

Virtual Meeting

**Upper Mississippi River Restoration Program
Coordinating Committee**

Quarterly Meeting

October 28, 2020

**Agenda
with
Background
and
Supporting Materials**

**UPPER MISSISSIPPI RIVER RESTORATION PROGRAM
COORDINATING COMMITTEE**

October 28, 2020

8:00 a.m. – 12:30 p.m. CDT

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 October 28, 2020 quarterly meeting.]

Time	Attachment	Topic	Presenter
8:00 a.m.		Welcome and Introductions	<i>Sabrina Chandler, USFWS</i>
8:05	A1-13	Approval of Minutes of August 12, 2020 Meeting	
8:10		Regional Management and Partnership Collaboration <ul style="list-style-type: none">▪ FY 2020 Fiscal Update and FY 2021 Outlook▪ Statements of UMRS Significance▪ HREP Guidance Documents▪ 2013 UMRR Joint Charter Review▪ 2015-2025 Strategic and Operational Plan Review▪ 2022 Report to Congress	<i>Marshall Plumley, USACE</i>
8:40		Communications <ul style="list-style-type: none">▪ UMRR Communications Team▪ External Communications and Outreach Events	<i>Rachel Perrine, USACE</i> <i>All</i>
9:00		UMRR Showcase Presentations <ul style="list-style-type: none">▪ FY 20 HREP Accomplishments▪ Evidence of regime shifts in the LTRM fisheries data	<i>Marshall Plumley and District HREP Managers</i> <i>Kristen Bouska, USGS</i>
9:45		Break	
10:00	B1-16	Program Reports <ul style="list-style-type: none">▪ Long Term Resource Monitoring and Science<ul style="list-style-type: none">– LTRM FY 2020 4th Quarter Highlights– Status and Trends Report 3rd Edition– USACE LTRM Update– A-Team Report▪ Habitat Restoration<ul style="list-style-type: none">– District Reports	<i>Jeff Houser, USGS</i> <i>Karen Hagerty, USACE</i> <i>Nick Schlessler, MN DNR</i> <i>District HREP Managers</i>
12:15	C1	Other Business <ul style="list-style-type: none">▪ Future Meeting Schedule	
12:30 p.m.		Adjourn	

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

Continued on next page for remote connection information

Remote Connection Information:

October 28

UMRR Coordinating Committee Quarterly Meeting (8:00 a.m. to 12:30 p.m. CDT)

- Web conferencing:
<https://umrba.my.webex.com/umrba.my/j.php?MTID=m376a556fe28c5dd3ec6944f1c6167018>
- 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: 126 411 5627
 - Password: 1234

ATTACHMENT A

Minutes of the August 12, 2020
UMRR Coordinating Committee Quarterly Meeting
(A-1 to A-13)

DRAFT
Minutes of the
Upper Mississippi River Restoration Program
Coordinating Committee

August 12, 2020
Quarterly Meeting

Virtual Meeting

Thatch Shepard of the Army Corps of Engineers called the meeting to order at 8:00 a.m. on August 12, 2020. UMRR Coordinating Committee representatives present on the virtual meeting were Sabrina Chandler (USFWS), Mark Gaikowski (USGS), Randy Schultz (IA DNR), Dave Glover (IL 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 20, 2020 Meeting

Jim Fischer moved and Matt Vitello seconded a motion to approve the draft minutes of the May 20, 2020 UMRR Coordinating Committee meeting as written. The motion carried unanimously.

Regional Management and Partnership Collaboration

Marshall Plumley applauded the partnership for continuing to operate effectively while COVID-19 has presented unique challenges. The partnership continues to have important conversations on programmatic issues and LTRM continues to be implemented despite constraints to travel and sampling.

FY 2020 Budget Outlook

Plumley said UMRR has obligated over \$23 million of its \$33.17 million FY 2020 funds to-date. In response to a question from Andrew Stephenson, Plumley said Pool 12 Overwintering received a lower bid than expected, resulting in a savings of \$93,000. Significant upcoming expenditures include McGregor Lake HREP in St. Paul District and Piasa and Eagles Nest HREP in St. Louis District. Unobligated funds at the end of the fiscal year can be used to implement parts of the FY 2021 LTRM scope. Plumley said he is confident that UMRR will continue its record of fully obligating funds.

The President's FY 2021 budget and House FY 2021 appropriations bill include \$33.17 million for UMRR, but the Senate recommendation and final appropriation are not yet known. The District is planning for UMRR in FY 2021 at a \$33.17 million funding scenario, with internal allocations anticipated to be as follows:

- Regional Administration and Program Efforts – \$1,250,000
- Regional Science and Monitoring – \$10,400,000
 - Long term resource monitoring – \$5,000,000
 - Regional science in support of restoration – \$3,800,000
 - Regional science staff support – \$200,000
 - Habitat project evaluations – \$1,125,000
 - HNA II/regional project sequencing – \$275,000

- Habitat Restoration – \$21,520,000
 - Rock Island District – \$7,020,000
 - St. Louis District – \$7,125,000
 - St. Paul District – \$7,275,000
 - Model certification – \$100,000

In response to a question from Jennie Sauer, Plumley said the Corps is prepared to allocate any unobligated FY 2020 funds to advance work prioritized in the FY 2021 LTRM scope of work.

UMRR Ten-Year Plan

Plumley overviewed changes to UMRR’s 10-year outlook, highlighted in red, since the May 20, 2020 UMRR Coordinating Committee quarterly meeting. Projects with accelerated schedules include Conway Lake, Piasa and Eagles Nest, Oakwood Bottoms, and Yorkinut Slough. For a variety of reasons including delays from high water, projects with schedules that were pushed back include Reno Bottoms, Huron Island Stage III, Ted Shanks, and West Alton Island. West Alton Island feasibility will start in FY 21 to accommodate further refinement of plans and specs and construction. Rip Rap Landing was removed from the chart due to challenges with real estate and NRCS easements, but a rescope version of the project that excludes those lands may be reintroduced at a later date. A placeholder for a future project was also added. In response to a question from Stephenson, Brian Markert said there is not a current need to replace Rip Rap Landing on the schedule, but that MVS is working with Illinois DNR to field a project as early as FY 22.

Plumley said that, in its WRDA 2020 measure, the House is proposing an increase to UMRR’s annual appropriation for HREPs from \$22.75 million to \$40 million and for LTRM from \$10.42 million to \$15 million. In response to a question from Kirsten Wallace, Plumley said the first opportunity to budget for a change to the authorization amount would occur in FY 23 with potential work plan opportunities in FY 22. Short-term plans under increased appropriations include accelerating the existing work through larger, consolidated HREP contracts, advancing efforts under LTRM, and accelerating the next HREP selection process.

Statements of UMRS Significance

Plumley reported that, on August 7, 2020, the UMRR Coordinating Committee received a request to review revised statements of significance. The statements are organized into categories the partnership has classified as important, including natural resources, culture, recreation, navigation, partnership, and economy. The document also identifies a set of concerns for the river and threats to areas of significance that may be important for articulating in the 2022 Report to Congress. Recent revisions include additional description of the various threats to the river ecosystem (e.g., climate change, water quality, altered hydrology, ecological connectivity, and aquatic invasive species) and how UMRR may help to better understand and alleviate those pressures through LTRM, HREPs, and the integration of both program elements. A call will be convened in September or October to discuss the statements in their final draft form along with the accompanying UMRR storyline and soundbites document. Stephenson said the document reflects the partnership well and expressed appreciation for the input from all partners, with special thanks to Jennie Sauer, Jeff Houser, Karen Hagerty, and Marshall Plumley for drafting sections.

2015-2025 Strategic and Operational Plan Review

Plumley said the review of the 2015-2025 UMRR Strategic and Operational Plan helped inform the many efforts undertaken over the last few months. A survey regarding the strategic plan will be distributed to UMRR partners in the near future. The survey will 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. Stephenson said reviewing the strategic plan has been valuable to gain the perspective from the past on what we set out to do, what we've accomplished, and what to prioritize for next 5 years that can be discussed in next Report to Congress.

UMRR Joint Charter Review

Plumley referred to the 2013 UMRR joint charter of consultative bodies on pages B-4 to B-19 of the meeting agenda packet. A meeting was held May 6, 2020 to review and revise the HREP selection process guidance documents. Additional discussion was needed around the role of the Science Support Team (SST). On an August 3, 2020 call, the UMRR Program Planning Team (PPT) evaluated the river team's use of the SST. Plumley said science expertise was utilized by river teams, but that the SST was not convened as an entity. The PPT agreed to eliminate the formality of the SST and, in light of program integration, continue with a more informal inclusion of HNA experts in the project selection discussions. The revised HREP selection process guidance documents will be incorporated into the UMRR joint charter of consultative bodies to replace the former HREP planning and sequencing framework included in 2013 charter.

Given that charter amendments will require renewed formal adoption, Plumley said it makes sense to review the charter's terms for the UMRR Coordinating Committee and A-Team. The A-Team was asked to review its respective roles and responsibilities outlined in the charter at its July 30, 2020 virtual meeting. Plumley said his understanding was that A-Team members felt comfortable with the role and operations of the A-Team and were not recommending any changes to the Charter language at this time. Karen Hagerty said A-Team members requested additional time to complete the review and will discuss the issue at its October 2020 virtual meeting. Jim Fischer requested that the charter's A-Team provisions be evaluated to ensure that the A-Team's function reflects the partnership's contemporary view of UMRR as an integrated program among the HREP and LTRM elements. For example, the A-Team could help advance efforts to integrate science and restoration.

Stephenson recommended that guided questions help facilitate the A-Team's conversations around more substantial questions. Stephenson acknowledged that recent partnership conversations have focused around being intentional in our efforts toward program integration. This discussion could be taken up by the A-Team, a new programmatic integration team, or an *ad hoc* team. Hagerty said A-Team members may also serve on the District River Teams. She said reviewing how each group functions is warranted as they all may be different from the language in the Charter. Fischer suggested reviewing how the role of the SST may fit into a discussion about a more contemporary version of the A-Team. Plumley agreed.

HREP Selection Process Guidance Documents

Based on feedback from the May 6, 2020 meeting, Plumley pointed to pages B-20 to B-28 of the agenda meeting packet for revised goals, roles, and responsibilities of the HREP selection process, including a visual diagram. The schedule was generalized to be applicable for future iterations. A diagram showing the District River Teams structures was added. Stephenson said the process is now estimated to take approximately eight to nine months. It is recommended that the process occur in the fall to winter season to avoid the field sampling season, while maintaining a "lean forward" schedule. The last schedule included developing the process that was akin to building a plane while trying to fly it.

Hagerty said that, originally the idea for the SST had broad support, but that the process ultimately operated in an integrated way informally without that team.

Plumley said the documents could be accepted with changes. Sabrina Chandler agreed and said the documents are very helpful. Chandler suggested that a) the project sponsor roles be included in the roles and responsibilities section and b) “and continue to coordinate throughout” be included in the bullet that addresses project sponsors on the process diagram. The intent being to ensure that sufficient coordination occurs with the project sponsor throughout the process, especially if the project is proposed by an organization other than the required sponsor. Plumley agreed, and said the additional language in the process diagram would be helpful for future new staff. Chandler added that organizations other than USFWS will sponsor projects if additional funding is available and the PPA issue can be resolved. In response to a comment from Tim Yager, Plumley said the template letter to non-traditional sponsors articulates the roles and responsibilities of project sponsors.

Fischer suggested adding an additional step to inform the public and potential non-federal sponsors of the opportunity to participate as a cost-share sponsor into the process diagram. In response to comments from Fischer and Thatch Shepard, Plumley said mechanisms exist at the river teams for potential project sponsors to propose ideas and river teams could be asked to set aside time at one meeting each year to discuss ideas with project sponsors. Stephenson agreed and said potential sponsors should be clearly informed that they only need to provide a problem statement that UMRR could address rather than have a completed fact sheet.

In response to a question from Plumley, Megan Moore suggested editing the documents before the UMRR Coordinating Committee considers endorsing them. Stephenson said the constructive feedback and suggestions will improve the documents and suggested requesting UMRR Coordinating Committee endorsement via email after documents are revised or seeking endorsement in conjunction with the next Charter review meeting. Plumley and Moore agreed. Plumley reiterated that revisions will include roles and responsibilities of project sponsors and informing the public and potential non-federal sponsors of upcoming selection processes. In response to a question from Stephenson to the river team chairs, Steve Winter and Sara Schmuecker said they did not have any concerns about adding an annual opportunity for potential sponsors to raise project ideas.

In response to a question from Fischer, Stephenson said the Program Management Team includes the UMRR program manager and the District HREP Managers who consider the Program Planning Team and UMRR Coordinating Committee’ recommended project prioritization along with administrative factors for executing program funds in determining project sequencing. Plumley said the current charter includes language describing the program management team that can be incorporated into the guidance documents. Fischer said it will also be important to consider how adaptive management of existing projects will fit into ongoing implementation, though he did not recommend including language on it at this point.

2022 Report to Congress

Plumley said that, on June 3, 2020, the UMRR Coordinating Committee held a virtual meeting to discuss development of the 2022 UMRR Report to Congress. Discussion topics included lessons learned from past reports to Congress, content to include, personnel involved in drafting the report, and a draft schedule for completion. Questions raised included how to discuss NESP, integration of HREP and LTRM sections, and possible implementation issues. An *ad hoc* scoping team will develop a scope and schedule for developing the report as well as ideas for content and organization. Members include:

Jeff Houser
Matt Vitello
Sabrina Chandler

Karen Hagerty
Marshall Plumley
Jill Bathke

Brian Markert
Andrew Stephenson
Kirsten Wallace

Plumley said he introduced a draft schedule that targets November 2022 as the delivery date. Next steps involve review of the schedule by the scoping team and the various reviewing entities (e.g., states, MVD, USACE HQ, ASA). The remainder of 2020 will consist of planning, identifying report contributors, and developing content. Thatch Shepard said allowing additional time for review is a good idea as most reviewers will be familiar with UMRR, but not with the day-to-day operations. Plumley said the RTC will take content from the HNA-II and indicators reports, statements of UMRS significance, 2015-2025 strategic plan review, and third edition of the LTRM Status and Trends Report. Stephenson suggested including a narrative on how the recently selected HREPs will address HNA-II indicators. Plumley agreed and said the indicators are important for discussing the desired future condition. Hagerty said the status and trends indicators could be pulled in to that discussion as well.

Communications Team and Lower Illinois Pilot Project

Rachel Perrine said she and Jill Bathke are co-leading the UMRR communications team, which is scheduled to convene a virtual meeting on August 27, 2020. The team will review existing documents and determine next steps. Public affairs representatives from UMRR's implementing partners are asked to participate. Fischer said the communications specialist from the Wisconsin DNR's Office of Great Waters, Susan Tesarik, is planning to participate. Fischer said that he will forward the invitation to the Wisconsin DNR Office of Communications. Perrine said monthly virtual meetings will be scheduled to keep momentum. Stephenson said the strategic plan review highlighted the need for a concerted communications effort and that regular meetings of the Communications Team will support goal three of the strategic plan. He reiterated the importance of engaging agency communications staff in the next call as it will provide background on previous communication efforts including the communication and engagement plan and the Lower Illinois River Pilot communication project as well as determine future actions for the team.

External Communications and Outreach

Communication and outreach activities in the third quarter of FY 20 include the following:

- Jim Fischer said that, on August 1, 2020, the National Wildlife Magazine published an article titled *Mississippi River Rising*, which highlights UMRR projects and includes many interviews from Wisconsin DNR staff. Fischer said the magazine averages 400,000 print readers each issue and more than one million unique online visitors annually.
- Jeff Janvrin said he discussed HREPs in a presentation to the annual conference of the Wisconsin Association of Agriculture Educators.
- Tim Yager said sand placement at McGregor Lake has drawn a lot of interest from recreational users and that area law enforcement has been conducting outreach to users regarding unstable sand and safety issues.
- Marian Muste said he participated on a call with the Corps regarding research opportunities involving artificial islands and dredge materials. Plumley said it was a good discussion about what UMRR is doing, the capabilities of LCMERS, and to establish a relationship.
- Plumley said Kat McCain participated in a virtual outreach activity on June 23, 2020 for the Mighty Mississippi River exhibit as part of the Missouri History Museum's river conservation series. She discussed UMRR's role in the recovery of ecosystems that have been degraded, damaged, or destroyed.
- Mark Gaikowski said USGS reached out to the Ho Chunk Nation and Prairie Island Indian Community to discuss land cover/use decadal data collection to discuss any concerns of image

collection over their lands. A Partners-In-Action meeting scheduled for August 17, 2020 will highlight land cover/use and UMRR.

- Gaikowski said the LTRM WQ lab and broader program were highlighted during a recent internal USGS program discussion with the USGS Contaminants Biology Program.

UMRR Showcase Presentations

Forest Canopy Gaps: Understanding UMRS Forest Health

Andrew Strassman provided an overview of a forest gap study funded by LTRM. Forest gaps are critical for preserving forest structure and habitat and are a natural process that occur across spatial and temporal scales and allows forest succession. Small gaps close through infill from surrounding trees while larger gaps require new tree regeneration. Factors that may affect regeneration include invasive species, increased herbivory, as well as changing climate and hydroperiod. Mature and interior bottomland forest offers critical habitat for several species. Project goals include determining if gaps that are not closing are different from gaps that are closing, assessing the ability to detect gap closures remotely, and identifying metrics that can be recomputed as better data becomes available.

Strassman said code was written to analyze existing UMRR data including land cover/use, flood inundation data, and LiDAR for canopy holes the size of one large tree or bigger. Forest canopy gap layers were created to show where gaps occur and each gap was populated with 17 unique attributes. Field work was conducted on a very limited sample of UMRS forest gaps for long term monitoring. Results showed the UMR's forested landscape are at least 9.4 percent gap, but many more gaps were detected below the 0.065-acre threshold. A comparison to previous research suggests that UMR bottomland forest have vastly more gaps than an old growth mesic forest. Small gaps account for the majority of total gap area. Comparison of gaps to tree size-inundation classes may elucidate how inundation duration affects gap formation and regeneration. The project determined that there are patterns of gap distribution in the UMR that can be detected remotely, but additional research is needed to determine their significance. Future steps include monitoring a subset of gaps over time to see if they are closing or expanding and automating the monitoring of all UMRS gaps as new data becomes available.

In response to a question from Hagerty, Strassman said there is little to no published data on gaps other than Yao Yin's published work on the UMRS. Houser said the results presented by Strassman are the product of a 2018 science proposal. In response to a question from Lauren Salvato, Strassman said gaps form in a natural system and allow trees to regenerate, but there is concern that hydrology changes to the system and invasive species (e.g., reed canary grass) are affecting regeneration. Jodi Creswell said, and Jennie Sauer, agreed that it would be great to see a similar presentation made available to a broader audience including distribution to the UMRCC, UMRR, and UMRBA partnerships. Strassman said the final project report should be completed by December 2020 and additional presentation requests would be welcome.

In response to a question from Stephenson, Strassman said the 2020 forestry science proposal was revisiting sites from Yao Yin's study, but did not know potential site locations relate to gaps on the landscape. He added that gaps are well below the size for detection in the LCU imagery, but that this report is helping to identify aspects not available through LCU data. Megan McGuire said Reno Bottoms is planning to use this data to identify gaps. In response to a question from McGuire, Strassman said regeneration can be detected on a five to ten year time frame, but that survival may be impacted by inundation.

Forest Model Development

Megan McGuire reported on the development of a forest model to quantify the habitat benefits of forest management for cost-benefit analyses. Current models in use (e.g., gray squirrel or chickadee models) are not sensitive to partners' resources of concern and do not consider factors that may be influenced through forest management. The new forest model, generated through a collaborative, rapid model development workshop held June 9-10, 2020, will be geographically specific to all three districts in the UMR. The conceptual model developed during the workshop calls for a stand level model that would consider forest management actions such as invasive species management, canopy management, planting, and regeneration. It would also evaluate measures and activities used to restore patches of forest and how actions are affecting that patch. Landscape-level forest characteristics, such as age diversity, diverse types of forests, connectivity, and substantial forest interiors, should be incorporated. The model should not be specific to any wildlife species, but look at forest as a plant community and consider the quality of the plant community itself. The model should allow for more flexibility of use for various ages and types of forest and consider how forests change drastically in use and habitat at years 0, 50, and 100. The variables selected for the model include canopy cover, desired forest types (based on forester expertise), invasive cover, regeneration, and structural diversity. Next steps include model testing, documentation, and review with a goal for certification by the end of October 2020 for use in evaluating Reno Bottoms and Green Island HREPs.

Jeff Janvrin provide a partner agency perspective on the model development and future application. Janvrin said the workshop format was well organized and that the model will be very valuable to quantify quality existing forest and desired forest types with common metrics for the UMR. This is a seamless model to be able to calculate benefits across a range of forest types that will replace models that use surrogate species. He hopes the model can help evaluate desired future conditions as well as future without project condition. State wildlife action plans could be included as additional documentation to inform discussion of what species would benefit from various communities. Past conversations on model development have stressed how time intensive and expensive they are to generate, but this method may present an efficient means to update existing models or develop new models. Janvrin said that, because of their recurrence in multiple documents, future HREP models should be developed around a variety of aquatic habitat types as well as the following species or use a community approach:

- American Bittern
- Bald Eagle
- Divers
- Grasshopper Sparrow
- Prothonotary Warbler
- Sturgeon
- Yellow-billed Cuckoo
- Red Shouldered Hawk
- Dabblers
- Pectoral Sandpiper
- Freshwater Mussels

Plumley expressed appreciation to the workshop participants and said he also regularly heard the challenges of time and money for model development. This method shows the capabilities of the partnership working together to help achieve UMR's goals with the considerable lineup of upcoming and ongoing forestry work. In response to a question from Hagerty, McGuire said Nate De Jager and Molly Van Appledorn were consulted on how inundation affects potential and desired forest type. Janvrin said Andy Meyer, the St. Paul District Forester, provided valuable graphics of where different community types fall within inundation that served as the basis for defining what inundation class species.

USGS Midcontinent Climate Adaptation Science Center

Olivia LeDee provided an overview of the mission and structure of the climate adaptation science centers (CASCs) and discussed opportunities for partners and projects with the launching of the Midwest CASC. She said climate issues facing the Midwest include projected warmer winter temps and loss of extreme minimum temps. Impacts include such things as eastern larch beetle causing tamarack die-off and increases in extreme precipitation events. Climate adaptation includes strategic action, anticipatory or reactionary, to address the current or expected effects of climate change. These actions may moderate harm or take advantage of beneficial changes (e.g., crop expansion). The CASC network mission is to deliver science to help fish, wildlife, water, land, and people adapt to a changing climate. Goals of the CASC network include:

- Responding to high priority management challenges
- Fostering substantive, sustained engagement between scientists and managers.
- Providing science to support sound resource management and adaptation.
- Advancing the understanding of the impacts of climate change on fish, wildlife, water, and land

USGS is planning to restructure its CASC regions. The proposed Midwest region will include the five UMR states plus Indiana, Michigan, and Ohio. The CASC structure is similar across all regions and includes a host university and satellite institutions with PIs to work on issues within their expertise. Funds support research fellows, management staff, and federal partners.

Jeff Zeigeweid said that in FY 20, \$4 million was designated to focus on issues in the Midwest. Research priorities included fish and wildlife, coastal management, coupling freshwater and terra systems, and invasive species. The FY 20 research solicitation resulted in 95 statements of interest that requested over \$38 million. From those statements, 19 proposals were generated requesting over \$8 million. Ultimately, 12 proposals were funded with \$3.3 million. Proposal projects should generate quantifiable ecosystem relationships that are likely to change with changing climates and pair with future climate scenario planning. Future opportunities with the Midwest CASC include a call for proposals in spring 2021, workshops and trainings after a host institution is identified, and technical assistance to help with climate information integration.

Jennie Sauer expressed appreciation to LeDee and Zeigeweid for their presentation and said it built on the briefing provided by John Delaney and Kristen Bouska's at the UMRR Coordinating Committee's May 20, 2020 meeting. Sauer observed that there is a lot of shared interests between the CASC and UMRR. Jim Fischer agreed and said UMRR is unique in its opportunity to restore habitat and learn from restoration, and continues to improve the integration of science and restoration efforts. He said UMRR has seen the effects of climate change in numerous ways to the river, habitat, and projects, and he hopes for continued interconnection with climate work in the future, perhaps in the 2022 science planning.

Habitat Restoration

Angela Deen said MVP's planning priorities include Reno Bottoms and Lower Pool 10. Reno Bottoms is planning to incorporate the forest model after it is approved. Alternatives are being evaluated for Lower Pool 10, and TSP selection is anticipated in fall 2020. The district's design priority is McGregor Lake. Four bids were received on August 11 with a low bid of \$17.5 million. A contract award is anticipated for mid-September. Construction at Conway Lake is approximately 45 percent complete. Bass Ponds is anticipated to begin construction in October 2020. Given the urban proximity of the project, signage will be posted to explain the project and construction activities. Placement of 70,000 cubic yards of dredge material at McGregor Lake was coordinated with USACE operations staff. This partnership resulted in \$1 million of savings to the HREP. A plans and specs package is being

completed to address repairs on three islands and backwater areas at Harpers Slough. In response to a question from Stephenson, Deen said the Star Tribune had an article on Bass Ponds recently and signage is being coordinated with the Refuge. Chandler said they receive regular questions about plans and activities for the area, but that interaction with the public is limited because the main visitor center is closed, and thanked Deen for continuing the work on signage and information sharing.

Marshall Plumley said MVR's planning priorities include Steamboat Island, Lower Pool 13, Green Island, and Pool 12 Forestry. The final package for Steamboat Island is anticipated to be sent to MVD for approval by the end of August. A virtual mini-charette was held June 22-24 for Lower Pool 13. Identification of alternatives has begun for Green Island and the Pool 12 Forestry PDT is being established. Design work for Keithsburg Division Stage II is anticipated to be completed in September 2020. Construction on Huron Island Stage II is awaiting completion of surveys, while Stage III is delayed due to COVID-19-related travel restrictions. Dredging is underway at Beaver Island. The Quincy Bay fact sheet was submitted to Mississippi Valley Division (MVD) for approval. Stephenson said Lower Pool 13 and Reno Bottoms have often been provided as examples of LTRM and HREP integration at the PDT level and suggested revisiting what makes them unique. Deen agreed and said they are capturing lessons for Reno Bottoms and said USGS is more involved in this project than previous ones. Plumley agreed and said sharing that information with other teams will be important.

Brian Markert reported that MVS anticipates submitting the feasibility report for Oakwood Bottoms to MVD in fall 2020. Feasibility continues for Yorkinut Slough with a virtual site visit scheduled for August 13, 2020. Planning for West Alton Islands is anticipated to kick off in early FY 21. A design contract for Piasa and Eagles Nest is anticipated to be awarded in September 2020. Plans and specs are being finalized for Harlow Island for a future outyear award. Wet conditions have disrupted work at Crains Island. Exterior berm setback and pump stations are being constructed at Clarence Cannon. Reforestation and warranty work continue at Ted Shanks. Precast box culverts were being used at Clarence Cannon and are beneficial because they reduce the amount of time contractors have to be in the field. Three fact sheets were sent to MVD for approval. Missouri Department of Conservation recently provided letters of support for other fact sheets that will be submitted for approval soon.

Long Term Resource Monitoring and Science

FY 2020 3rd Quarter Report

Jeff Houser said accomplishments of the third quarter of FY 20 include publication of the following manuscripts:

- Environmental factors controlling phytoplankton dynamics in a large floodplain river with emphasis on cyanobacteria.
- Exploring silica stoichiometry on a large floodplain riverscape.

The University of Wisconsin – La Crosse received funding from the National Academy of Sciences for the 2020 Summer Research Experience for Undergraduates program. UWL faculty wrote grants with support and guidance from UMESC staff. Four projects selected for funding focused on water quality, phytoplankton, and floodplain forest data. The four projects were:

- Classification of Upper Mississippi River Floodplain Forests
- Characterizing Water Quality Responses to High Discharge Events using High-frequency Sensor Data
- Spatial and Temporal Patterns in River Phytoplankton and Cyanobacteria Communities
- Using Time-series Analysis of Water Quality Sensor Data to Understand Shared Seasonality

Recordings of the final 15 minute presentations are available at <https://uwlax.webex.com/uwlax/ldr.php?RCID=cb8d7f34e0f04e53bec2ca877d239872>.

Houser said the LTRM water quality lab volunteered to participate in the USGS Standard Reference Sample Project that evaluates the performance of USGS, cooperator, and contract analytical laboratories analyses of chemical constituents of environmental samples. Results show that LTRM water quality labs are rated excellent for phosphorous, nitrite, and nitrate as N. Lab staff recently conducted extensive calibration of new equipment to show comparability with replaced equipment and ensure validity of testing.

Houser said that LTRM component PIs were required to respond to agency COVID-19 restrictions and determine sampling strategies under very different conditions than years past. COVID-19 restrictions prevented Wisconsin and Minnesota from conducting some fixed site water quality sampling and electrofishing. Minnesota was unable to hire interns for vegetation sampling, but completed sampling on time with other staff assisting. Wisconsin and Iowa delayed starting vegetation sampling by one week. Iowa suspended all LTRM sampling July 30 due to a field station staff member and, shortly thereafter, seasonal staff member, testing positive for COVID-19, but sampling is scheduled to resume mid-August.

Houser said no vegetation rake sampling on the Illinois River will occur in conjunction with the lock closures because of COVID-19-related travel restrictions. Aerial photos will be collected as part of the 2020 land cover/use flights and may provide some information. Fish sampling is ongoing and is utilizing the full LTRM SRS design. Fisheries teams will collect chlorophyll and turbidity for water quality at sites in Alton, Peoria, Starved Rock, and Marseilles pools during period two and three fish sampling. MVR staff are deploying two sondes at sites in Starved Rock pool for the duration of the closures to measure several parameters including turbidity and chlorophyll.

In response to a question from Stephenson, KathiJo Jankowski said chlorophyll-*a* may not have funding to continue, but that turbidity sampling will. Stephenson asked if the effects of the August 10, 2020 Derecho in Iowa will be captured in the LCU aerial imagery. Jennifer Dieck said pools 11, 12, 13 were flown on August 11, and Pools 14 and 15 were underway and provided a link to live tracking of the data collection (<https://flightaware.com/live/flight/N708>). Houser said the effects of the storm may be captured. Jim Fischer expressed appreciation to the LTRM water quality lab for their excellence and hard work and reflects well on the program. Karen Hagerty said an unbelievable number of trees were downed in the Quad Cities and that the storm may be worth noting in the photo records.

Status and Trends 3rd Edition

Houser said an internal draft of LTRM's third status and trends report is complete. A-Team members will be asked to review the report in September. [Note: The A-Team review has been postponed to mid-October.] A final draft is anticipated for December 2020 to help inform the 2022 Report to Congress.

USACE LTRM Report

Karen Hagerty said UMRR's FY 20 LTRM allocation under full funding includes \$6.3 million (\$5.0 million for base monitoring and \$1.3 million for analysis under base). An additional \$2.5 million is available for science in support of restoration and management. LTRM funds would be similarly allocated in FY 21 under full funding. If UMRR's authorization is increased, as proposed in House WRDA language, significant strategic planning would be needed for LTRM.

A-Team Report

Nick Schlessner said that the A-Team met via webinar on July 31, 2020. Topics discussed included impacts of COVID-19 on agency policies and work during the 2020 field/work season, the effectiveness of various LTRM gear for detecting Asian carp (particularly young of the year individuals) along the leading edge of the invasion, and the A-Team's science proposal ranking process. Suggested modifications to the ranking process included encouraging more representatives from each state to take part in the ranking process (both through recruitment of rankers and improving the data collection process) and improving the documentation and instructions provided with rating sheets to achieve uniform application of the ratings by each individual rater. Schlessner said he created a program to generate blank rating sheets and import completed sheets automatically to minimize transcription errors and the amount of time dedicated to compiling scores. Hagerty expressed appreciation to Schlessner for creating the new proposal ranking spreadsheet and said it greatly improved the ranking process.

The A-Team also reviewed the roles and responsibilities of the A-Team outlined in the 2013 UMRR Advisory Group Charter. A-Team members requested additional time to consider recommendations and the A-Team will review this topic again at their next meeting. Jeff Houser requested that individuals from each state be ready to review the upcoming Status and Trends document during September. All representatives indicated they should be able to accommodate that schedule. The A-Team's October meeting will be held via webinar.

Stephenson said there were additional comments earlier in the meeting regarding the A-Team's review of the Charter language and suggested holding a planning meeting before the next A-Team meeting to develop additional questions to guide that discussion. Schlessner agreed that additional questions would help guide the conversation.

Other Business

Andrew Stephenson reminded attendees to extend the invitation for the upcoming UMRR Communications Team call to their respective agency public affairs or communications staff and that an email request for endorsement of the revised HREP Selection Guidance Documents would be sent to Coordinating Committee members soon.

Upcoming quarterly meetings are as follows:

- **October 2020 – Remote**
 - UMRBA quarterly meeting – October 27
 - **UMRR Coordinating Committee quarterly meeting – October 28**
- **February 2021 – Remote**
 - UMRBA quarterly meeting – February 23
 - **UMRR Coordinating Committee quarterly meeting – February 24**
- **May 2021 – TBD**
 - UMRBA quarterly meeting – May 25
 - **UMRR Coordinating Committee quarterly meeting – May 26**

With no further business, the meeting adjourned at 12:16 p.m.

**UMRR Coordinating Committee Virtual Attendance List
August 12, 2020**

UMRR Coordinating Committee Members

Thatch Shepard	U.S. Army Corps of Engineers, MVD [on behalf of Brian Chewning]
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Mark Gaikowski	U.S. Geological Survey, UMESC
Dave Glover	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
Verlon Barnes	Natural Resources Conservation Service
Ken Westlake	U.S. Environmental Protection Agency, Region 5

Others In Attendance

Jim Cole	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
Jill Bathke	U.S. Army Corps of Engineers, MVP
Megan McGuire	U.S. Army Corps of Engineers, MVP
Chris Erickson	U.S. Army Corps of Engineers, MVP
Terry Birkenstock	U.S. Army Corps of Engineers, MVP
Jonathan Sobiech	U.S. Army Corps of Engineers, MVP
Eric Hanson	U.S. Army Corps of Engineers, MVP
Aaron McFarlane	U.S. Army Corps of Engineers, MVP
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Andy Barnes	U.S. Army Corps of Engineers, MVR
Kim Thomas	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR
Jodi Creswell	U.S. Army Corps of Engineers, MVR
Rachel Perrine	U.S. Army Corps of Engineers, MVR
Davi Michl	U.S. Army Corps of Engineers, MVR
Jesse Ray	U.S. Army Corps of Engineers, MVR
Rachel Hawes	U.S. Army Corps of Engineers, MVR
Roger Perk	U.S. Army Corps of Engineers, MVR
Rebecca Costello	U.S. Army Corps of Engineers, MVR
Keri Diedrich	U.S. Army Corps of Engineers, MVR
Brian Markert	U.S. Army Corps of Engineers, MVS
Jasen Brown	U.S. Army Corps of Engineers, MVS
Katy Smith	U.S. Army Corps of Engineers, MVS
Brian Johnson	U.S. Army Corps of Engineers, MVS
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
Stephen Winter	U.S. Fish and Wildlife Service, UMR Refuges
Jeff Houser	U.S. Geological Survey, UMESC
Jennie Sauer	U.S. Geological Survey, UMESC
KathiJo Jankowski	U.S. Geological Survey, UMESC
Molly Van Appledorn	U.S. Geological Survey, UMESC

Jennifer Dieck	U.S. Geological Survey, UMESC
Kristen Bouska	U.S. Geological Survey, UMESC
John Delaney	U.S. Geological Survey, UMESC
Andrew Strassman	U.S. Geological Survey, UMESC
JC Nelson	U.S. Geological Survey, UMESC
Olivia LeDee	U.S. Geological Survey
Jeff Ziegeweid	U.S. Geological Survey
Jason Daniels	U.S. Environmental Protection Agency, Region 7
Joe Summerlin	U.S. Environmental Protection Agency, Region 7
Kirk Hansen	Iowa Department of Natural Resources
Nick Schlessler	Minnesota Department of Natural Resources
Katrina Kessler	Minnesota Pollution Control Agency
Bryan Hopkins	Missouri Department of Natural Resources
Jeff Janvrin	Wisconsin Department of Natural Resources
Jill Crafton	Izaak Walton League – Minnesota Division
Brent Hoerr	Upper Mississippi, Illinois, and Missouri Rivers Association
Maisah Khan	Mississippi River Network
Marian Muste	University of Iowa
Rick Stoff	Stoff Communications
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

ATTACHMENT B

Long Term Resource Monitoring and Science

- **Base Monitoring Scope of Work thru 4th Quarter of FY 2020 (10/13/2020) (B-1 to B-3)**
- **FY 2020 UMRR Science Activities in Support of Restoration and Management (10/13/2020) (B-4 to B-15)**
- **FY 2014 and FY 2015 UMRR Science Activities in Support of Restoration and Management (10/13/2020) (B-16)**

Upper Mississippi River Restoration
Long Term Resource Monitoring Element
FY2020 Base Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Aquatic Vegetation Component						
2020A1	Complete data entry and QA/QC of 2019 data; 1250 observations.					
	a. Data entry completed and submission of data to USGS	30-Nov-2019		30-Nov-2019		Lund, Drake, Bales
	b. Data loaded on level 2 browsers	15-Dec-2019		15-Dec-2019		Schlifer
	c. QA/QC scripts run and data corrections sent to Field Stations	28-Dec-2019		28-Dec-2019		Sauer, Schlifer
	d. Field Station QA/QC with corrections to USGS	15-Jan-2020		15-Jan-2020		Lund, Drake, Bales
	e. Corrections made and data moved to public Web Browser	30-Jan-2020		30-Jan-2020		Larson, Schlifer, Caucutt
2020A2	Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2019 data	31-Jul-2020		31-Jul-2020		Larson, Rogala, Schlifer
2020A3	Wisconsin DNR annual summary report 2019 that combines current year observations from LTRM with previous years' data, for the fish, aquatic vegetation, and water quality components.	30-Sep-2020				Drake, Bartels, Hoff, Kalas, Carhart
2020A4	Complete aquatic vegetation sampling for Pools 4, 8, and 13 (Table 1)	31-Aug-2020		31-Aug-2020		Larson, Lund, Drake, Bales
2020A5	Pool 4: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-2019		2-Oct-2019		Lund
2020A6	Pool 8: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-2019		6-Sep-2019		Drake, Carhart
2020A7	Web-based: Update software coding for surface distribution maps of aquatic plants	30-Sep-2020				Larson, Rogala
2020A8	Draft manuscript: Estimated annual summer submersed aquatic macrophyte standing stocks (1998 - 2018) in three large reaches of the Upper Mississippi River.	30-Jun-2020		1-Sep-2020	Accepted for publication with revisions	Drake, Lund, Bales, Kreiling
2020A9	Draft manuscript: Species-specific wet-dry mass calibrations for common submersed macrophytes in the Upper Mississippi River	30-Sep-2020		30-Sep-2020		Lund and Drake
Intended for distribution						
LTRM completion report: Evaluation of a "Trace" Plant Density Score in LTRM Vegetation Monitoring (New Milestone 2020BIO3a ; Report under final USGS review)						
Fisheries Component						
2020B1	Complete data entry, QA/QC of 2019 fish data; ~1,590 observations					
	a. Data entry completed and submission of data to USGS	31-Jan-2020		1-Jan-2020		DeLain, Bartels, Bowler, Hine, Gittinger, West, Solomon, Maxson
	b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations	15-Feb-2020		15-Jan-2020		Ickes, Schlifer
	c. Field Station QA/QC with corrections to USGS	15-Mar-2020		30-Jan-2020		DeLain, Bartels, Bowler, Hine, Gittinger, West, Solomon, Maxson
	d. Corrections made and data moved to public Web Browser	30-Mar-2020		6-Feb-2020		Ickes and Schlifer
2020B2	Update Graphical Browser with 2019 data on Public Web Server.	31-May-2020		6-Feb-2020		Ickes and Schlifer
2020B3	Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool (Table 1)	31-Oct-2020				DeLain, Bartels, Bowler, Hine, Gittinger, West, Solomon, Maxson
2020B4	Summary Letter: Floodplain fisheries sampling	31-Oct-2020				West

Upper Mississippi River Restoration
Long Term Resource Monitoring Element
FY2020 Base Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2020B5	IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2019	30-Jan-2020		3-Jan-2020		Bowler
2020B6	Sample collection, database increment on Asian carp age and growth: collection of cleithral bones	31-Jan-2020		31-Jan-2020		Solomon, Maxson
2020B8(D)	Database increment: Stratified random day electrofishing samples collected in Pools 9–11	30-Sep-2020			Canceled for summer 2020 because of Covid-19 sampling issues	Bowler
2020B9(D)	Database increment: Stratified random day electrofishing samples collected in Pools 16–18	30-Sep-2020				Bowler
2020B10	Database increment: Evaluating the Fish Community in a rare Backwater Habitat in the Middle Mississippi River	30 Dec. 2020				West
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)						
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 edited)						
Water Quality Component						
2020D1	Complete calendar year 2019 fixed-site and SRS water quality sampling	31-Dec-2019		31-Dec-2019		Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
2020D2	Complete laboratory sample analysis of 2019 fixed site and SRS data; Laboratory data loaded to Oracle data base.	15-Mar-2019		15-Mar-2019		Yuan, Schlifer
2020D3	1st Quarter of laboratory sample analysis (~12,600)	30-Dec-2019		30-Dec-2019		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni
2020D4	2nd Quarter of laboratory sample analysis (~12,600)	30-Mar-2020		30-Mar-2020		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
2020D5	3rd Quarter of laboratory sample analysis (~12,600)	29-Jun-2020		29-Jun-2020		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
2020D6	4th Quarter of laboratory sample analysis (~12,600)	28-Sep-2020		28-Sep-2020		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
2020D7	Complete QA/QC of calendar year 2019 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-2020		30-Mar-2020		Schlifer, Rogala, Jankowski
	b. Field Station QA/QC; USGS QA/QC.	15-Apr-2020		15-Apr-2020		Jankowski, Rogala, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
	c. Corrections made and data moved to public Web Browser	30-Apr-2020		15-Apr-2020		Rogala, Schlifer, Jankowski
2020D8	Complete FY2020 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool	30-Sep-2020		30-Sep-2020		Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni
2020D9	WEB-based annual Water Quality Component Update w/ 2019 data on Server.	30-May-2020		30-May-2020		Rogala, Jankowski
2020D10	Operational Support to the UMRR LTRM Element. Serve as in-house Field Station for USGS for consultation and support on various LTRM-	30-Sep-2020		30-Sep-2020		Kalas, Hoff, Bartel, Drake

Upper Mississippi River Restoration
Long Term Resource Monitoring Element
FY2020 Base Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
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-Jan-2021				Fulgoni and Jankowski
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-Dec-2020		Contractor delay	Fulgoni and Jankowski
2017D10	Draft LTRM Completion report: Evaluation of water quality data from automated sampling platforms	30-Sep-2017	30-Dec-2020		Delayed, Lubinski took new position	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)						
Land Cover/Land Use with GIS Support						
2020LC1	Maintenance ArcGIS server	30-Sep-2020		30-Sep-2020		Hlavacek, Fox, Rohweder
2020LC2	Aerial Photo scanning (ILR)	30-Sep-2020		30-Sep-2020		Hlavacek
2020LC3	Updates on progress for land cover products listed.	30-Sep-2020		30-Sep-2020		Robinson, Finley
Data Management						
2020M1	Update vegetation, fisheries, and water quality component field data entry and correction applications.	30-May-2020		30-May-2020		Schlifer
2020M2	Load 2019 component sampling data into Database tables and make data available on Level 2 browsers for field stations to QA/QC.	30-Jun-2020		30-Jun-2020		Schlifer
2020M3	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						
2020ST1	Final Outline including specific indicators that will be included in the report.	1-Dec-2019		1-Dec-2019		All
2020ST2	Draft Report for partner review	28-Aug-2020	16-Oct-2020	13-Oct-2020		All
2020ST3	Revised draft to USGS publishing network	15-Dec-2020				All
2020ST4	Draft S&T3 Fact Sheet	30-Mar-2020	TBD		Tied to completion of S&T3	All
Quarterly Activities						
2020QR1	Submittal of quarterly activities	30-Jan-2020		30-Jan-2020		All
2020QR2	Submittal of quarterly activities	13-Apr-2020		13-Apr-2020		All
2020QR3	Submittal of quarterly activities	13-Jul-2020		13-Jul-2020		All
2020QR4	Submittal of quarterly activities	12-Oct-2020				All
Equipment Inventory						
2020ER1	Property inventory and tracking	15-Nov-2020				LTRM staff as needed

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Developing and Applying Indicators of Ecosystem Resilience to the UMRS						
2020R1	Updates provided at quarterly UMRR CC meeting and A team meeting	Various				Bouska, Houser
2020R2	Submit fish regime manuscript for peer-review publication	30-Dec-2019		10-Oct-19	accepted for publication	Bouska
2020R3	Submit aquatic vegetation resilience manuscript to RWG	30-Sep-2020	30-Oct-2020			Bouska
2020R4	Submit draft outline of resilience assessment synthesis to RWG	30-Sep-2020		30-Sep-2020		Bouska
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. <i>In Review</i> . 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						
2018ST1	Reestablishment of horizontal and vertical temporary benchmarks, and a data base for horizontal and vertical benchmarks (Continuation of 2017ST1)	30-Mar-2018	1-Feb-2019	1-Feb-2019	Poor conditions in Pool 13 continue; highwater fall 2019	Rogala, Moore, Kalas, Bierman
2018ST2	Open-water nearshore surveys completed and a database (Continuation of 2017ST2)	31-Dec-2018	2-Jan-2020	2-Jan-2020		Rogala, Moore, Kalas, Bierman
2018ST3	Over-ice surveys completed and a database (Continuation of 2017ST3)	30-Mar-2018	30-Mar-2020			Rogala, Moore, Kalas, Bierman
2018ST4	Draft completion report on sedimentation rates along transects (Continuation of 2017ST4) If surveys in Pool 13 cannot be completed in 2019/2020, the	30-Sep-2018	30-Mar-2020	5-Feb-2020	Pools 4 and 8	Rogala, Moore, Kalas, Bierman

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Landscape Pattern Research and Application						
2020L1	Geospatial analyses in support of the Forest Gap project	30-Aug-2020		30-Aug-2020	Some analysis on-going	De Jager
2020L2	Analysis; Evaluating effects of alternative flooding scenarios on forest succession in the UMRS. Potential manuscript in 2021	30-Sep-2020		12-Oct-20		De Jager
2020L3	Analysis; Developing a state and transition model for reed canarygrass invasion on the Upper Mississippi River floodplain.	30-Sep-2020		30-Sep-2020		De Jager
On-Going						
2016L3	Draft Manuscript: Review of Landscape Ecology on the UMR	30-Sep-2016	30-Sep-2020	30-Sep-2020	Delayed due to Indicators Report and HNA	De Jager
Eco-hydrologic Research						
2020EH01	Submit manuscript of UMRS inundation diversity for peer review	30-Sep-2020		30-Sep-2020	Completed and published. https://doi.org/10.1002/rra.3	Van Appledorn, De Jager, Rohweder
2020EH02	Submit manuscript of temporal patterns in UMRS inundation regimes for peer review	30-Sep-2020	30-Sep-2021		delayed due to priority shift to Status and Trends 3 Report	Van Appledorn, De Jager, Rohweder
2020EH03	Analysis of UMRS floodplain forest diversity and development of forest typology	30-Sep-2020		30-Sep-2020		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)						

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
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						
2020LCU1	Imagery Acquisition	Late Aug. Sept. 2020		Late Aug. Sept. 2020		Dieck, Hop
2020LCU2	Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, QA/QC, and serving of 2020 LCU	1-Sep-2021				Dieck, Hop
2020LCU3	Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, automation, QA/QC, and serving of	1-Sep-2022				Dieck, Hop
2020LCU4	Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, automation, QA/QC, and serving of	1-Sep-2023				Dieck, Hop
Aquatic Vegetation, Fisheries, and Water Quality Research						
Fisheries						
2020B12a	Final LTRM Completion Report: Developing a biochronology of smallmouth buffalo growth for the Upper Mississippi and Illinois Rivers (tied to	30-Jul-2020		9-Oct-2020		Ickes with Solomon
On-Going						
2019B13	Draft Manuscript: Evidence of functionally defined non-random fish community responses over 25 years in a large river system (replacing 2015B17 and 2016B17)	30-Sep-2019	29-Feb-2020	29-Feb-2020	Not accepted at journal, resubmitting to Hydrobiologia	Ickes
2016B14	Draft completion report: Exploring Years with Low Total Catch of Fishes in Pool 26	30-Sep-2016	30-Dec-2020		Previous co-authors took new job positions	Gittinger, Chick

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2020BF1	Iowa Walleye Management Plan 2019; incorporation of LTRM data	30-Nov-2019		30-Nov-2019		Bowler
Water Quality						
2019D12	Draft Summary Paper: Expanding the international engagement and recognition of UMRR LTRM (replacing 2014P1)	30-Sep-2019	TBD		Currently low priority, will revisit when appropriate	Jankowski
2019D13	Draft manuscript: Ice and snow cover affect winter limnological conditions differently across a connectivity gradient in a large floodplain river (replacing 2018D13); Warmer winters increase phytoplankton biomass in a large floodplain river	30-Sep-2019	30-Jul-2020		delayed due to Status and Trends 3 Report; due Oct 31 to special issue on winter limnology	Jankowski, Rogala, Houser
Intended for Distribution						
Burdis, Rob. Manuscript: Trends in water quality and biota in segments of Pool 4, above and below Lake Pepin (<i>Aquat Sci</i> 82, 27. https://doi.org/10.1007/s00027-020-0703-7M) Working title: Decadal trends and ecological shifts in backwater lakes of a large floodplain river: Upper Mississippi River						
Statistical Evaluation						
2020E1	Draft manuscript. Detection errors	30-Sep-2020		30-Sep-2020		Gray
Intended for distribution						
Draft manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1) <i>in journal review</i>						
Draft manuscript: How well do trends in LTRM percent frequency of occurrence SAV statistics track trends in true occurrence? Gray 2016E2; <i>in journal review</i>						
Manuscript: Model selection for ecological community data using tree shrinkage priors; Gray, Hefley, Zhang, Bouska; (2017FA2; <i>in revision with Ecological Applications</i>)						

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Pool 12 Overwintering HREP Adaptive Management Fisheries Response Monitoring						
<i>Fisheries Population Monitoring</i>						
2020P13a	Collect annual increment of pool-wide electrofishing data	1-Nov-2019		1-Nov-2019		Bowler
2020P13b	Collect annual increment of fyke netting data from backwater lakes	15-Nov-2019		15-Nov-2019		Bowler
2020P13c	Perform otolith extraction from bluegills for aging	1-Dec-2019		1-Dec-2019		Bowler
2020P13d	Age determination of bluegills collected in Fall 2020	1-Feb-2020		Not collected because of highwater fall of 2020		Bowler and Kueter
2020P13e	In-house project databases updated	31-Mar-2020				Bowler
2020P13f	Summary letter compiled and made available to program partners; contained in "2019 UMRR LTRM Highlights for Bellevue"	30-Sep-2020				Bowler
Pool 4 - Peterson Lake HREP Water Quality Monitoring – Pre and Post-Adaptive Management Evaluation						
2017PL3	Collection of post-construction winter water quality data	Feb. 2020		Feb. 2020		Burdis, DeLain, Lund, Dawald
2017PL4	Collection of post-construction summer water quality data	Aug. 2020		Aug. 2020		Burdis, DeLain, Lund, Dawald
2017PL5	Summary letter: Tabular and graphical summary of water quality data	Dec. 2020				Burdis, Lund, Moore

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
UMRR LTRM Science Coordination Meeting						
2020N1	Science Planning Meeting; UMESC	Week Jan. 13, 2020		Completed		All LTRM
FY18 Funded Science in Support of Restoration and Management Proposals						
Conceptual Model and Hierarchical Classification of Hydrogeomorphic Settings in the UMRS						
2019CM2	Summary of workshop findings and minutes; internal document	31-Dec-2018		30-Jan-2019	Delayed due to Furlough	Fitzpatrick, Henderson, Rogala, Erwin, Sawyer
2019CM3	Presentation to Focal Area 1 workgroup, LTRM researchers, HREP designers, and state resource agency partners	31-Aug-2019	30-Dec-2019	19-Dec-2019		Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange
2019CM4	GIS data base and query tool	31-Dec-2019	On-going		Prototype developed	Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange
2019CM5	Submit draft LTRM Completion report on hydrogeomorphic conceptual model and hierarchical classification system	31-Dec-2019	30-Aug-2020			Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange
2019CM6	Submit Final LTRM Completion report on hydrogeomorphic conceptual model and hierarchical classification system	30-Jun-2020	30-Dec-2020			Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange
Develop a better understanding of geomorphic changes through repeated measurement of bed elevation and overlay of land cover data						
<i>Determine geomorphic changes in selected side channels of selected reaches using hydroacoustics</i>						
2019GC2	Complete geodatabase of previous surveys and begin updating as needed. Begin developing and apply change detection methods.	1-Dec-2018		30-Jan-2019	Delayed due to furlough	Strange, Rogala
2019NEW	Complete Side Channel Surveys	30-Sep-2019	30-Nov-2019	4-Feb-2020	Pool 18 survey data received Feb. 2020	Strange, Wallace, Klingman

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2019GC3	Submit draft LTRM Completion report	1-Mar-2020	15-Jun-2020	15-Jun-2020	In USGS review	Rogala, Stone
<i>Establish a network of transects in backwaters to measure sedimentation</i>						
2019GC4	Begin setting monuments at existing transects. Establish, survey and monument new transects as needed	1-Oct-2018	1-Jun-2019	1-Jun-2019		Kalas, Rogala
2019GC5	Establish methods. Determine database structure and begin entering data into database (including transect maps, description of monuments, etc.)	1-Dec-2018		1-Dec-2018		Rogala, Kalas
2019GC6	Complete setting monuments and surveying remaining transects	30-Sep-2020				Kalas
2019GC7	Complete database for all transects.	30-Sep-2020				Kalas
<i>Determine recent planform changes using UMRR LCU datasets</i>						
2019GC8	Submit draft LTRM Completion Report on recent planform changes using UMRR LCU datasets	1-Jul-2019	30 Oct. 2019	4-Nov-2019		Rogala
Water Exchange Rates and Change in UMRS Channels and Backwaters, 1980 to Present						
2019WE1	Data Analysis	31-Mar-2019	30-Jun-2020		Delayed due to continuous flooding and high water along with other priorities	Hendrickson
2019WE2	Base Maps of Discharge Measurement Location	31-May-2019				Le Claire
2019WE3	Submit draft LTRM Completion Report	30-Sep-2019	30-Jul-2020			Hendrickson
2019WE4	Submit Final LTRM Completion Report	30-Mar-2020	30-Sep-2020			Hendrickson

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Intrinsic and extrinsic regulation of water clarity over a 950-km longitudinal gradient of the UMRS						
2019IE1	Database complete	30-Apr-2019		30-Apr-2019		Carhart, Drake, others
2019IE2	Draft analysis and annual progress summary	31-Dec-2019		7-Feb-2020		Drake, Carhart and others
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						
2019WF3	Collect data in Pool 8 using benthic core sampling	30-Apr-2019		30-Apr-2019		Winter
2019WF4	Submit preliminary report with results from data collected in the summer and fall of 2018, and data collected in the spring of 2019	30-Jul-2019		1-Jul-2019		Schmidt, Straub, Schultz
2019WF5	Collect data in Pools 4, 8, 13 using LTRM methodology	30-Aug-2019		30-Aug-2019		Winter, Lund, Drake, Bales
2019WF6	Collect data in Pools 4, 8, 13 using benthic core sampling	30-Oct-2019		30-Oct-2019		Winter
2019WF7	Conduct final analyses, submit draft LTRM Completion report	30-May-2020	30-Sep-2020	Extra samples taken in Spring 2020, sorting and analysis also delayed due to Covid-19		Schmidt, Straub, Schultz
2019WF8	Submit Final LTRM Completion Report	30-Sep-2020	30-Dec-2020			Schmidt, Straub, Schultz

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Understanding constraints on submersed vegetation distribution in the UMRS: the role of water level fluctuations and clarity						
2019SVD1	Retrieve existing systemic datasets for elevation gages, topobathy and water clarity.	30-Dec-2018		1-Dec-2018		Kalas, Carhart, Rogala,
2019SVD2	Estimate/interpolate photic zone and generate predicted SAV bands systemically.	30-Jun-2019		2-Jul-2019		Kalas, Carhart, Rogala,
2019SVD3	Submit annual progress summary	30-Sep-2019		11-Oct-2019		Kalas, Carhart,
2019SVD4	Spatial coverages and databases complete, begin draft report.	30-Oct-2019		30-Oct-2019		Kalas, Carhart, Rohweder
2019SVD5	Submit draft manuscript	30-Sep-2020		30-Sep-2020		Kalas, Carhart, Drake, Rogala, Rohweder
2019SVD6	Webpage to house database information	30-Sep-2020			Under development	Kalas, Carhart, Rogala, Rohweder
Systemic analysis of hydrogeomorphic influences on native freshwater mussels						
2019FM1	Design pool-wide surveys in Pools 8 and 13	30-Sep-2019		30-Sep-2019		Jim Rogala, Teresa Newton, Mike Davis
2019FM2	Explore existing (and perhaps create additional?) geomorphic indices within the aquatic areas data set that may influence mussel assemblages and begin assessing patterns in mussel assemblages across a gradient of geomorphic conditions in existing data (Pools 3, 5, 6, and 18)	30-Sep-2019	9/30/2020 (will now include all pools)	Delayed since lead technician who was to perform most of the analyses took a new position; new hire in place (Jan. 2020)		Jim Rogala, Jason Rohweder, Teresa Newton
2019FM3	Conduct pool-wide surveys for mussels in Pools 8 and 13	30-Sep-2019	30-Sep-2019	30-Sep-2019		Mike Davis, Teresa Newton
2019FM4	Annual progress summary	30-Dec-2019	15-Feb-2020	7-Feb-2020		Teresa Newton
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			Jason Rohweder, Teresa Newton, Catherine Murphy
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

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Using dendrochronology to understand historical forest growth, stand development, and gap dynamics						
2019DD1	Annual progress summary	31-Dec-2018		25-Feb-2019		Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde
2019DD2	Data collection	30-Nov-2018		30-Nov-2018	Sample size low due to high water levels	Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde, Robert Cosgriff
2019DD3	Growth-ring chronologies and forest vegetation demographic and biophysical data	31-Jul-2019		31-Jul-2019		Dr. Harley, MS students
2019DD4	Plot-level 3-dimensional subsurface floodplain sedimentation maps for each study site	31-Jul-2019		31-Jul-2019		Dr. Maxwell, MS students
2019DD5	Annual progress summary	31-Dec-2019		6-Feb-2020		Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde
2019DD6	Baseline dataset for promoting resilience of hard mast forest communities along the UMRS	30-Jun-2020	Delay in field work data collection has significantly altered the anticipated time for analysis.			Dr. Harley, Dr. Maxwell, MS students
2019DD7	Submit draft manuscript	30-Sep-2020				Dr. Harley, Dr. Maxwell, MS students
Forest canopy gap dynamics: quantifying forest gaps and understanding gap – level forest regeneration						
2019FG1	Completion of polygon layer of canopy gaps for Study Area with associated tabular and FGDC-compliant metadata	30-Apr-2019		30-Apr-2019		Strassman, Sattler, Hoy
2019FG2	Annual progress summary	31-Dec-2018		27-Dec-2018		Meier, Strassman
2019FG3	Data collection	31-Oct-2019		31-Oct-2019		Thomsen, Vandermyde, Guyon
2019FG4	Annual progress summary	31-Dec-2019		30-Dec-2019		Meier, Strassman
2019FG5	Submit draft LTRM Completion Report	30-Sep-2020				Guyon, Thomsen, Meier, Strassman
2019FG6	Baseline dataset complete	30-Sep-2020		30-Sep-2020		Guyon, Thomsen, Meier, Strassman, DeJager
2019FG7	Submit draft manuscript	30-Sep-2021				Guyon, Thomsen, Meier, Strassman, DeJager

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Investigating vital rate drivers of UMRS fishes to support management and restoration						
2019VR1	Data collection will occur during regular LTRM fish field sampling (Completed)	15-Oct-2018		15-Oct-2018		LTRM Fish Component Leads
2019VR2	Processing of samples	2018 through 2021				Quinton Phelps, Greg Whitledge
2019VR3	Annual progress summary	31-Dec-2018		11-Feb-2019		Andy Bartels, Kristen Bouska, Quinton Phelps
2019VR4	Data collection will occur during regular LTRM fish field sampling	15-Oct-2019		15-Oct-2019		LTRM Fish Component Leads
2019VR5	Annual progress summary	31-Dec-2019		31-Dec-2019		Andy Bartels, Kristen Bouska, Quinton Phelps, Greg Whitledge
2019VR6	Data collection will occur during regular LTRM fish field sampling	30-Oct-2020				LTRM Fish Component Leads
2019VR7	Annual progress summary	31-Dec-2020				Andy Bartels, Kristen Bouska, Quinton Phelps, Greg Whitledge
2019VR8	Data set complete (data delivered to Ben Schlifer, physical structures delivered to BRWFS)	30-Sep-2021				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						
2019epm1	Progress Summary	30-Dec-2019	Postponed due to high water; 2020 vegetation surveys complete. Data entry and analysis underway.			Chick and McGuire
2019epm2	Progress Summary	30-Dec-2020				Chick and McGuire
2019epm3	Draft LTRM Completion	30-Jun-2021				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						
2019gen1	Progress Summary	30-Dec-2019		31-Dec-2019		Larson, Bartels, Bouska
2019gen2	Progress Summary	30-Dec-2020				Larson, Bartels, Bouska
2019gen3	Draft Manuscript	30-Dec-2021				Larson, Bartels, Bouska
Reforestation UMRS forest canopy openings occupied by invasive species						
2019ref1	Progress Summary	30-Dec-2019		7-Feb-2020	Project delays due to high water in 2019	Guyon and Cosgriff
2019ref2	Progress Summary	30-Dec-2020				Guyon and Cosgriff
2019ref3	Draft LTRM Completion	30-Apr-2021				Guyon and Cosgriff
2019ref4	Final LTRM Completion	30-Sep-2021				Guyon and Cosgriff

Upper Mississippi River Restoration
 Long Term Resource Monitoring Element
 FY2020 Science in Support of Restoration and Management Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
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			Sample collection delayed because of Covid-19 state sampling processes	Sobotka and Fulgoni
2019zoo3	Final LTRM Completion report on utility of zooplankton community monitoring for HREP assessment	30-Jun-2021				Sobotka and Fulgoni
2019zoo4	Draft LTRM Completion report on on detailing differences between pools and habitats. Report will also investigate the potential investigate the potential impacts of Asian carp on the zooplankton community.	30-Dec-2020			Sample collection delayed because of Covid-19 state sampling processes	Sobotka and Fulgoni
2019zoo5	Final LTRM Completion report on on detailing differences between pools and habitats. Report will also investigate the potential investigate the potential impacts of Asian carp on the zooplankton community.	30-Jun-2021				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
2019LW2	Draft LTRM Completion Report	31-Dec-2020				Thomsen, Jankowski
2019LW3	Final LTRM Completion Report	30-Apr-2021				Thomsen, Jankowski
FY19 Funded Illinois Waterway 2020 Lock Closure						
Aquatic Vegetation: Navigation Closure Study						
2020SAV1	Field sampling - during lock closure	30-Aug-2020		Cancelled due to Covid-19 travel restrictions		Lund, Drake, Bales, others
2020SAV2	Progress Summary	30-Dec-2020				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		See 2020LCU1			Lubinski, Robinson, Finley, and Hop
Fish Community Response to the 2020 Illinois Waterway Lock Closure						
2020FSH1	Field sampling - during lock closure	30-Oct-2020				Lamer and Solomon
2020FSH2	Progress Summary	30-Dec-2020				Lamer and Solomon
Water Clarity and the IWW Lock Closures						
2020WC1	Background data collection on barge -driven wave action and sediment suspension	30-Dec-2020				Jankowski (collaborating with Fish and SAV studies)
2020WC2	Spatial survey of phytoplankton biomass	30-Dec-2020				Jankowski (collaborating with Fish and SAV studies)

UMRR Science in Support of Restoration and Management
 FY2014 and FY2015 Scopes of Work
 October
 2020 Status

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Effects of Nutrient Concentrations on Zoo- and Phytoplankton						
2014NC1	Counting of phytoplankton samples	13-Mar-15		2-Mar-15		Giblin, Campbell, Houser, Manier
2014NC2	Database completed and analysis completed	13-Mar-16	28-Feb-18	28-Feb-18		Giblin, Campbell, Houser, Manier
2014NC3	Full manuscript completed	13-Mar-18	13-Mar-20	13-Mar-20	revised manuscript submitted to journal	Giblin, Campbell, Houser, Manier
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	31-Dec-20		staff time in field work due to temp staff shortage	Burdis
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	TBD		PI has resigned. Working to complete this product as soon as feasible	Sauer (for Yin), Rogala, Ingvalson

ATTACHMENT C

Additional Items

- **Future Meeting Schedule** *(C-1)*
- **Frequently Used Acronyms (12/21/2017)** *(C-2 to C-7)*
- **UMRR Authorization, As Amended (1/27/2015)** *(C-8 to C-11)*
- **UMRR (EMP) Operating Approach (5/2006)** *(C-12)*

**QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE**

FEBRUARY 2021

Remote

February 23 UMRBA Quarterly Meeting
February 24 UMRR Coordinating Committee Quarterly Meeting

MAY 2021

To Be Determined

May 25 UMRBA Quarterly Meeting
May 26 UMRR Coordinating Committee Quarterly Meeting

AUGUST 2021

To Be Determined

August 10 UMRBA Quarterly Meeting
August 11 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), and Section 3177 of the Water Resources Development Act of 2007 (P.L. 110-114).

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 \$22,750,000 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 \$10,420,000 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.