LOWER MISSISSIPPI RIVER
AQUATIC RESOURCE MANAGEMENT PLAN

GOAL A. HABITAT - Maintain or improve aquatic habitat quantity, quality, and diversity in the Lower Mississippi River ecosystem

Objective A.1 Identify, define, describe, and delineate habitats in the Lower Mississippi River

Strategy A.1.1 Use U. S. Army Corps of Engineers' (Corps) habitat delineation and classification procedures, aerial photographs, Geographic Information System (GIS) technology, navigation charts, and other resources to identify and quantify historical and existing aquatic habitats.

Strategy A.1.2 Quantify aquatic habitat losses.

Strategy A.1.3 Work with the Corps to complete a Habitat Needs Assessment to and prioritize restoration of critical habitat that provides vital natural processes and functions.

Objective A.2 Restore and maintain secondary channels, oxbows, natural banks, backwater areas, and other natural aquatic habitat features

Strategy A.2.1 Support legislation that will promote aquatic habitat restoration projects.

Strategy A.2.2 Develop a Memorandum of Agreement with the Corps to prevent and minimize future losses of aquatic habitat.

Strategy A.2.3 Work with the Corps to develop a long-term program, similar to the Upper Mississippi River Environmental Management Program and the Middle Mississippi River Avoid and Minimize Program, to design, construct, and maintain aquatic habitat restoration projects.

Strategy A.2.4 Work with the Corps to develop and implement site-specific modifications to existing structural features in the river that will improve or create aquatic habitat during Operation and Maintenance activities.

Strategy A.2.5 Use micro-models constructed and calibrated by the Corps to evaluate aquatic habitat improvement plans.

Strategy A.2.6 Work with the Corps to further evaluate the impact of various bank stabilization methods (articulated concrete mattress, large-stone type A riprap, etc.) as fish habitat.

Strategy A.2.7 Participate in annual meetings with the Corps, other federal agencies, and state natural resource agencies to discuss the incorporation of measures to restore aquatic habitats or avoid and miniimize adverse effects of construction plans.

Strategy A.2.8 Ensure equal consideration of navigation and biotic concerns in the planning of Corps channel maintenance activities (e.g., dike and revetment construction, dredge spoil placement, etc.).

Strategy A.2.9 Maintain and restore hydrology in backwater areas.

Objective A.3 Acquire floodplain lands and islands from willing sellers

Strategy A.3.1 Identify and prioritize floodplain areas, islands, side channels, and other critical habitats requiring special protection or for acquisition to increase habitat diversity.

Strategy A.3.2 Develop coordinated strategies for acquisition and purchase of floodplain areas.

Strategy A.3.3 Identify cooperating state and federal agencies, non-governmental organizations, land trusts, etc. that will own and manage acquired lands.

Strategy A.3.4 Identify and pursue opportunities to increase the connectivity between the Mississippi River and its current and historic floodplains.

Strategy A.3.5 Develop a federal program to lease floodplain lands with an active connection to the Lower Mississippi River and manage them to increase flood storage capacity and enhance natural hydrological functions.

Objective A.4 Develop a natural resource technical assistance program

Strategy A.4.1 Provide technical assistance on fisheries, wetlands, wildlife, and forestry management to private landowners within the leveed floodplain.

Strategy A.4.2 Provide technical assistance on fisheries, wetlands, wildlife, and forestry management to levee and drainage districts.

Strategy A.4.3 Provide technical assistance on fisheries, wetlands, wildlife, forestry management, and economic development to riverside communities.

GOAL B. WATER QUALITY - Improve water quality in the Lower Mississippi River by implementing the Clean Water Act

Objective B.1 Determine short and long-term water quality trends in the Lower Mississippi River system

Strategy B.1.1 Identify monitoring sites and areas of concern for water quality (e.g., pH, sediment concentration, dissolved oxygen, nutrients, heavy metals, pesticides).

Strategy B.1.2 Increase the number of water quality monitoring sites in under-represented river reaches and major tributaries.

Strategy B.1.3 Support development of uniform sampling and data collection strategies (e.g., similar to the Upper Mississippi River Environmental Management Program Long Term Management Program) that identify critical baseline water quality parameters (pH, dissolved oxygen, suspended sediments, etc.) to be collected on a regional basis.

Strategy B.1.4 Identify state and federal agencies that have or are collecting water quality data in the Lower Mississippi River basin.

Strategy B.1.5 Work with state and federal agencies to review and summarize water quality data.

Strategy B.1.6 Integrate historical and present water quality data sets into GIS databases and analyze the changes that have occurred.

Objective B.2 Coordinate development of a Water Quality Master Plan

Strategy B.2.1 Identify and catalog major sources of pollution and contaminants.

Strategy B.2.2 Develop and implement new procedures and support existing Best Management Practices to reduce pollution and contaminant influx into the Lower Mississippi River watershed.

Strategy B.2.3 Assist state and federal agencies in reducing pollution influx into the watershed.

Strategy B.2.4 Support the Clean Water Act and other legislation that would reduce pollution and improve water quality.

Strategy B.2.5 Reduce contaminants in fish to acceptable levels (see Objective B.4).

Objective B.3 Improve water quality and reduce annual flood damage by restoring floodplain hydrology

Strategy B.3.1 Determine water filtration capacities (e.g., location, areal extent relative to river stage) of existing floodplain habitats in the Lower Mississippi River system.

Strategy B.3.2 Increase the connectivity between the Lower Mississippi River and its current and historical floodplains (See Objective A.3).

Strategy B.3.3 Identify potential sites in the floodplain of the Lower Mississippi River system that could be restored as wetland and bottomland hardwood habitats.

Strategy B.3.4 Promote habitat restoration projects that increase the area of naturally functioning floodplains.

Objective B.4 Cooperate with State Departments of Health to monitor and reduce contaminant levels in fish

Strategy B.4.1 Encourage each state natural resource agency to periodically collect fish tissue samples for contaminant analysis in accordance with state Department of Health guidelines.

Strategy B.4.2 Ensure that standardized fish contamination advisory levels for all chemical compounds of concern are used.

Strategy B.4.3 Survey Lower Mississippi River Conservation Committee agencies and develop a detailed summary of fish species and causative agents involved in fish consumption advisories in the Lower Mississippi River system.

Strategy B.4.4 Cooperate with each state's Department of Health to issue fish consumption or other river-related health advisories.

Strategy B.4.5 Cooperate with state Departments of Health to issue news releases of contamination levels in fish and fish consumption or other river-related health advisories.

Objective B.5 Develop a spill contingency plan for the Lower Mississippi River system

Strategy B.5.1 Determine the agencies and procedures currently involved in spill contingency planning in Lower Mississippi River Conservation Committee member states, and work cooperatively with them to develop a coordinated plan for the Lower Mississippi River system.

Strategy B.5.2 Develop an "early-warning system" for the Lower Mississippi River system based on time-in-travel studies that will determine the time required for contaminants to pass through the Lower Mississippi River system, as well as dilution, elution and dissipation rates as contaminants pass downstream.

Objective B.6 Work with the Corps of Engineers to improve water quality in the Lower Mississippi River system

Strategy B.6.1 Identify and quantify contaminated sediments in frequently dredged reaches of the main channel.

Strategy B.6.2 In areas where contaminated sediments exist, determine amounts of contaminants that will be resuspended in the water column due to dredging activities.

Strategy B.6.3 Determine potential impacts of resuspended contaminants on aquatic biota.

Strategy B.6.4 Implement channel maintenance measures that reduce

dredging activities and resuspension of contaminated sediments.

Strategy B.6.5 Implement wetland habitat construction and restoration projects using dredged material, rather than disposing of contaminated dredged material into the main channel.

GOAL C. BIOLOGICAL RESOURCES - Restore, conserve, and manage the biological diversity of native fishes and invertebrates and provide for sustainable harvest of selected fish species in the Lower Mississippi River ecosystem

Objective C.1 Determine the present status of fish and invertebrate populations

Strategy C.1.1 Compile, summarize, and analyze historical and existing fish and invertebrate data.

Strategy C.1.2 Incorporate biological data into GIS databases.

Strategy C.1.3 Develop habitat-specific sets of indicator species for assessing the long-term environmental quality of the Lower Mississippi River system.

Strategy C.1.4 Establish at least one Long Term Resource Monitoring Station.

Strategy C.1.5 Develop standard data and metadata formats.

Strategy C.1.6 Develop facilities and procedures to electronically store, transmit, and share data at sites throughout the Lower Mississippi River system**.**

Objective C.2 Protect and restore threatened and endangered (T&E) fish and invertebrate species

Strategy C.2.1 Determine status of all State and Federally listed fish and aquatic invertebrate species.

Strategy C.2.2 Determine habitat and water quality requirements of each listed species.

Strategy C.2.3 Identify present and potential biotic and abiotic threats to listed species.

Strategy C.2.4 Cooperate with Mississippi Interstate Cooperative Resource

Association (MICRA), Upper Mississippi River Conservation Committee (UMRCC), Missouri River Natural Resource Committee (MRNRC), and Ohio River Fisheries Management Team (ORFMT) in the management and recovery of listed species according to existing plans.

Strategy C.2.5 Develop and implement recovery plans as needed.

Strategy C.2.6 Utilize Natchitoches, Mammoth Spring, and Private John Allen National Fish Hatcheries to propagate and restore wild populations of listed species.

Objective C.3 Minimize the effects of aquatic nuisance species on native fauna and reduce their dispersal to other water bodies

Strategy C.3.1 Develop and coordinate studies to assess the status, impacts, and potential control of aquatic nuisance species on habitats and biota.

Strategy C.3.2 Develop programs to control the introduction and slow the spread of aquatic nuisance species.

Strategy C.3.3 Support and promote legislation, regulations, and public awareness to prevent the introduction or spread of exotic organisms.

Strategy C.3.4 Develop markets for and promote the commercial harvest of large exotic fishes (e.g. Asian carp).

Strategy C.3.5 Manage for species that prey on exotic invertebrates.

Strategy C.3.6 Distribute existing literature on the effects of aquatic nuisance species and methods to reduce their spread to other basins.

Strategy C.3.7 Place signs at all Lower Mississippi River access points detailing methods of stopping the spread of aquatic nuisance species to other streams and lakes.

Objective C.4 Determine habitat requirements and limiting factors for selected fish and invertebrate species

Strategy C.4.1 Compile biological profiles (e.g., spawning requirements, nursery and adult habitat preference, food habits, etc.) for

environmentally sensitive, commercial, and recreational fishes and invertebrates.

Strategy C.4.2 Establish a monitoring program to evaluate aquatic community response to completed habitat improvement projects.

Objective C.5 Manage for sustainable harvest of commercial and recreational fish species

Strategy C.5.1 Determine effective sampling gears and develop a standardized protocol for collection of fishes and invertebrates. Consider gear effectiveness and selectivity among habitat types, seasons, species, and life history stages.

Strategy C.5.2 Develop key population variables to assess population status, condition, growth rate, mortality rate, and exploitation rate for selected fish species.

Strategy C.5.3 Establish compatible objectives for managing key recreational and commercial organisms.

Strategy C.5.4 Coordinate and implement uniform commercial and recreational fishing regulations for state agencies jointly managing Lower Mississippi River reaches.

Strategy C.5.5 Establish procedures for collecting and reporting commercial fish harvest data.

Strategy C.5.6 Monitor and regulate harvest to ensure sustainable production of fishes by conducting periodic creel surveys in the Lower Mississippi River.

Strategy C.5.7 Utilize Natchitoches, Mammoth, and Private John Allen National Fish Hatcheries to propagate and restore wild populations of recreationally important fish species.

GOAL D. ECONOMIC OPPORTUNITIES - Improve economic opportunities in river-side communities through the sustainable use of environmental resources

Objective D.1 Ensure that the Aquatic Resource Management Plan provides positive benefits to the economy of river-side communities

Strategy D.1.1 Seek input from the private sector, manufacturing, forest products, agriculture, navigation, and recreation industries on incorporating positive economic development strategies into the Aquatic Resource Management Plan

Strategy D.1.2 Concurrently develop specific economic enhancement goals as an integral component of the Aquatic Resource Management Plan by involving the Departments of Tourism & Economic Development in Arkansas, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee

Objective D.2 Increase public use of the Lower Mississippi River through improved public access

Strategy D.2.1 Conduct a comprehensive inventory of existing public facilities that provide access to the Lower Mississippi River system.

Strategy D.2.2 Work cooperatively with state and federal agencies to determine additional public access needs.

Strategy D.2.3 Develop a prioritized list of potential public access sites on the Lower Mississippi River and seasonally connected backwaters, side channels, and oxbows.

Strategy D.2.4 Work cooperatively with state and federal agencies to develop additional funding sources for access development.

GOAL E. PARTNERSHIPS - Ensure coordinated management of the Lower Mississippi River ecosystem through involvement of management agencies, resource user groups, and commercial interests in planning and implementing management activities

Objective E.1 Improve and enhance cooperation among the Corps, Fish and Wildlife Service, other federal agencies, state agencies, and navigation, industrial, and municipal interests to avoid, minimize, or mitigate further losses of and improve aquatic habitat resources

Strategy E.1.1 Conduct annual meetings between the Corps and other federal and state natural resource agency personnel to coordinate Mississippi River activities (e.g., biological sampling, water quality, flood control, navigation, channel maintenance, habitat restoration, etc.).

Strategy E.1.2 Ensure that state natural resource administrators and biologists from member states participate in the Corps' on-board annual high and low water inspection trips on the Lower Mississippi River. Discuss aquatic habitat issues, offer avoid and minimize solutions, and jointly develop habitat restoration measures.

Strategy E.1.3 Similar to the Upper Mississippi River Conservation Committee, develop a "Biologist-On-Board" program to further understanding between navigation and natural resource interests.

Strategy E.1.4 Provide technical review of Section 404 and Section 10 permit applications in the Lower Mississippi River system, and provide recommendations to avoid, minimize, or mitigate habitat degradation.

Objective E.2 Establish and implement a protocol for coordinating management activities between state and federal agencies, resource user groups, and private industry

Strategy E.2.1 Establish a directory of state and federal agencies, resource user groups, commercial interests, and conservation groups that have an interest in the Lower Mississippi River.

Strategy E.2.2 Consult with representatives from groups identified in Strategy E.1.1 on matters of interest involving Lower Mississippi River Conservation Committee actions.

Strategy E.2.3 Establish a communications network and consultation process to inform and discuss matters of interest.

Strategy E.2.4 Conduct annual meetings between the Corps and Lower Mississippi River Conservation Committee state, federal agencies, resource user groups, and navigation and other commercial interests to discuss pertinent issues and develop management strategies beneficial to all interests.

Strategy E.2.5 Invite biologists from federal agencies and non-government organizations to participate in the Lower Mississippi River Conservation Committee's technical sections.

Objective E.3 Establish a Marketing and Development Program

Strategy E.3.1 Develop funding support from public and corporate sponsors to implement the Aquatic Resource Management Plan.

Strategy E.3.2 Establish the Mississippi River Foundation to support the fund raising mission of the Lower Mississippi River Conservation Committee.

GOAL F. PUBLIC AWARENESS - Increase public use and awareness of fisheries resources in the Lower Mississippi River ecosystem

Objective F.1 Determine public perceptions and knowledge of environmental issues, functions, habitats, and resources

Strategy F.1.1 Develop and periodically conduct phone or mail public opinion surveys.

Strategy F.1.2 Collect user satisfaction, demographic, and other information in conjunction with creel surveys.

Objective F.2. Improve public awareness of natural resource issues

Strategy F.2.1 Develop a marketing plan for improving awareness of resource issues.

Strategy F.2.2 Prepare and distribute news releases and reports on environmental issues.

Strategy F.2.3 Publicize efforts to conserve, enhance, and restore aquatic habitats and to manage the fisheries resources in the Lower Mississippi River system.

Strategy F.2.4 Develop and distribute presentations on the Lower Mississippi River Conservation Committee and the natural resources in the Lower Mississippi River system for use by state and federal agencies, schools, and other organizations.

Strategy F.2.5 Write articles for popular fishing magazines and state conservation magazines.

Strategy F.2.6 Periodically hold "Day on the River" events at riverside communities to educate the public about the river's natural resources, the threats to the river, and the recreational opportunities that are available.

Strategy F.2.7 Establish a Lower Mississippi River Conservation Committee library to serve as a central clearinghouse and repository for Lower Mississippi River ecosystem information.

Strategy F.2.8 Acquire an Education and Outreach staff position to maintain and disseminate information concerning the Lower Mississippi River system.

Strategy F.2.9 Produce a video about the Lower Mississippi River, important conservation issues and threats, and the Lower Mississippi River Conservation Committee.

Strategy F.2.10 Establish an Internet site to disseminate information and data on natural resources and environmental issues.

Strategy F.2.11 Conduct teacher workshops and develop teacher curricula about big river ecosystems, environmental issues, and natural resource management opportunities.

Objective F.3 Increase public involvement in conservation issues

Strategy F.3.1 Develop and disseminate lists of action items concerning the Lower Mississippi River system.

Strategy F.3.2 Establish and coordinate state-sponsored STREAM TEAMs or RIVERKEEPERS that will adopt reaches of the Lower Mississippi River system for stewardship and advocacy purposes.

Strategy F.3.3 Develop a network for distributing information on issues impacting the Lower Mississippi River system.

Strategy F.3.4 Develop a communication network with public conservation groups.

Objective F.4 Improve public awareness of outdoor recreational opportunities along the Lower Mississippi River

Strategy F.4.1	Produce and distribute a Lower Mississippi River Fishing Guide.
Strategy F.4.2	Work with counties to ensure that each public access is adequately marked with road signs.
Strategy F.4.3	Prepare and distribute news releases about Lower Mississippi River public access sites.
Strategy F.4.4	Work cooperatively with state and federal agencies to improve public facilities at riverside municipal parks.
Strategy F.4.5	Prepare and distribute news releases and reports on fishing and other recreational opportunities.
Strategy F.4.6	Provide weekly fishing reports on the Lower Mississippi River Conservation Committee web page.