me know if you have any questions or need any further information.

Thank you,  
Natalie

Natalie Lenzen  
Operations Manager | Upper Mississippi River Basin Association (UMRBA)  
7831 E. Bush Lake Rd., Suite 302, Bloomington, MN 55439  
[nlenzen@umrba.org](mailto:nlenzen@umrba.org) | 651-224-2880 (*office*)  
Find us online at [www.umrba.org](http://www.umrba.org) or [Facebook](#)

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02/14/23

Accrual Basis

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

	Jul '22 - Jun 23	Budget	\$ Over Budget
<b>Ordinary Income/Expense</b>			
<b>Income</b>			
<b>Contracts and Grants</b>			
USEPA NRS Workshops	48,259.52	60,000.00	-11,740.48
COE (UMRR)	7,982.77	85,716.00	-77,733.23
COE (RTC)	33,500.00	11,000.00	22,500.00
EPA (OPA)	138,268.56	250,000.00	-111,731.44
Interstate WQ Pilot	2,641.40	0.00	2,641.40
<b>Total Contracts and Grants</b>	230,652.25	406,716.00	-176,063.75
<b>State Dues</b>			
Illinois Dues	63,500.00	63,500.00	0.00
Iowa Dues	63,500.00	63,500.00	0.00
Minnesota Dues	31,750.00	63,500.00	-31,750.00
Missouri Dues	63,500.00	63,500.00	0.00
Wisconsin Dues	63,500.00	63,500.00	0.00
WQ Assessment	102,500.00	102,500.00	0.00
<b>Total State Dues</b>	388,250.00	420,000.00	-31,750.00
<b>Interest Income</b>			
<b>Short Term Interest</b>			
Short Term (Checking)	1,294.92	0.00	1,294.92
Short Term (Savings)	405.56	60.00	345.56
Short Term (Sweep)	0.00	1.00	-1.00
Short Term (CD)	0.00	4,000.00	-4,000.00
<b>Total Short Term Interest</b>	1,700.48	4,061.00	-2,360.52
<b>Total Interest Income</b>	1,700.48	4,061.00	-2,360.52
<b>Total Income</b>	621,262.73	830,777.00	-209,514.27
<b>Gross Profit</b>	621,262.73	830,777.00	-209,514.27
<b>Expense</b>			
<b>USEPA NRS Workshops</b>			
Meeting Expenses	3,581.03	30,000.00	-26,418.97
Communications	20,508.28	8,000.00	12,508.28
Supplies	0.00	1,200.00	-1,200.00
Travel Assistance	4,851.85	17,500.00	-12,648.15
Travel	2,745.33	2,000.00	745.33
<b>Total USEPA NRS Workshops</b>	31,686.49	58,700.00	-27,013.51
<b>Gross Payroll</b>			
Salary	234,950.06	404,600.00	-169,649.94
UMRBA Time Wages	1.75	5,000.00	-4,998.25
OPA Wages	66,510.82	62,634.00	3,876.82
Benefits	58,737.59	101,150.00	-42,412.41
Benefits UMRBA Time	0.00	500.00	-500.00
Benefits OPA	3,049.04	6,263.40	-3,214.36
<b>Total Gross Payroll</b>	363,249.26	580,147.40	-216,898.14
<b>Payroll Expenses</b>			
SocSec Company	22,521.45	35,969.14	-13,447.69
Medicare Company	5,592.61	8,412.14	-2,819.53
SUTA (Minnesota UC)	497.65	290.07	207.58

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02/14/23

Accrual Basis

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

	Jul '22 - Jun 23	Budget	\$ Over Budget
Workforce Enhancement Fee	178.47	290.07	-111.60
<b>Total Payroll Expenses</b>	<b>28,790.18</b>	<b>44,961.42</b>	<b>-16,171.24</b>
Travel	27,767.81	25,000.00	2,767.81
Space Rental			
Office Rental	31,061.95	53,000.00	-21,938.05
<b>Total Space Rental</b>	<b>31,061.95</b>	<b>53,000.00</b>	<b>-21,938.05</b>
Reproduction			
Copy Service	322.58	1,360.00	-1,037.42
Printing	0.00	500.00	-500.00
<b>Total Reproduction</b>	<b>322.58</b>	<b>1,860.00</b>	<b>-1,537.42</b>
Meeting Expenses	17,461.57	30,000.00	-12,538.43
Supplies	552.99	3,000.00	-2,447.01
Equipment			
Equipment (Maint./Rental)	463.25	1,600.00	-1,136.75
<b>Total Equipment</b>	<b>3,185.62</b>	<b>1,600.00</b>	<b>1,585.62</b>
Legal and Financial			
Insurance	2,065.55	6,200.00	-4,134.45
Legal and Tax Services	10,040.00	13,000.00	-2,960.00
Bank Charges	69.00	10.00	59.00
<b>Total Legal and Financial</b>	<b>12,174.55</b>	<b>19,210.00</b>	<b>-7,035.45</b>
Telephone/Communications	5,266.01	6,500.00	-1,233.99
Postage	119.89	1,200.00	-1,080.11
Other Services	24,500.00	5,000.00	19,500.00
Publications	61.00	40,000.00	-39,939.00
State Travel Reimbursement			
Illinois	420.54	5,000.00	-4,579.46
Iowa	2,032.53	5,000.00	-2,967.47
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
<b>Total State Travel Reimbusem...</b>	<b>2,453.07</b>	<b>28,500.00</b>	<b>-26,046.93</b>
OPA Expenses			
Equipment OPA	0.00	1,000.00	-1,000.00
Equipment (Maint./Rental) O...	5,611.98	6,500.00	-888.02
Travel OPA	1,227.23	1,000.00	227.23
Other OPA	0.00	800.00	-800.00
<b>Total OPA Expenses</b>	<b>6,839.21</b>	<b>9,300.00</b>	<b>-2,460.79</b>
Interstate WQ Expenses			
Other Interstate WQ	150.00	0.00	150.00
<b>Total Interstate WQ Expenses</b>	<b>150.00</b>	<b>0.00</b>	<b>150.00</b>
<b>Total Expense</b>	<b>555,642.18</b>	<b>907,978.82</b>	<b>-352,336.64</b>
<b>Net Ordinary Income</b>	<b>65,620.55</b>	<b>-77,201.82</b>	<b>142,822.37</b>

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02/14/23  
Accrual Basis

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

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	<u>Jul '22 - Jun 23</u>	<u>Budget</u>	<u>\$ Over Budget</u>
Net Income	<u>65,620.55</u>	<u>-77,201.82</u>	<u>142,822.37</u>

**Upper Mississippi River Basin Association**  
**Balance Sheet**  
As of February 14, 2023

	Feb 14, 23
<b>ASSETS</b>	
<b>Current Assets</b>	
Checking/Savings	
Checking HT 2732	176,203.71
Investment	
Sweep HT 5401	310,344.13
CD	406,693.73
<b>Total Investment</b>	717,037.86
<b>Total Checking/Savings</b>	893,241.57
<b>Other Current Assets</b>	
Prepaid Expense	
Office Rental Prepaid Expense	8,244.10
Prepaid Expense - Other	8.00
<b>Total Prepaid Expense</b>	8,252.10
<b>Total Other Current Assets</b>	8,252.10
<b>Total Current Assets</b>	901,493.67
<b>Fixed Assets</b>	
Accum. Deprec. UMRBA	-31,613.35
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	34,524.70
OPA Equipment	21,705.26
WQ Equipment	1,290.47
604(b) Equipment	568.95
STC Equipment	4,332.67
<b>Total Fixed Assets</b>	4,256.54
<b>TOTAL ASSETS</b>	<b>905,750.21</b>
<b>LIABILITIES &amp; EQUITY</b>	
<b>Liabilities</b>	
<b>Current Liabilities</b>	
Credit Cards	
Visa Chase 5294	1,973.29
<b>Total Credit Cards</b>	1,973.29
<b>Other Current Liabilities</b>	
Deferred MO DoC (WLM) Revenue	4,206.05
Office Expense Liabilities	
Travel Expense	1,619.60
<b>Total Office Expense Liabilities</b>	1,619.60
<b>Payroll Liabilities</b>	
SUTA (Minnesota UC)	18.03
Workforce Enhancement Fee	283.85
Accrued Vacation	45,786.20
Accrued Vacation FICA	3,502.65
<b>Total Payroll Liabilities</b>	49,590.73
<b>Total Other Current Liabilities</b>	55,416.38
<b>Total Current Liabilities</b>	57,389.67
<b>Total Liabilities</b>	57,389.67
<b>Equity</b>	
Retained Earnings	782,739.99



3:20 PM  
02/14/23  
Accrual Basis

**Upper Mississippi River Basin Association**  
**Balance Sheet**  
As of February 14, 2023

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	<u>Feb 14, 23</u>
Net Income	<u>65,620.55</u>
Total Equity	<u>848,360.54</u>
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b><u>905,750.21</u></b>

## **ATTACHMENT C**

### **Annual Consultation on Interbasin Diversion Requests**

- **Background** *(C-1)*
- **Upper Mississippi River Basin Charter (10/2/1989)** *(C-2 to C-5)*

## **Annual Consultation on Interbasin Diversion Requests Background**

In October 1989 the five basin Governors signed "The Upper Mississippi River Basin Charter" which sets forth a notification and consultation process for any new or increased water diversion out of the basin that will exceed an average of 5 million gallons per day during any 30 day period. (See Charter on pp. C-2 to C-5.) Item 6 of the Notification and Consultation Guidelines states that "at each annual meeting of the Upper Mississippi River Basin Association each state shall report on its involvement with diversion requests."

Since 1991, UMRBA's Annual Meetings have provided an opportunity for the States to fulfill their notification responsibilities under the Charter. For the past 31 years, none of the States have reported any diversion requests. Despite the fact that there has been no activity under the terms of the charter, a letter has typically been sent to each of the Governors indicating that fact.

At UMRBA's 2023 Annual Meeting on February 28, each UMRBA Board member should be prepared to report on any diversion requests within the last 12 months that would fall within the confines of the Charter.

# **THE UPPER MISSISSIPPI RIVER BASIN CHARTER**

## **PRINCIPLES FOR THE MANAGEMENT OF UPPER MISSISSIPPI RIVER BASIN WATER RESOURCES AND NOTIFICATION AND CONSULTATION PROCESS GUIDELINES**

### **FINDINGS**

The Governors of the signatory Upper Mississippi River Basin States jointly find and declare that:

The water resources of the Upper Mississippi River Basin are precious natural resources. The Basin's water uses include municipal, industrial, and agricultural water supply; navigation; hydroelectric power and energy production; recreation; mining; and the maintenance of fish and wildlife habitat. The Basin States have a duty to protect, conserve, develop, and manage the water resources of the Basin.

The water resources of the Upper Mississippi River Basin comprise a valuable regional and national resource. The Upper Mississippi river system is a multi-purpose system with two Congressional mandates; it is managed both for commercial navigation and as a national wildlife refuge. The States in partnership with the federal government of the United States share a continuing and abiding responsibility to maintain and enhance all aspects of this multipurpose system. Without careful and prudent management, future diversions of the water resources of the Upper Mississippi River Basin may have significant adverse impacts on the environment, economy, and welfare of the region.

Management of the water resources of the Upper Mississippi River Basin is subject to the jurisdiction, rights, and responsibilities of each Basin State. Effective management of the water resources of the Basin requires the Basin States to exercise their jurisdiction, rights, and responsibilities in the interest of all of the people of the region through a continuing spirit of comity and mutual cooperation.

A preferred means to achieve effective management of the water resources of the Upper Mississippi River Basin is through the joint pursuit of unified and cooperative principles and policies mutually agreed upon and adhered to by the States of the Upper Mississippi River Basin.

### **PURPOSE**

The purposes of this charter are to conserve the levels and flows of the water resources; to protect the environmental ecosystem; to secure present development; to provide a foundation for future investment and development; and to assure all significant benefits and impacts are considered before a decision is made.

## **PRINCIPLES FOR THE MANAGEMENT OF THE UPPER MISSISSIPPI RIVER BASIN WATER RESOURCES**

In order to achieve the purposes of this Charter, the Governors of the signatory Upper Mississippi River Basin States agree, subject to the laws of each state, that:

### **Principle I Integrity of the Upper Mississippi River Basin**

The water resources of the Upper Mississippi River Basin shall be managed for the wise use, benefit, and enjoyment of all citizens of the Basin. The planning and management of the water resources of the Upper Mississippi River Basin shall recognize that the water resources of the Upper Mississippi River Basin transcend political boundaries within the Basin and should be conserved and provided for beneficial uses including navigation, recreation, municipal and industrial water supply, irrigation, hydroelectric power and energy production, water quality, mining, maintenance of fish and wildlife habitat, aquatic ecosystem, and other instream and withdrawal uses.

### **Principle II Notification and Consultation**

The signatory states agree that it is the intent of the states that interbasin diversion of water resources will not be supported if individually or cumulatively they would have significant adverse impact on instream flows, in-basin uses, and the basin ecosystem.

Any state having knowledge of a proposal for a new or increased diversion of water which will exceed 5 million gallons per day average in any 30 day period from the waters of the Upper Mississippi River Basin to another basin shall notify and offer to consult with all signatory states in order to allow all signatory states to express their concerns, identify their interests, develop where possible mutually acceptable agreements, or take such other actions as they may find appropriate.

### **Principle III Cooperation Among States**

The Governors agree to pursue such additional agreements as may be necessary to promote greater cooperation with respect to any new or increased interbasin diversions of Mississippi River Basin waters.

### **Principle IV Reservation of States Rights**

The signatory States mutually recognize the rights and standings of each other to represent and protect the rights of their respective jurisdictions. Each State reserves and retains all rights and authority to seek, in any state, federal, or other appropriate court or forum, adjudication or protection of their respective rights.

## NOTIFICATION AND CONSULTATION PROCESS GUIDELINES

### 1) State Appointments

- Each signatory state shall designate a contact person for the state's involvement in the notification and consultation process.
- The Upper Mississippi River Basin Association shall compile and maintain a mailing list.

### 2) Notification

- Notice shall be given to all signatory states of an anticipated diversion which exceeds 5 million gallons per day average in any 30 day period.
- The notice shall include at a minimum:
  - a) name, location, and sending and receiving waterbodies or basins
  - b) list of applicable permits
  - c) purpose of water use
  - d) method of measurement
  - e) request for comments

### 3) Comments/Objections

Comments or objections from the signatory states:

- a) shall be submitted by the Governor or his representative within 45 days
- b) should be based on hydrologic, economic, or environmental concerns
- c) may include a request for a consultation meeting

### 4) Consultation

- The originating state shall schedule and conduct a consultation meeting when a letter of objection has been received and a consultation meeting requested.
- The originating state shall provide a minimum 30 day notice of the meeting to the Governors or their representatives.
- The originating state shall be responsible for preparation of the agenda, chairing of the meeting, and preparation of notes of the meeting.
- The consultation meeting shall include opportunities for description of the proposed diversion, presentation of basin states positions, and discussion.

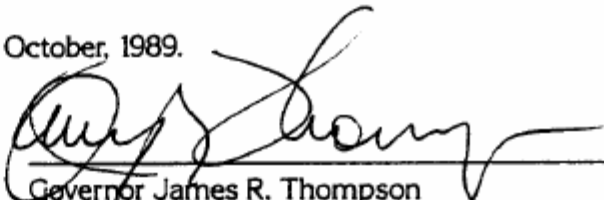
5) Decision

- If no objections are received, the originating state shall make its decision on the proposed withdrawal and inform the signatory states.
- If objections are received, whether or not a consultation meeting is convened, the originating state shall:
  - a) distribute to signatory states a summary of the consultation discussion and comments and a draft response to the diversion request.
  - b) allow 30 days for comments from the signatory states.
  - c) consider comments received.
  - d) distribute the final disposition of the diversion request to all signatory states within 15 days after the final decision has been made.

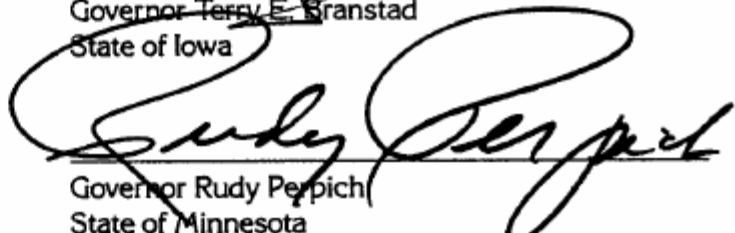
6) Annual Review


At each annual meeting of the Upper Mississippi River Basin Association each state shall report on its involvement with diversion requests.

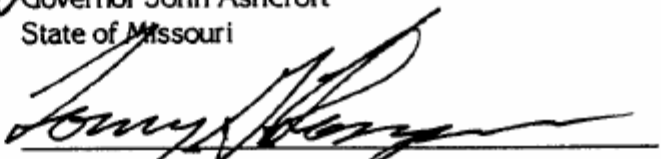
Signed at Milwaukee, Wisconsin this 2<sup>nd</sup> day of October, 1989.

  
Governor James R. Thompson  
State of Illinois

  
Governor Terry E. Branstad  
State of Iowa

  
Governor Rudy Perpich  
State of Minnesota

  
Governor John Ashcroft  
State of Missouri

  
Governor Tommy Thompson  
State of Wisconsin

## ATTACHMENT D

### Navigation Channel Maintenance

- **Five-Year Regional Dredged Material Management Plans (WRDA 2020 Section 125)**
  - **Legislative Provision** *(D-1 to D-11)*
  - **Implementation Guidance (10/29/2021)** *(D-12 to D-16)*
- **Beneficial Use Strategic Plan Legislative Provision (WRDA 2022 Section 8130)** *(D-17 to D-21)*
- **MVR River Resources Coordinating Team (RRCT) Letter to MVR Commander Transmitting On-site Inspection Team (OSIT) Recommendations (2/13/2023)** *(D-22 to D-24)*
- **UMRBA Interstate Water Quality Monitoring Reaches 8-9 Pilot Condition Assessment**
  - **Excerpts of Monitoring Data** *(D-25 to D-27)*
  - **Full Report:** <https://umrba.org/document/reaches8-9pilot-condition-assessment>



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1 information about the request and the reasons for  
2 the Secretary's determination.”.

3 **SEC. 124. SENSE OF CONGRESS ON MULTIPURPOSE**  
4 **PROJECTS.**

5 It is the sense of Congress that the Secretary, in co-  
6 ordination with non-Federal interests, should maximize  
7 the development, evaluation, and recommendation of  
8 project alternatives for future water resources develop-  
9 ment projects that produce multiple project benefits, such  
10 as navigation, flood risk management, and ecosystem res-  
11 toration benefits, including through the use of natural or  
12 nature-based features and the beneficial use of dredged  
13 material.

14 **SEC. 125. BENEFICIAL USE OF DREDGED MATERIAL;**  
15 **DREDGED MATERIAL MANAGEMENT PLANS.**

16 (a) NATIONAL POLICY ON THE BENEFICIAL USE OF  
17 DREDGED MATERIAL.—

18 (1) IN GENERAL.—It is the policy of the United  
19 States for the Corps of Engineers to maximize the  
20 beneficial use, in an environmentally acceptable  
21 manner, of suitable dredged material obtained from  
22 the construction or operation and maintenance of  
23 water resources development projects.

24 (2) PLACEMENT OF DREDGED MATERIALS.—

## 1315

1 (A) IN GENERAL.—In evaluating the place-  
2 ment of dredged material obtained from the  
3 construction or operation and maintenance of  
4 water resources development projects, the Sec-  
5 retary shall consider—

6 (i) the suitability of the dredged mate-  
7 rial for a full range of beneficial uses; and

8 (ii) the economic and environmental  
9 benefits, efficiencies, and impacts (includ-  
10 ing the effects on living coral) of using the  
11 dredged material for beneficial uses, in-  
12 cluding, in the case of beneficial use activi-  
13 ties that involve more than one water re-  
14 sources development project, the benefits,  
15 efficiencies, and impacts that result from  
16 the combined activities.

17 (B) CALCULATION OF FEDERAL STAND-  
18 ARD.—

19 (i) DETERMINATION.—The economic  
20 benefits and efficiencies from the beneficial  
21 use of dredged material considered by the  
22 Secretary under subparagraph (A) shall be  
23 included in any determination relating to  
24 the “Federal standard” by the Secretary  
25 under section 335.7 of title 33, Code of

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1 Federal Regulations, for the placement or  
2 disposal of such material.

3 (ii) REPORTS.—The Secretary shall  
4 submit to Congress—

5 (I) a report detailing the method  
6 and all of the factors utilized by the  
7 Corps of Engineers to determine the  
8 Federal standard referred to in clause  
9 (i); and

10 (II) for each evaluation under  
11 subparagraph (A), a report displaying  
12 the calculations for economic and en-  
13 vironmental benefits and efficiencies  
14 from the beneficial use of dredged ma-  
15 terial (including, where appropriate,  
16 the utilization of alternative dredging  
17 equipment and dredging disposal  
18 methods) considered by the Secretary  
19 under such subparagraph for the  
20 placement or disposal of such mate-  
21 rial.

22 (C) SELECTION OF DREDGED MATERIAL  
23 DISPOSAL METHOD FOR CERTAIN PURPOSES.—  
24 Section 204(d) of the Water Resources Develop-

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1           ment Act of 1992 (33 U.S.C. 2326(d)) is  
2           amended—

3                   (i) in paragraph (1)—

4                           (I) in the matter preceding sub-  
5                           paragraph (A), by striking “In devel-  
6                           oping” and all that follows through  
7                           “the non-Federal interest,” and in-  
8                           serting “At the request of the non-  
9                           Federal interest for a water resources  
10                          development project involving the dis-  
11                          posal of dredged material, the Sec-  
12                          retary, using funds appropriated for  
13                          construction or operation and mainte-  
14                          nance of the project, may select”; and

15                           (II) in subparagraph (B), by  
16                           striking “flood and storm damage and  
17                           flood reduction benefits” and inserting  
18                           “hurricane and storm or flood risk re-  
19                           duction benefits”; and

20                          (ii) by adding at the end the fol-  
21                          lowing:

22                           “(5) SELECTION OF DREDGED MATERIAL DIS-  
23                          POSAL METHOD FOR CERTAIN PURPOSES.—Activities  
24                          carried out under this subsection—

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1           “(A) shall be carried out using amounts  
2           appropriated for construction or operation and  
3           maintenance of the project involving the dis-  
4           posal of the dredged material; and

5           “(B) shall not carried out using amounts  
6           made available under subsection (g).”.

7           (b) BENEFICIAL USE OF DREDGED MATERIAL.—

8           (1) PILOT PROGRAM PROJECTS.—Section 1122  
9           of the Water Resources Development Act of 2016  
10          (33 U.S.C. 2326 note) is amended—

11           (A) in subsection (a)—

12           (i) in paragraph (6), by striking “;  
13           and” and inserting a semicolon;

14           (ii) in paragraph (7)(C), by striking  
15           the period at the end and inserting “;  
16           and”; and

17           (iii) by adding at the end the fol-  
18           lowing:

19           “(8) recovering lost storage capacity in res-  
20           ervoirs due to sediment accumulation, if the project  
21           also has a purpose described in any of paragraphs  
22           (1) through (7).”;

23           (B) in subsection (b)(1), by striking “20”  
24           and inserting “35”; and

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1 (C) in subsection (g), by striking “20” and  
2 inserting “35”.

3 (2) SENSE OF CONGRESS.—It is the sense of  
4 Congress that the Secretary, in selecting projects for  
5 the beneficial use of dredged materials under section  
6 1122 of the Water Resources Development Act of  
7 2016 (33 U.S.C. 2326 note), should ensure the thor-  
8 ough evaluation of project submissions from rural,  
9 small, and economically disadvantaged communities.

10 (3) PROJECT SELECTION.—In selecting projects  
11 for the beneficial use of dredged materials under  
12 section 1122 of the Water Resources Development  
13 Act of 2016 (33 U.S.C. 2326 note), the Secretary  
14 shall prioritize the selection of at least one project  
15 for the utilization of thin layer placement of dredged  
16 fine and coarse grain sediment and at least one  
17 project for recovering lost storage capacity in res-  
18 ervoirs due to sediment accumulation authorized by  
19 subsection (a)(8) of such section, to the extent that  
20 a non-Federal interest has submitted an application  
21 for such project purposes that otherwise meets the  
22 requirements of such section.

23 (4) TEMPORARY EASEMENTS.—Section 1148 of  
24 the Water Resources Development Act of 2018 (33  
25 U.S.C. 2326 note) is amended—

1320

1 (A) in subsection (a)—

2 (i) by striking “grant” and inserting

3 “approve”; and

4 (ii) by striking “granting” and insert-

5 ing “approving”; and

6 (B) in subsection (b), by striking “grants”

7 and inserting “approves”.

8 (c) FIVE-YEAR REGIONAL DREDGED MATERIAL  
9 MANAGEMENT PLANS.—

10 (1) IN GENERAL.—Not later than 1 year after

11 the date of enactment of this Act, and annually

12 thereafter, the District Commander of each district

13 of the Corps of Engineers that obtains dredged ma-

14 terial through the construction or operation and

15 maintenance of a water resources development

16 project shall, at Federal expense, develop and submit

17 to the Secretary a 5-year dredged material manage-

18 ment plan in coordination with relevant State agen-

19 cies and stakeholders.

20 (2) SCOPE.—Each plan developed under this

21 subsection shall include—

22 (A) a dredged material budget for each

23 watershed or littoral system within the district;

24 (B) an estimate of the amount of dredged

25 material likely to be obtained through the con-

1           struction or operation and maintenance of all  
2           water resources development projects projected  
3           to be carried out within the district during the  
4           5-year period following submission of the plan,  
5           and the estimated timing for obtaining such  
6           dredged material;

7           (C) an identification of potential water re-  
8           sources development projects projected to be  
9           carried out within the district during such 5-  
10          year period that are suitable for, or that re-  
11          quire, the placement of dredged material, and  
12          an estimate of the amount of dredged material  
13          placement capacity of such projects;

14          (D) an evaluation of—

15               (i) the suitability of the dredged mate-  
16               rial for a full range of beneficial uses; and

17               (ii) the economic and environmental  
18               benefits, efficiencies, and impacts (includ-  
19               ing the effects on living coral) of using the  
20               dredged material for beneficial uses, in-  
21               cluding, in the case of beneficial use activi-  
22               ties that involve more than one water re-  
23               sources development project, the benefits,  
24               efficiencies, and impacts that result from  
25               the combined activities;



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1 (E) the district-wide goals for beneficial  
2 use of the dredged material, including any ex-  
3 pected cost savings from aligning and coordi-  
4 nating multiple projects (including projects  
5 across Corps districts) in the use of the dredged  
6 material; and

7 (F) a description of potential beneficial use  
8 projects identified through stakeholder sollicita-  
9 tion and coordination.

10 (3) PUBLIC COMMENT.—In developing each  
11 plan under this subsection, each District Com-  
12 mander shall provide notice and an opportunity for  
13 public comment, including a solicitation for stake-  
14 holders to identify beneficial use projects, in order to  
15 ensure, to the extent practicable, that beneficial use  
16 of dredged material is not foregone in a particular  
17 fiscal year or dredging cycle.

18 (4) PUBLIC AVAILABILITY.—Upon submission  
19 of each plan to the Secretary under this subsection,  
20 each District Commander shall make the plan pub-  
21 licly available, including on a publicly available  
22 website.

23 (5) TRANSMISSION TO CONGRESS.—As soon as  
24 practicable after receiving a plan under subsection

1 (a), the Secretary shall transmit the plan to Con-  
2 gress.

3 (6) REGIONAL SEDIMENT MANAGEMENT  
4 PLANS.—A plan developed under this section—

5 (A) shall be in addition to regional sedi-  
6 ment management plans prepared under section  
7 204(a) of the Water Resources Development  
8 Act of 1992 (33 U.S.C. 2326(a)); and

9 (B) shall not be subject to the limitations  
10 in section 204(g) of the Water Resources Devel-  
11 opment Act of 1992 (33 U.S.C. 2326(g)).

12 (d) DREDGE PILOT PROGRAM.—

13 (1) REVISIONS.—Section 1111 of the Water  
14 Resources Development Act of 2018 (33 U.S.C.  
15 2326 note) is amended—

16 (A) in subsection (a), by striking “for the  
17 operation and maintenance of harbors and in-  
18 land harbors” and all that follows through the  
19 period at the end and inserting the following:

20 “for the operation and maintenance of—

21 “(1) harbors and inland harbors referred to in  
22 section 210(a)(2) of the Water Resources Develop-  
23 ment Act of 1986 (33 U.S.C. 2238(a)(2)); or

24 “(2) inland and intracoastal waterways of the  
25 United States described in section 206 of the Inland

1 Waterways Revenue Act of 1978 (33 U.S.C.  
2 1804).”; and

3 (B) in subsection (b), by striking “or in-  
4 land harbors” and inserting “, inland harbors,  
5 or inland or intracoastal waterways”.

6 (2) COORDINATION WITH EXISTING AUTHORI-  
7 TIES.—The Secretary may carry out the dredge pilot  
8 program authorized by section 1111 of the Water  
9 Resources Development Act of 2018 (33 U.S.C.  
10 2326 note) in coordination with Federal regional  
11 dredge demonstration programs in effect on the date  
12 of enactment of this Act.

13 **SEC. 126. AQUATIC ECOSYSTEM RESTORATION FOR ANAD-**  
14 **ROMOUS FISH.**

15 (a) ANADROMOUS FISH HABITAT AND PASSAGE.—  
16 Section 206 of the Water Resources Development Act of  
17 1996 (33 U.S.C. 2330) is amended—

18 (1) in subsection (a), by adding at the end the  
19 following:

20 “(3) ANADROMOUS FISH HABITAT AND PAS-  
21 SAGE.—

22 “(A) MEASURES.—A project under this  
23 section may include measures to improve habi-  
24 tat or passage for anadromous fish, including—



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
CIVIL WORKS  
108 ARMY PENTAGON  
WASHINGTON, DC 20310-0108

SACW

October 29, 2021

MEMORANDUM FOR COMMANDING GENERAL, U.S. ARMY CORPS OF ENGINEERS

SUBJECT: Implementation Guidance for Section 125(c) of the Water Resources Development Act of 2020, Dredged Material Management Plans

1. Section 125(c) of the Water Resources Development Act (WRDA) of 2020 requires that the District Commander of any district that obtains dredged material from construction or operation and maintenance (O&M) of a water resources development project, provide the Secretary with a 5-year dredged material management plan (DMMP) no later than 1 year after the date of WRDA 2020 enactment. Plans will be completed at 100 percent Federal expense and done in coordination with relevant State agencies and stakeholders. Plans will be updated and submitted to the Secretary annually. Further, Section 125(c) details the scope of each plan developed under this section and requires public comment and public availability. The Secretary will transmit all plans to Congress. Plans developed under Section 125(c) will be in addition to regional sediment management plans prepared under Section 204(a) of WRDA 1992 and are not subject to limitations in Section 204(g) of WRDA 1992. A copy of Section 125(c) of WRDA 2020 is enclosed.

2. This Section is applicable to Headquarters and all Divisions, Districts, and Field Offices of the U.S. Army Corps of Engineers (Corps) with civil works responsibilities.

3. Definitions. The following definitions apply to this guidance:

a. As defined in 33 C.F.R. 335.7, the term "Federal standard" means the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria.

b. Non-Federal interest. As defined in section 221(b) of the Flood Control Act of 1970 (42 U.S.C. 1962d-5b(b)), the term "non-Federal interest" means a legally constituted public body (including an Indian Tribe and a tribal organization) or a nonprofit entity with the consent of the affected local government, that has the full authority and capability to perform the terms of the agreement, and to pay damages, if necessary, in case of failure to perform.

4. Preparation of 5-year DMMPs by District Commanders is dependent upon the appropriations of funds. No work will be conducted to meet the 5-year DMMP

SACW

SUBJECT: Implementation Guidance for Section 125(c) of the Water Resources Development Act of 2020, Dredged Material Management Plans

requirement until funding has been appropriated. Subject to the availability of funds, the 5-year DMMPs will be updated on an annual basis following initial preparation. The 5-year DMMPs will be prepared at full Federal expense.

5. The District Commander is responsible for preparation of the 5-year DMMP. The 5-year DMMP will adhere generally to the Technical Framework outlined in Section V of Engineer Manual (EM) 1110-2-5025, Dredging and Dredged Material Management and will include following:

a. A dredged material sediment budget for each watershed or littoral system within the district.

b. An assessment of the dredging needs for the construction or O&M of water resources development projects anticipated to be carried out within the district's civil works Area of Responsibility (AOR) during the 5-year period covered by the DMMP.

c. Identification and evaluation of alternatives for dredged material placement. Alternatives will include:

(1) The placement of dredged material to construct or periodically renourish water resources development projects anticipated to be carried out within the district during such 5-year period covered by the DMMP.

(2) Opportunities to use dredged material during the 5-year period covered by the DMMP for the full range of beneficial uses described in EM 1110-2-5025.

(3) Open-water placement.

(4) Confined placement.

d. A Real Estate Plan analyzing the required real estate interests in accordance with current policy as described in ER 405-1-12.

6. The 5-year DMMP will characterize the socioeconomic and environmental impacts and benefits of each placement alternative determined to be reasonable. An alternative will be considered reasonable if it is technically feasible and environmentally acceptable. The DMMP will identify the following plans:

a. The alternative, or combination of alternatives, that constitutes the Federal standard for the dredging of water resources development projects within the district's AOR during the 5-year period covered by the DMMP. Selection of the Federal standard will consider any expected efficiencies or cost savings from aligning and coordinating the dredging needs and dredged material disposal capacity of multiple projects within the district's AOR.

SACW

SUBJECT: Implementation Guidance for Section 125(c) of the Water Resources Development Act of 2020, Dredged Material Management Plans

b. Technically feasible, environmentally acceptable opportunities for beneficial use of dredged material that may be pursued during the 5-year period if the incremental costs in excess of the Federal standard are funded by a non-Federal interest, another water resource development project, or another Federal agency.

c. Section 204(d) placements and Section 204 projects that may be pursued during the 5-year period subject to the availability of adequate Federal funding.

7. The District Commander will ensure that the Dredge Information System (DIS) is maintained with accurate dredging and placement data to support precise tracking of beneficial use and dredge material management planning.

8. On an annual basis, by 31 December the Director of Civil Works will consolidate the 5-year DMMPs from all reporting District Commanders and provide the DMMPs to the Assistant Secretary of the Army (Civil Works) (ASA (CW)) for review and transmittal to Congress. Each District Commander will post the district's DMMPs to the district's public-facing website upon transmitting a plan to the Division Commander for transmittal to the ASA (CW) through Corps headquarters.

9. The 5-year DMMP will be developed with the input of non-Federal interests, stakeholders, and the public. Annually while developing the 5-year DMMPs, District Commanders will solicit public input for a minimum of 30-days. As a part of the public comment effort stakeholders will be asked to provide proposals for potential beneficial use placement opportunities.

10. Under no circumstances shall this policy be modified, supplemented, amended, or rescinded, directly or indirectly, nor shall the Corps take action not in accordance with the direction herein, without the express written approval from the ASA(CW). This guidance shall be transmitted to the appropriate Corps Division and District Commanders and posted to the Corps WRDA website within five business days of receipt (written or electronic) from this office. Guidance shall be transmitted and posted as is and without additional guidance attached.

11. Questions regarding this implementation guidance should be directed to Gib Owen, Office of the ASA (CW), at gib.a.owen.civ@army.mil or 703-695-4641.



JAIME A. PINKHAM  
Acting Assistant Secretary of the Army  
(Civil Works)

Encl

CF:  
DCG-CEO  
DCW

SUBJECT: Implementation Guidance for Section 125(c) of the Water Resources Development Act of 2020, Dredged Material Management Plans

Section 125(c) Five-Year Regional Dredged Material Management Plans

(1) In general. Not later than 1 year after the date of enactment of this Act, and annually thereafter, the District Commander of each district of the Corps of Engineers that obtains dredged material through the construction or operation and maintenance of a water resources development project shall, at Federal expense, develop and submit to the Secretary a 5-year dredged material management plan in coordination with relevant State agencies and stakeholders.

(2) Scope. Each plan developed under this subsection shall include -

(A) a dredged material budget for each watershed or littoral system within the district;

(B) an estimate of the amount of dredged material likely to be obtained through the construction or operation and maintenance of all water resources development projects projected to be carried out within the district during the 5-year period following submission of the plan, and the estimated timing for obtaining such dredged material;

(C) an identification of potential water resources development projects projected to be carried out within the district during such 5-year period that are suitable for, or that require, the placement of dredged material, and an estimate of the amount of dredged material placement capacity of such projects;

(D) an evaluation of -

- (i) the suitability of the dredged material for a full range of beneficial uses; and
- (ii) the economic and environmental benefits, efficiencies, and impacts (including the effects on living coral) of using the dredged material for beneficial uses, including, in the case of beneficial use activities that involve more than one water resources development project, the benefits, efficiencies, and impacts that result from the combined activities;

(E) the district-wide goals for beneficial use of the dredged material, including any expected cost savings from aligning and coordinating multiple projects (including projects across Corps districts) in the use of the dredged material; and

(F) a description of potential beneficial use projects identified through stakeholder solicitation and coordination.

(3) Public comment. In developing each plan under this subsection, each District Commander shall provide notice and an opportunity for public comment, including a solicitation for stakeholders to identify beneficial use projects, in order to ensure, to the extent practicable, that beneficial use of dredged material is not foregone in a particular fiscal year or dredging cycle.

Enclosure

SUBJECT: Implementation Guidance for Section 125(c) of the Water Resources Development Act of 2020, Dredged Material Management Plans

(4) Public availability. Upon submission of each plan to the Secretary under this subsection, each District Commander shall make the plan publicly available, including on a publicly available website.

(5) Transmission to congress. As soon as practicable after receiving a plan under subsection (a), the Secretary shall transmit the plan to Congress.

(6) Regional sediment management plans. A plan developed under this section -  
(A) shall be in addition to regional sediment management plans prepared under section 204(a) of the Water Resources Development Act of 1992 (33 U.S.C. 2326(a)); and

(B) shall not be subject to the limitations in section 204(g) of the Water Resources Development Act of 1992 (33 U.S.C. 2326(g)).



1 (A) in paragraph (1), by striking “15” and  
2 inserting “50”; and

3 (B) in paragraph (2), by striking “15”;  
4 and  
5 (2) in subsection (e)—

6 (A) by striking “10-year period” and in-  
7 serting “16-year period”; and

8 (B) by striking “6 years” and inserting  
9 “12 years”.

10 (b) INDIAN RIVER INLET SAND BYPASS PLANT.—

11 For purposes of the project for hurricane-flood protection  
12 and beach erosion control at Indian River Inlet, Delaware,  
13 commonly known as the “Indian River Inlet Sand Bypass  
14 Plant”, authorized by section 869 of the Water Resources  
15 Development Act of 1986 (100 Stat. 4182), a study car-  
16 ried out under section 156(b) of the Water Resources De-  
17 velopment Act of 1976 (42 U.S.C. 1962d–5f(b)) shall con-  
18 sider as an alternative for periodic nourishment continued  
19 reimbursement of the Federal share of the cost to the non-  
20 Federal interest for the project to operate and maintain  
21 the sand bypass plant.

22 **SEC. 8130. BENEFICIAL USE OF DREDGED MATERIAL; MAN-**  
23 **AGEMENT PLANS.**

24 (a) STRATEGIC PLAN ON BENEFICIAL USE OF  
25 DREDGED MATERIAL.—

1           (1) IN GENERAL.—Not later than 1 year after  
2           the date of enactment of this section, the Secretary  
3           shall submit to the Committee on Transportation  
4           and Infrastructure of the House of Representatives  
5           and the Committee on Environment and Public  
6           Works of the Senate a strategic plan that identifies  
7           opportunities and challenges relating to furthering  
8           the policy of the United States to maximize the ben-  
9           eficial use of suitable dredged material obtained  
10          from the construction or operation and maintenance  
11          of water resources development projects, as de-  
12          scribed in section 125(a)(1) of the Water Resources  
13          Development Act of 2020 (33 U.S.C. 2326g).

14          (2) CONSULTATION.—In developing the stra-  
15          tegic plan under paragraph (1), the Secretary  
16          shall—

17                 (A) consult with relevant Federal agencies  
18                 involved in the beneficial use of dredged mate-  
19                 rial;

20                 (B) solicit and consider input from State  
21                 and local governments and Indian Tribes, while  
22                 seeking to ensure a geographic diversity of  
23                 input from the various Corps of Engineers divi-  
24                 sions; and

1 (C) consider input received from other  
2 stakeholders involved in beneficial use of  
3 dredged material.

4 (3) INCLUSION.—The Secretary shall include in  
5 the strategic plan developed under paragraph (1)—

6 (A) identification of any specific barriers  
7 and conflicts that the Secretary determines im-  
8 pede the maximization of beneficial use of  
9 dredged material at the Federal, State, and  
10 local level, and any recommendations of the  
11 Secretary to address such barriers and conflicts;

12 (B) identification of specific measures to  
13 improve interagency and Federal, State, local,  
14 and Tribal communications and coordination to  
15 improve implementation of section 125(a) of the  
16 Water Resources Development Act of 2020 (33  
17 U.S.C. 2326g); and

18 (C) identification of methods to prioritize  
19 the use of dredged material to benefit water re-  
20 sources development projects in areas experi-  
21 encing vulnerabilities to coastal land loss.

22 (b) DREDGED MATERIAL MANAGEMENT PLANS FOR  
23 HARBORS IN THE STATE OF OHIO.—

24 (1) IN GENERAL.—

1 (A) FORMULATION OF PLAN.—In devel-  
2 oping each dredged material management plan  
3 for a federally authorized harbor in the State of  
4 Ohio, including any such plan under develop-  
5 ment on the date of enactment of this Act, each  
6 District Commander shall include, as a con-  
7 straint on the formulation of the base plan and  
8 any alternatives, a prohibition consistent with  
9 section 105 of the Energy and Water Develop-  
10 ment and Related Agencies Appropriations Act,  
11 2022 (Public Law 117–103; 136 Stat. 217) on  
12 the use of funds for open-lake disposal of  
13 dredged material.

14 (B) MAXIMIZATION OF BENEFICIAL USE.—  
15 Each dredged material management plan for a  
16 federally authorized harbor in the State of  
17 Ohio, including any such dredged material man-  
18 agement plan under development on the date of  
19 enactment of this Act, shall maximize the bene-  
20 ficial use of dredged material under the base  
21 plan and under section 204(d) of the Water Re-  
22 sources Development Act of 1992 (33 U.S.C.  
23 2326(d)).

24 (2) SAVINGS PROVISION.—Nothing in this sub-  
25 section prohibits the use of funds for open-lake dis-

1       posal of dredged material if such use is not other-  
2       wise prohibited by law.

3       **SEC. 8131. CRITERIA FOR FUNDING OPERATION AND MAIN-**  
4                   **TENANCE OF SMALL, REMOTE, AND SUBSIST-**  
5                   **ENCE HARBORS.**

6       (a) IN GENERAL.—Not later than 180 days after the  
7       date of enactment of this Act, the Secretary shall develop  
8       specific criteria for the annual evaluation and ranking of  
9       maintenance dredging requirements for small harbors and  
10      remote and subsistence harbors, taking into account the  
11      following:

12           (1) The contribution of a harbor to the local  
13           and regional economy.

14           (2) The extent to which a harbor has deterio-  
15           rated since the last cycle of maintenance dredging.

16           (3) Public safety concerns.

17      (b) INCLUSION IN GUIDANCE.—The Secretary shall  
18      include the criteria developed under subsection (a) in the  
19      annual Civil Works Direct Program Development Policy  
20      Guidance of the Secretary.

21      (c) REPORT TO CONGRESS.—The Secretary shall in-  
22      clude in each biennial report submitted under section  
23      210(e)(3) of the Water Resources Development Act of  
24      1986 (33 U.S.C. 2238(e)(3)) a ranking of projects in ac-

February 13, 2023

COL Jesse Curry  
District Commander  
US Army Corps of Engineers, Rock Island District  
PO 2004  
Rock Island, IL 61204-2004

Dear Sir:

This letter provides partner agency feedback regarding maintenance of the Upper Mississippi River Nine-foot Navigation Channel in the Rock Island District (District) area of responsibility. The River Resources Coordinating Team (RRCT) facilitates coordination among Federal and State agencies with management or regulatory responsibilities along the Upper Mississippi River System (UMRS) in the Rock Island District. The RRCT coordinates and advises the On-Site Inspection Team (OSIT), a team of field personnel from various natural resource agencies that works closely with your Operations Division by providing input on dredged material placement and channel maintenance activities.

The OSIT developed feedback and recommendations as part of the OSIT 2021 Annual Report and asked the RRCT to share these with you. The recommendations fall under the major groups of Policy, Strategy, Communication and Support.

#### Policy

1. We request District staff participate in development of USACE implementation guidance and policy to ensure policy and guidance support an effective UMRS channel maintenance program that includes beneficial use of dredged material. Recent law and policy directives of interest include, but are not limited to, the following: 1) Water Resources Development Act of 2020 Section 125 Beneficial use of dredged material; dredged material management plans, and 2) Policy Directive on Comprehensive Documentation of Benefits in Decision Document.
2. We recommend the District prioritize resolving issues that currently limit implementation of identified beneficial use opportunities. We support your continued work on real estate instruments that support public private partnering on beneficial use of dredged material.

#### Channel Maintenance Strategy

3. We request development of a District-level strategy for regional Dredged Material Management Program (DMMP) planning and implementation. The strategy should prioritize reaches, pools, or clusters of pools that chronically require dredging and those that have recently necessitated higher dredging volumes.
4. The aforementioned strategy should give priority to the development and use of upland placement sites and environmental and/or public beneficial use opportunities, including construction of existing Corps-owned upland sites to make them ready to receive dredged material.
5. We recommend additional investigation regarding the application of a large quantity "clean-out" approach to maximize dredging efficiencies.
6. We recognize and appreciate challenges of limited funding and the unpredictability of the changing river landscape. We remain ready and willing to work with you on proactive planning approaches.

Communication. The OSIT appreciates the ongoing communication regarding channel maintenance. The following recommendations would improve communications and provide the OSIT access to key documents to facilitate coordination.

7. Recommend that the District share electronic documents to aid in coordination of dredged material placement. Documents to be shared include: DMMP Reports, stand-alone Environmental Assessments for placement sites, updated dredge cut and placement site mapping files (.kmz or .shp), and sediment chemistry data.
8. Recommend that the District work with the OSIT to develop a charter and update the OSIT Standard Operating Procedures (SOP) to codify processes. As part of the SOP development, we recommend that the District continues to prioritize regular communication and early coordination with the OSIT. We request the SOP identify criteria for re-engaging the OSIT in dredge material placement discussions including re-engagement when dredging quantity estimates at a given site change appreciably from what was originally coordinated.

Support Reducing Sediment Delivery

9. Request the District to support State and local efforts to reduce sediment input and sediment delivery from tributaries to the UMRS through USACE planning and implementation authorities including the Continuing Authorities Program, Planning Assistance to States, Floodplain Management Services, and specifically authorized studies and projects. The RRCT supports minimizing sediment inputs reducing the sediment load at its source, in the interest of reducing shoaling within the navigation project while protecting UMRS habitats.

In closing, the RRCT asks that you consider these recommendations to support policy development, develop planning and implementation strategies, and communicate important information to continue to work together to maintain the navigation channel and protect the environment. Please reach out to us with any questions or to discuss further.

Sincerely,

Dave Glover  
Co-chair, River Resources Coordinating Team  
Illinois Department of Natural Resources

Jodi Creswell  
Co-chair, River Resources Coordinating Team  
US Army Corps of Engineers

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# Appendix 6

Summary of all PFAS substances analyzed from 2019 to 2021 in raw (untreated) water from Reaches 8 and 9. Samples were collected at Illinois EPA fixed water quality monitoring sites at L&D 17 (New Boston, IL), L&D 19 (Keokuk, IA), and L&D 21 (Quincy, IL). Limited sampling and analysis were conducted during the winter of 2019-2020 by public water suppliers at Warsaw, IL, and Quincy, IL. Note: a spike of PFAS substances that came through Reaches 8 and 9 in late August and early September 2021, and high values were found at all the fixed sites. This spike resulted in the similarity of maximum detected values for many of the PFAS substances.

PARAMETER	NO. OF ANALYSES	MAXIMUM DETECTED VALUE	UNITS
1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)	42	5.083	ng/l
1H, 1H, 2H, 2H-perfluorohexane sulfonate (4:2 FTS)	42	5.083	ng/l
1H,1H,2H,2H-perfluorooctane sulfonate (6:2 FTS)	25	5.083	ng/l
N-ethylperfluoro-1-octanesulfonamidoacetic acid (NEtFOSAA)	42	5.083	ng/l
N-methylperfluoro-1-octanesulfonamidoacetic acid (NMeFOSAA)	42	5.083	ng/l
Perfluoro-1-decanesulfonate (PFDS)	42	5.083	ng/l
Perfluoro-1-heptanesulfonate	42	5.083	ng/l
Perfluoro-1-nonanesulfonate (PFNS)	42	5.083	ng/l
Perfluoro-1-octanesulfonamide (FOSA)	42	5.083	ng/l
Perfluoro-1-pentanesulfonate (PFPeS)	42	5.083	ng/l
Perfluorobutanoate (PFBA)	42	25.417	ng/l
Perfluorobutyl sulfonate (PFBS)	37	5.083	ng/l
Perfluorodecanoate (PFDA)	42	5.083	ng/l
Perfluorododecanoate	42	5.083	ng/l
Perfluoroheptanoate (PFHpA)	41	5.083	ng/l
Perfluorohexanoate (PFHxA)	42	5.083	ng/l
Perfluorohexyl sulfonate (PFHxS)	42	5.083	ng/l
Perfluorononanoate (PFNA)	42	5.083	ng/l
Perfluorooctanoate (PFOA)	42	5.083	ng/l
Perfluorooctyl sulfonate (PFOS)	33	4.828	ng/l
Perfluoropentanoate (PFPeA)	42	25.417	ng/l
Perfluorotetradecanoate (PFTreA)	42	5.083	ng/l
Perfluorotridecanoate	42	5.083	ng/l
Perfluoroundecanoate	42	5.083	ng/l

# Appendix 8

Length and weight of fish collected from Reaches 8 and 9 in 2021 from which skin-off fillets were analyzed for PCBs, mercury, and PFAS substances. NA = Not Available.

REACH	RIVER MILE	PARENT FIELD NUMBER	FISH SPECIES	DUPLICATE SAMPLE (Y/N)	FISH TISSUE FIELD NUMBER	LENGTH (MM)	WEIGHT (GRAMS)
8	433	UMR15-0182	Common Carp	N	21018208101F009	528	NA
8	433	UMR15-0182	Largemouth Bass	N	21018208101F005	383	820
8	433	UMR15-0182	Common Carp	N	21018208101F010	523	1904
8	428	UMR15-0186	Common Carp	N	21018608171B011	493	1622
8	428	UMR15-0186	Common Carp	N	21018608171B009	508	1659
8	415	UMR15-0194	Common Carp	N	21019408161B001	483	1430
8	398	UMR15-0195	Common Carp	N	21019508181B010	520	1944
8	398	UMR15-0195	Common Carp	N	21019508181I005	523	1924
8	377.5	UMR15-0183	Largemouth Bass	N	21018309011F011	423	1371
8	377	UMR15-0187	Largemouth Bass	Y	21018709102D007	392	1163
8	377	UMR15-0187	Largemouth Bass	Y	21018709102J006	374	818
8	377	UMR15-0187	Largemouth Bass	N	21018709011J001	405	1024
8	377	UMR15-0187	Largemouth Bass	N	21018708241D001	376	380
8	377	UMR15-0187	Common Carp	N	21018708241I006	502	1578
8	377	UMR15-0187	Common Carp	N	21018708241I013	462	1318
8	377	UMR15-0187	Largemouth Bass	N	21018709011H001	376	887
8	377	UMR15-0187	Largemouth Bass	Y	21018709102J004	401	961
8	367	UMR15-0181	Largemouth Bass	N	21018109211I001	389	1154

## Appendix 8 (continued)

REACH	RIVER MILE	PARENT FIELD NUMBER	FISH SPECIES	DUPLICATE SAMPLE (Y/N)	FISH TISSUE FIELD NUMBER	LENGTH (MM)	WEIGHT (GRAMS)
8	367	UMR15-0181	Largemouth Bass	N	21018109211A008	414	1147
8	363	UMR15-0189	Common Carp	N	21018909281C004	518	1684
9	357.5	UMR15-0034	Common Carp	N	2100347281C001	528	NA
9	353	UMR15-0045	Common Carp	N	21004507281A002	431	NA
9	353	UMR15-0045	Common Carp	N	21004507281G001	442	NA
9	353	UMR15-0045	Largemouth Bass	Y	21004509211B022	339	NA
9	350	UMR15-0038	Common Carp	N	21003807291G002	522	NA
9	343	UMR15-0044	Common Carp	N	21004408041G001	500	NA
9	343	UMR15-0044	Largemouth Bass	N	21004408041E011	312	NA
9	341	UMR15-0040	Common Carp	N	21004008041F018	531	NA
9	333	UMR15-0031	Largemouth Bass	N	21003109201G001	385	NA
9	329	UMR15-0039	Largemouth Bass	N	21003908021D001	309	NA
9	329	UMR15-0039	Common Carp	N	21003908021F037	490	NA
9	329	UMR15-0039	Common Carp	N	21003908021J012	473	NA
9	328.5	UMR15-0036	Common Carp	N	21003607271D002	546	NA
9	328.5	UMR15-0036	Common Carp	N	21003607271C001	459	NA
9	328.5	UMR15-0036	Largemouth Bass	N	21003607271E004	286	NA

## **ATTACHMENT E**

### **Resilience Planning**

- **Iowa Drought Plan Update (1/2023)**
  - **Excerpts of Executive Summary, Mitigation Recommendations, and Implementation Steps** *(E-1 to E-11)*
  - **Link to Full Iowa Drought Plan:**  
<https://www.iowadnr.gov/Portals/idnr/uploads/files/2023-iowa-drought-plan.pdf>
  
- **Illinois State Water Plan Update (1/2023)**
  - **Press Release (1/11/2023)** *(E-12 to E-13)*
  - **Excerpt of Recommendations and Cross-Cutting Impacts (12/2022)** *(E-14 to E-15)*
  - **Link to Full Illinois Drought Plan:**  
[https://www2.illinois.gov/dnr/WaterResources/Documents/SWPTF\\_Report\\_Dec2022.pdf](https://www2.illinois.gov/dnr/WaterResources/Documents/SWPTF_Report_Dec2022.pdf)

## **1.0 Executive Summary**

This drought plan was developed as a tool to be used by local, county, and state agencies and governments before, during, and after droughts in Iowa. The process for development of this plan was started during meetings held during the summer of 2021 to address growing concerns over drought conditions in Iowa. Plan development began in earnest in early 2022 and culminated in this Iowa Drought Plan (IDP). In order to develop and implement this plan a Drought Planning Team was assembled, utilizing staff from the Iowa Department of Natural Resources (DNR), the Department of Agriculture and Land Stewardship (IDALS), and Iowa Department of Homeland Security and Emergency Management (HSEMD).

The IDP is intended to provide the State of Iowa with a planned and collaborative approach to plan for, identify, respond to, and recover from a drought. To accomplish these objectives the IDP addresses:

### **1.1 Drought Regions**

The State of Iowa was divided into five drought regions based, in part, on the landform regions of Iowa. Landform regions largely reflect the diversity of geologic landscapes shaped by Quaternary age glacial deposition and post-glacial erosion over the last two million years or so. The different landform regions have similar topography, soils, geology and hydrology that make them appropriate for classifying drought regions in the state. The landform regions are irregular boundaries but the drought regions follow county boundaries for better state administration.

### **1.2 Drought Triggers and Actions**

The IDP includes a data driven system for determination of drought status for each of the five drought regions of the state. Within each of the five drought regions, conditions will be assessed as Normal, Drought Watch, Drought Warning, or Drought Emergency. For any of these drought conditions, the IDP indicates specific actions and evaluations that will be done and communicated to state, county, and local officials so that appropriate activities can be undertaken. The IDP also indicates information and data that will be communicated to state, county, and local officials, as well as indicating which local and state agencies will be asked to participate in drought discussions during various levels of drought conditions.

### **1.3 Vulnerability & Impact Assessment**

No portion of the State of Iowa is immune from drought conditions, but different regions and sectors are more or less vulnerable at different points in a drought. The five regions delineated in this plan are vulnerable to drought for different reasons: lower annual precipitation and fewer deep groundwater resources make the northwestern quadrant of the state more susceptible to precipitation deficits. The northeastern region has generally reliable precipitation and good groundwater resources, but still experiences agricultural losses at or above the average. The southern portion of the state is generally dependent on surface waters and shallow groundwater sources due to poor water quality in deeper aquifers, but the southeastern part of the state sees more precipitation than other regions.

Sectors such as water supply and agriculture generally feel the impacts of drought first and most strongly. In 2022 dollars, Iowa has seen over \$5.3 billion in crop loss insurance claims from 1989 to 2022 due to drought. An added difficulty for water suppliers is that during dry times, demand for water often spikes, both to deal with concurrent heat waves and to irrigate crops and lawns suffering from the lack of precipitation.

Many industries in Iowa are dependent on water, such as food processing and chemical manufacturing. Depending on the severity and location of the drought, energy supply may also be impacted when power plants are unable to use and dispose of water to cool generators. The environment & recreation sectors are impacted by drought, since much of the outdoor recreation in Iowa is dependent on the quality and quantity of surface waters. Even non-water-based recreation is aided by healthy plant and animal life, which is negatively affected by drought. Public health can see negative impacts from disease both during and after droughts.

Drought poses threats to Iowa that can severely impact public health and social, environmental, and economic well-being. Iowa is expected to see droughts increase in frequency, intensity, and duration, given long-term atmospheric

trends. As an agricultural state that largely depends on rainfall rather than irrigation, this poses serious consequences for the state’s environment, economy, and society.

## **1.4 Mitigation & Response**

Actions that can mitigate the effects of drought are often less obvious than actions that mitigate other natural disasters. When they are obvious, they can be expensive to implement (e.g., building additional water storage). Adding to the difficulty of mitigating drought, it is often hard to tell whether dry conditions constitute a drought, or if so, how long they are expected to last. Droughts are thus hard to prepare for in the short-term and it can be difficult to know the appropriate level of response.

A major element of drought preparedness, then, is public awareness of potential and current drought conditions, and capacity to respond on the local level. Consequently, coordinated state messaging and public education play a role in mitigating drought. To facilitate early warning and accurate information, monitoring networks could be improved and expanded (e.g., for soil moisture, stream levels, or precipitation measurements). Infrastructure, agricultural practices, and nature-based solutions also play an important role in improving resilience against drought. If implemented, the mitigation recommendations listed in Mitigation Recommendations are intended to reduce Iowa’s vulnerability to drought.

## **1.5 Implementation**

As part of implementing the plan, a Drought Coordinating Team (DCT), comprised of staff from the DNR, HSEMD, and IDALS will be responsible for confirming drought levels, coordinating state messaging on drought conditions, and creating materials for public information on drought preparedness and response. The materials currently expected to be developed are listed in Informational Material to Develop.

The Iowa Drought Plan is expected to undergo revisions and updates as capacities and conditions change, and as needed adjustments are recognized. The DCT will be responsible for updating the plan every five years, with one additional update expected within the first two years of implementation.

## **2.0 Iowa Drought Plan Purpose**

The Iowa Drought Plan (IDP) is intended to provide the State of Iowa with a planned and collaborative approach to plan for, identify, respond to, and recover from a drought. To accomplish these objectives the IDP:

- Incorporates input from community and industry stakeholders, scientists, and policymakers
- Provides an overview of Iowa climate conditions and historical drought conditions, along with a history of drought planning in the state.
- Identifies and provides organizational guidance for the involvement of state agencies during all phases of drought.
- Provides an operational framework to be followed in addressing drought and drought-related activities, including a determination of communication mechanisms and strategies to be used by state agencies during all phases of drought.
- Defines regions of Iowa selected for monitoring for drought conditions, and defines the stages of drought selected for use in Iowa. The IDP also defines the data and information available and needed to identify drought status and triggers for regions and stages of drought.
- Provides a risk and vulnerability assessment by region and sector.
- Provides a response framework for regions and stages of drought.
- Identifies long- and short-term mitigation activities that can be implemented to prepare for drought and to minimize the impacts of future droughts.
- Provides a springboard for local and industrial drought planning and response efforts.
- Provides a mechanism for the updating of the IDP.
- Includes a future work section describing potential work that is outside of the scope of this plan.

The actions below are meant to help the state of Iowa meet the goals listed. The Action ID number corresponds to the goal. The table is a list of objectives and actions that could mitigate the impacts of drought or improve drought response. Some are borrowed from other states' drought or hazard mitigation plans, but have not been authorized or funded in Iowa, or Iowa state agencies may not currently have the capacity or priority to implement them. Consequently, it is likely not all actions listed in this table will be implemented in Iowa. Some state organizations or state agencies have been listed as potentially assisting with certain actions where they seem the most appropriate, but there is no guarantee that these parties (or anyone) will in fact take on these actions. Still, the state agencies listed will typically be well-informed on an action and may provide technical assistance or serve as a point of contact for other entities interested in drought mitigation.

The 2023 update to Iowa's State Hazard Mitigation Plan, drawing from this table, will provide a more focused list of actions the state is taking on mitigating drought.

Action ID	Action	Potentially Assisting Party(ies)	Type	Notes
1.1	Develop coordinated, prompt, reliable, and accessible information for the whole community, actionable at every level of organization (i.e., state agencies, local government, industries, NGOs, individuals), concerning current and likely drought and water supply status.	DCT	Communication & Education	
1.2	Encourage and support public education on drought vulnerability, drought-time response actions, and continuous conservation measures prior to the occurrence of drought.	DCT	Communication & Education	Work with Iowa Department of Education to promote awareness among students
1.3	Encourage and support public education on watershed health and water quality protection, which preserves the quantity of usable water during droughts.	DCT, DNR	Communication & Education	Communicate with journalists and media outlets about this plan and what can be done.
1.4	Promote a culture of conservation through public messaging and discussion with water suppliers	DCT	Communication & Education	Conservation education or outcomes could be tied to the receipt of funds for infrastructure
1.5	Encourage and support residential storm water capture and re-use infrastructure	DNR, IDALS	Infrastructure	Example: rain barrels, ponds
2.1	Characterize Iowa's surface and groundwater resource availability, quality, use, and sustainability, and share the information via a web-based data system		Monitoring & Awareness	Establish an "Iowa Drought Information System", similar to the existing Iowa Flood Information System.
2.2	Expand current network of stream gauges to improve monitoring.		Monitoring & Awareness	Focus expansion on watersheds with insufficient or non-ideal placement of gauges
2.3	Expand current network of rain gauges to improve rainfall monitoring.		Monitoring & Awareness	
2.4	Expand current soil moisture monitoring network.		Monitoring & Awareness	

Action ID	Action	Potentially Assisting Party(ies)	Type	Notes
2.5	Expand current evapo-transpiration monitoring network.		Monitoring & Awareness	
2.6	Continue to improve groundwater level monitoring (i.e., install more monitoring wells)		Monitoring & Awareness	
2.7	Encourage public use of <a href="#">CMOR</a> and CoCoRaHS.	IDALS, DNR	Monitoring & Awareness	
2.8	Incentivize or require water suppliers to confidentially share supply and demand forecasts with the Drought Coordinating Team		Monitoring & Awareness	
2.9	Improve mapping of private water supply and private wastewater systems; ensuring they can be assessed during extreme weather emergencies	DNR, Local	Monitoring & Awareness	In Iowa, a Groundwater Hazard Statement is required for all property transfers involving private water/wastewater systems. Capturing the data in GIS may improve risk assessment during drought.
3.1	Develop, implement, and continually improve the IDP communication plan	DCT, IGOV	Communication & Education	
3.2	Coordinate interagency drought-related efforts and communication	DCT	Communication & Education	
3.3	Provide water suppliers with prepared materials for distribution to water users, appropriate to the drought level and region	DCT	Communication & Education	
4.1	Encourage and implement green infrastructure practices to create healthier urban environments and manage storm water in cities.	Local, IDALS, IEDA, HSEMD, DNR, DOT	Nature-Based Solutions	Practices include mechanisms that prevent soil erosion or provide improved infiltration & groundwater recharge, flood protection, habitat, and cleaner air & water
4.2	Encourage local ordinances to exempt drought-resistant native plantings from vegetation height restrictions	Local, DNR, Iowa League of Cities	Nature-Based Solutions	
4.3	Expand drought-resistant native plantings along highways and local roads	DOT, Local	Nature-Based Solutions	
4.4	Foster riparian buffers on private lands	IDALS	Nature-Based Solutions	
4.5	Restore streambanks and wetlands	DNR, IDALS, Local	Nature-Based Solutions	
4.6	Seek authorization and funding for development of new water supply sources.		Infrastructure	Focus funding on critical watersheds, vulnerable water systems, and vulnerable populations



Action ID	Action	Potentially Assisting Party(ies)	Type	Notes
4.7	Develop additional water storage, especially floodwater diversion and storage options	Local, IDALS, DNR, HSEMD	Infrastructure	Focus funding on critical watersheds, vulnerable water systems, and vulnerable populations. Use LiDAR scans to identify suitable locations for water storage, such as detention/retention ponds
4.8	Encourage development of gray water infrastructure, recycling and reusing water at any scale whenever viable	Local, DNR, IEDA	Infrastructure	
4.9	Connect vulnerable public water systems to redundant water sources and other supply systems	HSEMD, Local	Infrastructure	Identify resilient systems to connect to nearby vulnerable systems. DNR records number of “consecutive systems” and “sole-source systems”
4.10	Monitor and review aquifer storage and recovery well analysis and permitting	DNR	Infrastructure	
4.11	Couple water supply development efforts with infrastructure assessments and improvements in agricultural and rural communities		Infrastructure	
4.12	Proactively assist well-owners with maintenance of domestic and industrial wells, including identifying potential well vulnerabilities	DNR, Local	Infrastructure	
4.13	Expand water treatment capabilities	Local, DNR	Infrastructure	Focus funding on critical watersheds, vulnerable water systems, and vulnerable populations.
4.14	Continue transitioning to energy sources that do not require water throughput for cooling	IUB, IEDA, DOC	Infrastructure	Most fossil-fuel and nuclear energy facilities use water for cooling, which has a warm water effluent that might not be permissible during low streamflow. Improved battery capacity may be required for other energy sources.
4.15	Intensify water resource planning efforts in areas where population growth, development, or future climate conditions could stress available water supply in the future.	Local, DNR, IEDA	Demand Management	
4.16	Encourage development in areas with sufficient water supply, and/or encourage the use of development fees to fund water supply systems that can reduce the community’s risk of drought.	Local, IEDA, DNR	Demand Management	Ensure plans account for future conditions (e.g. population growth, increasing temperatures, frequency of drought, etc.). Water suppliers should be an integral partner in local development planning.

Action ID	Action	Potentially Assisting Party(ies)	Type	Notes
4.17	Take a leadership role by developing and implementing a water conservation and reuse strategy for the State, local governments and public and private facilities that incorporates the use of green infrastructure, gray water systems and energy production that includes recognition programs.	DAS, DOM, Local	Demand Management	
4.18	Encourage local plumbing codes that promote water efficiency		Demand Management	
4.19	Reduce water losses through leak detection and distribution system renovation, and increase awareness of the cost-effectiveness of replacing aging infrastructure	Local, DNR	Infrastructure	The American Society of Civil Engineers ("ASCE") states that over \$2 billion per year is spent in the U.S. on treating water lost to distribution system leaks. The EPA estimates two to three trillion gallons are lost per year. In some cities, it may be up to 50% of treated water.
5.1	Improve resilience to drought on agricultural land through: crop selection and management, soil conservation and soil health, cover crops, perennial groundcover, agroforestry, terraces, windbreaks, conservation cover, tree & pasture planting, grassed waterways, and other soil health and soil conservation measures to retain soil moisture	IDALS, ISU Extension	Agricultural Resilience	
5.2	Improve resilience to drought on agricultural land through: irrigation and drainage water management, retention ponds, flow-adjustment valves on field tile systems, expanded irrigation infrastructure & improved irrigation efficiency, for both row crops and specialty crops	IDALS, ISU Extension	Agricultural Resilience	Solutions should be appropriately scaled for large or small operations working with a variety of crops.
5.3	Improve livestock cooling efficiency, including non-water cooling methods	IDALS, ISU Extension	Agricultural Resilience	

Action ID	Action	Potentially Assisting Party(ies)	Type	Notes
5.4	<p>Plan for livestock-related transportation during drought at the state level.</p> <p>Note regulations that may inhibit relocation of livestock to non-drought areas, and ease as appropriate when necessary.</p> <p>Note regulations that may inhibit bringing water or feed to drought-stricken areas, and ease as appropriate when necessary.</p>	DOT, IGOV, IDALS, HSEMD	Agricultural Resilience	
5.5	Promote among agricultural producers an awareness of climatological trends that suggest droughts may become more common	IDALS	Agricultural Resilience	
5.6	Encourage growth of fields enrolled in the NRCS Conservation Reserve Program that can be used for haying and grazing in USDA-declared drought emergencies		Agricultural Resilience	
6.1	Continue work of Iowa Water Resources Coordination Council to facilitate water policies and mitigation funding	IDALS, WRCC	Capacity Building	
6.2	Continue work of Iowa Watershed Planning Advisory Council to protect water resources through watershed planning	IDALS, WPAC	Capacity Building	
6.3	Encourage the continued establishment of Watershed Management Authorities (WMA), including through provision of technical assistance for WMAs	IDALS, DNR, HSEMD, Local	Capacity Building	WMA is a mechanism for cities, counties, and soil and water conservation districts to cooperatively engage in watershed planning and management. A WMA may assess and reduce flood risk, assess and improve water quality, monitor federal flood-risk planning and activities, educate residents of the watershed regarding flood risks and water quality, and allocate moneys made available to the authority for purposes of water quality and flood mitigation.

Action ID	Action	Potentially Assisting Party(ies)	Type	Notes
6.4	Continue participation in the Strategic National Stockpile Program	IDPH/HHS	Capacity Building	Provides a statewide, effective plan and operational procedures to ensure Iowa is prepared to receive and distribute the assets of the Strategic National Stockpile and ensure integration into Iowa's homeland security and emergency plan
6.5	Encourage and support the development and enhancement of local and regional drought management plans	HSEMD, DNR, IDALS, Local, EMA	Capacity Building	Consider scenarios of long-term droughts and complete loss of water. Integrate drought planning with local and regional water resources planning and hazard mitigation planning. Ensure consideration of future conditions.
6.6	Partner with agricultural and industrial sectors to protect source waters	IDALS, DNR, Local	Capacity Building	
6.7	State funding for local water quality protection	DNR	Capacity Building	The Resource Enhancement and Protection program provides funding to work with soil and water conservation districts to address local water quality protection needs
6.8	Undertake water assessment and watershed planning	IDALS, DNR, HSEMD	Capacity Building	Utilize NRCS Watershed Surveys and Planning Program and NRCS Watershed Protection and Flood Prevention Program

## 8.0 Implementation Steps

### 8.1 Adoption

This plan may be officially adopted by state agencies involved, and/or endorsed by the governor of Iowa. In the event that these actions are delayed or do not occur, staff at DNR, HSEMD, and IDALS may use the plan as a template for preparing for and responding to drought.

In the event that this plan is adopted, it is critical that the Drought Coordinating Team has the flexibility to amend the plan to respond to changing conditions, changes in staffing, or errors in the plan; or to adjust drought level indicators to match the situation “on the ground.” Consequently, there is no intention to seek legislative adoption of the Iowa Drought Plan.

Parts of this plan may be included in the State Hazard Mitigation Plan update scheduled for 2023, which HSEMD will adopt by rulemaking.

### 8.2 Plan Revision and Update Schedule

- First update: within 2 years of initial plan (by January 2025)
  - Within the first year of implementation, HSEMD will lead tabletop exercises to test the plan and find areas for improvement.

- Feedback may also be gathered from actual drought occurring from 2020 to 2022. The Drought Coordinating Team will consider the real-world application of the included drought level indicators and adjust as necessary.
- Second update and continuing: 5 years after initial plan (January 2028) and every 5 years thereafter, to coincide with State Hazard Mitigation Plan updates

### 8.3 Data and Information Needs

The next steps in providing timely and accurate drought information to lowans are the development of an Iowa Drought Information System (IDIS) and the completion of the statewide hydrologic monitoring station network.

#### 8.3.1 Iowa Drought Information System (IDIS)

Drought-related data are currently scattered across various databases, websites, and models at a variety of online or inaccessible server platforms, making it difficult for lowans to access comprehensive and easily accessible drought information. The Iowa Drought Information System would display a collection of drought-related monitoring and climate data on a web-based visualization platform freely accessible to the public.

The IDIS platform would be modeled after the highly successful Iowa Flood Information System (IFIS) that was developed by the Iowa Flood Center in 2011. IFIS provides an easy way for local governments and citizens to access a wide range of flood data and information from one web location, and IDIS would do the same thing with drought data and information. IDIS would integrate and disseminate relevant drought information in a one-stop shop web platform in order to improve the public's and decision-makers' understanding and management of drought risk. Improved understanding and mapping of drought conditions are critical for Iowa's agricultural industry, water utilities, and all other water users. The threat of a variable climate and long periods of dry conditions make this information valuable to all lowans. Improving the ability to quantify the emergence and severity of drought in agricultural regions will lead to improved resilience for food production systems.

There are many existing sources of drought-related data that could be included for visualization and analysis in IDIS. At a minimum, IDIS would provide access to the following:

1. Rainfall data at some 70 real-time rain-gauge stations deployed by the Iowa Flood Center and the Iowa State University, the National Weather Service (NWS) daily coop gauging network (~200 stations), radar-based rainfall estimates from NOAA and the IFC, as well as the Community Collaborative Rain, Hail and Snow (CoCoRaHS) civilian rain gauge network.
2. Streamflow and baseflow data from 150 USGS, 300 IFC "bridge sensors" with synthetic rating curves and statewide continuous hydrologic model for low streamflow;
3. Soil moisture sensors including from UI hydrostation (20) measurements at different depths and ISU soil moisture stations;
4. Soil moisture modeling output from the IFC hydrologic model (available statewide);
5. NASA satellite data including, among others, the Soil Moisture Active Passive (SMAP) and Gravity Recovery and Climate Experiment (GRACE) satellites.
6. Groundwater levels including UI hydrostation wells (see Hydrologic Monitoring Stations), Iowa Geological Survey water level monitoring network, water level monitoring data reported by water supply operators, USGS water table monitoring stations, and long-term project monitoring wells;
7. Evapotranspiration (ET) data from the IFC statewide model reported at hourly and daily scales;
8. U.S. Drought Monitor (USDM) maps produced weekly
9. Intelligent data analytics products including drought impact assessment, watershed level drought score, and real-time data exploration and visualization products.
10. Other information requested specifically by IDIS users that could be incorporated into the system.

IDIS would use a Google map-based web interface to bring this wide variety of drought-related monitoring data together in a single platform. Public demand for drought information can be estimated from interest in the highly successful IFIS. Usage of IDIS would be expected to be similar to IFC's first-in-the-nation on-line flood-information system, IFIS, which has since been visited more than 4 million times.

The IDIS will be automated to assess drought conditions in the state at a frequency of once per day. This drought frequency exceeds the weekly frequency of the USDM and will serve to monitor the expansion and contraction of drought conditions based on daily inputs. The IDIS will be built to be customizable in the future to incorporate new drought inputs and related derivative products. Improved communication and the prediction of droughts will improve the resiliency of the Iowa communities by assisting them in preparing for and recovering from natural disasters and by facilitating the sharing of information among users. The concept of IDIS was shared with citizen and agency stakeholders during the development of this IDP and was widely supported and recommended. It should be noted that those supporting and recommending the implementation of IDIS are the likely users of the system, which indicates that such a system would be accepted and used just as consistently as the current IFIS system.

### **8.3.2 Hydrologic Monitoring Stations**

To better understand and monitor drought conditions, it is critical to have a uniform network of hydrologic monitoring sensors placed across the state to gather consistent and reliable hydrologic data. While climate data are widely available from a variety of sources, there is a notable lack of subsurface hydrologic data available on statewide drought conditions. Currently subsurface data on soil moisture conditions and groundwater levels are only available from sparsely located research stations or leftover from various projects. A dedicated hydrologic monitoring network is recommended for gathering reliable and systematic information on drought conditions in the state.

Expansion of hydrologic monitoring to include one station per county would provide systematic, drought-related information to all Iowans. Currently, through the Iowa Watershed Approach (IWA), the Iowa Flood Center has already deployed 20 hydrologic stations in several counties in Iowa. Each hydrologic station measures rainfall, wind speed and direction, soil moisture and temperature at four soil depths, and water levels in a shallow groundwater well. These stations have been used to inform drought and flood forecast models and provide critical publicly available data to local landowners, researchers, and agencies. As demonstrated so far in the IWA project, the hydrologic stations are low cost, low maintenance, last for many years, and collect and transmit data every few minutes. The data gathered would be immediately useful to local agencies and community members who will have access to the data through the Iowa Drought Information System.

Since several county stations were already installed as part of other projects, expansion of the Iowa Flood Center's network of hydrologic stations is needed to provide county-level coverage across the state. In addition to the IWA deployments, in 2023, the Iowa Flood Center anticipates federal funding from Representative Miller-Meeks and Representative Hinson through Community Planning Grants to expand the hydrologic network to Iowa Congressional Districts 1 and 2 in eastern Iowa (30 counties). Thus, it is imperative to finish the county network in western Iowa (50 counties) without a hydrologic station (~50). With a fully operational hydrologic monitoring network that includes one station per county, a systematic analysis of drought conditions across the state can be conducted, including the development of a statewide assessment of soil moisture conditions, soil water deficits and drought severity. This detailed information will be used to better inform the National Drought Center on drought conditions in Iowa. Better hydrologic data given to the National Drought Center will mean improved drought designations in Iowa that reflect actual, boots-on-the-ground conditions.

In summary, the development of the Iowa Drought Information System and expansion of the hydrologic network will improve communication and prediction of droughts and the resiliency of Iowa communities by helping them prepare for and recover from natural disasters. Although data are available from many different sources, the information is not widely distributed nor easily accessible. The IDIS will facilitate the sharing of information among users and improve the quality of life for both agricultural and urban residents.

### **8.4 Informational Material to Develop**

The following are concepts for materials that the DCT could develop or contribute to that would help the public understand drought risk and preparedness. Development of these materials should include input from all relevant state agencies.

- Conservation tips and infographics
- Water resources information. (e.g., "Where does my water come from?")
- Response to drought

- Public Health resources
  - Mental health & drought
  - Possible effects of drought
- What is a drought watch/warning/emergency and what do we do about it?
  - Local Government
  - Industry
  - Individuals
- What can we do to mitigate drought?
  - Local Government
  - Industry
  - Individuals
- Guidance for public water systems:
  - Performing drought vulnerability assessments?
  - Example rate structures

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**FOR IMMEDIATE RELEASE**

Wednesday, Jan. 11, 2022

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## **New State Water Plan spotlights 13 critical water-related challenges for Illinois**

*Social justice, climate change impacts integrated into plan for first time*

SPRINGFIELD – The Illinois State Water Plan, which serves as a blueprint for addressing key water-related challenges in the state over the next decade, has been updated for the first time since 1984 and is available to help guide state and local leaders in setting priorities for water resources.

Different from previous Illinois state water plans, the updated plan intentionally strives to integrate social and environmental justice perspectives into recommendations in every section to better serve economically and socially marginalized individuals and communities in Illinois. It also addresses climate change impacts for the first time.

“Like throwing a rock into a lake, implemented actions of the plan and the resulting plan accomplishments over the next seven to 10 years will have ripple effects in Illinois for the next 50 years,” said **Loren Wobig, director of IDNR’s Office of Water Resources and chair of the State Water Plan Task Force**. “These effects are necessary to address a changing climate, economy, landscape and social structure.”

The report was prepared by members of the State Water Plan Task Force and the state agencies they represent, as well as a range of diverse individuals representing a broad spectrum of water interests in Illinois.

The updated Illinois State Water Plan spotlights 13 key water issues and focuses on improving the resiliency, sustainability, public safety, stewardship, economic development, and understanding of the water resources of Illinois to improve the lives of the people of the state.

The State Water Plan presents an opportunity to adjust state programs and policies in water resources by recommending necessary changes and new ideas to elected officials and key leaders in the state of Illinois. The updated State Water Plan provides a seven-year-focus strategic plan containing 147 actionable and measurable recommendations for future inclusive and equitable state water resources development in Illinois.

Directors and leaders from nine state agencies and programs have signed a letter of support for recommendations outlined in the report. Those agencies include IDNR, the Illinois Environmental Protection Agency, the Illinois Department of Transportation, the Illinois State Water Survey, the Illinois Department of Public Health, the Illinois Water Resources Center, the Illinois Emergency Management Agency, and the Illinois Pollution Control Board.



The next phase is to work closely with the General Assembly to implement the plan. The plan is dynamic and subject to change by the State Water Plan Task Force based on stakeholder collaboration to address these changes in Illinois for the good of its inhabitants.

To read the 2022 Illinois State Water Plan, visit <https://bit.ly/2022ILStateWaterPlan>. To learn more about the State Water Plan Task Force, visit <https://bit.ly/ILstatewaterplan>.

###



*Jo Daviess County, Near Galena (Kelly, 2019)*

# 18

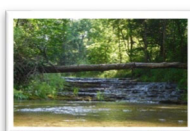
## RECOMMENDATIONS & CROSS-CUTTING IMPACTS

### Recommendations

After the 13 critical topics were selected, the first step in the SWP update was for each committee to develop a list of issues of concern for each topic. Then the groups developed a list of potential solutions for those issues. Using public and Task Force input, the committees refined the recommendations for each issue. One of the objectives of this update were to ensure that the recommendations could be accomplished in a 5–10-year timeframe when the next SWP update will be undertaken. Generally, there were more issues than could be reasonably addressed in this time frame so the final list of recommendations contains the most pressing needs at this time. The other issues will be tracked by the committee for inclusion in future updates.

Another intent of the update was to frame the recommendations so that success would be measurable. Internally, the committees were tasked with determining exactly what outcome was expected and how it would be accomplished. While not included in the Plan, this effort will help when developing annual updates to measure the progress and success of the recommendations. Further information about monitoring the SWP progress is outlined in **Section 19**.

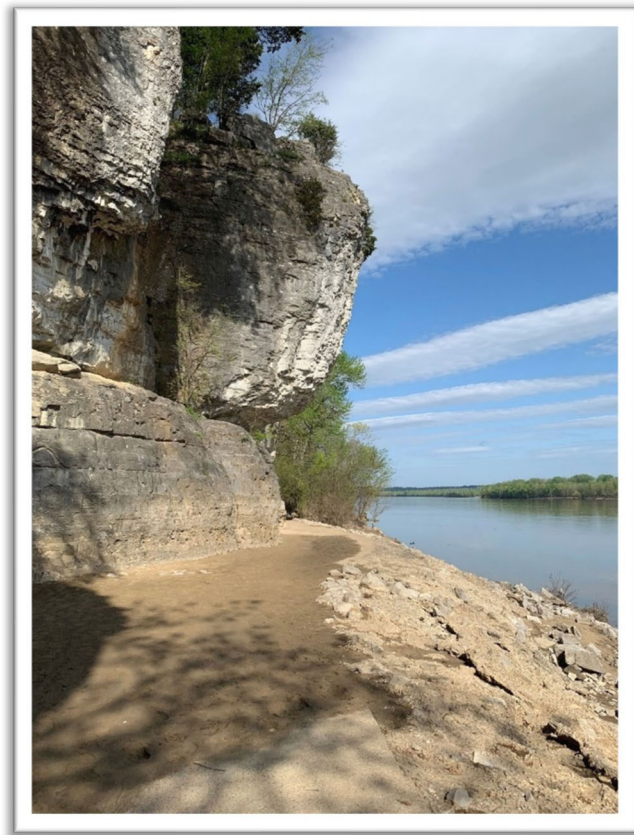
Detailed recommendations were provided in the section for each critical topic (**Sections 5-17**). All the recommendations have been summarized for inclusion in this Section for comparative purposes (**Table 18.1**). There are **147 recommendations** in this updated SWP. This ties closely with the original 1984 report which had 151. Ten years after publication of the 1984 report, progress had been made for 132 of the tasks due to the support of the General Assembly and adequate funding. With similar support, we expect that the Task Force will be able to



accomplish the solutions as laid out in this update within the next 7 years. From there, a new update will be generated to assess what work remains and to bring forward issues that were unable to be included this round as well as new issues that have been encountered in the interim.

If after looking at these lists and further information is needed, please refer back to the individual sections. In addition to describing the solutions in more detail, the detailed sections assign which agency is recommended to lead the effort, type of funding if required and what main type of action is required. **Section 19** provide summaries of the types of recommendations by these categories.

The tables provided in this section are sorted by main topic. A second summary recommendation table is provided in the Appendix which has been generated by sorting by lead agency for further comparative use (see **Appendix D**).



*Figure 18.1 – Cave in Rock State Park, Ohio River (Gray, 2019)*



**ATTACHMENT F**

**UMRBA Multi-Benefits Conservation Practices Workshop  
Agenda (11/2022)**

*(F-1 to F-4)*

**UPPER MISSISSIPPI RIVER BASIN ASSOCIATION  
MULTI-BENEFIT CONSERVATION PRACTICE WORKSHOP  
AGENDA**

**November 9-10, 2022**



**Objectives**

- Improve understanding and ability to communicate about conservation practices that provide multiple, stacked water quality and quantity, ecological, financial, and sustainability benefits on agricultural and urban landscapes
- Strengthen regional collaboration and coordination among individuals and organizations involved in conservation practice implementation and nutrient reduction strategies
- Increase awareness of successful implementation efforts for multiple benefit conservation practices; highlight leadership and other reasons for achieving success
- Determine strategies to trigger increases in conservation practice adoption on agricultural lands that provide additional multiple benefits beyond nutrient reduction
- Identify priorities and actionable items for states, federal agencies, and partners to pursue collaboratively

**The workshop was made possible with a grant from the  
U.S. Environmental Protection Agency Office of Water**

# Agenda

November 9, 2022

Time	Topic	Presenter
8:00 a.m.	Check In	<i>All</i>
9:00	Welcome and Introductions Day One	<i>Kirsten Wallace, UMRBA Matthew Lechtenberg, IA</i>
9:10	Review of Pre Webinar Workshops	<i>DALS Lauren Salvato, UMRBA</i>
9:20	<b>Research Information Sharing</b> <ul style="list-style-type: none"> <li>What are the latest research initiatives that provide understanding into the multiple benefits offered by these conservation practices?</li> <li>The State of the Science: Conservation Practices with Co-Benefits</li> <li>Carbon Reduction Potential Evaluation (CaRPE) Tool: Seize the Carbon!</li> <li>Continuous Improvement Accelerator: Enabling Supply Chain Partners to Design and Implement Sustainable Projects</li> </ul>	<i>Dr. Matt Helmers, IA State University</i>  <i>Dr. Bonnie McGill, American Farmland Trust</i>  <i>Paul Hishmeh, Field to Market</i>
10:50	Break	
11:05 a.m.	<b>Research Breakout</b> <ul style="list-style-type: none"> <li>What tools are missing that could aid practitioners in increasing the adoption of conservation practices with multiple benefits?</li> <li>What are the research gaps that may increase understanding of conservation practices with multiple benefits?</li> </ul>	<i>All</i>
12:30 p.m.	Lunch (Boxed lunches will be available for purchase of \$15)	
1:30	<b>Communication Information Sharing</b> <p>What social science information can help communicate information about conservation practices with multiple benefits to a diverse group of landowners (i.e., middle and late adopters)?</p> <ul style="list-style-type: none"> <li>What We Know About Motivation for Conservation Practice Adoption</li> <li>Incorporating behavior change science for more effective conservation outreach</li> </ul>	<i>Dr. Dara Wald, TX A&amp;M University</i>  <i>Dr. Adam Reimer, National Wildlife Federation</i>

(Continued)

Hampton Inn at the Gateway Arch  
St. Louis, MO

*Raelynn Parmely, IL Farm  
Bureau*

- Illinois Farm Bureau Nutrient Stewardship Programs and Initiatives

**3:00 Break**

**3:30 Communication Breakout**

*All*

- What curricula, training, and studies on implementing conservation practices with multiple benefits would help advance the adoption of the practices? And how can these items be delivered to target audiences?
- Are there ways of motivating adoption beyond formal training? What examples are there of non traditional outreach approaches?

**4:45 Day Two Preview**

*Phil Seng, DJ Case*

**5:00 p.m. Adjourn Day One**

Get to know your fellow workshop attendees at an optional networking event. Drinks and dinner will be provided with individual checks, at cost to the attendee.

Ball Park Village, 6:30 p.m.  
601 Clark Ave, St. Louis, MO 63102  
Bally's Sports Live VIP Area

November 10, 2022

Time	Topic	Presenter
8:15 a.m.	<b>Welcome and Introductions Day Two</b>	<i>Kirsten Wallace, UMRBA Matthew Lechtenberg, IA</i>
8:25	<b>Breakout Group Report Outs from Day One</b>	<i>DALS Lauren Salvato, UMRBA</i>
8:40	<b>Financial Information Sharing</b> What financial tools and incentives exist for land users to select conservation practices with multiple benefits? <ul style="list-style-type: none"> <li>Scaling Climate and Water Smart Cropping Systems</li> <li>Minnesota Pilot Project to Increase Farmer Participation in Ecosystem Services Markets</li> <li>Single Fiscal Agent Models and Reducing Barriers for Practice Implementation</li> </ul>	<i>Dr. Tessa Peters, The Land Institute Sienna Nesser, University of MN</i>  <i>Rich Biske, TNC</i>  <i>John Swanson, Central IA WQ Infrastructure Project/Polk County Iowa</i>
10:10	<b>Break</b>	
10:30	<b>Financial Breakout</b> <ul style="list-style-type: none"> <li>What research and tools are missing that could aid practitioner in increasing conservation practice with multiple benefit adoption?</li> <li>What financial information has been developed to help explain benefits to a landowner?</li> <li>How can the financial industry be engaged in this topic?</li> </ul>	<i>All</i>
11:15	<b>Financial Breakout Group Report Outs</b>	<i>All</i>
11:45	<b>Feedback for Workshop Two (TBD September or October 2023)</b>	<i>Phil Seng, DJ Case</i>
12:00 p.m.	<b>Adjourn Day Two</b>	

### Thank you to the planning committee!

Trevor Sample, IL EPA  
Matt Lechtenberg, IA DALS  
Adam Schnieders, IA DNR  
Justin Sherwood, MO DNR  
Janette Marsh, U.S. EPA, Region 5

Dave Wall, MN PCA  
Coreen Fallat, WI DATCAP  
Sam Porter, NRCS MN  
John Bullough and Martin Lowenfish, NRCS  
Steve Schaff, U.S. EPA, Region 7



## **ATTACHMENT G**

### **Navigation and Ecosystem Sustainability Program (NESP) and Upper Mississippi River Restoration (UMRR) Program Reports**

- **UMRR Handout** *(G-1 to G-2)*
- **UMRR 10-Year Plan** *(G-3)*
- **NESP Handout** *(G-4 to G-5)*
- **NESP Projects Map** *(G-6)*





For over 35 years, the Upper Mississippi River Restoration program partnership has **implemented innovative and sustainable restoration, research, and monitoring** techniques for a healthier Upper Mississippi River System.




photo by Robert J. Hurt


## A WORKING RIVER IN NEED

The mighty Mississippi River is one of the world's most famous rivers, flowing through America's heartland to the Gulf of Mexico. It provides critical and nationally important :

 <b>Drinking water &amp; power supply</b>	<b>Recreation &amp; ecotourism</b> 
 <b>Habitat for fish &amp; wildlife</b>	<b>Commercial navigation &amp; transporation</b> 

 **Dams & levees, climate change, and land use changes in the Upper Mississippi River System contribute to: *altered water cycle, decreased amount and quality of habitat, and reduced water quality.***

A partnership of federal and state agencies, non-governmental organizations, and individuals work together to address these past and ongoing challenges through the Upper Mississippi River Restoration (UMRR) program.

 The UMRR program supports Upper Mississippi River restoration, research, and monitoring.

## RESTORING OUR RIVER

Through Long Term Resource Monitoring (LTRM) and Habitat Rehabilitation and Enhancement Projects (HREPs), the UMRR program successfully restores habitat to combat degradation.

**WHY MONITOR?** By collecting and evaluating LTRM water, fish, land use, and vegetation data over decades, scientists can assess the health of the river and target habitat restoration projects and management actions for the greatest benefit of the river and the public.

**WHY RESTORE?** Humans have changed the river; habitat restoration techniques address the negative impacts of past and ongoing changes.

- Connecting and Protecting the Upper Mississippi River System in 5 STATES through**
- ▶ shoreline protection
  - ▶ island creation
  - ▶ water level management
  - ▶ dredging
  - ▶ habitat enhancement

The UMRR program uses state-of-the-art research and monitoring to understand changing environmental conditions of the river. Using effective and science-based restoration methods, the UMRR supports a healthier and more resilient Upper Mississippi River System.





## The Upper Mississippi River System is a NATIONALLY SIGNIFICANT RESOURCE

### NATURAL RESOURCES

Habitat projects have **restored and connected more than 100,000 acres** along the Upper Mississippi River, with an additional 65,000 acres of habitat projects planned for the next decade. These projects provide vital habitat for diverse fish and wildlife species, **including rare and endangered species.**

### FISH & WILDLIFE



### BIRDS

More than 40% of North American migrating birds use the Mississippi River corridor as their migration route. Restoring forests and wetlands improves bird habitat and provides opportunities for hunting and birdwatching.



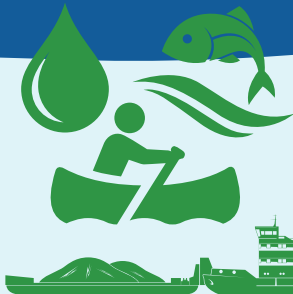
### AQUATIC LIFE

Wetlands and backwater lakes provide habitat for many valued fish and aquatic species. Millions of people enjoy fishing and boating on the Upper Mississippi River System each year.



### FORESTS

Forest corridors provide habitat for wildlife species, opportunities for wildlife viewing and hunting, and connect communities and animals to the river. The health of floodplain forests and wet prairies along the river contribute to improved quality of drinking water for millions of people.



The Upper Mississippi River System provides cultural, recreational, ecological, and economic value to communities and Tribal Nations who reside in the river's watershed. The UMRR program and partnership improves and supports these values for present and future generations.

	FY22	FY23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
Habitat Rehabilitation and Enhancement Projects	October 2021 - September 2022	October 2022 - September 2023	October 2023 - September 2024	October 2024 - September 2025	October 2025 - September 2026	October 2026 - September 2027	October 2027 - September 2028	October 2028 - September 2029	October 2029 - September 2030	October 2030 - September 2031	October 2031 - September 2032
<b>St. Paul District</b>											
Conway Lake, IA											
Bass Ponds, Marsh & Wetland, MN											
McGregor Lake, WI											
Harpers Slough Flood Damage Repair											
Lower Pool 10 Islands, IA											
Reno Bottoms, MN/IA											
Lower Pool 4, Big Lake, MN/WI											
Robinson Lake, MN											
TBD MVP											
<b>Rock Island District</b>											
Rice Lake Stage I											
Pool 12 Stage II & III											
Huron Island Stage II & III											
Keithsburg											
Steamboat Island, IA											
Beaver Island Stage I & II											
Lower Pool 13											
Green Island, IA											
Pool 12 Forestry											
Quincy Bay, IL											
Lower Pool 13 Phase II											
TBD, MVR											
TBD, MVR											
<b>St. Louis District</b>											
Ted Shanks, MO											
Clarence Cannon NWR, MO											
Piasa and Eagles Nest, IL											
Crains Islands, IL											
Harlow, MO											
Oakwood Bottoms, IL											
Yorkinut Slough, IL											
West Alton, MO Islands											
Gilead Slough, IL											
Reds Landing, IL											
TBD, MVS											
<b>HREP Feasibility Phase</b>	Feasibility Completion = 1	Feasibility Completion = 2	Feasibility Completion = 4	Feasibility Completion = 2	Feasibility Completion = 3	Feasibility Completion = 2	Feasibility Completion = 1	Feasibility Completion = 0	Feasibility Completion = 0	Feasibility Completion = 0	Feasibility Completion = 0
<b>HREP P&amp;S Phase</b>	Design Completion = 1	Design Completion = 0	Design Completion = 3	Design Completion = 3	Design Completion = 5	Design Completion = 3	Design Completion = 3	Design Completion = 2	Design Completion = 0	Design Completion = 0	Design Completion = 0
<b>HREP Construction Phase</b>	Construction Completion = 4	Construction Completion = 0	Construction Completion = 1	Construction Completion = 1	Construction Completion = 1	Construction Completion = 1	Construction Completion = 4	Construction Completion = 4	Construction Completion = 5	Construction Completion = 4	Construction Completion = 3
<b>HREP M&amp;AM/Sponsor O&amp;M Phase(2)</b>											
<small>(2) Physical features are turned over to the sponsor at construction completion for Operation &amp; Maintenance. Monitoring &amp; Adaptive Management activities will begin (WRDA 2039; as amended) and per the Feasibility Report.</small>											
<b>Regional Program Elements</b>											
Adaptive Management											
Habitat Evaluation & Monitoring											
Long Term Resource Monitoring											
Model Certification/Regional HREP											
Public Outreach											
Regional Program Management											
Regional Project Sequencing											
Science in Support of Restoration/Mgmt.											



# Navigation and Ecosystem Sustainability Program

## Upper Mississippi River System



*Bottomland forest of the Upper Mississippi River  
National Wildlife and Fish Refuge, Pool 10 © USFWS*

### Invest Now to Ensure the River System's Long-Term Viability

The Navigation and Ecosystem Sustainability Program (NESP) is a dual-purpose authority to improve navigation efficiency and reliability and ecological health on the Upper Mississippi River System. Our broad coalition respectfully requests optimal financial investments in NESP to:

- Modernize L&D 25 and La Grange L&D  
[Add a 1,200-foot chamber]
- Install small-scale measures to assist navigation efficiency
- Construct fish passage at L&D 22
- Rehabilitate and manage floodplain forests, islands, and aquatic habitats
- Restore and reconnect floodplains
- Protect cultural resources

#### More Efficient Navigation

NESP includes the construction of seven 1,200-foot locks at the most congested locations (L&Ds 20, 21, 22, 24, and 25 on the Upper Mississippi River and La Grange and Peoria on the Illinois Waterway). Smaller-scale efficiency improvements will provide immediate benefits upon their implementation. Navigation on the river is vital to our nation's economy:

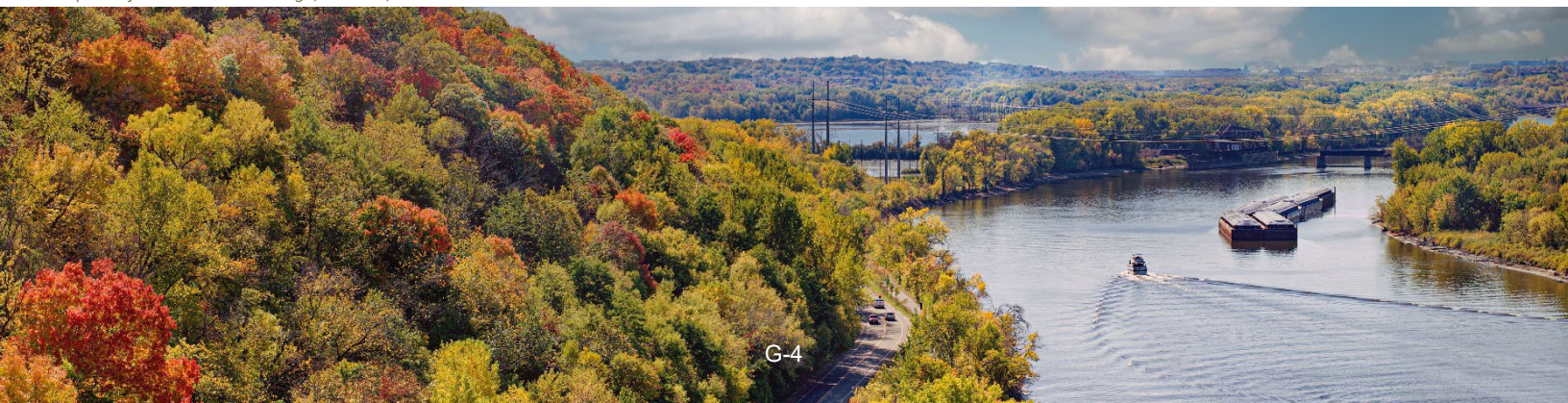
- River transportation on the Upper Mississippi River System prides 59,000 directly related shipping jobs
- Through L&D 25, products are shipped between 132 counties in 17 states and global markets
- An outage at L&D 25 would cost nearly \$1.6 billion and require an additional 500,000 truck traffic trips annually

#### Healthier River Ecosystem

NESP will improve water quality and habitat conditions for fish and wildlife through modified dam operations for the environment, floodplain restoration and reconnection, construction of fish passages, and backwater, side channel, and island enhancements. The projects and their benefits to water quality, vegetation, fish, and wildlife will be monitored to document river health and the value of restoration actions.

- The river system is home to at least 154 fish species, supporting valuable recreational and commercial fisheries
- The area serves as a globally significant migratory flyway for 60 percent of North America's bird species
- The Upper Mississippi River's \$24.6 billion tourism and recreation industry supports 420,000 jobs at shops, restaurants, outfitters, and marinas in river towns

*View upriver from Smith Ave Bridge, St. Paul, MN © James T. Ebert*

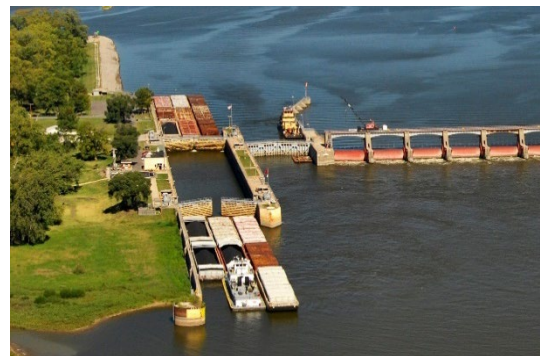




# Ongoing Challenges to the River System's Long-Term Integrity

## Navigation Challenges

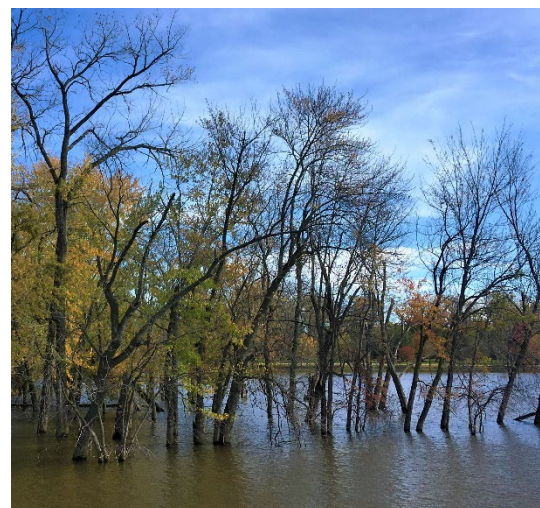
- Most locks were constructed between 1907 and 1936, built for yesterday's needs with a limited intended life span that has long since passed.
- Locks only 600 feet long require tows to pull apart and lock through in two stages. Single chambers constrain traffic to one-way. Both inefficiencies drive up costs and delivery time, hindering the nation's competitiveness and reducing market opportunities.
- Aging locks are susceptible to emergency closures. Single chambers mean a closure at one lock shuts down the entire system.



Tows of 1,200-foot length must be cut and reconfigured to pass through a 600-foot lock. Here a second cut waits to enter L&D 25. © U.S. Army Corps of Engineers

## Environmental Challenges

- The river has been isolated from its natural floodplain causing dramatic loss in habitats for fish and wildlife, reducing its capacity to store floodwaters and mitigate flood damages, and limiting its ability to improve water quality.
- Floodplain forests are experiencing stress as floods occur more often and over longer durations. Combined with competition from invasive species, additional degradation and loss of the floodplain forest is occurring and is expected to continue.
- Locks and dams restrict native fish species from reaching high-quality spawning, rearing, feeding, and winter habitats. Lack of access to a diversity of habitats along the longitudinal gradient of the Upper Mississippi River System inhibits migratory fishes' ability to fulfill their life cycles.



Prolonged highwater increases tree mortality. © Andrew L. Stephenson

## Working for a Healthier Economy and Ecosystem

The Upper Mississippi River System directly generates over \$584 billion in economic activity, supporting more than 1.86 million jobs. **Funding NESP will:**

**Create jobs** for many skilled construction trades and support and strengthen existing jobs at grain elevators, manufacturing facilities, terminals, and ports.

**Lower transportation costs, minimize safety risks, and facilitate new market opportunities** through modernized locks and small-scale efficiency improvements.

**Reestablish complexes of naturally functioning wetlands, floodplains, braided channels, and forests** that filter pollutants, trap carbon, and absorb rains lessening flood impacts.

**Improve the quality of life for local communities** and ensure the viability of the river's tourism and recreation industry, built upon the serenity and adventure of the river's landscape.

**National Audubon Society**  
Brent Newman  
Mississippi River Program  
Director  
(303) 681-8420  
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**The Nature Conservancy**  
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**Upper Mississippi River  
Basin Association**  
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**Waterways Council, Inc**  
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**Ducks Unlimited**  
Mike Sertle  
Manager of Conservation  
Programs  
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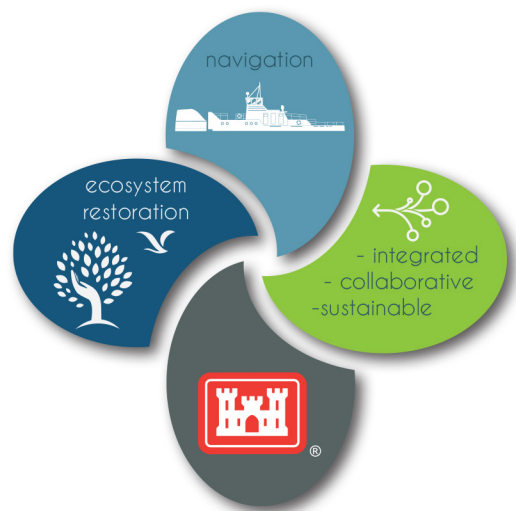


US Army Corps of Engineers®

# 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 only shows projects actively being implemented. 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 Systemic Mitigation - Pool 4 Island 4
- 3 Lock 14 Mooring Cell
- 4 Starved Rock Breakwater
- 5 LaGrange New 1200' Lock Design
- 6 Moore's Towhead System Mitigation
- 7 Twin Island - Island Protection and Enhancement
- 8 Alton Pools Islands - Island Protection and Side Channel Restoration

### FY22 ECOSYSTEM PROJECTS INITIATED

- Water Level Management - Reduce Water Level Fluctuations
- Systemic Forest Restoration
- Multi-Pool Forest Restoration
- 1 North Sturgeon Lake
- 2 Wacouta Bay
- 3 Sabula Lakes
- 4 Andalusia Island Complex
- 5 Pool 24 Island Restoration - Denmark and Drift Islands Complex
- 6 Middle Mississippi River Stone Dike Alterations Phase 1

### FY22 NAVIGATION PROJECTS INITIATED

- ⬡ Mooring Facilities



As of January 2023

### PARTNERS



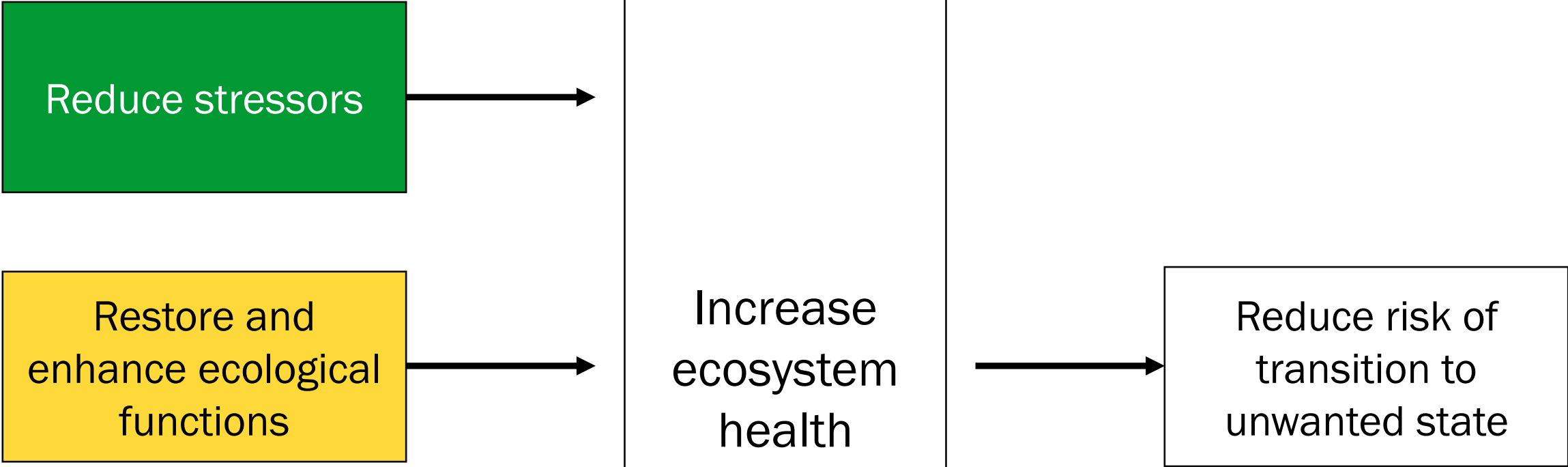
G-6

## **ATTACHMENT H**

### **Nongovernmental Program Initiatives**

- **Environmental Defense Fund Mississippi River Basin Framework** *(H-1 to H-4)*
- **America's Watershed Initiative Mississippi River Watershed Partnership Prospectus** *(H-5 to H-8)*





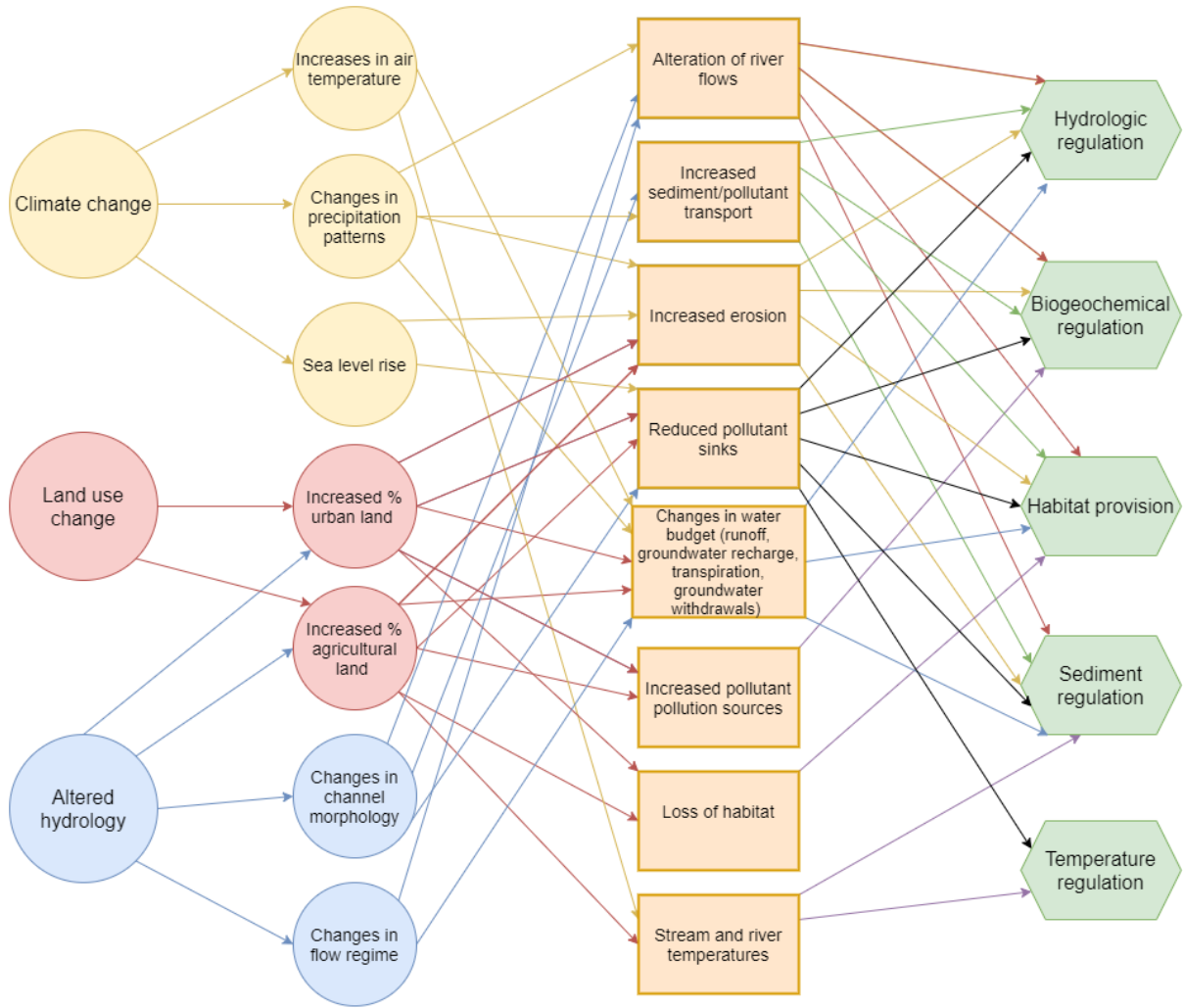
**Key**

Prevent future damage



Repair past damage





<b>Table 4</b>		
<i>Management goal</i>	<i>Potential indicators</i>	
<b>Reduce stressors</b>		
Mitigate climate change	Changes in % of Basin area in forest, grassland and wetland.	
	Changes in regional atmospheric concentrations of CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O.	
	Changes in amount of carbon uptake in tree/shrub biomass.	
Minimize impacts of land use change	Changes in % of Basin area in forest, grassland and wetland.	
	For nutrients: changes in anthropogenic N and P inputs at county scale. For pesticides: changes in amounts of pesticides applied.	
	Changes in extent of winter vegetative cover (either NDVI or fractional green vegetation cover) and crop residue.	
	Changes in baseflow amount and timing measured by in-stream monitoring.	
Minimize hydrologic alteration	Changes in area of in-channel habitat.	
	Changes in area of aquatic habitat.	
	Changes in volume of groundwater withdrawals.	
	Changes in volume of inter-basin water transfers	
	Changes in length of tile drainage.	
	Changes in channel sinuosity.	
	Changes in area of floodplain disconnected by levees.	
Changes in number of stream and river flow barriers.		
<b>Restore and enhance ecosystem functions and processes</b>		
Improve nutrient cycling	Changes in losses of N and P to air and water, quantified by changes in N and P balance.	
	Improve nutrient retention and removal	Changes in area of hydrologically-connected wetlands.
		Changes in area of hydrologically -connected floodplains.
	Restore sediment flow regime	Changes in annual volume of sediment lost to Gulf of Mexico.
Restore sediment retention and sinks	Changes in area of hydrologically-connected floodplains. Changes in annual volume of sediment accreted in the Delta.	

	Increase water storage in landscape	Changes in water storage capacity in ponds and depressional wetlands; changes in potential water storage in reconnected floodplains.
	Increase groundwater recharge	
	Increase flow variability in streams and rivers; restore functional flows	Changes in multiple aspects of streamflow, e.g. floodplain inundation frequency, frequency and magnitude of peak flows during specific seasons; stability of base flows.
	Restore thermal buffering for streams and rivers	Changes in extent of riparian vegetation; changes in hyporheic discharge.
<b>Increase resilience</b>		
	Increase biodiversity at all scales	Changes in various vegetative diversity indices.
	Increase terrestrial habitat connectivity to facilitate species dispersal	Changes in connectivity index at multiple scales.
	Increase aquatic habitat connectivity to facilitate species dispersal	Changes in connectivity index at multiple scales.
	Increase % landscape in native perennial vegetation.	Changes in % perennial cover.

# THE MISSISSIPPI RIVER

*Creating a Sustainable Watershed*



## Importance of the Mississippi River Watershed to the Nation

The Mississippi River Watershed is an unparalleled economic engine and ecological treasure; it is vital to our national security and global competitiveness. Spanning 31 states and two Canadian provinces the watershed provides:

- » \$70 billion in food, goods, and services
- » \$4 billion in revenue from the recreation-based economy supporting 1.5 million jobs
- » Clean drinking water for 20 million people
- » Globally significant ecosystems providing habitat for more than 400 species of fish and wildlife
- » 589 million tons of shipped goods per year through the Louisiana Ports, along with 175 million tons of freight moved through the Mississippi River watershed barge port system





## Call to Action

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The Mississippi River Watershed is the only large watershed in the United States without dedicated funding spanning across its sub-basins, and it lacks an integrated, watershed-based approach to address its many urgent and interrelated challenges.

Currently, actions in the watershed are divided among many agencies and governments—often without alignment or coordination. To achieve meaningful improvements, we must build a diverse and robust collaboration of different sectors, public and private, looking at the whole system in an integrated way. This approach would consider ecological, social, and economic factors and lead to the development of shared priorities and amplification of on-the-ground action across the entire watershed.

## Key Challenges and Opportunities

---

**Nutrient reduction and soil health strategies leading to improved water quality:** The federally mandated Gulf Hypoxia Task force has a goal to reduce the five-year average areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by the year 2035. An interim target of a 20% reduction of nitrogen and phosphorus loading in just three years (2025) is a milestone for immediate planning and implementation actions that will require a significant commitment of resources to accelerate implementation of actions to reduce nutrient loading from all major sources of nitrogen and phosphorus in the watershed.

**Investments in Structural and Nature-Based Solutions to mitigate impacts of climate change:** The increasing frequency of heavy rain in the Mississippi River Watershed is among the clearest climate change impacts. Recent storms along the Mississippi River have been supercharged and the resultant rain and flood related disasters in the watershed have become persistent and systemic, with seven major flood events occurring between 2000–2019. Average temperatures are also increasing in states along both the upper and lower Mississippi at varying rates. Increasing heat has

costly implications for agricultural yields, public health, energy costs, and infrastructure throughout the corridor. Sea level rise, coastal subsidence and erosion are additional impacts being exacerbated by climate change.

Investments in maintaining existing infrastructure that have proven effective and adopting new nature-based solutions can help mitigate impacts of a changing climate. Additionally, better flood risk assessments and forecasting capabilities will help to reduce damages and loss of life associated with increasingly frequent and extreme flood events.

**Improvements in inland transportation and infrastructure:** Well-maintained, inland navigation infrastructure that is integrated with rail and highway transport is critical to support the cost effective, safe, and environmentally friendly waterborne movement of goods and materials, including millions of bushels of agricultural products for export. The Navigation and Ecosystem Sustainability Program on the Upper Mississippi is an example of an integrated management approach, charting the course for improved infrastructure and ecological restoration.

**Actionable information to drive decision making:** To protect the health of the river, and our communities, we must have timely, integrated, and actionable information to drive sound decision making and grey and green infrastructure investments throughout the Mississippi River Basin. Deploying a comprehensive monitoring system that will be a “sentinel for the basin” would provide the standardized information on present and future flooding and flood risk, water quality and sediments, ecosystem health, coastal restoration, and navigation safety to inform land use and infrastructure investments across the basin.

**Engage environmental justice communities:** Vulnerable communities often endure the brunt of weather and climate impacts. It is critical that we provide climate information, services, and opportunities to contribute to designing a more resilient future for communities that have long been left out of these decision-making processes.

## Existing Partnerships

Numerous state, tribal, and local programs, along with dozens of federal programs help fund and implement environmental restoration and management activities, structural, non-structural, and nature-based solutions to flooding and inland transportation and infrastructure throughout the Mississippi River Watershed.

In addition, several intergovernmental bodies (see Attachment A) are providing leadership in the region to address these issues in the Mississippi River Basin.

These activities, however, would benefit substantially from more systematic collaboration and better integration of efforts. This would ensure that their programs are funding effective strategies and are reaching Mississippi River Watershed shared goals for flood risk mitigation, climate preparedness, improved water quality and inland navigation.

Enabling conditions, based on studies from other watershed-wide programs are also in place which makes timing right for such an initiative (Attachment B).



## PROPOSED MISSISSIPPI RIVER PUBLIC-PRIVATE PARTNERSHIP

*A policy framework establishing this partnership should include these key aspects:*

### PHASE 1 | 12-months

- » Analyze key federal and state programs and their sufficiency to address watershed-wide issues (in part completed by the EPA).
- » Examine existing intergovernmental organizations, such as Upper Mississippi River Basin Association, that could serve as models on which to design additional institutions in each of the sub-basins in the Mississippi River Watershed.
- » Consider organizational frameworks that best support the unique needs and social, environmental, and economic challenges and opportunities in each of the five major sub watersheds (Upper Mississippi, Lower Mississippi, Missouri, Arkansas-Red, and Ohio Rivers).
- » In collaboration with existing Mississippi River Basin alliances, develop outcome-based goals for the Mississippi River Watershed system relying upon, among other things, existing data, and science-based indicators for key goal areas. Goals area include: improved water quality, flood risk reduction, and transportation infrastructure.

### PHASE 2 | 12-months

- » Develop a DRAFT action plan for addressing the goal areas identified by stakeholders including prioritization of resources
- » Identify high impact funding priorities such as sufficient funding to ensure adequate and comprehensive monitoring and real-time data collection can be used to inform management and investment decisions.
- » Assess need for legislation and potential vehicles to achieve shared goals.

### LONG-TERM OUTCOMES

- » Develop a process for exchange of information regarding policies, strategies, projects, and activities of the federal agencies related to Mississippi River Watershed.
- » Ensure coordinated federal scientific and other research associated with the Mississippi River Watershed.



**MULTISTATE ALLIANCES**

America's Watershed Initiative (31 states, participation from navigation, agriculture, industry, conservation)

Lower Mississippi River Conservation Committee (5 states)

Mississippi River/Gulf of Mexico Hypoxia Task Force (12 states, multiple federal agencies, EPA led)

Mississippi River Network (10 states, 58 NGO's)

Mississippi River Cities and Towns Initiative (10 states, 100 municipalities)

Missouri River Recovery Implementation Committee (7 states)

Navigation and Ecosystem Sustainability Program (5 states, USACE, USGS, USFWS, UMRBA)

Ohio River Basin Association (14 states)

Ohio River Valley Water Sanitation Commission (8 states)

Red River Valley Association (4 states)

Sentinel Landscape Partnership (5 states, multiple federal agencies (USGS led), multiple NGO's TNC-led, academic Institutions, Tulane Led)

Upper Mississippi River Basin Association (5 states)

Upper Mississippi River Conservation Committee (5 states)

Upper Mississippi River Restoration Program (5 states, plus USACE, USGS, USFWS and EPA)

**INDUSTRY AND TRADE GROUPS**

Agricultural Coalitions: National Corn Growers Association, Soy Transportation Coalition

Engineering Firms: Including Stantec and HDR

Inland Navigation: Leaders in the navigation industry including Ingram Barge, Marquette Transportation, Waterways Council, Corn Belt Ports

**ACADEMIC INSTITUTIONS**

University of Iowa

University of Maryland

St. Louis University

Tulane University

Having studied the Great Lakes example and others from the Chesapeake Bay, Puget Sound and Danube River, we have identified key enabling conditions that are currently in place in the Mississippi River Basin. One factor is the strong relationships America's Watershed Initiative (AWI) and The Nature Conservancy (TNC) have with the three entities that have historically been the drivers in the watershed—agriculture, navigation, and flood control. While these entities remain critical to success, we also recognize that when only they are engaged the environment and often communities (especially stressed or disadvantaged communities) lose, which in turn sets up this zero-sum game. In addition to strong working relationships with the traditional stakeholder groups, AWI and TNC have a strong history of bringing together unlikely allies in pursuit of greater collaborative breakthroughs and could offer support for efforts across the Mississippi River Basin.

**Additional enabling conditions include:**

- » Key coalitions are in place—not only does AWI have a network of hundreds of partners developed through the Mississippi River Report Card Process, but there are also well-developed partnership organizations in the Upper Mississippi River Basin (UMRCC, UMRBA, UMRR), in the Lower Mississippi River Basin (LMRCC), Arkansas- Red Basin (AR River Compact), and Ohio River (ORBA, ORSCANCO, TVA, Cumberland River Compact). AWI and TNC have robust relationships with the aforementioned sub-basin groups.

- » A clear desire to move beyond the sub-basins, and consider basinwide opportunities:

The 2015 and 2020 Mississippi River Report Cards engaged more than 600 individuals representing 400 organization who were committed to defining the economic and environmental health of the basin as well as development of shared goals for the basin.

Likewise, TNC recently formed a partnership to address the critical information needs in the basin, bringing together, state, federal agencies, NGOs, and the navigation community to find shared solutions to inform decision-making

- » Key relationships with academia and the engineering industry make it possible to define the goals and metrics around green infrastructure.
- » We have galvanizing issues, water quality, flooding, and inland navigation that all parties can gather around.



# **ATTACHMENT I**

## **Additional Items**

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

**QUARTERLY MEETINGS  
FUTURE MEETING SCHEDULE**

<b>MAY 2023</b>	
<u>St. Paul, MN</u>	
May 23	UMRBA Quarterly Meeting
May 24	UMRR Coordinating Committee Quarterly Meeting

<b>AUGUST 2023</b>	
<u>La Crosse, WI</u>	
August 8	UMRBA Quarterly Meeting
August 9	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