

November 27, 2002

**TO:** Upper Mississippi River Comprehensive Plan (UMRCP) Collaboration Team (CT) members

**FROM:** Mr. Jerry Skalak, UMRCP Regional Project Manager, U.S. Army Corps of Engineers, Rock Island District

**SUBJECT:** December 3, 2002 CT conference call (CT meeting #3) materials

Please find enclosed copies of the following documents:

1. Conference call dial-in information
2. Conference call agenda
3. Meeting #2 draft minutes
4. Meeting #2 action items/due outs list
5. Revised UMRCP Goals and Objectives
6. UMRCP Potential Measures table
7. UMRCP Relationship Between Potential Alternative Measures and Planning Objectives
8. Current Collaboration Team participants list

These documents have been simultaneously distributed via email (see enclosure #8).

Please let me know if you have any questions or concerns regarding any of the enclosures or the subject meeting. Your continuing interest in and commitment to the successful accomplishment of this project is greatly appreciated.

Jerry Skalak  
309-794-5605

From: confirmations@mymeetings.com  
Sent: Monday, November 25, 2002 2:53 PM  
To: Skalak, Jerry A MVR  
Subject: Details of Your Meeting: DEC-03-2002, 01:30 PM (CT), Conf# 9738951

This e-mail contains confidential information that you may want to modify before forwarding to anyone else. Please, do not reply to this e-mail. Thank you for selecting FTS conferencing services for your upcoming meeting. Please examine the details of your reservation to ensure they are correct. If you'd like to make any changes, call us at 877-855-4797. Should you need to cancel your call, please do so at least 30 minutes prior to its scheduled start to avoid cancellation charges.

MEETING INFORMATION :

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RESERVATION CONFIRMATION #: 9738951

COMPANY: FTS-US ARMY COE-ROCK ISLAND

LEADER: MR JERRY SKALAK

PHONE #: 1-309-794-5605  
DAY OF CALL PHONE #: 1-309-794-5605 Ext VM  
Conference Contact: Mr Jerry Skalak  
PHONE #: 1-309-794-5605

AUDIO ACCESS INFORMATION:

=====  
PRODUCT TYPE: UNATTENDED  
CALL TYPE: MEET ME

# OF LINES: Total=25 Dialout=0 Meet Me=25 Meet Me Toll=0  
Entry Method: Tone In  
CALL DATE: DEC-03-2002 (Tuesday)  
CALL TIME: 01:30 PM CENTRAL TIME  
DURATION: 1 hr 30 min  
USA Toll Free Number: 800-988-0490

PASSCODE: 27706  
LEADER: MR JERRY SKALAK

FEATURES:  
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Tones

SPECIAL NOTES:

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CALL NOTES: NOV-25-02 253PM CT MURPHYK CDR...CHANGED TIME FROM 1PM TO 130PM  
PER JERRY SKALAK

PARTICIPANTS:

=====  
PARTICIPANT PHONE1 PHONE2 COMMENTS  
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Leader: Mr Jerry Skalak 1-309-794-5605  
(Will Call in) Ext VM

We make every effort to compile accurate information for each participant. Occasionally, names may be misspelled if participants speak too quickly or if there is an unclear connection. Please encourage those attending your meeting to spell their names clearly when requested by the conference coordinator to ensure the information we gather is accurate.

Please let your meet-me participants know that for security reasons, the passcode 27706 and the leader's name will be required to join your call.

This confirmation contains confidential information that you may want to modify before forwarding to your participants.

**UMRC CT Meeting #3 (conference call)  
 Tuesday, December 3<sup>rd</sup>, 2002  
 1:30 –3:00 P.M CDT**

**DRAFT Agenda**

<b>Timeframe</b>	<b>Topic/Activity</b>	<b>Associated enclosure(s)</b>	<b>Corps Lead</b>
1:00 – 1:10	Participants roll call and meeting #2 minutes	enc 3	Skalak
1:10 – 1:20	Meeting #2 action items/due outs	enc 4	Skalak
1:20 – 1:30	Revised goals and objectives	enc 5	Astrack
1:30 – 1:45	Potential measures table	enc 6	Astrack
1:45 – 2:30	Measures vs. Objectives Matrix	enc 7	Astrack
2:30 – 2:50	Project status reports		
	- Project Management		Skalak
	- Plan Formulation		Astrack
	- Economics		Abney
	- Environmental Analysis		Gates
	- Hydrology and Hydraulics		Stephens
2:45 – 3:00	Meeting summary and future meetings schedule		Skalak

# DRAFT

UMRCP CT #2 11 October 2002  
Meeting Minutes

1. See attachment one for list of meeting attendees.
2. J. Skalak opened the meeting with brief introductory comments and a request for corrections to the previous meeting's minutes. Bill Franz asked that the minutes be corrected to show that he participated in the conference call.
3. D. Leake, acting as the overall meeting facilitator, explained how the meeting would be run. He subsequently asked the participants to introduce themselves and provide statements as to study expectations and/or concerns. In response the following was expressed:
  - B. Goodwin: Study needs to be fully coordinated with other major studies underway.
  - J. Frazier: Need to use a methodical process. End product needs to represent a marriage of all expectations and should provide a billboard for future collaborative efforts.
  - K. Westphal: Study needs to address environmental health and fish and wildlife floodplain habitat needs
  - B. Franz: Water quality, quantity, and environmental health all need to be addressed.
  - G. Clark: The best H&H efforts need to be applied to identify cost effective alternatives. An emergency flood fighting response plan is needed.
  - H. Stoerker: Maintain study focus on flood damage reduction.
  - M. Klingner: UMIMRA was the sponsor of the authorizing legislation. Need to take a more regional approach. Development of a systemic flood protection and flood routing plan for large magnitude events is the focus. Need to develop a real plan not just do another study.
  - G. Riedel: Need a better overall floodplain management plan that respects other interests.
  - J. DeZellar: Need to make maximum use of Navigation Study data and information.
  - J. O'Neil: Habitat assessment will be important.
  - J. Skalak: Must remain vigilant with respect to time and cost. Will emphasize the 3 Cs (collaboration, coordination, communication). Need to recognize long term planning aspects while focusing on flood damage reduction. Plan needs to consider both environmental and economic sustainability.
  - M. Beorkrem: Who were the recipients of the UMIMRA-developed questionnaire? (Per M. Klingner the UMIMRA mailing list was used for that distribution)
4. J. Skalak addressed the next agenda item which was public comments and input received to date.

- It was requested that a copy of a more detailed summary and analysis of the input received to date be distributed with the meeting minutes.
  - M. Beorkrem asked about the potential of posting the raw comments. J. Skalak stated that he would explore this further.
  - H. Stoerker asked about how the public input will be used. In response D. Leake stated that it is part of the NEPA process and provides another opportunity to identify/confirm problems, needs, and opportunities. J. Skalak stated that it will be fully considered in the screening of measures and development of alternatives.
5. Discussion of read ahead #4a (resource problems)
- It was acknowledged that this document has not been crosschecked with the public input.
  - D. Leake noted that it is primarily the results of a limited literature search accomplished by D. Gates of CEMVS.
  - B. Goodwin: How will problems be prioritized?
  - D. Leake: Flood damage reduction will be the priority.
  - M. Beorkrem: Water quality issues in general need to be considered.
  - M. Klinger: A broader review of existing literature for resource problems needs to be accomplished.
  - D. Leake: Concurred that a more extensive review of the existing literature for problems, needs, and opportunities should be accomplished.
  - O. Dutt: The opportunities list needs significant work, including making it more explicit.
  - H. Stoerker: How will problems be addressed in the planning process?
  - R. Astrack: Need to make sure the most critical problems are first addressed. Need solid study goals and objectives. Opportunities go beyond just problem solving.
  - M. Klingner: Should categorize problems ( e.g. economic, environmental, other social effects).
  - J. Skalak: Problems need to be flooding-specific.
  - General concurrence that problems list document needs to be expanded by review of additional existing documents.
  - O. Dutt: Title of the project effort implies tremendous expectations. Need to document and make sure that the scoping down process is clearly understood.
  - D. Leake: Meeting minutes should include a list of additional sources to be searched for the purpose of making resource problems list more complete.
  - M. Beorkrem: Retain reference information in resource problems list.
  - D. Leake: Corps will re-work opportunities column and add a needs column. An iterative review process with the Collaboration Team will be subsequently initiated.
  - H. Stoerker: What will be done with this “laundry list” of problems, needs, and opportunities?
  - B. Goodwin: CT members need a more detailed chart showing study flow and work items.
  - R. Astrack: Goal of the effort to develop th problems, needs, and opportunities list is to make sure we aren’t missing something.

- H. Stoerker: A category for recreation problems needs to be added.
  - O. Dutt: Some of the problems are very specific while others are quite general. Secondary and cumulative impacts needs to be considered.
  - B. Franz: Some of the problems identified seem to be symptoms of more fundamental problems.
  - A. Schulz: Review past solutions and consider how they have or have not worked. Need to take a hard look at the history of flood damage reduction
  - M. Klingner: Need to maintain focus on systemic flood protection. In organizing and prioritizing resource problems go back to the authorizing legislation language.
  - B. Franz: Will need to take into account losses of wetlands, grasslands, etc. and how have other programs have helped to reduce flood peaks.
  - J. Frazier: Need to learn form the past and consider smarter ways to address flooding problems.
  - A. Schulz: Look at how past actions have influenced today's conditions.
  - J. Skalak: Corps team will re-work resource problems document to include systemic issues raised. A more complete list of physical and policy-related problems will be developed.
6. Goals and objectives
- A. Schulz suggested the study product be referred to as a floodplain management plan.
  - M. Klingner: Plan needs to be implement-able
  - B. Goodwin: Need an objective specific to ports and marinas
  - A. Schulz: An objective specific to E.O. 11988 is needed
  - With some minor tweaking the revised objectives, as presented, are, in general, consistent with the Collaboration Team thinking.
  - J. Skalak: Need to consider that the objectives are the future basis for evaluation of plan performance.
  - A. Schulz: flood insurance program is not a floodplain management program
  - G. Riedel: FEMA and Corps modeling and mapping methodologies need to consider future conditions. Future H&H analysis work needs to consider watershed influences.
  - B. Franz: consider the effects of CRP, CREP, and other programs.
  - A. Schulz: See study done by FEMA re port development and floodplain compatibility
  - B. Franz: Stormwater management plans and storwater retention policies need to be considered
  - H. Stoerker: Consider temporary structural measures (e.g. flood fighting)
  - G. Riedel: Need to make sure that there is interagency integration coordination of programs.
  - A. Schulz: Need to acquire easement sin conjunction with flood control projects
  - J. Skalak: Zoning is a flood damage reduction measure
  - M. Klingner: Dredged material placement on inside of levees is an important consideration

- M. Beorkrem: Removal of navigation channel modification structures needs to be considered
- B. Franz: Pool draw down as a tool.
- J. Skalak: Maintaining a higher pool may be a means for managing vegetation in areas where levee setbacks might be recommended.
- B. Franz: 401 permitting should be added to list of potential measures

#### Screening Measures

- H. Stoerker: Need to screen measures down to a list that is manageable for alternative formulation. Also need to figure out how best to package measures. A conceptual framework needs to be developed.
- M. Beorkrem: Need ways to model non-structural measures. A matrix of the measures vs objectives needs to be developed. The robustness of the measures, particularly the non-quantitative ones, needs to be captured.
- H. Stoerker: Use criteria for screening alternatives not individual measures
- D. Leake: The development of a matrix showing measures vs. planning objectives would be very helpful.
- M. Beorkrem: Small vs. large scale measures. Need the right data to define the problems.
- D. Leake: Need to better quantify the economics but may not have sufficient time and resources to do so.
- H. Stoerker: Some measure are beyond the scope and should be screened
- D. Leake: Schedule is short so screening of measures needs to occur soon.
- H. Stoerker: Need framework for alternatives

#### Regional Focus Groups

- D. Leake: Tough getting commitments. Need FWS representation.

#### Next meeting:

J. Skalak suggested the meeting location be rotated amongst various sites within the study region. Members generally concurred that St. Louis was a good meeting location. Next face-to-face meeting was set for December 3 in St. Louis.

Jerry A. Skalak  
Regional PM

#### Distribution

CT

PDT

Dist File

Others?

## Action Items from CT meeting #2 (11 Oct 02)

1. Correct previous meeting minutes to reflect B. Franz participation (Skalak)
2. Prepare draft meeting MFR within 3-5 days and distribute to all participants for consideration (Skalak)
3. Distribute copy of expanded public input summary to CT (Skalak)
4. Further explore possible web site posting of all public comments (Skalak)
5. Expand review of foundation documents for problems, needs, and opportunities; initiate iterative review of table (DeZellar)
6. Revise potential measures table to reflect meeting input (MVS)
7. Revise objectives statements consistent with meeting input (MVS)
8. Distribute FFS status and schedule information to CT (Skalak)
9. Develop measures vs. objectives matrix (MVS)
10. Develop FPMA summary (Stephens)
11. Provide more detailed UMRCP schedule layout to CT (Skalak/Astrack)
12. Develop conceptual framework for alternative formulation (MVS)
13. Schedule 3 Dec 02 CT meeting at St. Louis airport Drury Inn (Skalak)

## Additional items:

- Get copies of color-coded IL River levee status maps (MVR)
- Pursue possible UMRCP panel session at ASFPM (Skalak)
- Fund R. Barkau H&H modeling support contract (Skalak/Stephens)
- Provide levee maps in .pdf format to M. Beorkrem (MVR)
- Make sure all documents are time or version-stamped and pages are numbered (all)

**UMRCP Goal and Objectives**  
**Revised Following Collaboration Team Meeting, 11 Oct and PDT Input**

26 Nov 02

Vision for the Upper Mississippi River System

The balance of economic, ecological and social conditions so as to meet the current, projected and future needs of the Upper Mississippi River System without compromising the ability of future generations to meet their needs.

Goal of the UMR Comprehensive Plan

Develop a systemic floodplain management plan for the Upper Mississippi and Illinois Rivers, sufficiently comprehensive to address flood damage reduction needs and supportive of evolving long-term UMRS economic and environmental sustainability goals.

Objectives

- Minimize the threat to health and safety resulting from flooding using structural and non-structural flood damage reduction measures.
  - Reduce damages and costs associated with flooding.
  - Identify opportunities to support environmental sustainability/restoration goals of the Upper Mississippi River and Illinois River floodplain as part of any systemic flood damage reduction plan
  - Seek opportunities to address in concert with flood damage reduction measures, other floodplain specific problems, needs and opportunities to include:
    - Continued maintenance of the navigation project and related commercial infrastructure,
    - Reduction of nutrient input and sedimentation into the rivers,
    - Improved habitat management,
    - Bank caving and erosion reduction,
- Note: The Corps possesses no authority to undertake repair/correction of non-flood related streambank caving and erosion. Local levee and drainage districts are responsible for operation and maintenance activities. Corps participation in such work would require passage of additional authorities.*
- Improved recreation opportunities.
  - Identify and recommend appropriate follow-on studies.

## UMRCP--POTENTIAL MEASURES

Category	Measure	Source	Description
<b>Flood Damage Reduction Measures</b>			
<b>Structural</b>	Levee Removal	H&H-1, FPM-2	This measure would remove all or selected agricultural levees from the UMR floodplain.
	Levee Realignment	H&H-2	This measure would involve the reconfiguration of certain sections of levee to make them less susceptible to failure during major flood events.
	Levees Improvement	DLF-9	Improvements to the existing levee system (berms, slope change, etc.).
	Controlled Levee Breaching	H&H-3	This measure calls for the back flooding of selected D&L District locations in the event of major flooding events.
	Levee Set-Backs	H&H-4, FPM-3	Setback of a levee refers to moving the levee from the present location to a new location, which is farther from the river. They are intended to increase the cross section flow width instead of constricting the flow area to a narrow channel.
	Constant Systemic Levee Protection	H&H-6, FPM-4	This measure would provide a uniform level of protection (e.g. a 25-year level) to all or selected river reaches. Levees above the uniform level would be notched, and levees below the uniform level would be raised.
	Variable Systemic Levee Protection	H&H-7, DLF-10	This measure would provide a variable level of protection (e.g. a 25-year level for agricultural areas, and a 500-year level) for urban areas. Levees above the designated levels would be notched, and levees below the uniform level would be raised.
	Protection of Critical Infrastructure	H&H-8, FPM-7, GAL-3	This measure would provide a designated high level of flood protection for critical facility sites. Critical infrastructure includes: bridges, drinking water facilities, wastewater treatment plants, HTRW sites, electricity generating plants, hospitals, airports, etc.
	Watershed Small Ponds & Detentions	H&H-9, FPM-11	This measure would consider the stage reduction effects of incorporating different levels of runoff
	New Flood Control Reservoirs	H&H-12, FPM-9	This measure would retain all existing reservoirs, but also add some additional reservoir locations.
	Selective or Systemic Lowering Between Levees	H&H-15	
	Ag Levees—Raising Levees	FPM-5	This measure would raise the entire agricultural system to a designated high level of protection (e.g. to the SPF level—similar to that of the lower Mississippi River MR&T Project).
	Urban Levees—500-Year Protection	FPM-6	This measure would provide a minimum 500-year level of flood protection for urban areas.
	Major Flow Diversions	H&H-13	This measure involves major excavations to help substantially increase the cross-sectional drainage area of the system, and thus improve water flow.

Category	Measure	Source	Description
<b>Flood Damage Reduction Measures</b>			
<b>Non-Structural--General</b>	Floodproofing Structures	GAL-1	Provide inexpensive remedial measures to enhance flood protection of specific floodplain structures.
	Flood Warning System	GAL-2	Improve existing flood warning system.
	Relocations	H&H-14	Acquisition of relocation of floodprone buildings through federal programs or state and local initiatives continues to be an important strategy for reducing potential flood damages.
	Modified Flood Control Reservoirs Operation	H&H-11, FPM-10	This measure would consider the increased retention or revised schedules as opportunities to reduce flood impacts.
<b>Non-Structural--Programs</b>	Establish an Upper MR&T Program	GAL-4	Seek Congressional authorization for an Upper Mississippi River and Tributaries project for the management of federal flood damage reduction and navigation activities in UMR basin.
	Enhanced Land Acquisition Programs	GAL-11	To take full advantage of existing federal programs, which enhance natural floodplain functions, legislative authority would be sought to better execute post-disaster land acquisition programs.
	Safety Net	GAL-17	To provide a safety net for low-income flood victims who were unable to afford flood insurance.
	Programmatic Buyouts	GAL-26, DLF-4	Provide state with the option of receiving Section 404 Hazard Mitigation Grants as block grants.
	Disaster Relief	FPM-14	Corps authority under Public Law 84-99 (as amended) allows for emergency response preparation, flood fighting and rescue operations, post flood response, emergency repair and restoration of flood control works can occur in accordance with the provisions of Public Law 84-99, as amended. Under the provisions of the Stafford Disaster Relief Act (Public Law 93-288), in response to a Presidential declaration of a major disaster, or a FEMA declared disaster, assistance to governments is provided in essential response and recovery operations.
	Wetlands Reserve Program (WRP)	NR-18	This NRCS program helps landowners work toward a goal of no net loss of wetlands. One-third of program acres to be enrolled in permanent easements, one-third in 30-year easements, and one-third in restoration under cost-shared agreements. The WRP program may provide environmental benefits in areas of marginally productive highly erodible lands.
	Conservation Reserve Program (CRP)	NR-19	This NRCS multi-year program, converts highly erodible and other cropland to perennial vegetation. The CRP program may provide environmental benefits in areas of marginally productive highly erodible lands.
	Continuous Research Program	NR-23	This measures calls for a long-term data-gathering program (not unlike the intent of the LTRMP) to enhance our knowledge of the floodplain and the future trends inherent in the management action we take.

Category	Measure	Source	Description
<b>Flood Damage Reduction Measures</b>			
<b>Non-Structural--Policies</b>	Floodplain Policy E.O.	GAL-6	To clearly define the responsibility of federal agencies to exercise sound judgment in floodplain activities.
	Reestablish Basin Commission	GAL-8	To clearly define the responsibility of federal agencies to exercise sound judgment in floodplain activities.
	Mississippi River Commission (MRC)	DLF-1	This measure would extend the existing Mississippi River Commission (currently only active for the Lower Mississippi) to provide river management leadership to include the issues of flood control, navigation and environmental protection. If an MRC approach is preferred, the Corps would be an important member of such a Commission.
	Corps Directed Integrated River Management	DLF-2	This measure would mandate the Corps to lead the overall initiation and coordination of integrated river management and floodplain management. The objective being to enhance the rational development of the rich resources of the Basin, while ensuring that environmental conditions will not degrade. As the responsible agency, the Corps would fully control publicly owned floodplain land and all levees (public and private), and would strive for a wise and balanced use of the river for all users and functions, now and in the future. The Corps would be provided with annual budgets for river basin management.
	Enhanced NFIP Marketing	GAL-14	To take steps to improve the marketing of flood insurance.
	Reduce Support to Uninsured	GAL-16	To reduce post-disaster support to those eligible to buy insurance but choosing not too.
	Flood Insurance Policy Surcharge	GAL-18	To reduce repetitive loss outlays by adding a surcharge to flood insurance policies following each claim under a policy.
	Actuarial Based Insurance	GAL-19	To require those who are behind levees that provide protection against less than the SPF discharge to purchase actuarial based insurance.
	Flood Insurance Map Improvement	GAL-21	To leverage technology to improve the timeliness, coverage and accuracy of flood insurance maps.
	Periodically Update Levee Profiles Data	NOA-1	Acquisition or relocation of Floodprone buildings through federal programs or state and local initiatives continues to be an important strategy for reducing potential flood damages. Buyout programs are usually in response to a flood or series of floods.
	Improve Interagency Data Links	NOA-2	Agencies should improve communication links to ensure that data collection schedules and data distribution mechanisms are well understood and documented.
	Replace Antiquated Computers & Communications	NOA-3	COE & NWS should improve communications systems and data exchange procedures.
	Cross-Training between Agencies	NOA-4	COE & NWS personnel would improve intra-agency and interagency operations during flood events and during routine operations.
	Improved Stage Gage Operations	NOA-5	More gage stations are needed to produce accurate and timely forecasts. NWS should support other agencies in maintenance of existing gages and the installation of additional gages at strategic locations.
Improve Stage-Discharge Relationships	NOA-6	Flow measurements are too sparse in some areas. NOAA cooperators need to collaborate to improve these stage-discharge relationships.	
Relocation and Mitigation	FPM-13	Acquisition or relocation of Floodprone buildings through federal programs or state and local initiatives continues to be an important strategy for reducing potential flood damages. Buyout programs are usually in response to a flood or series of floods.	
Implement Mock Disaster Exercises & Review Action Plans	NOA-12	Coordination should be improved with EMA's and EOC's through periodic review of action plans and via mock disaster exercises.	

Category	Measure	Source	Description
<b>Flood Damage Reduction Measures</b>			
	NWSRFC Software Readiness Evaluation	NOA-13	NWS should systematically evaluate the operational readiness of its River Forecast Center (RSC) software.
	Complete NEXRAD	NOA-14	Work on the Next Generation Weather Radar (NEXRAD) or Weather Surveillance Radar 88 Doppler (WSR-88D) system needs to be completed for the Upper Mississippi River basin. This is a component part of the ongoing modernization and associated restructuring (MAR) of the National Weather Service (NWS).
	Complete AWIPS	NOA-15	The Advanced Weather Interactive Processing System (AWIPS) under MAR is needed at RFCs to use effectively WSR-88D rainfall estimates for numerical input to hydrologic models.
	Project Justification Analysis Improvements	DLF-3	This measure would direct the reassessment and potential improvement of the project justification methods currently in place. The present estimation method for future benefits undervalues economic development. Also, economic benefits helping to justify environmental protection are not made explicit.
	Develop River Basin Development Plan	DLF-5	This measure calls for a balanced River Basin Development Plan for the UMRS to be drafted interactively with wide participation of all parties concerned, while improving the understanding of the complex interrelationships between environmental protection, resource use, and river and floodplain development. The plan would be dynamic, serving as a foundation to be revised on a regular basis according to new developments and insights. In this way, the plan would enhance a wise use of the river resources.
	Decision Support System (DSS)	DLF-7	To assist decision makers in evaluating and communicating alternative solutions for problems encountered in integrated river management, an interactive Decision Support System (DSS) applied. The DSS should consist of up-to-date river and floodplain information (Geographic Information System and Data Base) and dynamic river models of the complete river network. The public would be informed of the projected results if specific measures are taken.
	Flood Safety Levels Reanalysis	DLF-11	Corps should reanalyze the flood safety levels for urban and industrial areas, and also for agricultural levees. Due to intensive floodplain use northeast of St. Louis, higher safety levels may be economically justified.
<b>Non-Structural--Policies</b>	Accelerate NWS Forecast & Warning Subsystem	NOA-16	NWS should accelerate development of Weather Forecast Office (WFO) Hydrometeorological Forecast and Warning Subsystem for use in AWIPS.
	Strengthen Partnerships Ensuring Life/Property Protection	NOA-17	NWS should strengthen cooperative arrangements with current partners and to seek additional opportunities to work with interested parties to ensure the protection of life and property.
	Improved LARCs Operations	NOA-22	Limited Automatic Remote Collectors (LARCs) increase the accuracy and timeliness of forecasts and warnings. High priority should be placed on the installation and maintenance of additional LARCs with attached, automated rain gages.
	Improve Info Transfer to Water Control & Emergency Management Decision Makers	NOA-32	NWS needs to modernize methods of providing information in graphical format.

Category	Measure	Source	Description
<b>Flood Damage Reduction Measures</b>			
	Strengthen Flood Warning & Flood Action Plan Activities	NOA-33	FEMA should be encouraged to strengthen coordination among local and regional agencies in the development of flood warning and flood action plans (e.g. identification of flood magnitude threshold to trigger sandbagging operations).
<b>Environmental Resources Measures</b>			
	Low Profile Berms	EMP-2	A low elevation earthen embankment structure used to sequester a wetland area from the river at lower flood stages. It serves as a partial barrier to an influx of river borne sediments, and as a structure useful for interior water level control independent of river stage.
	Gated Culverts	EMP-3	Gated (e.g. sluice gates, stop-logs) pipes (e.g. CMP, RCP) in combination with levees and/or pumps can be used for interior wetlands water control. At times, such structures may also function in fish passage between the wetland area and the river.
	Pump Stations	EMP-4	Pumps can be useful in interior water management control when gravity drainage via gated pipes alone is insufficient.
	Bank Line Riprap	EMP-6	Eroding bank lines can be stabilized using a number of different approaches; one approach is with the application of a stone blanket along the shoreline—commonly referred to as riprap.
	Channelization	EMP-11	The construction of new channels or modification of old channels can serve a variety of water management functions of use to habitat restoration efforts.
	Fill Material	EMP-12	River dredged material can be of use in combination with rock perimeters or earthen berm contained areas for the placement of fill material and subsequent use as island or as an elevated floodplain location for the planting of mast trees.
	Ditch Alterations	EMP-13	The creation of new ditches and/or the modification by widening/deepening of old ditches for habitat management purposes.
	Conservation Farming	EMP-14	The measure entails the application of various soil conservation practices (e.g. no fall till farming) to help reduce overall soil losses due to erosion.
	Terraces	EMP-15	This measure entails the conversion of a steep gradient section of farmland into a series of terraces to reduce erosion effects from the cultivated ground.
	Farm Ponds	EMP-16	Small hillside impoundments equipped with pipes allowing for a specified volume of the impounded water to drain within an approximate 24-hour time period. This detention time allows a portion of sediment in the runoff to settle out. This impoundment is intended to only partially drain after a local storm event, thus leaving a partial ponding effect for farm or habitat usage.

Category	Measure	Source	Description
<b>Environmental Resources Measures</b>			
	Dry Detention Basins	EMP-17	Small hillside impoundments equipped with pipes allowing for an approximate 24-hour release rate. This detention time allows a substantial portion of sediments to settle out. This impoundment is intended to totally drain after a local storm event.
	Grade Control Weirs	EMP-18	Grade control structures can be a useful tool in stabilizing creek bank along high gradient streams. A series of these low water dams (constructed of stone, concrete, or reinforced earth) help to reduce stream velocities, and stair-step water down to a lower base elevation.
	Dredging	EMP-19	Grade control structures can be a useful tool in stabilizing creek bank along high gradient streams. A series of these low water dams (constructed of stone, concrete, or reinforced earth) help to reduce stream velocities, and stair-step water down to a lower base elevation.
	Dredge Material Placement	EMP-20	Dredged material can be placed in various ways to improve habitat conditions. For example, material placed on the floodplain within a berm confined area serves to raise the ground elevation sufficient for the subsequent growth of hard mast producing trees (e.g. pin oaks and hickory).
	Conservation Easements	EMP-26	This measure entails the acquisition of land areas by way of purchased easements to allow for the management of an area for conservation purposes (e.g. to provide for planting of trees to form a more continuous riparian corridor, i.e. one less fragmented).
	Flood Easements	EMP-27, DLF-4	This measure entails the acquisition of flooding rights on property essential to the management of an ecosystem project.
	Fee Title Acquisitions	EMP-28	When agreeable to a landowner, fee title land acquisition is generally more preferable to acquisition by easements. However, a willing seller situation is more likely to occur under easements.
	Tree Plantings	EMP-33	Tree plantings could facilitate the restoration of forest habitat at certain locations by filling in areas to create larger tracts of forest cover. This could help reduce the adverse effects of forest fragmentation on populations of neotropical songbirds.
	Nutrient Farming	NR-1	Midwest streams convey excessive amounts of nitrate-nitrogen. Effects range from eutrophication in local waters to hypoxia in Gulf of Mexico. Nitrogen farming is a potential solution, employing restored wetlands in floodplains and on bottomlands to remove the excess nitrogen. It would also employ a mechanism for the buying and selling of nitrogen credits.
	Spawning Habitat Easements	NR-2	Every 3 or 4 years a participating D&LD would be flooded for the primary purpose of fish spawning. Crop production on those years would be terminated or reduced to planting soybeans late in the season. To make this feasible, a levee-based fish passage structure would need to be installed at applicable D&LDs, perhaps similar to those structures at Swan Lake or Spunky Bottoms habitat projects. This feature could also be used in conjunction with a modification of the pool's water level regulation as part of Environmental Pool Management.
	Levee Habitat Easements	NR-3	The planting of wildlife preferred herbaceous vegetation along the toe and slopes of certain levees could be obtained under easements. This would be compatible with a levee trails development for non-consumptive wildlife use (e.g. wildlife photography or wildlife observation).
	Riparian Corridor Easements	NR-4	Riparian corridor habitat easements are obtained to allow for the filling in of forest gaps along the unleveed river corridor, thus reducing the adverse effects of forest fragmentation.

Category	Measure	Source	Description
<b>Environmental Resources Measures</b>			
	Floodplain Forest Tract Easements	NR-6	Large tracts of marginal floodplain farm habitat are placed in permanent easements or for a specified time interval (similar to NRCS--WRP).
	Tax Revenue Offsets	NR-9	This measure would help to minimize the effects of lost tax revenues to local governments, resulting from land conversions. This action could be environmentally beneficial in that it would reduce some of the opposition to such land conversions.
	Environmental CAP Projects	NR-14	This measure would encourage the application of Sec 1135 projects at locations consistent with the overall comprehensive planning efforts. Sec 1135 of the Water Resources Development Act of 1986. Authority provides for constructing environmental restoration projects where a Corps project contributed to the degradation of the environment.
	EMP Projects	NR-15	This measure would encourage the application of EMP projects at locations consistent with the overall comprehensive planning efforts. Sec 1103 of the Water Resources Development Act of 1986. Authority provides for the development of habitat rehabilitation and enhancement projects (HREPs) within the UMRS.
<b>Recreation Measures</b>			
	Interpretive Trails	MP-1	Feature developed at project compatible locations within the numerical limits consistent with the Corps' master planning effort.
	Access Roads	MP-5	Feature developed at project compatible locations within the numerical limits consistent with the Corps' master planning effort.
	Parking Lots	MP-6	Feature developed at project compatible locations within the numerical limits consistent with the Corps' master planning effort.
	Boat Ramps	MP-7	Feature developed at project compatible locations within the numerical limits consistent with the Corps' master planning effort.

<b>INFORMATION SOURCES</b>		
Abbreviation	Source	
H&H	Typical Hydrology/Hydraulics Measures	Dennis Stephens
FPM	Floodplain Management Assessment	
GAL	Galloway Report	
NR	Natural Resources Measures	Dave Gates
NOA	NOAA Report	
EMP	Typical Environmental Management Program Measures	Dave Gates
DLF	Delft Report	
MP	Typical Master Plan Recreational Measures	Francis Walton

**UMRCP—RELATIONSHIP BETWEEN POTENTIAL ALTERNATIVE MEASURES AND PLANNING OBJECTIVES**

Alternative Measures			Seek Opportunities									
Category	Description	Source	Minimize Health & Safety Threat	Flood Damages/ Costs Reduction	Identify Environmental Sustainability/ Restoration Opportunities	Maintenance of Navigation Project & Related Commercial Infrastructure	Reduction of Nutrient Input to River	Reduction of Sediment Input to River	Improve Habitat Management	Reduction of Bank Caving	Improved Recreation Opportunities	Identify/Recommend Follow-on Studies
<b>Flood Damage Reduction Measures</b>			1	2	3	4	5	6	7	8	9	10
<b>Structural</b>	Levee Removal	H&H-1, FPM-2	X	X	X	X			X			
	Levee Realignment	H&H-2	X	X					X			
	Levee Improvements	DLF-9	X	X								
	Controlled Levee Breaching	H&H-3	X	X								
	Levee Set-Backs	H&H-4, FPM-3	X	X	X	X			X	X	X	
	Constant Systemic Levee Protection	H&H-6, FPM-4	X	X								
	Variable Systemic Levee Protection	H&H-7, DLF-10	X	X								
	Protection of Critical Infrastructure	H&H-8, FPM-7, GAL-3	X	X	X	X			X			
	Watershed Small Ponds & Detentions	H&H-9, FPM-11	X	X	X		X	X	X	X		
	New Flood Control Reservoirs	H&H-12, FPM-9	X	X	X		X	X	X	X	X	
	Selective or Systemic Lowering Between Levees	H&H-15	X	X								
	Ag Levees— Raising Levees	FPM-5	X	X								
	Urban Levees— 500-Year Protection	FPM-6	X	X	X							
	Major Flow Diversions	H&H-13	X	X								
<b>Non-Structural-- General</b>	Floodproofing Structures	GAL-1	X	X								
	Flood Warning System	GAL-2	X	X								
	Relocations	H&H-14	X	X	X				X		X	
	Modified Flood Control Reservoirs Operation	H&H-11, FPM-10	X	X								
<b>Non-Structural-- Programs</b>	Establish an Upper MR&T Project	GAL-4	X	X	X	X	X	X	X	X	X	X
	Enhanced Land Acquisition Programs	GAL-11	X	X	X				X		X	
	Safety Net	GAL-17	X									
	Programmatic Buyouts	GAL-26, DLF-4	X	X	X				X		X	

Alternative Measures			Seek Opportunities									
Category	Description	Source	Minimize Health & Safety Threat	Flood Damages/ Costs Reduction	Identify Environmental Sustainability/ Restoration Opportunities	Maintenance of Navigation Project & Related Commercial Infrastructure	Reduction of Nutrient Input to River	Reduction of Sediment Input to River	Improve Habitat Management	Reduction of Bank Caving	Improved Recreation Opportunities	Identify/Recommend Follow-on Studies
Flood Damage Reduction Measures			1	2	3	4	5	6	7	8	9	10
Non-Structural-- Programs	Disaster Relief	FPM-14	X									
	Wetlands Reserve Program (WRP)	NR-18		X	X		X	X	X	X		
	Conservation Reserve Program (CRP)	NR-19		X	X		X	X	X	X		
	Continuous Research Program	NR-23	X	X	X	X	X	X	X	X	X	X
Non-Structural-- Policies	Floodplain Policy E.O.	GAL-6	X	X	X				X			
	Reestablish Basin Commission	GAL-8	X	X	X	X	X	X	X	X	X	X
	Mississippi River Commission (MRC)	DLF-1	X	X	X	X	X	X	X	X	X	X
	Corps Directed Integrated River Management	DLF-2	X	X	X	X	X	X	X	X	X	X
	Enhanced NFIP Marketing	GAL-14	X	X								
	Reduce Support to Uninsured	GAL-16	X	X								
	Flood Insurance Policy Surcharge	GAL-18	X	X								
	Actuarial Based Insurance	GAL-19	X	X								
	Flood Insurance Map Improvement	GAL-21	X	X								X
	Periodically Update Levee Profiles Data	NOA-1	X	X								X
	Improve Interagency Data Links	NOA-2	X	X								
	Replace Antiquated Computers & Communications	NOA-3	X	X								
	Cross-Training between Agencies	NOA-4	X	X								
	Improved Stage Gage Operations	NOA-5	X	X								
	Improve Stage-Discharge Relationships	NOA-6	X	X								
	Relocation and Mitigation	FPM-13	X	X	X				X			

Alternative Measures			Seek Opportunities									Identify/Recommend Follow-on Studies
Category	Description	Source	Minimize Health & Safety Threat	Flood Damages/ Costs Reduction	Identify Environmental Sustainability/ Restoration Opportunities	Maintenance of Navigation Project & Related Commercial Infrastructure	Reduction of Nutrient Input to River	Reduction of Sediment Input to River	Improve Habitat Management	Reduction of Bank Caving	Improved Recreation Opportunities	
<b>Flood Damage Reduction Measures</b>												
			1	2	3	4	5	6	7	8	9	10
<b>Non-Structural-- Policies</b>	Implement Mock Disaster Exercises & Review Action Plans	NOA-12	X	X								
	NWSRFC Software Readiness Evaluation	NOA-13	X	X								
	Complete NEXRAD	NOA-14	X	X								
	Complete AWIPS	NOA-15	X	X								
	Project Justification Analysis Improvements	DLF-3	X			X						X
	Develop River Basin Development Plan	DLF-5	X	X	X	X	X	X	X	X	X	X
	Decision Support System (DSS)	DLF-7	X	X	X	X	X	X	X	X	X	X
	Flood Safety Levels Reanalysis	DLF-11	X									X
	Accelerate NWS Forecast & Warning Subsystem	NOA-16	X	X								
	Strengthen Partnerships Ensuring Life/Property Protection	NOA-17	X	X								
	Improved LARCs Operations	NOA-22	X	X								
	Improve Info Transfer to Water Control & Emergency Management Decision Makers	NOA-32	X	X								
	Strengthen Flood Warning & Flood Action Plan Activities	NOA-33	X	X								
<b>Environmental Measures</b>												
			1	2	3	4	5	6	7	8	9	10
	Low Profile Berms	EMP-2			X		X	X	X		X	
	Gated Culverts	EMP-3			X		X		X			
	Pump Stations	EMP-4		X	X		X		X			
	Bank Line Riprap	EMP-6			X				X	X		
	Channelization	EMP-11	X	X	X				X			

Alternative Measures			Seek Opportunities									
Category	Description	Source	Minimize Health & Safety Threat	Flood Damages/ Costs Reduction	Identify Environmental Sustainability/ Restoration Opportunities	Maintenance of Navigation Project & Related Commercial Infrastructure	Reduction of Nutrient Input to River	Reduction of Sediment Input to River	Improve Habitat Management	Reduction of Bank Caving	Improved Recreation Opportunities	Identify/Recommend Follow-on Studies
<b>Environmental Measures</b>												
			1	2	3	4	5	6	7	8	9	10
	Fill Material	EMP-12			X			X	X			
	Ditch Alterations	EMP-13			X		X	X	X			
	Conservation Farming	EMP-14		X	X		X	X	X	X		
	Terraces	EMP-15		X	X		X	X	X	X		
	Farm Ponds	EMP-16		X	X		X	X	X	X		
	Dry Detention Basins	EMP-17		X	X		X	X	X	X		
	Grade Control Weirs	EMP-18		X	X		X	X	X	X		
	Dredging	EMP-19		X	X		X	X	X	X		
	Dredge Material Placement	EMP-20			X			X	X			
	Conservation Easements	EMP-26			X				X			
	Flood Easements	EMP-27			X				X			
	Fee Title Acquisitions	EMP-28			X				X			
	Tree Plantings	EMP-33			X				X		X	
	Nutrient Farming	NR-1			X		X		X			
	Spawning Habitat Easements	NR-2			X				X			
	Levee Habitat Easements	NR-3			X				X			
	Riparian Corridor Easements	NR-4			X				X		X	
	Floodplain Forest Tract Easements	NR-6			X				X			
	Tax Revenue Offsets	NR-9			X				X			
	Environmental CAP Projects	NR-14			X				X		X	
	EMP Projects	NR-15			X				X		X	
<b>Recreation Measures</b>												
			1	2	3	4	5	6	7	8	9	10
	Interpretive Trails	MP-1									X	
	Access Roads	MP-5									X	
	Parking Lots	MP-6									X	
	Boat Ramps	MP-7									X	

**Upper Mississippi River Comprehensive Plan (UMRCP)  
Collaboration Team**

<b>3 Dec 02 Conference Call <sup>1</sup></b>	<b>Name</b>	<b>Agency/ Organization</b>	<b>Address</b>	<b>Phone</b>	<b>FAX</b>	<b>email</b>				
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<b>Yes</b>	John Barko, Ph.D	Waterways Experiment Station	CEERD-EV-E 3909 Halls Ferry Road Vicksburg, MS 39180-6199	601/634-3654	601-634-2430	<a href="mailto:john.w.barko@wes.army.mil">john.w.barko@wes.army.mil</a>				
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<sup>1</sup> Email or verbal confirmation received (as of Nov 27)

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NRCS					
USDA					
USGS (UMESC)					

**CT meetings schedule:**

Meeting #	Meeting Date (s)	Meeting Format	Meeting Location	Duration	Participation	Additional Notes
1	August 28, 2002	Conference Call	N/A	9:00 a.m.-11:00 a.m.	13 Corps; 9 non-Corps	Final Meeting Minutes Posted to Web Site
2	October 11, 2002	Face-to-Face	St. Louis, MO (Airport Hilton)	8:00 a.m. - 3:30 p.m.	9 Corps; 12 non-Corps	Draft Meeting Minutes Prepared
3	December 3, 2002	Conference Call	N/A	1:30 p.m.-3:00 p.m.		
4	January, 2003	TBD	TBD	TBD		
5	May, 2003	TBD	TBD	TBD		
6	July, 2003	TBD	TBD	TBD		
7	November, 2003	TBD	TBD	TBD		

**UMRCP Web Site:** <http://mvrwebdev.mvr.usace.army.mil/UMRCP/default.asp>