

**Upper Mississippi River Restoration
Environmental Management Program
Coordinating Committee
(UMRR-EMP CC)**

Quarterly Meeting

May 14, 2014

**Agenda
with
Background
and
Supporting Materials**

**UPPER MISSISSIPPI RIVER RESTORATION
ENVIRONMENTAL MANAGEMENT PROGRAM
COORDINATING COMMITTEE**

May 13-14, 2014

AGENDA

Tuesday, May 13 Partner Pre-Meetings

- 4:15 – 5:45 p.m.** Corps of Engineers
4:15 – 5:45 p.m. Department of the Interior
4:15 – 5:45 p.m. States

Wednesday, May 14 UMRR-EMP Coordinating Committee

Time	Attachment	Topic	Presenter
8:00 a.m.		Welcome and Introductions	<i>Tim Yager, USFWS</i>
8:05	A1-13	Approval of Minutes of February 26, 2014 Meeting	
8:10	B1-5	UMRR-EMP Regional Management <ul style="list-style-type: none">▪ FY 14 Fiscal Update▪ FY 15 Appropriations Status▪ Agency Leadership Event Update▪ Public Involvement and Outreach<ul style="list-style-type: none">– March <i>Our Mississippi</i> devoted to UMRR-EMP	<i>Marv Hubbell, USACE</i>
8:40	C1-25	UMRR-EMP Strategic Planning <ul style="list-style-type: none">▪ Overview of Planning Process▪ Conceptual Overview of the Strategic Plan▪ Partner Review Process and Input Received▪ Recommendations for Program Name	<i>Marv Hubbell, USACE and Strategic Planning Team Members</i>
9:40		Long Term Resource Monitoring Program Element	
	D1-7	<ul style="list-style-type: none">▪ Product Highlights	<i>Kevin Richards, USGS and Barry Johnson, USGS</i>
	D8-10	<ul style="list-style-type: none">▪ USACE's LTRMP Update▪ A-Team Report▪ LTRMP Element Highlight: Asian Carp in the UMR	<i>Karen Hagerty, USACE Rob Maher, Illinois DNR Quinton Phelps, Missouri DoC</i>

(Continued)

Wednesday, May 14, 2014
 UMRR-EMP Coordinating Committee
 (Continued)

Time	Attachment	Topic	Presenter
10:30		Break	
10:45 a.m.	E1	Aquatic Invasive Species	<i>Karen Hagerty, USACE and Marv Hubbell, USACE</i>
11:15		Habitat Rehabilitation and Enhancement Projects Element	
		<ul style="list-style-type: none"> ▪ District Reports ▪ Planning New Project Starts for 2017 <ul style="list-style-type: none"> – Schedule and process ▪ HREP Highlight: TBD 	<i>District HREP Managers Marv Hubbell, USACE</i> <i>TBD</i>
12:20	F1	Other Business	
		<ul style="list-style-type: none"> ▪ Future Meeting Schedule 	
12:30 p.m.		Adjourn	

(See Attachment F for frequently used acronyms,
 UMRR-EMP authorization (as amended), and UMRR-EMP operating approach.)

ATTACHMENT A

Minutes of the February 26, 2014 UMRR-EMP CC Meeting *(A-1 to A-13)*

DRAFT
Minutes of the
Upper Mississippi River Restoration
Environmental Management Program
Coordinating Committee
(UMRR-EMP CC)

February 26, 2014
Quarterly Meeting

Arsenal Island Golf Club
Rock Island, Illinois

Mark Moore of the U.S. Army Corps of Engineers called the meeting to order at 8:02 a.m. on February 26, 2014. Other UMRR-EMP CC representatives present were Tim Yager (USFWS), Mike Jawson (USGS), Dan Stephenson (IL DNR), Walt Popp (MN DNR) on behalf of Kevin Stauffer, Janet Sternburg (MO DoC), Jim Fischer (WI DNR), Ken Westlake (USEPA), and Jon Hubbert (NRCS). A complete list of attendees follows these minutes.

Minutes of the November 20, 2013 Meeting

Dan Stephenson moved and Jim Fischer seconded a motion to approve the minutes of the November 20, 2013 meeting as prepared. The motion carried unanimously.

Program Management

FY 2014 Fiscal Update

Marv Hubbell reported that, on January 17, 2014, Congress passed the FY 2014 Omnibus Act that appropriated \$31.968 million for UMRR-EMP. Prior to the Act's passage, UMRR had been planning at \$30.368 million under a continuing resolution authority. Allocations within the program have been adjusted and are as follows:

- Regional Management — \$1,000,000
- LTRMP element — \$5,225,000
- HREPs element — \$25,743,000
 - Regional science support — \$1,065,700
 - MVP — \$6,980,400
 - MVR — \$10,466,500
 - MVS — \$7,230,400

[Note: At the end of FY 2013, funds were transferred among UMR Districts to get critical work accomplished and to maximize the amount of funds obligated. The FY 2014 allocations to all three Districts reflect rebalancing of those internal transfers.]

Hubbell explained that USACE anticipates awarding a contract to UMRBA late spring/early summer to write the 2016 Report to Congress (RTC). He also noted that about \$1.1 million of regional support funds will be used for science-related work and about \$1.06 million will be allocated to fund science

efforts that are directly related to informing habitat restoration. Thus, in total, approximately \$7.4 million of UMRR's FY 2014 appropriation will be invested in the program's science efforts.

Janet Sternburg asked what is anticipated for work on the 2016 RTC in FY 2014, particularly for partner involvement. Hubbell said partners will be asked to provide input on the report development approach and schedule, but said he does not anticipate any significant review or writing commitment during this fiscal year. Sternburg recalled that a follow-on report to the 2010 RTC (i.e., 2013 Implementation Issues Assessment) was developed to address program- and policy-related issues, asking if a similar approach will be used for the 2016 report. Hubbell said partners agreed to address the issues in a separate report because of time constraints in completing the 2010 RTC. However, he anticipates enough lead time to address issues in the 2016 RTC. Hubbell recognized the importance of discussing and identifying ways to resolve these issues in the program's reports to Congress.

Agency Leadership Event Update

Hubbell said the UMRR-EMP agency leadership event is postponed and will no longer be held on June 18, 2014 due to recent conflicts with Col. Mark Deschenes' schedule. Hubbell said he is now seeking input on a new date. The event will still occur at Eagle Point Park in Dubuque and will include a field trip component, which will require that the event be held in summer or fall. Olivia Dorothy recommended avoiding August, given the number of Corps meetings that could represent conflicts. In response to a question from Hubbell, Jim Fischer said this event is still important to the states. He said the issues addressed in the IIA regarding state participation in the face of diminishing resources remain and call for agency leadership engagement. Hubbell said he will work with the UMRR-EMP CC members to reschedule the event in September. [Note: Subsequent to the meeting, the date of the UMRR-EMP agency leadership event was set for September 18, 2014 at Eagle Point Park in Dubuque.]

Public Outreach

Tom Novak said Dave Potter participated in Stillwater, Minnesota's Da Vinci Fest, which is an annual science and art fair, where he showcased a hands-on island-building model.

Hubbell said USACE anticipates publishing the edition of *Our Mississippi* specifically devoted to UMRR-EMP on March 14, 2014. The edition will reflect the breadth of the program, including featuring the diverse array of program partners. Hubbell extended his appreciation to all partners who contributed their time and effort in writing articles and participating in interviews.

Mike Jawson said Brig. Gen. Duke DeLuca visited UMESC in early February. The visit included discussion about UMRR-EMP as well as the Center's work on Asian carp. Jawson expressed appreciation to Dave Potter for planning the tour.

Hubbell said USACE recently held a public meeting for Beaver Island. The project received very positive feedback. Hubbell gave thanks to Nate Richards, the project delivery team lead, and Tim Yager for their leadership on the project.

FY 2015-2019 Strategic Plan

Marv Hubbell said the FY 2015-2019 UMRR-EMP strategic planning team has made significant progress over the past few months. Hubbell provided an overview of the team's efforts thus far. The planning process is outlined on pages C-1 to C-4 in the agenda packet. The team has held three in-person meetings and one conference call. At the first meeting, held in April 2013, the team identified seven issue areas to explore further: defining success, ecosystem restoration, ecosystem monitoring, collaboration, communication, funding, and integration. Subgroups developed brief papers addressing

these issues and presented them at the second in-person meeting in June 2013. At that meeting, the team also developed a vision for the river and mission for the program as well as four goals to accomplish the mission. Subgroups have been refining the vision, mission, and goals ever since, with input from the full team at various times.

The strategic planning team held its third in-person meeting on January 6-8, 2014 to review draft goal write-ups and address remaining issues and questions. Hubbell presented a one-page outline of the draft strategic plan that is included on page C-5 of the agenda packet. He shared several of the strategic planning team's recommendations that will be included in the draft strategic plan, as follows:

- Dropping “Environmental Management Program (EMP)” from the program’s name, so the program would be known as Upper Mississippi River Restoration (UMRR) going forward. The intent is to match its reference in the appropriations process and move forward as an integrated program.
- A vision for the river and mission for the program. The vision is for “a healthier and more resilient Upper Mississippi River Restoration ecosystem that sustains the river’s multiple uses.” The mission is “to work within a partnership among federal and state agencies and other organizations; to construct high-performing habitat restoration projects; to produce state-of-the-art knowledge through monitoring, research, and assessment; to engage other organizations to accomplish the Upper Mississippi River Restoration vision.”
- Integrated approaches in each of the goals for enhancing synergies between the program’s restoration and science efforts necessary to advance the vision for the river (see above).

Hubbell explained that the vision creates a stronger message about the need for UMRR’s long term monitoring and research and analysis as well as restoration. The program’s science is required to determine ecological health and resilience through key ecological indicators and provide critical knowledge about how the system operates and how restoration can best address ecological needs. Restoration must be based on sound science, and restoration can be used as a tool to answer science questions.

Hubbell said the team agreed to share these recommendations with the UMRR-EMP CC at this time to seek input as the plan continues to develop. The team anticipates distributing a draft strategic plan to partners in late spring for review and then providing a revised draft plan to the UMRR-EMP CC at its August 6, 2014 quarterly meeting for consideration of endorsement.

Olivia Dorothy said the vision seems short term and suggested changing it to “a healthy and resilient...” to create a longer term context. Karen Hagerty explained that the team had discussed the tenses and concluded that “a healthier and more resilient...” provided a long term context given that current and new stressors that will limit the river’s ability to achieve a healthy and resilient state. Jawson concurred, and explained that the vision statement and assumptions and guiding principles speak to the Administration’s questions about when will UMRR-EMP be done restoring the river. The current statement allows partners to explain that there will be an ongoing need for restoring and learning about the river. Walt Popp asked if the HREP element and LTRMP element terminology will remain. Hubbell said the functions of each will certainly remain but partners will need to consider the terminology use, given that the terms can be constraining.

Jim Fischer acknowledged that he was initially apprehensive with integrating the two program elements, but through the strategic planning process, he now agrees and embraces the concepts of integrating the program’s restoration and science efforts. Fischer concluded that, in the program’s early years, scientists had to focus on how to best monitor and assess the river and engineers and biologists had to focus on how to best select and design habitat projects. The program has now evolved to a point where it is necessary to enhance the use of science in habitat projects and gain scientific knowledge through

habitat projects. Fischer cautioned that the base monitoring is not further diminished through integration. Chuck Theiling suggested highlighting UMRR-EMP as a stewardship program.

Janet Sternburg expressed reservation with dropping EMP from the program's name since it drops the reference to environment and does not identify the Illinois River. If the name change needs to occur, Sternburg suggested creating a tag line such as "Program that restores the Upper Mississippi and Illinois Rivers." Fischer observed that there is a long, rich history with EMP. He emphasized the need to link a new name and work completed under the name EMP to ensure program continuity.

Hubbell said the strategic planning team will hold its next meeting in April to finalize a draft plan for initial partner review. Hubbell reiterated that he anticipates presenting a draft strategic plan to the UMRR-EMP CC at its August 6 quarterly meeting for consideration of endorsement. At its April meeting, the strategic planning team will also consider a follow-on operational plan, including content and composition of an operational planning team. In addition, the April meeting will focus on how best to distribute and seek partner input on a draft strategic plan for a first round of review. This could include a webinar, or face-to-face meetings, regional meetings, and so forth.

Fischer recalled that an oversight in the roll-out of the LTRMP FY 2010-2014 Strategic Plan was not employing a more thoughtful, intentional, and rigorous roll out of the plan to explain the plan's concepts and intended direction. Fischer and Hagerty suggested having conversations about the draft UMRR-EMP FY 2015-2019 strategic plan with District river teams (e.g., FWIC, FWVG, etc.), the A-Team, and key program partners. Jawson suggested also coordinating with UMRBA Board members. Theiling suggested presenting the plan's concepts to UMRCC's technical meetings. Hubbell said he would follow-up on both suggestions. Sternburg suggested restructuring UMRR-EMP CC's quarterly meetings to reflect the plan's four goals. Hubbell said that, as an example, this could include presentations by project staff on when and how scientists can engage on a project and provide input or develop science questions to explore with that project.

In response to a question from Fischer, Mickelsen said a process and schedule have not yet been determined for an operation plan. There is a lot of substance that was considered in developing the draft goals and tabled for the operational plan. However, the planning team has acknowledged that there may be a lot of particulars to sort through when it comes to implementing integration.

LTRMP Element

Product Highlights

Mike Jawson presented LTRMP element's accomplishments in FY 2014's first quarter. Jawson reported that a manuscript was published that examines nutrient content and factors limiting free-floating plants to better understand how habitat projects might influence free-floating plant abundance. The results indicate that free-floating plants are associated with connectivity. Thus habitat projects that would alter connectivity should consider the possible effects on free-floating plant abundance. Jawson reported that another manuscript was published that analyzes the relationship among floodplain connectivity, nutrient cycling, and free-floating plant abundance. The results show that deliberately managing connectivity of off-channel areas can improve fish and waterfowl habitat and reduce nutrient transport to the Gulf of Mexico. In addition, Jawson listed the many individual contributions to outreach and assistance to internal and external stakeholders.

Chuck Theiling observed that these analyses demonstrate that ecological trend observations and responses to projects often require monitoring over several years. Theiling stressed the importance of managing expectations related to determining habitat project success. Jawson said the results are

published in manuscripts and suggested that partners consider how best these insights be communicated to habitat project planners and others.

Mike Jawson's Contributions to UMRR-EMP

In light of Jawson's upcoming retirement in mid-April, Hubbell recognized Jawson's substantial contributions to UMRR-EMP, including his support in working through tough issues and helping the program realize the success it is now experiencing. Jawson said being a part of UMRR-EMP has been a highlight of his career, given its incredible partnership, longevity, and dedication to improving the ecosystem. He acknowledged that, while there are sometimes differences of opinion among partners, all partners are striving to make the program the best that it can be. Jawson expressed much appreciation to all partners who contribute to UMRR-EMP.

UMRR-EMP Science Coordination Meeting

Barry Johnson reported that the first UMRR-EMP science coordination meeting of the program's scientists and habitat project planners was held on February 11-13, 2014. This meeting also served as a kick-off to a three-year research plan for the LTRMP element and is part of the UMRR-EMP Science Coordination Process. The process alternates every year between a science coordination meeting such as this one and a meeting focused on monitoring. About 70 people attended the meeting, including LTRMP element and HREP element staff and outside collaborators that are engaged in UMRS science. The meeting included several presentations of recent work and future research goals related to long term monitoring components, as well as the program's science needs for habitat project planning and evaluation and potential interactions between science and habitat projects. The primary focus of these presentations was on work completed in the last few years and planned work in the near term. In addition, the meeting included presentations from complementary, external efforts that may inform UMRR-EMP's science. On the third day, small groups were formed to discuss specific research ideas.

According to Johnson, the primary goals for communication and interaction among partners during this meeting were achieved. Johnson said there was good discussion throughout the meeting, particularly interactions between science and restoration to address questions and issues. This meeting highlighted the need for more and better communication to scientists regarding habitat projects in the pipeline and their progress. Johnson said the UMRR-EMP HREP database should be useful in facilitating some of this integration. He said an annual progress update on habitat projects may be valuable. Johnson said the next step is to develop a three-year research plan to consider program priorities and focus the program's science. This research plan will be updated at least every two years.

Marv Hubbell expressed appreciation to Johnson and UMESC staff for coordinating a successful and valuable meeting among partners. In response to a suggestion by Sternburg, Johnson said he will distribute a survey to attendees to obtain feedback on this first science coordination meeting. Sternburg suggested that the status of habitat projects and opportunities for science engagement be discussed at the A-Team meetings. Bob Clevenstine said the District planning teams can be a key forum for science and restoration integration. Johnson agreed and said the meeting participants discussed that idea. The questions raised were about how and when to engage on specific habitat projects, given that scientific research will not be applied to all habitat projects. Participants discussed more engagement of scientists on planning teams when projects are in early development stages. Clevenstine suggested that the System Ecological Team identify ecological and learning objectives when identifying and selecting possible habitat projects. Sternburg clarified that this integrated engagement has occurred over time and to varying degrees, but partners are now looking to enhance and formalize the interactions.

USACE's LTRMP Element Report

Karen Hagerty explained that \$1.065 million of UMRR-EMP's FY 2014 appropriation is being allocated to science research that supports the program's restoration efforts. (This is additional funding above the program's base monitoring efforts.) Thus far, \$436,142 has been funded for seamless elevation data, land cover/land use, the February 2014 science coordination meeting, standardized habitat project sampling protocols for non-forested wetland plants and floodplain forest, a predictive model for aquatic vegetation types, and Pool 12 Overwintering fish response modeling. Their associated costs and planned milestones are provided on pages D-14 to D-16 of the agenda packet.

Hagerty said the A-Team is currently considering proposals to fund with the remaining \$629,604. She recalled that these proposals were selected by the A-Team, USACE staff, and UMESC staff, and then approved via email by the UMRR-EMP CC members in late November. Hagerty said the A-Team held a conference call on February 21, 2014, and agreed to vote via email to select the final proposals. Once the A-Team finalizes its recommendation in early March, Hagerty said she will consult with the UMRR-EMP CC members via email regarding which proposals to fund. USACE staff will then work quickly to distribute funds to project leads to get the projects started.

In response to a question from Jon Hubbert, Hagerty said the LiDAR dataset is a seamless data layer covering the entire UMRS from bluff-to-bluff.

LTRMP Element Highlight: Documenting the Use of LTRMP Element's Fish Monitoring Methodologies Throughout the Midwest

Levi Solomon presented on the results of a recent survey to estimate the extent that the program's fish monitoring protocols are used beyond the program. Solomon explained that UMRR-EMP serves as a leader in monitoring and science nationally and internationally, and that standardized methods are a pathway for that leadership. Solomon said several presentations at the 2012 American Fisheries Society conference cited the use of LTRMP element fish monitoring protocols, triggering the question about the extent that other programs and projects use LTRMP element's monitoring protocols. To estimate the spread of use, Solomon distributed a survey of seven multiple choice questions to the American Fisheries Society list serves (about 2,000 people) and Upper Mississippi River Conservation Committee (UMRCC) (about 525). However, with overlap between the two organizations, about 2,000 people received the survey. About 11 percent of individuals (227) surveyed responded.

Solomon overviewed the seven survey questions and respective results. The questions are as follows:

1. How would you describe yourself — i.e., administrator, other, student, fisheries researcher, fisheries/resource manager?
2. What type of organization do you work for — i.e., private agency, other, federal agency, university, state natural resource agency?
3. Do you use standardized methods?
4. If yes (to question 3), how were the methods developed — i.e., don't know, other, "in-house," adopted from projects, adopted from literature?
5. Are you familiar with LTRMP methods?
6. How often do you use LTRMP methods?
7. Do you modify methods to suit needs?

Solomon explained that, while the low sample size makes it hard to extrapolate the results, the results indicate that the protocols are well known outside of the program and have been used many times in other monitoring efforts. Forty eight percent of respondents are familiar with the LTRMP element's methods and 31 percent have used the methods in the past. Solomon noted that the results may be inflated if current and former LTRMP element staff were more likely to participate. He said expanding this research may include polling UMRR-EMP staff or surveying existing literature. This research could also be expanded to include other research components, such as vegetation, water quality, or macroinvertebrates. Solomon concluded that nearly all fisheries professionals use standardized methods and that many professionals in the Midwest are familiar with the LTRMP element's methods. The survey shows that UMRR-EMP's influence has grown beyond initial expectations.

In response to a question from Barry Johnson, Solomon said staff have conducted a preliminary literature search using Google Scholar and plan to do more formal research. Jim Fischer observed that this research highlights the importance of name recognition for UMRR-EMP and its LTRMP element. Fischer stressed the need to connect a new program name to the LTRMP name and ensure there is not a misconception that the LTRMP element has been disconnected.

Dan Stephenson said Illinois DNR is working with fisheries programs on the Wabash, Ohio, and Upper Mississippi Rivers, who are using the LTRMP element's fish monitoring protocols. In addition to monitoring protocols, Andy Casper noted that other programs and projects also use UMRR-EMP's policy and process methods. Olivia Dorothy suggested that this type of information be captured in the 2016 UMRR-EMP RTC. Barry Johnson concurred with Dorothy's suggestion and said partners should capture the extent and types of influence. Hubbell noted that UMRR-EMP can use the results to compare its analyses across the UMR watershed, nation, and world. Johnson said UMESC staff have been examining opportunities to do comparative analyses and will connect with Solomon regarding other users of the LTRMP element's fish monitoring protocols.

Emerging Trends and Issues

Role of UMRR-EMP as it Relates to Invasive Species

Marv Hubbell recalled that, at its February 28, 2013 quarterly meeting, the UMRR-EMP CC agreed to develop a white paper addressing the implications of Asian carp on the program's habitat projects and monitoring and research. This is an outcome of the 2013 Implementation Issues Assessment, where the Committee agreed to consider whether there is an emerging issue or trend that warrants further evaluation of any implications to the program. Hubbell said the white paper has been expanded to address invasive species in general. He explained that UMRR-EMP's base monitoring is designed to detect substantial changes in the fundamental ecosystem condition of the UMRS by continuing to develop and maintain information on long term status and trends for aquatic vegetation, water quality, fish, land cover/land use, and bathymetry, which are the river's key ecological components. Thus, the data provide a basis for evaluating changes from a range of stressors, such as invasive species, on one or more of these components and ultimately on the ecosystem's health and resilience. Hubbell said the paper will explore how the program's long term data can serve as a baseline for detecting the emergence and effects of various invasive species on the UMRS, including impacts to the ecosystem's health and resilience. Karen Hagerty added that the paper will outline UMRR-EMP's roles in understanding the impacts of invasive species and how the program should respond to these stressors — e.g., designing habitat project features to benefit native species.

In response to a question from Barry Johnson, Hubbell said he anticipates a draft white paper will be distributed to partners in about five to six months. In response to a question from Jim Fischer, Hubbell said the lead author(s) has not yet been assigned but that Karen Hagerty and Mark Cornish are drafting

an outline for the paper. Hubbell said an outline of the paper will be presented at the UMRR-EMP CC's May 14, 2014 quarterly meeting.

In response to a question from Hagerty, Dan Stephenson said about a dozen Black carp were captured just below St. Louis last week. Stephenson said the fish are especially destructive since they eat mussels. In response to a question from Ken Westlake, Stephenson said these are the only reports received that far north thus far. However, he said Black carp are difficult to differentiate from Grass carp.

Other Priority Emerging Trends and Issues to Evaluate

Hagerty noted that the draft UMRR-EMP FY 2015-2019 Strategic Plan is calling for the program to enhance the ecosystem's health and resilience and measure their current status and trends. She said the planning team is considering resilience to mean the ability for the system to recover given a disturbance. Given the extreme winter temperatures, Hagerty suggested that partners evaluate whether there is an impact to the system and how the system is able to recover.

Fischer suggested that partners be requested to develop brief summaries of potential emerging issues for possible consideration in the agenda packets for each February quarterly meeting. Hubbell agreed.

Message from Colonel Mark Deschenes

Colonel Mark Deschenes said he is frequently in contact with Marv Hubbell and made aware of UMRR-EMP and its many successes, which he attributed largely to the program's incredible partnership. Col. Deschenes recognized that UMRR-EMP is an extremely valuable program for the three UMR Districts as well as MVD. It currently represents the largest construction project for MVR. Col. Deschenes said MVD Commander Brig. Gen. Duke DeLuca has been briefed on UMRR-EMP and the importance of its work. He said UMRR-EMP is a good example of success and a model for others, and that OMB has shown its support for the program. Col. Deschenes said UMRR-EMP CC could serve as a model for a watershed-based interagency planning team.

Habitat Rehabilitation and Enhancement Projects Element

District Reports

St. Louis District

Brian Markert reported that USACE Headquarters recently issued a waiver for Rip Rap Landing allowing it to proceed to construction even though its land acquisition exceeds USACE's policy threshold limiting land acquisition to no more than 25 percent of the project's total cost. Markert said MVS staff will now reengage MVD staff and the project's sponsor to finalize project planning. MVS is also planning Clarence Cannon and Piasa and Eagles Nest Islands and designing Ted Shanks. The District's current construction priorities include Ted Shanks, Pools 25 and 26 Islands, and final minor items at Batchtown. Markert said the evaluation report for Stump Lake is completed and will be available on the UMRR-EMP's web site shortly.

St. Paul District

Tom Novak said MVP is scheduled to complete construction of Capoli Slough this summer. The District also anticipates submitting to MVD in FY 2014 definite project reports (DPRs) for all of its projects in planning: Harper's Slough, North and Sturgeon Lakes, Conway Lake, and McGregor Lake. Novak said MVP's leads working on UMRR-EMP, channel maintenance, and O&M are coordinating to

minimize states' resources in permitting and reviewing USACE's projects in the District's portion of the UMRS at a time of quickly accelerated funding — e.g., holding partner meetings in conjunction. Jim Fischer explained that there is a lot of work happening on the river (e.g., restoration, dredging, and channel realignment) that is all very important to Wisconsin, but acknowledged that it will also be important to be mindful of the state's limited staff time and resources.

Rock Island District

Marv Hubbell said MVR has five habitat projects currently in construction, including flood repairs on Fox Island, Rice Lake, and Lake Odessa. The District will also initiate planning on Stage II of Pool 12 Overwintering this summer.

Olivia Dorothy asked if there was a particular reason for holding the Beaver Island public meeting. Nate Richards said the District is simply interested in holding more public meetings as a way to enhance projects as well as relationships with stakeholders. Hubbell added that the project is located in a more populous area and the project is receiving greater interest. Col. Deschenes said USACE should increase its use of public meetings to engage interested stakeholders and enhance program recognition and solicit input. Novak said public meetings are often useful to project planners for technical reasons, since individuals living on the river can often contribute insights on how the river works in that particular area.

New Project Starts

Hubbell said that, following the FY 2015-2019 strategic planning process, UMRR-EMP will initiate a “data-driven” process for selecting new starts that will be informed by partners' expertise and experience, the strategic plan and other planning documents, and decision support tools. Hubbell said the planning process will build on the past while looking towards the future by applying systemic data layers, research and monitoring efforts, models, decision support tools, and refined ecosystem objectives. The process will be more data-driven with greater utilization of GIS tools and models, and will serve as a building block in addressing the question about what is the partners' vision of success for the program. Hubbell anticipates the planning process will be initiated early fall 2015 and completed by late winter/early spring 2017.

Tom Novak presented examples of potential opportunities to leverage resources to implement projects with other efforts that have similar goals or with those who could offer mutual benefits — e.g., USACE's dredging activities. Novak said partners should think creatively about how to best address ecological needs when planning new projects. He said this way of thinking applies beyond islands and triggers questions about how to best design features or timelines that would produce the best outcome in meeting an ecological need(s).

Olivia Dorothy said partners have also been discussing ways to design projects that include small-scale features over a larger geographic extent. Barry Johnson said the proposed planning approach is sound and said UMESC staff are willing to help in the planning process. Jim Fischer agreed with the approach and said coordinating with other programs and projects is important. However, he said partners will want to ensure that UMRR-EMP funds are not used to pay for channel maintenance. Janet Sternburg acknowledged that the river teams do talk about these types of opportunities to leverage resources in mutually beneficial ways. Fischer noted that Wisconsin DNR is renewing its memorandum of understanding (MOU) with USACE regarding dredging and said opportunities to complement restoration work should be included in the MOU. Chuck Theiling noted that MVP and MVR are doing this type of leveraging.

HREP Highlight: Pool 12 Overwintering

Ellen Milliron, Chuck Theiling, and Julie Millhollin presented on Pool 12 Overwintering's design to restore off-channel aquatic habitat and floodplain forest habitat, monitoring and adaptive management approaches, and construction progress to date. Milliron said Pool 12 Overwintering extends over 10 river miles by Dubuque and is located on USFWS's UMR National Wildlife and Fish Refuge in the Savanna District. Along with USFWS, Iowa DNR and Illinois DNR are involved in project planning. Currently, the project area's floodplain is mostly covered by permanent water and its off-channel, backwater areas have become shallower and are likely to transform from deep aquatic habitat to shallow aquatic habitat. The floodplain forest is homogenous. Milliron said the project goals and objectives are to 1) restore and protect off-channel aquatic habitat by increasing the amount of deep water habitat, depth diversity, and habitat suitability in the backwater lakes; and 2) restore floodplain forest habitat by increasing areal coverage in acres of forest stands with hard mast-producing trees. Project features will include channel dredging, containment areas, berms, mast tree establishment, and rock closure structures. Project planners selected four out of eight evaluated backwater lakes to restore, including Stone Lake, Sunfish Lake, Tippy Lake, and Kehough Slough. Milliron explained that the size and distance between the lakes made these selections the best alternative for maximizing restoration value.

Milliron said analysis of radio tracking and pool-wide population systemic benefits monitoring will answer the question of how much backwater overwintering habitat is required within a given area, as well as the spatial distribution of the backwater restoration sites necessary to achieve floodplain reach-level fishery response. She said site-specific monitoring will include water quality for desired velocity and dissolved oxygen, sedimentation transects (bathymetry), and tree survival rates. Systemic benefits monitoring for adaptive management analyses regarding pool-wide fish population impacts will also be employed. Iowa DNR has been doing robust pre-project monitoring since 2006, including fish condition and behavior within backwaters such as movement out of overwintering sites. The hypotheses that will be tested are as follow:

Pool-wide fish community response

- Management intervention in Pool 12 backwaters (dredging) will increase the pool-wide relative abundance of Centrarchids compared to the Pool 13 control
- Management intervention in Pool 12 backwaters (dredging) will increase the pool-wide biomass of Centrarchids compared to the Pool 13 control
- Management intervention in Pool 12 backwaters (dredging) will increase the pool-wide condition (relative weight) of Centrarchids compared to the Pool 13 control

Backwater lake effects

- Relative abundance of overwintering Centrarchids will be greater in restored lakes compared to control lakes
- Biomass of overwintering Centrarchids will be greater in restored lakes compared to control lakes
- Condition (relative weight) of overwintering Centrarchids will be greater in restored lakes compared to control lakes
- Fish community age structure will increase in restored lakes compared to control lakes
- Fish habitat area, measured as Utilization Distance, will increase in restored lakes compared to control lakes

Fish dispersal from backwater lakes

- Fish will disperse farther from restored lakes compared to control lakes
- More fish will disperse from restored lakes compared to control lakes

Chuck Theiling explained that, initially, the adaptive management design was to construct three of the four lakes and then use the results to design the fourth lake. However, for several reasons including funding implications, the plan is to now construct all project features and use the results to inform future projects. Theiling said the adaptive management analyses can be evaluated at the project, pool, and reach level. The LTRMP element protocols are being used to allow for comparisons to Pool 13 and beyond. For example, radio telemetry is being used to track fish movement into overwintering areas. Milliron added that staging the construction of each lake will help inform about interactions between the lakes.

Millhollin said the fully funded cost estimate for Pool 12 Overwintering is \$23.1 million, which includes construction, site specific monitoring and adaptive management, systemic benefits monitoring, and contingency. She overviewed the ongoing construction process, features, and associated costs of the first backwater lake to be restored. Pool 12 Overwintering Stage I, which is Sunfish Lake, is estimated to cost \$4.015 million and Dubuque Barge and Fleeting Service was granted the construction contract in August 2014. Millhollin reviewed progress on the project to-date including dredging and berm construction. She said MVR staff anticipate initiating planning on Stage II (Stone Lake) in FY 2014 and construction in FY 2015.

In response to a question from Tim Yager, Millhollin said seeding for hard mast trees will be done under a separate contract. Barry Johnson observed the benefits of the project's location to UMRR-EMP's long term trend reach, Pool 13, to allow for a control in hypothesis testing. He underscored the benefits of the program's long term monitoring for such capabilities. In response to a question from Johnson, Dave Bierman said Iowa DNR has not yet decided how long it will monitor the project area. Bierman said the agency will likely make that decision once construction is completed all four backwater lakes. Since there are seven years of pre-project monitoring, the agency would likely monitor for that duration or longer post-project construction. Milliron said USACE will likely do its monitoring on the project for 10 to 12 years post-construction. Hubbell emphasized that Pool 12 Overwintering is an important step in the program's adaptive management efforts to do more explicit hypothesis testing. He recognized the importance that such analyses are flexible given that the design and construction of habitat projects is a relatively fluid process.

Other Business

Jim Fischer asked when and how science will be injected into the habitat project planning process. Hubbell explained that there are various opportunities for projects to incorporate science, but said the most opportune time to incorporate science into projects is while the fact sheet and initial plans are being developed. That is when projects have identified goals and objectives but are still early in the planning process for partners to consider exploring specific science questions. In response to a question from Col. Deschenes, Hubbell said UMRR-EMP has an adopted framework for identifying and sequencing new habitat projects and has a science coordination process for identifying and priorities science questions. Hubbell said USACE can provide partners with its Gantt chart sequencing UMRR-EMP's habitat projects for the next six to eight years so that partners can see where there might be opportunities to integrate science. Sternburg said that would be helpful and asked Hubbell to share what information is available in the UMRR-EMP database. Fischer said the Gantt chart would also be helpful for partners to plan for future staffing needs.

Olivia Dorothy said River Action is teaming with Mississippi River Network to host an October 15-17, 2014 conference focusing on the entire Mississippi River. Dorothy said she is on the planning committee and to contact her with any questions.

Future Meetings

The upcoming quarterly meetings are as follows:

- **May 2014 — St. Louis**
 - UMRBA — May 13
 - **UMRR-EMP CC — May 14**

- **August 2014 — East Peoria**
 - UMRBA — August 5
 - **UMRR-EMP CC — August 6**

- **November 2014 — St. Paul**
 - UMRBA — November 18
 - **UMRR-EMP CC — November 19**

With no further business, the meeting adjourned at 12:15 p.m.

**UMRR-EMP CC Attendance List
February 26, 2014**

UMRR-EMP CC Members

Mark Moore	U.S. Army Corps of Engineers, MVD
Tim Yager	U.S. Fish and Wildlife Service, UMR Refuges
Mike Jawson	U.S. Geological Survey, UMESC
Dan Stephenson	Illinois Department of Natural Resources
Walt Popp	Minnesota Department of Natural Resources [On behalf of Kevin Stauffer]
Janet Sternburg	Missouri Department of Conservation
Jim Fischer	Wisconsin Department of Natural Resources
Ken Westlake	U.S. Environmental Protection Agency, Region 5
Jon Hubbert	U.S. Department of Agriculture, NRCS Iowa

Others In Attendance

Renee Turner	U.S. Army Corps of Engineers, MVD
Tom Novak	U.S. Army Corps of Engineers, MVP
Gary Meden	U.S. Army Corps of Engineers, MVR
Tom Hodgini	U.S. Army Corps of Engineers, MVR
Marvin Hubbell	U.S. Army Corps of Engineers, MVR
Andy Barnes	U.S. Army Corps of Engineers, MVR
Ken Barr	U.S. Army Corps of Engineers, MVR
Dave Bierl	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR
Dennis Hamilton	U.S. Army Corps of Engineers, MVR
Julie Millhollin	U.S. Army Corps of Engineers, MVR
Ellen Milliron	U.S. Army Corps of Engineers, MVR
Darron Niles	U.S. Army Corps of Engineers, MVR
Nathan Richards	U.S. Army Corps of Engineers, MVR
Chuck Theiling	U.S. Army Corps of Engineers, MVR
Heather Schroeder	U.S. Army Corps of Engineers, MVR
Brian Johnson	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Bob Clevestine	U.S. Fish and Wildlife Service, UMR Refuges
Jon Duyvejonck	U.S. Fish and Wildlife Service, RIFO
Doug Yeskis	U.S. Geological Survey, Illinois Water Science Center
Barry Johnson	U.S. Geological Survey, UMESC
Andrew Casper	Illinois Natural History Survey
Levi Solomon	Illinois Natural History Survey
Dave Bierman	Iowa Department of Natural Resources
Robert Stout	Missouri Department of Natural Resources
Bryan Hopkins	Missouri Department of Natural Resources
Dan Baumann	Wisconsin Department of Natural Resources
Tom Boland	AMEC
Olivia Dorothy	Izaak Walton League
Dru Buntin	Upper Mississippi River Basin Association
Dave Hokanson	Upper Mississippi River Basin Association
Kirsten Mickelsen	Upper Mississippi River Basin Association

ATTACHMENT B

UMRR-EMP Regional Management

- **UMRR-EMP Spreadsheets thru 2nd Quarter of FY 14 (3/14)**
(B-1 to B-5)

UMRR-EMP EXPENDITURES AND ALLOCATIONS

FY14 (\$ 000)						
	CARRY IN FROM FY 13	FY 14 ALLOCA.	TOTAL AVAILABLE TO EXP.	31 Mar 14 ACTUAL EXP.	31 Mar 14 ACTUAL OBLIG.	
PROGRAM ELEMENTS						
HABITAT PROJECTS						
HREP PROJECTS	1,075	22,796	23,871	7,575	6,409	
ARRA HREP PROJECTS	0	0	0	0	0	
HABITAT EVAL/MONITORING	0	570	570	195	203	
HABITAT NEEDS ASSESSMENT	0	0	0	0	0	
PLANNING/PRIORITIZATION	0	0	0	0	0	
USFWS HREP SUPPORT	0	492	492	402	156	
PROGRAM COOR. (Includes District Habitat Coordination)	35	2,617	2,652	884	1,074	
REPORT TO CONGRESS- 2014	0	0	0	0	0	
REGIONAL INITIATIVES	0	201	201	113	112	
LTRM (Includes LTRM Regional Technical)	0	5,291	5,291	2,954	3,116	
ARRA LTRM PROJECTS	0	0	0	0	0	
TOTALS	1,110	31,968	33,077	12,122	11,070	
TOTALS BY ORGANIZATION						
MVR **	963	12,190	13,147	1,640	1,800	
MVP	98	7,090	7,188	1,878	727	
MVS	49	6,910	6,959	5,251	5,251	
USGS	0	5,216	5,216	2,900	3,062	
UMRBA Administration	0	75	75	52	74	
USFWS (Multi-district funded)	0	492	492	402	156	
REPORT TO CONGRESS- 2012	0	0	0	0	0	
System Ecological Team (SET)	0	0	0	0	0	
TOTAL	1,110	31,974	33,077	12,122	11,070	

*1

* 1 Equals Work Allowance amount of \$31,974,000. Includes President's Budget of \$31,968,000 plus \$6k reprogrammed into UMRR in FY14.

31 Mar 14
FY 2014

ADMINISTRATIVE, LTRM, and Non-Site Specific Costs

	FY14 (\$ 000)				
	CARRY		TOTAL	'31 Mar 14	'31 Mar 14
	IN	ALLOCA.	SCHEM EXP.	Actual Exp.	Actual Obl.
HABITAT (Rollup from district sheets)					
BASELINE MONITORING	0	110	110	71	71
HABITAT PROJ. EVALUATION	0	385	385	123	131
BIO-RESPONSE STUDIES	0	75	75	1	1
USFWS HREP SUPPORT (Multi-district funded)	0	492	492	402	156
PLANNING/SEQUENCING (PRIORITIZATION)	0	0	0	0	0
TOTAL HABITAT	0	1,062	1,062	596	359
PROGRAM COORDINATION (excludes District Habitat Coord.)					
UMRBA	0	75	75	52	74
System Ecological Team (SET)	0	0	0	0	0
PUBLIC INVOLVEMENT	0	110	110	35	37
EMP PROGRAM ADMINISTRATION	0	630	630	321	323
LTRM REGIONAL TECHNICAL	0	75	75	53	55
REGIONAL INITIATIVES	0	201	201	113	112
PROGRAM MGT TOTAL	0	1,091	1,091	574	601
REPORT TO CONGRESS (includes all organizations)	0	0	0	0	0
LTRM					
CORPS LTRM MANAGEMENT	0	0	0	0	0
LTRM (USGS & STATES)	0	5,216	5,216	2,900	3,062
CORPS BATHOMETRY & LiDAR (Multi-district funded)	0	0	0	0	0
ARRA - BATHOMETRY, LiDAR, & GIS (Multi-district funded)	0	0	0	0	0
CORPS APE'S ACTIVITIES	0	0	0	0	0
CORPS LTRM TECHNICAL SUPPORT (MSP)	0	0	0	0	-1
SUBTOTAL	0	5,216	5,216	2,901	3,061

ST. PAUL DISTRICT

MVP	PROJECT ESTIMATE DESIGN CONST		TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 13	EXP THRU FY 13	FY14 (\$ 000)					(Federal) Scheduled \$ To Complete	
							CARRY IN	ALLOCA.	TOTAL AVAILABLE TO EXP.	'31 Mar 14	'31 Mar 14		
										Actual Exp.	Actual Obl.		
HABITAT PROJECTS													
Ambrough Slough, WI	504	2,165	2,669	116	0	2669			0			0	COMPLETE
Capoli Slough, WI	500	8,750	9,250		3,112	4432	25	140	165	978	-174	3,840	CONSTRUCTION
Conway Lake, IA	462	2,050	2,512		1	113		175	175	68	68	2,331	DESIGN
Finger/Clear Lakes, MN	401	1,044	1,445		0	183			0			1,262	COMPLETE
Harpers Slough, IA	1,500	15,000	16,500		474	1686	20	5,600	5,620	245	245	14,569	DESIGN/CONST
Lake Winneshiek, WI	620	4,380	5,000		0	9		25	25			4,991	DESIGN
Lock and Dam 3 Fish Passage	922	15,000	15,922	5,250	9	932			0			14,990	DESIGN
Long Lake Restoration, WI	63	434	497		0	466			0			31	COMPLETE
Long Meadow Lake, MN	482	600	1,082		0	1083			0			-1	COMPLETE
McGregor Lake, WI	900	5,600	6,500		0	1		200	200	65	65	6,434	DESIGN
North & Sturgeon Lakes, MN	900	7,600	8,500	3,250	113	1875	18	300	318	146	146	6,479	DESIGN
Polander Lake, MN	645	2,488	3,133		0	3133			0			0	COMPLETE
Pool 8 Phase III, WI	950	18,700	19,650		12	15908		25	25	12	12	3,730	COMPLETE
Pool 8 ARRA	0	178	178		0	267			0			-89	COMPLETE
Pool Slough, IA	390	373	763	78	0	763			0			0	COMPLETE
Spring Lake Isl, WI	166	4,231	4,397		0	4398			0			-1	COMPLETE
Trempealeau NWR, WI	955	4,880	5,835		0	5819			0			16	COMPLETE
ARRA PLANING, ENG & DESIGN	0	75	75	0	0	75			0			0	
Other Habitat (Carry over)	0	0	0	0	0	0			0			0	
HABITAT TOTAL	10,360	93,548	103,908	8,694	3,721	67,819	63	6,465	6,528	1,514	362	58,582	
HABITAT EVAL/MONITORING													
HABITAT NEEDS ASSESSMENT						57			0				
BASELINE MONITORING					15	478		50	50	48	48		
HABITAT PROJ. EVALUATION					173	1633		200	200	67	67		
BIO-RESPONSE STUDIES						1333			0				
USFWS HREP SUPPORT					164	1238		140	140	80	0		
PLANNING/SEQUENCING(PRIORITIZATION)						0			0				
SUBTOTAL	0	0	0	0	352	4,739	0	390	390	195	115	0	
PROGRAM MANAGEMENT													
PROGRAM COORDINATION					273	4432	35	375	410	249	250		
PUBLIC INVOLVEMENT - mipr \$					0	0			0				
SUBTOTAL	0.0	0.0	0.0	0.0	273	4,432	35	375	410	249	250	0	
LTRM													
LTRM COORDINATION						455	0	0	0				
ADDITIONAL LTRM						484	0	0	0				
SUBTOTAL	0	0	0	0	0	939	0	0	0	0	0	0	
DIRECT MVP EXPENDITURES				8,694	4,346	77,929	98	7,230	7,328	1,958	727	0	
MIPR & CROSS CHARGE LABOR EXPENDITURES													
Mipr for LTRM Travel					0	15.1			0	0	0		
Cross charge Labor Technical & Bathemetry					0	31.7			0	0	0		
MIPR TOTALS (Includes Public Involvement)					0	47	0	0	0	0	0	0	
TOTAL MVP EXPENDITURES					4,346	77,976	98	7,230	7,328	1,958	727		
*1													
NOTES:													
*1 Equals MVP work allowance of \$7,230,400 (150,000 (Includes Packback funding to MVR in FY13) & (250,000 (Includes Packback funding from MVR for FY13))													

ROCK ISLAND DISTRICT

MVR	PROJECT DESIGN	ESTIMATE CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 13	EXP THRU FY 13	FY14 (\$ 000)					(Federal)		
							CARRY IN	ALLOCA.	TOTAL AVAILABLE TO EXP.	'31 Mar 14 Actual Exp.	'31 Mar 14 Actual Obl.	Scheduled \$ To Complete		
HABITAT PROJECTS														
BEAVER ISLAND, IA	1,500	11,000	12,500		94	179	0	248	248	96	97	12,225	PLANNING	
FOX ISLAND, MO	700	4,300	5,000		1,463	5,229	0	140	140	239	22	-467	DESIGN	
HURON ISLAND, IA	2,100	8,400	10,500		270	1,646	0	3,449	3,449	194	194	8,660	PLANNING	
LAKE ODESSA, IA	2,470	12,394	14,864		61	15,043	790	4,284	5,074	4	4	-183	DESIGN	
POOL 11 ISLANDS, WI	1,548	14,469	16,017			10,157			0			5,860	CONSTRUCTION	
POOL 12 OVER WINTER, IA	2,500	16,500	19,000		542	2,127		580	580	513	186	16,360	DESIGN	
RICE LAKE, IL	2,800	10,720	13,520	6,825	4,862	10,856		539	539	-329	200	2,993	DESIGN	
TURKEY RIVER BOTTOMS	2,900	15,800	18,700		2	2		4	4	0	0	18,698	PLANNING	
BOSTON BAY	900	5,100	6,000		1	2		4	4	1	1	5,998	PLANNING	
STEAMBOAT ISLAND	1,250	6,250	7,500		1	2		364	364			7,498	PLANNING	
KEITHSBURG DIVISION	1,400	4,800	6,200		1	2		99	99	2	2	6,196	PLANNING	
DELAIR DIVISION	1,750	7,750	9,500		1	2		7	7			9,498	PLANNING	
SNYDER SLOUGH	1,800	15,000	16,800		1	2		4	4			16,798	PLANNING	
EMIQUON	725	12,575	13,300	6,400	0	0		75	75	80	80	13,219	DESIGN	
LAKE ODESSA, IA (Flood Recovery) (supplemental)		5,500	5,500		347	4,742	173	75	173	152	152	606	FLOOD RECONSTR.	
ARRA ODESSA		236	236			158			0			78	ARRA	
OTHER HABITAT		0	0			0			0			0		
HABITAT TOTAL	23,618	138,922	162,540	6,825	7,647	82,163	962.9	9,796.0	10,759	951	937	39,233		
HABITAT														
HABITAT NEEDS ASSESSMENT						0		0	0					
BASELINE MONITORING			268			254			0					
HABITAT PROJ. EVALUATION			938		166	3,364	0	170	170	45	53			
BIO-RESPONSE MONITORING			588			1,036	0	0	0					
USFWS HREP SUPPORT					189	884	0	282	282	166	0			
PLANNING/SEQUENCING (PRIORITYIZATION)						39		0	0					
SUBTOTAL	0	0	1,794	0	355	5,577	0	452	452	210	53	0		
PROGRAM MANAGEMENT														
REGIONAL HREP SCIENCE SUPPORT			3,496	0	175	5,192	0	1,202	1,202	121	284			
PUBLIC INVOLVEMENT	0.0	20.0	20.0		23	204	0	110	110	35	37			
REGIONAL ADMIN				0	360	2,281	0	630	630	321	323			
LTRM REGIONAL TECHNICAL					226	1,744	0	75	75	53	55			
PROGRAM INITIATIVES					272	978	0	201	201	113	112			
SUBTOTAL			3,516	0	1,056	10,399	0	2,218	2,218	643	811			
REPORT TO CONGRESS					6	96	0	0	0					
LTRM														
CORPS BATHOMETRY & LIDAR (Multi-district funded)						455	0		0					
ARRA - BATHOMETRY, LIDAR, USGS, & GIS					41	2,811	0		0					
CORPS APE'S ACTIVITIES						165	0		0					
ADDITIONAL LTRM					98	927	0		0	0	-1			
SUBTOTAL	0	0	530	0	140	4,357	0	0	0	0	-1			
MIPRS & Contracts														
UMRBA					47	155	0	75	75	52	74			
ITRC					0	0	0	0	0	0	0			
USGS					4,801	14,198	0	5,216	5,216	2,900	3,062			
FY14 Reprogram						0		6						
SUBTOTAL					4,848	14,354	0	5,297	5,291	2,952	3,136			
TOTAL MVR EXPENDITURES					14,052	116,946	962.9	17,763	18,720	4,757	4,936			
*1														
*1 Equals MVR work allowance of \$17,763,200 * Reprogramming action into MVR for \$6,000(300,000 (Includes Packback funding from MVS \$150k & MVP \$150k in FY13) & (250,000 (Includes Packback funding to MVP for FY13)														

ST LOUIS DISTRICT

MVS	PROJECT ESTIMATE		TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 13	EXP THRU FY 13	FY14 (\$ 000)					(Federal) Scheduled \$ To Complete	
	DESIGN	CONST					CARRY IN	ALLOCA.	TOTAL AVAILABLE TO EXP.	'31 Mar 14 Actual Exp.	'31 Mar 14 Actual Obl.		
HABITAT													
BATCHTOWN MGMT, IL	3,220	14,875	18,095	145	177	16,535		200	200	9	9	1,551	CONSTRUCTION
CLARENCE CANNON, MO	2,637	27,180	29,817		397	1,018		675	675	161	161	28,638	DESIGN
EAGLES NEST & PIASA IS., IL	1,057	4,500	5,557		81	216		325	325	62	62	5,279	FACT SHEET
GLADES WETLAND, IL	3,218	14,000	17,218			0		35	35			17,218	DESIGN
GODAR WETLAND, IL	1,317	6,885	8,202		7	7		35	35	10	10	8,185	DESIGN
HARLOW ISLAND	750	3,750	4,500		22	38		100	100	9	9	4,453	DESIGN
RIP RAP LANDING	1,373	10,553	11,926	1,207	49	669		430	430	33	33	11,224	DESIGN
POOL 24 ISLANDS	1,373	8,119	9,492			8			0			9,484	DESIGN
POOLS 25/26, MO	875	1,600	2,475		38	804		150	150	182	182	1,489	CONSTRUCTION
REDS LANDING,	621	2,863	3,484			0			0			3,484	DESIGN
SCHEMANN CHUTE, MO	691	2,800	3,491			396		100	100			3,095	DESIGN
SWAN LAKE, IL	2,377	13,246	15,623	262	93	15,204		50	50			419	CONSTRUCTION
TED SHANKS, MO	4,405	25,101	29,506		3,110	7,616	49	4,305	4,354	4,600	4,600	17,290	CONSTRUCTION
WILKINSON ISLAND	1,250	2,730	3,980	0		868		30	30			3,112	DESIGN
WEST ALTON ISLAND	805	5,727	6,532		2	17			0			6,515	DESIGN
CYPRESS SLOUGH	1,520	12,750	14,270		0	0		100	100	44	44	14,226	DESIGN
FT. CHARTRES SIDE CHANNELS, IL	650	2,650	3,300			44			0			3,256	DESIGN
ESTABLISHMENT CHUTE SC, MO	650	2,250	2,900			24			0			2,876	FACT SHEET
KASKASKIA OXBOWS, IL	750	3,500	4,250			0			0			4,250	FACT SHEET
ARRA RIPRAP LANDING	0	319	319			319			0			0	ARRA
ARRA BATCHTOWN	0	3,405	3,405			3,261			0			144	ARRA
ARRA SWAN LAKE	0	1,109	1,109			1,109			0			0	ARRA
(Other Unexpended Carryover)	0	14	14			14			0			0	
HABITAT TOTAL	29,539	169,926	199,465	1,614	3,976	48,167	49	6,535	6,584	5,110	5,110	146,188	
HABITAT EVAL/MONITORING													
HABITAT NEEDS ASSESSMENT	1,000		1,000			0							
BASELINE MONITORING					65	842		60	60	23	23		
HABITAT PROJ. EVALUATION					18	652		15	15	11	11		
BIO-RESPONSE MONITORING					9	1,180		75	75	1	1		
USFWS HREP SUPPORT					53	458		70	70	156	156		
PLANNING/SEQUENCING(PRIORITIZATION)						4			0				
SUBTOTAL	1,000	0	1,000	28,347	145	3,136	0	220	220	191	191		
PROGRAM MANAGEMENT													
PROGRAM COORDINATION					205	2,086		225	225	106	106		
PUBLIC INVOLVEMENT					0	0			0				
SUBTOTAL	0	0	0	0	205	2,086	0	225	225	106	106		
LTRM													
LTRM COORDINATION					0	0			0				
ADDITIONAL LTRM					0	0			0				
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0		
DIRECT MVS EXPENDITURES	30,539	169,926	200,465	29,961	4,326	53,389	49	6,980	7,029	5,407	5,407		
MIPR EXPENDITURES													
LTRM mipr for Travel					0	444		0	0	0	0		
LTRM Bathemetry & Technical cross chrg					0	28		0	0	0	0		
MIPR/ Cross charge totals					0	472		0	0	0	0		
TOTAL MVS EXPENDITURES					4,326	53,861	49	6,980	7,029	5,407	5,407		
NOTES:													
*1 Equals MVS work allowance of \$6,980,400 (150,000 (Includes Packback funding to MVR in FY13))													

ATTACHMENT C

Targeted Review Draft FY 15-25 UMRR Strategic Plan (4/11/14)
(C-1 to C-25)

Upper Mississippi River Restoration's Strategic Plan for 2015 to 2025
TRANSMITTAL: TARGETED REVIEW DRAFT

A subset of the Upper Mississippi River Restoration (UMRR) partnership have spent the last year considering UMRR's past, ongoing, and future roles in making the UMR a better ecosystem in the face of continual stresses and with evolving science and restoration tools to address those stresses.

The planning team agreed to do a targeted review of the enclosed draft UMRR strategic plan for 2015 to 2025 in order to get essential feedback from those organizations and individuals who are directly involved in the program's policy and implementation. The strategic planning team will consider this feedback during its next in-person meeting this summer, where the team will make any further refinements before sending the plan to the UMRR Coordinating Committee's review at its August 6, 2014 meeting.

The team members believe that, when implemented, this strategic plan will result in:

- Even more effective habitat restoration projects
- Even more effective application of science (esp. ecological, biological, and engineering science) to habitat restoration work
- Deeper understanding of the dynamics and details of river health and resilience
- Stronger commitment to the collection, maintenance, and application of long term monitoring data
- An even stronger partnership among the organizations that participate directly in the program
- And, most importantly, the UMR will be healthier and more resilient because of the program's work

*Enhancing Restoration and Advancing Knowledge
of the Upper Mississippi River*

A STRATEGIC PLAN FOR THE
UPPER MISSISSIPPI RIVER RESTORATION PROGRAM
2015 – 2025



TARGETED REVIEW DRAFT
April 11, 2014

ACKNOWLEDGEMENTS

The U.S. Army Corps of Engineers would like to extend its sincere appreciation to the partners involved in developing this groundbreaking strategic plan for the Upper Mississippi River Restoration program.

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DISTRICT COMMANDER'S LETTER

[Placeholder]

TARGETED REVIEW DRAFT

PREAMBLE

Strategic Plan Purpose

This strategic plan articulates the Upper Mississippi River Restoration (UMRR) partnership's vision for the Upper Mississippi River¹ that sets a clear direction for the program over the next decade. This 10-year plan focuses UMRR's efforts to continue to deliver products and services that are nationally significant, regionally relevant, internationally engaged, and technically sound. It outlines the program's key approaches to enhancing restoration and advancing knowledge necessary for a healthier and more resilient Upper Mississippi River that sustains the river's multiple uses. This strategic plan is also intended to foster UMRR's longstanding commitment to internal and external communication and collaboration among the many organizations and individuals that are working for a better Upper Mississippi River.

Strategic Planning Approach

The UMRR Coordinating Committee established a team of 20 individuals reflecting representation from the various program partners and functions to undergo an integrated strategic planning effort for the entire program. The Committee directed the strategic planning team to develop a programmatic strategic plan that:

- 1) Establishes priorities and actions to ensure that UMRR-EMP accomplishes its authorized purposes.
- 2) Guides program partners in identifying and effectively addressing key policy and technical issues facing the program.
- 3) Continues to effectively integrate UMRR-EMP's science and restoration efforts.
- 4) Identifies and examines foreseeable challenges to program implementation, including dynamic regional and national factors — such as, aquatic nuisance species, federal budget processes and appropriation levels.
- 5) Positions UMRR-EMP to continue as an exemplary leader among large aquatic ecosystem programs nationally and internationally.

In addition, the Committee agreed to the following major assumptions to guide the planning process:

- 1) The Objective (outlined above) reflects the core items that are necessary to address in the Strategic Plan.
- 2) The Plan will articulate partners' long term vision for UMRR-EMP, which will reflect its authorization, and define implementation priorities for advancing that vision in FY 2015-25.
- 3) Basic administrative provisions and program infrastructure will remain in place.
 - A. UMRR-EMP is authorized as a continuing authority, meaning that the program is not bound to a specific end-point and will remain operational as long as Congress appropriates funding to the program.
 - B. Any recommendations to change the Corps' existing national policies and procedures will need to be coordinated with the appropriate Corps entity — e.g., Headquarters or Division.

¹ Per UMRR's authorization, the program's geographic area encompasses the river reaches having commercial navigation channels on the Mississippi River main stem north of Cairo, Illinois; Minnesota River, Minnesota; Black River, Wisconsin; Saint Croix River, Minnesota and Wisconsin; Illinois River and Waterway, Illinois; and Kaskaskia River, Illinois. For the purposes of this strategic plan, the Upper Mississippi River refers to that geographic extent.

- C. All partner agencies/organizations have their own missions, procedures, and policies. Any recommendations to change their existing procedures or policies will need to be coordinated with the appropriate entity.
 - D. The existing network of offices and biological field stations will remain in place.
 - E. The Corps will continue to coordinate closely with all program partners through identified advisory bodies.
 - F. The purpose of this planning efforts is enhance effectiveness and not to downsize the program.
- 4) The Plan will build upon and incorporate partner-supported planning and other documents. These include, but are not limited to, the LTRMP Operating Plan, the Joint Charter for UMRR-EMP's coordinating groups, and the Implementation Issues Assessment. See References below.
 - 5) The process should focus on identifying and addressing key issues related to ecosystem restoration, monitoring, assessment and research within the UMRR-EMP. However, it should remain cognizant of other existing and potential new restoration and science programs on the UMRS, including NESP, 519 on the Illinois River, and other federal and state initiatives.

The planning team first explored a suite of issues affecting UMRR and the Upper Mississippi River itself, from which the team was able to determine focal areas for the program in FY 2015 to 2025. With a defined vision for the Upper Mississippi River and mission statement for UMRR, both firsts for the program, the planning team articulated specific goals, objectives, and strategies to best optimize the program's investment in achieving its mission and advancing its vision.

The strategic plan was built as a partnership document where all partners have a vital role in contributing to the program's successes in enhancing restoration and knowledge of the Upper Mississippi River. Team members were responsible for representing their respective agency's views. In addition, the planning team solicited and considered input from all program partners and coordinated with the UMRR Coordinating Committee to provide routine updates and seek feedback at its quarterly meetings. [Note: Add more text re UMRR-CC's review and endorsement here when relevant and details are known.]

Program Overview

Authorization

In 1986, Congress declared the Upper Mississippi River as "a nationally significant ecosystem and a nationally significant commercial navigation system." Following from this declaration, in Section 1103 of the 1986 Water Resources Development Act (WRDA), Congress authorized the Upper Mississippi River Restoration program to address the river's ecological needs. UMRR's authorization, as amended, is provided in Appendix A. UMRR became the first federal program to combine ecosystem restoration with scientific monitoring and research on a large river system.

Over the program's first 13 years, UMRR proved to be one of this country's premier ecosystem restoration programs, combining close collaboration among federal, state, and public partners; an effective restoration planning process; and a built-in monitoring process. This led Congress to reauthorize UMRR in the 1999 WRDA and establish the following two core elements as continuing authorities:

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

UMRR is authorized to receive annual appropriations of \$33.17 million. Per UMRR's authorization, Section 906(c) of the 1986 WRDA, as amended, governs cost sharing for habitat projects. In particular, this requires that a non-federal sponsor provide 35 percent of the construction costs of habitat projects. And, in accordance with Section 107(b) of the 1992 WRDA, operation and maintenance of habitat projects is the responsibility of the entity that manages the land.

Geographic Setting

Per UMRR's authorization, the program's geographic area encompasses the river reaches having commercial navigation channels on the Mississippi River main stem north of Cairo, Illinois; Minnesota River, Minnesota; Black River, Wisconsin; Saint Croix River, Minnesota and Wisconsin; Illinois River and Waterway, Illinois; and Kaskaskia River, Illinois. For the purposes of this strategic plan, the Upper Mississippi River refers to that geographic extent. The Upper Mississippi River basin drains 189,000 square miles and includes major portions of five states: Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The river's floodplain covers approximately 2.6 million acres of land and water in public and private ownership, including 10 National Wildlife Refuges and many other federal, state, and local parks.

The river is unique in that it still retains much of its natural floodplain ecosystem characteristics, including annual flood pulses that advance and retreat over the floodplain and temporarily expand backwaters and floodplain lakes. However, the Upper Mississippi River basin has been substantially modified since the mid-1800s. The current condition of the Upper Mississippi River is heavily influenced by development for agriculture, flood control, and navigation. Improvements in sewage treatment and land use practices have had a positive effect on the river. However, the ecosystem remains under considerable stress and still faces many challenges, including sedimentation, nutrient loading, invasive species, altered hydrology, and floodplain isolation.

UMRR successfully implements innovative and effective habitat projects and conducts cutting-edge monitoring and research to enhance restoration and knowledge of the Upper Mississippi River. UMRR has constructed 55 habitat projects in its 27 years, improving over XX acres. Another 8 habitat projects are currently in construction and 27 in planning that will, in combination, improve approximately XX acres of additional habitat. A map of UMRR's completed and ongoing habitat projects is provided in Appendix B. UMRR has also made incredible strides in river science through long term resource monitoring, research, analysis, modeling, and data management. The knowledge gained enhances understanding of the river system functions and provides tools for managers to more effectively evaluate alternative management options. For over 25 years, the program has monitored key ecological attributes of the river at six study reaches, which include Pool 4 (Lake City, Minnesota); Pool 8 (La Crosse, Wisconsin), Pool 13 (Bellevue, Iowa), Pool 26 (Alton, Illinois), La Grange Pool (Havana, Illinois), and Open River (Cape Girardeau, Missouri). These study reaches reflect the wide range of ecological gradients along the Upper Mississippi River. A map of the study reaches and field stations is provided in Appendix C. UMRR also has systemic land cover/land use, bathymetry, and LiDAR coverages along the entire Upper Mississippi River as well as data collected for project monitoring and focused research. These additional data expand the program's ability to assess and detect any substantial changes to the river's ecosystem.

Implementation through a Partnership

The Upper Mississippi region has a rich tradition of interagency and interdisciplinary partnership that extends among the river's multiple uses, such as commercial navigation, recreation, agriculture, and water quality and supply. The UMRR is a product of this regional collaboration and has been fortunate to build upon and expand it. In fact, its roots can be traced to the 1981 Upper Mississippi River Basin Commission's Master Plan recommendations and the 1986 WRDA, where the program was authorized. The ongoing

commitment from all partners have been vital to UMRR's effective and efficient habitat restoration and knowledge-building efforts on the Upper Mississippi River.

While the U.S. Army Corps of Engineers (USACE) is ultimately responsible for implementing UMRR, it pursues that mission in a genuine spirit of cooperation with its agency partners and interested stakeholders. Through interagency consultative and coordination bodies, the program partnership works together to consider and address a range of program policy and budget issues, define program priorities and direction, and raise and resolve technical questions. Habitat projects are selected, planned, and designed in a collaborative manner among project planners, habitat managers, and scientists. And, long term resource monitoring, research, and analysis are implemented in coordination among the programs partners. In addition to their involvement in these collaborative mechanisms, individual federal and state agencies have their own specific responsibilities for implementing UMRR:

U.S. Army Corps of Engineers has overall responsibility for UMRR. In brief, this includes overseeing and integrating UMRR's habitat restoration and science, operating the partner-based forums, preparing budget submissions, recommending annual allocations within the program, and developing scientific reports.

U.S. Fish and Wildlife Service, from its refuges, ecological services field offices, and fisheries resource offices, participates in planning, design, and construction of habitat projects both on and off refuge lands. USFWS is responsible for operation and maintenance of projects on lands it manages, and participates in pre- and post-project monitoring.

U.S. Geological Survey provides science leadership and daily administration of UMRR's long term resource monitoring and other science efforts, through its Upper Midwest Environmental Sciences Center in La Crosse. This includes program planning, coordination, and administration, as well as executing research, data analysis, modeling and decision support, and data maintenance and access. In serving these roles, USGS coordinates closely with USACE, state field stations, and interagency coordination bodies.

The Upper Mississippi River *states* participate in all aspects of UMRR, including the program's various coordinating committees and all stages of implementing habitat projects and long term resource monitoring. The states partner in project planning and design, provide water quality permitting and certification, construction consultation, pre- and post-construction monitoring, and 100 percent of operation and maintenance for projects on lands that they manage. In addition, the states staff and operate the six field stations with UMRR funding and contribute in a variety of ways to the design and execution of the program's monitoring, research, and analysis.

Many ***other federal and state environmental protection, agriculture, and transportation agencies*** are also involved in UMRR's implementation. These include, but are not limited to, U.S. Environmental Protection Agency, U.S. Department of Agriculture Natural Resource Conservation Service, and state water quality programs. These agencies and programs contribute their staff expertise to assist in UMRR's habitat restoration and scientific monitoring and research efforts by providing valuable information and insights.

Nonprofit organizations actively engage in UMRR's implementation in a variety of ways, from providing comments on specific project proposals to engaging in more regional, program-level matters. Some nonprofits, such as The Nature Conservancy, Ducks Unlimited, and the National Audubon Society, may also serve as nonfederal cost-share sponsors of habitat projects. The nonprofits are responsible for a 35 percent cost share and ongoing operation and maintenance of the project for the life of UMRR. The ***general public*** participates in UMRR through the involvement of local governments; sport, conservation, and nonprofit organizations; and individual participation.

CONTENTS

Acknowledgements..... i

District Commander’s Letter ii

Preamble iii

Vision..... 1

Mission..... 1

Assumptions..... 1

Guiding Principles 1

Defining Success..... 2

Goal 1: Enhance Habitat for Restoring and Maintaining a Healthier and More Resilient
Upper Mississippi River Ecosystem..... 3

Goal 2: Advance Knowledge for Restoring and Maintaining a Healthier and More Resilient
Upper Mississippi River Ecosystem..... 6

Goal 3: Engage and Collaborate with Other Organizations and Individuals to Help Accomplish the
Upper Mississippi River Restoration Vision..... 9

Goal 4: Utilize a Strong, Integrated Partnership to Accomplish the Upper Mississippi River
Restoration Vision..... 10

Appendix A: Program Authorization..... 11

Appendix B: Map of Habitat Projects..... 15

Appendix C: Map of Trend Pools..... 17

Appendix D: Sampling Effort..... 18

VISION

A HEALTHIER AND MORE RESILIENT UPPER MISSISSIPPI RIVER ECOSYSTEM
THAT SUSTAINS THE RIVER’S MULTIPLE USES

MISSION

TO WORK WITHIN A PARTNERSHIP AMONG FEDERAL AND STATE AGENCIES
AND OTHER ORGANIZATIONS; TO CONSTRUCT HIGH-PERFORMING HABITAT
RESTORATION PROJECTS; TO PRODUCE STATE-OF-THE-ART KNOWLEDGE
THROUGH MONITORING, RESEARCH, AND ASSESSMENT;
TO ENGAGE OTHER ORGANIZATIONS TO ACCOMPLISH THE
UPPER MISSISSIPPI RIVER RESTORATION PROGRAM’S VISION

GOALS

1. Enhance habitat for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem
2. Advance knowledge for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem
3. Engage and collaborate with other organizations and individuals to help accomplish the Upper Mississippi River Restoration vision
4. Utilize a strong, integrated partnership to accomplish the Upper Mississippi River Restoration vision

ASSUMPTIONS

Assumptions that provide an underlying foundation for this Strategic Plan’s goals and objectives:

1. Conditions in the Upper Mississippi River result from a combination of tributary inputs from the watershed, natural and man-made structures within the river corridor, and management of river flow. Human actions over time, within the river and its watershed, have produced stresses to the river’s condition and degraded its ecological health.
2. Existing stresses (e.g., point and nonpoint source pollution, navigation, flood control structures, invasive species) are likely to remain, and new stressors are likely to emerge in the future. Thus the river will continue to degrade without continued management and rehabilitation designed to minimize the effects of stresses. Managing stresses that originate within the watershed will require coordination with other relevant agencies or programs to address these challenges at their sources.
3. The man-made infrastructure within the river corridor that supports navigation and other human uses will remain in place for the foreseeable future, but modifications to structures or operations may occur.
4. Upper Mississippi River Restoration’s datasets (and other information) will be used to evaluate progress in advancing ecosystem and management objectives and determine if the Upper Mississippi River is recovered to a quality sufficient to support a healthy and resilient river ecosystem as well as future restoration needs.

GUIDING PRINCIPLES

Core principles to guide implementation of this Strategic Plan’s goals and objectives:

1. Deliver innovative, high quality projects, products, and services that create value to the Upper Mississippi River Restoration program partners and serve as a knowledge base for the Upper Mississippi River and other river systems nationally and internationally.
2. Promote focused research and analyses of monitoring data to predict how management actions will affect river function and use habitat projects to help test those predictions and improve management capabilities.
3. Make decisions using the best available science, data, and other information that will benefit current and future generations of humans and biota.
4. Routinely disseminate information about program activities and outcomes to program partners and other organizations and individuals to promote transparency and knowledge sharing.
5. Apply the principles of adaptive management to continually learn and improve as a program and in implementing restoration and science techniques.
6. Maintain and support the effective interagency and interdisciplinary partnership through communication and collaboration of the Upper Mississippi River Restoration Coordinating Committee, Analysis Team, and habitat project planning and sequencing teams to ensure high quality program delivery.
7. Serve as a dedicated partner to other agencies and programs in the integrated, multi-purpose management of the Upper Mississippi River and its watershed.

DEFINING SUCCESS

Criteria for evaluating success in achieving this Strategic Plan’s goals and objectives are as follows:

1. Restoration projects that enhance the health and resilience of the Upper Mississippi River and demonstrate progress in achieving this Strategic Plan’s goals and objectives.
2. A highly integrated program in which research and monitoring informs restoration efforts and in which restoration efforts are readily available for scientific use.
3. The ability to detect and communicate the status and trends of the Upper Mississippi River as related to indicators of ecosystem health and resilience as well as management objectives.
4. A highly engaged regional partnership that is supportive of the program and its outputs.
5. The Upper Mississippi River Restoration is recognized as a premier program in large river restoration and science and is a source of guidance for similar programs nationally and internationally.

GOAL 1**ENHANCE HABITAT FOR RESTORING AND MAINTAINING
A HEALTHIER AND MORE RESILIENT UPPER MISSISSIPPI RIVER ECOSYSTEM**

The Upper Mississippi River Restoration (UMRR) uniquely and effectively combines ecosystem restoration with scientific monitoring and research to restore and maintain a healthier and more resilient Upper Mississippi River ecosystem. Integrating a broad range of restoration techniques, including approaches that strive to use or mimic the river's natural processes, UMRR habitat projects enhance critical fish and wildlife habitat, improve the river's floodplain structure and function, restore the river's natural processes, and counteract the effects of human activity throughout the Upper Mississippi River basin. The process of identifying, planning, and prioritizing habitat projects is an interagency and public endeavor. The projects are then jointly planned by interdisciplinary teams of partner agencies, with input from the interested public. The best available science and decision support tools are used throughout project formulation and evaluation to optimize investment and most effectively and efficiently advance UMRR's vision. UMRR continually enhances its restoration techniques through adaptive management to enhance its restoration effectiveness and efficiency, learning from its long term systemic monitoring, project-specific monitoring, and focused research. Recognizing that the Upper Mississippi River ecosystem is affected in many ways by human activity within the river and its watershed, UMRR engages directly and indirectly with other organizations and individuals whose actions and decisions affect the Upper Mississippi River ecosystem to create synergies and leverage capabilities in advancing UMRR's vision.

- Objective 1.1 Address key ecological needs at various spatial scales through habitat projects that reflect best available knowledge and advance UMRR's vision**
- Strategy 1 Select habitat projects that will most effectively and efficiently advance UMRR's vision, utilizing an interagency, science-driven, systemic planning approach
 - Strategy 2 Plan, design, and construct habitat projects to best, and most efficiently, address their defined objectives and advance the UMRR's vision, using structural and non-structural measures and considering ecological benefits at various spatial scales
 - Strategy 3 Perform operation and maintenance on UMRR's habitat projects to ensure key features are working properly and effectively advancing the projects' goals and UMRR's vision
- Objective 1.2 Apply adaptive management principles to continually enhance restoration and knowledge of the Upper Mississippi River ecosystem**
- Strategy 1 Refine and implement a framework to operationalize UMRR's adaptive management efforts, including when and how to apply certain adaptive management techniques and documenting, communicating, and integrating the results and conclusions
 - Strategy 2 Apply monitoring and adaptive management principles at the individual habitat project scale to set learning objectives (for select projects), adjust project designs based on ecological models, evaluate the ecological responses to project features, modify constructed project features if not performing as intended, assess operation and maintenance activities, and enhance future restoration efforts
 - Strategy 3 Employ deliberate and explicit adaptive management analyses (hypothesis testing) using selected habitat projects to explore priority science questions or learning objectives and determine the effects of UMRR's restoration efforts on the Upper Mississippi River ecosystem's health and resilience

Strategy 4 Communicate and integrate learned information into future restoration alternatives and scientific investigations to guide and optimize UMRR’s investment in enhancing restoration and knowledge of the Upper Mississippi River ecosystem

TARGETED REVIEW DRAFT

GOAL 2**ADVANCE KNOWLEDGE FOR RESTORING AND MAINTAINING
A HEALTHIER AND MORE RESILIENT UPPER MISSISSIPPI RIVER ECOSYSTEM**

The Upper Mississippi River Restoration (UMRR) effectively and comprehensively integrates long term monitoring, research, modeling, and data management to provide critical knowledge about the Upper Mississippi River's health and resilience, providing a solid foundation upon which to base management actions and policy. With long term data collected over 25 years and a vast amount of scientific analyses and modeling capabilities, the UMRR's dataset is one of the most extensive and comprehensive datasets on any large river system in the world. UMRR's breadth of information, monitoring protocols, and data management and dissemination infrastructure create enormous possibilities to learn about the river's natural functions and processes, human influences, and opportunities to best address critical restoration needs. USACE operates this substantial undertaking in true partnership fashion, with USGS providing scientific leadership and conducting research and analysis and the five partner states operating the long term resource monitoring field stations and contributing in many ways to UMRR's scientific design and execution. The knowledge derived from UMRR is used extensively by resource managers, planners, administrators, scientists, academics, legislators, and the general public within the Upper Mississippi River region. UMRR also often exchanges knowledge with, and serves as a model for, other large river programs nationally and internationally, and at the same time, obtains valuable information and insights to even further enhance knowledge of the Upper Mississippi River ecosystem.

- Objective 2.1** **Assess, and detect changes in, the fundamental health and resilience of the Upper Mississippi River ecosystem by continuing to monitor and evaluate its key ecological components of aquatic vegetation, bathymetry, fish, land use/land cover, and water quality**
- Strategy 1 Determine the Upper Mississippi River's ecological status and trends through comprehensive, integrated analyses of key ecological indicators using UMRR's long term data
- Strategy 2 Conduct scientific analysis, research, and modeling using UMRR's long term data, and any necessary supplemental data, to gain knowledge about the Upper Mississippi River ecosystem status and trends and process, function, structure, and composition
- Strategy 3 Continue to improve the effectiveness of long term data collection, analysis, storage, and dissemination to maintain the data's integrity, long-term consistency, relevance, and usability (See Appendix D for a description of UMRR's sampling effort)
- Strategy 4 Evaluate additional ecological components as priorities and resources allow to gain an even broader understanding of the Upper Mississippi River ecosystem and expand possibilities for important scientific analyses
- Objective 2.2** **Provide critical insights and understanding regarding a range of key ecological questions through a combination of monitoring, additional research, and modeling in order to inform and improve management and restoration of the Upper Mississippi River**
- Strategy 1 Conduct focused research and analyses to gain critical, management-relevant information about the Upper Mississippi River's processes, functions, structures, and compositions as well as the dynamics and interactions among system components

- Strategy 2 Conduct research projects that improve our understanding of critical ecological conditions and processes by examining the effects of select habitat restoration projects on those conditions and processes
- Strategy 3 Utilize other information, as needed, to augment UMRR’s long term data sets for comprehensive analyses of the river’s health and resilience
- Strategy 4 Develop and improve ecological models and other decision support tools to enhance science capabilities and understandings, and improve understanding of the potential effects of future management actions
- Strategy 5 Effectively communicate to habitat project planners and managers regarding how research findings may be applied to habitat projects

TARGETED REVIEW DRAFT

GOAL 3

ENGAGE AND COLLABORATE WITH OTHER ORGANIZATIONS AND INDIVIDUALS TO HELP ACCOMPLISH THE UPPER MISSISSIPPI RIVER RESTORATION VISION

The Upper Mississippi River is a large, complex, and dynamic ecosystem that is heavily influenced by human activity throughout its watershed. While Upper Mississippi River Restoration (UMRR) can and does make significant contributions to enhancing the river’s ecosystem health and resiliency, it cannot, and should not, attempt to meet all of the river’s needs. No one agency or program can solely manage this multi-use ecosystem successfully. Rather, the UMR requires thoughtful and meaningful coordination among numerous agencies, organizations, and individuals with varying mandates and missions. This includes state and federal agencies with responsibilities related to natural resources, water quality, agriculture, transportation, and recreation; non-governmental organizations; industry representatives; and academics. UMRR can aid other programs and projects that have influence on the Upper Mississippi River’s condition. For example, UMRR’s various datasets are readily available for broad use by Clean Water Act programs and other river managers and researchers. It will be increasingly important for UMRR to work within a watershed context and create synergies with programs and projects that will affect the Upper Mississippi River’s health and resilience. In addition, interactions with other aquatic ecosystems nationally and internationally offer UMRR cost efficiencies and insights not otherwise available.

Objective 3.1 Work with key organizations and individuals in the Upper Mississippi River watershed

- Strategy 1 Ensure rich collaboration with key organizations and individuals in the Upper Mississippi River watershed in advancing complementary visions, missions, and goals
- Strategy 2 With key watershed programs and projects, jointly develop and communicate common messages about the restoration and knowledge needs of the Upper Mississippi River
- Strategy 3 Seek knowledge from other organizations and individuals for the purposes of being aware of activities that may influence UMRR’s work and enhancing programmatic efforts
- Strategy 4 Directly engage relevant organizations or individuals in implementing UMRR’s efforts, as appropriate

Objective 3.2 Provide information to organizations and individuals whose actions and decisions affect the Upper Mississippi River ecosystem

- Strategy 1 Enhance the delivery and utility of UMRR’s knowledge in order to increase understanding of the Upper Mississippi River’s ecosystem drivers and means to achieve the UMRR vision
- Strategy 2 Provide decision makers with timely, relevant, understandable, and usable knowledge about the needs and tools available to advance the UMRR’s vision

Objective 3.3 Exchange knowledge with other organizations and individuals nationally and internationally

- Strategy 1 Serve as a resource for similar programs nationally and internationally
- Strategy 2 Seek knowledge from other organizations and individuals nationally and internationally to enhance UMRR’s efforts in advancing its vision

GOAL 4

**UTILIZE A STRONG, INTEGRATED PARTNERSHIP
TO ACCOMPLISH THE UPPER MISSISSIPPI RIVER RESTORATION VISION**

As the federal agency authorized to implement Upper Mississippi River Restoration (UMRR), USACE is accountable for program management and execution. As a result, UMRR has been shaped in many ways by USACE policies and procedures. Yet, UMRR is truly a partnership program. UMRR’s authorization directs USACE to implement the program in consultation with the Department of Interior and the five basin states. For the specific purposes of providing interagency coordination, the UMRR Coordinating Committee was established to serve as the program’s primary consultative body to discuss and seek consensus on UMRR budgetary and policy issues. In addition, the Analysis Team provides scientific and technical advice and recommendations on Goal 2-related activities, including work priorities and research activities. The planning and prioritization of habitat projects is guided by interagency teams in USACE’s three regional Districts (St. Paul, Rock Island, and St. Louis). Partners commit substantial resources to participate in these coordinating groups. This thoughtful and meaningful collaboration has been vital to UMRR’s success and now serves as a model for other ecosystem restoration programs regionally, nationally, and internationally.

- Objective 4.1 Promote a common vision and sense of purpose, transparency, and accountability among UMRR partners**
 - Strategy 1 Partners carry a strong, unified message regarding UMRR’s value, accomplishments, and importance to the region and nation
 - Strategy 2 Partners work in cohesion to enhance restoration and knowledge of the Upper Mississippi River to advance UMRR’s vision
 - Strategy 3 Continually learn and improve as a program and in implementing restoration and science techniques
 - Strategy 4 Maintain transparency and accountability within the partnership regarding program priorities and budgets
 - Strategy 5 Organize and maintain institutional knowledge of UMRR’s policy and programmatic efforts

- Objective 4.2 Implement the UMRR as outlined in the program’s adopted Joint Charter for the UMRR Coordinating Committee, Analysis Team, and Habitat Planning and Sequencing Framework Teams, as well as the FY 2015-2025 UMRR Strategic Plan**
 - Strategy 1 Partner agencies implement program activities in accordance to the adopted Joint Charter
 - Strategy 2 Partner agencies collaboratively develop and implement the strategic plan

APPENDIX A: PROGRAM AUTHORIZATION

Environmental Management 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 GRM 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--

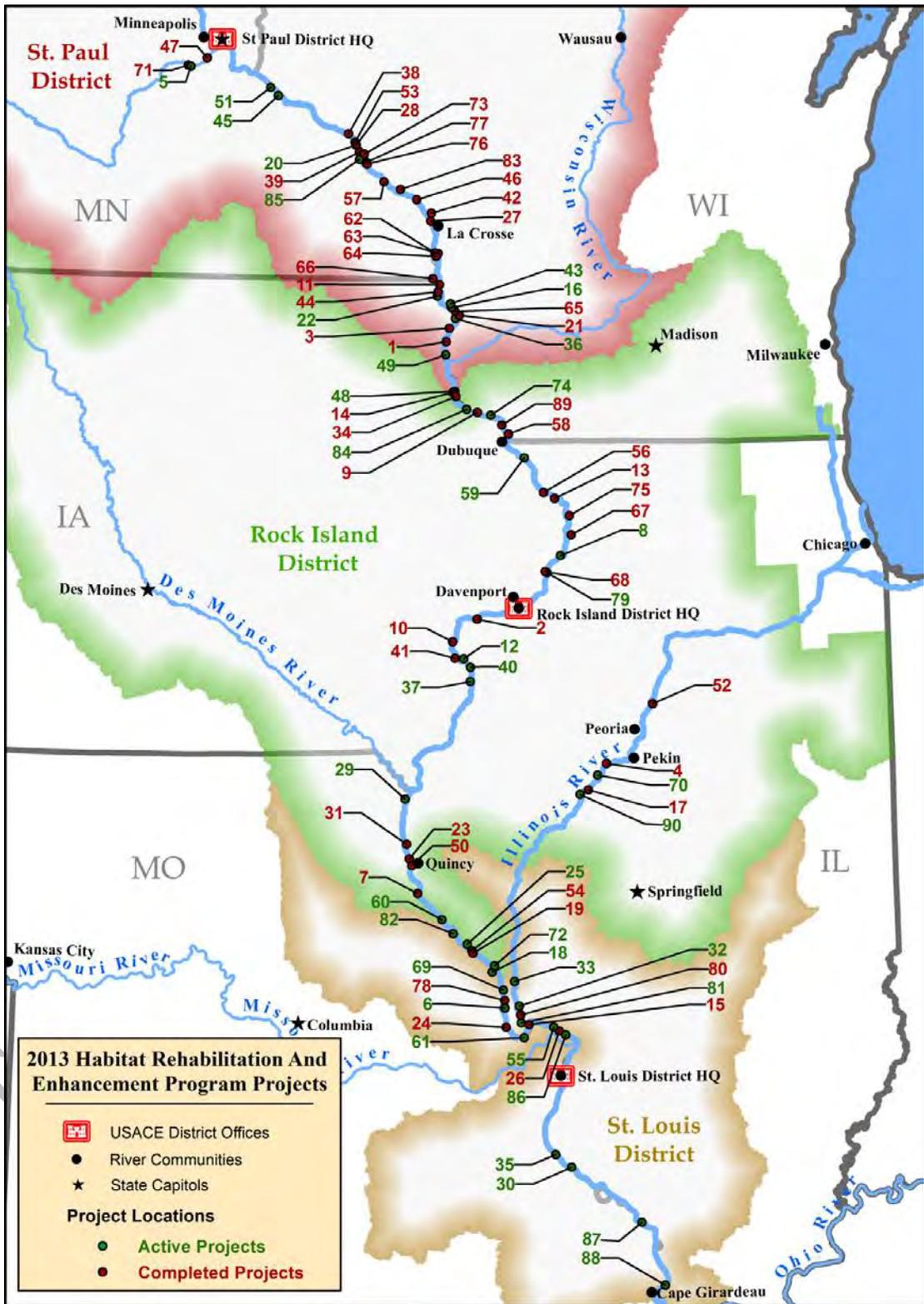
(1) such enhancement provides benefits that are determined to be national, including benefits to species that are identified by the National Marine Fisheries Service as of national economic importance, species that are subject to treaties or international convention to which the United States is a party,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

APPENDIX A: MAP OF HABITAT PROJECTS



UMRR Habitat Projects	Site #
Ambrough Slough	1
Andalusia Refuge	2
Mississippi River Bank Stabilization	3
Banner Marsh	4
Bass Ponds, Marsh, and Wetland	5
Batchtown	6
Bay Island	7
Beaver Island	8
Bertom McCartney Lakes	9
Big Timber	10
Blackhawk Park	11
Boston Bay	12
Brown's Lake	13
Bussey Lake	14
Calhoun Point	15
Capoli Slough	16
Chautauqua Refuge	17
Clarence Cannon	18
Clarksville Refuge	19
Clear Lake (Finger Lake) Dredging	20
Cold Springs	21
Conway Lake	22
Cottonwood Island	23
Cuivre Island	24
Delair Division	25
Dresser Island	26
East Channel	27
Finger Lakes	28
Fox Island	29
Salt Lake/Ft Chartres Side Channel	30
Gardner Division (Long Island Division)	31
Glades Wetlands	32
Godar Refuge	33
Guttenberg Waterfowl Ponds	34
Harlow Island	35
Harpers Slough	36
Huron Island	37
Indian Slough	38
Island 42	39
Keithsburg Division	40
Lake Odessa	41
Lake Onalaska	42
Lake Winneshiek	43
Lansing Big Lake	44
Lock & Dam 3	45
Long Lake	46

UMRR Habitat Projects	Site #
Long Meadow Lake	47
Lower Pool 10 Island and Backwater Complex	48
McGregor Lake	49
Monkey Chute	50
North and Sturgeon Lakes	51
Peoria Lake	52
Peterson Lake	53
Pharrs Island	54
Piasa - Eagle's Nest Islands	55
Pleasant Creek	56
Polander Lake	57
Pool 11 Islands-Sunfish Lake	58
Pool 11 Islands-Mud Lake	89
Pool 12 Overwintering	59
Pool 24 Islands	60
Pool 25 and 26 Islands	61
Pool 8 Islands Phase I	62
Pool 8 Islands Phase II	63
Pool 8 Islands Phase III	64
Pool 9 Islands	65
Pool Slough	66
Potters Marsh	67
Princeton Refuge	68
Red's Landing Wetlands	69
Rice Lake-IL	70
Rice Lake-MN	71
Rip Rap Landing	72
Small Scale Drawdown	73
Snyder Slough Backwater Complex	74
Spring Lake	75
Spring Lake Islands	76
Spring Lake Peninsula	77
Stag and Keaton Islands	78
Steamboat Island	79
Stump Lake	80
Swan Lake	81
Ted Shanks	82
Trempeleau	83
Turkey River Bottoms Delta and Backwater Complex	84
Weaver Bottoms	85
West Alton Tract	86
Wilkinson Island	87
Schenimann Chute	88
Emiquon	90

APPENDIX C: MAP OF TREND POOLS



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APPENDIX D: SAMPLING EFFORT

Component	Study Reach					
	4	8	13	26	La Grange	Open River
Vegetation ¹	450 stratified random sample sites over growing season.	450 stratified random sample sites over growing season.	450 stratified random sample sites over growing season.	—	—	—
Fisheries ²	~160 samples; 2 periods: Aug. 1–Oct. 30, 6 sampling gears. Mix of stratified random and fixed sample sites.	~180 samples; 2 periods: Aug. 1–Oct. 30, 6 sampling gears. Mix of stratified random and fixed sample sites.	~200 samples; 2 periods: Aug. 1–Oct. 30, 6 sampling gears. Mix of stratified random and fixed sample sites.	~180 samples; 2 periods: Aug. 1–Oct. 30, 6 sampling gears. Mix of stratified random and fixed sample sites.	~270 samples; 2 periods: Aug. 1–Oct. 30, 6 sampling gears. Mix of stratified random and fixed sample sites.	~165 samples; 2 periods: Aug. 1–Oct. 30, 6 sampling gears. Mix of stratified random and fixed sample sites.
Added fish monitoring for 2010–2014	1 st period, June 15 – July 31, 82 samples	1 st period, June 15 – July 31, 82 samples	1 st period, June 15 – July 31, 100 samples	1 st period, June 15 – July 31, 92 samples	1 st period, June 15 – July 31, 120 samples	1 st period, June 15 – July 31, 82 samples
Water Quality ³	135 stratified random sites done in each episode (winter, spring, summer, and fall); 14 fixed sites ⁴	150 stratified random sites done in each episode (winter, spring, summer, and fall); 13 fixed sites ⁴	150 stratified random sites done in each episode (winter, spring, summer, and fall); 12 fixed sites ⁴	121 stratified random sites done in each episode (winter, spring, summer, and fall); 9 fixed sites ⁴	135 stratified random sites done in each episode (winter, spring, summer, and fall); 11 fixed sites ⁴	150 stratified random sites done in each episode (winter, spring, summer, and fall); 9 fixed sites ⁴
Added water quality monitoring for 2010–2014	14 fixed sites in Pools 4 biweekly during July and August.	4 historic fixed sites, biweekly from April through August.	—	—	—	—

Land Cover/Land Use - Information on land cover/ land use is obtained from aerial photography collected approximately every 10 years to document change over time in response to both natural and anthropogenic disturbances. Systemic land cover of the Upper Mississippi River System has been mapped twice as part of the Long Term Resource Monitoring Program; 1989 and 2000.

Land Cover/Land Use digital aerial photography will be acquired in 2010.

¹ Principal aquatic vegetation data collected were species composition, relative and percent frequency, abundance (rake score), and distribution.

² Principal fish data collected were species composition, relative abundance (catch-per-unit-effort), and length distribution of catches. Subsamples from a few species were collected for age determination, growth analysis, and examination of food use.

³ Principal limnological data collected included physicochemical characteristics, suspended solids, chlorophyll a, phytoplankton [archived], and major plant nutrients.

⁴ Frequency of fixed site sampling was bi-weekly in April, May, and June, and monthly in all other months, but with no sampling in December and February (i.e., winter sampling in January only).

ATTACHMENT D

Long Term Resource Monitoring Program Element

- **LTRMP Element FY 14 Scope of Work thru 2nd Quarter (4/25/14)** *(D-1 to D-7)*
- **UMRR-EMP Science Support (4/28/14)** *(D-8 to D-10)*

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Aquatic Vegetation Component						
2014A1	Complete data entry and QA/QC of 2013 data; 1250 observations.					
	a. Data entry completed and submission of data to USGS	30-Nov-13		30-Nov-13		Moore, Langrehr, Petersen
	b. Data loaded on level 2 browsers	15-Dec-13		15-Dec-13		Schlifer
	c. QA/QC scripts run and data corrections sent to Field Stations	28-Dec-13		28-Dec-13		Sauer, Schlifer
	d. Field Station QA/QC with corrections to USGS	15-Jan-14		15-Jan-14		Moore, Langrehr, Petersen
	e. Corrections made and data moved to public Web Browser	30-Jan-14		30-Jan-14		Sauer, Schlifer, Caucutt
2014A2	WEB-based annual Aquatic Vegetation Component Update with 2013 data on Public Web Server.					
	a. Develop first draft	30-Mar-14		31-Mar-14		Sauer
	b. Reviews completed	15-Apr-14				Moore, Langrehr, Petersen, Sauer, Yin
	c. Submit final update	30-Jun-14				Sauer
	d. Placement on Web with PDF	31-Jul-14				Sauer, Caucutt
2014A3	Complete aquatic vegetation sampling for Pools 4, 8, and 13 (Table 1)	31-Aug-14				Yin, Moore, Langrehr, Petersen
2014A4	Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2013 data	31-Jul-14				Yin, Rogala, Schlifer
2014A5	Wisconsin DNR annual summary report 2013 that combines current year observations from LTRMP with previous years' data, for the fish, aquatic vegetation, and water quality components.	30-Sep-14				Fischer, Langrehr, Bartels, Giblin, Hoff
2014A6	Annual Field Station Data Summary Report Template Development	30-Sep-14				Popp, Bierman, Chick, Herzog, Casper, Hagerty
2014A7	Final draft report: Identification of maximal flow velocity threshold for colony of <i>Vallisneria americana</i> along the channel border of the Upper Mississippi River (2013A8)	15-Sep-14				Yin
On-Going						
2012A6	Draft LTRMP completion report: Fifteen years (1998–2012) of aquatic vegetation in Pool 4 of the Upper Mississippi River.	30-Apr-14				Moore
2013A8	Draft report: Identification of maximal flow velocity threshold for colony of <i>Vallisneria americana</i> along the channel border of the Upper Mississippi River–Extension of modeling capabilities for aquatic vegetation (contract award July 2013)	15-Jun-14				Yin
Intended for distribution						
Completion report: LTRMP Aquatic Vegetation Program Review (2007A9; Heglund) (In USGS Review)						
LTRMP Technical Report: Ecological Assessment of High Quality UMRS Floodplain Forests (2007APE12; Chick, Guyon, Battaglia) (In USGS Review)						
LTRMP Technical Report; Experimental and Comparative Approaches to Determine Factors Supporting or Limiting Submersed Aquatic Vegetation in the Illinois River and its Backwaters (2008APE5, Sass) (In USGS Review)						
LTRMP 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)						
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)						
Manuscript: A statistical model of species occupancy using the LTRMP aquatic vegetation data (2013A7; Yin)						
WI DNR annual 2012 data summary report (2013A5; Fischer, Langrehr, Bartels, Giblin, Hoff) Distributed; http://dnr.wi.gov/water/wsSWIMSDocument.aspx?documentSeqNo=86352298						

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Fisheries Component						
2014B1	Complete data entry, QA/QC of 2013 fish data; ~1,590 observations					
	a. Data entry completed and submission of data to USGS	31-Jan-14		31-Jan-14		DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Michaels
	b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations	15-Feb-14		15-Feb-14		Schlifer
	c. Field Station QA/QC with corrections to USGS	15-Mar-14		15-Mar-14		DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Michaels
	d. Corrections made and data moved to public Web Browser	30-Mar-14		30-Mar-14		Sauer and Schlifer
2014B2	Update Graphical Browser with 2013 data on Public Web Server.	31-May-14				Sauer, DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Michaels, Schlifer
2014B3	Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool (Table 1)	31-Oct-14				Ickes, DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Michaels
2014B4	Final draft fact sheet: Tree map tool for visualizing fish data, with example of native versus non-native fish biomass (2013B16)	30-Sep-14				Schlifer, Sauer
2014B5	Final draft completion report: summary of data extraction & metadata for archiving of UMRS floodplain disturbance histories (2008APE1a/2013B4)	30-Sep-14				Ickes
2014B6	Summary letter on Asian carp age and growth: collection of cleithral bones	31-Jan-14		17-Jan-14		Solomon, Casper
2014B7	Preliminary analysis and summary letter: Asian Carp Age and Growth	30-Sep-14				Solomon, McClelland, Casper
2014B8	Letter Summary: Native fish community response to Asian Carp reduction efforts	30-Sep-14				Casper, McClelland, Solomon
2014B9	Letter Summary: Exploring Years with Low Total Catch of Fishes in Pool 26	30-Sep-14				Gittinger, Ratcliff, Lubinski, Chick
2014B10	Presentations, draft completion report: Paddlefish population characteristics in the Mississippi river Basin	1-Dec-15				Hupfeld, Phelps
2014B11	Presentations, draft completion report: Examining recruitment patterns in Fishes in the Mississippi River	30-Sep-14				West, Sobotka, Hupfeld, Phelps
2014B12	Database increment, Letter summary: Collection and exploratory analysis of age and growth data for catfish in La Grange Pool	30-Sep-14				Solomon, Casper
2013S3	Prepare read ahead (if applicable) on use of LTRMP fish monitoring methods to EMPCC	31-Dec-13		31-Dec-13		Solomon, Casper
2013S4	Present findings at EMP CC and UMRCC and/or MRCC conference (if funding for travel available)	Spring 2014				Solomon, Casper
2014B13(L)	Advisory role for Assessment of Asian carp exploitation by native piscivores in the Illinois River (Western Illinois University)	On-going				Casper
2014B14	IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2013	30-Jun-14				Bowler
2014B15(D)	Database increment: Stratified random day electrofishing samples collected in Pools 9 – 11	30-Sep-14				Bowler

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2014B16(D)	Database increment: Stratified random day electrofishing samples in Pools 16–18	30-Sep-14				Bowler
2014B17	Draft LTRMP Program Report: Monitoring Rationale, Strategy, Issues, and Methods (UMRR-EMP LTRMP Fish Component; off-shoot of 2013B5)	30-Jun-14				Ickes, Sauer, and Rogala
2014B18	Final Draft LTRMP Technical Report: Annotated empirical response curves for Upper Mississippi River System fishes” (AHAG 2.0), (2013B28)	30-Sep-14				Ickes, Sauer, Richards, Bowler, and Schlifer
2014B19	Summary report: Pool 12 Overwintering HREP adaptive management fisheries response monitoring	30-Sep-14				Bierman, Bowler
On-Going						
2006B6	Draft manuscript: Spatial structure and temporal variation of fish communities in the Upper Mississippi River. (Dependent on 2008B9 acceptance into journal)	30-Sep-14				Chick
2008B9	Draft manuscript: Standardized CPUE data from multiple gears for community level analysis (a previous manuscript was submitted and not accepted by the journal, 2006B5; 2008B9 is a revised manuscript)	15-Dec-13				Chick
2012B8	Draft manuscript: Influence of Asian carp on planktivorous fish	31-Dec-13		31-Dec-13		Phelps
2013B12	Final draft LTRMP report: Testing the Fundamental Assumption underlying the use of LTRMP fish data: Does variation in LTRMP catch-per-unit-effort data reflect variation in the abundance of fishes? (2007APE3)	22-Nov-13		13-Jan-14		Chick
2013B17	Shovelnose sturgeon habitat use in the UMR (data sets, analysis, presentations, draft manuscript)	31-Dec-13		31-Dec-13		Phelps
2013B19	Channel catfish habitat evaluation (data sets, analysis, presentations, draft manuscript)	31-Dec-13		31-Dec-13		Phelps
2013B26	White Paper: UMRR-EMP LTRMP Capability Related to Asian Carps	31-Dec-13		9-Sep-13		Hubbell, Chick, Casper, Phelps, Solomon, Lubinski
Intended for distribution						
Completion report: LTRMP Fisheries Component collection of six darter species from 1989–2004. (2006B13; Ridings) <i>(In USGS Review)</i>						
Evaluating the effectiveness of a mandatory catch and release regulation on a riverine largemouth bass population (2007B7; Bowler) <i>(proposed for publication in Iowa DNR’s Fisheries Management Investigations)</i>						
LTRMP Report: An Evaluation of Macroinvertebrate Sampling Methods For Use In The Open River Reach of The Upper Mississippi River; Kathryn N. S. McCain, Robert A. Hrabik, Valerie A. Barko, Brian R. Gray, and Joseph R. Bidwell (2005C2) <i>(In USGS Review)</i>						
LTRMP technical report: Relationship of juvenile abundance of select fish species to aquatic vegetation in Navigation Pools 4, 8, and 13 of the Upper Mississippi River, 1998-2007 (2007B5; 2009B5; Popp and DeLain) (http://pubs.usgs.gov/mis/ltrmp2014-t001/)						
LTRMP technical report; Setting quantitative fish management targets for LTRMP monitoring (2008APE2; Sass) <i>(In USGS Review)</i>						
LTRMP Completion report, compilation of 3 years of sampling: Fisheries (2009R1Fish; Chick et al.) <i>(In USGS Review)</i>						
Manuscript: American eel population characteristics in the Upper Mississippi River (2012B7; Phelps) <i>(accepted for publication)</i>						
LTRMP fisheries component procedures manual (2013B5; Ratcliff, Gittinger, Ickes) <i>(submitted to USGS)</i>						
Manuscript: Determining environmental history of three sturgeon species in the Upper, Middle, and Lower Mississippi Rivers. (2013B22; Phelps) <i>(submitted to USGS)</i>						

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Manuscript: A pilot evaluation of the commercial and recreational harvest of paddlefish (<i>Polyodon spathula</i>) in Missouri, (2013B24; Phelps) (submitted to the Journal of Applied Ichthyology)						
Manuscript: Sauger life history in the lower portion of the Upper Mississippi River (2013B20, Phelps). (Submitted to Prairie Naturalist)						
Manuscript: Age-0 sturgeon habitat associations in the free flowing portion of the Upper Mississippi River (2012B5; Tripp, Phelps, Herzog) (submitted to UMESC)						
Manuscript: development of an Asian Carp Size Structure Index and Application through Demonstration (Phelps, Willis) (2013) North American Journal of fisheries Management, 33:(2) 338-343						
Water Quality Component						
2014D1	Complete calendar year 2013 fixed-site and SRS water quality sampling	31-Dec-13		31-Dec-13		Houser, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2014D2	Complete laboratory sample analysis of 2013 fixed site and SRS data; Laboratory data loaded to Oracle data base.	15-Mar-14		15-Mar-14		Yuan, Schlifer
2014D3	1st Quarter of laboratory sample analysis (~12,600)	30-Dec-13		30-Dec-13		Yuan, Kreiling, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2014D4	2nd Quarter of laboratory sample analysis (~12,600)	30-Mar-14		30-Mar-14		Yuan, Kreiling, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2014D5	3rd Quarter of laboratory sample analysis (~12,600)	29-Jun-14				Yuan, Kreiling, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2014D6	4th Quarter of laboratory sample analysis (~12,600)	28-Sep-14				Yuan, Kreiling, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2014D7	Complete QA/QC of calendar year 2013 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-14		30-Mar-14		Schlifer, Rogala, Houser
	b. Field Station QA/QC; USGS QA/QC.	15-Apr-14				Houser, Rogala, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
	c. Corrections made and data moved to public Web Browser	30-Apr-14				Rogala, Schlifer, Houser
2014D8	Complete FY2013 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool (Table 1)	30-Sep-14				Houser, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2014D9	WEB-based annual Water Quality Component Update with 2013 data on Public Web Server.	30-May-14				Rogala
2014D10	Final draft fact sheet: Tree map tool for visualizing fish data with example of native versus non-native fish biomass	30 Sept. 2014				Schlifer, Sauer
2014D11	Letter Summary: Evaluation of water quality data from an automated sampling platform	30-Sep-14				Soeken-Gittinger, Lubinski, Chick
2014D12	Draft manuscript: Nutrients and dissolved oxygen in the UMRS: improving our understanding of winter conditions and their implications for structure and function of the river	30-Sep-14				Houser

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2014D13	Presentations, draft completion report: A Comparison of Side and Main Channel Fish Community and Water Quality Characteristics	1-Dec-15				Sobotka, West, Phelps
On-Going						
2013D10	Final draft completion report: changes in substrate, water quality, aquatic vegetation, zooplankton, and fish community from Geomorphic Reach 1 (above Lake Pepin) to Geomorphic Reach 3 (below Lake Pepin) (2010D6)	30-Dec-13		6 Feb. 2014		Popp, De Lain, Burdis, Moore
2013D17	Draft manuscript: Relationship between the temporal and spatial distribution, abundance, and composition of zooplankton taxa and hydrological and limnological variables in Lake Pepin	30-Dec-13			Request submitted to BJ for modification of deadline	Burdis
2013D19	Letter Summary: Assessment of the efficacy of monitoring water quality in the UMRS using a YSI real-time Environmental Monitoring System (Pices Platform) (continued work on 2012D15)	31-Oct-13				Chick, L. Gittinger, Lubinski
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)						
LTRMP report: Main channel/side channel report for the Open River Reach. (2005D7; Hrabik) (In USGS Review)						
Manuscript: Ecosystem metabolism in the main channel and backwaters of the Upper Mississippi River: the role of submersed vegetation and hydraulic connectivity. (2008D8; Houser et al.) (In review)						
Manuscript Nutrient cycling, connectivity, and free-floating plant abundance in backwater lakes of the Upper Mississippi River. (2009APE3, Houser) River Systems, Volume 21: 1, p. 71–89						
Manuscript: Lateral contrasts in nutrients, chlorophyll, and suspended solids within the Upper Mississippi River System (2012D10; Houser) (In review)						
Completion report, compilation of 3 years of sampling: Water Quality (2009R1WQ; Giblin, Burdis) (In USGS Review)						
Manuscript: Temporal evaluation of factors influencing metaphyton biomass, distribution and composition within UMR backwaters (2010out2a; Giblin et al) Wetlands On-line First DOI 10.1007/s13157-013-0508-8						
Manuscript: Trends in suspended solids, nitrogen, and phosphorus in select upper Mississippi River tributaries, 1991-2011 (Kreiling and Houser, 2013D14) (in USGS review)						
Land Cover/Land Use with GIS Support						
2014LC1	Updates on progress for land cover products (See SOW)				New progress reported in the quarterly activities. Percent complete updated 30 Sept 2014.	Robinson
Development of 2010–2011 Land Cover/Land Use GIS Database and Aerial Photo Mosaics						
2014V1	Complete 30% of the 2010/11 LCU database for UMR Open River North	30-Apr-14				Robinson, Hoy, Hanson, Langrehr, Ruhser, Nelson
2014V2	Complete remaining 70% of the 2010/11 LCU database for UMR Open River North	TBD			Tasks captured by milestones 2014V2 and 2014V4 will be completed under the separate UMRR Science Support SOW	Robinson, Hoy, Hanson, Langrehr, Ruhser, Nelson
2014V3	Complete accuracy assessment and validation analyses	30-Apr-14				Ruhser, Jakusz
2014V4	Final LTRMP Completion Report on Accuracy Assessment	TBD			Tasks captured by milestones 2014V2 and 2014V4 will be completed under the separate UMRR Science Support SOW	Ruhser, Jakusz

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Statistical Evaluation						
2014E1	Final draft completion report: Long-term trend reporting, water quality component (2013E1)	30-Sep-14				Gray, Houser, Rogala
2014E2	Water quality web page: Depiction of trend estimates on water quality graphical browser pages	30-Sep-14				Gray, Houser, Rogala, Schlifer
On-Going						
2013E2	Final draft completion report: an assessment of trends in water temperature in La Grange Pool (2012E3)	30-Dec-13		30-Dec-13		Gray, Robertson, Rogala, Houser
Intended for distribution						
Completion report that describes methods of estimating variance components from LTRMP water quality data (2008E1; Gray) (In USGS Review)						
Manuscript (Changed from Completion Report): Spatial and temporal variation in duckweed and filamentous algal levels in contiguous floodplain lakes of the Upper Mississippi River. Gray and Holland. (2009APE3a) Journal of Aquatic Plant Management 50: 91-100						
Manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1, Rogala, Gray, Houser) (in journal review)						
Completion Report: summer water temperature in the Upper Mississippi River (2012E2). Gray, Robertson, Houser, Rogala. (in USGS review)						
Completion report: An assessment of trends in water temperature in La Grange Pool (2012E3; Gray, Robertson, Rogala, Houser) (in USGS review)						
Data Management						
2014M1	Update vegetation, fisheries, and water quality component field data entry and correction applications.	30-May-14				Schlifer
2014M2	Load 2013 component sampling data into Oracle tables and make data available on Level 2 browsers for field stations to QA/QC.	30-Jun-14				Schlifer
2014M3	Webinar on LTRMP data access and use	Fall				Sauer, Johnson, Houser, Ickes, Yin, Rogala, De Jager, Schlifer, Lowenberg
Landscape Pattern Research and Application (Not base monitoring)						
2014L1	Draft manuscript: Effects of flood inundation duration on litter decomposition and nitrogen cycling during different states of forest succession.	30-Sep-14				Strauss, Swanson, (UWL) &
2014L2	Maps and Metrics: Floodplain inundation duration maps and metrics	30-Sep-14				Rohweder and De Jager
2014L3	2014L3: Draft manuscript: Differences in fish community composition between patches of high TN:TP and low TN:TP: the role of water flow velocity	30-Sep-14				De Jager
Intended for distribution						
Manuscript: Cogger, B.J. , De Jager, N.R. and Thomsen, M. . In Press. Winter browse selection by white-tailed deer and implications for bottomland forest restoration in the Upper Mississippi River valley, USA. (2012L4) (Submitted to Natural Areas Journal)						
Fact Sheet: De Jager, N.R. 2013. Landscape Ecology on the Upper Mississippi River: lessons learned, challenges, opportunities (2013L3). (In Press)						
Manuscript: De Jager, N.R. and T.J. Fox. 2013 Curve Fit: a pixel-level raster regression tool for mapping spatial patterns (2013L1) Methods in Ecology and Evolution; British Ecological Society 2013. 4 pp.						
Manuscript: De Jager, N.R. effects of flood frequency and duration on the allometry of community-level stem size-density distributions in a floodplain forest. American Journal of Botany 99(9): 1572–1576.						
Science Planning						
2013XZ	Final Draft report to EMP-CC	20-Nov-13				Johnson

Upper Mississippi River Restoration–Environmental Management Program
 Long Term Resource Monitoring Program Element
 FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2014N1	Science Planning Meeting	11-13 Feb 2014				Johnson, Sauer, Lowenberg
2014N2	Draft 3-year research plan	15-May-14				Johnson, UMESC staff
2014N3	Final Draft research plan to EMP-CC	1-Aug-14				Johnson
Involvement of LTRMP with monitoring on other rivers, nationally and internationally						
2014P1	Draft white paper for review	15-Jun-14				Johnson
2014P2	Final draft white paper	30-Sep-14				Johnson
2014P3	Final Draft white paper to EMP-CC	Nov. 2014				Johnson
Quarterly Activities						
2014QR1	Submittal of quarterly activities	30-Jan-14		30-Jan-14		All LTRMP staff
2014QR2	Submittal of quarterly activities	13-Apr-14				All LTRMP staff
2014QR3	Submittal of quarterly activities	13-Jul-14				All LTRMP staff
2014QR4	Submittal of quarterly activities	12-Oct-14				All LTRMP staff
Science Management						
2014ER1	Property inventory and tracking	15-Nov-14				LTRMP staff as needed

UMRR-EMP's
Long Term Resource Monitoring Program element
FY2013
Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Seamless Elevation Data						
2014LB1	LiDAR Tier 1, processing and meta data, data on line: Pools 15-19, Pool 25 – Open River, Kaskaskia, IL River all pools	30-Mar-15				Dieck, Rohweder, Nelson, Fox
2014LB2	LiDAR Tier 3, processing and meta data, data on line: Pools 4, 5, 7, 8, 9, 10, 13, and 21	30-Mar-15				Dieck, Rohweder, Nelson, Fox
Land Cover / Land Use data and Accuracy Assessment/Validation for UMRS						
2014V2	Complete remaining 70% of the 2010/11 LCU database for UMR Open River North	30-Sep-14				Robinson, Hoy, Hanson, Langrehr, Ruhser, Nelson
2014V4	Final LTRMP Completion Report on Accuracy Assessment	30-Sep-14				Ruhser, Jakusz
Standardized HREP Non-forested Wetland Plant Sampling Protocol						
2014NFW1	draft NFW monitoring protocol	28-Feb-14		28-Feb-14		McCain
2014NFW2	Final draft NFW monitoring protocol	30-Mar-14		31-Mar-14		McCain
2014NFW3	A-Team review	1-Apr-14		7-Apr-14		McCain
2014NFW4	completed NFW monitoring protocol available	30-Sep-14				McCain
Standardized HREP Forested Wetland Plant Sampling Protocol						
2014FW1	draft FW monitoring protocol	30-Nov-13		30-Nov-13		McCain
2014FW2	Final draft FW monitoring protocol	30-Mar-14		31-Mar-14		McCain
2014FW3	A-Team review	1-Apr-14		7-Apr-14		McCain
2014FW4	completed FW monitoring protocol available	30-Sep-14				McCain
Predictive Model for Aquatic Cover Types						
2014AQ1	Complete hydraulic model of existing conditions	30-Apr-14				Hendrickson
2014AQ2	Compile vegetation data and develop empirical equations, Stoddard as pilot	31-Aug-14				Yin, Rogala, Ingvalson, Potter
2014AQ3	Compile vegetation data and develop empirical equations, North & Sturgeon	30-Sep-14				Yin, Rogala, Ingvalson, Potter
2014AQ4	Final model and outputs	31-Dec-14				Yin, Rogala, Ingvalson, Potter
UMRS Vegetation Handbook						
2014VH1	Acquire new field images for handbook	30-Sep-14				Dieck, Langrehr, Hoy, Robinson, Ruhser
2014VH2	Draft updates to technical sections and vegetation descriptions	31-Dec-14				Dieck, Langrehr, Hoy, Robinson, Ruhser
2014VH3	Finalize handbook and submit for USGS review	31-Mar-15				Dieck, Langrehr, Hoy, Robinson, Ruhser
Phase 2 Geospatial Data Upgrades						
2014GDU1	Complete geodatabases by pool for the entire UMRS	30-Sep-14				Nelson, Robinson
2014GDU2	Complete KMZ files for river miles, levees, boat access points, wing dams, aquatic areas, and remaining land cover data	30-Sep-14				Nelson, Robinson

UMRR-EMP's
Long Term Resource Monitoring Program element
FY2013
Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Spatial Data Query Tool						
2013SDQ1	Compile all LTRMP sampling data collected through 2013 and convert to a useable format	1-Aug-14				Rohweder, Fox
2013SDQ2	Create a web-based platform that contains all spatial data; convert all queries to ArcGIS	31-Dec-14				Rohweder, Fox
2013SDQ3	SDQT beta tested and ready for USGS review	31-Mar-15				Rohweder, Fox
2014DM1	Include all UMRR-EMP data created at UMESC in the data map	30-Sep-14				Nelson, Ruhser
2014DM2	Include all UMRR-EMP publications from http://umesc.usgs.gov/reports_publications/ltrmp_rep_list.html in the data map	31-Dec-14				Nelson, Ruhser
2014DM3	Include additional state and federal data references in the data map	31-Mar-15				Nelson, Ruhser
Assessing System-wide Hydrodynamic Model Availability						
2014SHM1	Kick off Email to workshop participants	30-Apr-14		21-Apr-14		Theiling
2014SHM2	Compile list of UMR-IWW hydrologic models	31-May-14				Theiling
2014SHM3	Complete read-aheads	15-Jun-14				Theiling
2014SHM4	Conduct workshop/webinar	Jul-14				Theiling
2014SHM5	Summarize webinar	31-Jul-14				Theiling
2014SHM6	Draft white paper	31-Aug-14				Theiling
2014SHM7	Final white paper	30-Sep-14				Theiling
Development of Mussel Vital Rates						
2014MVR1	Brief summary report	30-Sep-15				Newton, Zigler, Davis
2014MVR2	Brief summary report	30-Sep-16				Newton, Zigler, Davis
2014MVR3	Completion report on a vital rates of native mussels at West Newton Chute, UMRS	30-Sep-17				Newton, Zigler, Davis
Validation of Mussel Community Assessment Tool						
2014MCA1	Workshop of mussel experts in UMRS	1-May-15				Newton, Zigler, Dunn, Duyvejonck
2014MCA2	Draft completion report on a validated mussel community assessment tool for use by river managers	1-Dec-15				Newton, Zigler, Dunn, Duyvejonck
2014MCA3	Final completion report on a validated mussel community assessment tool for use by river managers	1-Mar-16				Newton, Zigler, Dunn, Duyvejonck
Effects of Nutrient Concentrations on Zoo- and Phytoplankton						
2014NC1	Counting of phytoplankton samples	13-Mar-15				Giblin, Campbell, Houser, Manier
2014NC2	Database completed and analysis completed	13-Mar-16				Giblin, Campbell, Houser, Manier
2014NC3	Full manuscript completed	13-Mar-17				Giblin, Campbell, Houser, Manier
Ecological Shifts Turbid to Clear States						
2014ES1	Literature review and initial analyses completed	13-Mar-15				Giblin, Ickes, Langrehr, Bartels
2014ES2	Refined analyses and draft manuscript prepared	13-Mar-16				Giblin, Ickes, Langrehr, Bartels
2014ES3	Manuscript submitted for publication	13-Mar-17				Giblin, Ickes, Langrehr, Bartels

UMRR-EMP's
 Long Term Resource Monitoring Program element
 FY2013
 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Invasive Carp Population Demographics (#1)						
2014CPD1	Summary letter	31-Jan-15				Phelps, McCain
2014CPD2	Manuscript	31-Mar-16				Phelps, McCain
Asian Carps Recruitment Sources (#2)						
2014CRS1	Summary letter	31-Jan-15				Phelps, McCain
2014CRS2	Manuscript	31-Mar-16				Phelps, McCain
Effects of Asian Carps on Native Piscivore Diets (#3)						
2014NPD1	Summary letter	31-Jan-15				Phelps, McCain
2014NPD2	Manuscript	31-Mar-16				Phelps, McCain
Early Life History of Invasive Carps (#4)						
2014CLH1	Summary letter	31-Jan-15				Phelps, McCain
2014CLH2	Manuscript	31-Mar-16				Phelps, McCain

ATTACHMENT E

UMRR-EMP Outline for an Invasive Species Strategy (4/25/14)

(E-1)

DRAFT

**Upper Mississippi River Restoration – Environmental Management Program (UMRR-EMP)
Outline for an Invasive Species Strategy
April 25, 2014**

Overview: Issues related to the spread and impact of invasive species are one of the dominate natural resource topics in the UMRS. The LTRM element of the UMRR-EMP collects a broad range of base data in the UMRS related to fish, water quality, and submerged aquatic vegetation. The scientific monitoring and research activities are focused on identifying the status and trends of critical river components and gaining insight into ecosystem function and the factors influencing the community structure of fishes and aquatic vegetation. Although none of the protocols used in the LTRM element of the Program are designed to specifically address any invasive species, these data are essential to document baseline conditions and changes in those conditions over time within the UMRS.

Purpose of Strategy: This paper will aid in identifying and addressing UMRR-EMP's role regarding invasive species within its authorization and within the Partnership while considering the Corps' Invasive Species Policy objectives and related activities.

This will include:

1. Communicating UMRR-EMP's role in understanding historic and existing conditions of the UMRS ecosystem, and how this can be used to evaluate impact of invasive species on native communities or species;
2. Delineating how future UMRR-EMP research activities on both invasive and native species can be strengthened though improved coordination and application of a system-wide perspective;
3. Evaluating the impacts of invasive species on existing and future restoration projects and their intended benefits;
4. Documenting the procedure to report new captures or sightings of invasive species;
5. Communicating the UMRR-EMP roles to other groups or organizations is critical for coordinating all efforts on aquatic invasive species effectively.

Target Audience: The primary target audience for this Strategy is the UMRR-EMP partnership, including the EMP-CC, Analysis Team, and UMRR LTRM Management Team. The secondary audience for this effort is the broad array of entities working on invasive species issues throughout the UMRS and Great Lakes Basin.

ATTACHMENT F

Additional Items

- **Future Meeting Schedule** *(F-1)*
- **Frequently Used Acronyms (3/28/14)** *(F-2 to F-7)*
- **UMRR-EMP Authorization, As Amended (9/24/10)**
(F-8 to F-11)
- **UMRR-EMP Operating Approach (5/06)** *(F-12)*

**QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE**

AUGUST 2014	
<u>East Peoria, Illinois</u>	
August 5	UMRBA Quarterly Meeting
August 6	UMRR-EMP Coordinating Committee

NOVEMBER 2014	
<u>St. Paul, Minnesota</u>	
November 17	UMRBA WQEC Meeting
November 18	UMRBA Quarterly Meeting
November 19	UMRR-EMP Coordinating Committee

Acronyms Frequently Used on the Upper Mississippi River

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
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
CWA	Clean Water Act
DALS	Department of Agriculture and Land Stewardship

DED	Department of Economic Development
DEM	Digital Elevation Model
DET	District Ecological Team
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 (see UMRR-EMP for current preferred form)
EMP-CC	Environmental Management Program Coordinating Committee (see UMRR-EMP CC for current preferred form)
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
HEL	Highly Erodible Land
HEP	Habitat Evaluation Procedure
HNA	Habitat Needs Assessment
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
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
LTRMP	Long Term Resource Monitoring Program
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
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
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
PA	Programmatic Agreement
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
RCP	Regional Contingency Plan
RDB	Right Descending Bank
RED	Regional Economic Development
RIFO	Rock Island 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
TLP	Traditional License Process
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
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-EMP	Upper Mississippi River Restoration Environmental Management Program
UMRR-EMP CC	Upper Mississippi River Restoration Environmental Management Program Coordinating Committee
UMRS	Upper Mississippi River System
UMRSHNC	Upper Mississippi River Sub-basin Hypoxia Nutrient Committee
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
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

Environmental Management 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.