Holiday Inn & Suites
East Peoria, Illinois

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

Quarterly Meeting

August 6, 2014

Agenda

with
Background
and
Supporting Materials

UPPER MISSISSIPPI RIVER RESTORATION ENVIRONMENTAL MANAGEMENT PROGRAM COORDINATING COMMITTEE

August 5-6, 2014

AGENDA

Tuesday, August 5

12:30 p.m. – 4:30 p.m. **Optional Tour of UMRR-EMP Emiquon Project Site**
(RSVP to Margie Daniels (mdaniels@umrba.org or 651-224-2880)

NOTE: UMRR-EMP Partner Pre-Meetings will not be held.

Wednesday, August 6 UMRR-EMP Coordinating Committee

Time	Attachment	Topic	Presenter
8:00 a.m.		**Welcome and Introductions**	***Mark Moore**, USACE*
8:05	**A1-11**	**Approval of Minutes of May 14, 2014 Meeting**	
8:10	**B1-5**	**UMRR-EMP Regional Management** ▪ FY 14 Fiscal Update ▪ FY 15 Appropriations Status ▪ Agency Leadership Event Update – Brainstorming focus issues ▪ Public Involvement and Outreach	***Marv Hubbell**, USACE*
8:30	**C1-20**	**UMRR-EMP Strategic Planning** ▪ Planning Process Update – Targeted review: process and input received ▪ Draft UMRR Strategic Plan – Recommendations for program name change – Consideration of approval for a public review draft and process	***Marv Hubbell**, USACE*
9:40	**D1-2**	**Implementation Issues Assessment (IIA) Review** ▪ Annual Review of Progress in Advancing the IIA Recommendations ▪ Partners' Priorities in FY 15	***Marv Hubbell**, USACE*
10:00		**Break**	

(Continued)

Wednesday, August 6, 2014
UMRR-EMP Coordinating Committee
(Continued)

Time	Attachment	Topic	Presenter
10:15 a.m.		**Habitat Rehabilitation and Enhancement Projects Element**	
		▪ District Reports	***District HREP Managers***
		▪ Planning New Project Starts for 2017 – Schedule and process	***Marv Hubbell**, USACE*
		▪ Emiquon Preserve Floodplain Restoration Project	
	E1-2	– Project overview	***Doug Blodgett**, TNC*
	E3-22	– Potential programmatic issues	***Marv Hubbell**, USACE*
	E23-28	– Partner discussion	***All***
11:30		**Long Term Resource Monitoring Program Element**	
	F1-9	▪ Product Highlights	***Kevin Richards**, USGS*
	F10-12	▪ USACE's LTRMP Update – FY 15 science work	***Karen Hagerty**, USACE*
		▪ A-Team Report	***Rob Maher**, Illinois DNR*
		▪ LTRMP Highlight: Native Fish Condition Response Following Silver Carp Invasion	***Rich Pendleton**, Illinois Natural History Survey*
12:20 p.m.		**Other Business**	
	G1	▪ Future Meeting Schedule	
12:30 p.m.		**Adjourn**	

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

ATTACHMENT A

Minutes of the May 14, 2014 UMRR-EMP CC Meeting

(A-1 to A-11)

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

May 14, 2014
Quarterly Meeting

Hampton Inn – Gateway Arch
St. Louis, Missouri

Tim Yager of the U.S. Army Corps of Engineers called the meeting to order at 8:00 a.m. on May 14, 2014. Other UMRR-EMP CC representatives present were Mark Moore (USACE), Kevin Richards (USGS), Dan Stephenson (IL DNR), Diane Ford (IA DNR), Kevin Stauffer (MN DNR), Janet Sternburg (MO DoC), Dan Baumann (WI DNR) on behalf of Jim Fischer, Ken Westlake (USEPA), and Harold Deckerd (NRCS). A complete list of attendees follows these minutes.

Minutes of the February 26, 2014 Meeting

Diane Ford moved and Mark Moore seconded a motion to approve the draft minutes of the February 26, 2014 meeting as written. The motion carried unanimously.

Regional Management

FY 2014 Fiscal Update

Marv Hubbell reported that UMRR-EMP is on schedule to fully execute its FY 2014 appropriation of $31.968 million. Allocations within the program for FY 14 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 said questions have been raised about UMRR-EMP's spending on science with the recent increase in appropriations. He explained that the program's overall spending on science in FY 2014 is $7.754 million, which includes $314,000 for regional management, $5.4 million for base monitoring (includes FY 2013 carry-over funds), $1.065 million for research and analysis to inform restoration, and $325,000 for standardizing the program's habitat project monitoring protocols. In response to a question from Olivia Dorothy, Hubbell said Section (e)(6) of UMRR-EMP's authorization allows for transferring up to 20 percent of the amounts authorized for the HREP and LTRMP elements.

FY 2015 President's Request

Hubbell reported that the FY 2015 President's budget request for UMRR-EMP is $33.17 million, which is its full annual authorized amount. This funding level is substantially more than it its average annual appropriations. Hubbell attributed the program's partnership to this increase in funding as well as the success in executing the additional funds. Together, all partners increase the program's capabilities and diffuse risk. The partnership also provides a great diversity of ways to accomplish the program's mission.

Agency Leadership Event Update

Hubbell said the UMRR-EMP agency leadership event is rescheduled for September 18, 2014, per input from the UMRR-EMP CC since its February 26, 2014 quarterly meeting. The summit will still be held at Eagle Point Park in Dubuque and will include an indoor discussion session in the morning and a field trip to Sunfish Lake in the afternoon.

Hubbell said the event's primary objective is to seek input from agency leadership on important issues for the program, including funding and staff resources as well as how to communicate externally about how UMRR-EMP relates to the river's other human uses. In addition, the event will highlight UMRR-EMP's partnership and accomplishments. Hubbell anticipates that the draft UMRR-EMP strategic plan will be ready to share at the event.

Public Outreach

Hubbell said he presented on UMRR-EMP at the March 5, 2014 Iowa General Assembly House Natural Resources Committee meeting. Hubbell and Diane Ford said the meeting was valuable.

Hubbell said USACE published the Spring 2014 edition of *Our Mississippi* in March 2014 that is specifically devoted to UMRR-EMP. The edition highlights the program's partnership, featuring a diverse array of partners. Hubbell extended his appreciation to all partners who contributed their time and effort in writing articles and participating in interviews. Diane Ford said the edition did a great job of highlighting the program and expressed thanks to those who worked on the publication.

Draft UMRR Strategic Plan

Marv Hubbell said the UMRR-EMP strategic planning team met in-person on April 8-10, 2014 in Rock Island. The team finalized an April 19, 2014 draft strategic plan for partner review, agreed to an internal program targeted review process, and discussed how the plan will change (or not change) aspects of the program's work. The draft plan is included as Attachment C of the agenda packet. The plan is the first comprehensive strategic plan for the entire program. The planning team is recommending modifying the plan's timeframe to 2015-2025 and dropping "Environmental Management Program (EMP)" from its name, so it would now be referred to as Upper Mississippi River Restoration (UMRR) program. The draft strategic plan includes a vision for the river, mission statement for the program, and four goals to achieve the vision and mission, which are as follows:

- *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

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

Hubbell explained that the strategic planning team is currently employing a targeted review of the draft UMRR Strategic Plan, dated April 11, 2014. Under this approach, each team member is responsible for obtaining feedback from groups or individuals it represents on the team — e.g., Gretchen Benjamin of TNC will coordinate with non-profit organizations that frequently engage with the program. This approach seeks essential feedback from those who are directly involved in the program's policy and implementation. The planning team will consider the input this summer and prepare a revised draft for the UMRR-EMP CC's consideration at its August 6, 2014 meeting. Following the Committee's approval of a draft strategic plan, the team will distribute the plan to external stakeholders for input.

Hubbell said the planning team believes that, when implemented, the strategic plan will result in:

- More effective habitat restoration projects
- More effective applications of science (especially ecological, biological, and engineering) to habitat restoration work
- Deeper understandings of the dynamics and details of river health and resilience
- Stronger commitments to the collection, maintenance, and application of long term resource monitoring data to measure the UMR's health and resilience
- An even stronger partnership among the organizations that participate directly in the program
- And, most importantly, a healthier and more resilient UMR because of the program's work

Kevin Stauffer said Minnesota's Lake City field station staff are generally supportive of the plan. Stauffer said he had been coordinating with the staff throughout the plan's development. Diane Ford said that, Mike Griffin, an Iowa DNR habitat manager who is on the planning team, has been discussing the plan with Iowa DNR staff and other river and local individuals. Ford said Iowa DNR staff are supportive of the plan and believe it is well thought-out.

Dru Buntin said that he and Gretchen Benjamin discussed the draft strategic plan with Olivia Dorothy of the Nicollet Island Coalition and Claudia Emken of the Sierra Club. They discussed the integration concepts embedded in the strategic plan as well as the plan's direction for the program's long term resource monitoring efforts. Dorothy expressed concerns with the level of funding being allocated to long term resource monitoring and said she plans to submit written comments. Hubbell said specific comments would be very helpful.

Bob Clevenstine said USFWS UMR Refuges and Ecological Services are currently developing comments. Clevenstine said no one has raised any major concerns. One suggestion is that the objectives should be more specific and measurable. Hubbell explained that the planning team will likely recommend that the strategic plan's implementation is planned and prioritized through budget development.

Hubbell shared his own thoughts about what partners will need to do to achieve the UMRR Strategic Plan's vision, mission, and goals. These actions are as follows:

- *Actions for all partners*
  a) Characterize/define the existing health and resilience of the UMR ecosystem
  b) Use existing, and potentially new, data sets or indicators to establish a baseline and monitor change
  c) Use existing, and potentially new, indicators to monitor progress
  d) Identify, select, formulate new projects based on their potential contribution to increasing the UMR ecosystem's health and resilience
  e) Communicate to the partnership more frequently regarding progress in achieving a healthier and more resilient UMR ecosystem
  f) Enhance integration among the program's various restoration and science efforts
  g) Focus science efforts to more effectively address rehabilitation and management needs
  h) Refer to the program as UMRR with a habitat restoration element and a science element
  i) Increase efforts to measure, and report progress to Headquarters and OMB in enhancing, UMR ecosystem health and resilience

- *Actions for Corps staff*
  a) Access monitoring data and scientists to a greater degree throughout project planning
  b) Increase use of habitat projects to test important science questions regarding the UMR ecosystem
  c) Improve project monitoring plans to measure project outcomes – e.g., biological responses
  d) Focus future research more on science questions related to restoration and management
  e) Focus the next generation of habitat projects more on enhancing ecological health and resilience
  f) Link models used for plan formulation and project evaluation
  g) Increase involvement in management of habitat projects post-construction
  h) Create a central database of science and habitat project information
  i) Use standard monitoring techniques/protocols across Districts

- *Actions for USGS-UMESC and field stations*
  a) Increase use of habitat projects to test important science questions regarding the UMR ecosystem
  b) Focus future research more on science questions related to restoration and management
  c) Increase involvement with project planning teams in project formulation

Janet Sternburg asked Hubbell what he envisions as greater involvement of Corps staff post-construction of habitat projects. Hubbell said this concept is related to monitoring for adaptive management; however, those details have yet to be determined. Hubbell said an *ad hoc* partner group will need to consider what is monitored and how results are reported. In response to a question from Sternburg, Hubbell said specific details would be identified in each project's definite project report (DPR) and the project would not close out until adaptive management analyses are complete.

Clevenstine recognized that some of the "actions for the Corps" apply to the entire partnership. Hubbell agreed. In response to a request by Stauffer, Hubbell said he will send these action items to these strategic planning team. Ken Barr said the list of actions is helpful to Corps staff and partners in identifying themselves in the plan and how they will contribute to its implementation.

In response to a question from Sternburg, Hubbell said the draft strategic plan will be presented at the May 28, 2014 web-based joint conference call of the river resource technical groups (i.e., FWWG, FWIC, RATT-Tech, and IRWG). Hubbell said the strategic planning team will review comments from the targeted review this summer and he anticipates presenting a revised draft plan to the UMRR-EMP CC. Pending the Committee's approval, the draft strategic plan will be distributed more widely to stakeholders and interested public for input.

Janet Sternburg asked if there is a similar documenting process to the LTMRP element scope of work (SOW) for the HREP element. Hubbell explained that the Corps uses the budget spreadsheets included on pages B-1 to B-5 of the agenda packet to document allocations to, and expenditures of, UMRR's individual habitat projects. The spreadsheets are updated and reported to the UMRR-EMP CC on a quarterly basis. Sternburg acknowledged that this information will be helpful in working towards program integration. She suggested that the habitat and science information is presented in a more coordinated fashion.

Tim Yager expressed appreciation to Hubbell for leading the strategic planning effort. Karen Hagerty thanked Brian Stenquist and Beth Carlson from Minnesota DNR for their facilitation.

LTRMP Element

Product Highlights

Barry Johnson presented LTRMP element's accomplishments in FY 2014's second quarter. Johnson reported that a technical report was published that examines the relationship between the abundance of submersed aquatic vegetation (SAV) and vegetation-associated fish: weed shiners and young-of-youth bluegills and largemouth bass. The analysis indicates that there may be a threshold of 60 to 75 percent of SAV present in backwaters to have a positive effect on the fish. Above that threshold, the fish become either more affected by other environmental factors or SAV levels become too high.

Johnson said UMRCC's 2014 annual meeting focused on progress in advancing the Master Plan's long term resource monitoring goals. Jeff Houser presented on the original purpose of the long term resource monitoring program and whether UMRR-EMP is fulfilling that purpose. The original purpose was to collect scientifically and statistically valid data through time and detect site-specific or system-wide changes. Houser concluded that the original purpose has largely been achieved; partners have gone even further than understanding trends to how the UMRS functions through knowledge gained about ecological patterns, relationships between variables, responses to management, and so on. In his UMRCC presentation, Houser said partners are entering a new phase of using system manipulations (i.e., HREPs) to expand collaboration and ecological knowledge, as a compliment to long term resource monitoring.

Johnson said UMRR-EMP's scientists played a strong role in April 2014's Mississippi River Research Consortium. There were 19 platform papers and 9 posters related to the LTRMP element showcased at MRRC.

Johnson presented the results of a participant survey on the UMRR-EMP's February 11-13, 2014 Science Coordinating Meeting. The meeting received very positive feedback, particularly for facilitating interaction and communication among program partners.

Johnson listed the many individual contributions to outreach and assistance to internal and external stakeholders. The UMESC water quality lab participated in USGS Standard Reference Sample Testing, which showed that the lab is within acceptable limits, mostly within five percent. Hubbell emphasized that UMESC's labs also provide a cost efficiency over commercial labs.

USACE's LTRMP Element Report

Karen Hagerty explained that, based on recommendations by the A-Team, USACE, and USGS, the UMRR-EMP CC voted via email in early March on how to allocate $1.061 million of UMRR-EMP's FY 2014 funds for research and analysis that will inform restoration and management. The projects and associated lead(s) and milestones are on pages D-8 to D-10 of the agenda packet. Hagerty said all projects have now been funded, with the exception of an airboat that will likely be funded mid-June.

A-Team Report

Hagerty reported that the A-Team met in-person on April 23, 2014. The team is considering language regarding quorum for its meetings and may recommend an amendment to adding the language to the UMRR-EMP Joint Charter of Coordinating Groups. The team discussed the April 19, 2014 draft UMRR strategic plan and generally expressed support for the plan. In addition, the A-Team discussed USACE's science priorities, indicators of health and resilience, habitat project monitoring protocols, and research frameworks. In response to a question from Tim Yager, Hagerty said the A-Team will draft language regarding A-Team quorum for the UMRR-EMP Joint Charter and present it to the UMRR-EMP CC for consideration.

LTRMP Element Highlight: Asian Carp in the UMR

Quinton Phelps presented analyses of UMRR-EMP's monitoring data showing the impacts of Asian carp on native fish species by comparing pools with high and moderate abundance and no presence of Asian carp, as well as pre- and post-invasion data. Phelps explained that there are many parameters needed to thoroughly evaluate the forces that influence the fish community to make informed management decisions, including the role of invasive species on native fishes. Long term resource monitoring data that incorporates pre- and post-invasion can provide the best insight regarding such influence. Phelps said the upper three study reaches have not been invaded by silver carp and therefore serve as a control. The lower three study reaches have established silver carp populations.

Phelps provided background about Asian carps' introduction into the Midwest and the traits that make the fish a great invader. He said silver carp are widely understood to alter habitats, compete with native species, and disrupt the ecosystem. However, the actual effects remain largely unknown since Asian carp are fairly recent invaders. To understand these effects better, researchers recently explored the following research questions: what are the effects of silver carp invasion?, what are the effects of silver carp in UMRS floodplain lakes?, if there is negative interaction between silver carp and native fishes, is competition the mechanism driving this relationship?

Phelps explained the research objectives, methods, and results, as described below:

1. Objective: To compare native planktivore relative abundance before and after invasion.

   Results: Using beyond before-after-control-impact analyses with data collected between 1993 and 2013, the data indicate that, following silver carp invasion, gizzard shad and bigmouth buffalo had significant declines in mean catch per year.

2. Objective: To evaluate short-term fish community changes in Mississippi River floodplain lakes with varying densities of silver carp.

   Results: Sampling four UMR floodplain lakes to compare present/absence of dominant taxa, the results show that there is no change in fish community where there is not silver carp invasion, minor changes where there is moderate invasion, and drastic changes where there is high invasion (or abundance).

3. Objective: To determine if competition exists between gizzard shad/bigmouth buffalo and silver carp in a controlled setting, and whether that competition is direct or indirect.

   Results: Comparing growth and survival of young-of-youth of silver carp, bigmouth buffalo, and gizzard shad in a laboratory as well as post-hoc behavioral experiments, the results indicate that silver carp outcompete the other fish because they are more effective at consuming prey.

Phelps concluded that there are multiple lines of evidence that suggest Asian carp may be impacting fish community composition and thus historic function. He said future study efforts could include evaluating potential management strategies that could effectively minimize effects on the UMRS, determining what stretches of the UMRS are the most important to invasive carp reproduction, the effects of Asian carp on the diets of piscivores and whether that alters community composition, and evaluating early life history and its role in recruitment and management efforts.

Bryan Hopkins asked why the research focuses only on silver carp and does not include impacts from bighead carp. Phelps explained that bighead carp are very difficult to catch. Noting that the filtrations systems are different between two fish, Hopkins asked if there are any differences in their impacts. Phelps said the silver carp has a finer mesh filtering mechanism and are not specific in their consumption, thus having a broader impact on filtering species. He noted that another issue is the potential for silver and bighead carp to hybrid.

In response to a question from Barry Johnson, Phelps said no bighead carp were found in the sampled floodplain lakes, but there may have been hybrids. Kevin Stauffer asked if the habitat among floodplain lakes was different enough to affect populations. Phelps said the researchers selected floodplain lakes with similar characteristics.

Dan Stephenson reported that the Havana Field Station has documented 13 tons of Asian carps per river mile and have seen three spawns per year, depending on river rise. He also reported that there was a half-mile die off of Asian carp below Barkley Lake about a year ago; the reasons for which are currently unknown. Phelps said the key is the transition from early life to being viable recruitment, and that may be the stressor. Hagerty added that evidence has indicated poor recruitment.

Ken Westlake asked what the impacts are to plankton in areas where silver carp are present. Phelps said the Havana Field Station has shown a shift in the plankton community population. Westlake asked if other filter feeding fish are affected by competition. Phelps said gizzard shad are not getting as big in size, making them more vulnerable to predation by piscavores over time. In response to a question from Olivia Dorothy, Phelps said the die off of gizzard shad occurred in both a controlled and field setting. The UMRR-EMP's long term monitoring data is also showing this occurrence.

Emerging Trends and Issues – Asian Carp

Marv Hubbell clarified UMRR-EMP's role in addressing invasive species, and Asian carp in particular. Hubbell said the program maintains a base flow of critical monitoring data that forms a basis for understanding the UMRS ecosystem. Through that information, managers and researchers can evaluate the implications of invasive species on habitat and native species.

Karen Hagerty presented on UMRR-EMP's role related to aquatic invasive species, per USACE's policies, including knowledge, leadership and coordination among partner agencies, early detection and response, and prevention in so far that the program's restoration enhances the river's resilience to invasion by harmful non-native species. Hagerty said the program's invasive species work is governed by several federal and USACE policies, including National Invasive Species Act of 1966, Invasive Species Executive Order 13112, National Invasive Species Management Plan, and USACE's 2009 Invasive Species Policy. In addition, there are several other regional and state policies governing work on invasive species.

Hagerty described how the UMRR-EMP takes action on invasive species relative to USACE's 2009 Invasive Species Act, as follows:

- Leadership and coordination
    - Coordinate with USACE invasive species leaders
    - Program partners coordinate within their respective organizations
    - Program partners coordinate through UMRR-EMP CC and the A-Team
- Prevent introduction and establishment
    - No direct role
- Early detection and rapid response
    - All new detections reported to individual agencies
    - Program partners develop a process to report new discoveries to UMRR-EMP management
    - UMRR consider adding invasive species to habitat project monitoring plans
- Control and management
    - No direct role
- Restore native species, habitats, and processes
    - UMRR promotes native species re-establishment, identifies impacts and costs from invasive species to project benefits, and identifies and develops measures to prevent invasive species re-colonization
- Conduct research to ensure management programs are effective and science-based
    - UMRR identifies invasive species impacts to native communities, habitats, and key ecological processes, as well as develops knowledge to improve habitat project selection, planning, and construction
- Information management to track invasive species data
    - UMRR utilizes websites to make data and reports available; USACE's website for project data and UMESC's website for research and monitoring data
- Education and public awareness
    - Program partners continue outreach and education efforts regarding what the program is doing, the status and new findings on Asian carp, and what the public can do

Hagerty said USACE will convene a writing team to draft a UMRR-EMP invasive species strategy. She anticipates the A-Team will review the draft strategy this fall and UMRR-EMP CC's consideration at its November 19, 2014 meeting. Barry Johnson suggested that perhaps UMRR-EMP discourages establishment through its habitat projects that improve the river's ability to be resilient to invasion.

Habitat Rehabilitation and Enhancement Projects Element

District Reports

St. Louis District

Tim Eagan said MVS's current planning priorities are Rip Rap Landing and Clarence Cannon. Final construction details on Pools 25 and 26 Islands are nearing completion. Eagan reported that, given constrains on available new starts, the District is discussing with partners the possibility of moving Horseshoe Lake from USACE's Continuing Authorities Program to UMRR-EMP. District staff will present more information on the project at UMRR-EMP CC's August 6, 2014 meeting and ask the Committee for its support for transferring the project to UMRR-EMP. Eagan said the River Resources Action Team (RRAT) has expressed its support for transferring the project to UMRR-EMP.

Marv Hubbell said that Col. Chris Hall is interested in working on restoration in the open river reach. In response to a question from Dan Stephenson, Eagan said the project would include a water control structure and USACE and Illinois DNR are currently discussing the best option. In response to a question from Dan Baumann regarding the project site's proximity and connection to the river, Eagan explained that the site receives Mississippi River flood water.

St. Paul District

Hubbell said MVP anticipates completing plans on Harpers Slough and initiating construction on Stages 1 and 2 of the project this fiscal year.

Rock Island District

Hubbell said MVR is focusing planning on Pool 12 Overwintering Stage II, Huron Island, and Beaver Island. Planning on Keithsburg will be initiated this summer. Hubbell said the District plans to initiate construction on Huron Island and Lake Odessa flood recovery this year. In addition, construction is proceeding on Pool 12 Overwintering Stage I, Fox Island, and Rice Lake Stage I.

New Project Starts

Hubbell said that, following the FY 2015-2019 strategic planning process in late summer/early fall, 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 requested that partners send him any input on the process by June 30, 2014.

In response to a suggestion by Janet Sternburg, Hubbell said the planning effort will build upon past efforts, including work on the Illinois River and Middle Mississippi River to identify projects as well as UMRR-EMP/NESP reach planning.

Question of the Quarter

What is the total amount of funding that UMRR has received from FYs 1985 through 2014, with the following multiple choice options?

a) $250 million to $350 million
b) $351 million to $450 million
c) $451 million to $550 million
d) $551 million to $650 million

The answer is C.

HREP Highlight: Clarence Cannon National Wildlife Refuge

Eagan said the Clarence Cannon HREP is located in Pool 25 on approximately 3,750 acres of Refuge lands. He said the project site has experienced loss of native plant communities, invasive species colonization, habitat fragmentation, loss of floodplain connectivity, shallow water in backwaters and loss of historic meanders, as well as an altered water regime that is not followed by native species. The project plans to a) increase acreage of, and connectivity between, native plant communities by reducing acreage of invasive plant species; b) restore floodplain connectivity between the Mississippi River and the project area; and c) improve water delivery and drainage to the Refuge to simulate the pre-impoundment hydrograph. Eagan demonstrated visually, using a map of the project site, the conditions without the planned habitat improvement and the conditions post-project given the water control structures.

In response to a question from Barry Johnson, Eagan said the site was flooded in 2008 and 2011. Brian Markert added that floodwaters currently enter the site through a spillway, and does not have an effective way of leaving the site post-flood.

Other Business

Future Meetings

The upcoming quarterly meetings are as follows:

- **August 2014 — East Peoria**
  - UMRBA — August 5
  - **UMRR-EMP CC — August 6**
- **November 2014 — St. Paul**
  - UMRBA — November 18
  - **UMRR-EMP CC — November 19**
- **February 2015 — Quad Cities**
  - UMRBA — February 10
  - **UMRR-EMP CC — February 11**

With no further business, the meeting adjourned at 11:35 a.m.

UMRR-EMP CC Attendance List
May 14, 2014

UMRR-EMP CC Members

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

Others In Attendance

Renee Turner	U.S. Army Corps of Engineers, MVD
Gary Meden	U.S. Army Corps of Engineers, MVP
Marvin Hubbell	U.S. Army Corps of Engineers, MVR
Ken Barr	U.S. Army Corps of Engineers, MVR
Karen Hagerty	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
Tim Eagan	U.S. Army Corps of Engineers, MVS
Matt Crosby	U.S. Army Corps of Engineers, MVS
Bob Clevenstine	U.S. Fish and Wildlife Service, UMR Refuges
William Guertal	U.S. Geological Survey, Midwest Region
Barry Johnson	U.S. Geological Survey, UMESC
Barb Naramore	Minnesota Department of Natural Resources
Patrick Phenow	Minnesota Department of Transportation
Quinton Phelps	Missouri Department of Conservation
Robert Stout	Missouri Department of Natural Resources
Bryan Hopkins	Missouri Department of Natural Resources
Tom Boland	AMEC
Mary Stroka	Fanning Communication, Our Mississippi
Olivia Dorothy	Nicollet Island Coalition
Brad Walker	Missouri Coalition for the Environment
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 3rd Quarter of FY 14 (6/14)**
  (B-1 to B-5)

BUDGET SHEET

UMRR-EMP EXPENDITURES AND ALLOCATIONS

	FY14 ($ 000)				
	CARRY IN FROM FY 13	FY 14 ALLOCA.	TOTAL AVALIABLE TO EXP.	30 June 14 ACTUAL EXP.	30 June 14 ACTUAL OBLIG.
PROGRAM ELEMENTS					
HABITAT PROJECTS					
HREP PROJECTS	1,075	22,802	23,871	7,731	6,117
ARRA HREP PROJECTS	0	0	0	0	0
HABITAT EVAL/MONITORING	0	570	570	545	567
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	1,323	1,567
REPORT TO CONGRESS- 2014	0	0	0	0	0
REGIONAL INITIATIVES	0	201	201	169	168
LTRM (Includes LTRM Regional Technical)	0	5,291	5,291	4,787	3,159
ARRA LTRM PROJECTS	0	0	0	0	0
TOTALS	1,110	31,974	33,077	14,957	11,734
TOTALS BY ORGANIZATION					
MVR **	963	12,190	13,147	2,938	3,304
MVP	98	7,090	7,188	2,925	1,215
MVS	49	6,910	6,959	3,898	3,898
USGS	0	5,216	5,216	4,726	3,098
UMRBA Administration	0	75	75	67	64
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	14,957	11,734

*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.

30 June 14
FY 2014

ADMINISTRATIVE, LTRM, and Non-Site Specfic Costs

	FY14 ($ 000)				
	CARRY IN	ALLOCA.	TOTAL SCHED EXP.	'30 June 14 Actual Exp.	'30 June 14 Actual Obl.
HABITAT (Rollup from district sheets)					
BASELINE MONITORING	0	110	110	333	347
HABITAT PROJ. EVALUATION	0	385	385	209	217
BIO-RESPONSE STUDIES	0	75	75	3	3
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	947	723
PROGRAM COORDINATION (excludes District Habitat Coor.)					
UMRBA	0	75	75	67	64
System Ecological Team (SET)	0	0	0	0	0
PUBLIC INVOLVEMENT	0	110	110	38	40
EMP PROGRAM ADMINISTRATION	0	630	630	493	493
LTRM REGIONAL TECHNICAL	0	75	75	60	62
REGIONAL INITIATIVES	0	201	201	169	168
PROGRAM MGT TOTAL	0	1,091	1,091	827	827
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	4,726	3,098
CORPS BATHEMETRY & LiDAR (Multi-district funded)	0	0	0	0	0
ARRA - BATHEMETRY, 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	4,727	3,097

ST. PAUL DISTRICT

MVP	PROJECT ESTIMATE DESIGN	PROJECT ESTIMATE CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 13	EXP THRU FY 13	FY14 ($ 000) CARRY IN	ALLOCA.	TOTAL AVALIABLE TO EXP.	'30 June 14 Actual Exp.	'30 June 14 Actual Obl.	(Federal) Scheduled $ To Complete	
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	1,554	-172	3,264	CONSTRUCTION
Conway Lake, IA	462	2,050	2,512		1	113		175	175	101	103	2,298	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	414	414	14,400	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	87	87	6,412	DESIGN
North & Sturgeon Lakes, MN	900	7,600	8,500	3,250	113	1875	18	300	318	215	215	6,410	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	17	17	3,725	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	
HABITAT TOTAL	10,360	93,548	103,908	8,694	3,721	67,819	63	6,465	6,528	2,388	664	57,708	
									0				
HABITAT EVAL/MONITORING													
HABITAT NEEDS ASSESSMENT						57			0				
BASELINE MONITORING					15	478		50	50	68	82		
HABITAT PROJ. EVALUATION					173	1633		200	200	103	103		
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	251	185	0	
PROGRAM MANAGEMENT													
PROGRAM COORDINATION					273	4432	35	375	410	366	366		
PUBLIC INVOLVEMENT - mipr $					0	0			0				
SUBTOTAL	0.0	0.0	0.0	0.0	273	4,432	35	375	410	366	366	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 *1	7,328	3,005	1,215	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		
TOTAL MVP EXPENDITURES					4,346	77,976	98	7,230 *1	7,328	3,005	1,215		
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 ESTIMATE DESIGN	PROJECT ESTIMATE CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 13	EXP THRU FY 13	FY14 ($ 000) CARRY IN	FY14 ($ 000) ALLOCA.	FY14 ($ 000) TOTAL AVALIABLE TO EXP.	'30 June 14 Actual Exp.	'30 June 14 Actual Obl.	(Federal) Scheduled $ To Complete	
HABITAT PROJECTS													
BEAVER ISLAND, IA	1,500	11,000	12,500		94	179	0	248	248	162	185	12,159	PLANNING
FOX ISLAND, MO	700	4,300	5,000		1,463	5,229	0	140	140	274	284	-502	DESIGN
HURON ISLAND, IA	2,100	8,400	10,500		270	1,646	0	3,449	3,449	280	280	8,574	PLANNING
LAKE ODESSA, IA	2,470	12,394	14,864		61	15,043	790	4,284	5,074	31	31	-210	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	991	297	15,882	DESIGN
RICE LAKE, IL	2,800	10,720	13,520	6,825	4,862	10,856		539	539	-217	554	2,881	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	7	7	6,191	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	181	181	13,118	DESIGN
LAKE ODESSA, IA (Flood Recovery) (supplemental)		5,500	5,500		347	4,742	173		173	175	175	583	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	1,884	1,994	39,233	
HABITAT													
HABITAT NEEDS ASSESSMENT						0		0	0				
BASELINE MONITORING			268			254			0				
HABITAT PROJ. EVALUATION			938		166	3,364	0	170	170	92	100		
BIO-RESPONSE MONITORING			588			1,036	0	0	0				
USFWS HREP SUPPORT					189	884	0	282	282	166	0		
PLANNING/SEQUENCING (PRIORITIZATION)						39		0	0				
SUBTOTAL	0	0	1,794	0	355	5,577	0	452	452	258	100	0	
PROGRAM MANAGEMENT													
REGIONAL HREP SCIENCE SUPPORT			3,496	0	175	5,192	0	1,202	1,202	202	447		
PUBLIC INVOLVEMENT	0.0	20.0	20.0		23	204	0	110	110	38	40		
REGIONAL ADMIN				0	360	2,281	0	630	630	493	493		
LTRM REGIONAL TECHNICAL					226	1,744	0	75	75	60	62		
PROGRAM INITIATIVES					272	978	0	201	201	169	168		
SUBTOTAL			3,516	0	1,056	10,399	0	2,218	2,218	962	1,210		
REPORT TO CONGRESS					6	96	0	0	0				
LTRM													
CORPS BATHEMETRY & LiDAR(Multi-district funded)						455	0		0				
ARRA - BATHEMETRY, 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	67	64		
ITRC					0	0	0	0	0	0	0		
USGS					4,801	14,198	0	5,216	5,216	4,726	3,098		
FY14 Reprogram						0		6					
SUBTOTAL					4,848	14,354	0	5,297	5,291	4,794	3,162		
TOTAL MVR EXPENDITURES					14,052	116,946	962.9	17,763	18,720	7,898	6,465		
								*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 DESIGN	PROJECT ESTIMATE CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 13	EXP THRU FY 13	FY14 ($ 000) CARRY IN	ALLOCA.	TOTAL AVALIABLE TO EXP.	*30 June 14 Actual Exp.	*30 June 14 Actual Obl.	(Federal) Scheduled $ To Complete	
HABITAT													
BATCHTOWN MGMT, IL	3,220	14,875	18,095	145	177	16,535		200	200	135	135	1,425	CONSTRUCTION
CLARENCE CANNON, MO	2,637	27,180	29,817		397	1,018		675	675	117	117	28,682	DESIGN
EAGLES NEST & PIASA IS., IL	1,057	4,500	5,557		81	216		325	325	173	173	5,168	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	29	29	8,166	DESIGN
HARLOW ISLAND	750	3,750	4,500		22	38		100	100	14	14	4,448	DESIGN
RIP RAP LANDING	1,373	10,553	11,926	1,207	49	669		430	430	57	57	11,200	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	21	21	1,650	CONSTRUCTION
REDS LANDING,	621	2,863	3,484			0			0			3,484	DESIGN
SCHENIMANN 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	2,880	2,880	19,010	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
HORSESHOE LAKE	1,520	12,750	14,270		0	0		100	100	33	33	14,237	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	3,459	3,459	147,839	
HABITAT EVAL/MONITORING													
HABITAT NEEDS ASSESSMENT	1,000		1,000			0							
BASELINE MONITORING					65	842		60	60	265	265		
HABITAT PROJ. EVALUATION					18	652		15	15	14	14		
BIO-RESPONSE MONITORING					9	1,180		75	75	3	3		
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	438	438		
PROGRAM MANAGEMENT													
PROGRAM COORDINATION					205	2,086		225	225	157	157		
PUBLIC INVOLVEMENT					0	0			0				
SUBTOTAL	0	0	0	0	205	2,086	0	225	225	157	157		
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	4,054	4,054		
								*1					
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	4,054	4,054		

NOTES: *1

*1 Equals MVS work allowance of $6,980,400 (150,000 (Includes Packback funding to MVR in FY13)

ATTACHMENT C

July 17, 2014 Draft 2015-2025 Upper Mississippi River Restoration Strategic Plan

(C-1 to C-20)

Enhancing Restoration and Advancing Knowledge of the Upper Mississippi River

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

UMRR-EMP CC REVIEW DRAFT
July 17, 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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Upper Mississippi River Basin Association

The Strategic Planning Team acknowledges and offers its sincere appreciation for the extraordinary work of its two facilitators in the development of this plan:

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Minnesota Department of Natural Resources

Brian Stenquist
Minnesota Department of Natural Resources

DISTRICT COMMANDER'S LETTER

[Placeholder]

[Include in the District Commander's letter recognition that the program has been successful because of its longstanding interagency network including Corps UMR Districts, USFWS, USGS, states, and nongovernmental organizations. This unique partnership has provided the program with immense capacity and flexibility in implementing restoration and science efforts. This strategic plan utilizes and builds upon that partner-based network to achieve the vision, mission, and goals. The purpose of the strategic plan is to enhance the program's effectiveness and efficiency in improving the Upper Mississippi River's ecological health and resilience to stressors.

Barry Johnson's suggested text:

The success of UMRR has resulted from (1) developing successful habitat projects and learning how to implement those projects in ways that are more effective and cost efficient, and (2) creating an infrastructure (expertize, field stations, equipment) for monitoring and science that has produced an unequalled data base of river ecological conditions and substantially increased knowledge of the structure and function of the river, and (3) using projects, data, and research to define baseline conditions in the river and determine how natural forces and management actions affect those conditions. This Strategic Plan assumes that the existing structure and administration of UMRR will remain in place, and seeks to enhance the Program's effectiveness by building on past and current success.]

CONTENTS

PREAMBLE

Strategic Plan Purpose

This strategic plan articulates the Upper Mississippi River Restoration[1] (UMRR) partnership's vision for the Upper Mississippi River[2] that sets a clear direction for the program over the next decade. This 10-year plan focuses UMRR's efforts to continue delivering products and services that are nationally significant, regionally relevant, internationally engaged, and technically sound. It outlines the program's key approaches to enhancing restoration[3] 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 21 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 planning team to develop a programmatic strategic plan that:

1) Establishes priorities and actions to ensure that UMRR 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'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 and state budget processes and appropriations and staffing levels.
5) Positions UMRR to continue as an exemplary leader among large aquatic ecosystem programs nationally and internationally.

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 the program's success 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

[1] The Upper Mississippi River Restoration (UMRR) program was originally named the Environmental Management Program (EMP) in its 1986 authorization. However, in 2006, the Office of Management and Budget and Congress began referring to the program as UMRR in its budgeting and appropriations document.

[2] 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.

[3] The term restoration is interpreted in various ways among resource managers, researchers, policy makers, and the public. The strategic planning team agreed to use the term restoration, rather than other terms, to describe UMRR's efforts to restore, rehabilitate, and enhance habitat for native species, and improve river structures, functions, and processes, that enhance the ecological health and resilience of the Upper Mississippi River. This term also matches the program's name.

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. [Note: The program was named the Environmental Management Program in its authorization. In 2006, the Office of Management and Budget and Congress began referring to the program as UMRR in its budgeting and appropriations documents.]

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 long term 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

Geographic Setting

Per UMRR's authorization, the program's geographic area encompasses nearly 1,300 river miles along the 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 lands.

The river is unique in that it still retains many of its natural floodplain ecosystem characteristics including flood pulses, floodplain forests, 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 risk reduction, and navigation. Improvements in wastewater 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.

Implementation through a Partnership

The Upper Mississippi region has a rich tradition of interagency and interdisciplinary partnership dating back to the 1981 Upper Mississippi River Basin Commission's Master Plan that extends among the river's multiple uses, such as commercial navigation, fish and wildlife, recreation, agriculture, and water supply.

The UMRR is a product of this regional collaboration and has been fortunate to build upon and expand it. The ongoing commitments from all partners have been vital to UMRR's effective and efficient habitat restoration and knowledge-building efforts on the Upper Mississippi River.

While 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,[4] 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, engineers, habitat managers, and scientists. 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; supporting the partner-based forums; preparing budget submissions; recommending annual allocations within the program; developing, constructing, and evaluating habitat projects; and producing 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 all operation and maintenance of projects on lands it manages, and participates in pre- and post-project monitoring on its sponsored projects. The service's research and monitoring also informs UMRR science and habitat projects.

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 five ***Upper Mississippi River states***, including Illinois, Iowa, Minnesota, Missouri, and Wisconsin, 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 are responsible for 35 percent of construction costs and 100 percent operation and maintenance for habitat projects located on lands they manage, and they provide water quality permitting and certification. 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.

O***ther 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.

[4] The Joint Charter for the UMRR's advisory groups is available at http://www.mvr.usace.army.mil/Portals/48/docs/Environmental/EMP/HREP/EMP_Documents/EMP-CC%20A-Team%20HPSF%20Charter%20combined%205-15-13.pdf.

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 would be responsible for a 35 percent cost share and all operation and maintenance of any such 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.

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, REHABILITATION, AND ENHANCEMENT 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. 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, programs, and land managers 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:

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 structure and function and use habitat projects to help evaluate 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 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 and management 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 (e.g., flow regime, sedimentation, successional stages), UMRR habitat projects enhance critical fish and wildlife habitat, restore the river's floodplain structure and function,., and counteract the negative effects of human activity throughout the Upper Mississippi River basin. The process of identifying and sequencing 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 improves its restoration techniques through adaptive management to enhance 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 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	Identify and 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 address risk and uncertainty and 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 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 evaluate 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

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 more than 25 years, the UMRR's database is one of the most extensive and comprehensive on any large river system in the world. UMRR's scientific expertise, breadth of information, monitoring protocols, modeling capabilities, and data management and dissemination infrastructure create extensive 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: Evaluate 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[5]
- 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 process, function, structure, and composition as well as the dynamics and interactions among system components

[5] More information on the long term resource monitoring sampling effort and statistics can be found at http://www.umesc.usgs.gov/ltrmp.html.

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

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 UMRR makes significant contributions to enhancing the river's ecosystem health and resiliency, it cannot and should not attempt to meet all management needs for improving river's health. No one agency or program can solely manage this multi-use ecosystem. Rather, successful management of 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 organizations and individuals that manage and conduct research 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 sequencing 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 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 collaboration 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	Improve 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 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.

ATTACHMENT D

2013 UMRR-EMP Implementation Issues Assessment (IIA): Executive Summary and Partner Recommendations for Future Action

(D-1 to D-2)

Executive Summary

Program Overview

The Upper Mississippi River Restoration – Environmental Management Program (UMRR-EMP) uniquely and effectively combines ecosystem restoration with scientific monitoring and research. Integrating a broad range of restoration techniques, including approaches that strive to use or mimic the river's natural processes, the program's habitat rehabilitation and enhancement projects (HREPs) have effectively enhanced over 100,000 acres of critical fish and wildlife habitat throughout the Upper Mississippi River System (UMRS). These projects have improved the river's floodplain structure and function, restoring the river's natural processes and counteracting the effects of an aging, impounded river system. The program also informs river management through integrated environmental monitoring, research, and modeling, as well as data management and dissemination. Collectively, this element of the UMRR-EMP is known as the Long Term Resource Monitoring Program (LTRMP). This information is used extensively by resource managers, planners, administrators, scientists, academics, and the general public, enhancing management actions and scientific investigations on the UMRS.

A primary reason for UMRR-EMP's longstanding success is its strong interdisciplinary and interagency partnership, which transcends traditional state and agency boundaries. The U.S. Army Corps of Engineers (USACE) has the ultimate responsibility for managing and executing UMRR-EMP; while the U.S. Fish and Wildlife Service (USFWS); U.S. Geological Survey (USGS); and states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin have their own specific responsibilities under UMRR-EMP. Other federal agencies, nongovernmental organizations, and industry groups are also actively involved in UMRR-EMP implementation. The ongoing commitment from all partners and established coordination mechanisms have been vital to UMRR-EMP's effective and efficient implementation of its restoration and science components.

Purpose of the Implementation Issues Assessment

Section 509(b) of the 1999 Water Resources Development Action directed USACE, in consultation with the Secretary of the Interior and the states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, to submit a report to Congress (RTC) regarding UMRR-EMP by the end of 2004 and every six years thereafter. These reports must evaluate UMRR-EMP's HREP and LTRMP elements, describe the program's accomplishments, provide an update of the system's habitat restoration needs, and recommend any necessary adjustments to the program's authorization. In UMRR-EMP's 2010 RTC, partners recommended that USACE, in collaboration with program partners, develop this Implementation Issues Assessment (IIA) to address various policy and program implementation issues that were not thought to require Congressional action. The IIA will not be formally submitted to Congress. Partners see the IIA as an important opportunity to address a variety of outstanding issues and challenges, with the goal of enhancing program implementation. The report is meant to document the issues discussed and partners' decisions regarding how best to advance or resolve those issues. The IIA's intended audience includes the Administration, USACE, partners, and external stakeholders.

For each issue, the report includes a concise overview; an outline of relevant policy; and an articulation of partner recommendations, including specific action items. The final section of the IIA outlines the process that partners will use to review progress on its implementation. This section also provides a table of all the action items and their primary leads, approximate timeframes, and relationship (if any) to the pending FY 2015-19 UMRR-EMP Strategic Plan. In 2013-2014, the UMRR-EMP strategic planning team will address many of the IIA's issues in greater detail, as well as other technical implementation priorities and issues for the program.

Progress Review

The UMRR-EMP Coordinating Committee will review progress in advancing the IIA's recommendations and action items at its August quarterly meetings. In addition, the review will consider partners' priorities for advancing the action items in the upcoming year, given anticipated resources and other factors that may influence the partners' ability to act on the recommendations.

Partner Recommendations

The UMRR-EMP Coordinating Committee would like to accomplish the following recommendations in order to maintain and enhance the UMRR-EMP.

Recommendations for maintaining and enhancing the program's overall success include:

- ✓ Advance habitat projects that include land acquisition from willing sellers, where that is the most efficient and effective option.
- ✓ Maintain UMRR-EMP's current delegated authority policy.
- ✓ Implement new and innovative restoration techniques and approaches, in an effort to enhance the program's capacity to address the partner-identified ecosystem goals and objectives.
- ✓ Include more explicit and consistent consideration of state and federal agencies' UMRS-related priorities in the program's habitat project planning and prioritization.
- ✓ Expand the criteria for constructing habitat projects at full federal expense.
- ✓ Consider habitat projects that have a nonprofit cost share sponsor.
- ✓ Improve habitat project evaluations.
- ✓ Pursue options to better enable USFWS and the states to completely and effectively implement HREP operation and maintenance.
- ✓ Seek to increase LTRMP resources, while also preparing strategies to guide implementation.
- ✓ Develop more deliberate and explicit approaches to implementing adaptive management.
- ✓ Evaluate emerging trends and issues that might affect UMRR-EMP's restoration, monitoring, and research efforts.
- ✓ Maintain and enhance the states' ongoing, active participation and leadership in the UMRR-EMP that are essential to program's success.

ATTACHMENT E

UMRR-EMP Emiquon Project

- **The Nature Conservancy's Emiquon East Habitat Restoration and Enhancement Project Fact Sheet** *(E-1 to E-2)*

- **Information about Proposed Water Control Structures Available at** http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/illinois/explore/emiquon-water-management.xml

- **Excerpt of Draft Emiquon East Habitat Restoration and Enhancement Project Definite Project Report: Coordination, Public Reviews, and Comments** *(E-3 to E-22)*

- **U.S. Fish and Wildlife Services' Final Fish and Wildlife Coordination Act Report (FWCAR)" re Emiquon East Habitat Rehabilitation and Enhancement Project (7/21/14)** *(E-23 to E-28)*

Emiquon East Habitat Restoration and Enhancement Project

Overview: The **Emiquon East Habitat Restoration and Enhancement Project** with the **US Army Corps of Engineers** will provide for the restoration and long-term sustainability of 5800 acres of high-quality floodplain habitat along five miles of the Illinois River at The Nature Conservancy's Emiquon Preserve in Fulton County, Illinois. This will be the **first ever public-private partnership** completed by the **Upper Mississippi River Restoration Environmental Management Program (UMRR-EMP).** Key project features include:

- **water control infrastructure** (pumps and a managed gravity flow connection between the preserve and the river) needed to maintain the highly productive wetland long term and ensure drainage of those other private agricultural lands in the Thompson Drainage and Levee District;
- **constructed islands** that would provide important nesting and resting habitat for birds, improve water quality with associated benefits to plant communities and the animals that depend on them, and protect archaeological resources; and
- **research and monitoring** to guide adaptive management and to ensure opportunities for learning and sharing are leveraged.

In addition to the Corps, another key federal partner is the **US Department of Agriculture Natural Resources Conservation Service (NRCS)** that holds a **30-year Wetland Reserve Program easement** on most of the Conservancy's Emiquon Preserve.

Project Status: Since 2005, the Corps has invested more than $1.3M using sound science and methodologies to develop a restoration and long-term management plan for the Conservancy's wetland at Emiquon. That plan is detailed in the Emiquon East **Definite Project Report (DPR)**. The 30-day public review of that report is now complete. A **Project Partnership Agreement** will be negotiated between the Corps and Conservancy and is expected to be signed in November. However, the implementation of the Emiquon East Habitat Rehabilitation and Enhancement Project requires a **Compatible Use Authorization (CUA)** from NRCS. That authorization has been requested.

Based on the water control structure designed by the Corps and due to urgency in providing flood protection and drainage for private agricultural lands in the Thompson Drainage and Levee District (District), the Conservancy secured donor financing for construction of a similar water control structure that could both provide the drainage required by the District and fully fulfill the needs for ecological restoration and management as detailed in the Corps plan. Construction of that structure should begin the first quarter of 2015. If NRCS provides the required CUA, the Corps will move forward with the additional project features (island construction, monitoring, and adaptive management). However, if NRCS does not provide the CUA, the Corps will not be able to implement the **Emiquon East Habitat Rehabilitation and Enhancement Project (HREP)** and those additional features will be lost.

Financial information: The Corps estimates **total project costs for Emiquon East HREP at $19.44M**. The UMRR-EMP requires a non-federal cost share sponsor (i.e., the Conservancy) fund 35% of the total project costs. However, **currently the Conservancy plans to provide $11.68M (60%)** of the total project funding. If NRCS is not able to provide the requested CUA, the estimated $6.44 M federal funding for island construction and monitoring will be eliminated from the project, as will those benefits.

Requested Action: The Conservancy requests **full engagement of the Corps and NRCS to resolve any issues that could prevent the Corps Emiquon East Project from moving forward in a timely and efficient manner,** thereby ensuring the full implementation of the Corps plan and the restoration and long-term sustainability of the high-quality wetland.

For more information, visit:
http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/illinois/explore/emiquon-water-management.xml

Chronology of The Nature Conservancy's Emiquon Project

2000 Conservancy acquired 7600 acres along the Illinois River in Fulton County, Illinois

2005 Corps initiated planning for the Section 206 Emiquon East Aquatic Ecosystem Restoration Project

2006 NRCS purchased 30-year Wetland Reserve Program (WRP) easement on 6295 acres

2007 Phase 1 restoration of Emiquon Preserve began

2011 Emiquon East *Draft* Ecosystem Restoration Report released to Conservancy and NRCS by Corps

2013 April- Record Illinois River flood leaves Thompson Drainage and Levee District without capacity (pumps) to ensure private agricultural lands can be drained

November- Emiquon East Habitat Rehabilitation and Enhancement Project (HREP) accepted into Upper Mississippi River Restoration Environmental Management Program as the program's first ever public-private partnership

2014 March- Emiquon East HREP Definite Project Report released for public review by Corps

April- Conservancy requests Compatible Use Authorization from NRCS for Emiquon East HREP

Anticipated

2014 August- NRCS issues Compatible Use Authorization for Emiquon East HREP

January- Corps and Conservancy sign Emiquon East HREP Project Partnership Agreement (PPA)

2015 March- Construction of water control structure begins

2016 Water control structure construction complete

Construction of islands begins

2017 Construction of islands complete

XIII. COORDINATION, PUBLIC VIEWS, AND COMMENTS

Coordination has been made throughout the planning process with the following State and Federal agencies:

Illinois Department of Natural Resources
Illinois State Historic Preservation Office
Illinois Department of Transportation
Dickson Mounds Museum
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
U.S. Department of Agriculture – Natural Resources Conservation Service

A. Coordination Meetings

Numerous coordination meetings were held with Project cooperators to discuss potential enhancement features and project considerations. The following meetings demonstrated ongoing coordination:

- July 08, 2009. Partnership meeting with the District, the NRCS, TNC, and IWR
- June 18, 2010. Coordination meeting with the District and TNC to discuss real estate and legal issues. Coordination was conducted via teleconference.
- September 03, 2010. Coordination meeting with the District and TNC to discuss real estate and legal issues. Coordination was conducted via teleconference.
- March 21, 2011. Coordination meeting with the District, SHPO, DOT, NRCS, Dickson Mounds State Museum and TNC to discuss potential cultural resources impacts.
- July 08, 2013. CUA and Partnership meeting with the District, TNC and NRCS.
- April 16, 2014. Open House held at Dickson Mounds Museum in Fulton County, Illinois, to discuss Project features and receive comments from the general public and other interested parties.
- May 6, 2014. Coordination meeting with the District and USFWS to discuss the Coordination Act Report.
- May 9, 2014. CUA and Partnership meeting with the District, TNC and NRCS.
- May 30, 2014. Coordination meeting with the District, TNC, NRCS, USFWS and elected officials. This recent coordination meeting with NRCS and other Federal partners was chaired by IL Senator Richard Durbin. Also in attendance was staff from Senator Kirk's office and congressional staff from representative Aaron Shock and representative Cheri Bustos offices. This coordination meeting resulted in a verbal commitment that a 10-yr CUA may be provided prior to execution of the Project Partnership Agreement once ecological decision points are identified by the multi-agency AMT and captured in the compatible use document.
- June 11, 2014. CUA and Partnership meeting with the District, TNC and NRCS.
- June 20, 2014. Adaptive Management Planning Kick-off meeting with seven state and Federal agencies, academia, and two nongovernmental organizations. The group discussed the basics of adaptive management (AM), the agencies' goals with the Project planning, project constraints, risks and uncertainties, the annual plan review process, key ecological attributes and their roll in AM, the AMT's roll and responsibilities, and AM as part of the CUA.

B. Coordination by Correspondence. The following letters can be found in Appendix A, *Correspondence*:

- June 10, 2005. Letter of intent from TNC to serve as project sponsor.
- August 17, 2005. Preliminary Restoration Plan Approval Memo from MVD

- March 28, 2011. Letter from State of Illinois to USFWS to request Emiquon designation as wetland of international significance
- March 24, 2011. Letters from TNC related to real estate and legal requirements
- March 26, 2011. NHPA coordination letter submitted to the IL SHPO
- April 26, 2011. Endangered Species Act and Fish and Wildlife Coordination Act coordination letter submitted to the USFWS
- May 02, 2011. Letter from DOT about maintenance of roadway slopes due to inundation associated with WLMP
- October 20, 2011. Endangered Species Act concurrence from USFWS of ***No Adverse Effect*** on *B. Decurrens.*
- December 17, 2012. Phase I Cultural Resources coordination letter from NRCS to IL SHPO
- March 26, 2013. Phase I Cultural Resources coordination letter from the district to IL SHPO
- April 12, 2013. Letter from SHPO to the district concurring with ***No Effect*** determination
- August 13, 2013. Project support / CUA letter from NRCS
- August 09, 2013. Letter from Fulton County supporting TNC as the NFS
- April 23, 2014. Letter from the ILDNR
- May 12, 2014. Agency Review comments provided by US EPA
- June 17, 2014. USFWS's Draft Fish &Wildlife Coordination Act Report with recommendations
- June 25, 2014. USFWS concurrence letter

C. Public Views and Comments

The *Draft DPR with Integrated Environmental Assessment* was distributed for a 30-day public, state, and agency review on March 21, 2013. During the public review the District received comments from the US EPA, US FWS, and ILDNR. These agencies had several concerns with the report and Project. Through subsequent meetings and discussions, many of their concerns were resolved. See Appendix A for more details on their comments and the District's responses.

During the public review period the District and TNC held an open house on April 16, 2014, at the Dickson Mounds Museum, near Lewiston, Illinois. Representatives from the District and TNC were present to talk one-on-one with attendees about the draft TSP and to gather public input. Maps of the Recommended Plan and copies of the report were arranged around the room. In addition, hand-outs of the Executive Summary, a project map, and a comment sheet were available for each attendee. Twenty members of the public attended the evening session. Only 1 comment sheet was returned. Respondents indicated they use the area for recreation, fishing, boating, and hunting. The most common response from the open house was uncertainty about the water control gate management and allowing Illinois River water to enter the preserve.

During the public review period, the District received the following emails and letters from the public. Each email and letter is found in Appendix A, *Correspondence*:

April 17, 2014. Letter from Kendall W. Miller
April 17, 2014. Email from John Wisher
April 18, 2014. Letter from Dr. Stephen Havara

April 30, 2014. Email from Brad Rolando
April 30, 2014. Email from John Graham
May 12, 2014. Letter from Mike Conlin
May 13, 2014. Letter from Brent Manning
May 14, 2014. Email from David Hill
May 16, 2014. Email from Gary Lutterbie
May 16, 2014. Email from Larry Cruse
May 16, 2014. Phone call from John Tranquilli
May 18, 2014. Email from Bill & Sue Boyd
May 19, 2014. Letter from Donald Koch
May 29, 2014. Email from Rudy Stinauer
May 29, 2014. Email from Stan Etter
June 17, 2014. Email from Dr. Stephen Havara

D. Response to Public Comments

The District, TNC, and the public have the same vision for Emiquon - we want this jewel to remain a sparkling gem now and into the future. Since TNC began managing Emiquon, the results have been phenomenal, but without water control this high quality habitat will decline. This Project is one tool TNC could use to maintain Emiquon as a high quality wetland.

The TNC will be tasked to monitor and access the risks and uncertainties of invasive species, sedimentation, turbidity, and water temperatures. The AMT will assist TNC with interpreting the monitoring results and together, create a management scheme to boost the Preserve's habitat benefit for the long term.

With the lessons learned from Hennepin/Hopper as well as other Illinois River backwater management sites like Banner Marsh, Chautauqua, and Swan Lake, the District and TNC are taking a cautious approach to future management at Emiquon. Through the implementation of an exhaustive monitoring plan/adaptive management plan, TNC has taken the steps beyond the norm to protect the existing resources and protect future resources.

Presently, Emiquon has carp; without the Project, carp will eventually proliferate and there will be no way of controlling them other than reset the system with dewatering, conducting a major fish kill, and then have a dead fish removal problem. With the Project and adaptive management, TNC will have the ability to control carp populations effectively and economically.

Actions to Date

Based on the public comments the District received during the public comment period, the District took several actions. The District extended the 30-day public comment period to 70 days, and in fact, received and accepted comments 17 days after the 70-day period. The District initiated the Project's adaptive management process prior to the initiation of the PED phase. This includes formation of an AMT and an initial kick-off meeting. The District anticipates additional AMT meetings prior to the PED phase when AMT meetings generally start.

E. Response to Agency Comments

1. Response to ILDNR April 23, 2014 letter

Comment: The Department concurs with the USFWS that this species should be searched for before disturbing the construction area given this plant's ability to colonize new areas each year. If the plant is found in the construction footprint, measures should be taken to avoid or mitigate impacts to this listed species. The Department concurs that this Project is not likely to negatively affect decurrent false aster.

District Response: The District updated this DPR, Section IX.B.5, *Endangered Species* to explain the measures the District proposed to implement before, during, and after construction to protect and enhance *Boltonia decurrens* populations and habitat.

Comment: The state-endangered black-crowned night heron is known to occur in the Project vicinity. This bird builds its nest in standing aquatic vegetation in wetland habitats. Nesting occurs from late April to early June. While the probability of a nest occurring in the construction vicinity is slight, efforts should be taken to avoid disturbance, including noise, if a nesting black-crowned night heron is discovered in the vicinity of construction. If avoidance is not possible, please contact the Department to discuss other mitigation options.

District Response: Concur. The District also contends the island construction may provide black-crowned night heron nesting habitat when trees begin to grow on the islands. Likewise, the 10:1 island slopes may also provide habitat for other species of concern like the black-legged stilt and other migrating shorebirds.

Comment: The state-endangered Blanding's turtle and smooth softshell may occur in the Project vicinity. The ILDNR recommends the construction area be searched for these species each day before the start of work and when transporting equipment. If one is encountered, wait for the turtle to leave the area or contact Michelle Simone with the ILDNR's Natural Heritage Division at 309-202-3438.

District Response: The District will add a note on shop drawings during plans and specification phase of this Project with the ILDNR's request. The District also added this stipulation to this DPR in Section IX.B.5, *Endangered Species.*

Comment: …the starhead topminnow appears to be thriving, with the key to its success being the submerged aquatic vegetation (SAV), now abundant at Emiquon. The Department stresses the need to maintain high quality and abundant SAV in Emiquon as these habitats are rare to non-existent in floodplain lakes where connectivity to the Illinois River exists. Reasons for SAV destruction in floodplain lakes connected to the river include high sediment loads, turbidity, fluctuating water levels, and non-native carps that will be introduced during flood pulses. Maintaining SAV after reconnection may be challenging, yet is of utmost importance to mitigate for any negative impacts to the starhead topminnow and many other species that have come to rely on this unique and valuable habitat at Emiquon.

District Response: The District concurs with the ILDNR concerning the need to maintain high quality and abundant SAV at Emiquon. The partnership between the District, TNC, ILDNR, FWS and NRCS developed an AMT who is committed to ensuring the continued high quality wetland values and functions at Emiquon for the life of the Project. Like all wetland systems, environmental conditions are not static; the AMT will advise TNC's on their water level management to optimize the wetland quality, quantity, and function to reach the Project goals. Details on the AMT, its role, and contribution to the Project are outlined in Appendix O.

While the construction period of dewatering may have short term impacts to this species, the overall construction benefits along with adaptive management, will have long term project benefits and a net positive effect on the species.

2. Response to USEPA May 12, 2014 letter

US EPA Letter Dated May 12, 2014 Response

ALTERNATIVES/PROJECT JUSTIFICATION/IMPACT ANALYSIS

Recommendation: The Final Definite Project Report/Environmental Assessment (hereafter: Final EA) should clearly articulate the Project purpose and need.

District Response: The Emiquon East Project (Project) is the District's 55th Upper Mississippi River Environmental Management Program Definite Project Report/Environmental Assessment addressing habitat restoration and enhancement projects over the last 25 years. The format of the report and planning process remains consistent over the life of the program. Please read Section I. C, *Resource Problems and Opportunities* for a brief introduction to the Purpose and Need requirements normally found in a NEPA document. Other sections in Chapters I, II, and III provide a more in-depth look at why habitat restoration and enhancement is needed at Emiquon.

Recommendation: The final EA should clearly articulate how each identified alternative measure (those carried forward for study) does, or does not, meet the Project purpose and need. Additionally, specific impacts associated with each action alternative carried forward (LR0, W1, W2, W3, P0, P2, S0, S1, S4, S5, L0, I0, I1, I2) should be quantified, and include all impacts associated with that specific proposal. This information should be clarified and included in the Final EA.

District Response: The District determined the alternatives carried forward for feasibility had similar environmental impacts as the preferred plan. The District determined the alternatives carried forward for analysis would not pose any additional or significant environmental impacts beyond the Recommended Plan. The District selected this plan based on its high level of habitat benefits, ability to meet the Project's goals, and it was the "best buy" alternative. The District added a paragraph to the beginning of Section IX, *Environmental Effects* explaining this.

Recommendation: The Final EA should clearly discuss all project proposals, including those activities proposed that relate to project goals of educational and recreational access, and quantify all impacts associated with these proposed activities.

District Response: The District added a footnote in Section III. D.4, *Illinois River Reach Objectives,* stating that educational and recreational activities are part of the NFS goals and outside of the UMRR-EMP program authorization; therefore, they will not be covered as part of this Project.

WETLAND AQUATIC RESOURCE IMPACTS

Recommendation: As previously stated above, specific wetland impacts associated with each action alternative, including 10, 11, 12, must be quantified in the final EA.

District Response: The District quantified island construction benefits in Appendix C, *Habitat Evaluation and Quantification*. Please see tables C-5 and C-12 for the comparison between constructing 5 islands versus 10 islands. The islands construction would not alter the acreage or types of wetlands, except for the 10' wide above water section. On the tops of the islands, wetland vegetation promoting colonial nesting birds should naturally revegetate. If not, TNC staff will actively plant the island with bottomland tree species. Based on the benefits of topographic diversity, and vegetation, the District determined there would be little to no wetland benefit loss.

Recommendation: The Draft EA did not include a 404(b1) analysis. The Final EA should be modified to include the following information:

- Clarification if a Section 404 permit is required and clarification if TNC will be the permit applicant;
- A robust discussion about how sequencing established by the Clean Water Act Section 404(b)1 guidelines has been applied, namely, avoidance first, then demonstration of impact minimization, then mitigation for unavoidable minimized impacts; and
- A 404(b)1 analysis.

District Response: Since this action falls under a general permit, the District followed Corps of Engineer guidelines, Engineer Regulation 1105-2-100. Nationwide and regional permits fall under the category of general permits. A general permit is issued subject to the Section 404(b)(1) Guidelines and to any conditional standards pursuant to Section 404(e) of the Clean Water Act. The conditions of a general permit shall be used in lieu of this regulation for those Federal activities which the District Commander determines to be applicable.

The District updated this DPR and Appendix B, *Clean Water Act Compliance* to reflect this Project is in compliance with the 404(b)1 guidelines for general permits based on its compliance with the NWP #27 conditions. In Appendix B, the District documented the compliance with the NWP #27 conditions which were used in lieu of the standard 404(b)1 guidelines. No formalized 404(b)1 analysis is required.

Recommendation: The Final EA should include written concurrence from USACE Regulatory Branch staff that NWP 27 is applicable to this Project.

District Response: Concur. The District added the Rock Island District Regulatory Branch coordination in Appendix B, *Clean Water Act Compliance*.

Recommendation: While Nationwide Permit 27 is still for Aquatic Habitat Restoration, Establishment, and Enhancement Activities, language referencing the applicability of the Nationwide Permits should be corrected in the Final EA to refer to the current 2012 Nationwide Permits.

District Response: Concur. The District updated the final report in the appropriate locations.

WATER QUALITY

Recommendation: The Final EA should provide additional information on the current impairments listed for the Illinois River, and describe how implementation of the proposed project could potentially affect the waterbody (with regard to specific listed impairments).
District Response: The District added the appropriate discussion in Section III, K. *Water Quality*, and Section IX. F. *Water Quality*. The District anticipates the Project would not impact any Illinois impaired water body.

THREATENED/ENDANGERED SPECIES

Recommendation: EPA recommends that USACE continue to coordinate with USFWS and the ILDNR to determine if any of the proposed activities would or could detrimentally affect any federally- or state-listed species of their critical habitat. The Final EA should include correspondence from the USFWS and IDNR confirming if the proposed project will, or will not, affect any federally- or state-listed threatened or endangered species.

District Response: Appendix A, *Correspondence*, includes coordination letters from the ILDNR and USFWS both concerning threatened and endangered species information. Elsewhere in this section, there are the District's responses to the ILDNR and USFWS comments.

Recommendation: EPA recommends that USACE continue coordination efforts with USFWS and state wildlife agencies as appropriate to meet the conditions of the Fish and Wildlife Coordination Act (FWCA). Correspondence to and from coordinating agencies regarding FWCA coordination should be included in the final EA.

District Response: The USFWS's Draft Coordination Act Report, as required by the FWCA, is included in Appendix A, *Correspondence*. The District's response to the Draft Coordination Act Report is included in this Section. Due to time constraints, the District and USFWS are continuing the appropriate level of FWCA coordination. The USFWS anticipates providing both their Final Coordination Act Report no later than July 20, 2014.

Recommendation: The Final EA should clarify what effects the proposed project will have either positively or negatively, on *Boltonia decurrens*.

District Response: The District updated this DPR Section IX.G.5. *Endangered Species* to include a detailed discussion of the anticipated impacts to *B. decurrens*.

Recommendation: The Final EA should specifically state all avoidance measures to be taken to avoid impacts to *B. decurrens,* explain how these measures will be incorporated into project plans and bid documents, and be committed to in the Finding of No Significant Impact (FONSI).

District Response: The District updated this DPR Section IX.G.5, *Endangered Species* to include a discussion of the avoidance measures the District would require during Project construction and operation. Specific sheets or plates will also contain information as part of all bid packages. Specific locations and certain drawing notes are part of the final report (per the Freedom of Information Act) are not part of the plates. The avoidance measures are part of this final document, therefore avoidance measures are part in parcel to the FONSI; they are not detailed specifically in the FONSI but referenced back to the final report.

Recommendation: The Final EA should include information on the BA, what it is being prepared for, and copies of all correspondence to and received from the USFWS regarding the status of the BA and its review by USFWS.

District Response: At the time the District completed the Project draft report, it had correspondence dated October 20, 2011, from the USFWS stating the USFWS concurred the Project would not likely adversely affect Decurrent false aster (*Boltonia decurrens*). That is why the report did not have any reference to the BA the USFWS requested during the public comment period. Further, since the populations of *B. decurrens* are experimental at Emiquon, a biological assessment (BA) is not required. The District prepared Section 10(j) conference documentation in the form of a BA. The District updated this DPR Section IX.G.5, *Endangered Species* to include a discussion of the conference documentation/BA the District prepared for this Project.

INVASIVE SPECIES

Recommendations: The Final EA should be amended to include a robust discussion on the potential for invasion of the Project by Asian and other carp, in addition to invasive wetland vegetation (such as reed

canary grass, common reed, cattail, and purple loosestrife). Information on all aspects noted above as lacking in the Draft EA should be added to the Final EA.

District Response: The District, TNC, and most Project partners recognize the introduction of invasive species as the Project's biggest concern. The District feels the appropriate recognition of these concerns is in the feasibility stage of this Project. The District has enhanced the discussion concerning invasive species impacts in several locations in the report (see *Executive Summary;* Section II.H, *Invasive Species;* Section III.B.1, *Problems;* and Section IX.C. 6, *Invasive Species*). As the Project engineers fine tune the Project's Recommended Plan with detailed plans and specs during the Project's PED phase, so too will the AMT come together and fine tune the adaptive management plan.

The AMT will analyze the potential impacts of invasive species on all aspects of the Project and create a strategy to reduce invasive species impacts. This team met on June 20, 2014, and the District is confident adaptive management is especially true with this Project given the time and efforts the USFWS, NRCS, TNC, ILDNR, and District have already devoted to creating an AMT to carry out sound management decisions.

The proposed Project is in compliance with EO 13112. The ILDNR Fish sampling in 2013 captured 92 Common Carp in 2013, higher than the 62 caught in 2012, but less than the record high of 146 in 2011. As the 2013 flood overtopped the Emiquon levee, TNC observed Asian carp species (Bighead and Silver Carp) entering the preserve (personal communication between J. Jordan and Emiquon Preserve Mgr D. Blodgett). The carp are there and will continue to be there with or without the Project. Given this fact, the proposed Project, through adaptive management, will reduce the impacts of invasive species better than having no project at all. The District added additional compliance language to this DPR concerning EO 13112.

HISTORIC PRESERVATION

Recommendation: The Final EA should clarify how the 2004 PA relates to current SHPO consultation efforts undertaken for the activities proposed in the Draft EA.

District Response: The NRCS PA was not fully implemented and therefore not in compliance with Section 106 and the WRP, since the Emiquon pumping station quit working and the reserve naturally inundated/flooded. During the Corps development of the EA, the Corps Emiquon team viewed the flooded Emiquon reserve as existing conditions and Project related alternatives, features/measures avoided all existing sites within the APE. The SHPO concurred with the Corps determination on April 12, 2013. Page 89 of the Project report explains that time would be allowed for NRCS testing of three archeological sites to fully implement their Programmatic Agreement during EMP Project construction after the reserve is dewatered for island construction and prior to Project completion.

Recommendation: The Final EA should clarify the status of the Phase II study, including dates when the Phase II study will be or was undertaken.

District Response: Phase II testing will be completed by the NRCS as the lead federal agency for WRP and PA following the EMP Project dewatering/island construction.

ADAPTIVE MANAGEMENT AND MONITORING

Recommendation: This should be clarified in the final EA.

District Response: This Recommendation refers to Appendix O, *Adaptive Management/Monitoring Plan* and who is responsible for assessment of whether or not success criteria/performance measures are being met. The level of detail addressing the success criteria/performance measures is appropriate for the feasibility phase of project planning. Once the Project enters the PED phase, the AMT will address the levels of success as an interagency, interdisciplinary team. To the District and project partners' credit, they have already met to discuss adaptive management and the way forward before the PED phase has begun. The AMT will develop success criteria/performance measures to assist TNC's on short term and long term management decisions.

Recommendation: Additional clarification on which objectives are short-, medium-, or long-term, and further discussion on when to stop or continue monitoring to meet these objectives, should be included in the Final EA.

District Response: Again the level of detail addressing short-, medium-, or long-term objectives is appropriate for the feasibility phase of project planning. Once the Project enters the PED phase, the AMT will address the short-, medium-, or long-term objectives.

Recommendation: USACE should reconsider and evaluate applicable success criteria and performance objectives that take into account invasive aquatic plant and animal species, particularly the exclusion of, treatment for, these species. Revised success criteria should be added to the final EA.

District Response: The AMT is currently discussing how to measure invasive species risk and uncertainties and the management scenarios that will reduce these risks. The AMT will specifically address monitoring regimes and results to help in make management decisions to reduce the effects of invasive species. This information is not complete; more detailed information on the effects of invasive species is being developed by the Project's interagency AMT during the PED phase of this Project. The team is looking at the ecological criteria, or triggers behind each management regime to reduce the impacts of invasive species while at the same time optimizing the Project features' benefits.

Recommendation: The Final EA should clarify the definition of "success" as it relates to project closeout. EPA recommends that project success be defined as meeting all performance expectations for at least two consecutive years. Modified objectives should be updated in the Final EA.

District Response: In the USEPA's letter they cite text from Appendix O, *Project Closeout*. Their citation failed to include the beginning of the sentence where it states the "*Closeout of the Project would occur when the **AMT determines*** (emphasis added)…." One of the roles of the AMT (with which the EPA has become a welcomed participant) is to help define success. During the PED phase of Project the AMT will formalize success expectations, not necessarily define success end points.

The AMT may determine the status quo is successful in any particular year. If there is a change in the present condition, they may determine a water level change is in order. The AMT should not be bound to a consecutive 2-year period of success. This arbitrary length of time limits the ability of the AMT and TNC to capitalize on opportunities and can limit their ability for long term success. This Project is predicated on six management scenarios. The Project cannot achieve all the Project goals in any 2-year period.

The District is bound by Corps regulations and Federal law (WRDA 2007) only allowing the Corps to monitor or take an active role in adaptive management for 10 years after construction. At that time the Corps has to close out its construction time frame. The 10 years is not the end of the Project; it is the end of the Corps construction period. It will be up to TNC to continue monitoring after the 10 years and to ensure the Project success. During the first 10 years of monitoring the AMT may determine TNC is

adequately managing the Project and the AMT may not take as active role in the year to year management. After 10 years, TNC will continue to monitor the 40+ ecological criteria they current use to gage their success and will employ adaptive management practices throughout the life of the Project.

CLARIFICATIONS

Recommendation: The Final EA should include updated information on the status of coordination with USDA-NRCS towards receipt of a CUA.

District Response: The TNC and NRCS have gone through extensive coordination of their CUA since the District distributed the DPR for public review. Both parties are continuing those discussions. The District anticipates TNC and NRCS will have an agreed upon CUA by the time the District and TNC sign a Project Partnership Agreement.

Recommendation: The Final EA should include an updated schedule with corrected dates for public outreach (including noting the public meeting held in April 2014), and timeframes for submittal for, and receipt of, required permits.

District Response: The District has updated Table 16 to reflect the most accurate dates.

Recommendation: EPA recommends that page numbers be added to all appendices.

District Response: Concur. All the appendices have page numbers.

OTHER ISSUES

Recommendation: The Final EA should discuss further implications of site water level management should inadvertent site excavation reach groundwater and should discuss measures to ensure this does not occur.

District Response: Concur**.** Protecting the underlying aquifer from intrusion is very important in the construction of all features for the Emiquon Project in order to be able to provide water level management. While there were numerous areas in the DPR outlining we were aware of this concern, we decided to consolidate and summarize these concerns and path for ensuring the shallow aquifer is not pierced.

The District used lessons learned from numerous HREP projects in developing this site in addition with industry engineering practices in wind wave fetch analysis and borrow site evaluations. Borrow depths to avoid piercing the groundwater were outlined in the report, to address needs at this site but also understanding areas where this has happened previously (Bay Island HREP).
Changes to the plates to clarify some of these concerns and to the DPR main report under the Recommended Plan were made. Changes to the report are generally as follows:

> This measure consists of constructing 10 interior islands. Islands will provide topographic diversity for this backwater area. The recommended design is for 10 islands to be strategically placed throughout the Project area to prevent resuspension of sediment due to wind generated waves, this reducing turbidity. The islands will not completely eliminate sediment resuspension. Island construction helps by reducing wind fetch length and forcing wind generate waves to break while the protection of shallow areas is achieved through seasonal drawdowns and recruitment of moist soil vegetation.

A detailed hydraulic analysis was performed for this wind/wave fetch analysis for this specific report (using Automated Coastal Engineer System Modeling Software and ASCE publications). A geotechnical analysis, including constraints for borrow and excavation depths, was performed. Information regarding the design was also obtained from experience as outlined in the UMRR *Environmental Design Handbook* as well as lessons learned from various HREPs.

Criteria for island design included the following:

- reducing wind fetch length which in turn will reduce wave height and sediment resuspension;
- breaking wind generated waves to reduce wave height and sediment resuspension;
- protecting shallow areas which are more susceptible to sediment resuspension;
- allowing the islands to be functional for most water levels predicted in the WLMP;
- avoiding and protect environmentally sensitive and cultural areas;
- using existing topographic features to reduce fill quantities; and
- maintaining sufficient layer of clay over the underlying aquifer for all borrow sites (do not puncture the lake pan).

Island orientations chosen were based on the prevailing wind direction. During plans and specifications, analysis of wind fetch from directions other than the primary wind direction will be performed to develop the final island layout. Lessons learned from the Peoria Island HREP Initial Performance Evaluation Report (specifically the barrier island) outline the importance of considering various wind directions and site specific wind data for final layouts.

An iterative process for island placement occurred to provide the optimum island locations in order to reduce wave height. The island crown elevations were selected to prevent overtopping by wave run up. These elevations are similar to the existing elevations observed at the Old Norris Farm Pump House Road.

The construction of islands would require borrow from adjacent land. Geotechnical borings would be required in these areas to ensure that the borrow depth would not penetrate the surface clay layer resulting in a point in the Project interior that would be directly connected to the groundwater. This type of connection could result in an additional intrusion of water during low water periods, or unwanted drainage of water during high water periods. . Lessons learned from other ecosystem projects (such as the Bay Island HREP) outline the need that the shallow aquifer be protected to ensure effective water level management within the complex. If it is not possible to protect the aquifer at any of the island locations shown, the island locations will be updated to optimize the reduction of wave heights while protecting the underlying aquifer. Shallow borrow areas are shown adjacent to each island location. These can be seen in the typical section shown and in the plan views for each island on the attached drawings. Borrow areas would be kept as close to the constructed feature as possible in order to minimize construction costs. During construction, close monitoring of all borrow activities will be required to ensure that excavation depths do not pierce the underlying aquifer.

Final island design and layout will consider recommendations from the AMT and will incorporate lessons learned from projects such as Swan Lake.

In order to construct the islands, the interior could be drained by the newly constructed pumps. Any drawdown recommended for construction purposes should be consistent with the NRCS

CUA. If the area could not be drawn down, equipment that can work in wet and submerged conditions would be used.

For further detail, refer to Appendix Q, Plates 10 to 16, Appendix H, *Hydrology and Hydraulics*, and Appendix G, *Geotechnical Considerations*.

Recommendation: References to boulder placement should be amended to discuss that they are part of the design, not that they may be part of the design. Construction plan sheet notes should be amended as well to reflect the certainty of boulder placement. Additionally, EPA requests that construction plan sheet (a detail sheet) be created to show the fish passage boulders within the proposed access channel. This detail sheet should include boulder sizing, including the proposed D50 or average weight of the boulders.

District Response: The District agrees that providing specific locations, spacing, and sizing on construction drawings is appropriate. However, these drawings show a feasibility level of design. The Note on Sheet S-102 will be changed to read similar to as follows "Boulder sizing and placement within the concrete channel will be finalized in the design phase."

Additional clarification to the description of the Recommended Plan will also be added to the DPR. Words will be added similar to as follows "The structure developed for this DPR to meet the proposed WLMP includes a 7-foot water control structure is a U-shaped reinforced concrete channel with a sheet pile cutoff wall. The proposed channel invert elevation is 428 feet with a top of structure elevation of 455 feet to match adjacent levee top elevations and allow for vehicular transport across the top of the structure. The 7-foot opening is spanned with heavy duty grating to provide access across the water control structure for maintenance vehicles. Light duty grating spans the structure on each side of the heavy duty grating to provide an operating platform for the sluice gate and access to the stoplog slots. One purpose of this structure is to allow for fish passage which could be allowed by the placement of boulders embedded into the bottom of the structure to allow for resting areas for fish passage. An 84" x 154" steel sluice gate would be installed on the landward side of the levee. The gates would remain out of the water during periods when fish passage is desired in order to assure no impact on passage of paddlefish. The sluice gate could be operated by an electric motor gate lift operator that is controlled manually at the elevated outdoor rated motor control center.

Stop log structures would be installed to allow the NFS to close off the structure to do repair work on the gate or do other water control manipulations. The stoplog material would be evaluated during plans and specification, but could consist of timber, plastic or another non-metallic material. The stoplog channels could be vinyl coated prior to installation in order to account for paddlefish sensitivity to metal. Once the water control feature is opened, it forms a connection to the IWW in which fish passage may occur. The fish would be attracted to this opening when a high attracting velocity is detected. However, the velocities may be too high to allow the fish to pass through. Boulder placement within the water control structure was discussed during feasibility to provide resting areas for fish during these high velocity periods. For feasibility design, it was assumed that we would have rows of 5-foot diameter boulders which would be embedded to about 25 percent of their depth, at a spacing to reduce velocities to match fish burst swimming capabilities. Further design is required for boulder spacing and placement during plans and specifications."

3. Response to USFWS June 17, 2014 Letter

Comment Page 3, paragraph 2: We understand that the project sponsor and the COE are now under significant time constraints due to their respective funding cycles, but feel that the DPR would benefit from information updates. Such updates would include recent hydrographic data, effects of the 2012 drought and 2013 flood on Emiquon resources and infrastructure, and other UMRR-EMP HREP

Performance Evaluation Review data from Illinois River projects or projects with features similar to those proposed.

District Response: The District agrees updated data could lead to a more informed decision. However, the District feels hydraulic data from 2 extreme years would not provide additional information that would change the recommended plan. By all means, the 2 years of hydraulic data on during these two years and the resulting effects a on the Illinois River Valley's backwater habitat complexes are extremely important to the District and the AMT. The AMT will use this data to make an informed decision on developing the details of an adaptive management plan and evaluating TNC's management activities.

Comment Page 3, paragraph 3: Typically, formulation of HREP project alternatives is a collaborative process among the project stakeholders. Project structural measures (e.g. pump station, water control outlet) were formulated in alternative sizes and capabilities and then compared to one another, but only one six year water management cycle was presented. Other alternative water management regimes should be considered. We understand that there is an existing Emiquon Advisory group, but it has not been convened recently. We recommend that this group or a similar group of interagency and interdisciplinary scientists and engineers be convened to review the proposed 6 year management cycle and identify other potential management cycles that could be implemented to meet stated project objectives. This group serving as the Adaptive Management Team (AMT) would determine the best/optimum management regime to implement following construction. Any future changes to the management regime would be informed by monitoring results and evaluation by the AMT and could vary widely from the analyzed 6 year recommended cycle. We recommend that the COE take special consideration during the PED (Project Engineering and Design) phase of the project to incorporate AMT recommendations and considerations.

District Response: Concur. The District embraces the adaptive management concept for the Emiquon East Project. The management cycle was developed to look at a variety of management cycles, specifically 6 different annual cycles. The District updated the main report and appropriate appendices changing the 6 "year" management cycle to a management cycle with 6 "scenarios."

The PDT analyzed the cycles as "years" to better understand the pump sizing and habitat benefit evaluation. However, as noted in Section III.D.4, *Illinois River Reach Objectives*) and in Appendices C, H, and O, the 6-year cycle would be used as a guide and not as a regimented management plan. The AMT will consider the detailed management cycles outlined in the plan and will possibly develop additional cycles depending on the monitoring, and meeting the project objectives.

Comment Page 3, paragraph 4: The anticipated effects of gravity flow development on Emiquon's aquatic and wetland systems are the subject of much debate. The effects of this proposed project feature need additional analysis and investigation. Each step of the proposed water management cycle should be analyzed with regard to anticipated objectives and possible negative effects (e.g. invasive species, sediment, and contaminants). In particular, an impact analysis that addresses the likelihood of exotic carp invasion and predicted consequences should be completed. The adaptive management plan/strategy should include measures (e.g. an invasive species control plan) that can address invasive species.

District Response: Concur. At the June 20, 2014, Emiquon AM Planning Kick-off meeting, the AMT identified invasive species impacts as one of the most critical risks to the success of the Emiquon project. The District anticipates the AMT members, including the District and USFWS, will make invasive species one of their highest priorities for monitoring and management. The AMT also discussed sediment and contaminants as risks and uncertainties. The adaptive management plan will have specific objectives focusing on sedimentation and water quality.

Likewise, the AMT should look at the positive effects the project and management on dealing with a carp problem. The AMT should develop contingency plans for dealing with Asian carp, common carp, and grass carp before they become a problem. In addition to other functions, perhaps the gate could serve as a management tool to get rid of a tremendous amount of biomass while avoiding a massive fish kill.

Comment Page 4, paragraph 1: Multiple objectives have been proposed for this project, making the preparation of a long term management plan a complex task requiring contribution from multiple disciplines. For example, although improving native fish species passage into and out of the project is desirable, it appears to be in conflict with the necessity to exclude exotic carp species. Nutrient export and denitrification is also desirable, but there is limited evidence presented to suggest that it will be significant or even measureable compared to the nutrient load of the Illinois River.
and
Comment Page 4, last sentence: An adaptive management strategy, like the one recently initiated by the project stakeholders is the best way to address and alleviate some of the inherent risks and uncertainties.

District Response: Concur. The District recognizes there are risks and uncertainties with this project. As Appendix O points out, *The District would address uncertainties in the PED phase in the detailed monitoring and adaptive management plan, including a detailed cost breakdown.* (Section II, *Project Adaptive Management Planning*). Additionally, there are risks and uncertainties associated with no project and limited management capabilities. Some Key Ecological Attributes (developed with the 40-plus member Emiquon Science Advisory Council) remain in the poor range and others have been declining.

While there is limited evidence presented to suggest nutrient export and denitrification will be significant or even measureable compared to the nutrient load of the Illinois River, it does not mean it is not important or desirable and it should not be considered in management decisions. In fact, on http://www.nrcs.usda.gov/Internet/ FSE_DOCUMENTS/nrcs143_006911.pdf, the Natural Resources Conservation Service states "Lands enrolled in WRP … decrease flood damages, (and) **improve water quality**" (emphasis added).

Likewise at http://www.fws.gov/budget/2013/PDF%20Files%20FY%202013%20Greenbook /8.%20National%20Wildlife%20Refuge%20System.pdf and <http://www.fws.gov/budget/2013/ PDF%20Files%20FY%202013%20Greenbook/8.%20National%20Wildlife%20Refuge%20System.pdf> , the Fish and Wildlife Service states "The Refuge System also provides major societal benefits through ecosystem services such as improving air and **water quality** "(emphasis added).

Bottomline: We need to look at risks and uncertainties and gauge them against ecosystem benefits.

Comment Page 5, paragraph 1: Incorporation of "lessons learned" from other restoration efforts along the Illinois River could only improve and strengthen the planning and management of the Emiquon Preserve. Including individual managers from other *sites* along the Illinois River valley on the AMT would ensure that the most recent knowledge of ecological responses to management actions be incorporated.

District Response: Concur. The District has taken into consideration the results of many of the preceding HREP projects lessons learned and integrated them into this Project's the planning process. The AMT met on June 20, 2014, with other refuge managers on hand to contribute their wealth of knowledge on regional collaboration ventures, and for their "boots on the ground" experience with project operations. The AMT governance will include other Illinois River land/resource mangers on the team to ensure its success.

Comment Page 5, paragraph 3, Water Control. … we recommend that a hydrologic analysis be conducted to inform the adaptive management plan and managers as to the frequency and efficiency of using the structure for those purposes (i.e., how often during the target drawdown periods is the Illinois River water level expected to be below the water levels within the Emiquon Preserve).

District Response: Appendix H, figure H-8 (reproduced below) illustrates the relationship between the median Illinois River water levels and the desired WLMP. Based on median Illinois River water levels, July drawdowns in Scenarios 4 and 6 are the only opportunities to use primarily gravity drainage to meet the desired WLMP; therefore, there are few opportunities to use interior gravity drainage to meet the WLMP. This indicates the TNC would have to use pumps to complete most of the desired drawdowns (described in Appendix H, page H-13). The AMP (Appendix O) states the TNC would capitalize on gravity flow opportunities whenever possible to meet the Project's objectives.

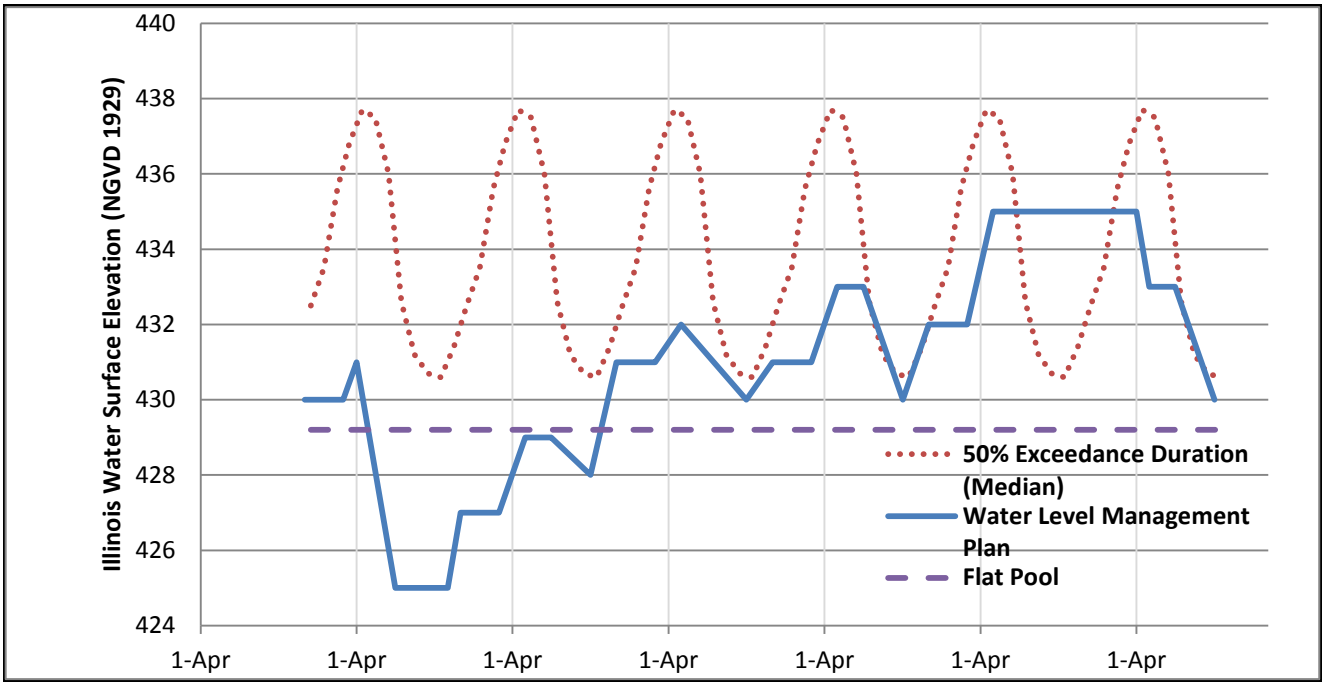

Figure H-8. Water Level Management Plan and Median River Elevation at RM 123.4

Comment Page 5, paragraph 5: We recommend all woody vegetation control measures be considered within the alternative analysis.

District Response: Maintaining high water for a period of time is an economical way of controlling woody vegetation. This method saves manpower and chemical costs. It is a successful technique use by wildlife refuges in the Illinois River Valley. While this is the preferred method of controlling willows, the AMT should include in their plan other methodologies successfully used at other large restoration sites.

Comment Page 6, paragraph 1: It is not clear why groundwater seepage and annual average rainfall is not adequate for the management objectives of the Emiquon Preserve. We recommend that the COE analyze possible groundwater seepage and compare it to the identified 6 year management regime and consider it within the alternatives analysis.

District Response: The feasibility study qualitatively considered groundwater contributions to the Emiquon interior-managed water levels. Wehrmann et al. (2009) suggest estimates for a stable, pre-development (nonpumping) groundwater level of 432 and perhaps as much as 435 ft (NAVD 88). However, the rate of groundwater recovery is highly uncertain and the rate of groundwater flow to the site is variable based on surface water elevations. However, data collected at Emiquon more recently suggest little if any groundwater influences on the hydrology of Emiquon. Because of uncertainties with the contributions of groundwater (both inflow and outflow), the reliance on surface water to meet the desired water level management scenarios reduces water level management risk. The TNC would use any ground water contributions to their maximum benefit albeit a minor source of water.

Comment Page 6, paragraph 2 Islands: Other floodplain restoration efforts within the Illinois River valley have inadvertently punctured the "lake pan" and compromised the sites ability to hold adequate (or

desired) water levels. We recommend that the COE evaluate potential borrow sites to ensure water retention is not compromised.

District Response: The District concurs protecting the underlying aquifer from intrusion is very important in the construction of all features for the Emiquon project in order to be able to provide water level management. While there were numerous areas in the DPR outlining the District was aware of this concern, the District decided to consolidate and summarize these concerns and described their avoidance measures to ensure the shallow aquifer is not pierced (Section VI.B.3., *Islands*).

Comment Page 6, paragraph 3: The construction of ten artificial islands would be a radical landscape change and is incongruent with the historical landscape of Thompson and Flagg Lakes.

District Response: The intent of this project is **not** to rebuild the historical landscape of Thompson and Flagg Lakes. A 21-foot ag levee, 20 miles of ditches, and a 5,000+ acre lake are not historic features either. The Project wants to restore some historic function to this system.

Comment Page 6, paragraph 3: Islands could potentially attract nesting Canada geese. Herbivory from high numbers of geese can lead to declines in aquatic vegetation (e.g. as seen at Peoria Lake). A high local goose population may compete with more desirable species of migratory birds.

District Response: While the islands may provide some nesting habitat for geese, the islands' primary habitat value is for pelican and geese loafing sites, shorebird foraging areas, aquatic habitat diversity, and potential colonial bird nesting habitat in naturally grown trees, or actively planted trees. After monitoring the resident goose population, TNC and AMT should put in a management plan in place before the geese become a problem.

Comment Page 6, paragraph 3: Final island design and location should be informed through input from the AMT (during COE PED) of project planning to ensure that the best available science be incorporated.

District Response: Concur. Island construction, configuration, timing, and location were all topics at the first AMT meeting on June 20, 2014. The AMT will be an integral part of this project feature during the Project PED phase.

Comment Page 7, paragraph 2: We recommend that consideration be given to a phased construction plan for islands that is guided and informed by the AMT and/or Emiquon Science Advisory team. Following a period of post-construction monitoring, islands could be built in problem locations if necessary.

District Response: Final island design and layout will consider recommendations from the AMT and incorporate lessons learned from projects such as Swan Lake, Peoria Lakes, and the UMR.

Comment Page 7, paragraph 2: …we recommend that the AMT include professional scientists from the ILDNR, the Illinois Natural History Survey, and other wetland scientists.

and

Comment Page 7, paragraph 3: An expanded AMT should collaborate on the development of quantifiable "ecological trigger points" to guide management actions.

District Response: Concur. The District has updated Appendix O, *Adaptive Management/ Monitoring Plan*, to include a section titled, *Plan Implementation to Date*. This section documents the June 20 AM meeting participants (from seven state and Federal agencies, academia, and two NGOs), and the discussion that took place. Among the topics the group discussed included the key ecological attributes the team may consider in their management decisions.

Comment Page 7, paragraph 4 Habitat Evaluation: … the WHAG neglects to account for the likely introduction of invasive species. We recommend that the AMT analyze and evaluate the potential detrimental effects of invasive species. In the absence of necessary species models for inclusion into the WHAG, we recommend that a core team of fisheries experts be formed to estimate the possible impacts of invasive species as they relate to the adaptive management plan and ecological triggers.

District Response: Concur. Through the AM process, specific duties of the AMT and TNC could be to evaluate the risks and uncertainties of invasive species, and make specific recommendations on how to manage the project so the level of risk and uncertainty.

Comment Page 7 Conclusions: Due in part to the compressed schedule and abbreviated review time, significant gaps were made in the planning process that should be addressed before proceeding. One significant gap is the lack of invasive species impact analysis in almost every project aspect. The DPR Problem Identification Section does not mention invasive species and their potential impacts on project objectives. Only relatively recently invasive species (including non-native or naturalized carp species) have emerged to redefine the context of our overall restoration mission under the UMRR-EMP. Therefore, we feel it is appropriate that project objectives should be reexamined and prioritized using the most current hydrographic and sediment transport information on this highly altered system.

Some objectives (fish passage and nutrient export) appear to be in direct conflict with other possibly higher priority objectives. A draft agenda for the AMT meeting on June 20, 2014, identifies significant time being allocated to discussion of this specific topic. We are confident that the AMT using adaptive management principles will further refine the objectives.

District Response: Concur. The District updated the main report in several places (see *Executive Summary;* Section II.H, *Invasive Species;* Section III.B.1, *Problems;* and Section IX.C.6, *Invasive Species*) but this is not enough to address the risk and uncertainties of the Project's invasive species issues. The District is confident the AMT will help guide the project's management decisions so the invasive species issues are minimized as practical.

The Project objectives may be in conflict, yet natural systems are in conflict at times. A natural system is a balance of biological and natural forces that are always evolving. The District believes objective prioritization should not be completed, but a balanced approach is more ecologically desirable. The District is relying on the project partners in the form of an AMT to craft effective adaptive management/monitoring criteria to find a balance approach between the Project objectives. One way the AMT could look at it, is to prioritize ecological processes. For example, one management plan for a particular year would be to create a more natural hydrograph.

Comment Page 8, paragraph 2: The Service is committed to engaging this process and is confident that the adaptive management principles can be used to identify solutions for implementation and reduce inherent risks and uncertainties.

District Response: Concur. The District appreciates the USFWS's candor and collegiately and willingness to support this Project's AM process.

Recommendations

1. An AMT should be organized to provide science and management guidance to project managers. The roles and responsibilities of this team should be mandated and described in the Project Partnership Agreement (PPA).

District Response: Concur. The District, TNC, USFWS, and NRCS are committed to establishing an AMT that will assist with Project management decisions. The Project requirement of adaptive management will be part of the Project Partnership Agreement

2. Additional water level management regimes should be considered and outlined by the AMT (including the proposed 6-year cycle) and then analyzed during the PED phase for their relative benefits and costs. This effort should recognize that optimal regimes may vary widely from the 6 year cycle and would be informed heavily by the AMT, monitoring and local conditions.

District Response: The District, TNC, USFWS, and NRCS are committed to establishing an AMT to assist with project management decisions at Emiquon East HREP. There are already program level coordination bodies (EMPCC and RRCT) providing science and management guidance to project managers. The District will add text to the Project Partnership Agreement to identify the need for an AMT to assist in Project management decision making. The roles and responsibilities will be developed as part of the design and construction phase of the project. The AMT will fully analyze each management proposal to optimize the Project's short- and long-term habitat benefits.

3. Ecological trigger or decision points should be developed for each project objective and linked to specific management actions.

District Response: Concur. The District, TNC, USFWS, and NRCS are committed to establishing an AMT that will assist with Project management decisions including the consideration of alternate water level management regimes.

4. The detrimental effects of invasive species should be assessed in response to the proposed management actions.

District Response: Concur. The District, TNC, USFWS, and NRCS are committed to establishing an AMT that will assist with Project management decisions including those associated with detrimental effects of invasive species. The AMT will consider invasive species effects based on the proposed management actions for any given year as part of the AMT decision making process.

5. The benefits of island construction should be analyzed further and reconsidered for phased implementation.

District Response: Concur. The District, TNC, USFWS, and NRCS are committed to establishing an AMT that will assist with Project management decisions including input on the design and location, and timing of the islands based on collected water quality data and engineering wind fetch analysis.

6. Project objectives should be re-examined and prioritized in consideration of stakeholder input.

District Response: Concur. The District, TNC, USFWS, and NRCS are committed to establishing an AMT that will assist with Project management decisions including analyzing the project objectives and prioritize the objectives based on a balanced adaptive management paradigm.

XIV. CONCLUSIONS

Full realization of the potential habitat value in Emiquon East has been hindered by the lack of a managed floodplain connection with the Illinois River and an unreliable pumping system to manage interior water levels. Infrastructure improvements and hydrologic alterations have changed flow regimes due to impoundment which has led to the loss of diverse backwater aquatic/wetland habitats. Restoring off-channel areas containing reliable aquatic/wetland habitat and establishing floodplain areas that would support survival and lifecycle needs of river fish would allow the Project Area to realize the highest combined benefit to fish and migratory birds.

The Recommended Plan restoration features for Emiquon East (7-foot water control structure, 60,000 GPM Pumping System and 10 interior islands) are designed to meet the Project's objectives of restoring and protecting aquatic habitat and restoring floodplain connectivity to the Illinois River.

Assessment of the future with-Project scenario shows definite increases in total habitat units over the 50-year period of analysis for the target species, as well as a majority of other aquatic and wetland dwelling species. These increases represent quantification of the Projected outputs: improved habitat quality and increased preferred habitat quantity.

This Project is consistent with and fully supports the overall goals and objectives of the UMRR-EMP, the Illinois River Comprehensive Plan, the North American Waterfowl Management Plan, and the Ramsar designation as a wetland of international importance.

United States Department of the Interior

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IN REPLY REFER TO:
FWS/RIFO

July 21, 2014

Colonel Mark J. Deschenes
District Engineer
U.S. Army Corps of Engineers
Rock Island District
Attn: Mr. Ken Barr, Chief, Planning
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Deschenes:

This document constitutes our Final Fish and Wildlife Coordination Act Report (FWCAR) for the Emiquon Habitat Rehabilitation and Enhancement Project (HREP) on the Illinois River near Havana, IL. This project was originally proposed under authority of Section 206 of the Water Resources Development Act (WRDA) of 1996. The U.S. Army Corps of Engineers, Rock Island District (COE) in partnership with The Nature Conservancy (TNC) proposes to restore floodplain wetland functions on 5,800 acres of land within the Thompson Levee and Drainage District (TLDD) now owned by TNC. The Fish and Wildlife Service, Rock Island Field Office (Service) provided a Draft Coordination Act Report (DCAR) on June 17, 2014 which identified several issues and made several recommendations. We appreciate your attention to these concerns and many have been adequately addressed. However, a few remain that warrant further attention. These include:

1. Potential impact of invasive species
2. Revising the baseline information used for the incremental habitat analysis
3. Island construction, siting and justification
4. Prioritization of project objectives
5. Establishment of roles and responsibilities for an Adaptive Management Team (AMT)

The formation of an AMT began on June 20th at Dixon Mounds where many of the interested stakeholder agencies met to discuss the project, project alternatives and role of an AMT. We are encouraged by COE implementation of adaptive management to help guide this project and are confident that adaptive management principles will be used to refine project components during the planning and design phase of the project. Additionally, we believe that adaptive management is appropriate to inform and guide fish and wildlife resource management at the Emiquon Preserve.

In the coming months we hope to reach a consensus regarding the final composition of the AMT and its roles and responsibilities. Through close collaboration between the COE, TNC, and the Illinois DNR (DNR hereafter), the Service believes Emiquon Preserve can be managed to conserve and maintain its significant wetland functions. Simultaneously, we can improve our understanding of floodplain ecology. Despite this progress, concerns remain in regards to impacts to existing wetlands and wetland functions and the justification for some features of the recommended plan.

The landscape setting and pre-project condition of fish and wildlife resources at Emiquon Preserve are different from the baseline encountered at other HREP projects. The goals and objectives for other HREPs frequently focus on restoring habitats degraded by sedimentation and poor water quality. The Emiquon Preserve however, is already a highly diverse and productive environment. A recent Illinois Natural History Survey (INHS) Report[1] documents the extraordinary habitat transformation that has occurred over the last six years. Many of the following conclusions and information stem from this report. Given the current high quality of the Emiquon Preserve, an overall goal to "maintain" current wetland values and functions seems more appropriate than "restoration."

Success for this project hinges upon science informed management which balances several goals and objectives identified in the DPR. Some of these goals, such as river reconnection and habitat restoration, may be in potential conflict with one another. Establishing an AMT comprised of regional experts in fisheries, water quality, hydrology, and migratory birds will be critical in balancing these goals and objectives. Some objectives such as fish passage, fish overwintering, and nutrient export need further study before implementation. The exchange of water between the preserve and the Illinois River to achieve these objectives must be thoroughly vetted in order to avoid impacts to environmentally sensitive habitats.

The potential impact of this action was demonstrated when the overtopping and eventual failure of the Spunky Bottoms levee in 2013 led to 100% of the aquatic bed vegetation being lost. Recent information from Spunky Bottoms indicates that the aquatic bed is recovering. Information from Spunky Bottoms and other floodplain sites should inform management actions at the Emiquon Preserve. Any purposeful introduction of Illinois River water should be delayed until TNC's science advisory team and the AMT have considered the available science and weighed potential risks. This process was initially discussed during the June 20th AMT meeting, and it is our understanding that it will be refined during the next several months and during planning and design of the project. The Service supports and understands the need for reliable water level management at the Emiquon Preserve and a well-managed controlled connection to the Illinois River.

Aquatic Bed Wetlands - Since pumping of the preserve ceased in 2007 groundwater seepage and surface runoff have raised the water level within the Emiquon Preserve and created a variety of wetland habitats. The most significant of these is aquatic bed wetlands which consist primarily of submersed and floating-leaved aquatic plants. On Emiquon Preserve these aquatic bed

[1] Hine, C.S., H.M. Hagy, A.P. Yetter, M.M. Horath, R.V. Smith, and J.D. Stafford. 2013. Waterbird and Wetland Monitoring at the Emiquon Preserve – Final Report 2007-2013. Prepared for the Nature Conservancy. INHS Technical Report 2013 (20).

wetlands have increased dramatically from a low of 1.2 % in 2007 to as much as 65.7% in 2009 and 47.1 % in 2012 (six year average of 41.3%). This increase can be attributed to water quality conditions present in Emiquon Preserve. This wetland habitat type is very uncommon in the Illinois River Valley (IRV) due to high turbidity levels found in most other locations. These wetlands are critical during both spring and fall bird migration (especially for diving ducks). They are especially critical to species of concern such as lesser scaup and canvasback.

Between 2008 and 2013 more than 50% of the spring duck use days at Emiquon Preserve were from diving ducks. Aquatic beds provide an abundance of invertebrates needed by soon-to-be-nesting hens that is not always present at other IRV locations in spring. The attractiveness of Emiquon Preserve for diving ducks appears to fluctuate directly with the amount of aquatic bed present (See footnote 1).

The diversity and extensive coverage of the submerged aquatic vegetation is a key habitat component for the native fish population. Both the Illinois DNR and the INHS have been monitoring the Emiquon fishery resources. DNR fishery biologists found that the current fish population in Thompson and Flagg Lakes is composed of a diverse native fish population with common carp present in low numbers. In 2013, DNR fish surveys collected 2286 fish that represented 21 species and 1 hybrid. The survival and recruitment of the state threatened, Star Head Topminnow was documented, and it is now a common species at the site. The DNR report showed stable populations for the largemouth bass, bluegill, black crappie, bowfin, spotted gar, warmouth sunfish, pumpkinseed sunfish, golden shiner, brown bullhead, mosquito fish and starhead topminnow. DNR also reported recruitment and increasing numbers from the 2008 brood stocking of grass pike, white crappie and channel catfish. The current common carp population was reported at a level below that thought to be destructive of the submersed aquatic vegetation community. From the period 2007-2012, the INHS[2] also documented a fish community dominated by native fish. Only two species of invasives (common carp and goldfish) were collected. Secchi disc data indicated a trend of decreasing water clarity possibly due to fish foraging or increased phytoplankton.

Islands - The Final DPR recommends construction of ten islands. The stated objective is to reduce suspended sediments caused by wind fetch. A secondary objective is to create colonial bird nesting habitat. Approximately 79 acres of environmentally sensitive aquatic bed wetland would be filled and an additional approximately 40 acres of aquatic bed and lake bottom would be excavated (during the construction drawdown) down to an elevation of 424 NGVD ft. to provide borrow material. Biologists suspect that the rapid reestablishment (2007-2013) of aquatic vegetation was enhanced by the seed bank remaining in the soil since Thompson and Flag lakes were originally drained. Construction of islands may impact the seed bank of submersed vegetation through removal or compaction from heavy machinery. Removal and/or compaction of the seed bank may increase the number of years required for the aquatic bed to reestablish.

The Service has been unable to examine the full incremental analyses used to quantify fish and wildlife benefits derived from island creation, but it is our understanding that 2008 conditions were used as a baseline for the analyses. Incremental analysis requires the use of current

[2] VanMiddlesworth, T.D., N.N. Michaels, and A.F. Casper. 2013. The Nature Conservancy's Emiquon Preserve-Fish and Aquatic Vegetation Monitoring 6-year (2007-2012) Report. Illinois Natural History Survey. 104pp.

baseline conditions to develop future with and without-project scenarios to estimate fish and wildlife benefits of project features. Since cessation of agriculture and associated drainage of the Emiquon Preserve, wetland values have steadily increased. Current conditions documented in the INHS report(s) render the 2008 baseline conditions inadequate for evaluating current conditions against future with and without conditions. As recommended in our DCAR, project features (specifically island creation) need to be re-evaluated during the planning and design phase to inform TNC, COE and the AMT regarding benefits of final island creation.

We were unable to find any evidence that wind driven waves are resuspending sediment and impacting aquatic vegetation at the Emiquon Preserve. Wind driven waves have been shown to resuspend sediment in other areas where wide (large) open areas exist. This phenomenon may exist within the Emiquon Preserve and is likely isolated to the large open water areas. In fact, according to the INHS report rooted submersed aquatic vegetation has been expanding since 2007 and now covers the proposed footprint of roughly 7 of the 10 proposed island features. In addition, the acreage of open water in Thompson Lake has also declined from 41.8 % in 2007 to 16.4% in 2012. INHS investigations at Emiquon and Spunky Bottoms indicate that recent episodes of increased turbidity may be attributable to an increased number of less desirable fish species (e.g. carp and gizzard shad). Other studies indicate that increased blue-green algae growth, spurred by sudden nutrient enrichment can also increase turbidity. Overall, the biological evidence strongly indicates that neither suspended sediment nor turbidity from other causes is inhibiting submersed aquatic vegetation growth.

In the Services DCAR we cited the following text from the Post Construction Evaluation Report[3] for Swan Lake HREP:

> Pre- and post-project monitoring indicated that the island groups were marginally effective at reducing wave height in Middle Swan, and not significant in reducing wave height in Lower Swan (Figure C1). Sediment deposition rates were measured upstream and downstream of island groups in Lower Swan Lake to assess the affects [*sic*] of the island group on sediment resuspension. Garvey et. al. (2007) found no significant differences in the deposition rates or sediment upstream or downstream of the island complex, or between pre- and post-project monitoring (Figure C2). This indicates that the resuspension of sediments has not been reduced by the creation of the island complex.

Conclusions in that report suggest that islands do not reduce suspended sediment. The Swan Lake post-construction evaluation report also suggests that improved water management capability will allow managers to manipulate water levels to effectively control resuspended sediments should that problem arise. It is our understanding that at the Emiquon Preserve, TNC's science advisory team and the AMT will evaluate all available information and make management recommendations to address suspended sediment issues.

The shallow island slope could be susceptible to erosion. The post-construction report for Swan Lake also documented island erosion. Attempts to establish vegetation with willow stake

[3] Upper Mississippi River System Environmental Management Program. 2010. Post-Construction Performance Evaluation Report - Swan Lake Habitat Rehabilitation and Enhancement Project. US Army Engineer District. St. Louis.

plantings were unsuccessful and natural recolonization did not occur due to wildlife impacts. Some islands lost as much as 50% of their original mass.

One of the anticipated secondary benefits from island construction is increased colonial nesting bird habitat. The proposed island configurations (long and narrow) are not conducive to nesting and their anticipated use by colonial nesting birds is speculative. If an island does attract nesting birds, reproductive success is likely to be marginal. It is our understanding that there is a significant amount of public use on the preserve (both fishing and waterfowl hunting). Although the Service is supportive of public use, it could be disruptive to nesting birds and could cause nest abandonment.

Island placement should be designed with respect to potential effects on drainage. Islands should not impede drainage during drawdown or water level management. Fishery biologists advise against the creation of shallow isolated pools of water during drawdown events. Shallow pockets with degraded water quality may sustain undesirable carp species and eliminate native fish.

The Service supports the initial creation of island numbers 7 and 10 as identified in figure 12 of the DPR in open water areas that do not require the direct loss (trade-off) of aquatic bed wetland habitat. These targeted islands should be monitored with adaptive management principles to inform future island creation and management actions.

Endangered Species Coordination - The Service received a Biological Assessment from the Corps of Engineers dated June 3, 2014. The Service responded by letter dated June 30, 2014 concurring that the proposed project "may affect, but is not likely to adversely affect" any federally listed species. This precludes the need for further coordination unless the project changes significantly.

Conclusions and Recommendations - Currently, the Emiquon Preserve is providing significant fish and wildlife benefits. This resource also supports a broad array of recreational uses. Because restoration at the Emiquon Preserve has been so successful, short-term investments could be limited to additional management tools (i.e reliable water level management through pumps and gravity drain) that preserve existing wetland productivity and diversity. Based on the current habitat trend at Emiquon and recent biological information, the proposed island features (as recommended and sited in the final COE plan) do not appear warranted and if constructed in areas dominated by submersed aquatic bed wetlands may result in a net habitat loss. The improvement of water management capability through pump and gravity drain construction should provide the short-term means necessary to maintain the ecosystem values currently provided by the preserve. The addition of a pump station and a carefully managed water control structure will provide the necessary capability to sustain the current high quality habitat that now exists.

Even though Emiquon Preserve is currently providing a high degree and diversity of wetland function, it is unlikely to retain these values indefinitely if left unmanaged. Collaborative resource management provided by the AMT, along with pertinent research and monitoring should be able to sustain these values over the long term. Unpredictable future events and circumstances however, may indicate that additional measures (e.g. island creation) will be necessary to achieve project objectives. The flexibility to meet future uncertainties and challenges must be an integral element within the adaptive management process.

In consideration of recent meetings and dialogue with the COE, the Service believes that the finding of no significant impact (FONSI) and/or statement of findings (SOF) include language that formalizes a commitment to the following:

1. The SOF and or FONSI should include language that formalizes the commitment made by the COE and TNC to collaborate with prospective participants (USFWS, USACE, TNC, NRCS, Illinois DNR, and INHS) in preparing a detailed adaptive management plan in the design phase.
2. Roles and responsibilities, representation, and operating principles for the AMT will be further developed and refined for the project operation manual.
3. Adaptive management principles will be implemented to inform island creation. Future monitoring and research combined with site specific data ,will be used to demonstrate the need/benefits of island creation and will inform TNC and the COE (through the AMT) on final decisions regarding the location, configuration, size, number, and construction timing for islands.
4. The purposeful introduction of Illinois River water will be carefully managed and vetted by TNC's science advisory team and the AMT to protect against the potential negative impacts of additional invasive species introduction.
5. Scientists from both the Illinois Natural History Survey (INHS) and the Long Term Resource Monitoring (LTRM) should be funded to conduct resource monitoring and other relevant studies at Emiquon Preserve to help inform the TNC and the AMT.

This letter provides comments under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); and the Endangered Species Act of 1973, as amended. Questions concerning this letter should be directed to Mr. Jon Duyvejonck (telephone 309/757-5800, ext. 207).

Sincerely,

Kraig McPeek
Acting, Field Supervisor

cc: USFWS (Bob Barry, Gwen Kolb, Tim Yager, Robert Clevenstine)
Illinois DNR (Nathan Grider)
USEPA (Elizabeth Pelloso)
NRCS (Ivan Dozier, Paula Hingson)
The Nature Conservancy (Blodgett)
Environmental Management Program Coordinating Committee

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ATTACHMENT F

Long Term Resource Monitoring Program Element

- **LTRMP Element FY 14 Scope of Work thru 3rd Quarter (April – June 2014)** *(F-1 to F-9)*
- **UMRR-EMP Science Activities in Support of Restoration and Management (7/22/14)** *(F-10 to F-12)*

UMRR
Long Term Resource Monitoring Program FY14 Activities
(3rd quarter; April-June)

Publications, Presentations, and Conference Attendance

Jennifer Sauer attended the Upper Mississippi River Basin Association (UMRBA) Hazardous Spills Coordination Group Meeting at UMESC, April 16-17.

(UMESC) Mike Jawson, Barry Johnson, and Jeff Houser participated in a meeting of the Strategic Planning Team for the U.S. Army Corps of Engineers' Upper Mississippi River Restoration Program (UMRR), April 8-11 in Rock Island, IL.

UMRR LTRMP scientists authored/co-authored a series of platform and poster presentations at the 46th Annual Meeting of the Mississippi River Research Consortium, April 23-25 in La Crosse, WI.

- Long Term Trends in Suspended Solids, Nitrogen, and Phosphorus in Select Upper Mississippi River Tributaries, by Rebecca M. Kreiling and Jeffrey N. Houser.
- Modeling and Mapping Flood Inundation along the Upper Mississippi River: Implications for the Study and Management of Floodplain Vegetation and Soil Dynamics, by Nathan R. De Jager, Jason J. Rohweder, Timothy J. Fox, and Yao Yin.
- Patterns in Recruitment of Freshwater Mussels as a Function of River Discharge, by Patricia Ries, Teresa Newton, Steve Zigler (UMESC), and Roger Haro (UW-La Crosse).
- Spatial and Temporal Dynamics of Phytoplankton Assemblages in Selected Reaches of the Upper Mississippi River: Navigation Pools 8, 13, and 26, by John T. Manier (UMESC), Roger Haro (UW-La Crosse), Jeff Houser (UMESC), and Ron Rada (UW-La Crosse).
- Ecological Shifts in a Large Floodplain River during a Transition from a Turbid to Clear Stable State, by Shawn M. Giblin (WI DNR), Brian Ickes (UMESC), Heidi A. Langrehr, Andrew D. Bartels, Kraig L. Hoff (WI DNR).
- Ecosystem Change in Upper Mississippi River Backwaters II: Post-Dam Zooplankton Community Food Web Shift. Gerrish G.A**.,** C.S. Belby, C. Rivera Perez and S.M. Giblin.
- Efficacy of GREON Automated Sampling Buoys. Poster presented at the Mississippi River Research Consortium, La Crosse, WI. April 2014. Soeken-Gittinger, Lori, and John Chick.
- Shocking Results: Assessing the Injury Rates of Fishes from Pulsed-DC Electrofishing. Mississippi River Research Consortium, La Crosse, WI. April 2014. Culver, Edward F., and John H. Chick.
- Does Variation in Electrofishing Catch Per Unit Effort Reflect Variation in the Abundance of Fishes? Mississippi River Research Consortium, La Crosse, WI. April 2014. Chick, John H., Chad R. Dolan, and Greg G. Sass.
- Raising the Bar of Floodplain Forest Restoration: Elevation Modification as a Restoration Strategy, by Lisa Maas (USFWS), Nathan DeJager (UMESC), Rich King (USFWS), Jason Rohweder (UMESC), Randall Urich, and Bobby Jackson (USACE). Poster presentation

- Effects of Flooding and Nitrogen Addition on Nitrogen Cycling in Reed Canarygrass and Mature Silver Maple Communities in the Upper Mississippi River Floodplain, by Whitney Swanson (UW-La Crosse), Nathan De Jager (UMESC), and Eric Strauss (UW-La Crosse). Poster presentation

Barry Johnson, Jim Rogala, Yao Yin, Brian Ickes, Nate De Jager, and Jeff Houser participated in a meeting of the Analysis Team (A-Team) on April 23 in La Crosse, WI.

Jennifer Sauer gave a presentation on the UMMR program at the Rio Grande Environmental Management Meeting in Brownsville, Texas on April 22, 2014.

Bierman attended on-site visit at Sunfish Lake - Pool 12 Overwintering HREP Stage 1, with USFWS and Iowa DNR fisheries staff – April, 2014.

Bierman attended A-Team meeting in La Crosse – April, 2014.

Bierman participated in a Green Island/Maquoketa River floodplain management and science planning discussion and tour with IDNR Wildlife staff, and state and regional USGS staff – May 2014.

Bierman participated in a Joint River Resource Technical Team meeting via conference call – May, 2014.

Bierman, Bowler, Fitzpatrick, Kueter, and Miller hosted annual Iowa River Rat meeting at Bellevue State Park – June, 2014.

Bierman participated in a meeting regarding “River Floodplain Science Opportunities at the Confluence of the Maquoketa and Mississippi Rivers,” hosted in Bellevue by USGS Large River Initiative coordinator Ken Lubinski – June, 2014.

Modeling and Mapping Flood Inundation along the Upper Mississippi River: Implications for the Study and Management of Floodplain Vegetation and Soil Dynamics, by Nathan R. De Jager, Jason J. Rohweder, Timothy J. Fox, and Yao Yin. US Chapter of the International Association for Landscape Ecology in Anchorage, AK

Modeling and Mapping Flood Inundation along the Upper Mississippi River: Implications for the Study and Management of Floodplain Vegetation and Soil Dynamics, by Nathan R. De Jager, Jason J. Rohweder, Timothy J. Fox, and Yao Yin. Organizational meeting for floodplain restoration in Bellevue, IA

Houser, J.N. Nitrogen and phosphorus in the Upper Mississippi River: What we've learned about their patterns, processes, and effects from long-term monitoring and short-term field studies. University of Minnesota Water Resources Seminar. 19 April 2014. St. Paul, MN. Invited Presentation.

Houser. J.N. Contrasts among aquatic areas in a large, flood-plain river: testing our understanding of nutrient cycling, algal abundance, and suspended sediment dynamics. Joint Aquatic Science Meeting. 18 - 23 May 2014. NOTE: Joint meeting of Society for Freshwater Science, Association for the Sciences of Limnology and Oceanography, Phycology Society of America, Society of Wetland Scientists. Contributed Oral Presentation.

Manier, J.T., Haro R.J., Houser, J.N., Rada, R.G.: Spatial and Temporal Dynamics of Phytoplankton Assemblages in Selected Reaches of the Upper Mississippi River: Navigation Pools 8, 13, and 26. Joint Aquatic Sciences Meeting. Portland, Oregon.

Giblin S.M., B. Ickes, H. Langrehr, A. Bartels, K. Hoff. Ecological Shifts in a Large Floodplain River During a Transition from a Turbid to Clear Stable State. WI DNR New Employee Orientation Meeting. LaCrosse, WI.

On 21 April, 2014, Brian S. Ickes delivered an invited lecture at Northrup Auditorium, University of Minnesota, as part of the Institute of Advanced Studies, River Life Program. Announcement: http://www.northrop.umn.edu/events/irony-carp Video of lecture and round table: http://ias.umn.edu/2014/04/21/irony-of-carp/

On 21 April, 2014, Brian S. Ickes attended the inaugural meeting of the Board of Directors charged with developing a new interdisciplinary environmental sciences program at the University of Wisconsin - Stout. The meeting included a group discussion on the goals of the program and four break-out sessions, each focusing on a major emphasis area within the interdisciplinary program. Ickes' contributions were in the "Aquatic Ecology" sub-group. We reviewed planned curricula, content, and subject matter intended for each course, and pedagogical approaches to instruction. A novel concept termed "cohorts" was advanced to foster learning teams that can develop not only individual skills and knowledge, but also teamwork skills, throughout the program. Because UW Stout is a polytechnic institute, strong emphasis was placed on practicums throughout the course of study.

On 12 June 2014, Brian S. Ickes organized and moderated a special session at the International Fish Passage Conference in Madison, WI. Additionally, Brian gave a talk titled "The situational context for fish passage issues in the Upper Mississippi River System". A pdf of the talk will be available in the near future on the conference website.

The WDNR field station staff coordinated a statewide training session for new employees in the WDNR water bureau in May. This involved planning a half-day bus tour of sites in the coulee region and a narrated, 3-hour boat tour of Pool 8 for 60 staff. Field station staff also gave several floor presentations and provided sampling demonstrations to the group. Preparation for the two-day event began in March and April and required a significant investment of time. The session was well-received, and our participation was greatly appreciated.

Ben Lubinski attended the "Day of Science" meeting featuring NGRREC research collaborators from the University of Illinois. The meeting was held at the National Great Rivers Research and Education Center in East Alton, Illinois. 6/11/2014

Technical activities and assistance:

Brian Ickes and Andy Bartels assisted David Heath (WDNR) with data, analytics, and interpretation of UMRR-EMP LTRMP fish component walleye data. WDNR is entertaining new walleye harvest and size limit regulations in WI waters of the UMRS.

Jeff Houser presented Edward Stets, USGS with directions on how to garner water quality information from the UMRR LTRMP web site. Edward was specifically looking for information on carbon-related sampling.

Jennifer Sauer provided Ann Runstrom (USFWS) with information on LTRMP fish sampling procedures. Ann is drafting a 2014 interagency sampling plan for invasive carp from the UMR headwaters to Pool 12.

(UMESC) Nathan De Jager, Timothy Fox, Jason Rohweder (UMESC), and Steve Buan (NOAA) discussed computer tools under development at UMESC to model and map flood inundation along the Upper Mississippi River, and how these could be linked to river forecast models created by the National Oceanic and Atmospheric Administration (NOAA), May 6, 2014. Buan works for NOAA's North Central River Forecast Center in Chanhassen, MN, one of 13 NOAA River Forecast Centers which collects, processes, and provides forecasts for major U.S. river basins. UMESC and Buan are looking into using the combined GIS toolset to examine the effects of alternative precipitation scenarios (e.g., climate change) on the spatial and temporal patterns of flood inundation along the Upper Mississippi River.

Barry Johnson provided Tim Counihan (USGS) with 4 publications that indicate the types of fish analyses conducted under the UMRR LTRMP on the Upper Mississippi River System that relate to the hypotheses presented on the call, specifically: 1) differences in fish species longitudinally and through time, 2) classification of fishes by guilds and life history characteristics, and 3) power to

detect changes among years. The information was requested by the Large River Monitoring Forum.

Jennifer Sauer provided Lisa Reid (USFWS) with information on *Bithynia* snail sampling that was conducted under the LTRMP in 2007.

Brian S. Ickes assisted Dr. Dominik Halas (Department of Biology, University of Toronto Scarborough) with a request for Carassius (feral goldfish) specimens. Several state field station staff similarly assisted Dr. Halas.
The University of Toronto Scarborough is working on project to assess feral populations of goldfish in North America for cryptic diversity.

Jeff Houser and Jennifer Sauer provided Gwen White (USFWS Science Coordinator, Eastern Tallgrass Prairie & Big Rivers LCC with information and maps of areas with low dissolved oxygen. The LCCs are working to identify the selection and siting of agricultural conservation practices across the Mississippi Basin to optimize multiple benefits for wildlife habitat, water quality and agricultural production. The LCC is interested in any information that may guide work relative to the hypoxic areas in the Upper Mississippi River (not just the Gulf of Mexico).

Jennifer Sauer and Eileen Kirsch provided Jon Duyvejonck (USFWS) with a publication titled "Control of Reed Canarygrass Promotes Wetland Herb and Tree Seedling Establishment in an Upper Mississippi River Floodplain Forest authored by Meredith Thomsen, Kurt Brownell, Matthew Groshek, Eileen Kirsch. Jon is interested in methods to control Phragmites/reed canary grass on the UMR.

Jennifer Sauer provided Eric Smith with data and maps on the distribution of Bithynia snails in Pools 11-13. Eric is a Master's student looking at scaup mortality in the UMR.

Jennifer Sauer provided Bradd Sims, Fisheries Biologist, Wisconsin Department of Natural Resources with information regarding the alternate fish bait study done by Brian S. Ickes, A. Bartels, and J. West with additional contributions provided by M. Bowler, S. De Lain, E. Gittinger, N. Michaels, Q. Phelps, E. Ratcliff, J. Sauer, B. Schlifer, and L. Solomon.

Petersen completed aging of 606 bluegills for the Pool 12 HREP project – April, 2014.

Bowler entered bluegill age data into the Pool 12 HREP project database – April, 2014.

Bowler applied aged bluegill data to unaged fishes via SAS routine and calculated mortality in the six backwater study lakes for the Pool 12 HREP – April, 2014.

Bowler compiled and distributed 'Pool 13 LTRMP Highlights, 2013" to UMR personnel and to Manchester Research for AFS Rivers and Streams Technical Committee meeting – April, 2014.

Bowler provided data and summaries of 2013 fisheries special projects for Pools 10, 11, 17, 18, and Huron Island to Guttenberg and Fairport Management – April, 2014.

Bowler provided identification of fish specimens from Catfish Creek watershed project with Loras College student Amanda Fitzpatrick – April, 2014.

Bierman assisted Iowa DNR management and research staff with collections of shovelnose sturgeon from the Cedar River – May, 2014.

Bowler provided graphical and tabular LTRMP fisheries data (black and white crappie and sauger; *c/f* and *l/f*) Pool 13 to Jeremiah Haas of Exelon Nuclear for comparative purpose – May, 2014.

Bowler made Special Project Outpool maps with stratified random sampling points for Pools 9, 10, 16, 18, Beaver Island HREP, and Huron Island HREP for the 2014-2019 field seasons – May, 2014.

Bierman updated all "in-house" water quality datasets to include all fixed site monitoring data collected in 2013 – May, 2014.

Bierman provided water quality data from historical fixed sites in Clinton and Camanche, Iowa to Elizabeth Bruns of the Water Quality Section of the USACE, Rock Island District for the Beaver Island HREP pre-project report – May, 2014.

Bowler completed and submitted "Sex-Specific Age Structure, Growth, and Mortality of Black and White Crappie in Pool 13 of the Upper Mississippi River." for the Iowa DNR's Fisheries Management Investigations 2013 Annual Report – May, 2014.

Kueter assisted Bellevue Management and Research with habitat improvement (rip-rap placement) at Greens Lake in Pool 12 – June, 2014.

Fitzpatrick and Miller pre-filled Special Project Outpool data sheets for Fairport and Guttenberg Management – June, 2014.

Bowler provided identification of fish specimens from Catfish Creek watershed project with Loras College student Amanda Fitzpatrick – June, 2014.

Bierman joined Kirk Hansen, IDNR and Chuck Theiling, USACE in developing a proposal for future pre-project centrarchid telemetry work for the Pool 12 Overwintering HREP in federal FY15 – June, 2014.

Nate De Jager held a conference call with climatologists from the National Oceanic and Atmospheric administration about linking climate, precipitation, and runoff models with flood inundation models.

Nate De Jager participated in a conference call of the Minnesota Audubon Society regarding floodplain restoration.

Nate De Jager provided peer-reviews of journal articles submitted to the journals Ecosystems and Landscape Ecology

Becky Kreiling attended USGS Leadership Intensives Training in Middleton, WI on April 2 and April 3.

Becky Kreiling reviewed a denitrification paper for Ecological Engineering.

Giblin provided links to LTRMP data to Dr. Peter Sorenson U of MN and Dr. Shannon Davis-Foust UW-Oshkosh.

Giblin provided zooplankton data to Dr. Gretchen Garrish for palelimnology work on Pool 8.

Giblin provided demonstration of LTRMP water quality sampling methods to WI DNR new employees and inland water monitoring staff.

Giblin moderated two sessions at UMRCC Annual Meeting. La Crosse, WI.

Brian S. Ickes served as a blind peer reviewer on a manuscript for the Journal of Great Lakes Research (Elsevier).

Brian S. Ickes submitted a book chapter, co-authored with Dr. Hal Schramm, titled “The Mississippi River: a place for fish past, present and future”. The chapter will be published as part of an edited book deriving from a special symposium at the 2014 American Fisheries Society Conference in Little Rock, Arkansas that focused on large rivers.

On 27 May 2014, Jennifer Sauer and Brian S. Ickes submitted a proposal (USGS Innovation Fund) titled “Faster, better, cheaper: A preliminary evaluation on the use of canines for monitoring the distribution of Asian Carp”.

On 3 June 2014, Brian S. Ickes and Dr. Stephen Winter (USFWS) submitted an SSP proposal titled “Long-term datasets and large-scale management actions: Assessing the effect of pool-scale water level management on fisheries resources of the Upper Mississippi River”.

On 3 June 2014, Jennifer Sauer and Brian S. Ickes submitted a proposal (USFWS SSP) titled “Faster, better, cheaper: A preliminary evaluation on the use of canines for monitoring the distribution of Asian Carp”.

Outreach

Jennifer Sauer was put on the USGS Twitter page. USGS was highlighting “Women in Science”

Petersen gave presentation “About the LTRMP and the Mississippi River” to Bellevue Grade School students – May, 2014.

Bowler provided information and historic reports on LTRMP fisheries, vegetation, and water quality sampling in Pools 12 and 13 to Lowell Carlson for articles in the *Anamosa Journal-Eureka, Bellevue Herald Leader, and the Maquoketa Sentinel Press* – April, 2014.

Giblin S.M., K. Hoff, J. Kalas and R. Nissen. Water quality sampling methods on main channel and backwater habitat. La Crosse Logan Middle School and UW-Oshkosh students attended session.

Fitzpatrick assisted Manchester Management with the Hy-Vee fishing derby at Bergfeld pond in Dubuque – June, 2014.

Ben Lubinski organized and coordinated a continuing education workshop sponsored by the Continuing Education section of the Illinois Chapter of the American Fisheries Society titled: Using GIS Software for Fisheries Science. The workshop was held at Western Illinois University. 4/17/2014

John Chick, Eric Ratcliff, Eric Gittinger, and Ben Lubinski demonstrated LTRMP fish sampling techniques, fish identification, and ecology of fishes of the Mississippi River as well as LTRMP water quality sampling techniques to approximately 30 National Great Rivers Research and Education Center (NGRREC) college interns during NGRREC intern week. The demonstration was held at the USACE’s Riverlands Environmental Demonstration Area, West Alton, MO. 5/29/2014

John Chick gave a lecture to approximately 30 National Great Rivers Research and Education Center (NGRREC) college interns, titled: What Makes a River Great? 5/27/2014

John Chick gave a seminar at Saint Louis University, Department of Earth and Atmospheric Sciences, titled: Invasive Species in the Mississippi River with an Emphasis on Asian Carp. April 30, 2014

Ben Lubinski and Eric Gittinger presented fish identification, ecology, and biology to attendees of the Two Rivers Family Fishing Fair at Pere Marquette State Park in Grafton, Illinois. 6/07/2014

Eric Ratcliff, Eric Gittinger and Ed Culver gave a presentation about fishes of the Mississippi River and LTRMP fish sampling for a group of 40 eighth grade students and adults participating in the National Audubon Society's River Visions Program. May 2014

UMRR-EMP's Long Term Resource Monitoring Program Element
Science in Support of Restoration and Management
FY2014 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	11-Jul-14	11-Jul-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
20144GDU2	Complete KMZ files for river miles, levees, boat access points, wing dams, aquatic areas, and remaining land cover data	30-Sep-14				Nelson, Robinson
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

UMRR-EMP's Long Term Resource Monitoring Program Element
Science in Support of Restoration and Management
FY2014 Scope of Work

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
UMRS Data Map						
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		31-May-14		Theiling
2014SHM3	Complete read-aheads	15-Jun-14	14-Jul-14	14-Jul-14		Theiling
2014SHM4	Conduct workshop/webinar	Jul-14	12-Aug-14		July dates did not work for attendees	Theiling
2014SHM5	Summarize webinar	31-Jul-14	31-Aug-14			Theiling
2014SHM6	Draft white paper	31-Aug-14	15-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 Asessment 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 competed	13-Mar-15				Giblin, Ickes, Langrehr, Bartels
2014ES2	Refined analyses and draft manuscrpt prepared	13-Mar-16				Giblin, Ickes, Langrehr, Bartels
2014ES3	Manuscipt submitted for publication	13-Mar-17				Giblin, Ickes, Langrehr, Bartels

UMRR-EMP's Long Term Resource Monitoring Program Element
Science in Support of Restoration and Management
FY2014 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 G

Additional Items

- **Future Meeting Schedule** *(G-1)*
- **Frequently Used Acronyms (7/18/14)** *(G-2 to G-7)*
- **UMRR-EMP Authorization, As Amended (9/24/10)** *(G-8 to G-11)*
- **UMRR-EMP Operating Approach (5/06)** *(G-12)*

QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE

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

FEBRUARY 2015	
Quad Cities	
February 10	UMRBA Quarterly Meeting
February 11	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
P3	Public-Private Partnerships
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
RCPP	Regional Conservation Partnership Program
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.