

Virtual Meeting

**Upper Mississippi River Restoration Program
Coordinating Committee**

Quarterly Meeting

November 17, 2021

**Agenda
with
Background
and
Supporting Materials**

**UPPER MISSISSIPPI RIVER RESTORATION PROGRAM
COORDINATING COMMITTEE**

**November 17, 2021
8:00 a.m. – 4:00 p.m. CST**

AGENDA

[**Note:** The states, U.S. Army Corps of Engineers, and the Department of the Interior will arrange their respective pre-meetings via conference call prior to the November 17, 2021 quarterly meeting.]

Time	Attachment	Topic	Presenter
8:00 a.m.		Welcome and Introductions	<i>Sabrina Chandler, USFWS</i>
8:05	A1-15	Approval of Minutes of August 11, 2021 Meeting	
8:10	B1-3	Regional Management and Partnership Collaboration <ul style="list-style-type: none"> ▪ FY 2021 Fiscal Update and FY 2022 Outlook ▪ 2015-2025 Strategic and Operational Plan Review ▪ 2022 Report to Congress ▪ 2021 UMRR Joint Charter Signing 	<i>Marshall Plumley, USACE</i>
9:10	C1-2	Communications <ul style="list-style-type: none"> ▪ UMRR Communications Team <ul style="list-style-type: none"> – UMRR 35th Anniversary – FY21 COT Accomplishments ▪ External Communications and Outreach Events 	<i>Rachel Perrine and Jill Bathke, USACE</i> <i>All</i>
10:00		Break	
10:15		UMRR Showcase Presentations <ul style="list-style-type: none"> ▪ FY 21 LTRM Accomplishments ▪ FY 21 HREP Accomplishments 	<i>Jennie Sauer, USGS</i> <i>Angela Deen, Julie Millhollin, and Brian Markert, USACE</i>
11:15	D1-15	Program Reports <ul style="list-style-type: none"> ▪ Long Term Resource Monitoring and Science <ul style="list-style-type: none"> – LTRM FY 2021 4th Quarter Highlights – Status and Trends Report 3rd Edition – USACE LTRM Update – LTRM Implementation Planning – A-Team Report 	<i>Jeff Houser, USGS</i> <i>Karen Hagerty, USACE</i> <i>Jeff Houser & Jennie Sauer, USGS and Karen Hagerty, USACE</i> <i>Scott Gritters, IA DNR</i>
12:15 p.m.		Lunch	
1:00		Program Reports (Continued) <ul style="list-style-type: none"> ▪ Habitat Restoration <ul style="list-style-type: none"> – District Reports 	<i>District HREP Managers</i>
1:45		NESP Update	<i>Andrew Goodall, USACE</i>
2:15		Break	
2:30		RTC Implementation Issues	<i>Marshall Plumley, USACE</i>
3:45	E1	Other Business <ul style="list-style-type: none"> ▪ Future Meeting Schedule 	
4:00 p.m.		Adjourn	

[See Attachment E for frequently used acronyms, UMRR authorization (as amended), and UMRR (EMP) operating approach.]

Continued on next page for remote connection information

Remote Connection Information:

November 17

UMRR Coordinating Committee Quarterly Meeting (8:00 a.m. to 4:00 p.m. CST)

- Web and video conferencing:
<https://umrba.my.webex.com/umrba.my/j.php?MTID=m2e99a624d19af04df2160a215f1a38ac>
- Phone connection:
 - Dial-in: 312-535-8110
[Note: In the event that the call line provided is experiencing a high volume of calls, you may also connect by dialing 469-210-7159.]
 - Access code: 2552 004 7362
 - Password: 1234

ATTACHMENT A

Minutes of the August 11, 2021
UMRR Coordinating Committee Quarterly Meeting
(A-1 to A-15)

DRAFT
Minutes of the
Upper Mississippi River Restoration Program
Coordinating Committee

August 11, 2021
Quarterly Meeting

Virtual Meeting

Brian Chewning of the U.S. Army Corps of Engineers called the meeting to order at 8:00 a.m. on August 11, 2021. UMRR Coordinating Committee representatives on the virtual meeting were Sabrina Chandler (USFWS), Mark Gaikowski (USGS), Chad Craycraft (IL DNR), Randy Schultz (IA DNR), Megan Moore (MN DNR), Matt Vitello (MO DoC), Jim Fischer (WI DNR), Verlon Barnes (NRCS), and Ken Westlake (USEPA). A complete list of attendees follows these minutes.

Minutes of the May 26, 2021 Meeting

Randy Schultz moved and Jim Fischer seconded a motion to approve the draft minutes of the May 26, 2021 UMRR Coordinating Committee meeting as written. The motion carried unanimously.

Regional Management and Partnership Collaboration

Marshall Plumley expressed appreciation for the partnership's ongoing efforts to execute the program under continued challenging circumstances and uncertainty. Plumley acknowledged that, given the level of work lately, there have been a lot of additional meetings and he has been asked to consider how to condense discussions and meetings. Megan Moore agreed and noted that, as the program turns back to in person meetings with travel time, condensed and effective meetings will be essential. Jim Fischer agreed that there is an opportunity to strategically condense several meetings and noted the intersections of many ongoing efforts including the Report to Congress, Status and Trends strategic rollout, and LTRM implementation planning. Marshall Plumley agreed.

FY 2021 Fiscal Update

Plumley said UMRR has obligated over \$25 million, or 75 percent, of its \$33.17 million FY 21 funds to-date. The obligation rate is on target for the year. In response to a question from Brian Chewning, Plumley said the remaining funds to obligate are open contracts and that he does not anticipate any challenges to dispersing remaining funds by the end of the year, but that contingency plans are in place.

FY 2022 Budget Outlook

Plumley said the President's FY 22 budget recommended \$33.17 million for UMRR. The House and Senate Appropriations Committees have both acted on appropriations bills for FY 22 and concurred with the President's recommended amount for UMRR. The Corps' FY 22 budget submission to OMB occurred prior to the passage of WRDA 2020, so the Corps did not submit a package with the increased annual authorized appropriation. Plumley said UMRR has capability up to the new authorized amount of \$55 million. The final FY 22 appropriation is not yet known.

UMRR Ten-Year Plan

Plumley reported that the UMRR 10-year implementation plan was updated to reflect anticipated program activities from FY 21 to FY 31. Placeholders have been inserted for the future HREPs that the UMRR Coordinating Committee endorsed last year. Plumley noted that all outyears are subject to change based on funding and conditions on the river. In FY 22, Rock Island District is planning to begin the next of the newly identified HREP fact sheets, with Quincy Bay being the first of those

projects to start planning. The next project has not yet been identified. Plumley said an additional change to the spreadsheet reflects that the Harlow Island HREP has a shortened planning phase so construction may start earlier. Andrew Stephenson said this chart continues to be helpful to understand where work is anticipated in the future and to communicate the work by the partnership to develop the pipeline of projects for 10 years.

Acres Restored

Plumley said the current schedule of HREP implementation would restore 76,110 acres between FY 21-FY 31. No projects were completed from FY 17 through FY 20 due to high water. Fischer said the figure is an important communication tool for multiple audiences. Fischer said he used it in a presentation to the Wisconsin Conservation Congress to show where the program's history and future trajectory. In response to a question from Chewning, Plumley said the potential acres to be restored by FY 31 reflects completion of scheduled projects under current funding levels of \$33.17 million. Decreased funding levels would extend the end date for completing projects and increased appropriations could accelerate these restoration activities. In response to a question from Ken Westlake, Plumley said UMRR's total restored acres has remained at 106,000 acres since FY 17. Plumley expressed the importance of completing projects this year and next year.

Potential Construction Completions

Plumley reported that three projects, totaling 5,590 acres, are anticipated to be completed by December 2021, increasing UMRR's total acres restored to approximately 111,000 acres through 59 completed projects. These projects include Conway Lake, Pool 12 Overwintering, and Ted Shanks. Another four projects are anticipated to be completed in 2022 that would collectively add 9,810 acres to UMRR's total restored or improved habitat. Karen Hagerty suggested developing a figure depicting acres restored and funding levels together. Mark Gaikowski agreed and said it would help demonstrate the value of continued high levels of investment. Gaikowski suggested aligning significant LTRM science products as well to highlight the continued value of having an improved understanding of the system. Fischer said capturing the growth in knowledge over the decades would be a great story to tell. Hagerty concurred and said UMRR's science has produced incredible insights in recent years. Kirsten Wallace said a message regarding how knowledge has increased exponentially could be incorporated into the strategic rollout of the UMRR LTRM Status and Trends Report and would be useful for a variety of audiences including the public and funding decision-makers.

2015-2025 Strategic and Operational Plan Review

Plumley reported that, on August 6, 2021, the UMRR Coordinating Committee met to review the draft survey being developed for distribution to the UMRR partnership at-large regarding the 2015-2025 Strategic and Operational Plan. The purpose of the survey is to seek input regarding progress achieved since 2015, priorities for the next five years, and the issue areas to include in the 2022 Report to Congress. The meeting included an overview of the strategic plan review crosswalk (pages B5-B10 in meeting packet), which aligns the Objectives, Strategies, Needs, and Actions as outlined in the Strategic and Operational Plan with results of the Coordinating Committee's survey responses and priority actions identified at the May 2020 Strategic Plan review meeting. Janelle Gaun said the survey also identified actions and needs from the Operational Plan with the least consensus around how well they had been addressed. Plumley said that some adjustments were made to the survey following the August 6, 2021 meeting including adding choices to demographic questions, a question on geographic specificity of respondents' familiarity with the river, ways respondents may have engaged with the program, clarifications to question wording, and open-ended questions. Stephenson noted that some priority actions may address multiple goals in the strategic plan. He expressed appreciation for Gaun's efforts to develop the crosswalk document and noted that it will be valuable to reflect on for years to come. Stephenson said revisions to the online survey are underway, and it should be available for distribution

soon. Plumley said the 2019 HREP Planning and Design Workshop invitee list will serve as an initial distribution list as it represents the last all-hands meeting of both program elements. The UMRR Coordinating Committee will be asked to confirm staff on that list within their respective agency to receive the survey. The survey is anticipated to be distributed in September 2021.

2022 Report to Congress

Plumley reported that a kickoff meeting for the UMRR 2022 Report to Congress was held on July 19, 2021. Plumley identified the lead authors and collaborators for each section of the report and overviewed the roles and responsibilities for lead authors, contributors, and Corps staff who will help develop the report. The assigned lead authors and contributors are as follows:

Report Outline Section	Lead Author(s)	Collaboration
Forward	Marshall Plumley, Jill Bathke	UMRBA
Executive Summary	Marshall Plumley, Jill Bathke	UMRBA
History and Background	Marshall Plumley, Jill Bathke	UMRBA, UMRR partners
A. Origins and Authorization		
B. Evolution of the Program's Maturity		
C. Robust and Stable Funding	Marshall Plumley, Jill Bathke	District HREP Managers, Karen Hagerty, Jennie Sauer, Jeff Houser
Chapter 1. Strategic Partnership and Vision	Marshall Plumley, Jill Bathke	UMRBA
A. Strong, Integrated Partnership	UMRBA	Marshall Plumley, Jill Bathke, UMRR partners
B. Strategic Implementation	Marshall Plumley, Jill Bathke, UMRBA	
C. Bridge Building Initiatives	Marshall Plumley, Jill Bathke, Jeff Houser	Karen Hagerty, Kat McCain, Sara Schmuecker & Nate DeJager
D. Engaging and Collaborating with Others	UMRBA	Marshall Plumley, Jeff Houser, Jennie Sauer
E. Future Strategic Direction	Marshall Plumley, Jill Bathke	UMRBA, Jeff Houser
Chapter 2. Enhancing Habitat	Marshall Plumley	MVP, MVR, MVS, USGS, USFWS, States
A. Addressing Key Ecological Needs		
B. Applying Adaptive Management Principles to Address Risk and Uncertainty		
Chapter 3. Advancing Knowledge	Jeff Houser	Karen Hagerty, Jennie Sauer, Field Stations
A. Assessing and Detecting Changes in UMR Ecosystem		
B. Providing Critical Insights and Understanding to Improve Restoration		
Chapter 4. Implementation Issues	Marshall Plumley, Jill Bathke	UMRBA, UMRR Partners, District HREP Managers
Chapter 5. Conclusions and Recommendations	Marshall Plumley, Jill Bathke, Brian Chewing	UMRBA

Plumley said the Corps has contracted with UMRBA to complete UMRR's last two Reports to Congress. For this report, Corps staff will maintain version control of the document, but that UMRBA has a critical role to play in ensuring we are talking with one-voice in this report and that it will reflect the mission and

priorities of the partnership. Jill Bathke will be the gatekeeper of the document and is responsible for version control. Mary Rodkey will be the technical editor of the report and Emily Chavolla will be responsible for visual design. Chapter templates were created and provided to authors to establish consistent text, figure, and table formatting across chapters. Authors were asked to provide additional details regarding chapter content by August 16, 2021, and the first update meeting with authors and collaborators is anticipated for mid- to late-August. Rough drafts of report sections are scheduled to be completed by the end of September 2021. Chapters will be assembled into a draft report and shared with partners for review from December 2021 to January 2022. Partner comments will be consolidated into one document and shared to ensure transparency in report development. The first in-progress review (IPR) with MVD and USACE HQ is anticipated for January 2022. This will provide an opportunity to engage with Headquarters reviewers early in the process and allow adequate time to make any necessary modifications.

Chewning said that science is integral to UMRR's mission and asked if any information developed under UMRR is being used by other agencies or other Corps offices to advance their own missions. Plumley said groups from outside the region have looked to UMRR and how we do science and monitoring and have taken that back and applied that to other work. UMRR has relationships with other river restoration efforts in other countries to exchange information and that several states have adopted LTRM study design and protocols. Plumley said some of these types of external uses of LTRM data and information have been highlighted in past reports to Congress, and that they can be reiterated and expanded upon in this report. Karen Hagerty noted that New Mexico, Pennsylvania, and Illinois have adopted LTRM methods. Jeff Houser said the broader scientific community is also interested in what UMRR is doing and that can be captured in the report as well. As an example, KathiJo Jankowski was invited to provide a large river perspective to an American Geophysical Union Chapman Conference focused on understanding lake ice dynamics and winter aquatic systems. Kirsten Wallace said the 2016 Report to Congress highlighted The Nature Conservancy's Great Rivers program showcasing LTRM in China and Brazil. She added that, more recently, Jankowski presented to UMRBA's Water Quality Task Force and Executive Committee regarding water quality information and links to Clean Water Act and chloride trends. That will help to integrate CWA-focused monitoring and assessments on the river with LTRM and leverage overall knowledge of water quality conditions. Wallace said the information in the LTRM Status and Trends report will have broad implications and powerful utilization. The value that LTRM provides to UMRR and for broader river management should be explained in the report. Moore said LTRM data has been used and continues to be used for Clean Water Assessments. Hagerty said UMRR is incredibly unique in the research and science arena in large part because of the duration of LTRM's monitoring record. It allows for scientific observations not available in other monitoring initiatives, including long term trends. Plumley said case studies can be highlighted in the report.

UMRR Joint Charter Review

Plumley said that Stephenson sent an August 5, 2021 email to the UMRR Coordinating Committee members regarding suggested technical corrections to the version of the UMRR Joint Charter that was endorsed by the Coordinating Committee at its May 26, 2021 quarterly meeting. These changes are related to legal clarity (e.g., adding references to public laws that have adjusted UMRR's authorization) or some minor editorial changes. Changes include:

- Adding references to public laws that affected UMRR's authorization in the introduction.
- Reordering text.
- Correcting UMRR's authorization date.
- Adding USDA to NRCS in the membership section.
- Revising the Template letter to clarify that i) potential project sponsors are the landowners and ii) serving as a project sponsor requires a cost share match.
- Updating the Charter signatories for NRCS and USEPA.

Fischer asked if USEPA Regions 7 and 5 are both being asked to sign the Charter. Ken Westlake said Region 7 has not yet responded to his request on the matter. Westlake confirmed that Region 5 is prepared to sign the Charter. In response to a request from Brian Chewning, Megan Moore moved and Chad Craycraft seconded a motion to approve the technical changes to the Charter that will be routed for electronic signatures. The motion carried unanimously.

In response to a question from Chewning, Plumley said a PDF document would be routed for electronic signatures. Stephenson suggested using an email chain to advance the Charter to signatories as they sign. Sabrina Chandler and Chewning agreed that similar processes have worked for them before. Rachel Perrine said she would provide an example of digitally routing that was used for the RRCT recently. Plumley said the process would be started in the next couple weeks.

Communications

UMRR Communications and Outreach Team

Rachel Perrine reported that the UMRR communications and outreach team (COT) finalized the draft program flyer. The flyer is geared toward a general audience with limited knowledge of UMRR. It highlights the value of the UMRS and benefits of UMRR in the context of water, wildlife, and way of life. Kirsten Wallace commended the team on the final product and said it will be very useful for distribution to other partners. Jodi Creswell agreed. Perrine said USACE will distribute an electronic version of the flyer and organize a printing of flyers for program partners. In response to a question from Megan Moore, Marshall Plumley said a print order can be organized to meet local event needs. Coordinating Committee members were asked to coordinate within their agencies to determine the number of printed flyers they would like and send an email with the request amount and point of contact to Jill Bathke and Rachel Perrine.

The imagery, text, and themes from the new flyer will be used to develop pull-down banners for outreach activities. Pull-down banners are anticipated to be completed in late 2021. The colors and themes will also be used in the UMRR 2022 Report to Congress. Perrine said the communications team's state members requested the use of state agency logos on the pull-down banners rather than the state seals, due to state policies. Perrine asked the Coordinating Committee to provide guidance on whether to use state seals or state agency logos on outreach materials. Stephenson noted that the states communication experts on the team expressed that some of the state agencies have undergone significant branding efforts of their own and would like that to be considered. Sabrina Chandler said there should be consistency across the flyer, pull-down banner, and other materials. Moore noted the consistent use of the federal agency logos in UMRR documents and expressed support for using state agency logos consistently. Moore confirmed that Minnesota had recently updated its agency logos. Stephenson and Plumley explained that the use of state seals reflected the fact that the states are the authorized partners for UMRR. Wallace added that the UMRR Coordinating Committee had historically agreed to use the state seals because they were thought to be more powerful. She also noted that Illinois' involvement of both the INHS and IDNR was a consideration for using state seals. Jim Fischer expressed a preference for using agency logos as they are more recognizable than state seals. In response to a question from Hagerty, Plumley said HREPs are executed by state agencies. Moore said she will coordinate with state communications staff on requirements and send a recommendation. Wallace said UMRBA staff could draft a formal request and ask state representatives to confirm by August 25, 2021, whether state seals or state department logos should be used in the flyer and future communication materials. Fischer and Moore expressed support for that as a next step. [Note: Following conclusion of the meeting, all UMRR Coordinating Committee state members indicated a preference for using state agency logos over state seals on UMRR outreach materials.]

Perrine said the communications and outreach team also discussed developing a video series to recognize and celebrate UMRR's 35th anniversary. Videos will be three minutes long with clear and

concise messaging similar to a news package with interviewer, narrator, and use of voice over video segments and images of the Upper Mississippi River. The themes of the first four videos are:

1. What is UMRR: History and Partnership
2. Success of UMRR
3. Science on the River
4. Future of UMRR

Interviews for the first video on the history of UMRR will be conducted in August and September. Perrine requested that suggestions for potential interviewees be sent to Jill Bathke. The videos will be shared publicly via social media. In response to a question from Fischer, Perrine said the video production team is focusing on producing one video at a time, but that interviews will be collected throughout. In response to a question from Stephenson, Perrine said she was not certain of the process for reviewing the video script. In response to a question from Chewning, Perrine said she would appreciate suggestions for people to interview for the first video as soon as possible. Fischer said LTRM crews may have valuable video for B-roll and asked how it could be shared with the video production team. Perrine said the video series team was currently developing guidelines (e.g., resolution) for photos or videos that could be used and would share that when it was ready. In response to a question from Moore, Perrine said interviewees do not need to be familiar with UMRR. The team is looking for genuine opinions on the river and the work being done on it. For example, an avid ice angler would speak more avidly about changes in fishing experience than UMRR broadly. Those types of messages are still very related to UMRR's value to the river and the public. Mark Gaikowski suggested contacting the hotel in Stoddard, WI next to Pool 8 Island HREP for their perspective on the economic benefits of restoration projects and connections to local businesses. Chris Erickson suggested reaching out to Terry Tuma, a well-known spokesman in the fishing industry, who fishes extensively on the river.

Perrine said the team is also developing simple talking points and key messages for program partners' use during outreach activities. The team is reviewing the draft statements and determining the appropriate level of detail to include and program facts to highlight.

Plumley explained that an *ad hoc* team to develop strategies for publicly rolling out the third UMRR LTRM Status and Trends Report requested input from the UMRR Coordinating Committee via an online survey. Fischer said this a great opportunity to identify key partners or organizations for the partnership to target with key messages in the report and provided examples of potential audiences, including local conservation groups, Congressional members, among others to both spur action in the watershed and communicate the value of the program. Fischer said there should be additional conversations to clarify the roles of the UMRR Coordinating Committee, communications team, and UMRBA in this effort. Plumley agreed and said there have been several conversations over the past couple months on who the right group is to shepherd the rollout, including how the communications team can support that effort. Plumley acknowledged the leadership roles of USGS and the Corps, as science leads, in collaboration with the UMRR Coordinating Committee and UMRBA. Gaikowski said all partners bring the ability to identify connections to the report information and their respective agency missions and priorities and that he is looking forward to seeing the results of the survey and identification of audiences to help communicate about the Status and Trends Report.

Perrine said future potential activities for the communications team include finalizing the communication and outreach materials inventory, developing HREP/LTRM signage that would have more current information or imagery or tagline, reviewing the UMRR Communication and Outreach Plan, and refining the Lower Illinois River Pilot Project.

External Communications and Outreach

Communication and outreach activities in the third quarter of FY 21 include the following:

- Kirsten Wallace said that, on behalf of UMRBA, she testified to the House Select Committee on the Climate Crisis on June 11, 2021. The hearing focused on building resilient communities and also included the mayors of Madison, Los Angeles, and Atlanta. UMRBA testimony focused on how regional science, coordination, and planning can result in regional resilience. The testimony shared what we know about ecological resilience through the Upper Mississippi River Restoration (UMRR) program and underscored the interconnectedness of communities and river users/uses that require a collective effort at the regional or watershed scale. In addition, the testimony called for investment in UMRR, the Navigation and Ecosystem Sustainability Program (NESP), nutrient reduction strategies, and long term resilience planning. Wallace expressed her appreciation to Megan Moore and Jeff Houser for their review of the testimony. Wallace said it was a good opportunity to bring the data and science to the committee's attention and highlight that UMRR has been working on resilience for some time. Wallace expressed appreciation to Houser and others for their research efforts that allow UMRR to add to national discussions on ecological resilience.
- Mark Gaikowski reported that, on June 3, 2021, USGS participated in an open house with USACE regarding underwater acoustic deterrents at Lock 19. They discussed the value of monitoring for tracking effects of invasive species impacting ecosystems. USGS is also coordinating within the Department of the Interior to highlight the climate vulnerability assessment to support USFWS lands in the Midwest. This effort has connections to various efforts in the UMRS including discussions about modeling potential future hydrology of the UMRS.
- Scott Gritters said that, on August 16, there will be an Iowa mussel blitz on Upper Cedar River that will include Mississippi River staff.

UMRR Showcase Presentations

Why and how should we model future UMRS hydrology?

Molly Van Appledorn and Lucie Sawyer are planning a series of meetings to engage the partnership in discussions about modeling potential future hydrology of the UMRS. The desired outcome from these meetings is for a detailed description of an ideal quantitative future hydrology dataset. Three virtual meetings are planned for this fall to identify UMRR priorities for understanding climate change hydrology, potential datasets and approaches to addressing UMRR priorities as well as ideal outcomes of modeling effort, and to develop a proposal for a quantitative modeling effort. The first two meetings will each consist of two half-day sessions and be held on September 21 and 23 and on November 1 and 2. The third meeting date has not been determined. Participants will include members of the UMRR partnership such as A-Team members, HREP experts, LTRM scientists, UMRR technical experts, and possibly experts from the Corps' Climate Preparedness and Resiliency Community of Practice. Workshop participants will be asked to engage with their colleagues prior to the meeting on the following questions:

- How would a future hydrology dataset help your agency carry out UMRR mission?
- Are there certain hydrologic criteria you use in your decision making or research?
- At what spatial and temporal scales do you use (or would like to use) hydrologic data?

This work builds on Van Appledorn and Sawyer's efforts to determine best practices for serving historic and contemporary daily water surface elevations from USACE gaging locations for use by the UMRR partnership in support of LTRM monitoring and HREP planning.

Mike Klingner said the last a major H&H study for the flood frequency study included a public involvement group that ran concurrently with the scientific analysis and asked if this effort would include a similar public input component. Kirsten Wallace said flood dynamics and sediment issues tied to this work are important to the public. She added that UMRBA will be engaged in the process and work to connect it to its resiliency work and the work of others focused on tributary influences, what a future condition might look like, and what changes might look like relative to conveyance. Klingner encouraged incorporating upland storage impacts into the model discussion. In response to a question from Megan Moore, Van Appledorn said meeting invites were sent to state A-Team representatives and encouraged folks to share additional thoughts, resources, or tools with those individuals to bring to the discussion. Jim Fischer said the work has clear ties to ongoing flood, sediment, and drought work and will be very valuable. Davi Michl commended Van Appledorn and Sawyer on this effort.

HREP Story Maps

Kayleigh Thomas summarized progress on modernizing public facing HREP materials through the development of story maps. Old static and traditional maps were time consuming to produce and update and could quickly become out of date. The story maps can utilize data from existing authoritative datasets, are easily updated, and can be shared publicly or embedded into USACE webpages. GIS team members at the three USACE districts are working with project managers and engineers to distill data from authoritative project documents such as fact sheets, feasibility reports, as-built drawings, operation and maintenance manuals, and performance evaluation reports to include in the story maps. A uniform template was developed for use across all districts to keep the look and content consistent. HREP story maps include a landing page, general information about the HREP as well as the project objectives and restoration features.

The GIS team has completed 36 of 102 story maps and is currently working on several maps. The new online interface also makes it easier to locate an HREP. The link to the interface is: <https://www.mvr.usace.army.mil/Missions/Environmental-Stewardship/Upper-Mississippi-River-Restoration/Habitat-Restoration/Find-an-HREP-Project/>

In response to a question from Andrew Stephenson, Thomas said many layers are available in ArcGIS and that geoprocessing could be used to identify all project boundaries that overlay a specific project feature (e.g., islands). Davi Michl and Karen Hagerty commended Thomas on her work. Stephenson agreed and it helps address many actions outlined in the strategic plan. Jim Fischer said the story maps are a great communication tool and asked if they were connected to the various datasets available through partners or LTRM (e.g., fixed water quality sites within an HREP boundary or SRS data in trend pools). Thomas said the purpose of the story maps was to update text only static maps but that it could be integrated in the future. Hagerty said there have been steps to better integrate those data but they are still at the beginning of that effort. Houser noted that several of these sites have LTRM sites nearby that could provide interesting opportunities to link to LTRM data. Thomas agreed and said the platform allows leverage of a lot of available data and efficient delivery to the public and said additional products could be developed in the future. Plumley said each project webpage has completed PER reports included, but that easy access to the various information sources across the partnership remains challenging. He said he is interested in understanding the full range of information across PERs, project monitoring, and adaptive management. Rock Island District has started a process to aggregate that information and will share progress with the other districts. Plumley said he would like to have more broad discussions in the next year on the subject after that information is available. Fischer expressed appreciation for that initial inventory work and noted it may also help inform LTRM implementation planning discussions.

Habitat Restoration

Angela Deen said MVP's planning priorities include Reno Bottoms and Lower Pool 10. The forest succession model is being used to re-evaluate alternatives and TSP selection is anticipated in fall 2021. A draft feasibility report for Lower Pool 10 is anticipated to be released for public review in August 2021 and a final report is anticipated to be submitted to MVD in fall 2021. The district hopes to initiate design for Lower Pool 10 this winter. MVP has four projects in construction – i.e., Harpers Slough, McGregor Lake, Bass Ponds, and Conway Lake. The contractor at Harpers Slough HREP began work to repair three islands damaged from high water. Interior lake granular placement, rock work, and berm mixing are occurring at McGregor Lake and the project is fifty percent complete. Concrete stoplog structures are finished at Bass Ponds and Refuge staff were able to do their first drawdown which showed positive vegetation response. Construction may be completed one year ahead of schedule with only miscellaneous metal work and access roads remaining and a ribbon cutting ceremony is being discussed for early October. Conway Lake is nearly complete but high water is needed to access final seeding locations. The district is planning a kickoff meeting for Lower Pool 4 Big Lake feasibility work in fall 2021 and plans to complete three performance evaluation reports by the end of FY 21. Brian Chewning said it was good to see Harpers Slough moving in the right direction. In response to a question from Jim Fischer, Deen said there was a site visit to Trempealeau on June 22, 2021, to tour features and consider options for adaptive management or retrofitting features such as portable pumps. Discussions regarding how best to address the site needs are ongoing. Marshall Plumley said it was great to have in-person discussion at the site and that potential avenues to address concerns were very positive. In response to a question from Andrew Stephenson, Deen said PERs are underway for Ambrough Slough, Long Meadow Lake, and Pool Slough and updates could be shared at the next quarterly meeting.

Julie Millhollin said MVR's planning priorities include Lower Pool 13, Green Island, Pool 12 Forestry, and Quincy Bay. The Lower Pool 13 PDT has determined that two separate projects are needed to effectively address problems with different spatial scales. The Green Island PDT and sponsor met onsite on July 27, 2021. The Pool 12 Forestry PDT held a virtual open house on July 16, 2021, and public comments are due August 14, 2021. A virtual kick off meeting for Quincy Bay is scheduled for August 19, 2021. MVR's design priority is Steamboat Island Stage I and the 100 percent review is scheduled for the week of September 6, 2021. MVR has six projects in construction. Pool 12 Overwintering Stage II is complete; the PDT is wrapping up as-builts and O&M manuals and will be sending out close-out letters in early fall. The contractor at Keithsburg Division Stage 1 has mobilized to the site after eagles left their nest and the PDT finalized the modification to add an articulated concrete mattress for Stage II. Keithsburg Division Stage II proposals are due August 24, 2021. Huron Island Stage III aquatic vegetation planting was completed July 20-21, 2021 and ERDC will evaluate the plants in September 2021. The contractor at Beaver Island is working on shaping placement sites. A panel display monitor was replaced at Rice Lake on July 28, 2021. MVR is addressing sponsor comments on three fact sheets prior to submitting to MVD. In response to a question from Chewning, Millhollin said the district is hoping to submit fact sheets to MVD before the end of the fiscal year.

Brian Markert said MVS's planning priorities include West Alton Islands and Yorkinut Slough. Feasibility planning continues for West Alton Islands with two potential sponsors MDC and USFWS. Yorkinut Slough has complex hydrologic issues for the PDT to consider and hydraulic modeling is in progress. MVS's design priorities include Piasa & Eagles Nest, Crains Island, and Oakwood Bottoms. Plans and specs for Piasa & Eagles Nest Phase II and Crains Island Phase II are both anticipated to be completed in fall 2021. Oakwood Bottoms received assistance from Memphis and Savanna Districts regarding well pump testing and the project is anticipated to be ready for advertising in the first half of FY 22. Earth work and pile removal is ongoing at Crains Island. Construction on a rock structure at Piasa & Eagles Nest is anticipated to begin in August 2021. The pump station and berm setback are underway at Clarence Cannon. Reforestation work was completed at Ted Shanks and the invoice is being prepared to close the project out. The Sterling Island fact sheet was sent to MVD for approval

and the district is awaiting comments from MVD on the Open River fact sheet. The last recommended fact sheet is being coordinated with Illinois DNR/TNC as sponsors and will be sent to MVD for approval later this year.

Long Term Resource Monitoring and Science

FY 2021 3rd Quarter Report

Jeff Houser reported that accomplishments of the third quarter of FY 21 include publication of a manuscript regarding floodplain forest structure and the recent decline of *Carya illinoensis* (northern pecan) in the journal *Forest Ecology and Management*. Researchers used dendrochronology to characterize the floodplain forest composition, structure and dynamics and examined annual- to decadal-scale growth responses of northern pecan trees to disturbance events. Observed decline in northern pecan may be due to altered flooding regimes, drought frequency, masting phenology, fire suppression, and warming temperatures. Persistence of pecan trees in much of the UMR floodplain will require direct forest restoration actions.

Houser said 18 UMRR “science in support of restoration” funded projects are in-progress. LTRM staff will assist in developing chapters for the UMRR 2022 Report to Congress and planning for the 2022 UMRR Science Meeting is anticipated to begin in the next few weeks. Houser added that the resilience assessment is ongoing. He noted that Andy Meier’s presentation at the UMRBA Board’s quarterly meeting on August 10, 2021, included three components from the resilience assessment in discussion of work on systemic floodplain forests.

Status and Trends 3rd Edition

Houser said that the UMRR LTRM Status and Trends Report 3rd Edition is being reviewed by USGS’ Science Publishing Network (SPN) to produce a final version of the report by mid-November 2021. A small group is planning for a strategic rollout for the UMRR Status and Trends Report.

USACE LTRM Report

Karen Hagerty said UMRR’s LTRM FY 22 budget allocation will follow FY 21 allocations if the program receives \$33.17 million in funding. That is, \$6.3 million (\$5.0 million for base monitoring and \$1.3 million for analysis under base) with an additional \$2.5 million available for “science in support of restoration and management.” Hagerty said consistent funding at this level in recent years has contributed to the advancement of many science priorities and expressed appreciation for Houser’s leadership on the science portion of LTRM. She said more extensive budget breakouts will be available at the next quarterly meeting.

A-Team Report

Scott Gritters said the A-Team met via webinar on July 20, 2021. Topics discussed included UMRR updates, recent LTRM science publications, Molly Van Appledorn’s future hydrology meeting series, macroinvertebrate sampling and research needs, vegetation community analysis by Kristen Bouska, continued impacts of COVID-19 on agency policies and potential impacts to the 2021 field/work season, and an introduction to staff at the Great River Field Station. Gritters said that data suggests there could be decline of mayflies on the river and increases in PFAS, forever chemicals, have unknown impacts to invert populations on the river. Shawn Giblin raised these issues and suggested reinstating macroinvertebrate sampling under LTRM. Jim Lamer is developing a proposal for review and discussion at the next A-Team meeting. Gritters encouraged suggestions for topics for the next A-Team meeting. Stephenson expressed appreciation for the field station visit and focus on people as a new part of the A-Team meeting. Gritters said it is important to recognize the important contributions of partners

at all levels of the program and data collection is fundamental to the program's success. Fischer agreed and said those staff spend thousands of hours on the river and have great perspective on how it changes. The A-Team's next meeting is anticipated to be scheduled for early November 2021.

LTRM Implementation Planning

Houser said LTRM implementation planning is intended to address unmet information needs for UMRS if additional funding is dedicated to the program following increased authorization under WRDA 2020. The purpose of LTRM implementation planning is to identify and prioritize specific information needs not currently being met for the UMRS and specific actions to take to address those needs if additional funds are appropriated for UMRR LTRM. Houser reported that the *ad hoc* LTRM Implementation Planning Team met on July 15, 2021 to select a facilitator(s) from four identified potential facilitators and to review a draft LTRM implementation planning guidance document included on pages D-20 to D-21 of the meeting agenda packet. The draft guidance document outlines the purpose, desired outcomes, and initial process guidelines for discussion with the facilitators. The planning process will be structured to create time and space to think deeply about challenging questions, encourage a fair and transparent process, and allow participants to explore what information their agencies need for the management and restoration of the system. Outcomes are specific information needs and actions to address those needs. The group emphasized that data alone are not actionable items but should be paired with the analysis and communication of the results.

The group identified Max Post van der Burg and Dave Smith from USGS as the best fit for the needs identified in the implementation guidance document and the materials provided by the potential facilitators. Bios for both facilitators are included on pages D-17 to D-19 of the meeting agenda packet, and both have backgrounds in landscape ecology and large-scale planning. The next steps in the process will be to incorporate any feedback from the UMRR Coordinating Committee into a revised draft guidance document and discuss with the facilitators an appropriate sequence of meetings, timeline, and list of participants for implementation planning. In response to a question from Brian Chewing, Houser said information needs are a subset of scientific uncertainty. Megan Moore asked for clarification on whether the LTRM management team or the *ad hoc* implementation team selected the facilitators. Houser explained that the LTRM management team did meet to discuss facilitators and the intent was to bring some suggestions to the small group for discussion but that a decision was not made. Karen Hagerty echoed Houser's reflections but said it could have been handled differently. Plumley said the idea was to let folks know our thoughts on the field of candidates and that additional discussion with the full implementation team resulted in concurrence on the selected facilitators. Jim Fischer agreed that a different approach would have been better and said the discussion with the full team was very valuable and that he supports the direction going forward. Moore expressed appreciation for the additional context and encouraged input from all ahead of future decisions. Houser agreed. Fischer said the diversity in partner perspectives is an important part of the program's success and that having all voices at the table as the planning process proceeds will be necessary. Fischer asked Houser to speak to the overlap between the UMRR 2021-2025 Strategic Plan review survey and LTRM implementation planning. Houser said LTRM implementation planning will focus at a greater level of detail and specificity than the Strategic Plan review survey, but that any overlap will be explored. Stephenson noted that it will be important to be aware of the relationship to the two efforts but that the survey will prioritize actions already identified by the Committee while implementation planning will identify information needs that have not necessarily been considered before. Fischer emphasized the need to use the survey to inform the implementation planning to the extent possible. Houser agreed.

Navigation and Ecosystem Sustainability Program

Brian Johnson provided an update regarding the Navigation and Ecosystem Sustainability Program (NESP). Additional updates are anticipated at future UMRR Coordinating Committee meetings until such a time that a formal NESP coordinating body is established. The focus for NESP during FY 21 has

been to advance projects to construction readiness. Navigation and ecosystem projects that will be construction ready for FY 22 include:

Navigation (Total \$12.5M)

- Lock 25 Lockwall Modifications
- Lock 14 Mooring Cell
- Moore's Towhead Systemic Mitigation

Ecosystem (Total \$10M)

- Pool 2 Wingdam Notching
- Twin Islands Island Protection
- Alton Pool Side Channel and Island Protection
- Starved Rock Habitat Restoration and Enhancement

Lock 25 lockwall modifications will be the first project to construction if funds are received in FY 22. Lock 14 mooring cell is a small-scale navigation project, and the environmental assessment will be sent out for public review in the coming weeks. Moore's Towhead systemic mitigation was started in 2009. The island on the Illinois River located next to the navigation channel and was identified as an area that would be impacted by additional navigation traffic. Pool 2 wingdam notching will be ready for construction in FY 22. The project was approved prior to the interruption of major NESP planning funding in 2011. Twin Islands project approval will likely be completed in the next week. It was approved in 2009. Starved Rock is currently in planning and design and will convert a portion of the pool from a flowing system to a large slack water area to encourage the growth of aquatic plants and provide habitat for associated fauna. Karen Hagerty suggested renaming the Starved Rock project to something without the HREP moniker.

Additionally, the feasibility report for fish passage at Lock and Dam 22 underwent public review, and approval of that report is anticipated by the end of the calendar year 2021. The project is anticipated to be construction ready by the end of FY 23.

The District-based river teams were asked to identify additional ecosystem projects for implementation under NESP by July 30, 2021. Twenty-nine projects across three districts have been identified as priority projects including six side channel restoration projects, six multi-pool projects, five island construction, five backwater projects, three floodplain restoration, two island and shoreline protection, one habitat improvement and one dike alteration project. Ten to twelve projects will be selected for fact sheet development and be sent to MVD for approval. River teams identified some larger, multi-pool efforts that would fit well under NESP such as systemic shoreline protection or forest restoration. Projects over five million dollars will need approval by MVD prior to starting. There is a need to further evaluate the larger multi-pool or systemic efforts across river teams, but needs for forest and shoreline restoration exist in all districts. In response to a question from Tim Yager, Johnson clarified that the RRF has not yet endorsed the projects advanced by the FWVG. The RRF is scheduled to meet on August 24, 2021 to review and consider endorsement of the list. In response to a question from Chad Craycraft, Johnson said Starved Rock is near the 35 percent review milestone, but that H&H modeling is causing them to look at alignment at top of that structure. In response to another question from Craycraft, Johnson said implementation guidance under NESP states that fish passage projects must be approved at the Chief of Engineers level and that he has reached out to Headquarters to understand the requirements for that going forward should NESP receive a construction new start.

In response to a question from Kirsten Wallace, Johnson said that NESP does not have a formal coordinating body. There are monthly calls with federal and state representatives, but Andrew Goodall intends to talk with partners about standing up a formal coordinating body in the future. Wallace noted that the leading agencies wrote a letter last year to support the Lock and Dam 22 fish passage project. Wallace asked those who participate in the coordinating meetings if the partnership wants to issue a formal statement on the prioritized list of projects when they are identified. In response to a question from Matt Vitello, Wallace suggested adding it as a discussion topic at the next coordinating meeting. Johnson said the Corps hopes to have a draft set of priority projects by the next meeting and could discuss the appropriate path forward with implementing partners. Moore agreed with the proposed actions and requested that Corps staff distribute necessary reference materials ahead of the meeting to aid agency review and internal discussions. Lauren Salvato suggested the Starved Rock PDT coordinate with the Illinois River Basin NGWOS to avoid duplicative monitoring efforts as they will be collecting data in the pool and intensively monitoring harmful algal blooms and nutrient levels. Johnson said he would follow-up with the PDT and project manager.

Other Business

Upcoming quarterly meetings are as follows:

- **November 2021 – TBD**
 - UMRBA quarterly meeting – November 16
 - **UMRR Coordinating Committee quarterly meeting – November 17**
- **February 2022 – TBD**
 - UMRBA quarterly meeting – February 22
 - **UMRR Coordinating Committee quarterly meeting – February 23**
- **May 2022 – TBD**
 - UMRBA quarterly meeting – May 24
 - **UMRR Coordinating Committee quarterly meeting – May 25**

With no further business, Chad Craycraft moved and Jim Fischer seconded a motion to adjourn the meeting. The motion carried unanimously, and the meeting adjourned at 1:37 p.m.

**UMRR Coordinating Committee Virtual Attendance List
August 11, 2021**

UMRR Coordinating Committee Members

Brian Chewning	U.S. Army Corps of Engineers, MVD
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Mark Gaikowski	U.S. Geological Survey, UMESC
Chad Craycraft	Illinois Department of Natural Resources
Randy Schultz	Iowa Department of Natural Resources
Megan Moore	Minnesota Department of Natural Resources
Matt Vitello	Missouri Department of Conservation
Jim Fischer	Wisconsin Department of Natural Resources
Ken Westlake	U.S. Environmental Protection Agency, Region 5

Others In Attendance

Jim Cole	U.S. Army Corps of Engineers, MVD
Thatch Shepard	U.S. Army Corps of Engineers, MVD
Ben Robinson	U.S. Army Corps of Engineers, MVD
Leann Riggs	U.S. Army Corps of Engineers, MVD
Angela Deen	U.S. Army Corps of Engineers, MVP
Chris Erickson	U.S. Army Corps of Engineers, MVP
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR
Julie Millhollin	U.S. Army Corps of Engineers, MVR
Davi Michl	U.S. Army Corps of Engineers, MVR
Rachel Hawes	U.S. Army Corps of Engineers, MVR
Rachel Perrine	U.S. Army Corps of Engineers, MVR
Kayleigh Thomas	U.S. Army Corps of Engineers, MVR
Jodi Creswell	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Kat McCain	U.S. Army Corps of Engineers, MVS
Brian Johnson	U.S. Army Corps of Engineers, MVS
Greg Kohler	U.S. Army Corps of Engineers, MVS
Lane Richter	U.S. Army Corps of Engineers, MVS
Bryan Taylor	U.S. Army Corps of Engineers, SWT
Jason Daniels	U.S. Environmental Protection Agency
Kraig McPeck	U.S. Fish and Wildlife Service, IIFO
Sara Schmuecker	U.S. Fish and Wildlife Service, IIFO
Matt Mangan	U.S. Fish and Wildlife Service, IIFO
Tim Yager	U.S. Fish and Wildlife Service, UMR Refuges
Jeff Houser	U.S. Geological Survey, UMESC
Jennifer Dieck	U.S. Geological Survey, UMESC
Kristen Bouska	U.S. Geological Survey, UMESC
JC Nelson	U.S. Geological Survey, UMESC
Molly Van Appledorn	U.S. Geological Survey, UMESC
Scott Gritters	Iowa Department of Natural Resources
Steve Galarneau	Wisconsin Department of Natural Resources
Olivia Dorothy	American Rivers
Doug Daigle	Lower Mississippi River Sub-basin Committee
Rick Stoff	Stoff Communications
Doug Blodgett	The Nature Conservancy
Mike Klingner	Upper Mississippi, Illinois, and Missouri Rivers Association
Tom Boland	Wood

Kirsten Wallace	Upper Mississippi River Basin Association
Andrew Stephenson	Upper Mississippi River Basin Association
Mark Ellis	Upper Mississippi River Basin Association
Lauren Salvato	Upper Mississippi River Basin Association
Janelle Gaun	Upper Mississippi River Basin Association

ATTACHMENT B

Regional Management and Partnership Collaboration

- **UMRR Quarterly Budget Reports (11/2/2021)** *(B-1 to B-3)*

UMRR Quarterly Budget Report: St. Paul District

FY2021 Q4; Report Date: Tue Nov 02 2021

Habitat Projects

Project Name	Cost Estimates			FY2021 Financials			
	Non-Federal	Federal	Total	Carry In	Allocation	Funds Available	Actual Obligations
Bass Ponds, Marsh, and Wetland	-	\$6,300,000	\$6,300,000	-	\$300,000	\$300,000	\$864,402
Conway Lake	-	\$7,413,000	\$7,413,000	\$39,645	\$300,000	\$339,645	\$366,726
Harpers Slough	-	\$13,675,000	\$13,675,000	-	-	-	\$2,486,680
Lower Pool 10 Island and Backwater Complex	-	\$17,000,000	\$17,000,000	\$12,700	\$350,000	\$362,700	\$279,978
McGregor Lake	-	\$23,550,000	\$23,550,000	-	\$5,875,000	\$5,875,000	\$2,652,074
Pool Slough	\$175,000	\$518,000	\$693,000	-	-	-	-\$34,468
Reno Bottoms	-	\$10,000,000	\$10,000,000	\$105,337	\$450,000	\$555,337	\$436,736
Total	\$175,000	\$86,856,000	\$87,031,000	\$157,683	\$7,275,000	\$7,432,683	\$7,052,129

Habitat Rehabilitation

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
District Program Management	-	-	-	\$660,897
Total	-	-	-	\$660,897

Regional Program Administration

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
Habitat Eval/Monitoring	-	-	-	\$299,508
Total	-	-	-	\$299,508

	Carry In	Allocation	Funds Available	Actual Obligations
St. Paul Total	\$157,683	\$7,275,000	\$7,432,683	\$8,012,533

UMRR Quarterly Budget Report: Rock Island District

FY2021 Q4; Report Date: Tue Nov 02 2021

Habitat Projects

Project Name	Cost Estimates			FY2021 Financials			
	Non-Federal	Federal	Total	Carry In	Allocation	Funds Available	Actual Obligations
Beaver Island	-	\$25,288,000	\$25,288,000	\$40,000	\$1,025,000	\$1,065,000	\$1,247,872
Green Island, IA	-	\$16,600,000	\$16,600,000	-	\$500,000	\$500,000	\$550,902
Huron Island	-	\$15,773,000	\$15,773,000	\$43,305	\$100,000	\$143,305	-\$149,213
Keithsburg Division	-	\$29,643,000	\$29,643,000	-	\$3,945,000	\$3,945,000	\$3,044,334
Lower Pool 13	-	\$25,288,000	\$25,288,000	\$42,666	\$350,000	\$392,666	\$603,952
Pool 12 (Forestry)	-	-	-	\$84,173	\$500,000	\$584,173	\$432,738
Pool 12 Overwintering	-	\$20,870,822	\$20,870,822	\$99,267	-	\$99,267	\$179,719
Quincy Bay, IL	-	-	-	-	\$250,000	\$250,000	\$47,053
Rice Lake, IL	\$7,280,000	\$13,459,763	\$20,739,763	-	-	-	\$62,138
Steamboat Island	-	\$41,977,000	\$41,977,000	\$50,000	\$350,000	\$400,000	\$420,673
Total	\$7,280,000	\$188,899,585	\$196,179,585	\$359,411	\$7,020,000	\$7,379,411	\$6,440,168

Habitat Rehabilitation

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
District Program Management	-	-	-	\$515,215
Total	-	-	-	\$515,215

Regional Program Administration

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
Adaptive Management	-	\$200,000	\$200,000	\$211,423
Habitat Eval/Monitoring	-	\$1,125,000	\$1,125,000	\$284,216
Model Certification/Regional HREP	-	\$100,000	\$100,000	\$39,248
Public Outreach	-	\$50,000	\$50,000	\$36,615
Regional Program Management	-	\$1,200,000	\$1,200,000	\$1,077,301
Regional Project Sequencing	-	\$275,000	\$275,000	\$32,702
Total	-	\$2,950,000	\$2,950,000	\$1,681,506

Regional Science and Monitoring

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
Long Term Resource Monitoring	-	\$5,000,000	\$5,000,000	\$5,232,102
Science in Support of Restoration/Management	-	\$3,800,000	\$3,800,000	\$3,931,344
Total	-	\$8,800,000	\$8,800,000	\$9,163,446

	Carry In	Allocation	Funds Available	Actual Obligations
Rock Island Total	\$359,411	\$18,770,000	\$19,129,411	\$17,800,335

UMRR Quarterly Budget Report: St. Louis District

FY2021 Q4; Report Date: Tue Nov 02 2021

Habitat Projects

Project Name	Cost Estimates			FY2021 Financials			
	Non-Federal	Federal	Total	Carry In	Allocation	Funds Available	Actual Obligations
Clarence Cannon	-	\$29,800,000	\$29,800,000	-	\$850,000	\$850,000	\$460,467
Crains Island	-	\$36,562,000	\$36,562,000	\$6,228	\$4,000,000	\$4,006,228	\$1,251,742
Harlow Island	-	\$37,971,000	\$37,971,000	-	\$450,000	\$450,000	\$22,727
Oakwood Bottoms	-	\$29,000,000	\$29,000,000	-	\$350,000	\$350,000	\$1,255,271
Piasa - Eagle's Nest Islands	-	\$26,746,000	\$26,746,000	-	\$825,000	\$825,000	\$3,306,021
Ted Shanks	-	\$29,506,000	\$29,506,000	-	-	-	\$101,611
West Alton Missouri Islands	-	-	-	-	\$275,000	\$275,000	\$225,044
Yorkinut Slough, IL	-	\$8,500,000	\$8,500,000	\$2,718	\$225,000	\$227,718	\$330,693
Total	\$2,848,000	\$204,549,000	\$207,397,000	\$8,947	\$7,125,000	\$7,133,947	\$6,953,576

Habitat Rehabilitation

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
District Program Management	-	-	-	\$447,526
Total	-	-	-	\$447,526

Regional Program Administration

Subcategory	FY2021 Financials			
	Carry In	Allocation	Funds Available	Obligations
Habitat Eval/Monitoring	-	-	-	\$70,004
Total	-	-	-	\$70,004

	Carry In	Allocation	Funds Available	Actual Obligations
St. Louis Total	\$8,947	\$7,125,000	\$7,133,947	\$7,471,106

ATTACHMENT C

Communications and Outreach

- **UMRR Flyer (10/2021)** *(C-1 to C-2)*







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 :

 Drinking water & power supply	Recreation & ecotourism 
 Habitat for fish & wildlife	Commercial navigation & transporation 

 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

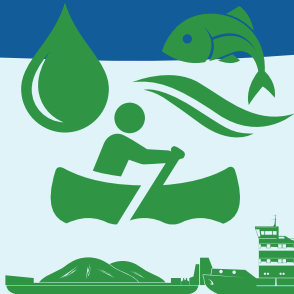
Wetlands and backwater lakes provide habitat for many valued fish and aquatic species. Millions of people enjoy fishing and boating on the Upper Mississippi River System each year.



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.



ATTACHMENT D

Program Reports

- **Long Term Resource Monitoring and Science**
 - **Base Monitoring Scope of Work thru 4th Quarter of FY 2021 (11/1/2021) (D-1 to D-5)**
 - **FY 2021 UMRR Science Activities in Support of Restoration and Management (11/1/2021) (D-6 to D-14)**
 - **FY 2014 and FY 2015 UMRR Science Activities in Support of Restoration and Management (10/26/2021) (D-15)**

UMRR LTRM FY21 Milestone Chart
Base Monitoring

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Aquatic Vegetation Component						
2021A1	Complete data entry and QA/QC of 2020 data; 1250 observations.					
	a. Data entry completed and submission of data to USGS	30-Nov-2020		30-Nov-2020		Lund, Drake, Bales
	b. Data loaded on level 2 browsers	15-Dec-2020		15-Dec-2020		Schlifer
	c. QA/QC scripts run and data corrections sent to Field Stations	28-Dec-2020		28-Dec-2020		Sauer, Schlifer
	d. Field Station QA/QC with corrections to USGS	15-Jan-2021		15-Jan-2021		Lund, Drake, Bales
	e. Corrections made and data moved to public Web Browser	30-Jan-2021		30-Jan-2021		Larson, Schlifer, Caucutt
2021A2	Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2020 data	31-Jul-2021				Larson, Schlifer
2021A3	Wisconsin DNR annual summary report 2020 that combines current year observations from LTRM with previous years' data, for the fish, aquatic vegetation, and water quality components.	30-Sep-2021			Lead took new position	Drake, Bartels, Hoff, Kalas, Carhart
2021A4	Complete aquatic vegetation sampling for Pools 4, 8, and 13 (Table 1)	31-Aug-2021				Larson, Lund, Drake, Fopma
2021A5	Pool 4: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-2021		26-Oct-2021		Lund
2021A6	Pool 8: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-2021		17-Sep-2021		Drake, Carhart
2021A6	Pool 13: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-2021		13-Oct-2021		Fopma
Intended for distribution						
LTRM completion report: Evaluation of a "Trace" Plant Density Score in LTRM Vegetation Monitoring (Completed; sent out 10/25/2021)						
Manuscript: Estimated annual summer submersed aquatic macrophyte standing stocks (1998 - 2018) in three large reaches of the Upper Mississippi River. (2020A8; at journal for review, IP 122160)						
Manuscript: Species-specific wet-dry mass calibrations for common submersed macrophytes in the Upper Mississippi River (2020A9; Completed: Aquatic Botany Volume 169, https://doi.org/10.1016/j.aquabot.2020.103344)						
Fisheries Component						
2021B1	Complete data entry, QA/QC of 2020 fish data; ~1,590 observations					
	a. Data entry completed and submission of data to USGS	31-Jan-2021		31-Jan-2021		DeLain, Bartels, Bowler, Hine, Kueter, Gittinger, West, Solomon, Maxson
	b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations	15-Feb-2021		15-Feb-2021		Ickes, Schlifer
	c. Field Station QA/QC with corrections to USGS	15-Mar-2021		15-Mar-2021		DeLain, Bartels, Kueter, Hine, Gittinger, West, Solomon, Maxson

UMRR LTRM FY21 Milestone Chart
Base Monitoring

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
	d. Corrections made and data moved to public Web Browser	30-Mar-2021		30-Mar-2021		Ickes and Schlifer
2021B2	Update Graphical Browser with 2020 data on Public Web Server.	31-May-2021		31-May-2021		Ickes and Schlifer
2021B3	Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool (Table 1)	31-Oct-2021		31-Oct-2021		DeLain, Bartels, Kueter, Hine, Gittinger, West, Solomon, Maxson
2021B4	IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2020	30-Jun-2021	30-Jun-2022		Delayed due to staff retirement; 2020 and 2021 data will be incorporated	Kueter
2021B5	Sample collection, database increment on Asian carp age and growth: collection of cleithral bones	31-Jan-2021		31-Jan-2021		Solomon, Maxson
2021B8(D)	Database increment: Stratified random day electrofishing samples collected in Pools 9–11	30-Sep-2021	31-Dec-2021		Delayed due to staff retirement; 2020 and 2021 data will be incorporated	Kueter
2021B9(D)	Database increment: Stratified random day electrofishing samples collected in Pools 16–18	30-Sep-2021	31-Dec-2021		Delayed due to staff retirement; 2020 and 2021 data will be incorporated	Kueter
Intended for distribution						
LTRM Completion report, compilation of 3 years of sampling: Fisheries (2009R1Fish; Chick et al.) (in USGS review; minor grammatical corrections needed then will be posted on LTRM Fish page)						
Manuscript: A synthesis on river floodplain connectivity and lateral fish passage in the Upper Mississippi River (2021B11; Submitted to USGS review; IP-123678)						
LTRM Fact Sheet: Tree map tool for visualizing fish data, with example of native versus non-native fish biomass (2013B16) (Programming code for TreeMap being re-written; once completed Fact Sheet will be completed)						
Water Quality Component						
2021D1	Complete calendar year 2020 fixed-site and SRS water quality sampling	31-Dec-2020		31-Dec-2020		Jankowski, Burdis, Kalas, Kueter, L.
2021D2	Complete laboratory sample analysis of 2020 fixed site and SRS data; Laboratory data loaded to Oracle data base.	15-Mar-2021		15-Mar-2021		Yuan, Schlifer
2021D3	1st Quarter of laboratory sample analysis (~12,600)	30-Dec-2020		30-Dec-2020		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni
2021D4	2nd Quarter of laboratory sample analysis (~12,600)	30-Mar-2021		30-Mar-2021		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni
2021D5	3rd Quarter of laboratory sample analysis (~12,600)	29-Jun-2021		29-Jun-2021		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni
2021D6	4th Quarter of laboratory sample analysis (~12,600)	28-Sep-2021		28-Sep-2021		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni

UMRR LTRM FY21 Milestone Chart
Base Monitoring

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2021D7	Complete QA/QC of calendar year 2020 fixed-site and SRS data.					
	a. Data loaded on level 2 browsers; QA/QC scripts run; SAS QA/QC programs updated and sent to Field Stations with data.	30-Mar-2021		30-Mar-2021		Schlifer, Jankowski
	b. Field Station QA/QC; USGS QA/QC.	15-Apr-2021		15-Apr-2021		Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
	c. Corrections made and data moved to public Web Browser	30-Apr-2021		30-Apr-2021		Schlifer, Jankowski
2021D8	Complete FY2020 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool	30-Sep-2021		30-Sep-2021		Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
2021D9	WEB-based annual Water Quality Component Update w/2020 data on Server.	30-May-2021		30-May-2021		Schlifer, Jankowski
2021D10	Operational Support to the UMRR LTRM Element. Serve as in-house Field Station for USGS for consultation and support on various LTRM-wide topics	30-Sep-2021		30-Sep-2021		Kalas, Hoff, Bartel, Drake
On-Going						
2019D12	Draft LTRM Completion Report: Assessment of Phytoplankton Samples collected by the Upper Mississippi River Restoration Program-Long Term Resource Monitoring Water Quality Component	30-Dec-2019	30-Jun-2022		Fulgoni took new position	Fulgoni and Jankowski
2020D12	Final LTRM Completion Report: Assessment of Phytoplankton Samples collected by the Upper Mississippi River Restoration Program-Long Term Resource Monitoring Water Quality Component	30-Mar-2021	30-Dec-2022			Fulgoni and Jankowski
2017D10	Draft LTRM Completion report: Evaluation of water quality data from automated sampling platforms	30-Sep-2017	30-Dec-2021		Waite, T., K.J. Jankowski, D.A. Bruesewitz, M. Johnson, J.N. Houser, D.A. Burnham, B. Bennie, M. Van Appledorn. Storm characteristics affect biogeochemical responses differently in lentic and lotic areas of a large river. In prep for Water Resources Research.	Soeken-Gittinger, Lubinski, Chick, Houser
Intended for distribution						
Completion report, compilation of 3 years of sampling: Water Quality (2009R1WQ; Giblin, Burdis) (in USGS review; minor grammatical corrections needed then will be posted on LTRM WQ page)						
Manuscript: Nutrients and dissolved oxygen in the UMRS: improving our understanding of winter conditions and their implications for structure and function of the river (2014D12; Houser) (under revision)						

UMRR LTRM FY21 Milestone Chart
Base Monitoring

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Spatial Data Component						
2021SD1	Aerial Photo scanning (ILR)	30-Sep-2021				Strange
2021SD2	3D Vegetation Mapping Solution Report	30-Jun-2021	TBD		Delayed due to lack of computer hardware, ready to proceed when graphics cards and VR headsets are available	Finley
2021SD3	4-Band to 3D Product SOP	30-Jun-2021		30-Jun-2021	Exploring ways to host the technical reports on-line	Finley
2021SD4	Google Earth Help Webpage	31-Dec-2020		31-Dec-2020	Exploring ways to host on-line	Finley
2021SD5	Co-Located Aerial LIDAR/SAR Report	30-Sep-2021		19-Aug-2021	In USGS review	Finley
2021SD6	Survey Capability Report and Historic Spatial Database for LCU Mapping	31-Dec-2020			Fieldwork to be completed by 6-August 2021	Finley
2021SD7	Draft topobathy strategic plan	30-Sep-2021	31-Dec-2021			Strange, De Jager
2021SD8	Maintenance ArcGIS server	30-Sep-2021			30-Sep-2021	Hlavacek, Fox, Rohweder
2021SD9	Status and Trends Report: continued data analysis and report writing for status and trends in land / water cover indicators.	30-Sep-2021		30-Sep-2021		De Jager
2021SD10	Draft Report: Evaluating effects of alternative flooding scenarios on forest succession and landcover in the UMRS.	30-Sep-2021	30-Sep-2022		Changing to a manuscript	De Jager
Data Management						
2021M1	Update vegetation, fisheries, and water quality component field data entry and correction applications.	30-May-2021		30-May-2021		Schlifer
2021M2	Load 2020 component sampling data into Database tables and make data available on Level 2 browsers for field stations to QA/QC.	30-Jun-2021		30-Jun-2021		Schlifer
2021M3	Assist LTRM Staff with development and review of metadata and databases in conjunction with publishing of reports and manuscripts	On-going				Schlifer
Status and Trends 3rd edition						
2021ST1	Draft Report out for Peer Review	16-Oct-2020	4-Nov-2020	4-Nov-2020		All
2021ST2	Revised draft to USGS publishing network	26-Feb-2021	30-May-2021	19-Apr-2021		All
2021ST3	Revised draft to UMESC Center Director and USGS Bureau Approving Official	23-Apr-2021	30-Jun-2021		Still under edit by the USGS Publishing network	All
2021ST4	Final publication	28-May-2021				All
2020ST4	Draft S&T3 Fact Sheet	TBD			Tied to completion of S&T3	All
Quarterly Activities						
2021QR1	Submittal of quarterly activities	30-Jan-2021		30-Jan-2021		All
2021QR2	Submittal of quarterly activities	13-Apr-2021		13-Apr-2021		All
2021QR3	Submittal of quarterly activities	13-Jul-2021	Decision to postpone these quarterly activities until other priorities are finalized S&T, RTC, Implementation planning, etc.			All
2021QR4	Submittal of quarterly activities	12-Oct-2021				All
Equipment Inventory						
2021ER1	Property inventory and tracking	15-Nov-2021		23-Aug-2021		LTRM staff as needed
UMRR LTRM Virtual All-Hands Component Meeting						

UMRR LTRM FY21 Milestone Chart
Base Monitoring

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2021VAH1	Virtual All-Hands Component Meeting	30-31 March 2021		30-31 March 2021		All

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Developing and Applying Indicators of Ecosystem Resilience to the UMRS						
2021R1	Updates provided at quarterly UMRR CC meeting and	Various				Bouska, Houser
2021R2	Submit aquatic vegetation manuscript for peer review publication	30-Mar-2021		1-Feb-2021		
2021R3	Submit resilience assessment synthesis manuscript for peer review publication	30-Mar-2021	TBD into FY22			
2021R4	Submit resilience assessment synthesis fact sheet for	30-Sep-2021	TBD into FY22			
2021R5	Submit manuscript that investigates associations between general and specified resilience for peer review publication	30-Sep-2021			Changed to management implications manuscript	
Intended for Distribution						
Manuscript: Bouska, K. L., J. N. Houser, N. R. De Jager, D. C. Drake, S. F. Collins, D. K. Gibson-Reinemer, and M. A. Thomsen. Conceptualizing alternate regimes in a large floodplain-river ecosystem. <i>Journal of Environmental Management</i> Volume 264 https://doi.org/10.1016/j.jenvman.2020.110516						
Assessing recent rates of sedimentation in the backwaters of Pools 4, 8, and 13 to support river restoration and the Habitat Needs Assessment-II						
2018ST3	Over-ice surveys completed along with a database (Continuation of 2017ST3)	30-Mar-2018	30-Mar-2020	Pool 13 Delayed due to Covid-19 state travel restrictions, now tracking		Moore, Kalas, Bierman
Landscape Pattern Research and Application						
2021LP1	Geospatial analyses in support of the Forest Gap project	30-Aug-2021	30-Sep-2022		Field work data for analysis delayed due to Covid-19	Rohweder
2021LP2	Support for developing topobathymetry plan	30-Sep-2021		30-Sep-2021	Completed; Draft document is in the works. Work will continue in FY22	Stone et al.
2021LP3	Analysis; Evaluating effects of alternative flooding scenarios on forest succession in the UMRS. Potential manuscript in 2021	30-Sep-2021		30-Sep-2021	Completed	Rohweder
2021LP4	Data Development: Developing seasonal aquatic areas maps to support aquatic habitat mapping and analysis.	30-Sep-2021			Currently working on ideas related to this task	Rohweder
On-Going						
Manuscript: Review of Landscape Ecology on the UMR; De Jager; 2016L3						

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Eco-hydrologic Research						
2020EH02	Submit manuscript of temporal patterns in UMRS inundation regimes for peer review	30-Sep-2021	30-Sep-22		Delayed due to ST3 priority switch	Van Appledorn, De Jager, Rohweder
2021EH01	Draft manuscript of temporal and spatial trends of large wood in the UMRS and potential eco-hydrologic drivers	30-Sep-2021	30-Dec-21			Van Appledorn, Jankowski
2021EH02	Draft manuscript of UMRS floodplain forest classification	30-Sep-2021	30-Jun-22			Van Appledorn, De Jager
2021EH03	Spatial analyses of UMRS geomorphic channel and/or delta features (e.g., slope, width, complexity, geomorphons, shoaling, etc.) to understand hydrogeomorphic constraints on river form and function	30-Sep-2021		30-Sep-2021		Van Appledorn
On-Going						
Development of UMRS inundation model query tool; Van Appledorn, Fox, Rohweder, De Jager; 2019EH03						
Manuscript: Van Appledorn, M., De Jager, N.R. Considerations for improving floodplain research and management by integrating inundation modeling, ecosystem studies, and ecosystem services (2016L5; see 2019EH01) (Resubmitted to journal after revisions)						
Intended for distribution						
Manuscript: Modeling and mapping inundation regimes for ecological and management applications: a case study of the Upper Mississippi River floodplain, USA Van Appledorn, De Jager, Rohweder Research and Applications, Early View On-Line Special Edition. http://dx.doi.org/10.1002/rra.3628 Location of supporting data: https://doi.org/10.5066/F7VD6XRT						
Acquisition and Interpretation of Imagery for Production of 2020 UMRS Land Cover/Land Use Data and Pool-Based Orthomosaics						
2020LCU2	Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, QA/QC, and serving of 2020 LCU datasets for Pools 4, 8, 13, 26, La Grange, and an estimated 80% of the Open River South	1-Sep-2021	La Grange - 12/31/21	Pool 4 - 2/10/21 Pool 8 - 5/12/21 Pool 13 - 6/28/21 Pool 26 - 8/05/21 (in review) 50% ORS - 9/30/21 (enter review after 100% complete)	Hop resigned; Strassman to finalize La Grange Pool	Dieck, Hop
2020LCU3	Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, automation, QA/QC, and serving of 2020 LCU datasets for remaining 50% of Open River South, the Alton Pool of the Illinois River, and Pools 9-12	1-Sep-2022				Dieck, Hop

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2020LCU4	Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, automation, QA/QC, and serving of 2020 LCU datasets for Pools 1-3, 5-7, the St. Croix and lower Minnesota Rivers, and the Peoria Pool of the Illinois River	1-Sep-2023				Dieck, Hop
Aquatic Vegetation, Fisheries, and Water Quality Research						
Intended for Distribution						
Manuscript: Estimated annual summer submersed aquatic macrophyte standing stocks (1998 - 2018) in three large reaches of the Upper Mississippi River. (2020A8; USGS review; Drake, Lund, Bales, Kreiling; IP-122160)						
Manuscript: Species-specific wet-dry mass calibrations for common submersed macrophytes in the Upper Mississippi River (2020A9; Lund and Drake) Completed: https://doi.org/10.1016/j.aquabot.2020.103344						
LTRM completion report: Exploring Years with Low Total Catch of Fishes in Pool 26; 2016B14; Gittinger, Chick (Completed to USGS 21 February 2021)						
Manuscript: Evidence of functionally defined non-random fish community responses over 25 years in a large river system (Ickes; 2019B13 replacing 2015B17 and 2016B17; (Not accepted at journal, resubmitting to Hydrobiologia))						
LTRM Completion Report: Developing a biochronology of smallmouth buffalo growth for the Upper Mississippi and Illinois Rivers, Ickes with Solomon (2020B12; tied to 2018SMBF4) Sent to Partnership 10-9-2020						
Manuscript: The ecology of ice across the river continuum (New tracking number 2021RC1) Authors review the literature on how river ice processes and their impact on ecological processes differ between rivers. Submitted to JGR Biogeosciences						
Manuscript: Warmer winters increase phytoplankton biomass in a large floodplain river. (Jankowski, Kathi Jo; Houser, Jeff N.; Schuerell, Mark D.; Smits, Adrienne P.; reconciliation to journal, 7/2020)						
Statistical Evaluation						
Intended for distribution						
Manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1; IP-027392; Gray; in journal review)						
Manuscript: Model selection for ecological community data using tree shrinkage priors; Gray, Hefley, Zhang, Bouska; (2017FA2; IP-111931; in revision with Ecological Applications)						
Manuscript: Probabilities of detecting submersed aquatic vegetation species using a rake method may vary with biomass; 2020E1; Completed; Aquatic Botany, 171:103375, https://doi.org/10.1016/j.aquabot.2021.103375						
Pool 12 Overwintering HREP Adaptive Management Fisheries Response Monitoring						
2021P13d	Age determination of bluegills	1-Feb-2021		30-Nov-2020	Delayed due to retirement of Bowler	Kueter
2021P13e	In-house project databases updated	31-Mar-2021		30-Nov-2020		Kueter
2021P13f	Made available to program partners via Fish Mgmt. State report (2021B4)	30-Sep-2021	30-Jun-2022			Kueter
Pool 4 - Peterson Lake HREP Water Quality Monitoring – Pre and Post-Adaptive Management Evaluation						
2017PL5	Summary letter: Tabular and graphical summary of water quality data	Dec. 2020		19-Jan-2021		Burdis, Lund, Moore

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
FY18 Funded Science in Support of Restoration and Management Proposals						
Conceptual Model and Hierarchical Classification of Hydrogeomorphic Settings in the UMRS						
2019CM4	GIS data base and query tool	31-Dec-2019	On-going		Prototype developed	Fitzpatrick, Hendrickson, Rogala, Erwin, Sawyer, Strange
2019CM5	Submit draft LTRM Completion report on hydrogeomorphic conceptual model and hierarchical	31-Dec-2019	30-Aug-2020		Template complete	Fitzpatrick, Hendrickson, Rogala, Erwin, Sawyer, Strange
2019CM6	Submit Final LTRM Completion report on hydrogeomorphic conceptual model and hierarchical	30-Jun-2020	30-Dec-2020			Fitzpatrick, Hendrickson, Rogala, Erwin, Sawyer, Strange
Develop a better understanding of geomorphic changes through repeated measurement of bed elevation and overlay of land cover data						
Determine geomorphic changes in selected side channels of selected reaches using hydroacoustics						
2021GC1	Final Completion Report; IP-121033	28-Apr-2021		23-Apr-2021		Strange
Establish a network of transects in backwaters to measure sedimentation						
2019GC6	Complete setting monuments and surveying remaining transects	30-Sep-2020			This work delayed until discussions can be held on methodologies etc.	Kalas
2019GC7	Complete database for all transects.	30-Sep-2020				Kalas
Water Exchange Rates and Change in UMRS Channels and Backwaters, 1980 to Present						
2019WE2	Base Maps of Discharge Measurement Location	31-May-2019	31-May-2021	31-May-2021		Le Claire
2019WE3	Submit draft LTRM Completion Report	30-Sep-2019	30-Sep-2021	30-Sep-2021		Hendrickson
2019WE4	Submit Final LTRM Completion Report	30-Mar-2020	30-Dec-2021			Hendrickson
Intrinsic and extrinsic regulation of water clarity over a 950-km longitudinal gradient of the UMRS						
2019IE3	Submit Draft manuscript	30-Mar-2020	TBD		Pls determined that to move forward biomass information is needed. Will continue work once biomass model complete	Drake, Carhart and others
2019IE4	Submit Final manuscript	30-Dec-2020				Drake, Carhart and others
Effectiveness of Long Term Resource Monitoring vegetation data to quantify waterfowl habitat quality						
Thesis; 2019WF8; Kirsten Schmidt, Estimating Wild Celery Winter Bud Density and Energetic Carrying Capacity for Waterfowl in Pools 4, 8, and 13, of The Upper Mississippi River. (Completed; http://digital.library.wisc.edu/1793/82238)						
Understanding constraints on submersed vegetation distribution in the UMRS: the role of water level fluctuations and clarity						
Manuscript: Understanding Constraints on Submersed Vegetation Distribution in a Large, Floodplain River: the Role of Water Level Fluctuations, Water Clarity and River Geomorphology; Carhart et al., <i>Wetlands</i> volume 41, Article number: 57; https://doi.org/10.1007/s13157-021-01454-1 . Data available at: https://www.sciencebase.gov/catalog/item/5f6f701c82ce38aaa24c17b8 and https://umesc.usgs.gov/management/dss/umrs_land_cover_viewer.html						

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Systemic analysis of hydrogeomorphic influences on native freshwater mussels						
2019FM5	Calculate pool-wide population estimates of native mussels in Pools 8 and 13, finish assessing patterns in mussel assemblages across a gradient of geomorphic indices (all pools), begin conducting statistical analyses	30-Sep-2020	30-Sep-2021		Delayed since lead technician who was to perform most of the analyses took a new position; new hire in place	Teresa Newton
2019FM6	Annual progress summary	30-Dec-2020	30-Dec-2021			Teresa Newton
2019FM7	Complete statistical analyses and prepare geospatial maps	30-Sep-2021	30-Sep-2022			Teresa Newton, Catherine Murphy, Jason Rohweder
2019FM8	Draft LTRM completion report	30-Sep-2021	30-Sep-2022			Teresa Newton
2019FM9	Final LTRM completion report	30-Jan-2023				Teresa Newton
Using dendrochronology to understand historical forest growth, stand development, and gap dynamics						
2019DD7	King, D. J., G. L. Harley, J. T. Maxwell, K. J. Heeter, B. J. Vandermyde, and R. J. Cosgriff. 2021. Floodplain forest structure and the recent decline of <i>Carya illinoensis</i> (Wangenh.) K. Koch (northern pecan) at its northern latitudinal range margin, Upper Mississippi River System, USA. Forest Ecology and Management, Volume 496, 15 September 2021, 119454 https://doi.org/10.1016/j.foreco.2021.119454 Abstract					Dr. Harley, Dr. Maxwell, MS students
Forest canopy gap dynamics: quantifying forest gaps and understanding gap – level forest regeneration						
Manuscript: Forest canopy gap dynamics: quantifying forest gaps and understanding gap - level forest regeneration in Upper Mississippi River floodplain forests (2019FG5)						
Investigating vital rate drivers of UMRS fishes to support management and restoration						
2019VR8	Data set complete (data delivered to Ben Schlifer, physical structures delivered to BRWFS)	30-Sep-2021			Pandemic has slowed progress on many aspects of age and growth. Closed labs, buildings and limited employees. Wrapping up on QA/QC on ages and wrapping up the last couple otoliths left	Quinton Phelps
2019VR9	Submit draft manuscript (Vital rates)	31-Dec-2021				Quinton Phelps, Kristen Bouska
2019VR10	Submit draft manuscript (Drivers of vital rates)	31-Dec-2021				Quinton Phelps, Kristen Bouska
2019VR11	Submit draft manuscript (Microchemistry)	31-Dec-2021				Greg Whitledge
FY19 Funded Science in Support of Restoration and Management						
Development of a standardized monitoring program for vegetation and fish response to Environmental Pool Management practices in the Upper Mississippi River System						
2019epm2	Progress Summary	30-Dec-2020		30-Mar-2021		Chick and McGuire
2019epm3	Draft LTRM Completion	30-Jun-2021			Field work delayed due to Covid-19	Chick and McGuire
2019epm4	Final LTRM Completion	30-Dec-2021				Chick and McGuire
Combining genetics, otolith microchemistry, and vital rate estimation to inform restoration and management of fish populations in the UMRS						
2019gen3	Draft Manuscript	30-Dec-2021				Larson, Bartels, Bouska
Reforestation UMRS forest canopy openings occupied by invasive species						
2019ref2	Progress Summary	30-Dec-2020		11-Feb-2021	Project delays due to high water in 2019	Guyon and Cosgriff

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2019ref3	Draft LTRM Completion	30-Apr-2021	30-Dec-22		Project on track after initial tree planting delays; fieldwork ongoing; draft and final report expected following final 2022 field season.	Guyon and Cosgriff
2019ref4	Final LTRM Completion	30-Sep-2021	30-Jun-23			Guyon and Cosgriff
A year of zooplankton community data from the habitats and pools of the UMR						
2019zoo1	Progress Summary	30-Dec-2019		2-Jan-2020		Sobotka and Fulgoni
2019zoo2	Draft LTRM Completion report on utility of zooplankton community monitoring for HREP assessment	30-Dec-2020	TBD	Sample collection delayed because of Covid-19 state protocols; zooplankton ID delayed; Fulgoni took new position		Sobotka and Fulgoni
2019zoo3	Final LTRM Completion report on utility of zooplankton community monitoring for HREP assessment	30-Jun-2021	TBD		Sobotka and Fulgoni	
2019zoo4	Draft LTRM Completion report on detailing differences between pools and habitats. Report will also investigate the potential impacts of Asian carp on the zooplankton community.	30-Dec-2020	TBD		Sobotka and Fulgoni	
2019zoo5	Final LTRM Completion report on detailing differences between pools and habitats. Report will also investigate the potential impacts of Asian carp on the zooplankton community.	30-Jun-2021	TBD		Sobotka and Fulgoni	
The Role of Large Wood in The Restoration of Habitat in the Upper Mississippi River System						
2019LW1	Progress Summary	31-Dec-2019	14-Feb-2020	12-Feb-2020		Thomsen, Jankowski
Henderson, Jeffrey. Improving Habitat: Periphyton And Macroinvertebrate Colonization on Large Wood In Pool 8 of The Upper Mississippi River. 2019LW3. http://digital.library.wisc.edu/1793/81736						
FY19 Funded Illinois Waterway 2020 Lock Closure						
Aquatic Vegetation: Navigation Closure Study						
2020SAV1	Field sampling - during lock closure	30-Aug-2021	Not completed due to Covid-19 travel restrictions			Lund, Drake, Bales, others
2020SAV2	Progress Summary	30-Dec-2021				Lund, Drake, Bales
Pre- and Post-Maintenance Aerial Imagery for Illinois River's Alton through Brandon Lock and Dams, 2019-2021.						
XXXX	Acquire 4-band aerial imagery 2020	30-Aug-2021		30-Aug-2021		Lubinski, Robinson, Finley, and Hop
Fish Community Response to the 2020 Illinois Waterway Lock Closure						
2020FSH1	Field sampling - during lock closure	30-Oct-2021		30-Oct-2021		Lamer and Solomon
2020FSH2	Progress Summary	30-Dec-2021				Lamer and Solomon
Water Clarity and the IWW Lock Closures						
2021WC1	Analysis of data collected on barge -driven wave action, sediment suspension, and phytoplankton biomass	30-Dec-2021				Jankowski (collaborating with Fish and SAV studies)

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
FY20 Funded Science in Support of Restoration and Management						
Mapping Potential Sensitivity to Hydrogeomorphic Change in the UMRS Riverscape and Development of Supporting GIS Database and Query Tool						
2021HG1	Complete annual project summary	31-Dec-2020		31-Dec-2020		Strange, Fitzpatrick
2021HG2	Conduct web meeting with core team and panelists,	30-Jan-2021		30-Jan-2021		Geomorphologist, Strange, Fitzpatrick, all attend
2021HG3	GIS compilation of hydrogeomorphic units and catena	30-Mar-2021		30-Mar-2021		Strange, Fitzpatrick, Geomorphologist, Van Appledorn
2021HG4	Conduct web meeting for presentation of results from hydrogeomorphic change classification interpretation, checking, testing, and application	30-Nov-2021				Geomorphologist, Strange, Fitzpatrick, all attend
2021HG5	Complete annual project summary	31-Dec-2021				Strange, Fitzpatrick
2021HG6	Submit draft LTRM Completion report on hydrogeomorphic change GIS database and query system	31-Dec-2021				Geomorphologist, Strange, Fitzpatrick, Van Appledorn, USACE core team
2021HG7	Submit Final LTRM Completion report on hydrogeomorphic change GIS database and query tool.	30-Mar-2022				Geomorphologist, Strange, Fitzpatrick, Van Appledorn, USACE core team
Improving our understanding of historic, contemporary, and future UMRS hydrology by improving workflows, reducing redundancies, and setting a blueprint for modelling potential future						
2021HH1	Historic and Contemporary Hydrologic Database Release and Documentation	30-Sep-2021	30-Jun-2022		Awaiting final data delivery from USACE Water Control Chiefs (2 of 3 districts have submitted historic data and documentation; 1 district has submitted documentation only); awaiting USACE hydrologic data server switch completion for accessing contemporary data	M. Van Appledorn, L. Sawyer
2021HH2	Draft LTRM Completion Report: document database and documentation development steps, database capabilities, and quantitative summaries of the hydrologic regime through time.	30-Dec-2021				M. Van Appledorn, L. Sawyer
2021HH3	Final LTRM Completion Report: document database and documentation development steps, database capabilities, and quantitative summaries of the hydrologic regime through time	31-Mar-2022				M. Van Appledorn, L. Sawyer
2021HH4	Developing Future Hydrologic Scenarios Workshop: topics include identify appropriate future climate and/or land-use scenarios for use in a UMRS watershed model, existing hydrologic modeling resources and capabilities, and logistics for completing a climate-changed hydrologic modeling effort	30-Dec-2021			On-Going	M. Van Appledorn, L. Sawyer

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2021HH5	Draft LTRM Completion Report (Scenarios): This report will serve as the blueprint for modeling future hydrology to be undertaken with future funding	31-Mar-2022				M. Van Appledorn, L. Sawyer, R. Seal-Soileau
2021HH6	Final LTRM Completion Report (Scenarios): This report will serve as the blueprint for modeling future hydrology to be undertaken with future funding	30-Jun-2022				M. Van Appledorn, L. Sawyer, R. Seal-Soileau
Understanding physical and ecological differences among side channels of the Upper Mississippi River System						
2021SC1	Annual progress summary: data collection and processing, preliminary analyses, and initial methods evaluation	30-Dec-2020		30-Dec-2020		Sobotka, Strange, Bouska, McCain, Theel, Vander Vorste
2021SC2	Annual progress summary on side channel classification scheme, recommendations for additional sampling, analyses of side channel classes and ecological associations	30-Dec-2021				Sobotka, Strange, Bouska, McCain, Theel, Vander Vorste
2021SC3	Manuscript on side channel classification scheme submitted for peer review	30-Sep-2022				Sobotka, Strange, Bouska, McCain, Theel
2021SC4	Final report on UMRR management implications submitted for USGS review	30-Sep-2022				Sobotka & McCain
2021SC5	Manuscript on benthic invertebrate associations with side channel characteristics submitted for USGS	30-May-2023				Sobotka & Vander Vorste
Refining our Upper Mississippi River's ecosystem states framework						
2021SS1	Data integration (gather datasets, integrate)	1-Dec-2020		1-Dec-2020		Rohweder (All assist)
2021SS2	Identify states and transitions using NMDS	1-Mar-2021		1-Mar-2021		Larson, Carhart
2021SS3	Driver-response curves	1-May-2021		1-May-2021		Larson
2021SS4	Workshop: vulnerability assessment	1-May-2021			Delayed to FY22 due to Covid-19 protocols	Larson, Delaney
2021SS5	Annual reporting and data management update	1-Sep-2021		1-Sep-2021		Larson
2021SS6	Vulnerability maps	1-Dec-2021				Delaney
2021SS7	Spatial mapping of states and changes	1-Dec-2021				Rohweder (Carhart trains)
2021SS8	TDA Mapper, regime shifts	1-May-2022				Bungula, student, Larson
2021SS9	Draft the STM, share with stakeholders	1-Sep-2022				Larson
2021SS10	Technical report, vulnerability assessment tool, and manuscripts to IDPS for internal review	1-Sep-2022				All

UMRR LTRM FY21 Milestone Chart
Science in Support of Restoration and Management Research

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Augmenting the UMRR fish vital rates project with greater species representation for genetics and otolith microchemistry						
2021VR1	Annual progress summary	31-Dec-2020		31-Dec-2020		Bartels, Bouska, Davis, Lamer, Tan, Whitledge
2021VR2	Annual progress summary	31-Dec-2021				Bartels, Bouska, Davis, Lamer, Tan, Whitledge
2021VR3	Submit draft manuscript (genetics)	31-Dec-2022				Davis, Tan, Lamer
2021VR4	Submit draft manuscript (genetics - mimic/channel)	31-Dec-2022				Davis, Tan, Lamer
2021VR5	Submit draft manuscript (constructing management units)	31-Dec-2022				Bartels, Bouska, Davis, Lamer, Larson, Phelps, Tan, Whitledge
Functional UMRS fish community responses and their environmental associations in the face of a changing river: hydrologic variability, biological invasions, and habitat rehabilitation						
2021FF1	Draft manuscript: Evidence of alternative trophic pathways for fish consumers in a large river system	30-Sep-2021		9/30/2021		Ickes and Gatto
2021FF2	Draft manuscript: "Has large scale ecosystem rehabilitation altered functional fish community expressions in the Upper Mississippi River System?"	30-Sep-2021	30-Jun-2022			Ickes and Gatto
2021FF3	Draft Manuscript: "Why aren't bigheaded carps (<i>Hypophthalmichthys</i> sp.) everywhere in the Upper Mississippi River System?"	30-Sep-2021	30-Sep-2022			Ickes and Gatto
Understanding landscape-scale patterns in winter conditions in the Upper Mississippi River System						
2021WL1	System wide spatial layers of habitat conditions	30-Sep-2022				Mooney, Dugan, Magee
2021WL2	Draft manuscript: Landscape scale controls on overwintering habitat in a large river	30-Sep-2022				Mooney, Dugan, Jankowski, Magee
2021WL3	Draft manuscript: Response of oxygen dynamics to ice and snow phenology in backwater lakes	30-Sep-2023				Jankowski, Dugan, Burdis, Kalas, Kueter
2021WL4	Draft Manuscript: Patterns in sediment characteristics and oxygen demand across a winter riverine landscape	30-Sep-2023				Perner, Kreiling, Jankowski, Gibling
Forest Response to Multiple Large-Scale Inundation Events						
2021FR1	Annual Summary	31-Dec-2020		Field work		Cosgriff, Guyon, De Jager
2021FR2	Annual Summary	31-Dec-2021				Cosgriff, Guyon, De Jager
2021FR3	Technical Report	1-Jun-2022				Cosgriff, Guyon, De Jager

UMRR Science in Support of Restoration and Management
 FY2014 and FY2015 Scopes of Work
 November 2021 Status

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Plankton community dynamics in Lake Pepin						
2015LPP1	Phytoplankton processing; species composition, biovolume	30-Dec-15		22-Oct-15		Burdis
2015LPP2	draft manuscript: Plankton community dynamics in Lake Pepin	30-Sep-16	30-Jun-22		good progress, presentations this fall	Burdis, Manier
Predictive Aquatic Cover Type Model - Phase 2						
2015AQ1	Develop 2-D hydraulic model of upper Pool 4	30-Sep-15		30-Sep-15		Libbey (MVP H&H)
2015AQ2	Apply model to Pool 4 and resolve discrepancies	31-Dec-15	31-Mar-16	31-Mar-16		Yin, Rogala
2015AQ3	Detailed summary of work for Phases I & II	31-Dec-15		NA	Work terminated with resignation of Dr. Yin. Danelle Larson will re-evaluate vegetation modeling in a future time frame	Sauer (for Yin), Rogala, Ingvalson

ATTACHMENT E

Additional Items

- **Future Meeting Schedule** *(E-1)*
- **Frequently Used Acronyms (12/21/2017)** *(E-2 to E-7)*
- **UMRR Authorization, As Amended (1/11/2021)** *(E-8 to E-11)*
- **UMRR (EMP) Operating Approach (5/2006)** *(E-12)*

**QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE**

FEBRUARY 2022	
<u>Location to be determined</u>	
February 22	UMRBA Quarterly Meeting
February 23	UMRR Coordinating Committee Quarterly Meeting

MAY 2022	
<u>Location to be determined</u>	
May 24	UMRBA Quarterly Meeting
May 25	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
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
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
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
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
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
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
HAB	Harmful Algal Bloom
HEL	Highly Erodible Land
HEP	Habitat Evaluation Procedure
HNA	Habitat Needs Assessment
HPSF	HREP Planning and Sequencing Framework
HQSACE	Headquarters, USACE
H.R.	House of Representatives
HREP	Habitat Rehabilitation and Enhancement Project
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
IIA	Implementation Issues Assessment
IIFO	Illinois-Iowa Field Office (formerly RIFO - Rock Island Field Office)
ILP	Integrated License Process
IMTS	Inland Marine Transportation System
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
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
MICRA	Mississippi Interstate Cooperative Resource Association
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
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

OHW	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	Preliminary 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
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
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
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

Upper Mississippi River Restoration Program Authorization

Section 1103 of the Water Resources Development Act of 1986 (P.L. 99-662) as amended by Section 405 of the Water Resources Development Act of 1990 (P.L. 101-640), Section 107 of the Water Resources Development Act of 1992 (P.L. 102-580), Section 509 of the Water Resources Development Act of 1999 (P.L. 106-53), Section 2 of the Water Resources Development Technical Corrections of 1999 (P.L. 106-109), Section 3177 of the Water Resources Development Act of 2007 (P.L. 110-114), and Section 307 of the Water Resources Development Act of 2020 (P.L. 116-260).

Additional Cost Sharing Provisions

Section 906(e) of the Water Resources Development Act of 1986 (P.L. 99-662) as amended by Section 221 of the Water Resources Development Act of 1999 (P.L. 106-53).

SEC. 1103. UPPER MISSISSIPPI RIVER PLAN.

(a)(1) This section may be cited as the "Upper Mississippi River Management Act of 1986".

(2) To ensure the coordinated development and enhancement of the Upper Mississippi River system, it is hereby declared to be the intent of Congress to recognize that system as a nationally significant ecosystem and a nationally significant commercial navigation system. Congress further recognizes that the system provides a diversity of opportunities and experiences. The system shall be administered and regulated in recognition of its several purposes.

(b) For purposes of this section --

(1) the terms "Upper Mississippi River system" and "system" mean those river reaches having commercial navigation channels on the Mississippi River main stem north of Cairo, Illinois; the Minnesota River, Minnesota; Black River, Wisconsin; Saint Croix River, Minnesota and Wisconsin; Illinois River and Waterway, Illinois; and Kaskaskia River, Illinois;

(2) the term "Master Plan" means the comprehensive master plan for the management of the Upper Mississippi River system, dated January 1, 1982, prepared by the Upper Mississippi River Basin Commission and submitted to Congress pursuant to Public Law 95-502;

(3) the term "GREAT I, GREAT II, and GRRM studies" means the studies entitled "GREAT Environmental Action Team--GREAT I--A Study of the Upper Mississippi River", dated September 1980, "GREAT River Environmental Action Team--GREAT II--A Study of the Upper Mississippi River", dated December 1980, and "GREAT River Resource Management Study", dated September 1982; and

(4) the term "Upper Mississippi River Basin Association" means an association of the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, formed for the purposes of cooperative effort and united assistance in the comprehensive planning for the use, protection, growth, and development of the Upper Mississippi River System.

(c)(1) Congress hereby approves the Master Plan as a guide for future water policy on the Upper Mississippi River system. Such approval shall not constitute authorization of any recommendation contained in the Master Plan.

(2) Section 101 of Public Law 95-502 is amended by striking out the last two sentences of subsection (b), striking out subsection (i), striking out the final sentence of subsection (j), and redesignating subsection "(j)" as subsection "(i)".

(d)(1) The consent of the Congress is hereby given to the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, or any two or more of such States, to enter into negotiations for agreements, not in conflict with any law of the United States, for cooperative effort and mutual assistance in the comprehensive planning for the use, protection, growth, and development of the Upper Mississippi River system, and to establish such agencies, joint or otherwise, or designate an existing multi-State entity, as they may deem desirable for making effective such

agreements. To the extent required by Article I, section 10 of the Constitution, such agreements shall become final only after ratification by an Act of Congress.

(2) The Secretary is authorized to enter into cooperative agreements with the Upper Mississippi River Basin Association or any other agency established under paragraph (1) of this subsection to promote and facilitate active State government participation in the river system management, development, and protection.

(3) For the purpose of ensuring the coordinated planning and implementation of programs authorized in subsections (e) and (h)(2) of this section, the Secretary shall enter into an interagency agreement with the Secretary of the Interior to provide for the direct participation of, and transfer of funds to, the Fish and Wildlife Service and any other agency or bureau of the Department of the Interior for the planning, design, implementation, and evaluation of such programs.

(4) The Upper Mississippi River Basin Association or any other agency established under paragraph (1) of this subsection is hereby designated by Congress as the caretaker of the master plan. Any changes to the master plan recommended by the Secretary shall be submitted to such association or agency for review. Such association or agency may make such comments with respect to such recommendations and offer other recommended changes to the master plan as such association or agency deems appropriate and shall transmit such comments and other recommended changes to the Secretary. The Secretary shall transmit such recommendations along with the comments and other recommended changes of such association or agency to the Congress for approval within 90 days of the receipt of such comments or recommended changes.

(e) Program Authority

(1) Authority

(A) In general. The Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, may undertake, as identified in the master plan

(i) a program for the planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancement; and

(ii) implementation of a long-term resource monitoring, computerized data inventory and analysis, and applied research program, including research on water quality issues affecting the Mississippi River (including elevated nutrient levels) and the development of remediation strategies.

(B) Advisory committee. In carrying out subparagraph (A)(i), the Secretary shall establish an independent technical advisory committee to review projects, monitoring plans, and habitat and natural resource needs assessments.

(2) REPORTS. — Not later than December 31, 2004, and not later than December 31 of every sixth year thereafter, the Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, shall submit to Congress a report that —

(A) contains an evaluation of the programs described in paragraph (1);

(B) describes the accomplishments of each of the programs;

(C) provides updates of a systemic habitat needs assessment; and

(D) identifies any needed adjustments in the authorization of the programs.

(3) For purposes of carrying out paragraph (1)(A)(i) of this subsection, there is authorized to be appropriated to the Secretary \$40,000,000 for fiscal year 1999 and each fiscal year thereafter.

(4) For purposes of carrying out paragraph (1)(A)(ii) of this subsection, there is authorized to be appropriated to the Secretary \$15,000,000 for fiscal year 1999 and each fiscal year thereafter.

(5) Authorization of appropriations.—There is authorized to be appropriated to carry out paragraph (1)(B) \$350,000 for each of fiscal years 1999 through 2009.

(6) Transfer of amounts.—For fiscal year 1999 and each fiscal year thereafter, the Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, may transfer not to exceed 20 percent of the amounts appropriated to carry out clause (i) or (ii) of paragraph (1)(A) to the amounts appropriated to carry out the other of those clauses.

(7)(A) Notwithstanding the provisions of subsection (a)(2) of this section, the costs of each project carried out pursuant to paragraph (1)(A)(i) of this subsection shall be allocated between the Secretary and the appropriate non-Federal sponsor in accordance with the provisions of section 906(e) of this Act; except that the costs of operation and maintenance of projects located on Federal lands or lands owned or operated by a State or local government shall be borne by the Federal, State, or local agency that is responsible for management activities for fish and wildlife on such lands and, in the case of any project requiring non-Federal cost sharing, the non-Federal share of the cost of the project shall be 35 percent.

(B) Notwithstanding the provisions of subsection (a)(2) of this section, the cost of implementing the activities authorized by paragraph (1)(A)(ii) of this subsection shall be allocated in accordance with the provisions of section 906 of this Act, as if such activity was required to mitigate losses to fish and wildlife.

(8) None of the funds appropriated pursuant to any authorization contained in this subsection shall be considered to be chargeable to navigation.

(f) (1) The Secretary, in consultation with any agency established under subsection (d)(1) of this section, is authorized to implement a program of recreational projects for the system substantially in accordance with the recommendations of the GREAT I, GREAT II, and GRRM studies and the master plan reports. In addition, the Secretary, in consultation with any such agency, shall, at Federal expense, conduct an assessment of the economic benefits generated by recreational activities in the system. The cost of each such project shall be allocated between the Secretary and the appropriate non-Federal sponsor in accordance with title I of this Act.

(2) For purposes of carrying out the program of recreational projects authorized in paragraph (1) of this subsection, there is authorized to be appropriated to the Secretary not to exceed \$500,000 per fiscal year for each of the first 15 fiscal years beginning after the effective date of this section.

(g) The Secretary shall, in his budget request, identify those measures developed by the Secretary, in consultation with the Secretary of Transportation and any agency established under subsection (d)(1) of this section, to be undertaken to increase the capacity of specific locks throughout the system by employing nonstructural measures and making minor structural improvements.

(h)(1) The Secretary, in consultation with any agency established under subsection (d)(1) of this section, shall monitor traffic movements on the system for the purpose of verifying lock capacity, updating traffic projections, and refining the economic evaluation so as to verify the need for future capacity expansion of the system.

(2) Determination.

(A) In general. The Secretary in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, shall determine the need for river rehabilitation and environmental enhancement and protection based on the condition of the environment, project developments, and projected environmental impacts from implementing any proposals resulting from recommendations made under subsection (g) and paragraph (1) of this subsection.

(B) Requirements. The Secretary shall

(i) complete the ongoing habitat needs assessment conducted under this paragraph not later than September 30, 2000; and

(ii) include in each report under subsection (e)(2) the most recent habitat needs assessment conducted under this paragraph.

(3) There is authorized to be appropriated to the Secretary such sums as may be necessary to carry out this subsection.

(i) (1) The Secretary shall, as he determines feasible, dispose of dredged material from the system pursuant to the recommendations of the GREAT I, GREAT II, and GRRM studies.

(2) The Secretary shall establish and request appropriate Federal funding for a program to facilitate productive uses of dredged material. The Secretary shall work with the States which have, within their boundaries, any part of the system to identify potential users of dredged material.

(j) The Secretary is authorized to provide for the engineering, design, and construction of a second lock at locks and dam 26, Mississippi River, Alton, Illinois and Missouri, at a total cost of \$220,000,000, with a first Federal cost of \$220,000,000. Such second lock shall be constructed at or in the vicinity of the location of the replacement lock authorized by section 102 of Public Law 95-502. Section 102 of this Act shall apply to the project authorized by this subsection.

SEC. 906(e). COST SHARING.

(e) In those cases when the Secretary, as part of any report to Congress, recommends activities to enhance fish and wildlife resources, the first costs of such enhancement shall be a Federal cost when--

(1) such enhancement provides benefits that are determined to be national, including benefits to species that are identified by the National Marine Fisheries Service as of national economic importance, species that are subject to treaties or international convention to which the United States is a party, and anadromous fish;

(2) such enhancement is designed to benefit species that have been listed as threatened or endangered by the Secretary of the Interior under the terms of the Endangered Species Act, as amended (16 U.S.C. 1531, et seq.), or

(3) such activities are located on lands managed as a national wildlife refuge.

When benefits of enhancement do not qualify under the preceding sentence, 25 percent of such first costs of enhancement shall be provided by non-Federal interests under a schedule of reimbursement determined by the Secretary. Not more than 80 percent of the non-Federal share of such first costs may be satisfied through in-kind contributions, including facilities, supplies, and services that are necessary to carry out the enhancement project. The non-Federal share of operation, maintenance, and rehabilitation of activities to enhance fish and wildlife resources shall be 25 percent.

EMP OPERATING APPROACH

2006 marks the 20th anniversary of the Environmental Management Program (EMP). During that time, the Program pioneered many new ideas to help deliver efficient and effective natural resource programs to the Upper Mississippi River System (UMRS). These included the creation of an effective partnership of five states, five federal agencies, and numerous NGOs; a network of six field stations monitoring the natural resources of the UMRS; and the administrative structure to encourage river managers to use both new and proven environmental restoration techniques.

EMP has a history of identifying and dealing with both natural resource and administrative challenges. The next several years represent new opportunities and challenges as Congress considers authorization of the Navigation and Environmental Sustainability Program (NESP), possible integration or merger of EMP with NESP, and changing standards for program management and execution.

We will continue to learn from both the history of EMP and experience of other programs. Charting a course for EMP over the next several years is important to the continued success of the Program. EMP will focus on the key elements of partnership, regional administration and coordination, LTRMP, and HREPs.

The fundamental focus of EMP will not change, however the way we deliver our services must change and adapt. This will include:

- further refinements in regional coordination and management,
- refinement of program goals and objectives,
- increased public outreach efforts,
- development and use of tools such as the regional HREP database and HREP Handbook,
- exploring new delivery mechanisms for contracting,
- continued refinement of the interface between LTRMP and the HREP program components, and
- scientific and management application of LTRMP information and data.

The focus of these efforts must benefit the resources of the UMRS through efficient and effective management.