Hampton Inn Gateway Arch
St. Louis, Missouri

Upper Mississippi River Restoration Program Coordinating Committee

Quarterly Meeting

May 16, 2018

Agenda

with Background and Supporting Materials

UPPER MISSISSIPPI RIVER RESTORATION PROGRAM
COORDINATING COMMITTEE

May 15-16, 2018

AGENDA

Tuesday, May 15 Partner Quarterly Pre-Meetings

4:00 – 4:45 p.m. **Corps of Engineers**

4:00 – 4:45 p.m. **Department of the Interior**

4:00 – 4:45 p.m. **States**

Wednesday, May 16 UMRR Coordinating Committee Quarterly Meeting

Time	Attachment	Topic	Presenter
8:00 a.m.		**Welcome and Introductions**	***Tim Yager***, *USFWS*
8:05	**A1-14**	**Approval of Minutes of February 7, 2018 Meeting**	
8:10		**Regional Management and Partnership Collaboration**	***Marshall Plumley***, *USACE*
		▪ FY 2018 Fiscal Update ▪ FY 2019 Outlook and Execution Strategy ▪ UMRR External Communications Strategy ▪ Public Outreach and Activities	***All***
8:45		**UMRR Showcase Presentations**	
		▪ Relating LTRM to Long Term Survey and Assessment of Large River Fishes in Illinois	***Ben Lubinski****, INHS*
		▪ Crains Island HREP	***Kip Runyan****, USACE*
9:15		**Habitat Restoration**	
		▪ District Reports	***District HREP Managers***
		▪ Project Selection Process and Approach – Incorporating Ecosystem Health and Resilience and Habitat Needs – Evaluating Habitat Planning and Sequencing Framework	**Marshall Plumley, USACE**
		▪ Project Schedule Over Next 1-3 Years	
	B1	▪ River Team Project Recommendations ▪ Habitat Needs Assessment II	***TBD***
10:30		**Break**	
10:45		**Long Term Resource Monitoring and Science**	
	C1-11	▪ LTRM FY 2018 2nd Quarter Highlights	***Jeff Houser***, *USGS*
		▪ USACE LTRM Update	***Karen Hagerty****, USACE*
	C12-14	▪ FY 2018 Science Proposals	***LTRM Management Team***
		▪ A-Team Report	***Matt Vitello****, MO DoC*

(Continued)

Wednesday, May 16, 2018
UMRR Coordinating Committee Quarterly Meeting
(Continued)

Time	Attachment	Topic	Presenter
11:50		**Other Business**	
	D1	▪ Future Meeting Schedule	
12:00 noon		**Adjourn**	

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

ATTACHMENT A

Minutes of the February 7, 2018
UMRR Coordinating Committee Quarterly Meeting

(A-1 to A-14)

DRAFT
Minutes of the
Upper Mississippi River Restoration Program
Coordinating Committee

February 7, 2018
Quarterly Meeting

Stoney Creek Hotel
Moline, Illinois

Brian Chewning of the U.S. Army Corps of Engineers called the meeting to order at 8:06 a.m. on February 7, 2018. Other UMRR Coordinating Committee representatives present were Sabrina Chandler (USFWS) via phone, Mark Gaikowski (USGS), Dan Stephenson (IL DNR), Randy Schultz (IA DNR), Megan Moore (MN DNR), Matt Vitello (MO DoC), Jim Fischer (WI DNR), Shannon Allen (NRCS), and Ken Westlake (USEPA) via phone. A complete list of attendees follows these minutes.

Minutes of the November 8, 2017 Meeting

Jim Fischer moved and Randy Schultz seconded a motion to approve the draft minutes of the November 8, 2017 UMRR Coordinating Committee meeting as written. The motion carried unanimously.

Regional Management and Partnership Collaboration

Program Manager

Andy Barnes announced that Marshall Plumley will serve as UMRR's new program manager, officially starting on March 4, 2018. Barnes said Plumley brings substantial experience working on Corps' aquatic ecosystem programs nation-wide, including Puget Sound, Chesapeake Bay, Louisiana's coast, and the Illinois River. His experience is wide-ranging, including planning, program management, basin integrator, and regional technical specialist. Most recently, Plumley served as Section Chief for the Regional Planning and Environmental Division North.

Barnes reflected on Marv Hubbell's successful tenure as UMRR Program Manager. Hubbell has been an important visionary and motivating leader and has positioned UMRR well to do incredible habitat restoration and science while also competing for funding within the Corps.

Hubbell will officially retire in June 2018. In the interim, Hubbell will assist Plumley as he assumes the program manager responsibilities.

Hubbell reflected on the tremendous value of UMRR's partnership, noting the value of each partner's unique strengths that they contribute to the program. The UMRR Coordinating Committee applauded Hubbell for his many contributions to UMRR and thanked him for his dedication to partnership and the resource.

Fiscal Report

Hubbell reported that Congress passed a second FY 2018 continuing resolution authority (CRA) on December 22, 2017 following the expiration of the first CRA on December 8, 2017. The second CRA expires on February 9, 2018. It is not yet known how Congress will act. [Note: Subsequent to the meeting, Congress enacted a third CRA expiring on March 23, 2018. The House and Senate

Appropriations Committees each approved $33.17 million for UMRR in their respective FY 2018 energy and water appropriations measures.]

District staff are authorized to execute the program at $33.17 million until full-year appropriations measure is enacted. At that funding level, UMRR's FY 2018 internal program allocations would be as follows:

- Regional Administration and Programmatic Efforts — $1,110,000
- Regional Science and Monitoring — $9,325,000
  - Long term resource monitoring — $4,725,000
  - Regional science in support of restoration — $3,175,000
    - — $1.025 million for data analysis
    - — $2.15 million for special research initiatives
  - Regional science staff support — $150,000
  - Habitat project evaluations — $975,000
  - Habitat Needs Assessment II — $300,000
- Habitat Restoration — $22,735,000
  - Regional project sequencing — $100,000
  - MVP — $10,922,000
  - MVR — $5,747,000
  - MVS — $5,966,500

[Note: The FY 2018 District HREP allocations above reflect repayment after transferring work among Districts in FY 2017.]

In response to a question from Megan Moore, Hubbell said the public outreach line item above is meant for external communication strategies. Hubbell acknowledged that the Corps struggles with implementing the funding. He referred to Sam Heilig's presentation later in the meeting.

FY 2019 Budget

Hubbell reported that District staff anticipate receiving a pass back on its draft FY 2019 spending plans in mid-February as is typical ever year. Hubbell anticipated that President Donald Trump will publish his FY 2019 budget in mid-February. [Note: Subsequent to the meeting, the President's FY 2019 was released on February 12, 2018 and includes $33.17 million for UMRR.]

Quarterly Budget Reports

Hubbell explained that District staff are working to simplify the Corps' UMRR budget report documents typically supplied to partners in the Coordinating Committee's quarterly meeting packets. He distributed a handout of the simplified budget report with current financial information. According to Hubbell, it provides a clearer way of showing UMRR's financial information and will allow for better tracking spending on specific activities over time. The Corps will begin including the newly reformatted budget reports on a regular basis again starting in May 2018.

Hubbell extended his appreciation to Heather Schroeder, Kayleigh Thomas, and other Corps staff for their work in reformatting the budget reports.

Hubbell's UMRR Program Management Tenure

Hubbell reflected on UMRR's growth and milestones throughout his involvement as program manager as follows:

- Two UMRR long term resource monitoring status and trends reports
- New approaches for evaluating UMRR's ecological resilience and habitat needs
- Improvements to the habitat project planning process and evaluation
- Robust funding with consistent high execution achievements
- All four UMRR reports to Congress (RTCs)

  [Note: Hubbell served as Illinois' UMRR Coordinating Committee representative during the 1998 UMRR RTC development, the UMRR-LTRM Manager for the 2004 RTC, and the UMRR Program Manager for the 2010 and 2016 RTCs.]
- UMRR Charter for its coordinating groups

Hubbell thanked partners for their involvement in UMRR and friendship over the years. Hubbell said he has tremendous confidence that Plumley will successfully lead UMRR through its next phase.

External Communications

Sam Heilig explained that she has been tasked with developing a more detailed external communications plan. This was in response to the UMRR Coordinating Committee's request on a November 27, 2017 conference call to develop a more detailed scope for implementing Goal 3 of the UMRR 2015-2025 Strategic Plan. The objective is to build from UMRR's recent branding development, using the logo and tag line to create communications strategies. Heilig said a draft plan is circulating within the Rock Island District for initial review. It currently revolves around the three tag line components: leading, innovating, and partnering.

Heilig explained that UMRR's draft communications plan utilizes the partnership's network, rotating leadership responsibilities among the implementing partner agencies. Questions remain regarding target audience and what should be communicated and why. Heilig plans to convene the UMRR external communications team to consider these questions and obtain feedback on the draft plan, and then Corps staff will begin developing content. The Corps anticipates employing a greater social media campaign around UMRR.

In response to a comment by Heilig, Mickelsen clarified that UMRBA, USGS, and other partners organized and contributed resources to UMRR's 30th anniversary event. At that time, the Corps was restricted in its ability to "celebrate" UMRR and bring attention to the program. Mickelsen expressed agreement that the plan needs to involve all partners but used the 30th anniversary as an example to underscore that the communications plan needs to withstand any political pressures, financial constraints, or other considerations within any one agency.

Megan Moore asked whether the communications plan utilized the 2016 UMRR Outreach Plan completed by Gulf South Research Corporation. Hubbell referred to Heilig regarding how it was used for the draft communications plan, but noted that the 2016 UMRR RTC utilized several of UMRR's key messages identified in the Outreach Plan. It has already been well received among Corps leadership. Heilig explained that the Outreach Plan focused on marketing and branding. The Communications Plan will expand into how to reach target audiences with specific messages.

Jim Fischer noted that the 2015-2025 UMRR Strategic Plan focused not only on public outreach but also communicating and engaging with programs and leaders that relate to UMRR – e.g., NRCS's Regional Conservation Partnership Program, states' CWA monitoring on the UMR.

Hubbell acknowledged that the Corps has allocated District overhead resources to developing UMRR's communications strategies. Broad messages and outreach goals are the initial focus and more focused, targeted outreach will follow.

Randy Schultz recognized that specific program- and project-related messages may not always surface as a high priority within a statewide or federal agency communications platform. Schultz asked how to ensure that UMRR's messages are given high priority and are ultimately implemented. Heilig said the UMRR communications plan will request that partner agencies identify a point of contact to develop content and then distribute that material to agencies for their use. Heilig said the plan will encourage partners to develop content ahead of time to facilitate use of social media.

Gretchen Benjamin noted her support for developing a communications plan that focuses on the tagline themes. Benjamin asked how UMRR's long term resource monitoring would be integrated into the communications plan. She said UMRR's science work was central to engaging with other large aquatic ecosystem internationally. Heilig explained that social media could describe a product or finding in a fairly straightforward, understandable way and then include a link to the publication or report where an interested stakeholder could find more detailed information.

In response to a question from Hubbell, Heilig said District staff will prepare a draft communications plan for the UMRR Communications Team to consider this spring and then will begin developing content.

HREP Showcase: Steamboat Island

Julie Millhollin explained that many years of silt deposition in Steamboat Island has significantly degraded backwater fisheries habitat. High water tables and increases in flood frequency have degraded forest health and erosion of islands has increased wind and wave fetch. The goals for UMRR's habitat restoration of Steamboat Island are to:

- Maintain, enhance, and restore quality habitat for native and desirable plant, animal, and fish species
- Maintain, enhance, restore, and emulate natural river processes, structures, and functions for a resilient and sustainable ecosystem

Millhollin described how the specific project features will advance the project objectives, depicting the project's construction plans on an image of Steamboat Island. The Rock Island District is anticipating completing the tentatively selected project for Steamboat Island by February 2019.

Nicole Manasco explained that District staff were able to work with another Corps program to secure green LiDAR, which provides spatial information on the river's shallow muddy bottoms (about 1 meter to 1.5 meters deep). District staff employed groundtruthing immediately following the LiDAR acquisition to validate the results. Manasco offered that the results of green LiDAR be presented at a future UMRR Coordinating Committee meeting.

Jim Fischer asked whether green LiDAR might be used on other future HREPs. Marv Hubbell said partners need to determine the value of green LiDAR and cost in comparison with other data collection techniques. Fischer suggested considering how green LiDAR might be used to update topobathy information.

In response to a question from Andy Barnes, Millhollin said she anticipates that the final plan for Steamboat Island will be completed in 2020 with construction starting in 2021.

Long Term Resource Monitoring and Science

FY 2018 1st Quarter Report

Jeff Houser reported that the manuscript was published, "Can data from disparate long-term fish monitoring programs be used to increase our understanding of regional and continental trends in large river assemblages?"

UMESC published a story map for UMRR's long term resource monitoring that is available on its website. The story map combines text, images, and video to summarize information in a compelling and understandable way. The story map can be used for a variety of purposes (e.g., outreach, virtual tours, delivering information) and can be found here: https://usgs.maps.arcgis.com/apps/MapSeries/index.html?appid=261453998dc844099bdb48d203deb736.

2018 Science Meeting

Jeff Houser provided a summary of the January 16-18, 2018 UMRR LTRM Science Meeting, which was meant to facilitate collaborative dialogue among UMRR scientists and restoration practitioners about future goals and priorities for the program's research and analysis. There were ninety attendees from federal agencies, state agencies, UMRBA, NGRREC, and universities, with a mixture of experiences and backgrounds. The meetings purposes were to build from previous research and restoration work, exchange information among restoration and scientist professionals, and consider time and financial resources in order to determine proposals for collaborative and relevant research and analysis projects.

Houser explained that participants organized into six working groups to explore the themes listed below. There was extensive preparation, planning, and review by partners leading up to the meeting to develop these areas and create working groups, including via a November 21, 2017 webinar. While the meeting's primary objective was to determine FY 2018 research priorities, the meeting also resulted in longer term ideas for future work and strengthened UMRR's partnership network of restoration practitioners and scientists. Houser detailed the outcomes of six working groups, as listed below. More detailed information on the work groups was provided on pages C-12 to C-25 of the agenda packet.

Themes:

1. Understanding changes in hydrogeomorphology and their implications for the future condition of the UMRS
2. Understanding relationships between hydrogeomorphic conditions and the distribution and abundance of biota
3. Understanding the physical, chemical, and biological processes behind the observed spatial and temporal patterns in LTRM data

Outcomes of working groups:

Group 1: Geomorphic change in the UMRS
[Led by Jim Rogala (USGS) and Jon Hendrickson (USACE)]

- Form a working group and convene a workshop to develop a hydrogeomorphology-based conceptual model, hierarchical classification system, and a prototype GIS database framework
- Measure and better understand geomorphic rates of change
- Develop a better understanding of changes in connectivity using existing flow data

Group 2: Interactions among water quality, aquatic vegetation, and wildlife

[Led by Deanne Drake (Wisconsin DNR), Eric Lund (Minnesota DNR), and Stephen Winter (USFWS)]

- Research internal and external drivers of water clarity on the UMRS
- Assess whether fluctuations in water levels and clarity affect distribution of SAV in the UMRS

Group 3: Native freshwater mussels in the UMRS – Identification of associations among critical biological processes and hydrogeomorphology

[Led by Teresa Newton (USGS)]

- Research which hydrogeomorphic features are predictive of mussel distribution, abundance, diversity, and recruitment

Group 4: Understanding relationships among floodplain hydrogeomorphic patterns, vegetation and soil processes, and nutrient cycling

[Led by Nate De Jager (USGS)]

- Assess forest canopy gap dynamics
- Research dendrochronology to understand historical forest growth, stand development, and gap dynamics
- Research how to reforest canopy gaps that are occupied by invasive species

Group 5: Woody debris in the UMRS: Quantity, distribution, and role in the hydrogeomorphic and ecology

[Led by KathiJo Jankowski (USGS) and Molly Van Appledorn (USGS)]

- Create a geospatial dataset of wood distribution
- Develop a wood budget of two to three contrasting pools
- Research geophysical drivers on the current wood distribution, changes in wood load along gradients of discharge, and the relative role of woody debris in structuring habitat
- Inform river management by identifying where wood is lacking and where it might be absent in the future and where wood placement will most effectively create habitat

Group 6: Understanding critical biological rates for select fishes on the UMRS and how they vary across hydrogeomorphic, climatic, and biological gradients

[Led by Kristen Bouska (USGS), Andy Bartels (Wisconsin DNR), and Quinton Phelps (West Virginia University)]

- Research vital rates, microchemistry, and genetics

Houser thanked the work group leaders and said their involvement was essential to the science meeting's success. Karen Hagerty expressed appreciation to Houser and Jennie Sauer for their efforts in organizing the meeting, noting that it was a tremendous success in focusing future research and building important relationships among partners. Megan Moore echoed Hagerty's comments, reflecting on the overall success of the meeting format, preparation, and facilitation. Jim Fischer reflected on UMRR's history and said he views the meeting as a significant milestone for the program. According to Fischer, the meeting is a reflection of UMRR's early visionary work to establish a monitoring

program that can address critical science and restoration information needs. Fischer also expressed appreciation to Marv Hubbell for his visionary leadership that brought the program to this point.

Houser outlined the anticipated schedule for selecting and funding FY 18 research proposals, as follows:

- March 16: Full proposals due to UMRR management team for review
- March 30: Proposals distributed to A-Team for review and evaluation
- Early to mid April: A-Team and UMRR federal partners review and rank proposals
- April 25: A-Team considers proposal rankings
- May 16: UMRR Coordinating Committee considers recommended FY 2018 research proposals for endorsement

USACE LTRM Report

Karen Hagerty reported that UMRR's FY 2018 LTRM allocation includes $5.75 million for base monitoring and $2.15 million for other science-related efforts. Actual costs for base monitoring are estimated at $5.6 million in FY 2018, allowing for $149,330 to fund aerial camera testing and FY 2017 work plan needs as well as other science-related efforts.

A-Team Report

Matt Vitello said the A-Team is scheduled to meet on April 25, 2018 to discuss the research proposals as discussed earlier. Vitello expressed appreciation to Houser and Sauer for their efforts in hosting the science meeting.

Habitat Restoration

District Reports

St. Louis District

Brian Markert said the St. Louis District's primary project sponsors are USFWS, Missouri DoC, and Illinois DNR. USFS recently became a partner on an open river project this year. The District is also engaging in ongoing discussions with The Nature Conservancy regarding its potential interest in sponsoring habitat projects such as Spunky Bottoms as well as a local land trust in the Alton area.

Markert reported that MVS anticipates submitting a final draft feasibility report for Crains Island to MVD in mid to late February for approval in order for the project to be construction-ready in FY 2019. The District's other planning efforts involve Piasa and Eagles Nest Islands, Harlow Open River Islands, and Oakwood Bottoms. MVS also continues to explore different alternatives to Rip Rap Landing to avoid complications associated with existing NRCS lands located on about two-fifths of the existing project area.

Markert reported that a construction bid is currently open for the Clarence Cannon pump station construction. He showed pictures of the pump stations to explain the project's features as well as reforestation efforts at Ted Shanks. The District recently completed mussel surveying at Batchtown and is finalizing the O&M manual for Ted Shanks before closing out the project.

In response to a question from Jennie Sauer, Markert explained that habitat restoration in the open river typically involves reconnecting floodplain areas that were previously levee-protected agricultural areas.

The project utilize the river's energy – e.g., hard mast trees will be planted after flood events have occurred and sediment deposited.

St. Paul District

Tom Novak said all projects located in the St. Paul District occur on USFWS lands because of the inability for non-federal partners to execute the Corps' project partnership agreements. Novak reported that MVP finalized construction of Harpers Slough and is planning a dedication ceremony and tree planting event for this spring. MVP is also advancing plans for McGregor Lake. The District has not yet issued an award for Conway Lake given issues with the awards received. It anticipates finalizing an award this spring. District partners have selected Bass Lake Ponds (on the Minnesota River), Lower Pool 10, and Reno Bottoms to advance as its next UMRR habitat projects. Novak expressed appreciation to Hubbell for his steady, calm leadership throughout challenging and rewarding times.

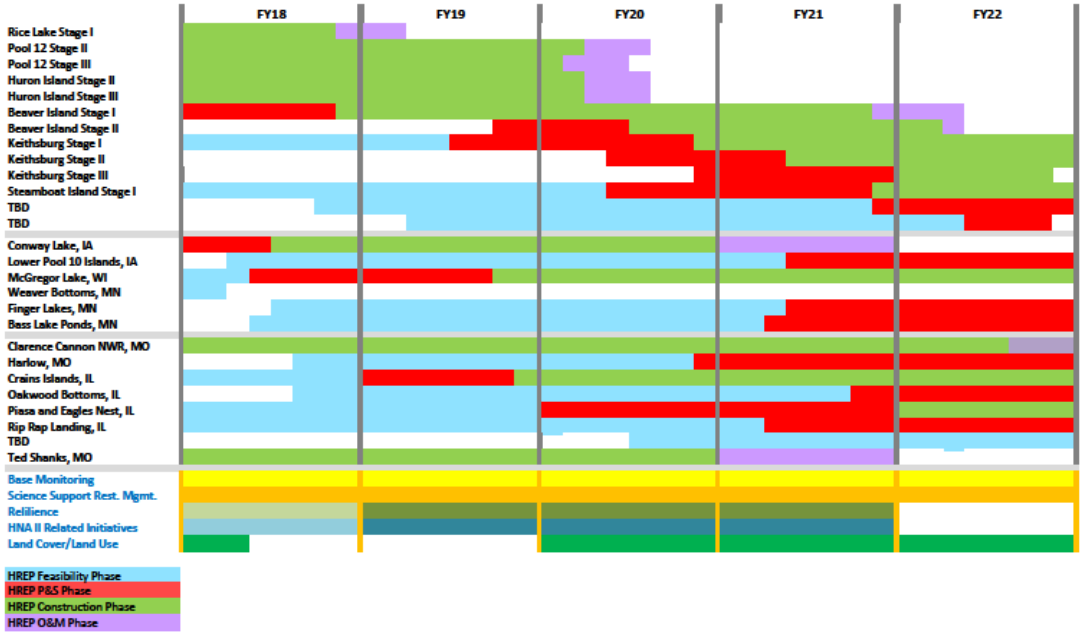
Rock Island District

Marv Hubbell reported that the Rock Island District awarded a construction contract in early February to repair one large pump stations at Rice Lake. MVR is actively planning on Keithsburg and Steamboat Islands. The District accelerated the planning of Beaver Island and will move the project into construction in FY 2018, given reallocated FY 2017 money from the St. Paul District. That funding will be repaid in FY 2018. Hubbell explained that MVR is working through the river teams to identify one to three projects to initiate planning within the next several months.

Hubbell said MVR has refocused its project evaluation efforts to better understand the effectiveness of dredge cuts over time.

HREP Implementation Schedule

Hubbell outlined the following implementation schedule through FY 2022 that assumes a steady appropriation of $20 million to $33.17 million annually. The Corps has withdrawn several of habitat projects since the February 7, 2018 quarterly meeting for various reasons preventing them from advancing.



Habitat Needs Assessment

Information Summary Report – Existing State of the System

Nate De Jager reported that a formal USGS review is underway for the publication of a manuscript regarding the HNA II's inventory of habitats and ecosystem conditions on the UMRS. A select number of partners are also reviewing the manuscript. All agency partners have had the opportunity to provide input on the manuscript through the HNA II Steering Committee. Its content is the foundational information by which restoration practitioners will make inferences about habitat needs on the UMRS – i.e., that the river teams will use when identifying habitat projects. De Jager explained that UMESC staff will seek USGS's approval for publication after reconciling comments received from partners.

Management Response to Information – System Assessment

Sara Schmuecker said a rapid assessment of each indicator will be employed through the individual river teams. The RRAT Exec performed the exercise on January 23, 2018 and the FWIC is scheduled to do so on February 20, 2018 and the FWWG on February 23, 2018. Given scoring of indicator rankings in various areas of the UMRS, the river teams will determine whether the area (per each indicator) is far from (red), near to (yellow), or at the desired condition (green). Ultimately, the goal will be to identify future needs and desired next steps.

Schmuecker said a "HNA II from Information to Management" report will be developed in March and April through the following steps:

- Summarize the river teams' rankings at pool and "cluster" scales
- Develop new graphics, including spider diagrams
- Provide narrative summaries of habitat needs to river teams for review
- Conduct a system assessment by comparing cluster-level evaluations

An update regarding the system assessment will be provided to the UMRR Coordinating Committee at its May 16, 2018 meeting. The HNA II Steering Committee and A-Team will be asked to review the draft HNA II report describing "information to management" in the early half of summer. A final draft report will be supplied to the UMRR Coordinating Committee for consideration of approval at its August 14, 2018 quarterly meeting. Pending the Committee's approval, the report would be finalized and published in early fall.

Hubbell thanked Schmuecker and De Jager for their efforts to advance this HNA II, including during the time that Kat McCain is on leave.

Water Level Management

Tim Yager explained that St. Paul District's River Resources Forum has a long-standing work group focused specifically on water level management – i.e., the Water Level Management Task Force (WLMTF). On behalf of the WLMTF, Yager pointed to the December 28, 2017 letter it sent to the UMRR Coordinating Committee provided on pages D-1 to D-2 of the agenda packet. The letter seeks the UMRR Coordinating Committee's support regarding funding for all or portions of a pool-wide water level reduction and to help clarify related policy questions.

Hubbell stated that UMRR's 2000 implementation guidance clarifies that the program can construct small- and large-scale projects, including pool-scale water level management. In response to a question

from Kara Mitvalsky, Roger Perk stated that a letter of intent to sponsor such a project would be needed from the respective states bordering the pool in which the drawdown would occur.

In response to a question from Tim Yager, Marv Hubbell said partners can propose a pool-scale drawdown project during the next habitat project selection process. Ultimately, partners would need to consider cost and priorities for other habitat projects. If a water level management project is deemed as a top priority, the District would submit a project fact sheet to MVD for approval and, subsequently, a feasibility study would be developed that would test certain policy questions. Hubbell articulated the merits of pool-scale water level management given the large footprint of potential improvements to habitat and ecological processes. There are several policy issues that would need to be addressed. For example, Corps Headquarters budgets for the construction of HREPs over a relatively short period of time. Corps policy encourages the turnover of completed projects to the sponsor as quickly as possible. However, pool level management would likely require construction and funding over al much longer timeframe. Sabrina Chandler asked if a one-time event could be funded with follow-on opportunities as funds are available.

In response to a question from Megan Moore, Gretchen Benjamin explained that the cost of a pool-scale drawdown over 50 years would be roughly equivalent to a typical habitat project. A high estimate for one dredging event is $500,000. Thus, 10 dredging events over 50 years would amount to $5 million. Tim Yager said the Pool 8 Water Level Management White Paper offers detailed information regarding costs that can be used as a reference. Yager also noted that the 9-foot navigation channel will continue to be dredged. He encouraged partners to think opportunistically to consider water level management following major dredging events within a pool. In response to a question from Hubbell, Yager said the White Paper also includes available areas for dredged material placement.

Referring to the WLMTF's letter, Moore suggested that the Coordinating Committee respond by explaining that UMRR could potentially implement such a pool-scale drawdown project should it be prioritized given other restoration opportunities. Regarding the second question of policy constraints, Moore said policies could be evaluated and tested through the context of a specific project. Moore noted that there is concern among partners in the St. Paul District that a 50-year funding commitment to water level management may undermine other restoration priorities in the future. A one-year drawdown may be better received by partners.

Hubbell reiterated that a project sponsor will still be required. Headquarters may not support the notion of keeping a project open for 50 years. However, there may be an option for performing water level management through the adaptive management process. Hubbell offered that NESP had evaluated pools for employing pool-scale water level management, suggesting that it could be used as a reference. Benjamin added that NESP had ultimately identified 12 pools to examine further. Jody Creswell said partners will have the opportunity examine its priority for water level management with respect to other restoration opportunities throughout the next HREP selection process. Hubbell reminded the Coordinating Committee that the selecting a new suite of projects will be initiated shortly.

Chandler observed that the WLMTF has great ideas and is looking to the UMRR Coordinating Committee for an indication of whether UMRR could be a venue for exploring opportunities further. Chandler said the Service is very interested in sponsoring a pool-scale water level management project whether through UMRR or another authority. Hubbell mentioned that nonprofit organizations may also serve as cost-share sponsors.

In response to a question from Kirsten Mickelsen, Moore moved and Jim Fischer seconded a motion to reply to the WLMTF with a letter. It would explain the UMRR Coordinating Committee's understanding of current policy and desire to explore opportunities for UMRR to implement a pool-wide water level management project should program partners select it as a high priority among other

restoration opportunities. The motion was approved unanimously. Moore added that the letter should note that UMRR could be a venue for pool-scale water level management but may not be the best Corps authority to utilize.

HREP Meeting

Hubbell reported that a UMRR HREP strategic planning meeting was held on November 29-30, 2017 in Dubuque. Partners discussed a wide range of issues that are affecting UMRR implementation, particularly as annual appropriations for the program have increased from roughly $20 million to $33.17 million. Hubbell encouraged the partnership to continue having open and honest discussion about their concerns and perspectives. He said partners' commitment to working through issues and conflict has been imperative of UMRR's success.

Mickelsen provided an overview of the meeting and discussed the primary conclusions. About 30 individuals attended the meeting, representing all the implementing agencies as well as The Nature Conservancy and Audubon. Mickelsen explained that partners the first day discussing the various ways they are challenged in executing habitat projects including project selection, planning, evaluation, and operations and maintenance. The second day was focused on finding solutions. Mickelsen listed the following agreed-upon next steps for resolving the challenges as well as the leads responsible for advancing the work:

- Vision statement for habitat restoration
  [Led by Steve Clark, Steve Winter, Kirk Hansen, and Karen Hagerty]
  - Determine how to utilize the HNA II and ecological resilience findings to create goals, objectives, and indicators for success for individual projects
  - Summarize pool plans and use them to inform project goals
  - Enhance communications within the partnership about goals and objective
- Project selection process
  [Led by Marshall Plumley]
  - Define a timeline and process for selecting the next generation of projects
  - Host a workshop regarding process, policies, and priorities
  - Utilize pool plans, agency plans, and other relevant information to identify and prioritize potential habitat projects
  - In an interim period (2018-2019), select habitat projects through the river teams
- Project formulation
  [Led by Camie Knollenberg, Monique Savage, and Angela Dean]
  - Facilitate a partnership review of UMRR's SMART process, including by hosting a webinar and identifying and responding to partners' questions
  - More regularly facilitate partnership dialogue (above PDTs)
  - Employ team building exercises
  - Create a conflict resolution process
  - Improve communications through note-taking and review of the notes

- Non-federal sponsorship
  [Led by Marshall Plumley, UMRBA, TNC, and Audubon]
  - — Outreach to nonprofit organizations regarding their ability to sponsor UMRR habitat projects
  - — Resolve policy impediments to implementing habitat projects
  - — Enhance communications

Other Business

Mark Gaikowski announced that Yao Yin resigned in January 2018. UMESC is currently seeking to fill that position.

Gaikowski reported that the Institute for Journalism and Natural Resources is planning a June 2018 paid fellowship opportunity for 15 to 20 journalists. USGS, UMRBA, and other river partners are working with the Institute's staff to assist in their planning effort. Gaikowski said this is a great opportunity to showcase UMRR's science and restoration work throughout the entire river system.

Marv Hubbell recognized Brad Walker for his many contributions to the Upper Mississippi, including UMRR. Walker plans to retire at the end of February 2018.

Hubbell said it has been an honor to work through UMRR's partners and each person individually. The UMRR Coordinating Committee applauded Hubbell for his tremendous contributions to the program. Brian Chewning underscored UMRR's execution rate of 92 percent and higher over his tenure. That is a remarkable achievement and has resulted in UMRR's increased appropriations.

Future Meetings

The upcoming quarterly meetings are as follows:

- **May 2018 — St. Louis, Missouri**
  - UMRBA quarterly meeting — May 15
  - **UMRR Coordinating Committee quarterly meeting — May 16**
- **August 2018 — La Crosse, Wisconsin**
  - UMRBA quarterly meeting — August 14
  - **UMRR Coordinating Committee quarterly meeting — August 15**
- **October 2018 — Bloomington, Minnesota**
  - UMRBA quarterly meeting — October 30
  - **UMRR Coordinating Committee quarterly meeting — October 31**

With no further business, the meeting adjourned at 12:11 p.m.

UMRR Coordinating Committee Attendance List
February 7, 2018

UMRR Coordinating Committee Members

Brian Chewning	U.S. Army Corps of Engineers, MVD
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges [On the phone]
Mark Gaikowski	U.S. Geological Survey, UMESC
Dan Stephenson	Illinois Department of Natural Resources
Randy Shultz	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
Shannon Allen	Natural Resources Conservation Service
Ken Westlake	U.S. Environmental Protection Agency, Region 5 [On the phone]

Others In Attendance

Terry Birkenstock	U.S. Army Corps of Engineers, MVP
Shahin Khazrajafari	U.S. Army Corps of Engineers, MVP
Tom Novak	U.S. Army Corps of Engineers, MVP
Andy Barnes	U.S. Army Corps of Engineers, MVR
Rebecca Costello	U.S. Army Corps of Engineers, MVR
Jody Creswell	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR
Samantha Heilig	U.S. Army Corps of Engineers, MVR
Kat Herzog	U.S. Army Corps of Engineers, MVR
Marvin Hubbell	U.S. Army Corps of Engineers, MVR
Nicole Manasco	U.S. Army Corps of Engineers, MVR
Julie Millhollin	U.S. Army Corps of Engineers, MVR
Kara Mitvalsky	U.S. Army Corps of Engineers, MVR
Darron Niles	U.S. Army Corps of Engineers, MVR [On the phone]
Roger Perk	U.S. Army Corps of Engineers, MVR
Rachel Perrine	U.S. Army Corps of Engineers, MVR
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Heather Schroeder	U.S. Army Corps of Engineers, MVR
Jasen Brown	U.S. Army Corps of Engineers, MVS
Brian Johnson	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Kip Runyon	U.S. Army Corps of Engineers, MVS
Monique Savage	U.S. Army Corps of Engineers, MVS
Tim Yager	U.S. Fish and Wildlife Service, UMR Refuges
Sara Schmuecker	U.S. Fish and Wildlife Service, RIFO
Tyler Porter	U.S. Fish and Wildlife Service, RIFO
Scott Morlock	U.S. Geological Survey, Midwest Region
Jeff Houser	U.S. Geological Survey, UMESC
Jennie Sauer	U.S. Geological Survey, UMESC
Nate De Jager	U.S. Geological Survey, UMESC [On the phone]
Mike McClelland	Illinois Department of Natural Resources
Mike Griffin	Iowa Department of Natural Resources
Adam Fowler	Iowa Department of Natural Resources
Adam Thiese	Iowa Department of Natural Resources
Chris Klenklen	Missouri Department of Agriculture

Bryan Hopkins	Missouri Department of Natural Resources
Jordan Weeks	Wisconsin Department of Natural Resources
Stephen Galarneau	Wisconsin Department of Natural Resources
Tom Boland	Amec Foster Wheeler
Olivia Dorothy	American Rivers
Alicia Lloyd	Missouri Coalition for the Environment
Brad Walker	Missouri Coalition for the Environment
Nancy Guyton	Neighbors of the Mississippi River
Gretchen Benjamin	The Nature Conservancy
Mark Ellis	Upper Mississippi River Basin Association
Kirsten Mickelsen	Upper Mississippi River Basin Association

ATTACHMENT B

New Proposals for UMRR HREP Fact Sheet Submisions (5/16/2018)

(B-1)

The full proposals are linked here:
http://www.mvr.usace.army.mil/Portals/48/docs/Environmental/EMP/EMP_CC/2018_05_16_UMRRCC_Read%20Aheads_newHREPs.pdf?ver=2018-04-30-143617-073

[Note: Given the size of the document, we will not be providing these as handouts at the meeting.]

Upper Mississippi River Restoration Program

Coordinating Committee

May 16, 2018

Habitat Restoration: River Team Project Recommendations

Earlier this year, at the request of the UMRR Program Manager, the River Teams were asked to identify and evaluate new HREP proposals that could start the Feasibility phase over the next few years beginning as early as FY 18. Over the life of the Program there have been several efforts to identify new HREP projects that have enabled the Program to maintain a ready list of projects to start feasibility at any given time. In FY 19, that process will be undertaken again. However, due to several HREP's projects, particularly in MVR, being halted for various reasons, the need for the identification of a handful of high quality projects that could move quickly into feasibility is needed. The River Teams have identified the following projects (see attached proposals):

MVP

- Reno Bottoms

MVR*

- Pool 13 Lower Islands
- Green Island
- Pool 12 Forestry
- Oquawka Islands Lower Pool 18
- Snyder Slough

MVS

- Yorkinut Slough

* At the time read ahead material were due, the River Resources Coordinating Team (RRCT) had not met yet to make a formal recommendation to the UMRR CC. Therefore, the proposals being considered by the RRCT at the May 2nd meeting are included for your information. The RRCT has been asked to recommend 1-3 projects to move forward for endorsement from the list above.

ATTACHMENT C

Long Term Resource Monitoring and Science

- **FY 2014-FY 2015 UMRR Science Activities in Support of Restoration and Management (4/30/2018)** *(C-1)*
- **FY 2017 UMRR Science Activities in Support of Restoration and Management (4/30/2018)** *(C-2)*
- **Base Monitoring Scope of Work thru 3rd Quarter of FY 2018 (4/26/2018)** *(C-3 to C-5)*
- **FY 2018 UMRR Science Activities in Support of Restoration and Management (4/26/2018)** *(C-6 to C-11)*
- **Introductory Excerpt of the FY 2018 UMRR Science Proposals** *(C-12 to C-14)*
  The full proposals are linked here.
  http://www.mvr.usace.army.mil/Portals/48/docs/Environmental/EMP/EMP_CC/2018_05_16_UMRRCC_ReadAheads_newScience.pdf?ver=2018-05-02-085714-680

  [Note: Given the size of the document, we will not be providing these as handouts at the meeting.]

UMRR Science in Support of Restoration and Management
FY2014 and FY2015 Scopes of Work
April 2018 Status

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Development of Mussel Vital Rates						
2014MVR1	Brief summary report	30-Sep-15		30-Sep-15	completed, in UMESC review	Newton, Zigler, Davis
2014MVR2	Progress update	30-Sep-16		30-Sep-16		Newton, Zigler, Davis
2014MVR3	Completion report on a vital rates of native mussels at West Newton Chute, UMRS	30-Sep-17	30-Oct-17	13-Apr-18	completed	Newton, Zigler, Davis
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	Working With UWL staff. Analysis partally complete.	Giblin, Campbell, Houser, Manier
2014NC3	Full manuscript completed	13-Mar-18	13-Mar-19		led by former LTRM FS staff	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	30-Jun-19		delayed due to field station staffing shortages and will also include data from 2015D15	Burdis
Predictive Aquative 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	31-Dec-17		PI has resigned. Working to complete this product as soon as feasible	Yin, Rogala, Ingvalson

UMRR Science in Support of Restoration and Management
FY2017 Work Plan Scope of Work
April 2018 Status

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Extrinsic and intrinsic control of water clarity in Pool 8 of the UMR						
2018BX1	Draft manuscript: Extrinsic vs Intrinsic Control of Water Clarity in the UMR	30-Mar-18		19-Jan-18		Drake, Weeks. Kalas, Fischer, Houser and Jankowski
Developing methods of estimating SAV biomass in the UMR to expand the capabilities within the UMRR program and improve the utility of the long-term vegetation data						
2018BIO1	Completion of USFWS collaborative field work, data entry, laboratory work and LTRM additional field data collection	30-Aug-17		30-Aug-17		Drake, Holman, Lund
2018BIO2	Draft LTRM Completion Report: Estimating biomass of submersed aquatic vegetation in the UMR	30-Mar-18		17-Apr-18		Drake, Holman, Lund
2018BIO3	Final LTRM Completion report: Estimating biomass of submersed aquatic vegetation in the UMR	30-Oct-18				Drake, Holman, Lund
Plankton community dynamics in Lake Pepin - the role of curstacean zooplankton						
2018PLK1	Three year (2012-2014) data set of Lake Pepin crustacean zooplankton data. Crustacean zooplankton samples collected at four fixed sites in Lake Pepin will be processed to obtain species composition and biomass estimates	30-Mar-18	31-May-18		delay in getting staff on board	Burdis
2018PLK2	Analysis: Data would be paired with existing rotifer (2015D15) and phytoplankton (2015LPP2)	31-Dec-18				Burdis
Smallmouth buffalo population demographics of the UMRS						
2018MMBF1	Collection of smallmouth buffalo for otoliths	31-Oct-17		31-Oct-17		Field Stations Fish Component Staff
2018MMBF2	Transfer of fish to IRBS	30-Nov-17		29-Nov-17		Solomon, Maxson
2018MMBF3	Processing of otoliths	30-May-18				Solomon, Maxson
2018MMBF4	Analysis: Mixed modeling approach to separate growth responses into	30-Jun-18				Ickes, Solomon, Maxson
2018MMBF5	Draft analysis methods and results write-up	30-Sep-18				Ickes
2018MMBF6	Draft LTRM Completion Report	30-May-19				Solomon, Maxson, et al.
4-Band aerial camera acquisistion, integration, and testing for the 2020 LCU mission						
2018CAM1	Collection of test 4-band imagery, evaluation of image quality and image processing using HT Condor distributed processing software.	Summer 2018				Robinson
2018CAM2	Collection and evaluation of sample floodplain at various resolutions above and below Lock and Dam 13 (where the Upper Mississippi River transitions from a floodplain composed complex aquatic vegetation above to a more channelized system that is largely agrarian in nature below).	Summer 2019				Robinson
2018CAM3	Draft LTRM Completion report detailing integration and testing procedures and recommendations of optimal image resolution for the 2020 systemic imagery collection.	Fall 2019				Robinson
2018CAM4	Final LTRM Completion report with sample images detailing integration and testing procedures and recommendations of optimal image resolution and final flight plan for the 2020 systemic imagery collection.	Winter 2019				Robinson
UMRR LTRM WQ lab modernization						
2018LM1	Contract design work	30-Sep-18				Goede, Yuan, Sauer
2018LM2	Purchase of walk-in refrigerator/freezer	30-Sep-18				Yuan
2018LM3	Construction complete	30-Sep-20				Goede, Yuan, Sauer

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Aquatic Vegetation Component						
2018A1	Complete data entry and QA/QC of 2017 data; 1250 observations.					
	a. Data entry completed and submission of data to USGS	30-Nov-17		30-Nov-17		Lund, Drake, Bales
	b. Data loaded on level 2 browsers	15-Dec-17		15-Dec-17		Schlifer
	c. QA/QC scripts run and data corrections sent to Field Stations	28-Dec-17		28-Dec-17		Sauer, Schlifer
	d. Field Station QA/QC with corrections to USGS	15-Jan-18		15-Jan-18		Lund, Drake, Bales
	e. Corrections made and data moved to public Web Browser	30-Jan-18		30-Jan-18		Yin, Sauer, Schlifer, Caucutt
2018A2	Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2017 data	31-Jul-18				Yin, Rogala, Schlifer
2018A3	Wisconsin DNR annual summary report 2017 that combines current year observations from LTRM with previous years' data, for the fish, aquatic vegetation, and water quality components.	30-Sep-18				Drake, Bartels, Hoff, Kalas
2018A4	Complete aquatic vegetation sampling for Pools 4, 8, and 13 (Table 1)	31-Aug-18				Yin, Lund, Drake, Bales
2018A5	Pool 4: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-17		12-Sep-17		Lund
2018A6	Pool 8: Graphical summary and maps of aquatic vegetation current status and long-term trends.	30-Dec-17		11-Sep-17		Drake, Weeks
Intended for distribution						
LTRM Technical Report: Ecological Assessment of High Quality UMRS Floodplain Forests (2007APE12; Chick, Guyon, Battaglia) (in final edits with author)						
LTRM Technical Report; Experimental and Comparative Approaches to Determine Factors Supporting or Limiting Submersed Aquatic Vegetation in the Illinois River and its Backwaters (2008APE5, Sass) (Completed)						
LTRM completion report: FY05-07 data--Analysis and support of aquatic vegetation sampling data in Pools 6, 9, 18, and 19 (2008APE4a; Yin) (in USGS review) (With author for revision)						
Manuscript: Have the recent increases in aquatic vegetation in Pools 5 and 8 been the result of water level management drawdowns, HREPs, or natural fluctuations? (2009APE1a; Yin) (in USGS review) (With author for revision)						
Manuscript: A statistical model of species occupancy using the LTRM aquatic vegetation data (2013A7; Yin) (in USGS review) (With author for revision)						
Fisheries Component						
2018B1	Complete data entry, QA/QC of 2017 fish data; ~1,590 observations					
	a. Data entry completed and submission of data to USGS	31-Jan-18		31-Jan-18		DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Maxson
	b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations	15-Feb-18		15-Feb-18		Ickes, Schlifer
	c. Field Station QA/QC with corrections to USGS	15-Mar-18		15-Mar-18		DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Maxson
	d. Corrections made and data moved to public Web Browser	30-Mar-18		30-Mar-18		Ickes, Sauer, and Schlifer
2018B2	Update Graphical Browser with 2017 data on Public Web Server.	31-May-18		30-Mar-18		Ickes, Sauer, and Schlifer
2018B3	Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool (Table 1)	31-Oct-18				Ickes, Sauer, DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Maxson, Schlifer
2018B4	Summary Letter: Floodplain fisheries sampling	31-Oct-18				West, Sobotka
2018B5	IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2017	30-Jun-18		13-Mar-18		Bowler

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2018B6	Sample collection, database increment, Summary letter on Asian carp age and growth: collection of cleithral bones	31-Jan-18		19-Apr-18		Solomon, Maxson, Casper
2018B8(D)	Database increment: Stratified random day electrofishing samples collected in Pools 9–11	30-Sep-18				Bowler
2018B9(D)	Database increment: Stratified random day electrofishing samples collected in Pools 16–18	30-Sep-18				Bowler
2018B10	Summary Letter: Open River Chevron Dike monitoring	31-Oct-18				West, Sobotka
2018B11	Summary Letter: Evaluating the Fish Community in a rare Backwater Habitat in the Middle Mississippi River 2017	30-Sep-18				West
2017B4	Summary Letter: Floodplain fisheries sampling	31-Oct-17		31-Oct-17		West, Sobotka
2017B10	Summary Letter: Open River Chevron Dike monitoring	31-Oct-17		31-Oct-17		West
Intended for distribution						
Completion report: LTRM Fisheries Component collection of six darter species from 1989–2004. (2006B13; Ridings) (in USGS review)						
LTRM technical report; Setting quantitative fish management targets for LTRM monitoring (2008APE2; Sass) (Completed)						
LTRM Completion report, compilation of 3 years of sampling: Fisheries (2009R1Fish; Chick et al.) (in USGS review)						
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)						
Manuscript: Determining environmental history of three sturgeon species in the Upper, Middle, and Lower Mississippi Rivers. (2013B22; Phelps) (Phelps, Q. E., Hupfeld, R. N. and Whitledge, G. W. 2017. Lake sturgeon *Acipenser fulvescens* and shovelnose sturgeon *Scaphirhynchus platorynchus* environmental life history revealed using pectoral fin-ray microchemistry: implications for interjurisdictional conservation through fishery closure zones. J Fish Biol, 90: 626–639. doi:10.1111/jfb.13242)						
Manuscript: Age-0 sturgeon habitat associations in the free flowing portion of the Upper Mississippi River (2012B5; Tripp, Phelps, Herzog) (Sechler, D. R., Q. E. Phelps, S. J. Tripp, J. E. Garvey, D. P. Herzog, D. E. Ostendorf, J. W. Ridings, J. W. Crites & R. A. Hrabik. 2012. Habitat for Age-0 Shovelnose Sturgeon and Pallid Sturgeon in a Large River: Interactions among Abiotic Factors, Food, and Energy Intake. North American Journal of Fisheries Management Vol. 32 , Iss. 1, Pages 24-31, 2012 http://dx.doi.org/10.1080/02755947.2012.655848)						
Water Quality Component						
2018D1	Complete calendar year 2017 fixed-site and SRS water quality sampling	31-Dec-17		31-Dec-17		Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Sobotka
2018D2	Complete laboratory sample analysis of 2017 fixed site and SRS data; Laboratory data loaded to Oracle data base.	15-Mar-18		15-Mar-18		Yuan, Schlifer
2018D3	1st Quarter of laboratory sample analysis (~12,600)	30-Dec-17		30-Dec-17		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Sobotka
2018D4	2nd Quarter of laboratory sample analysis (~12,600)	30-Mar-18		30-Mar-18		Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Sobotka
2018D5	3rd Quarter of laboratory sample analysis (~12,600)	29-Jun-18				Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Sobotka
2018D6	4th Quarter of laboratory sample analysis (~12,600)	28-Sep-18				Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Sobotka

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2018D7	Complete QA/QC of calendar year 2017 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-18		28-Feb-18		Schlifer, Rogala, Jankowski
	b. Field Station QA/QC; USGS QA/QC.	15-Apr-18		15-Mar-18		Jankowski, Rogala, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Sobotka
	c. Corrections made and data moved to public Web Browser	30-Apr-18		30-Mar-18		Rogala, Schlifer, Jankowski
2018D8	Complete FY2018 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool	30-Sep-18				Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Sobotka
2018D9	WEB-based annual Water Quality Component Update w/ 2017 data on Server.	30-May-18				Rogala
2017D10	Final LTRM Completion report: Evaluation of water quality data from automated sampling platforms	30-Sep-17	30-Sep-18			Soeken-Gittinger, Lubinski, Chick, Houser
2018D11	Operational Support to the UMRR LTRM Element. Serve as in-house Field Station for USGS for consultation and support on various LTRM-wide topics	30-Sep-18				Kalas, Hoff, Bartel, Drake
2015D12	Final report/manuscript: Developing continuous water quality monitoring methods in the UMR	1-Sep-17	1-Sep-18			Chick, Houser
Intended for distribution						
Completion report: Examining nitrogen and phosphorus ratios N:P in the unimpounded portion of the Upper Mississippi River (2006D9; Hrabik & Crites) (in USGS review)						
Completion report, compilation of 3 years of sampling: Water Quality (2009R1WQ; Giblin, Burdis) (in USGS review)						
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) (in USGS review)						
Land Cover/Land Use with GIS Support						
2018LC1	Maintenance ArcGIS server	30-Sep-18				Hlavacek, Fox, Rohweder
2018LC2	Aerial Photo scanning (Pools 11-12; 14-22; 24-25)	30-Sep-18				Hlavacek
2018LC4	Updates on progress for land cover products listed.	New progress reported in the quarterly activities. Percent complete updated 30 Sept 2018.				Robinson
Data Management						
2018M1	Update vegetation, fisheries, and water quality component field data entry and correction applications.	30-May-18				Schlifer
2018M2	Load 2017 component sampling data into Oracle tables and make data available on Level 2 browsers for field stations to QA/QC.	30-Jun-18				Schlifer
Quarterly Activities						
2018QR1	Submittal of quarterly activities	30-Jan-18		30-Jan-18		All LTRM staff
2018QR2	Submittal of quarterly activities	13-Apr-18		15-Apr-18		All LTRM staff
2018QR3	Submittal of quarterly activities	13-Jul-18				All LTRM staff
2018QR4	Submittal of quarterly activities	12-Oct-18				All LTRM staff
Equipment Inventory						
2018ER1	Property inventory and tracking	15-Nov-18				LTRM staff as needed

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Developing and Applying Indicators of Ecosystem Resilience to the UMRS						
2018R1	Updates provided at each quarterly UMRR CC meeting and A team meeting	Various				Bouska, Houser
2018R2	Submit General resilience manuscript for peer-reviewed publication. Bouska, K. L., J. N. Houser, N. R. De Jager, J. Rogala, and M. Van Appledorn. Applying concepts of general resilience to large river ecosystems: case studies from the Upper Mississippi and Illinois rivers.	30-Jan-18		30-Jan-18		Bouska, Houser
2018R3	Draft report summarizing trends in controlling variables and research framework for specified resilience	15-Sep-18				Bouska, Houser
Intended for Distribution						
Manuscript: Bouska, K.B., J.N. Houser, and N. De Jager. Developing a shared understanding of the Upper Mississippi River: the foundation of a resilience assessment. (Ecology and Society 23(2):6. DOI: 10.5751/ES-10014-230206)						
Modelling and mapping current and projected future habitats of the Upper Mississippi River System (HNA-II)						
2018HNA1	Draft HNA-II chapter documenting informational content for HNA-II	30-Dec-17		5-Dec-17	At USGS publications group for editing and desktop publishing	De Jager, Rogala, Bouska, Houser, Van Appledorn, Rohweder, Fox, Ruhser
2017AH8	Draft Appendix A in 2018 HNA1-Summarize methods used to develop Aquatic Areas	30-Dec-17		5-Dec-17		Jim Rogala, Janis Ruhser, Jason Rohweder, Jeff Houser
2017AH9	Complete Aquatic Areas Geodatabase	30-Dec-17		5-Dec-17		Jason Rohweder and Jim Rogala
2017FAH3	Complete Appendix C in 2018 HNA1-Summarize methods used to develop sedimentation model	30-Dec-17		5-Dec-17		Jim Rogala
2017FH4	Complete Appendix B in 2018 HNA1-Summarize methods used to develop flood inundation model	30-Dec-17		5-Dec-17		Molly Van Appledorn
2017FH5	Complete Floodplain Areas Geodatabase	30-Dec-17		5-Dec-17		Jason Rohweder, Tim Fox, and Molly Van Appledorn
2017FFH3	Complete Forest Succession Modelling work and Appendix D in 2018 HNA1-Summarize methods used to develop forest simulation model	30-Dec-17		5-Dec-17		Nathan De Jager
2017GEO1	Compile any remaining data used in HNA-II into geodatabase	30-Dec-17		5-Dec-17		Tim Fox and Jason Rohweder

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
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-18	1-Feb-19		Poor conditions in Pool 13	Rogala, Moore, Kalas, Bierman
2018ST2	Open-water nearshore surveys completed and a database (Continuation of 2017ST2)	31-Dec-18	2-Jan-19			Rogala, Moore, Kalas, Bierman
2018ST3	Over-ice surveys completed and a database (Continuation of 2017ST3)	30-Mar-18	30-Mar-19			Rogala, Moore, Kalas, Bierman
2018ST4	Data analysis and completion report on sedimentation rates along transects (Continuation of 2017ST4)	30-Sep-18	30-Mar-19		Analysis completed for transects resurveyed; report delayed until Pool 13 resurveys [30-Sept-19]	Rogala, Moore, Kalas, Bierman
Landscape Pattern Research and Application						
2018L1	Draft Manuscript: Modelling Forest succession in the UMRS.	30-Sep-18				De Jager
On-Going						
2016L3	Draft Manuscript: Review of Landscape Ecology on the UMR	30-Sep-18				De Jager
Intended for distribution						
Manuscript: Swanson, W., De Jager, N.R., Strauss, E.A., Thomsen, M. In Review. Effects of flood inundation and invasion by *Phalaris arundinacea* on nitrogen cycling in an Upper Mississippi River floodplain forest. (2016L2) (Ecohydrology. 2017;10:e1877. https://doi.org/10.1002/eco.1877)						
Manuscript: De Jager, N.R., Swanson, W., Hernandez, D.L., Reich, J., Erickson, R., Strauss, E.A. Effects of flood inundation, invasion by *Phalaris arundinacea* , and nitrogen deposition on extracellular enzyme activity in an Upper Mississippi River floodplain forest. (2015L5) Ecohydrology, Volume 10, Issue 7 October 2017						
Manuscript: Van Appledorn, M., De Jager, N.R., Johnson, K. Considerations for improving floodplain research and management by integrating inundation modeling, ecosystem studies, and ecosystem services (2016L5)						
Map Set: Reed Canarygrass abundance and distribution in the UMR (Pools 3-13) (2017L2) (Completed; LTRM Completion Report)						
Manuscript: De Jager, Rohweder, and Hoy. 2017. Mapping areas invaded by *Phalaris arundinacea* in Navigation Pools 2-13 of the UMRS. LTRM Completion Report (2016L4). (Completed)						
Eco-hydrologic Research						
2018EH01	Draft manuscript describing inundation process zones across the UMRS	30-Sep-18				Van Appledorn, De Jager, Rohweder
2018EH02	Inundation and Vegetation Data Analysis	30-Sep-18				Van Appledorn, De Jager
2018EH03	Draft inundation model curation plan	30-Sep-18				Van Appledorn, Fox, Rohweder, De Jager

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Evaluation of a System-Wide Floodplain Inundation Model for Ecological Applications						
2017FH11	Post-processing and analysis of logger data and water-edge mapping	29-Dec-17		29-Dec-17		Van Appledorn
2017FH12	A written summary of validation results will be submitted as a supplement to the Habitat Needs Assessment II that identifies potential sources of UMRS inundation model error, discusses the validity of the model's assumptions, and provides guidance on appropriate model use.	30-Sep-18				Van Appledorn
Aquatic Vegetation, Fisheries, and Water Quality Research						
Aquatic Vegetation						
2015A7	Data compilation and analysis: Aquatic macrophyte communities and their potential lag time in response to changes in physical and chemical variables	30-Dec-17	30-Jun-18		The data compilation is complete, analysis (report writing - 2015A8) underway	Lund
2015A8	Draft completion report or manuscript: Aquatic macrophyte communities and their potential lag time response to changes in physical and chemical variables in the LTRM vegetation pools	30-Jun-18				Lund
2016A7	Draft completion report: How many years did the effects of the 2001-2002 Pool 8 drawdown on arrowheads (*Sagittaria latifolia* and *S. rigida*) last?	30-Sep-18	30-Sep-18			Yin, Sauer
Fisheries						
2018B12	Draft fish framework for research and applied management technical support in the Fish Component of the UMRR LTRM	30-May-18		29-Nov-17		Ickes
2018B13	Coordination of draft fish framework with A-Team	1-Aug-18		22-Feb-18		Ickes
2018B14	Final draft fish research framework	30-Sep-18		18-Apr-18		Ickes
2018B15	Technical support for USACE	30-Sep-18				Ickes

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2015B17	Draft Manuscript: Fish Trajectory Analysis	28-Oct-17	30-May-18		Will be submitting 2015B17 and 2016B17 simultaneously to Journal	Ickes, Minchin
2016B17	Draft Manuscript: Developing and applying trajectory analysis methods for UMRR Status and Trends indicators – Year 2	28-Oct-17	30-May-18			Ickes, Minchin
2016B14	Draft completion report: Exploring Years with Low Total Catch of Fishes in Pool 26	30-Dec-17	30-Mar-18		Under review by Team Leader	Gittinger, Ratcliff, Lubinski, Chick
Water Quality						
2015D16	Draft manuscript: Trends in water quality and biota in segments of Pool 4, above and below Lake Pepin	29-Dec-17	30-Apr-18			Burdis
2018D12	Draft White Paper on UMRR LTRM's interactions with programs for other large rivers, nationally and internationally	30-Sep-18				Jankowski
2018D13	Using physical landscape metrics of hydrological connectivity to understand limnnological conditions in backwaters of the Upper Mississippi River	30-Sep-18				Jankowski, Rogala, Houser
Intended for Distribution						
Manuscript: An Assessment of Long Term Changes in Fish Communities within Large Rivers of the United States (Environmental Monitoring journal) Counihan, Ickes, Casper, Sauer 2016B13 (Can data from disparate long-term fish monitoring programs be used to increase our understanding of regional and continental trends in large river assemblages? PLoS ONE 13(1): e0191472. https://doi.org/10.1371/journal.pone.0191472)						
Manuscript: Aquatic Plant Response to Large-Scale Island Construction in the Upper Mississippi River. Drake and Gray; 2016A6a. (Submitted to journal)						
Statistical Evaluation						
On-Going						
2016E2	Draft manuscript: How well do trends in LTRM percent frequency of occurrence SAV statistics track trends in true occurrence?	30-Sep-16	30-Sep-18		Delayed due to computational issues	Gray
Intended for distribution						
Draft manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1)						

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Investigation of metabolism, nutrient processing, and fish community in floodplain water bodies of the Middle Mississippi River						
2017MMF2	Draft report completed - will detail differences between the floodplain habitats and the main channel and associations between fish community and water quality attributes with connectivity of the water body to floodwaters or the main channel	30-Dec-17	30-Mar-18	30-Mar-18		Sobotka
2017MMF3	Final Report	30-Jun-18				Sobotka
Advancing our understanding of habitat requirements of fish assemblages using multi-species models						
2017FA1	Draft LTRM Completion report on period-specific inferences on environmental gradients and species-environment associations by period	15-Feb-18	30-May-18		At co-author for review	Bouska, Gray
2017FA2	Final LTRM Completion Report	15-Sep-18				Bouska, Gray
Mapping the thermal landscape of the Upper Mississippi River: A Pilot Study						
2017TL1	Draft LTRM Completion report on feasibility and utility of surface water temperature map	30-Dec-17	30-Jun-18		Analysis delayed due to image processing software package needing upgrading	Jankowski, Robinson, Ruhser
2017TL2	Final LTRM Completion report and data distribution	30-Mar-18	30-Sep-18			Jankowski, Robinson, Ruhser
Estimating backwater sedimentation resulting from alluvial fan formation						
2017SED2	Draft LTRM Completion report summarizing findings and providing recommendations for expanding the project system-wide	31-Dec-17	30-Mar-18	24-Apr-18		Rogala, Hansen, Nelson
2017SED3	Final LTRM Completion Report	30-Jun-18				Rogala, Hansen, Nelson
Pool 12 Overwintering HREP Adaptive Management Fisheries Response Monitoring						
Fisheries Population Monitoring						
2018P13a	Collect annual increment of pool-wide electrofishing data	1-Nov-17		1-Nov-17		Bowler
2018P13b	Collect annual increment of fyke netting data from backwater lakes	15-Nov-17		15-Nov-17		Bowler
2018P13c	Perform otolith extraction from bluegills for aging	1-Dec-17		1-Dec-17		Bowler
2018P13d	Age determination of bluegills collected in Fall 2017	1-Feb-18		1-Feb-18		Bowler
2018P13e	In-house project databases updated	31-Mar-18		31-Mar-18		Bowler
2018P13f	Summary letter compiled and made available to program partners	30-Sep-18				Bowler

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Pre-project Biological Response Monitoring; Crappie Telemetry –Kehough Lake						
2017AM5	Summary letter Analysis of tracking data and quantification of 80% UDs for Kehough lake	30-Sep-18				Hansen, Bierman, Bowler, Theiling
Spatial Patterns of native mussels in the UMRS						
2016MRF2	Final completions report: Spatial patterns of native mussels in the UMRS	15-Nov-17		6-Oct-17	Out to Partnership 3/12/2018	Ries, Newton, De Jager, Zigler
Pool 4 - Peterson Lake HREP Water Quality Monitoring – Pre and Post-Adaptive Management Evaluation						
2017PL3	Collection of post-construction winter water quality data	February 2018 – 2019(?) Dependent on construction date				Burdis, Moore, DeLain, Lund
2017PL4	Collection of post-construction summer water quality data	August 2018 – 2019(?) Dependent on construction date				Burdis, Moore, DeLain, Lund
2017PL5	Summary letter: Tabular and graphical summary of water quality data	December 2018 - 2019 (?) Dependent on construction date				Burdis, Moore
USACE UMRR LTRM Technical Support						
2018COE1	Quarterly update submitted to the LTRM Management Team	31-Dec-17				McCain, Cornish, Potter
2018COE2	Quarterly update submitted to the LTRM	30-Mar-18				McCain, Cornish, Potter
2018COE3	Quarterly update submitted to the LTRM Management Team	30-Jun-18				McCain, Cornish, Potter
2018COE4	Quarterly update submitted to the LTRM Management Team	30-Sep-18				McCain, Cornish, Potter
UMRR Science Coordination Meeting						
2018N1	Science Planning Meeting	Winter 2018		16-Jan-18		Houser, Sauer, Hubbell, and Hagerty, all LTRM staff, UMRR Partners
A-Team and UMRR-CC Participation						

FY18 UMRR Science Proposals

The following are the UMRR LTRM management team recommendations regarding the use of FY2018 Science in Support of Management funds:

> Group I: Recommended for funding are seven full proposals, and selected components of two modular proposals.
>
> Group II: Recommended for reconsideration in FY2019 pending available funding, revisions to address questions and concerns raised during review, and an assessment of other science needs in FY 2019. These proposals address important topics, but were not judged to be of higher priority than any of the funded proposals and may need revision to be re-considered for funding.

Groups are identified in the attached Budget summary table. All of the proposals considered for funding are provided in the following section.

Group ID	Proposal Title	PIs	FY18	FY19	FY20	FY21	Total
	Understanding changes in geomorphology						
I	*Conceptual Model and Hierarchical Classification of Hydrogeomorphic Settings in the UMRS*	Fitzpatrick	**$32,288**	**$75,747**	**$58,588**		**$166,623**
I	*Develop a better understanding of geomorphic changes through repeated measurement of bed elevation and overlay of land cover data*	Rogala	**$142,271**	**$98,300**	**$31,282**		**$271,853**
I	*Water Exchange Change in UMRS Channels and Backwaters, 1980 to Present*	Hendrickson	**$68,800**				**$68,800**
	Vegetation, Wildlife and Water Quality (Working Group 2)						
I	*Understanding constraints on submersed vegetation distribution in the UMRS: the role of water level fluctuations and clarity*	Kalas	**$6,645**	**$68,703**	**$21,280**		**$96,628**
I	*Effectiveness of Long Term Resource Monitoring vegetation data to quantify waterfowl habitat quality*	Winter, Straub and Schultz	**$99,879**	**$93,354**			**$193,233**
I	**Part A.** *Intrinsic and extrinsic regulation of water clarity over a 950-km longitudinal gradient of the UMRS*	Drake		**$12,103**	**$12,103**		**$24,206**
II	**Part B.** *Does nutrient supply limit algal growth and suspended particle quality, and ultimately drive water clarity in the UMRS?*	Drake and Strauss		**$77,443**	**$80,032**		**$157,475**
I	**Systemic analysis of hydrogeomorphic influences on native freshwater mussels**	Newton and Ries		**$178,411**	**$80,073**	**$99,786**	**$358,270**
	Understanding relationships among floodplain hydrogeomorphic patterns, vegetation and soil processes, and effects on wildlife habitat and nutrient export in the context of alternative management and environmental scenarios						
I	*Dendrochronology*	Vandermyde	**$90,971**	**$36,308**			**$127,279**
I	*Forest canopy gap dynamics*	Meier	**$122,612**	**$137,596**	**$47,350**		**$307,558**
II	*Reforesting UMRS forest canopy*	Guyon, Cosgriff		**$29,934**	**$28,990**		**$58,924**
II	**Woody Debris in the Upper Mississippi River System: its quantity, distribution, and ecological role**	Jankowski, Van Appledorn, and Sobotka					
	Option 1: Spatial distribution of woody debris linked to fisheries resources AND Experimentally placement of woody debris	Full proposal	**$11,961**	**$37,004**	**$264,326**	**$161,228**	**$474,519**
	Option 2: Spatial distribution of woody debris linked to fisheries resources	Partial work	**$4,086**	**$7,036**	**$214,413**	**$161,228**	**$386,763**
	Investigating vital rate drivers of UMRS fishes to support management and restoration	Bartels, Bouska, Phelps					
I	*Vital Rates*		**$61,660**	**$151,821**	**$47,446**	**$41,524**	**$302,451**
I	*Microchemistry*			**$56,588**	**$25,726**		**$82,314**
II	*Genetics*			**$148,962**	**$40,040**		**$189,002**
		GRAND TOTAL	**$637,087**	**$1,202,274**	**$737,236**	**$302,538**	**$2,879,135**
		Only includes option #1 of Woody Debris					

2018 UMRR Science Proposals

ATTACHMENT D

Additional Items

- **Future Meeting Schedule** *(D-1)*
- **Frequently Used Acronyms (12/21/2017)** *(D-2 to D-7)*
- **UMRR Authorization, As Amended (1/27/15)** *(D-8 to D-11)*
- **UMRR (EMP) Operating Approach (5/06)** *(D-12)*

QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE

AUGUST 2018	
La Crosse, Wisconsin	
August 14	UMRBA Quarterly Meeting
August 15	UMRR Coordinating Committee Quarterly Meeting

OCTOBER 2018	
Bloomington, Minnesota	
October 30	UMRBA Quarterly Meeting
October 31	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
HQUSACE	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

OHWM	Ordinary High Water Mark
OMB	Office of Management and Budget
OMRR&R	Operation, Maintenance, Repair, Rehabilitation, and Replacement
OPA	Oil Pollution Act of 1990
ORSANCO	Ohio River Valley Water Sanitation Commission
OSC	On-Scene Coordinator
OSE	Other Social Effects
OSIT	On Site Inspection Team
P3	Public-Private Partnerships
PA	Programmatic Agreement
PAS	Planning Assistance to States
P&G	Principles and Guidelines
P&R	Principles and Requirements
P&S	Plans and Specifications
P&S	Principles and Standards
PCA	Pollution Control Agency
PCA	Project Cooperation Agreement
PCX	Planning Center of Expertise
PDT	Project Delivery Team
PED	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.