

MONTHLY STATUS REPORT

AUGUST 2003

UPPER MISSISSIPPI RIVER – ILLINOIS WATERWAY SYSTEM NAVIGATION STUDY



PURPOSE: These monthly status reports are intended to provide team members, partners, stakeholders, and other interested parties with a brief overview of significant events and activities occurring within the major components of the UMR-IWW System Navigation Feasibility Study. We welcome your comments and input on the status reports to ensure they provide timely and useful information. If you identify monthly events that we have overlooked, please let us know and we will correct it on the website. POCs: Denny Lundberg ph.: (309) 794-5632. or email address Denny.A.Lundberg@usace.army.mil or Scott Whitney ph.: (309) 794-5386. or email address Scott.D.Whitney@usace.army.mil

PROJECT MANAGEMENT (Lundberg and Whitney)

- **Federal Principals Group Meeting** – Study team members met with the Federal Principals Group on 10 September in the Corps Headquarters. The agenda included discussion of the evaluation of nonstructural alternatives (e.g. congestion fees, traffic management and scheduling); ecosystem restoration alternatives; model uncertainty; and adaptive management implementation strategy.
- **National Research Council (NRC) Independent Review** - The NRC review committee held its first meeting in Washington, DC from 8-9 September at the NRC office. During the first day of their meeting the committee heard presentations from the study team; USFWS, MARC 2000, the Izaak Walton League, and the Upper Mississippi River Basin Association; and a public comment session. Following this initial session, the NRC review committee will inform the Corps of its reactions to and comments on the restructured plan in a short report. The committee is scheduled to hold an additional four sessions and attend other study events between now and the end of the Feasibility phase next Fall.
- ***MV Mississippi Low Water Inspection Public Hearings and Open Houses*** – Public meetings and open houses were conducted at several river communities during the annual low water inspections conducted by the Mississippi River Commission while aboard the MV Mississippi. These were well attended with several hundred individuals touring the MV Mississippi and display booths for the various Corp projects and authorities. Citizens and groups were allowed and opportunity to present the MRC with their opinions and position statements on a variety of relevant topics. Study team members provided the MRC with a summary of study progress and were available at subsequent to answer relevant study questions.
- ***Cost Sharing MFR*** – A Draft of this memorandum was distributed to NECC/ECC/GLC at the end of June, with a request for comments on or before 15 July. A full set of the comments received was recently distributed to members of the coordinating committees. This topic was further discussed at the August meetings of the GLC, UMRBA, and EMPCC. The study team has also discussed this topic with the Regional Federal Task Force and Federal Principals Group during the past weeks. The MFR is currently being revised to address the comments received.

- **Meeting with UMIMRA representatives** – On August 25th and 26th, members of the Navigation Study team met with members of UMIMRA (Upper Mississippi, Illinois, and Missouri Rivers Association) to discuss Environmental Objectives that had been identified for specific levee districts, as well as current land practices and land owner concerns. On August 25th, the team met with 7 UMIMRA members as well as FWS and a member of the Comprehensive Plan Team in Waterloo Illinois to discuss levee district issues on the open river. UMIMRA members were asked to fill out a worksheet identifying land practices, habitat, and concerns in their levee districts and return the worksheets to the Corps by Sept 10th. On August 26th the team met with 37 UMIMRA members as well as FWS and a member of the Comprehensive Plan team in Keokuk, IA, to discuss levee district issues on the Mississippi and Illinois Rivers. UMIMRA members were asked to fill out a worksheet identifying land practices, habitat, and concerns in their levee districts and return the worksheets to the Corps by Sept 10th.

ENVIRONMENTAL (Barr)

Environmental Sustainability Component

- **Environmental Science Panel Report (a.k.a. Expert Panel):** The Science panel submitted their Final Draft report on 22 August 2003. Early the following week the report was distributed to the NECC, ECC, GLC, and NRC. The following provides the Panel’s draft recommendations exactly as they appear in their report:
 - (1) **Adaptive Management** – “We recommend that planning for a formal adaptive management approach on the UMRS be accelerated and expanded to include multiple organizations and programs.”
 - (2) **Goals and Objectives** – “We commend the Corps and the UMRS partners for collaboratively developing and supporting a vision of economic and ecosystem sustainability for the UMRS, but recommend continued clarification and integration of the ecosystem goals and objectives developed so far through stakeholder input. Further we note the need for future work to begin, also collaboratively, a structured process for rigorous and quantifiable evaluation of unavoidable trade-offs between the ecological and economic values of the system.”
 - (3) **Conceptual and Simulation Modeling** – “We recommend that conceptual and simulation modeling be formally established as vital steps in the adaptive management process to: 1) record the current state of the system; 2) create a holistic “virtual” reference system, based on goals and objectives expressed by stakeholders; and 3) predict system-level outcomes of alternative actions and policies.”
 - (4) **Management Actions** – “We recommend that the scope of management actions available on the UMRS be expanded as necessary to recognize and resolve problems originating at basin and stream network spatial scales.”
 - (5) **Monitoring and Evaluation** – “We recommend the development of a UMRS Ecosystem Report Card procedure to regularly evaluate system condition and collective progress toward objectives.”
 - (6) **Adaptation and Learning** – “We recommend that selected future management actions be specifically considered as experimental manipulations, intended not only to achieve stated objectives and to enhance ecosystem health, but to acquire knowledge in a predictable and structured way.”
- **Fish Passage** The draft report, *Improving Fish Passage Through Dams on the Upper Mississippi River*, has been reviewed by the Fish Passage Team members and is currently under review by the

NECC. The Fish Passage Team has identified migratory fishes in the UMRS, their migration behavior and swimming performance, examined the design, operation, and hydraulic conditions at the UMRS navigation dams, estimated existing opportunity for fish passage through the dams, identified alternatives for improving fish passage, potential sites for fishways at the dams, estimated cost of fish passage improvements, benefits of improving fish passage to fish and mussels, alternatives for limiting invasion of non-indigenous fish, and has recommended a set of fish passage improvements, in an adaptive management framework with monitoring and evaluation of initial fish passage improvements.

- **Water Level Management** – The draft report, *Water Level Management Opportunities for Ecosystem Restoration on the Upper Mississippi River and Illinois Waterway*, has been reviewed by the Water Level Management Team members and is currently under review by the NECC. In this report, six alternative water level management actions were identified and presented in terms of their potential to support identified ecosystem restoration goals and objectives. A prioritization of the identified water level management actions was conducted to identify those combinations of management actions and pools that produce the most benefits for the least cost (i.e., are efficient), and which are most likely to be successfully implemented (i.e., are feasible). The prioritization process was not intended to exclude any pool or management action from possible future consideration, but rather to help focus this effort on those combinations of management actions and navigation pools that appeared to be the most efficient and feasible, for development of benefit and cost information.

Environmental Impact Assessment Studies:

- ***Adaptive Mitigation Strategy*** - The environmental workgroup is working closely with the NECC to create an adaptive mitigation strategy to assess the effects of increased river traffic. The four primary components of this strategy include: fish, submersed aquatic vegetation, backwater/side channel sedimentation, and bank erosion. Restoration techniques identified in the adaptive mitigation strategy will be similar to those developed for the adaptive ecosystem management component, but focused on those areas most impacted by the increase in navigation traffic. A total of 53 environmental impact assessment investigations have been completed. To date, 36 have been published and are available at the website under the “Reports” section. An additional 7 will be available on the web by the end of October and the remainder will be published before the end of the year. Information from these investigations is being run through the ecological risk assessment models in September 2003. Initial cost estimates for the mitigation plan will be assessed by the September 30 NECC meeting.
- ***U.S. Fish and Wildlife Service*** and USACE personnel have been meeting and communicating regularly over the past weeks in an effort to collaboratively address several ongoing efforts with the Navigation Feasibility Study. This has included reviewing and assisting with the assembly of environmental alternatives (e.g., identifying appropriate measures and estimating costs and potential benefits). The Corps and USFWS held a working session on August 28th to discuss adaptive mitigation strategies for the Navigation Study. The group reviewed an initial draft adaptive mitigation plan and discussed preliminary fisheries modeling results. Writing assignments were divided between both Corps and Service personnel to draft the overall strategy for the Navigation Study. Since the last NECC/ECC meeting, conference calls have also been

provided biweekly to the NECC and ECC to share information and gather input from stakeholders regarding ongoing navigation feasibility study activities.

- **Adult Fish Entrainment** – The field study to quantify number and species of fish entrained through an operating towboat propeller in Pool 26, Mississippi River and lower Illinois Waterway has been completed and the data analyzed (report currently in ITR). Fish were collected with a specially designed net placed to filter the propwash from an operating towboat. Sampling periods encompassed the range of water temperatures that typically occur in the study area: summer (24–25 °C), autumn (8–9 °C), winter (0.5 °C), and spring (17 °C). A total of 139, ten-minute trawls were taken during the four sampling seasons. The lower, middle, and upper reaches in Pool 26 and the lower 9-miles of the Illinois River were sampled in summer and autumn. However, only the lower and upper reach of Pool 26 were sampled in winter (due to ice formation in the Illinois and middle reach of Pool 26) and spring (due to equipment problems). Most trawls were upbound (n=118), but during the summer and autumn sampling periods, 17 samples were taken downbound in Pool 26 and 4 in the Illinois River, respectively. Sampling was conducted during daylight, except in autumn when 8 crepuscular trawls were completed. The mean (\pm SE) speed (kmh) and distance (km) traveled per trawl were 7.7 ± 0.1 and 0.82 ± 0.01 , respectively, and these values did not appreciably vary between upbound and downbound tows. However, the engine rotations per minute were greater for upbound (123 ± 2) than downbound (84 ± 1), and consequently, the average volume of water filtered through the nets (m^3) for each 10-m tow was also greater for upbound ($2.6 \times 10^4 \pm 0.4 \times 10^3$) than downbound tows ($1.7 \times 10^4 \pm 0.3 \times 10^3$).

A total of 4,567 individuals comprised of 15 species were collected. Clupeidae was the dominant family, and gizzard shad was the dominant species (96% of total catch). Skipjack herring represented 2.7% of the catch, but other species were less than 1%. Catch rate (fish/km of towboat travel) was not significantly different between upbound and downbound trawls made during the summer in Pool 26 (ANOVA: $F=0.85$, $df=1,48$; $P<0.36$) and during autumn in the Illinois River ($F=0.57$, $df=1,22$; $P<0.46$). However, mean catch (\pm SE) was higher for upbound than downbound trawls in both Pool 26 (13.8 ± 4.4 vs. 7.9 ± 3.0) and Illinois River (28.1 ± 14.7 vs. 3.6 ± 3.4). Since volume of water filtered, propeller RPM, and mean catch were substantially different between upbound and downbound trawls, and only a relatively small number of trawls were taken downbound, subsequent analysis was based solely on upbound trawls.

In Pool 26 where all four seasons were sampled, fish/km of towboat travel was positively correlated (Pearson correlation coefficient = 0.56, $n=89$; $p<0.001$) with water temperature. However, only mean summer catches were significantly ($P<0.05$) higher (13.8 ± 4.3) among seasons. Autumn and spring catches were similar (mean = 0.6 and 1.1, respectively), and except for three adult fish collected below Lock and Dam 25 during winter (common carp, mooneye, and shovelnose sturgeon), all of which were non-injured, no fish were collected at water temperatures less than 1 °C. There were no significant differences in catch rates between summer and autumn in the Illinois River, although mean summer catches were substantially higher (132.7 ± 44.8 fish/km) than autumn (89.9 ± 63.3 fish/km).

Fish/km of towboat travel was significantly ($F=13.9$, $df=1,117$; $P<0.001$) higher in the Illinois River (102.2 ± 46.6) than in Pool 26 (5.3 ± 1.7) for all seasons pooled (Table 1). One reason was the high concentration of gizzard shad at the Grafton Ferry crossing on the Illinois River. During one

trawl in autumn, a total of 1,624 gizzard shad was collected, which was orders of magnitude greater than other trawl samples. In addition, autumn catch rates in the Illinois River were significantly ($F=6.3$, $df=1,18$; $P<0.03$) higher during crepuscular sampling (66.2 ± 31.0) than day sampling (0.5 ± 0.3). This latter comparison did not include the disproportionately higher catch of gizzard shad at Grafton Ferry. In Pool 26, catch rates were significantly higher in the middle reach (15.1 ± 5.6) than the lower (2.0 ± 0.7) and upper (0.9 ± 0.2) reaches for all seasons pooled.

Only 1 (400 mm TL skipjack herring) of 4,567 fish collected during the study could be identified as being directly killed by the propeller. Net-induced injuries were obvious for all other dead fish. Mortality rate of all killed or injured fish, including obvious net-induced injuries, was 0.5 and 1.0 fish/km of towboat travel for the Pool 26 and Illinois River, respectively. Gizzard shad comprised the majority of dead fish, and mortality was highest during the summer sampling period.

- ***Fish Mortality in Lock Chambers*** – The study of fish mortality during lockage at Lock and Dam 25 is coming to a close and the draft report is being completed. In addition, a report on seasonal fish abundance and species composition at Lock 25. The final lockage mortality sampling period was conducted in April. The lock was sampled after lockage of twenty towboats. Sixty-four fish killed by the towboats were collected. During previous sampling periods the majority of fish killed were gizzard shad. This also held for the spring sample with 34% of the fish killed being gizzard shad. Unlike previous sampling dates, a number of “New species” were killed including 2 paddlefish, 6 smallmouth buffalo, 3 white bass, 2 bigmouth buffalo, 2 sauger and 2 shortnose gar. It is presumed that many of these species were making spring spawning movements. A potential mitigation measure being explored would be to close the lock gates between lockages during the spring; thus keeping migrating fish out of the lock. Currently, the gates are held open between lockages.

ENGINEERING (Stamper)

- ***Independent Technical Review*** - Certification of the ITR comments received on July 2000 Engineering Appendix and interim reports is complete.
- ***Rewrite of Engineering Appendix*** - A rough draft has undergone internal review by the authors. After incorporating changes and Nav Study team review, the final draft is scheduled to be ready for ITR in mid-October 2003.
- ***Summary of Large-Scale Measures Screening*** - The report is undergoing a comprehensiveness review and quality control check and is scheduled to be published in Dec 2003.
- ***Mel Price Second Lock Mitigation Analysis*** - The EWG is supporting the Mel Price Second Lock Mitigation analysis by supplying estimates of lock closure and cost schedules.
- ***Regional Economic Development (RED) Analysis*** – The EWG is providing breakdown of costs for tentative alternative plans into labor, materials, and equipment for input to RED model.

ECONOMICS (Manguno)

- ***Economic Modeling*** – Evaluation of all navigation efficiency alternatives (w/o mitigation costs) has been completed for both the Tow Cost Model (TCM) and the ESSENCE model. Additionally, both models have been used to evaluate a water level management alternative designed to address environmental outputs. Work has also been initiated to identify the traffic impacts associated with construction of the second lock (the 600’ auxiliary chamber) at Mel Price Locks and Dam (Mississippi River L&D 26.)

- **Regional Economic Development (RED) Analysis** – Work on the RED analysis has been initiated. Data describing economic activity flows between regions to support the analysis has been acquired. The Engineering work group is providing an additional breakdown of costs for alternatives by labor, materials, and equipment. Output of the analysis will be expressed in terms of income and employment for the specified regions. Draft results are scheduled to be completed during early October.
- **Emissions, Accidents, & Other Social Impacts Analysis** – An analysis of the differential impacts by rail and water modes of transportation for a variety of potential impacts was initiated in August. This work will specifically address emissions and air quality, accidents including fatalities, and other social impacts including noise and landside congestion. A draft report is scheduled for early October.
- **Non-Structural Measures/Demand Management Measures** – The Volpe Transportation Center, USDOT, has completed an initial draft report that investigates non-structural and demand management measures. The draft report is now undergoing internal study team review and is expected to be sent out for stakeholder (NECC/ECC) and Independent Technical Review in September.

PUBLIC INVOLVEMENT (Bluhm)

- **Nav. Study Newsletter** – Volume 9, Number 2, of the UMR-IWWS Navigation Study newsletter was finalized on 5 September and is currently being reproduced for distribution to the 9,000+ mailing list during the week of 15 September. The main topics are: the announcement of the October public meetings and their locations, times & format; and study results. The newsletter is also available on the study website in the “*Newsletters and Status Reports*” section.
- **Qualitative Analysis of Public Surveys:** The Upper Mississippi River System has long been a valuable resource to both the economy and the natural ecosystem. The diversity has presented continuing opportunities to utilize the River’s resources in a variety of ways. While these opportunities do not go unnoticed, there have also been ongoing debates over the proper use and treatment of the river system. The results of many public meetings and the findings by many published reports document the wide variety of public opinions regarding the appropriate treatment of the river system. The Corps contracted with a private consulting firm in Minneapolis-St. Paul area to perform statistical analyses on key public opinion surveys involving the UMRS. The contractor has recently submitted a preliminary draft report that determines if previously collected data support the notion that citizens in the Upper Mississippi River Region are equally as concerned about navigation as they are about the environment. The following three reports and associated datasets were consulted to accomplish this evaluation:

Planning and Management Consultants, Ltd. *America’s Water Resources Challenges for the 21st Century: Summary Report on Identified Water Resource Challenges and Water Challenge Areas*, January 2001.

Carlson, Bruce. *Multi-Use Management on the Upper Mississippi River System: Public Preferences for Future Management Actions*, July 1999.

Planning and Management Consultants, Ltd. *Habitat Needs Assessment for the Upper Mississippi River System: Public Involvement Report*, October 2000.

The process employed in this evaluation provided for a careful review of the results and data collection methods of three documents cited above. The summary report presents a brief summary

of the previous surveys, outlines the approach and methodology for this analysis and reports the conclusions supported by this consolidated analysis.

- **Public Meetings (Oct. 2003)** – A series of seven public meetings will be held the last two weeks of October '03 to present the array of tentative alternative plans. The dates and cities will be as follows (actual meeting sites are still being arranged):

20 Oct - St. Louis, MO	28 Oct - St. Paul, MN
21 Oct – Quincy, IL	29 Oct - La Crosse, WI
22 Oct – Peoria, IL	30 Oct – Dubuque, IA
23 Oct – Davenport, IA	

Final format: Open House - 3-5 p.m. (include stakeholder involvement and displays)

Opening Presentation - 6:30-7:15 p.m.

Presentation-related Q's & A's - 7:15-8:00 p.m.

Group Completes Comment Sheets - 8:00-8:30 p.m.

General Q&A/Statements

SIGNIFICANT EVENTS

- **NECC/ECC Meetings and Conference Calls** – There was a joint meeting of the NECC/ECC on July 30 – July 31, 2003, in Davenport, IA. There were 38 attendees at the meeting. Some topics covered at the meeting included a preliminary look at the output of the economic models, updates to the traffic effects models, and some discussion on formulating alternative plans for river system management and restoration. During the meeting it was decided that the NECC/ECC would have biweekly phone conferences to stay current with the study's progress. During the biweekly phone conferences (Aug 14th, Aug 28th, and Sept 11th) attendees have been briefed on economic modeling outputs, environmental alternative formulation progress, as well as the progress of other studies.
- **GLC Meeting** – 5 August 2003. The primary agenda items for this meeting were: Cost Sharing MFR, Decision Model documentation, Alternative Formulation and Evaluation and Study Schedule. The Cost Sharing MFR was also presented and discussed at subsequent meetings of the UMRBA (6 Aug.) and EMPCC (7 Aug.). Minutes from the May GLC meeting were approved by GLC members and are available on the study website under the "Meetings" section

UPCOMING MEETINGS OR SIGNIFICANT EVENTS

- **NECC/ECC Meeting** (Sept. 30-Oct. 1) Davenport, IA.
- **GLC Conference Call** (week of Oct. 13th)
- **Regional Federal Task Force Conference Call** (week of Oct. 13th)
- **Federal Task Force Briefing** (week of Oct. 13th), Washington, D.C.
- **Public Meetings** – Tentative Alternative Plans (Oct 20-30)