FES 95-1
Vol. 1 of 2

Final
Comprehensive Management Plan
Environmental Impact Statement
w/Record of Decision 5/95
Volume One



MISSISSIPPI
National River and Recreation Area • Minnesota

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United States Department of the Interior
National Park Service

RECORD OF DECISION

Comprehensive Management Plan
Mississippi National River and Recreation Area
Minnesota

INTRODUCTION

On November 18, 1988, Public Law 100-696 established the Mississippi National River and Recreation Area (MNRRA) as a unit of the national park system. The Mississippi National River and Recreation Area was established by Congress to (1) protect, preserve, and enhance the significant values of the Mississippi River corridor through the Twin Cities metropolitan area, (2) encourage coordination of federal, state, and local programs, and (3) provide a management framework to assist the state of Minnesota and units of local government in the development and implementation of integrated resource management programs and to ensure orderly public and private development in the area.

The Mississippi National River and Recreation Area includes 72 miles of the Mississippi River and four miles of the Minnesota River and encompasses about 54,000 acres of public and private land and water in five Minnesota counties, stretching from the cities of Dayton and Ramsey through Minneapolis and St. Paul to just south of Hastings, Minnesota.

Congress also mandated that a Mississippi River Coordinating Commission be appointed to assist the Secretary of the Interior in developing an integrated resource management plan for the national river and recreation area. The commission was appointed by the Secretary in May of 1990 and has worked in partnership with the National Park Service and many other agencies, communities, interested groups, and the general public to develop a final plan for managing the river corridor.

Pursuant to the National Environmental Policy Act of 1969, Public Law 91-190, and the regulations promulgated by the Council on Environmental Quality at 40 CFR 1505.2, the Department of the Interior/National Park Service has prepared this Record of Decision on the *Final Comprehensive Management Plan/Environmental Impact Statement* (FEIS) for the Mississippi National River and Recreation Area.

This Record of Decision (ROD) is a concise statement of what decisions were made, alternatives that were considered, the basis for the decision, and the mitigating measures developed to avoid or minimize environmental impacts. The ROD also documents the Secretary's decision to approve the final comprehensive management plan pursuant to Section 703 (k) of the MNRRA legislation, Public Law 100-696.

DECISION

The National Park Service in partnership with other federal agencies, the State of Minnesota, and local governments in the corridor will implement the comprehensive management plan described as

the "Proposed Comprehensive Plan" in the *Final Environmental Impact Statement* dated October 1994 and filed with the Environmental Protection Agency in January 1995.

SUMMARY OF THE SELECTED ACTION

The basic visions and concepts identified in the final plan for the national river and recreation area promote extensive partnerships between the corridor's political entities and various constituencies to create the desired future and achieve the legislative purpose for the 72-mile-long river corridor through the Twin Cities area. Natural areas will be preserved, appropriate treatment of cultural resources will be ensured, economic resources will be protected, and public use will be enhanced.

Major issues addressed in the plan include land resource protection efforts, commercial navigation needs, park land and recreational facility opportunities, and the role of the National Park Service in preserving, interpreting, and managing the national river and recreation area corridor. The plan, as directed by the MNRRA legislation, is a conceptual policy and program-level document concentrating on corridorwide issues. It provides basic visions, broad concepts, and general policies that could be used to preserve resources, provide for visitor use, and manage land and water use throughout the corridor. Except for proposed NPS facilities, it does not address site-specific issues.

The most significant visual resources in the corridor will be protected and restored where practical, including historic structures and landscapes. The river corridor will have continuous public or private open space along the shoreline to the maximum extent practical, and it will be connected to the downtowns and neighborhoods by open space and trails. This continuous open space might be a combination of public parks, trail corridors, and private land along the river that is retained as, or restored to, green space. It will be as wide as some of the existing major regional parks along the river or could be as narrow as the 40-foot shoreline preservation setback area. Except in existing commercial and industrial developments, downtown areas, and historic districts, the riverfront and bluff area will appear mostly natural from the river and its shoreline areas (as observed from the opposite bank). In downtown areas and historic districts, development will be more visible but still complement the aesthetics of the river corridor, appealing to area residents and serving as an attraction to visitors to the metropolitan area. Where the natural appearance has been altered in other areas, design guidelines and programs will be established to encourage shoreline restoration to a more natural appearance.

The plan adopts and incorporates by reference the state critical area program, shorelands program, and other applicable state and regional land use management programs that implement the visions and concepts identified for the corridor. The plan does not create another layer of government, but rather stresses the use of existing authorities and agencies to accomplish the policies and actions developed for the area. Land use management consistent with the MNRRA plan will be encouraged through an emphasis on incentives, which will include a grant program authorized in the MNRRA act (if funded by Congress). Local government will retain local control of land use decisions in the corridor, consistent with applicable state and regional land use management programs. The plan will not prevent new development or expansion of existing development in the corridor that is consistent with state and regional land use management programs. The plan is not a regulatory document and does not mandate actions by non-NPS entities. The National Park Service and the commission do not have approval authority over local plans and ordinances, and they do not have authority to approve or deny project-specific land use decisions. The MNRRA legislation specifies that NPS regulatory authority in

the *Code of Federal Regulations*, 36 CFR, only applies to lands that the National Park Service owns — envisioned in the plan to be less than 50 acres.

Additional public and private open space is a critically important resource in the corridor that will be stressed in plan implementation. Such space will be provided through a continued local land and easement acquisition program. The goal will be to provide a continuous linear open space and trail along the riverfront in most of the corridor while protecting natural, cultural, and economic resources. Open space will include public and private lands that will be retained as primarily undeveloped. They might include land devoted to active or passive recreational use or land retained for visual or natural resource protection purposes. Some undeveloped areas will be acquired by local governments on the upper river (above the I-694 bridge) for open space purposes, although it is not feasible during the life of the plan to acquire a continuous public open space along the upper river due to extensive development. Where a riverfront trail is not practical, the trail will use available corridors such as nearby streets and utility easements. The potential for additional open space increases in the middle part of the Mississippi below the Minnesota River and is greatest in the lower river area (below the I-494 bridge). It is recognized that there are areas in all three portions of the corridor where a continuous public open space along both sides of the river is not practical. There will be an emphasis on working with local agencies to complete trail connections to provide a continuous trail system along or near the river and link with other areas outside the corridor.

The plan recognizes the importance of economic activities and provides for the commercial use of the corridor consistent with the MNRRA legislation. Economic activity has the ability to preserve nationally significant historic and economic resources, and this is encouraged by the plan. However, the document is not an economic development plan for the corridor.

Commercial navigation activities will be continued. Decisions about commercial navigation and facility activity will integrate the needs of the industry with the needs to protect natural, cultural, and economic resources in the corridor and provide for safe commercial and recreational traffic within the limits of river system capacity. River system capacity will include considerations of physical, biological, social, and safety limits. Local governments will continue to designate areas suitable for barge fleeting in corridor plans that are consistent with the MNRRA plan. The U.S. Army Corps of Engineers and Minnesota Department of Natural Resources will review these community plans for conformity with the commercial navigation policies in the MNRRA plan. The National Park Service will review permit applications for fleeting areas under its legislated review responsibility.

A wide range of visitor use (interpretation and recreation) activities will be encouraged that will emphasize selected areas. A variety of passive and active resource-related recreational activities will continue to be available to visitors in the corridor. These include fishing, hunting, boating, canoeing, hiking, bicycling, jogging, cross-country skiing, snowshoeing picnicking, birding, taking photographs, and participating in a wide range of interpretive and educational programs.

The Park Service will have a lead role in coordinating interpretation for the corridor. Because of the nature of the corridor and the proposed management concept, NPS facilities will be limited to interpretive centers and administrative offices. With the partnership arrangement and the extent of local interpretation, these will be cooperative ventures with only one interpretive facility owned and operated by the National Park Service. Based on the audience, site analysis, functions of each facility, and the interpretive themes, a system of interpretive facilities is proposed. The proposal capitalizes on

the excellent interpretive work already being done in the corridor and seeks to fill the interpretive gaps and offer overall coordination of activities.

There are two major interpretive facilities planned — a primary information and orientation center at Harriet Island opposite downtown St. Paul and a cooperative information and orientation center near downtown Minneapolis. The St. Paul/Harriet Island facility will be combined with the MNRRA administrative headquarters, strategically located to continue extensive interaction with the government agencies included in the MNRRA partnership.

Three smaller cooperative interpretive centers are also planned, one in the Hastings area, one at Fort Snelling State Park, and another at Coon Rapids Dam Regional Park. Each will have a different interpretive emphasis and potential visitor experience. Space for these facilities will be provided by partner agencies.

ALTERNATIVES CONSIDERED

The National Environmental Policy Act requires that alternatives be evaluated for proposed federal actions, and the FEIS analyzes a proposed comprehensive management plan and three alternatives to the proposed plan. The FEIS provides alternatives that offer a range of options to guide the management and use of this section of the river. The alternatives to the proposed plan as documented in the FEIS are summarized below.

Alternative A (no action) would continue existing resource protection activities, land and water management, and visitor use programs. No overall comprehensive plan would be adopted for the river corridor, and local communities would continue to manage the river with minimal coordination and cooperation. Political boundaries would continue to delineate different management regulations, so individual segments within the 72-mile stretch of the Mississippi River would be managed according to different plans.

Alternative B would place a greater emphasis on resource protection, more restrictive land management (with only selective new development), and passive recreation activities. Efforts for resource protection would be coordinated between the National Park Service and existing state, federal, and local programs, with the Park Service taking the lead on protection of the natural and cultural resources.

Alternative C would place greater emphasis on the use and development potential of the corridor; increased tourism and new commercial and industrial development would be encouraged to a greater degree. There would be less land management activity in alternative C, and visitor activities would emphasize more active recreation. Nationally significant resources would be protected under existing laws, regulations, and policies, and they would be marketed more intensively to stimulate visitation.

While alternative B would provide more protection for corridor resources and therefore would be the environmentally preferred alternative, the selected plan was developed through an exhaustive consensus-building process, and is considered more feasible based on economic development, land ownership patterns, cost, and public acceptance factors.

BASIS FOR DECISION

Public Participation

This final comprehensive management plan is the product of an extensive public involvement effort undertaken by the Mississippi River Coordinating Commission and the National Park Service over a four-year period. The 22-member commission includes representatives from several federal, state, and local agencies, and the general public of the area. The commission held 20 public meetings while the plan was being developed. Members of public were provided with opportunities to speak at each one, and many people did so. In addition, National Park Service personnel worked extensively with other interested parties through informal meetings and telephone contacts.

Work groups and subset focus groups were formed early in the planning process to assist the commission and National Park Service planning team in developing vision statements, gathering data, and reviewing preliminary alternatives. About 180 people from state and local agencies, businesses, and organizations participated in these groups. Appendix D in the FEIS provides a list of agencies and organizations that participated in the work groups.

As a result of these meetings, draft purpose and vision statements were issued for public review in a project newsletter in October 1991. A postage-free response form was included in the newsletter to facilitate public response. The vision statements contained in this document received strong public support. They are a result of that input and subsequent comments on later newsletters. The results of these and other newsletter response forms are contained in summary reports on file at park headquarters.

Conceptual alternatives grounded in these visions were developed for public review based partially on input received. They were issued for public comment in a second newsletter published in March 1992. A postage-free response form was also included in that newsletter to facilitate public feedback. A special round of meetings was held with local government representatives from communities in the corridor during that period. The resource protection alternative and the alternative emphasizing a wide range of uses and activities in the corridor were almost equally supported. There was little enthusiasm for the alternative emphasizing economic development. Among the management options there was a clear preference for the alternative that emphasized equal responsibility among the partners. One of the most distinct preferences was for strengthened pollution control. Another was a clear preference for a variety of visitor activities and access.

The University of Minnesota conducted a resident survey of attitudes about the river in 1992 that was used to help prepare the proposed plan.

Planning issues were identified for the project throughout the early phases of the project. A "notice of intent" to prepare an environmental impact statement was published in the *Federal Register* on July 14, 1992, which officially announced the scoping process for the environmental impact statement, and public input was solicited on EIS issues throughout the remainder of that year.

A preliminary proposed action was developed and issued for public review in a third newsletter published in September 1992. Again a response form was provided. A series of three public open house meetings was held to further define issues and alternatives in the plan/EIS.

The *Draft Comprehensive Management Plan/Environmental Impact Statement* was published in June 1993. Four public hearings were held in July 1993, and public input was accepted during an extended public input period through the fall. Over 1,000 pages of written comments and more than 100 pages of hearing comments were received on the draft comprehensive management plan/environmental impact statement. Review comments were analyzed and summarized by the planning team, and proposed responses were developed by the commission and NPS team through a series of three working papers and commission meetings during late 1993 and early 1994. Additional public input was received during each of these meetings. A draft revised plan was made available for public inspection and comment at commission meetings in February and March 1994, and a motion was adopted by the commission in an April 1994 meeting (after public comment) to recommend the final plan for review by the governor of Minnesota and approval by the Secretary of the Interior.

Numerous additional informal meetings, one-on-one consultations, and telephone discussions with corridor communities, agencies, businesses, environmental groups, other interested organizations and individuals were held to seek advice, coordinate efforts, and help prepare this document. This extensive program to work with others in the area will continue after plan approval. The commission and the National Park Service are sincerely grateful to everyone who contributed to make this a better plan. Continued citizen participation will be critical to the successful implementation of the MNRRA plan.

Plan Implementation Assurances/Regulatory and Financial Tools

The Mississippi River Coordinating Commission is composed of representatives from federal, state and local agencies in the Twin Cities area. The commission passed a unanimous resolution to recommend the plan on April 13, 1994. In a letter to the Secretary of the Interior dated September 14, 1994, Governor Arne Carlson recommended that the comprehensive management plan be approved.

The State of Minnesota has one of the most extensive arrays of legal authorities and programs in the country to assure protection for the MNRRA corridor. This includes air and water quality protection standards, floodplain and wetland protection standards, and land use planning requirements (implemented primarily by local governments). These include an existing state critical area planning requirement for the Mississippi River corridor and state shoreland protection regulation requirement that applies to all lands within the floodplain or 300 feet of the river. The critical area program covers almost the entire MNRRA corridor and the shorelands program covers over 40 percent of the land within the MNRRA boundaries. Agencies of the state have committed to use these programs to implement the MNRRA plan. Cooperative agreements will be developed with the Metropolitan Council and the State Department of Natural Resources following MNRRA plan approval to formalize this commitment. Additional details on these programs and how they will be used may be found in the text of the final plan.

Continuing Oversight of Plan Implementation

The Mississippi River Coordinating Commission will assist the Secretary of the Interior in reviewing and monitoring implementation of the plan by other federal, state, and local agencies. The commission is also authorized in the MNRRA legislation to recommend modifications to the plan. The commission will not have approval authority over land use plans or development or pollution control permits in the corridor, but it will serve as a forum to bring involved organizations together to

discuss major land and water issues in the corridor. The commission will receive reports from the National Park Service, Metropolitan Council, and Department of Natural Resources and will make reports to the Secretary of the Interior on the progress of plan implementation. The Park Service will continue to provide funding and staff services for the commission.

Federal law authorizes the establishment of a state commission after the 1998 sunset of the Mississippi River Coordinating Commission. Prior to its sunset, the commission will recommend to the state what entity should continue to provide the above functions.

The National Park Service will monitor general implementation progress along with the commission. The Park Service will have the lead role in coordinating interpretive activities for the corridor. The Park Service will offer various types of technical assistance to communities on matters related to the river corridor or plan implementation. The Park Service will contract with the Metropolitan Council and Department of Natural Resources to provide assistance to corridor communities to encourage substantial conformance of their plans and actions with the MNRRA plan. The National Park Service (acting for the Secretary of the Interior) will make the final determination on whether communities are conforming to the MNRRA plan, as specified in section 705(c) of the MNRRA legislation. The Park Service will administer the grants program authorized by the enabling legislation for communities that choose to implement tier 2 and substantially conform to the MNRRA plan, and the National Park Service will assist local governments in identifying and seeking other funding that could be used for river corridor projects that are compatible with this plan. The Park Service, working with the commission and other agencies, will have the lead to develop more detailed plans, such as a resource management plan and visitor use management plan. The National Park Service will carry out its mandated federal review responsibilities, emphasizing natural, cultural, and economic resource protection as articulated by the visions, concepts, and policies contained in the plan. NPS review of undertakings by other federal agencies in the corridor, as well as other reviews discussed in the plan, would be completed within existing review timetables to the maximum extent practical. The National Park Service also does not have approval authority over state or federal permit applications, local critical area plans, or zoning ordinances. The National Park Service does not have authority to approve or deny specific local land use decisions.

Additional details on plan oversight by federal and state agencies and other corridor partners is found in the "Partner Roles" section of the final MNRRA plan.

Environmental Consequences

Impacts of the comprehensive plan and the three alternatives are assessed in the FEIS. Both positive and negative impacts to natural and cultural resources, visitor use, and socioeconomic environments are analyzed. If corridor communities adopt and enforce the land use management and open space policies in the plan, sensitive resources in the corridor will be protected, a natural appearance will be preserved (and restored in some areas), cultural resources will be protected, and improvements will be made to recreation and open space opportunities in the area. The approved plan will minimize adverse effects on the river corridor and conflicts between users while providing for a broad spectrum of land and water uses and managed growth. It will protect fish and wildlife resources and emphasize the importance of biological diversity in the corridor. A table summarizing the impacts of the proposed plan and alternatives is attached to this ROD.

Measures to Minimize Harm

All practicable means to avoid or minimize environmental harm from the proposed plan have been adopted. These measures form a major portion of the contents of the plan, which is summarized above. They include, but are not limited to, land use management and resource protection policies and processes, additional planning activities, visitor use monitoring and planning, commitments for additional cultural resource surveys and consultation prior to Park Service construction, and proposals for additional research and data collection as outlined in the plan.

CONCLUSION

A notice of availability for the *Final Environmental Impact Statement* was published in the *Federal Register* on January 20, 1995, and the 30-day no-action period ended on February 19, 1995.

The above factors and considerations justify the selection of the final plan, as described in the "Proposed Comprehensive Plan" section of the *Final Environmental Impact Statement*. The final comprehensive management plan is hereby approved.

APPROVED: _____ DATE: May 16, 1995
Secretary of the Interior

ATTACHMENT

SUMMARY OF IMPACTS: PROPOSED PLAN AND OTHER ALTERNATIVES[1]
Mississippi National River and Recreation Area Comprehensive Management Plan

Value	Proposed Plan	Alternative A (No Action)	Alternative B	Alternative C
Water Resources	Some reduced water pollution	No effect	Greater pollution reduction	Minimal effect
Air Quality	Minimal impacts on air quality	Continued intermittent exceedances of some pollutants	Greater pollution reduction	Minimal effect
Soil and Vegetation	Increased revegetation of river banks with native species; encouraging erosion prevention measures would retain soils	Continued clearing of banks in some areas and associated erosion; inconsistent steep slope and bluff line protection with associated vegetation and soil loss	Greater revegetation of river banks; increased use of erosion control measures, implementation of monitoring system	Some loss of vegetation due to increased development
Wildlife	Increased protection of dwindling wildlife habitat in corridor	Continued loss of wildlife habitat to development	Greater protection for wildlife habitat areas	Possible loss of habitat to encouraged development
Threatened and Endangered Species	Increased protection for threatened and endangered species	No effect	Greater protection for threatened and endangered species/habitat in corridor	Minimal effect
Cultural Resources	Increased protection and adaptive reuse of cultural resources	Continued deterioration of some cultural resources	Increased protection of cultural resources	Increased adaptive reuse of cultural resources
Economic Environment	Minimal impacts; some lost opportunities due to open space acquisition and land use controls	No effect	Greater adverse effects	Greater economic benefits
Commercial Navigation	Minimal effect	No effect	Restricted expansion of barge fleeting areas	No effect; barge fleeting areas would expand as needed for demand
Recreational Use	Increased recreational opportunities, both passive and active	No effect	Limited increase of recreation use, primarily passive	Expansion of recreation use emphasizing active uses to stimulate economic growth
Cumulative Effects	Beneficial effects	No beneficial effect	Beneficial effects	Minimal beneficial effect

[1]From Final Environmental Impact Statement (October 1994)

Final
Comprehensive Management Plan
Environmental Impact Statement

Volume One

MISSISSIPPI

National River and Recreation Area
Anoka, Ramsey, Washington, Dakota, and Hennepin Counties, Minnesota

The Mississippi National River and Recreation Area was designated by Congress in 1988. The Mississippi River Coordinating Commission was established by the act to ensure local assistance to the secretary of the interior in planning for the national river and recreation area. The legislation provided for extensive federal, state, and local coordination in managing the river corridor and its nationally significant historical, recreational, scenic, cultural, natural, economic, and scientific resources.

The basic visions identified for the national river and recreation area would promote partnerships among the corridor's political entities and various constituencies to create the desired future and achieve the legislative purpose for the 72-mile-long corridor through the Twin Cities area. The comprehensive management plan and environmental impact statement provides a proposal that emphasizes a balanced and integrated approach to resource protection and sustainable use and development in the river corridor. Alternatives offer a range of options for issues identified in the plan. A no-action alternative (A) is included to facilitate comparison. Alternative B would emphasize greater resource protection than the proposal; alternative C would emphasize greater use and development than the proposal. Impacts of the proposed plan and the three alternatives are assessed in this document. Both positive and negative impacts to the natural, cultural, and socioeconomic environments are assessed.

The final environmental impact statement will be forwarded to the secretary of the interior for approval. A record of decision can be issued 30 days after publication of release of the document in the *Federal Register*.

This volume includes the purpose and need for the plan, the final comprehensive management plan and alternatives, the affected environment, environmental consequences, consultation and coordination, the list of preparers, and appendixes. Comments received on the *Comprehensive Management Plan/Environmental Impact Statement* as well as the Mississippi River Coordinating Commission/National Park Service responses are contained in volume two. For further information about this document, contact:

Superintendent, Mississippi National River and Recreation Area
175 East Fifth Street, Suite 418, Box 41
St. Paul, MN 55101
612-290-4160

Prepared by
Mississippi River Coordinating Commission and National Park Service

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United States Department of the Interior
October 1994



Looking downriver toward the Twin Cities of Minneapolis and St. Paul we see the Mississippi as a quiet country river, but the Mississippi is many rivers as it passes through this metropolitan corridor; a bustling river, a quiet river, a natural river, and an altered river; a river for commerce, a river for people . . . in short, the Mississippi is a river great in diversity and great in its challenge.

SUMMARY

The Mississippi is one of the world's great rivers and part of one of the most complex ecosystems on the planet. It is a critical migration corridor for millions of birds and is essential to the ecological health of the North American continent. The river environment is home to an incredible array of fish, wildlife, and plants. In turn, millions of people use and enjoy these diverse resources. The Mississippi River lies at the heart of what is American and more than any other natural feature is an unmistakable symbol of this nation. The Mississippi is one of the most recognized historic transportation routes in our country, and it is a corridor rich in nationally significant cultural resources. It is of spiritual importance to Native Americans and provides recreational opportunities to millions of people every year. The Mississippi is also a working river. Commercial navigation is important to the economy of the Minneapolis/St. Paul metropolitan area and the entire upper Midwest. The Mississippi is a vital commercial transportation link to national and international markets, providing safe, low-cost movement of bulk commodities in river barges.

On November 18, 1988, Public Law 100-696 established the Mississippi National River and Recreation Area (MNRRA) as a unit of the national park system. The system is composed of over 370 areas administered by the National Park Service (NPS), an agency of the U.S. Department of the Interior. The Mississippi National River and Recreation Area was established by Congress to (1) protect, preserve, and enhance the significant values of the Mississippi River corridor through the Twin Cities metropolitan area, (2) encourage coordination of federal, state, and local programs, and (3) provide a management framework to assist the state of Minnesota and units of local government in the development and implementation of integrated resource management programs and to ensure orderly public and private development in the area.

The Mississippi National River and Recreation Area includes 72 miles of the Mississippi River and four miles of the Minnesota River and encompasses about 54,000 acres of public and private land and water in five Minnesota counties, stretching from the cities of Dayton and Ramsey to just south of Hastings. The segment of the Mississippi flowing through the Minneapolis/St. Paul metropolitan area has always been of major significance as a resource, a boundary, a transportation corridor, a source of sustenance and energy, a place for recreation, an artistic inspiration, and a tourist attraction. It has been a home and work place, a source of water, and a sometime sewer. Demands upon it have often been in conflict, and attempts to manage its resources have frequently challenged state agencies, local governments, organizations, and area citizens.

In 1988 Congress charged the secretary of the interior (through delegation to the National Park Service) with coordinating the efforts of the federal, state, and local governments to keep this 72-mile section of the Mississippi corridor in good condition and enhance its resources. Congress also mandated that a Mississippi River Coordinating Commission be appointed to assist the secretary in developing an integrated resource management plan for the national river and recreation area. The commission was appointed by the secretary in May of 1990 and has worked in partnership with the National Park Service and many other agencies and groups to develop a plan for managing the river corridor.

Congress directed the commission to assist the secretary, the state of Minnesota, and local units of government to develop policies and programs for

(1) the preservation and enhancement of the environmental values of the area

(2) enhanced public outdoor recreation opportunities in the area

(3) the conservation and protection of the scenic, historical, cultural, natural, and scientific values of the area

(4) the commercial use of the area and its natural resources, consistent with the protection of the values for which the area was established

The basic visions and concepts identified for the national river and recreation area promote extensive partnerships between the corridor's political entities and various constituencies to create the desired future and achieve the legislative purpose for the 72-mile-long corridor through the Twin Cities area. Natural areas would be preserved, appropriate treatment of cultural resources would be ensured, economic resources would be protected, and public use would be enhanced.

This final comprehensive management plan and environmental impact statement provides a proposal and three alternatives that offer a range of options to guide the management and use of this section of the river. Major issues include land resource protection efforts, commercial navigation needs, park land and recreational facility opportunities, and the role of the National Park Service in preserving, interpreting, and managing the national river and recreation area corridor. The plan, as directed by the legislation, is a conceptual policy and program-level document concentrating on corridorwide issues. It provides basic visions, broad concepts, and general policies that could be used to preserve resources, provide for visitor use, and manage land and water use throughout the corridor. Except for proposed NPS facilities, it does not address site-specific issues.

After a great deal of study and consultation and after receiving and considering comments from a wide range of individuals and groups, the commission and the NPS study team developed a plan that provides a framework to balance and coordinate natural, cultural, and economic resource protection, visitor use, and sustainable development activities. It would minimize adverse effects on the river corridor and conflicts between users while providing for a broad spectrum of land and water uses and managed growth. It would protect fish and wildlife resources and emphasize the importance of biological diversity in the corridor. Corridor management policies would be applied in a practical manner with individual communities retaining flexibility to respond to unusual situations in special ways providing that the resources identified in the MNRRA act are protected. The most significant visual resources would be protected and restored where practical, including historic structures and landscapes. The river corridor would have continuous public or private open space along the shoreline to the maximum extent practical, and it would be connected to the downtowns and neighborhoods by open space and trails. This continuous open space might be a combination of public parks, trail corridors, and private land along the river that is retained as, or restored to, green space. It would be as wide as some of the existing major regional parks along the river or could be as narrow as the 40-foot shoreline preservation setback area. Except in existing commercial and industrial developments, downtown areas, and historic districts, the

riverfront and bluff area would appear mostly natural from the river and its shoreline areas (as observed from the opposite bank). In downtown areas and historic districts, development would be more visible but still complement the aesthetics of the river corridor, appealing to area residents and serving as an attraction to visitors to the metropolitan area. Where the natural appearance has been altered in other areas, design guidelines and programs would be established to encourage shoreline restoration to a more natural appearance.

This plan adopts and incorporates by reference the state critical area program, shorelands program, and other applicable state and regional land use management programs that implement the visions and concepts identified for the corridor. This plan does not create another layer of government, but rather stresses the use of existing authorities and agencies to accomplish the policies and actions developed for the area. Land use management consistent with the MNRRA plan would be encouraged through an emphasis on incentives, which would include a grant program authorized in the MNRRA act (if funded by Congress). Local government would retain local control of land use decisions in the corridor, consistent with applicable state and regional land use management programs. This plan would not prevent new development or expansion of existing development in the corridor that is consistent with state and regional land use management programs. It is not a regulatory document and does not mandate actions by non-NPS entities. The National Park Service and the commission do not have approval authority over local plans and ordinances, and they do not have authority to approve or deny project-specific land use decisions. The MNRRA legislation specifies that NPS regulatory authority in the *Code of Federal Regulations*, 36 CFR, only applies to lands that the National Park Service owns — envisioned in this plan to be less than 50 acres.

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This plan recognizes the importance of economic activities and provides for the commercial use of the corridor consistent with the MNRRA legislation. Economic activity has the ability to preserve nationally significant historic and economic resources, and this is encouraged by the plan. However, this document is not an economic development plan for the corridor.

Commercial navigation activities would be continued. Decisions about commercial navigation and facility activity would integrate the needs of the industry with the needs to protect natural, cultural, and economic resources in the corridor and provide for safe commercial and recreational traffic within the limits of river system capacity. River system capacity would include considerations of physical, biological, social, and safety limits. Local governments would continue to designate areas suitable for barge fleeting in corridor plans that are consistent with this plan. The U.S. Army Corps of Engineers (COE) and Minnesota Department of Natural Resources (DNR) would review these community plans for conformity with the commercial navigation policies in the MNRRA plan. The National Park Service would review permit applications for fleeting areas under its legislated review responsibility.

A wide range of visitor use (interpretation and recreation) activities would be encouraged that would emphasize selected areas. A variety of passive and active resource-related recreational activities would continue to be available to visitors in the corridor. These include fishing, hunting, boating, canoeing, hiking, bicycling, jogging, cross country skiing, snowshoeing picnicking, birding, taking photographs, and participating in a wide range of interpretive and educational programs.

The Park Service would have a lead role in coordinating interpretation for the corridor. Because of the nature of the corridor and the proposed management concept, NPS facilities would be limited to interpretive centers and administrative offices. With the partnership arrangement and the extent of local interpretation, these would be cooperative ventures with only one interpretive facility owned and operated by the National Park Service. Based on the audience, site analysis, functions of each facility, and the interpretive themes, a system of interpretive facilities is proposed. This proposal capitalizes on the excellent interpretive work already being done in the corridor and seeks to fill the interpretive gaps and offer overall coordination of activities.

There are two major interpretive facilities planned — a primary information and orientation center at Harriet Island opposite downtown St. Paul and a cooperative information and orientation center near downtown Minneapolis. The St. Paul/Harriet Island facility would be combined with the MNRRA administrative headquarters, strategically located to continue extensive interaction with the government agencies included in the MNRRA partnership.

Three smaller cooperative interpretive centers are also planned, one in the Hastings area, one at Fort Snelling State Park, and another at Coon Rapids Dam Regional Park. Each would have a different interpretive emphasis and potential visitor experience.

The National Environmental Policy Act requires that alternatives be evaluated for proposed federal actions, and the environmental impact statement (EIS) analyzes three alternatives to the comprehensive management plan.

Alternative A (no action) would continue existing resource protection activities, land and water management, and visitor use programs. No overall comprehensive plan would be adopted for the river corridor, and local communities would continue to manage the river with minimal coordination and cooperation. Political boundaries would continue to delineate different management regulations, so individual segments within the 72-mile stretch of the Mississippi River would be managed according to different plans.

Alternative B would place a greater emphasis on resource protection, more restrictive land management (with only selective new development), and passive recreation activities. Efforts for resource protection would be coordinated between the National Park Service and existing state, federal, and local programs, with the Park Service taking the lead on protection of the natural and cultural resources.

Alternative C would place greater emphasis on the use and development potential of the corridor; increased tourism and new commercial and industrial development would be encouraged to a greater degree. There would be less land management activity in alternative C, and visitor activities would emphasize more active recreation. Nationally significant resources would be protected under existing laws, regulations, and policies, and they would be marketed more intensively to stimulate visitation.

Impacts of the comprehensive plan and the three alternatives are assessed in of this document. Both positive and negative impacts to natural and cultural resources, visitor use, and socioeconomic environments are analyzed. If corridor communities adopt and enforce the land use management and open space policies in the plan, sensitive resources in the corridor would be protected, a natural appearance would be preserved (and restored in some areas), and improvements would be made to recreation and open space opportunities in the area. A table summarizing the impacts of the alternatives is included in this document and should be referenced for an overview of environmental consequences.

Many individuals, organizations, and agencies have contributed to the planning process. Work groups made up of local technical experts assisted the commission and National Park Service team in developing visions, collecting data, and making recommendations for the plan. Public meetings and several newsletters have offered opportunities for public involvement. An extended public review occurred on the *Draft Comprehensive Management Plan/Environmental Impact Statement,* including a series of open houses and public meetings in the summer of 1993. Hundreds of letters were submitted regarding the draft plan (see comment/response section in volume 2). Continued citizen participation would be critical to the successful implementation of the plan.

In a letter to the secretary of the interior dated September 14, 1994, Governor Arne Carlson recommended that the comprehensive management plan be approved.

The major elements of the proposed plan in the draft environmental impact statement were carried forward to the final environmental impact statement, with some exceptions. Many word revisions were made to address specific comments on the draft; the most substantive changes in the EIS are summarized below:

- Riverfront Area. A technical correction in the definition of "riverfront area" was made to include all of the 100-year floodplain (rather than only the first 300 feet back from the river as in the draft). The riverfront area is used as a planning concept to guide land use in the corridor near the river. This change was made to make the area consistent with the state shoreland management zone and simplify implementation of the MNRRA plan. It did double the size of the riverfront area to about 16,000 acres (or about 40% of all land in the corridor). Also, the lists of encouraged and discouraged riverfront uses were deleted from the plan and the text was changed to emphasize methods of use development rather than use restrictions.

• Commercial Navigation/Transportation. The importance of the Mississippi National River and Recreation Area as a historic transportation corridor was underscored in the final environmental impact statement, and the contribution of all transportation modes to the area economy was further stressed. Additional data on transportation facilities and use levels was added to the final environmental impact statement. The document was revised to better highlight the significance of commercial navigation in the corridor and the critical role it plays in connecting agricultural production in the upper Midwest with national and international markets. A follow-up surface water use management plan is proposed that would, among other things, identify suitable locations for barge fleeting and mooring areas.

• Natural Resources. A greater recognition of the national significance of the floodplain ecosystem, biological diversity, and wildlife habitat protection was added to the final environmental impact statement. This change was made to address concerns that the plan did not recognize the great importance of the riverine system and broad benefits that continuous open space provides in the corridor. Additional data about fish and wildlife species using the corridor was added to the environmental impact statement.

• Interpretive Centers. An interpretive facility at Fort Snelling State Park proposed by the Minnesota Department of Natural Resources was added to the list of cooperative interpretive centers under the proposed plan. This was done to address concerns that the plan did not adequately interpret prehistoric resources in the corridor.

• Land Use Management Strategy. To address a major concern about local control, a substantial change was made to the land use management strategy in the proposed plan. The final plan emphasizes incentives to a greater degree than the draft plan, the revised proposal places a higher priority on improving existing state and regional land use management programs, and a proposal for state legislation to mandate consistency with the plan was dropped in the final document.

• Partner Roles. Three additional state agencies were added to the partner roles section of the plan to explain their functions in implementing the comprehensive management plan. These include the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, and the State Historic Preservation Office of the Minnesota Historical Society. The roles of other agencies that were listed in the draft were also clarified in the final environmental impact statement.

For additional details on changes made in the final environmental impact statement, see the Comment/Response section of the document (Vol. 2).

PLAN SUMMARY BY ISSUE

ISSUE	PROPOSED ACTION
General concept	Balance and integrate sustainable use and resource preservation needs
Land use/landscape character concept	Preserve and restore natural appearance of shorelines and bluffs; protect habitat; protect historic areas; preserve economic resources; provide setbacks and screen new uses with vegetation
Riverfront area land use (within 300 feet of shore or the floodplain)	Emphasize river-related and river-enhancing uses; minimal change to existing development (i.e. some riverfront improvement)
Barge fleeting areas	Monitor effects; activity expansion would integrate the needs of industry with resource protection and river system capacity
Open space/trails	Provide a continuous linear open space and trail where practical; acquire sensitive areas and emphasize resource protection
Park landownership	Minimal NPS land; additional local park land
Resource management	Balance resource protection and use; increase pollution reduction efforts; preserve biological diversity; protect cultural and economic resources; facilitate and coordinate research
Visitor use	Provide broad range of activities in appropriate areas
Park Service development/cooperative interpretive facilities	NPS interpretive/administrative facility in St. Paul and major cooperative interpretive center in Minneapolis; small cooperative centers at Coon Rapids Dam Regional Park, Ft. Snelling State Park, and Hastings area
General management strategy	Extensive partnerships
Land use management/monitoring option	Emphasize incentives. Improve state and regional land use programs. NPS develops agreements with Metropolitan Council to review local plans and DNR to review local actions for conformance to MNRRA plan

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PURPOSE OF AND NEED FOR THE PLAN

The purpose of this document is to present the final comprehensive management plan (CMP) for the Mississippi National River and Recreation Area, alternatives to the proposal, and an analysis of the environmental consequences of the proposal and alternatives. The comprehensive management plan would provide guidance on managing the corridor for the next 10-15 years. The plan provides a policy framework for coordinated efforts to protect and interpret the nationally significant resources of the corridor and for analyzing other federal, state, or local plans and individual actions in the area. Except for NPS development, the comprehensive management plan does not address site-specific issues. The plan, with accompanying final environmental impact statement, is also intended to inform members of the public and the secretary of the interior of the potential impacts of implementation of the comprehensive plan or any of the alternatives. The Mississippi River Coordinating Commission and the National Park Service submitted the plan to the secretary of the interior and governor of Minnesota for review. On September 14, 1994, the governor recommended that it be approved. The final comprehensive management plan/environmental impact statement will be released to the public for 30 days before the secretary formally approves the plan and a record of that decision is issued. The final decision on whether to approve the comprehensive plan will be made by the secretary based on the governor's recommendations on the final plan, consideration of the adequacy of public participation throughout the project, and other factors specified in the MNRRA act.

The MNRRA legislation specifies that the commission may modify the plan after it is finalized and approved, subject to review by the governor and approval by the secretary, if the commission determines that a modification is necessary. Because this plan is intended to provide a comprehensive policy framework and considering the extensive public involvement that occurred during the preparation of this document, it is expected that frequent amendments will not be needed. Any future plan modification activity would be subject to all applicable state and federal open meeting laws and regulations.

PROJECT HISTORY

The Mississippi National River and Recreation Area is one of the newer areas in the national park system. The 72-mile-long corridor was created by Congress in 1988 to (1) protect, preserve, and enhance[1] nationally significant resources in the Mississippi River corridor through the Twin Cities metropolitan area, (2) coordinate government programs in the corridor, and (3) provide a management framework to assist the state of Minnesota and its units of local government in the development and implementation of integrated resource management programs for the Mississippi River corridor in order to ensure orderly public and private development in the area.

Also by congressional directive, the secretary of the interior has appointed the 22-member Mississippi River Coordinating Commission to assist federal, state, and local authorities to develop and implement an integrated plan for the Mississippi National River and Recreation

1. Throughout this document the terms "preserve" or "protect" should generally be interpreted to mean "preserve, protect, and enhance" when referring to resources.

Area. Members of the commission represent local governments, state and federal agencies, commercial navigation, and the general public (representing a variety of interests).

Congress directed the commission as a coordinator and advisory organization to assist the secretary, the state of Minnesota, and local units of government to develop policies and programs for

(1) the preservation and enhancement of the environmental values of the area

(2) enhanced public outdoor recreation opportunities in the area

(3) the conservation and protection of the scenic, historical, cultural, natural, and scientific values of the area

(4) the commercial use of the area and its related natural resources, consistent with the protection of the values for which the area was established as the Mississippi National River and Recreation Area

Following publication and approval of the final management plan, the Park Service and the commission would then coordinate with others to prepare more detailed strategies and work to implement the plan for the corridor. This would include a broad spectrum of partners, including state and regional agencies, local governments, interested organizations, and the private sector.

As the Mississippi River flows through the Twin Cities metropolitan area, it changes dramatically in character from natural areas to intense commercial and industrial use and back again. Travelers on the river see woodlands, parklands, factories, barges, residences, farms, historic buildings, bridges, wildlife habitat, and the skylines of two large cities. The extensive amount of natural vegetated shoreline is unusual for an urban area. The historic resources are also very impressive considering the dynamic growth and development in the region. Located near the confluence of three major ecoregions (Great Plains, central hardwood forest, and northern pine forest), the river valley contains diverse flora and fauna, including many rare, threatened, and endangered species. In addition, the Mississippi flyway is a critical migration corridor for some 40% of the nation's migrating waterfowl.

For more than a century the Mississippi has been a working river. It is an important commercial artery and for many years has produced hydropower. The Twin Cities developed because of their proximity to the river. The many significant cultural resources in the corridor are a testament to the historic influence of the waterway. In 1892 Congress authorized maintenance of a four-foot-deep navigation channel, and since 1940 the federal government has maintained a nine-foot-deep channel through the cities. The working river is important to the economy of the entire upper Midwest.

The river corridor remains a remarkably natural retreat in the midst of a major metropolitan area, due largely to the efforts of committed citizens and local government efforts over the years. One of the first was that of Horace Cleveland, who planned an extensive, linked park system focusing on the river, streams, and lakes. This provided the framework that is still used today to provide open space along the river and to connect the streams and lakes to the river. In recent years the river has benefitted from a growing public recognition of the value

of this resource. Open space, recreation, and entertainment improvements are drawing people back to its banks in greater numbers. For about 20 years the state of Minnesota has required special efforts to regulate land use in the corridor and to protect its resources, and in 1988 congress established the Mississippi National River and Recreation Area and directed a joint federal, state, and local program to coordinate efforts to preserve important natural, cultural, and economic values in the corridor and to guide growth and development.

Dramatic improvements have been made to the riverfront and public open space has increased throughout the corridor. However, in spite of the excellent efforts of individual cities, there is a general lack of coordination in the corridor. Most cities are adequately protecting the most sensitive natural and cultural resources, but a few are not. Some, because of existing development and land use controls or financial constraints, are unable to protect sensitive resources. Recreational traffic on the river has increased significantly, fish have been contaminated, water quality does not meet standards, and corridor lands have been developed at a rapid pace. Some communities are promoting industrial development along the riverfront, while others are attempting to preserve the river corridor for parks and recreation. This lack of a common vision for the river and coordinated action is a long-standing problem that this plan seeks to correct.

Several major planning efforts tried to address these problems in the past. The first was the Mississippi River Critical Area program, authorized by state law and initiated by the governor's executive order in 1976. The program involved 20 cities, the University of Minnesota, and four townships along the river. Each community was required to complete and implement a plan to preserve the river's resources (such as riverbanks, bluffs, wetlands, and vegetation), address barge fleeting (parking areas for barges — see glossary), define land use, and provide for open space and trails. The plans and implementation efforts varied, ranging from aggressive land acquisition and trail construction to plans designed to meet the minimum requirements of the legislation. There were a number of problems, including lack of funding for coordination and monitoring, lack of implementation, uneven quality of plans and implementation, and minimal enforcement. This comprehensive management plan borrows heavily from the best of these plans, while adding some new ideas to protect and restore resources.

In 1980, in response to continuing concern about the fate of the river, the Metropolitan River Corridors Study Commission was created by Congress to recommend ways to protect and manage the resource values of the three rivers in the metropolitan area. This study analyzed the management of the Mississippi River and found it lacking in both consistency and coordination. The 1986 study report provided the basis for many of the proposed management policies in this plan. While the study commission found that much work, thought, and expense had already gone into preserving, protecting, and enhancing the river's resources, it also found that a more concerted effort was needed to provide an overall vision for the river and to protect it. As a result of the study commission's efforts and those of many dedicated citizens, Congress created the Mississippi National River and Recreation Area as a unit of the national park system in 1988.

The 1988 legislation for the Mississippi National River and Recreation Area directs that a comprehensive management plan (CMP) be prepared for the corridor. Certain mandated elements are required to be in the plan (see appendix A). The NPS enabling legislation and NPS *Management Policies* require that a general management plan (GMP) be prepared for all

units of the national park system. This comprehensive management plan would serve as the general management plan for the national river and recreation area. This document was prepared according to legislative directives, the Interior *Departmental Manual,* and NPS policies and guidelines. The procedures for developing and approving the plan were derived from all these sources.

The MNRRA legislation and management plan fit into an extensive array of existing federal, state, and local laws, regulations, and policies. These include federal law authorizing navigation improvements, federal and state regulations requiring permits for activities in the river, state critical area, shoreland, wetland, and floodplain protection requirements, and numerous local plans and zoning ordinances controlling land use in the corridor. Details on the extent of this framework and the consistency of this plan with other plans in the area are contained in the Plan Implementation section of this document and in appendix J.

ISSUES ADDRESSED IN THIS PLAN

A number of issues were identified by the commission, the National Park Service, and the public during the scoping phase for this plan. Details of the scoping process are included in the Consultation and Coordination section. Most of the issues had been recognized for many years. This list covers only those problems that seem to be most appropriately addressed in a comprehensive plan, based on guidance provided by legislative direction and NPS policy. This is a brief introduction to the issues, which are more thoroughly addressed in the body of the document.

- There is a need for a corridorwide vision for the river — one that all units of local government endorse and actively implement. The final plan should provide that vision, produced through a partnership of government agencies, the public, and the commission.

- There is a need for a consistent and comprehensive management strategy for the corridor. The legislation clearly establishes the concept of partnership management with additional coordination and using existing state and local programs, but it allows some leeway in implementation. The 1988 legislation also allows flexibility in the role of the National Park Service in managing the corridor. This has been a major issue during the planning process. While there is general agreement that the Mississippi National River and Recreation Area is not a traditional unit of the national park system, there could be a stronger federal presence or management could rely more on existing authorities, state agencies, and local governments.

- As use of the river and adjacent land in the corridor grows, there is increasing potential for conflicts between uses.

- Barge transportation and fleeting is a well-established traditional use recognized in the MNRRA legislation, the activities provide a major contribution to the metropolitan area economy, and adequate fleeting space is vital to the commercial navigation industry. Some people have contended that the level of barge fleeting is excessive and that fleeting activities cause environmental impacts. Others contend that fleeting is not excessive and that greater environmental damage is caused by recreational watercraft. Barge fleeting has been a major issue identified by the public, and the MNRRA act requires that the plan

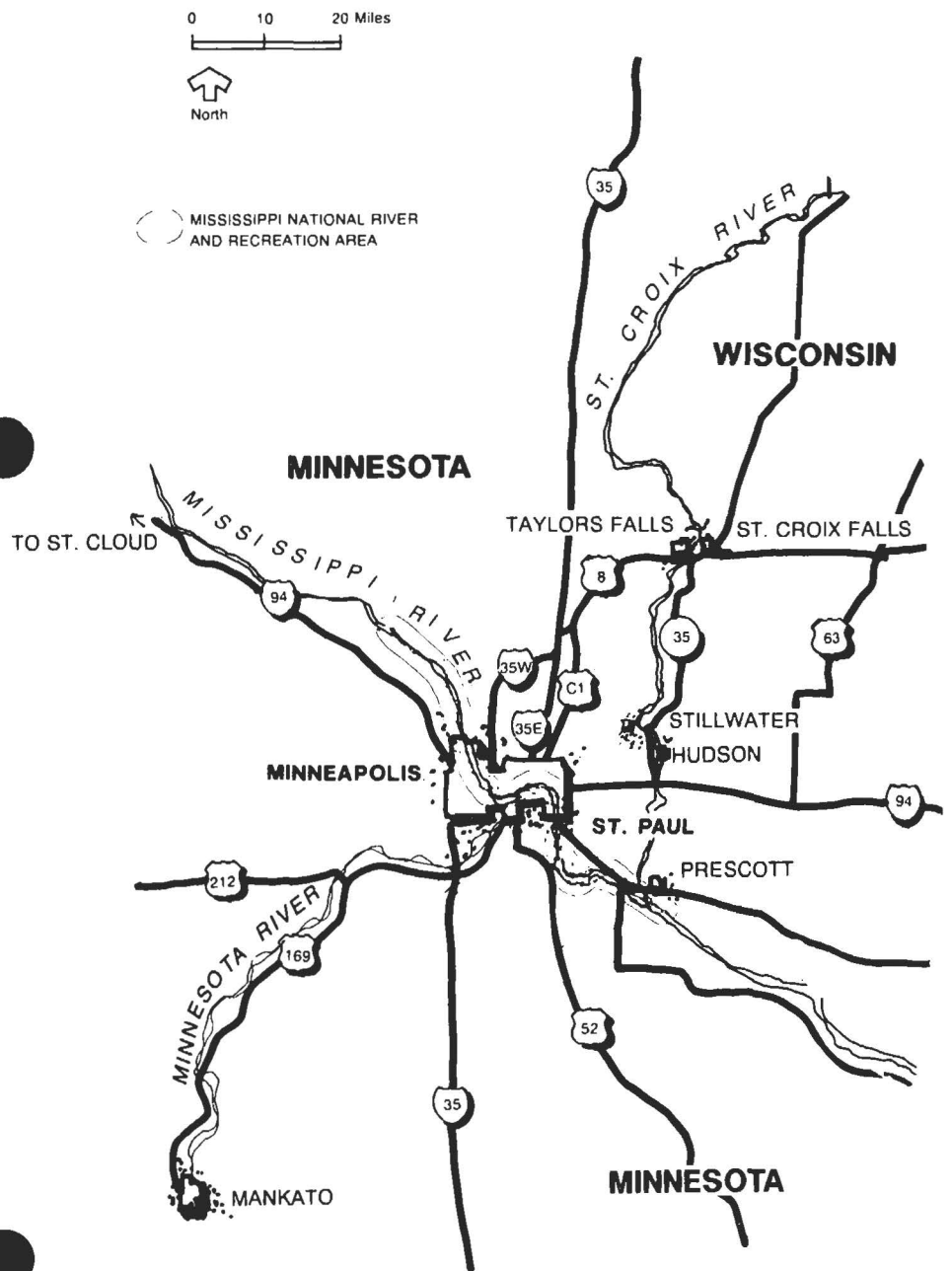
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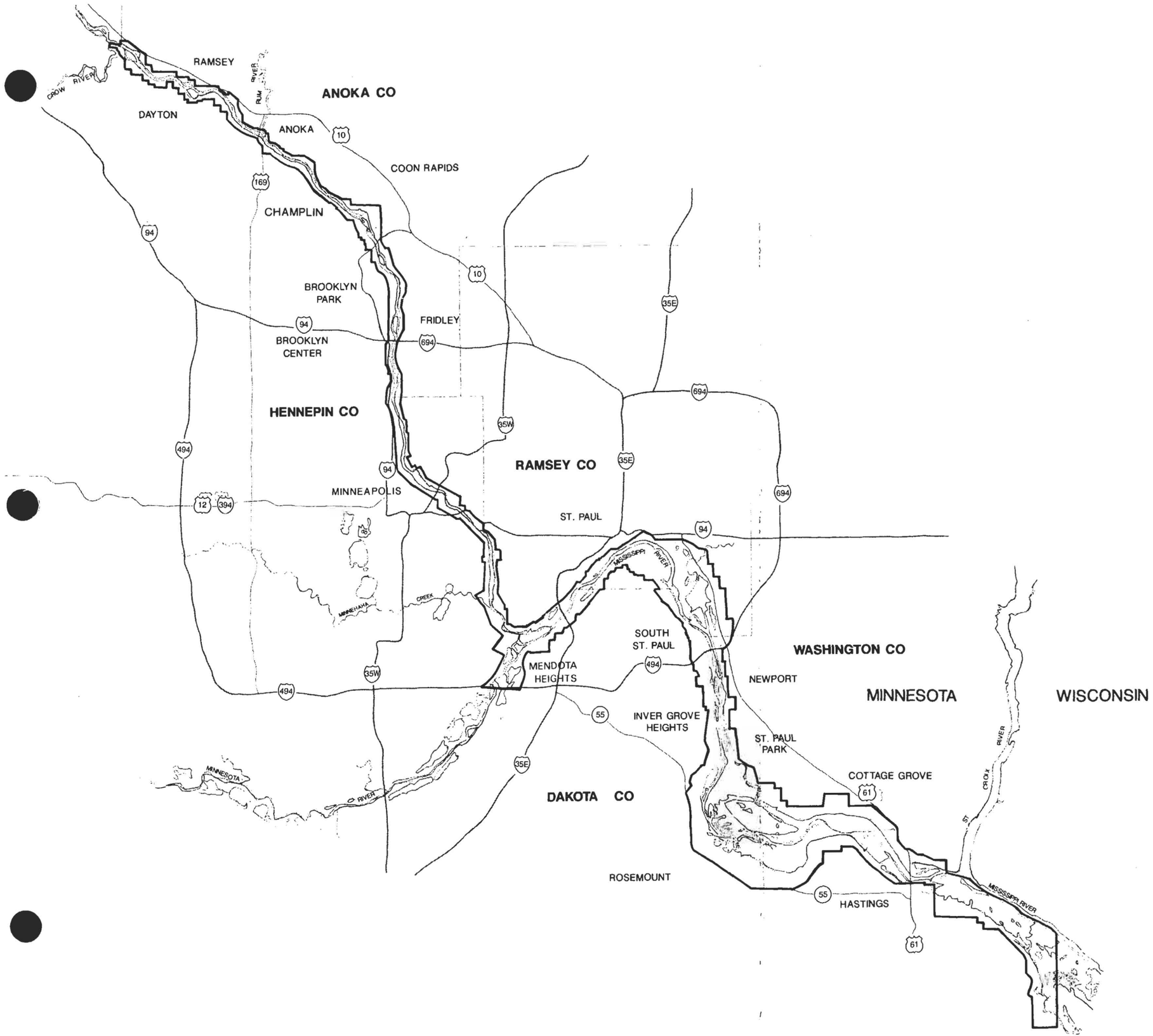
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CORRIDOR BOUNDARY
MISSISSIPPI NATIONAL RIVER
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include a program that provides for the management of barge fleeting consistent with the findings and purposes of the legislation. Maintaining navigation improvements, such as the 9-foot channel, is also recognized in the legislation because it is critical to the commercial navigation industry, but it requires periodic dredging and a need for material placement sites in the corridor.

• The corridor includes many outstanding vistas, areas of scenic beauty, and tranquil places in the midst of a great urban area. These scenic and aesthetic resources could be adversely affected by extensive development, incompatible design, high speed roads, and poor land use practices.

• Unrestricted development on the slopes or near the edge of bluffs causes soil erosion and diminishes the quality of the view from the river or opposing overlooks. Residences are often built near the bluff line to take advantage of river views. Bluffs have also traditionally been used for underground storage in the Twin Cities area, which has some unavoidable impacts to the bluff face.

• Degradation of the natural shoreline appearance can be caused by unregulated development, erosion, adjacent roads, and other land use activities. However, some development along the shoreline in urban waterfront areas is appropriate.

• Indigenous vegetation along the shoreline, in wetlands, and along the bluffs is important to the visual character of the corridor and support of natural systems. Unrestricted development can strip vegetation if established regulations and guidelines are not followed.

• Preserving cultural resources, including historic and ethnographic resources and prehistoric sites, is supported by many agencies and groups; however, new development or disuse has caused the loss of many important resources. The potential impacts of land use policies on cultural resources is a concern of the historic preservation community.

• Significant improvements have been made in wastewater treatment in the Twin Cities area. However, water quality is still a major concern. Issues range from toxic wastes to sedimentation. Fish are contaminated with heavy metals, contact recreation is not advised, and nonpoint source pollution is a chronic problem, especially in the lower part of the river corridor. The primary nonpoint source pollution input is from agricultural runoff outside the corridor into the Minnesota River, which enters the Mississippi at Fort Snelling State Park about five miles upstream from downtown St. Paul. The Minnesota Pollution Control Agency is attempting to address the nonpoint problems on the Minnesota River, but it is a very complex issue that will take extensive time and funds to correct.

• Direct loss of habitat, especially aquatic habitat, has occurred because of competing interests and uses such as recreation and commercial development. Direct and indirect loss of wetlands has been due to ground water depletion and water diversion from wet areas.

• Considerable public land already exists, but the amount and distribution of open space needed to protect the river's resources and to provide for the corridor's many uses

continues to be a major issue. As water quality improves, recreational facilities and open space along the river will increase in importance. There is also a question regarding who should manage additional open space in the corridor. Local park plans contain proposals to acquire additional lands along the river. The National Park Service currently administers about 43 acres of federal land on several small islands and one upland parcel that are scattered throughout the MNRRA corridor. However, there are no current efforts to actively manage these areas. The amount of additional NPS-managed land in the corridor, if any, is a major issue to be resolved in this plan.

- The MNRRA legislation listed the importance of economic resources along with other more traditionally cited national park system resources, and the plan must "recognize existing economic activities in the area and provide for their management." "Nationally significant economic resources" are not defined in the legislation. The act charges the commission with developing "policies and programs for the commercial utilization of the corridor consistent with the values for which the area was established." New development competes with existing activities for scarce land and access to the river, and it might adversely affect the preservation of existing economic resources in the corridor. The amount of new economic development in the corridor, types of uses, and locations for new commercial and industrial activities are issues to be addressed in the plan. New development needs must be weighed along with natural, cultural, and economic resource protection needs. The challenge is to find a way to define and achieve balance and sustainability among natural, cultural, and economic resource preservation, visitor use needs, and new development activities.

- The impact of proposed land and water use policies and open space acquisition on economic activities in the corridor is a major concern of some communities and members of the metro area business community.

- The interpretive program emphasis, the need for additional facilities, coordination of interpretation and visitor services, gaps in existing interpretive and environmental education programs, and the most appropriate service providers must be determined for the area.

ISSUES AND ALTERNATIVES NOT CONSIDERED IN THE PLAN

All significant corridorwide issues raised by the public during project scoping that were within the scope of the MNRRA legislation are addressed in this plan. One issue raised during the course of this planning process but not addressed in the plan is the concern that this project is the first step by the National Park Service to gain control of the entire Mississippi River from Lake Itasca to the Gulf of Mexico. There is a separate study currently being done by an independent congressionally established commission, the Mississippi River Study Commission, to determine the feasibility of designating the entire river as a national heritage corridor. The National Park Service is providing staff assistance to that commission, but it does not control the results of the study. A national heritage corridor, if recommended by that commission, would have to be established by Congress. National heritage corridors are considered affiliated areas, not units of the national park system.

An alternative for a more traditional national park also was identified early in project scoping. It would include broad NPS landownership in the corridor, extensive land restoration, and a dominant NPS presence in corridor management. This alternative is not analyzed in this document because it would be outside the legislative intent for MNRRA and is not feasible given the existing ownership and development pattern in the Twin Cities area.

The MNRRA plan also does not address site-specific issues on non-NPS land in the corridor. This is a comprehensive management plan providing a long-range vision for the area, broad concepts and a framework for coordination, and corridorwide policies and programs that would provide guidance on solving future site-specific issues. It is beyond the scope of the plan and would be in conflict with the cooperative spirit of the legislation to attempt to resolve all current site-specific land use conflicts in the corridor.

It is recognized that transportation planning issues are very important to the growth and development in the corridor and protection of its natural, cultural, and economic resources. This was identified by many commenters during the public review period on the draft comprehensive management plan/environmental impact statement. It is beyond the scope of this plan to address major transportation questions such as the new airport issue or metropolitan area road improvement needs. However, the general visions, concepts, and policies expressed below could be used as a framework to analyze these issues, and it will form the basis for NPS review comments on transportation plans and proposals affecting the corridor.

PURPOSES AND VISIONS FOR THE AREA

The following purpose and vision statements were developed early in the planning process to provide guidance for preparing the plan. They serve as a foundation for its implementation. They were developed by the Mississippi River Coordinating Commission with the assistance of work groups. These ideas form the basic goals and objectives on which the plan and the alternatives were based. They were subject to public review before conceptual alternatives and a draft proposal were developed. They have been revised during the planning process to reflect public input and the evolving direction provided by the commission. They are listed in the order that resources are listed in the act.

Please note that the purposes describe intent and are stated as broad goals to be accomplished. Visions are more specific objectives that describe how the corridor might appear if the purposes are achieved.

Purpose: Preserve, enhance, and interpret archeological, ethnographic, and historic resources.

Visions: (In the future we would see that . . .)

The public has opportunities to learn about historic, ethnographic, and archeological resources in the corridor through interpretive and educational programs.

The significant historic, ethnographic, and archeological resources of the corridor are preserved and protected.

Archeological, ethnographic, and historic preservation, enhancement, and interpretation reflect the diversity of the people who have lived in the river corridor.

The MNRRA corridor is an exemplary role model for historic preservation and adaptive use of historic structures.

Preservation, enhancement, and interpretation actions respect the rights of private ownership and involve all parties (public and private) with responsibility for the resources.

All developments and programs are sensitive to the physical limitations of historic and archeological resources.

Purpose: Enhance opportunities for public outdoor recreation, education, and scenic enjoyment.

Visions:

Additional opportunities for recreational and educational experiences, including scenic enjoyment and quiet contemplation, are provided throughout the MNRRA corridor.

The corridor offers a broad range of recreational and educational experiences closely tied to the character of the resource and complementing other recreational opportunities in the metropolitan area.

A full range of recreational boating is provided while providing for user safety and minimizing crowding and conflicts with other uses.

Public use areas are easily accessible and safe.

Residents and visitors are able to traverse the entire length of the corridor by foot and bicycle.

Public access is provided to a range of natural and cultural resources in ways that do not damage resources or violate the rights of private landowners.

Recreational and educational opportunities provided in the corridor reflect the cultural and ethnic diversity and varying physical and financial abilities of residents and visitors.

Special features are identified, developed, and promoted as tourist destinations consistent with the protection of cultural, natural, and economic resources.

The MNRRA corridor includes a system of park lands connected by the river with a system of linear parks and other elements that facilitate public access to the river.

Purpose: Preserve, enhance, and interpret natural resources.

Visions:

The public can learn about natural resources in the corridor through interpretive and educational programs.

Significant natural resources, such as native wildlife and plant diversity, in the corridor are preserved and enhanced.

All developments and programs are sensitive to the limitations of natural resources.

Significant natural resources that have been adversely impacted in the past are restored.

Preservation, enhancement, and interpretation respect the rights of private ownership and involve all parties, public and private, with responsibility for these resources.

The river through the MNRRA corridor has water quality that meets state and federal water quality standards and moves toward the fishable and swimmable goals as defined in federal and state law. It is a long-term vision of this plan that water quality in the corridor is as clean when it leaves the metropolitan area as when it enters.

Air quality in the corridor meets state and federal standards.

The value of the river as a public water supply is protected.

The role of the Mississippi River as a nationally significant natural ecosystem and migratory corridor for wildlife resources in the heart of the midcontinent is recognized.

Purpose: Provide for continued economic activity and development.

Visions:

The corridor continues to include multiple uses consistent with wise land use management principles.

Opportunities are provided for observation and interpretation of the Mississippi's role in the regional and national economy.

The role of the Mississippi River as a working river and as the heart of midcontinent navigation is recognized.

Protection and enhancement of the river corridor's natural and cultural resources are seen as positive elements in economic development strategies.

Economic development activities that take advantage of the corridor's attributes are encouraged in a manner that preserves, protects, and enhances the natural and cultural resources in the corridor.

Commercial and recreational river traffic are conducted to minimize conflicts with each other and with other uses.

Barge fleeting, a vital function of commercial navigation, is a recognized traditional use on the river and is conducted in a manner consistent with the purposes for which MNRRA was established.

Purpose: Improve the public's understanding of the river and promote public stewardship of its resources.

Visions:

Regional residents, local governments, businesses, and industries share a strong sense of stewardship for the well-being of the corridor.

Activities in the MNRRA corridor support the interests of local communities in improving the public awareness of river resources.

The public is aware through coordinated interpretive programs of the national significance and status of corridor resources and their stewardship.

The public has an understanding and appreciation of the multiple uses and purposes of the river.

Opportunities are provided to learn about and experience corridor resources.

Purpose: Recognize and strengthen people's relationships with the river as a dynamic part of our heritage, our quality of life, and our legacy for future generations.

Visions:

Metropolitan area citizens have a strong sense of identity with the three area rivers and their history.

The MNRRA corridor enriches the lives of metropolitan residents and visitors by enhancing regional, natural, cultural, and aesthetic resources and by contributing to regional socioeconomic growth.

The MNRRA corridor has an identity that connects it to the greater cultural, economic, political, and natural systems of the area.

The Mississippi is recognized as one of the world's largest river systems, as a significant historic and modern transportation corridor, and as a place that attracted human settlement.

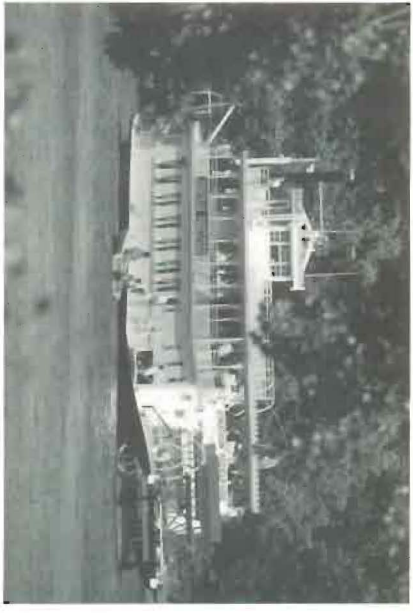
Opportunities are provided for local residents and visitors to discover the Mississippi River and its stories.

Communities support the MNRRA plan and participate in the coordination of activities.

By identifying the most significant resources (using the list identified in the act), balancing and integrating the needs to protect those resources with other needs in the corridor, and using concepts and policies taken from the previous corridor plans, the goal is to bring management in all areas in the corridor to the same level of excellence. If this occurs, then the visions can be achieved.



ALTERNATIVES, INCLUDING THE PROPOSED COMPREHENSIVE PLAN



Tour boat on Mississippi River in the Twin Cities

PROPOSED COMPREHENSIVE PLAN

This chapter describes the proposed comprehensive management plan (CMP), which would serve as the general management plan for the Mississippi National River and Recreation Area. The following sections cover general concepts and corridorwide policies for land and water use, resource management (including natural, cultural, and economic resources), visitor use and interpretation, general development needs, park operations, and plan implementation strategies.

Public Law 100-696, establishing the corridor as a unit of the national park system, required in section 703(i) that the comprehensive management plan include a program for management of existing and future land and water use. The proposed plan was prepared pursuant to this congressional direction and also complies with NPS guidelines for the preparation of general management plans. Additional plan contents required by the MNRRA legislation are covered in the last section of the proposed plan, "Plan Implementation."

This is a conceptual, policy and program-level plan concentrating on corridorwide concerns. Except for proposed NPS facilities, it does not address site-specific issues. Site-specific issues are very important to the growth, development, commercial utilization, visitor use, and protection of the corridor. However, they would be addressed on a community level or case-by-case basis following plan approval using the broad visions, general concepts, and corridorwide policies articulated in this document to determine consistency with the comprehensive management plan. Local governments have the flexibility to tailor the plan to their section of the river and address site-specific issues within the overall framework of the comprehensive management plan.

This comprehensive management plan is an integrated plan that covers the issues identified during the scoping process for the 54,000-acre MNRRA corridor. It recognizes that a lot of hard work has gone into existing plans for the corridor and it incorporates and builds on the approved plans for the area. The plan must be carefully coordinated with and strategically fit into the very extensive ongoing comprehensive planning processes that exist in the Twin Cities Metropolitan Area.

Alternatives to the proposed plan are described in the sections that follow the comprehensive plan. The analysis provided in the EIS provides a range of possible plans within the scope of the MNRRA legislation.

GENERAL CONCEPT

After a great deal of study and consultation and after receiving and considering comments from a wide range of individuals and groups, the commission and National Park Service study team developed a plan that provides a general framework to coordinate natural, cultural, and economic resource protection, visitor use, and development activities. It would minimize adverse effects on the river corridor and conflicts between users while providing for a broad spectrum of land and water uses and managed, sustainable growth.

This comprehensive management plan recognizes the importance of economic activities on and along the river and it provides for the commercial use of the corridor consistent with the MNRRA legislation. Economic activity has the ability to preserve nationally significant historic and economic resources and in many cases is the major driving force behind historic preservation successes in the area. The working river is important to the economy of the metropolitan area and the entire upper Midwest. The Mississippi is a historic transportation route and a vital current transportation link to national and international markets, providing safe, low-cost movement of bulk commodities. This plan fosters protection of both the working river and the natural riverine system.

This comprehensive management plan recognizes the national significance of the Mississippi River as a natural riverine ecosystem and as a corridor rich in cultural values. Fish and wildlife resources, including bottomland forests, bluffland, and riverine habitats would receive greater protection. The most significant visual resources would be protected and restored where practical. Archeological sites, historic structures and landscapes, shorelines, wetlands, steep slopes, and other sensitive resources would be preserved and enhanced. The river corridor would have continuous public and private open space along the shoreline area to the maximum extent practical, and it would be connected to the downtowns and neighborhoods by open space and trails. Local governments would be encouraged to update their plans for the corridor to conform with this plan. Additional open space and trails would be acquired and developed by local governments where consistent with local comprehensive plans adopted or amended pursuant to the MNRRA plan. The National Park Service would develop a major interpretive center and headquarters in St. Paul and cooperate in establishing a major interpretive center in Minneapolis and smaller interpretive centers in the Hastings area, at Fort Snelling State Park, and at the Coon Rapids Dam Regional Park.

While it is important for communities to show strong support for the MNRRA plan and provide consistency in river corridor management, it is recognized that individual communities must retain flexibility to address unusual issues and special situations. Policies proposed in this plan could be tailored to fit the different characteristics of specific reaches of the river, and they must be implemented in a practical manner considering the specific issues in particular cases. Practicality and feasibility would be part of all the policies and actions that follow. This should not, however, diminish the overall commitment to coordinated resource preservation, protection, and enhancement in the Mississippi River corridor.

The MNRRA legislation (section 705) requires the secretary of the interior (through delegation to the National Park Service) to "review all relevant local plans, laws, and ordinances to determine if they substantially conform" to the MNRRA plan. The MNRRA act also sets out a process for this review and stipulates that it be carried out under "agreements with the state or its political subdivisions." This review would be a high priority and carried out in the first phase of plan implementation.

This plan adopts and incorporates by reference the state critical area program, shoreland program, and other applicable state and regional land use management programs that implement the visions identified above. This plan does not create another layer of government but rather stresses the use of existing authorities and agencies to accomplish the policies and actions developed for the corridor.

The general concept for implementation envisions a two-tier approach to achieving MNRRA plan consistency through local government planning and management.

Tier 1 — The existing Mississippi River Critical Area Program and state shoreland management program would remain in place, and implementation of these programs would be improved. Critical area program oversight would be transferred from the Minnesota Environmental Quality Board (EQB) to the Minnesota Department of Natural Resources (DNR), and increased funding would be made available for program implementation in the MNRRA corridor. Local governments would be required to continue to administer a critical area and shoreland protection ordinance and to have a critical area plan in place. The purpose of the Mississippi River Critical Area Program is to "preserve and enhance its natural aesthetic, cultural, and historical value for the public use, and protect its environmentally sensitive areas," as the 1976 Critical Area Executive Order states. Local governments are already required to comply with these standards, and this would not change.

Tier 2 — Local governments could voluntarily move to a second tier of planning and management by updating their community plans and ordinances to incorporate the land use, resource protection, and open space policies described in this plan. Funding would be requested to assist local governments in updating their plans and ordinances to substantially conform to the new concepts and higher standards in the MNRRA plan, and technical assistance would be available from the Metropolitan Council for plan development and from the department of natural resources for ordinance development. Ordinance implementation would be overseen by the department of natural resources in the same way it oversees the critical area and shoreland management programs.

Because many of the concepts and policies in this plan were borrowed from the best of existing plans and programs for the river corridor, reaching tier 1 and more effectively implementing existing state and regional programs would have many beneficial effects and achieve many of the MNRRA plan visions for the corridor. The long-term goal of the this plan, however, is to have all communities in the corridor reach tier 2 and fully implement the MNRRA plan and achieve all its visions. If funded by Congress, the 50% matching grant program for acquisition and development of lands and waters or interests therein that is authorized in the MNRRA legislation would be used as an incentive to encourage communities to implement tier 2. In order to be eligible for this grant program local governments would have to adopt plans and ordinances consistent with the new concepts and higher standards described in this plan that exceed existing state and regional requirements in the critical area, shoreland management, or other existing land use management programs for the metropolitan area.

It is not the intent of this plan to impose on any federal- or state-regulated industry, standards or requirements related to construction, operation, and maintenance that conflict with those enforced by existing federal or state agencies for the safe and environmentally sound conduct of business. It is also recognized, however, that additional standards or requirements that are necessary to protect the sensitive resources of the corridor and that do not conflict with these legal mandates could be enacted and enforced by the appropriate federal, state, or local agency in pursuit of the MNRRA plan. The National Park Service would not be a regulatory agency in the corridor but rather would work to coordinate the activities of others, to achieve the purposes of the MNRRA act, and to encourage implementation of the comprehensive management plan.

This document also recognizes that continued public participation would be critical to successful plan implementation. Additional follow-up planning and implementation actions would be accomplished with public involvement.

LAND AND WATER USE

The MNRRA legislation specifies that the plan include a component for the "management of existing and future land and water use." Based on the project history and scoping process for the plan, this section concentrates on land use issues. However, it does include a subsection on commercial navigation and some land use policies that affect water use. Water quality and recreational boating issues were also identified as important during the scoping process and are covered in later sections of this document.

Planning Assumptions

The land and water protection strategy is based on the following planning assumptions or basic concepts, which were derived from the legislative history, analysis of the area data base, commission direction, purpose and vision statements, and public input:

- The metro area is growing and much of the land in the corridor is developed or will be developed in the next 10-15 years. The focus of the plan should be on guiding this growth and development in the corridor and building partnerships with federal, state, and local entities.

- Due to the extensive amount of land already developed in the corridor and rapid growth in the metropolitan area, opportunities for new open space are limited.

- Economic development activities and resource protection measures can coexist. The area's economic vitality is dependent on its environmental health. Preservation and economic development are not mutually exclusive, and MNRRA presents a significant economic development opportunity for the metropolitan area. In many cases, such as historic preservation efforts, economic development could be a key to resource protection.

- A comprehensive and coordinated federal, state, and local planning system for the corridor would enable a proactive and balanced assessment of existing uses and improved decisions on proposed new uses that could affect resources, while minimizing the adverse impacts of various uses on each other and on sensitive resources in the corridor.

- The National Park Service should own minimal land in the corridor.

- While improvement along the riverfront is desired, this plan should concentrate on new development in the corridor. Existing development is not expected to be substantially changed by this plan.

- There are many excellent land resource protection programs at the local level.

• New land uses should be substantially consistent with the resource and land protection policies articulated in this plan.

• Development compatible with resource protection can take place in the corridor using vegetative screening or excellence in building and landscape design.

• Land use regulation, including zoning and site plan approval, should continue to be primarily controlled at the local government level.

• Local and regional plans and ordinances should provide the basis for most concepts incorporated into this plan.

• This plan should not weaken any existing local policies, and it should exceed them when necessary to protect sensitive resources, take advantage of a coordination opportunity, or resolve a critical corridorwide management issue.

• Eminent domain should only be used as a last resort to protect corridor resources as specified in the MNRRA legislation after a secretarial finding of noncompliance with the plan has been made and all other procedures specified in the act have been fulfilled.

• The plan should not prescribe specific land use activities for specific locations in the corridor. It should deal with land use from a corridorwide policy perspective, using resource protection concepts, land use location policies, and design guidelines.

• The Mississippi National River and Recreation Area is a historic transportation corridor. Commercial navigation, rail lines, and roads are well established and traditional uses in the corridor that would continue. Airports, while having a shorter history in the corridor, preexisted the establishment of the Mississippi National River and Recreation Area and are generally recognized as a important contributor to the Twin Cities economy.

• The region owes much of its economic development and modern vitality to commerce along the river. Successful enterprises would be those that continue to recognize and fulfill their role in the economy while helping to preserve, protect, and enhance the diversity of values in the corridor.

• The intensity of the commercial navigation use in the corridor has and would continue to vary considerably over time in response to local, regional, national, and international needs and markets.

• Residential land use is a legitimate use in the river corridor and would continue to be predominant in many areas where it is well established. Such use would be developed in several other areas where it is planned, zoned, and platted.

• Nothing in this plan would usurp the authority of federal, state, regional, or local agencies to implement existing laws and regulations in the corridor.

• The Mississippi River floodplain ecosystem is important to the ecological health of North America. It is a vital migration corridor for wildlife and is essential to sustaining

the biological diversity of the continent. The MNRRA corridor is an important link in this 2,400- mile long natural riverine system.

General Land and Water Resource Protection Concept

The general land and water resource protection concept is based on the purposes and visions listed above, the existing situation, a visual analysis, extensive public input, and the planning assumptions.

One of the guiding visions of the plan is that the corridor enriches the lives of metropolitan residents and visitors by enhancing natural, cultural, and aesthetic resources and by contributing to regional growth. Another vision states that protection of resources is a positive element in economic development strategies. This crucial balance among resource protection, visitor use, and sustainable development should be maintained. Natural, cultural, and economic resources would be protected, enhanced, and promoted to stimulate tourism, compatible visitor use, recreational activities, community livability, compatible residential uses, and high quality and sustainable development. Decisions about land use would balance and integrate economic, natural, and cultural resource protection considerations with development needs. The natural appearance and functions of the river corridor would be maintained and restored while protecting cultural and economic resources. The native plant and animal communities in the corridor would be preserved. Fish and wildlife habitat would be protected, and biodiversity safeguarded. The natural functions of the riverine ecosystem would be protected and enhanced.

The most significant visual resources would be protected and restored where practical, including historic structures and landscapes. The river corridor would have continuous public and private open space along the shoreline area to the maximum extent practical, and it would be connected to the downtowns and neighborhoods by open space and trails. Except in existing commercial and industrial developments, downtown areas, and historic districts, the riverfront and bluff area would appear mostly natural from the river and its shoreline areas (as observed from the opposite bank). In downtown areas and historic districts, development would be more visible but would still complement the aesthetics of the river corridor, appealing to area residents and serving as an attraction to visitors. Where the natural appearance has been altered outside downtowns and historic districts, design guidelines and rehabilitation programs would be established to encourage shoreline restoration to a more natural appearance.

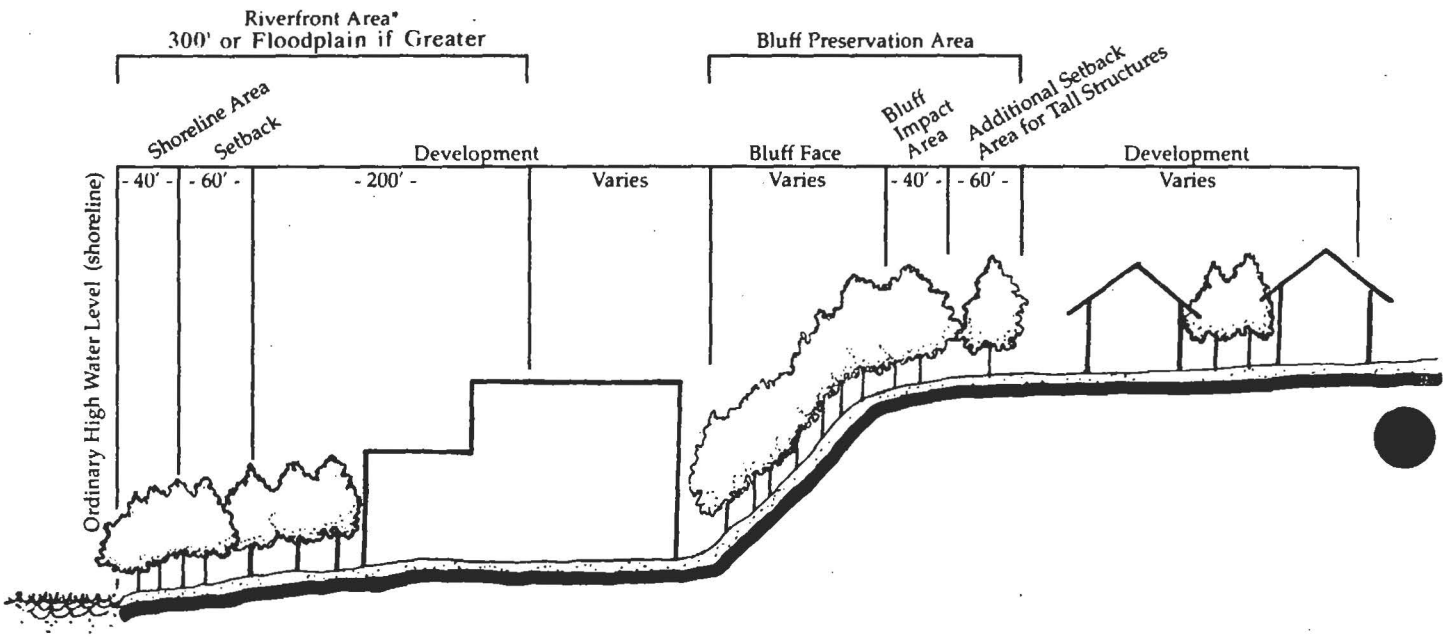
The working river is important to the economy of the metropolitan area and the entire upper Midwest. This plan promotes the benefits of both the natural river system and the working river. This plan includes protection for all resources listed in the act, and it recognizes that most of the land in the corridor is and would remain privately owned. This plan respects the right of private property owners to determine appropriate uses of their land subject to community land use regulations. It is also understood that much of the corridor is developed and would not be restored to a natural state. This plan recognizes existing development and concentrates on managing new uses and, where practical, increasing the amount of vegetation and other landscape treatments along the riverbank in existing developed areas. Nothing in this plan would require communities to be so restrictive that they would deprive corridor landowners of the use and enjoyment of their land. Land use controls would still allow

reasonable use of private property, although not necessarily the activities that generate the highest possible levels of income. Land use regulation would be consistent with recent state and federal court rulings. Local governments would continue to have primary land use planning and control responsibilities. Metropolitan Council staff would provide assistance to local governments on plan development and revision to achieve conformance with this plan. Similarly, DNR staff would provide technical advice and assistance to local governments in revising and administering zoning controls and would assist communities in realizing development projects that conform to this plan. (See Plan Implementation section for additional details.)

This plan includes protection of existing economic resources along with other existing resources listed in the act, and it proposes to manage new development consistent with resource protection mandates. Although economic development activity (promotion of new business and development) for the area is an important element of community growth and development strategies, it is not a major component of this plan and would continue to be the function of other local, regional, and state plans and programs for the area. This plan does encourage sustainable growth and redevelopment in the corridor that protects the nationally significant resources listed in the MNRRA act and enhances the appearance and livability of the river environs. Development would be compatible with surrounding land use and conform to established community zoning regulations and design guidelines. This plan especially supports economic development that preserves corridor resources (such as historic buildings) and provides opportunities for development of sustainable tourism-related businesses in the corridor that would support the desired visitor experience and contribute to the local economy.

Land Use and Protection Policies

General Policy. Decisions about land use and development in the corridor would be based on area resource characteristics implemented through local plans. Land use location decisions for development proposals would be based on a balance between resource protection, visitor use, and development needs in the corridor. Resource protection (including existing natural, cultural, and economic resources) and sustainability would be the primary determining factor in case of a conflict. Except in existing commercial and industrial areas, downtowns, and historic districts, currently undeveloped land areas in the corridor would continue to appear open from the river and its shoreline areas (as observed from the opposite bank), although there could be intensive development away from the shoreline. This open appearance does not mean all undeveloped land must remain undeveloped. In most cases this general policy could be achieved through the setback, height limit, and vegetation screening policies and design guidelines while allowing for extensive use of the site. New developments would in most cases be clustered near similar developments in the most appropriate places in the corridor and would be consistent with local plans. Wherever practical, degraded shorelines would be restored to a more natural appearance. Shorelines in downtown areas and historic districts could be maintained with a less natural appearance to reflect their urban sense of place and historic character. The river corridor is characterized by a mosaic of urban development and natural areas. To ensure preservation of this unusual landscape, several of the policies below concentrate on protection of bluffs and riverfront areas (see section sketch).



SECTION: DEVELOPMENT AREAS (OUTSIDE DOWNTOWN AREA)

This plan encourages business to make investments in the river corridor that would achieve the plan's visions, concepts, and policies for the corridor. Riverfront improvement is strongly encouraged by this plan. New uses should be located to improve the appearance of existing and expanded uses where practical. This plan does not exceed existing local requirements that prevent structures subject to setbacks from being rebuilt if damaged by fire or natural disaster. The plan encourages wise use of floodplains, including relocation of structures that are damaged by flood; however, it does not go beyond existing federal, state, and local policies for enforcing floodplain management standards on private land. Nothing in this document would prevent structures in the corridor that do not meet setback and height standards in this plan from being rebuilt on the same footprint if destroyed by fire or natural disaster unless prohibited by existing federal, state, or local policies. The plan encourages relocation of "inconsistent" uses that are causing adverse effects on the corridor, it encourages shoreline cleanup and restoration, it advocates more shoreline trails and open space, and finally, as areas are redeveloped, it is envisioned that further improvements could be made and there would be increased compatibility with the river and surrounding neighborhoods. The plan encourages improvement in the corridor over the long term and promotes sensitivity in design for expansion of facilities in existing developed areas.

New land use and development in the riverfront area (the first 300 feet back from the river, or the 100-year floodplain if wider) would include those activities relating to or requiring a location next to the river, activities preserving historic structures located along the river, activities designed to be compatible with the riverfront area, or activities enhancing the riverfront. A variety of high-quality, river-related, sustainable, and nonpolluting uses could exist near the river. These would include recreational, educational, residential, commercial, transportation, and industrial uses. Sensitive areas (including shorelines, floodplains, wetlands, endangered species habitat, steep slopes, bluff lines, and significant historic and archeological sites) would be buffered from other land uses. These sensitive areas would be identified in community critical area plans and mapped in greater detail by project proponents for specific development actions. A narrow natural area along the shoreline would be protected, and cultural resources would be preserved. The shoreline area adjacent to the downtown sections would be more structured, including public plazas and more formal landscape designs consistent with an urban setting. Shoreline treatments in historic districts would preserve cultural resources and enhance their interpretation. Existing riverfront improvement programs would be continued. The riverfront area would be more accessible from the downtown areas of the Twin Cities and would be more heavily used with the addition of recreational and retail uses such as restaurants, cultural facilities, and special events. People would be able to safely walk along the river, and views of the river would be available from areas away from the shoreline.

Detailed Policies. Following are more detailed land use policies for the corridor. The location policies are intended for new development in the corridor, while site development policies are intended for both new development and substantial expansion or redevelopment. Most existing residential, commercial, and industrial development in the corridor would not be significantly changed by this plan. The plan would also not discourage existing land uses in the corridor from expanding existing facilities if the expansion was consistent with resource protection policies contained in the Resources Management section of this plan and site development policies in this section. Expansion standards would continue to be established by local government. In general expansion would be acceptable as long as it did not create or increase nonconformity with the MNRRA plan (same use, setback, height, etc.). Additional

development should attempt to meet the visions and concepts of the MNRRA plan. In cases where the existing use is nonconforming, expansion should attempt to substantially conform. In all cases, the expansion should meet visual screening and shoreline setback guidelines contained in approved critical area plans. The expansion policy could be tailored to reflect local conditions.

It is the intent of this plan that communities in the corridor that elect to move to the second tier of planning and management would incorporate the general visions and concepts and the more detailed policies in this document when updating their plans. Encouraging corridor communities to update their plans to substantially conform to the MNRRA plan would be a high priority for plan implementation. The MNRRA plan provides a basic framework that should be used to guide use and development in the corridor. Specific dimensions are provided to give the policies better definition. As long as the MNRRA plan's visions and concepts are achieved and resources identified in the act are protected, communities could tailor detailed policies to the specific resources in their section of the river. Most of the policies listed below were taken from one or more of the local critical area plans. Local zoning ordinances would be updated as needed to comply with the second tier of land use management described in this plan if local governments elect to participate. There would be a standard variance procedure included in local ordinances.

Riverfront Location Policies —

(1) Give special emphasis to a relatively narrow zone of land along the river. This is because of its proximity to the river, its concentration of significant natural, cultural, and economic resources, its greater recreation use potential, and the potential for serious adverse effects if it is not properly managed. This area is consistent with the state-regulated shoreland area along rivers in Minnesota.

New development in the riverfront area (defined as the first 300 feet back from the river's ordinary high water level or the floodplain, whichever is greater) should have a relationship to the river, a need for a river location, or the capability to enhance the river environment. This policy would protect many values referenced in the MNRRA act, including existing economic resources. Uses that would replace inconsistent activities (incompatible uses causing adverse effects on the corridor) and enhance resources identified in the act are encouraged in the corridor.

General criteria for compatible riverfront uses include:

river-related (an economic or operational need for a river location or a connection to the river)

meets or exceeds federal, state, or local environmental standards

cleans up polluted areas

removes blighting influences

provides high quality building and landscape design

compatible with the riverfront environment

compatible with surrounding uses (particularly the neighborhoods)

sustains economic vitality of riverfront improvements

offers public access to and along the river

provides visual open space

maintains views of the river

exceeds minimum landscaping requirements

retains or restores natural shoreline appearance

contributes to natural, cultural, or economic resource appreciation, protection, and enhancement

These are not listed in priority order. Although it is desirable to meet as many of these criteria as possible, uses do not have to meet all of them to make a positive contribution to the riverfront. Riverfront activities could include a wide variety of uses, such as park land, institutional, residential, transportation, commercial, and industrial development.

New activities that do not meet these criteria, such as activities that do not relate to the river, that do not need a river location, that do not contribute to the riverfront environment, or that would cause some environmental degradation or have some other detrimental effects on corridor resources, should be located outside the riverfront area. These activities could be located in the corridor, but should be outside the riverfront area subject to local zoning. These uses should still comply with other location policies, site development policies, and resource protection policies contained in this comprehensive management plan. The requirement that all new activities comply with existing federal, state, and local land use and environmental standards is not diminished by this plan. Existing "inconsistent" uses (those that do not meet the compatibility criteria listed above) would be encouraged to relocate outside the riverfront area; however, wholesale redevelopment of the riverfront area is not envisioned.

(2) Develop incentives to encourage polluting industries that no longer rely on the river for transportation or other needs to relocate out of the riverfront area.

(3) Convert inconsistent riverfront land uses that are causing adverse effects on the river corridor to consistent uses if the owners move away. If the land within 300 feet of the river meets criteria for open space, encourage owners to leave the space open; otherwise, appropriate private redevelopment should occur. Nothing in this plan would prevent owners of inconsistent land uses from selling or leasing their property for the same or similar land uses if consistent with local plans or ordinances.

Corridorwide Location Policies —

(1) Cluster new uses near similar ones or replace existing uses rather than develop isolated, unrelated sites that promote sprawl and reduce open space in the corridor. New land uses should be located in areas that are compatible with adjacent land uses. For instance, intense uses should be located in existing areas of intense use, rather than in undeveloped areas. This policy recognizes that some land uses, such as marinas, are exceptions and would not normally be clustered.

(2) Emphasize residential and open space land uses in the upper river corridor (above the I-694 bridge at Fridley).

(3) Encourage a greater variety of land use activities with additional open space in the lower river corridor (below the I-494 bridge at the city of South St. Paul).

(4) Continue a wide variety of land uses in the middle portion of the corridor (between I-694 and I-494). Encourage high quality and sustainable open space, public plazas, historic landscapes, interpretive facilities, and residential, commercial, and industrial development in the corridor subject to location policies and local land use plan objectives.

(5) Locate urban-density development where metropolitan and urban services are available or planned.

(6) Comply with federal, state, and local requirements to avoid floodplain and wetland development. (Note that protecting these resources would be emphasized in implementing the state critical area program. Minnesota has a strong state law protecting wetlands. Federal agencies are required to protect these areas under existing presidential executive orders on floodplain and wetland management.)

(7) Comply with federal, state, and local requirements to protect endangered, threatened, and rare species (including state-listed species) and their habitats.

(8) Support the regional transportation planning process, including the intermodal transportation goals identified in Intermodal Surface Transportation Efficiency Act (ISTEA), especially the use of mass transportation and bicycle/pedestrian trail linkages. These plans include the *Major River Crossing Study* completed by Metropolitan Council.

(9) Discourage development in areas containing significant wildlife habitat.

Site Development Policies —

Except where specifically noted below, the following site development policies apply to the entire MNRRA corridor. Specific dimensions, such as setback and height limits, are illustrative and could be tailored by individual communities for local conditions (except if they are the same as minimum standards required by existing state programs). Communities could go beyond the minimum state requirements or MNRRA plan recommendations if they so choose for their segment of the river. None of the site development policies are intended to prohibit the construction, reconstruction, or

maintenance of bridges crossing the river, and their associated approach roads, rails, or trails (see policy no. 11 for more specific guidance on bridges).

(1) Provide uninterrupted vegetated shorelines where practical along the Mississippi and its tributary streams and ravines to preserve a natural look from the river and the opposite shore and to provide connections to adjacent natural areas. Downtown areas would be identified in critical area plans and are a recognized exception to this policy. Existing commercial and industrial areas outside downtowns are also excepted. However, new developments should appear as natural as possible when viewed from the river using setbacks, landscape treatments, and vegetative screening, and shoreline restoration is encouraged in existing commercial and industrial areas.

(2) Coordinate land development policies to protect natural resources using a system of preservation areas (see section sketch):

- Preserve a narrow zone along the shoreline (using the state definition for shoreline) with an undisturbed area 40 feet back from the river (ordinary high water mark) or restore natural vegetation where practical along the shoreline. When expanding existing uses located in this area, locate expansions as far back from the shoreline as practical and consistent with existing uses.

- Allow minimal disturbance (selective grading and tree removal) in an additional 60-foot setback adjacent to the shoreline area for a total shoreline preservation area setback of 100 feet.

- Prohibit land disturbance along the bluff face (slopes in excess of 12%). Development of underground space in these areas could be appropriate if the surface of the bluff face and top are mostly undisturbed and development is not visible from the river or shoreline area as observed from the opposite bank.

- Preserve the bluff impact area (40 feet back from the bluff line) in a natural state or restore natural vegetation in order to screen development.

- Provide additional setbacks in an additional 60-foot area (for structures over 30 feet tall outside downtown areas) for a total bluff preservation area of 100 feet from the bluff line.

- Reduce visual impacts and protect views of the river and from the river and its shoreline areas by establishing maximum building heights for the bluff line and riverfront preservation areas:

  within 100 feet of the bluff line — 30 feet
  within 200 feet of river — 30 feet
  within 300 feet of river — 45 feet
  beyond the areas above — no restrictions except those in existing local zoning codes

It is understood that building height limits would be set by local governments in their critical area plans and ordinances, and they would be higher in downtown areas. It is also

understood that certain structures, such as railroad signal masts, could exceed these maximum building heights for reasons of safety. Architecturally significant institutional structures might also be considered for exemption from height restrictions.

(3) Minimize the cumulative impacts to natural, cultural, and economic resources that result from many individual land development projects being implemented over time. Techniques would be developed to measure cumulative impacts and respond to significant undesirable effects.

(4) Increase the effectiveness and reduce the inconsistency of development regulation enforcement in the corridor.

(5) Coordinate the preparation and improvement of site development design guidelines and regulations to achieve the visions articulated in the plan.

A set of sample design guidelines are contained in appendix C. The guidelines are included only to provide examples of how the policies could achieve the intent of this plan. While the use of the design guidelines (or some variation) is desired for consistency purposes, compliance with the guidelines (or some future version of them), is not considered necessary to achieve substantial conformance with this comprehensive plan. The National Park Service, Metropolitan Council, and Department of Natural Resources would work with communities in the corridor to improve the guidelines and apply them to local conditions. The Department of Natural Resources and the National Park Service would also provide technical assistance to communities wishing to apply the guidelines on a site-specific basis.

(6) Encourage shoreline area preservation and restoration.

preserve native vegetation, particularly remnant natural communities identified by the Minnesota County Biological Survey as significant, or encourage revegetation

use native and other compatible floodplain vegetation in redevelopment projects

develop a cooperative program for revegetating existing denuded areas along the shoreline

use extensive native vegetation, including native trees and shrubs, in the more formal landscape treatments appropriate in the downtown areas

support a comprehensive metropolitan area riverbank cleanup program

develop and improve design guidelines for shoreline areas

use native or natural-looking materials to stop bank erosion to the maximum extent possible; provide technical assistance on desired bank stabilization techniques

(7) Provide pedestrian/bicycle paths to connect the river to the downtowns, neighborhood areas, and parks and open spaces.

(8) Protect views as seen from designated overlooks in the corridor. Develop new overlooks at strategic locations offering significant views of the river corridor.

(9) Remove vacant, nonhistoric structures that are not needed for consistent uses.

(10) Rehabilitate and adaptively reuse historic structures where practical.

(11) If it becomes necessary to increase river crossing capacity, the order of preference would be first to expand the capacity of an existing bridge, second to add a parallel structure, and third to establish a new corridor. Development of a new crossing corridor would occur only when no feasible and prudent alternative (including consideration for a greater reliance on intermodal transportation) exists and only if the crossing is included in approved regional transportation plans. This includes the *Major River Crossing Study* prepared by the Metropolitan Council.

(12) Protect existing wetlands and, where practical, restore degraded wetlands. Enforce the DNR floodplain encroachment ceiling so that small increments in development do not gradually degrade the floodplains.

(13) Work to increase and restore wildlife habitat and biological diversity in development projects. Protect bottomland forests, bluff prairies, woodlands, and riverine habitats. To ensure that there is adequate nesting habitat for peregrine falcons, development should be adequately set back in areas near cliffs that are considered potential nesting sites.

(14) Apply setback and height restrictions and encourage careful site design to maintain the ability to view the river from existing open space and developed uses. Avoid significantly obstructing river views with proposed development.

(15) Screen development wherever practical to minimize its visibility from the river or the opposite shoreline.

(16) Maintain existing public access to the river and increase access in redevelopment and new development projects if practical.

(17) Incorporate scenic road design concepts and architectural treatments into road construction, reconstruction, or capital improvement projects in the corridor, with primary emphasis on parallel roads in the riverfront area and bridges over the river (see appendix C for design guidelines).

(18) Protect endangered, threatened, and rare plant and animal species (including state-listed species) and their habitats in site development projects.

(19) Encourage consultation with Native American groups when site development would affect any Native American cultural site.

(20) Where practical encourage placing utilities underground in new development projects and the replacing of existing utilities underground in existing development.

(21) Encourage local governments to adopt sustainable building practices, such as energy efficiency and water conservation practices, in their municipal codes for new construction and renovation work.

Variance Policy —

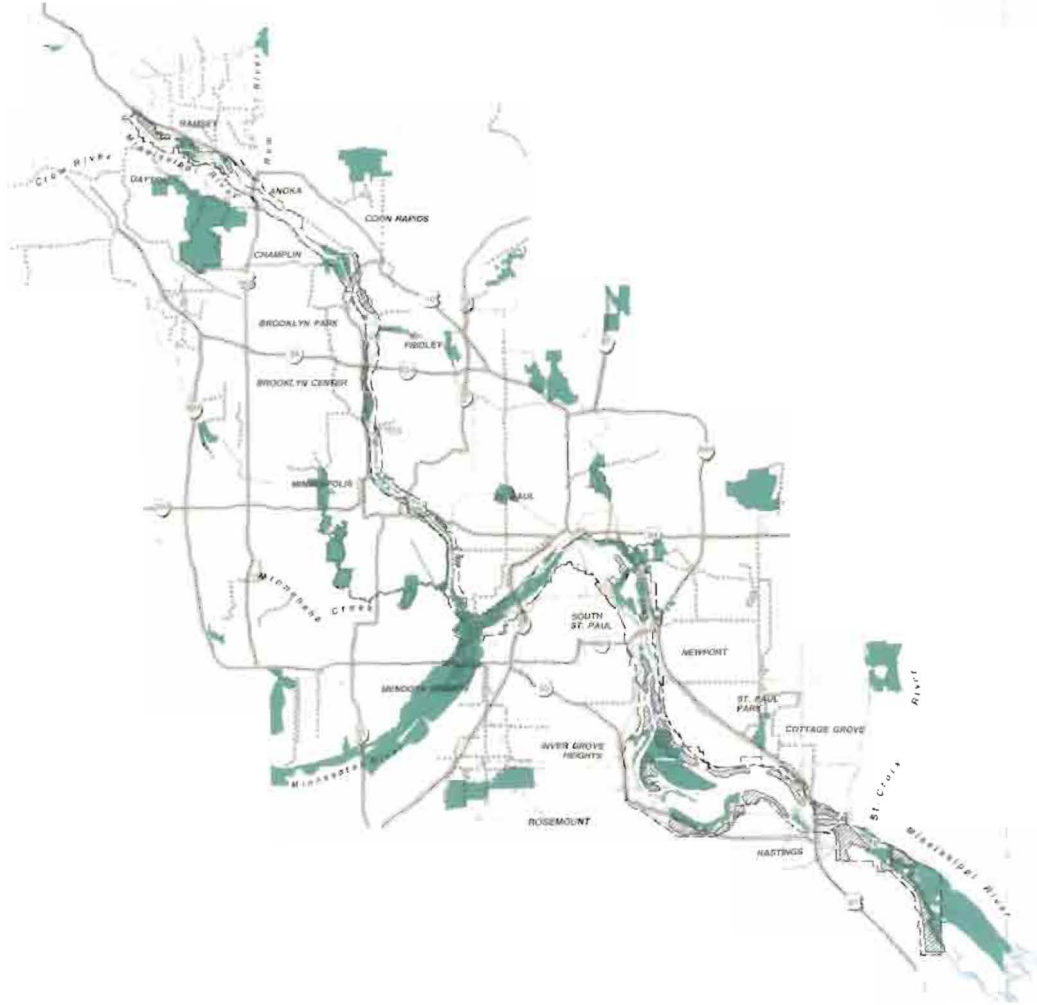
Variance procedures for local government ordinances adopted to implement policies in this plan would be established by communities in consultation with the Department of Natural Resources. The variance procedures would be in accord with state statutes.

Variance requests would be handled though the established local procedures. This would include opportunities for public input. Variance proposals would be reviewed by the Department of Natural Resources in a manner similar to the existing state critical area and shoreland management procedures. The Department of Natural Resources does not have the power to veto a local variance decision under current state authority and a court action is the Department of Natural Resources' only recourse. Nothing in this plan would expand existing state legal authorities.

Open Space and Trails

Extensive open space exists in the corridor, particularly along the river and its tributaries. Of the nearly 54,000 acres of land and water in the corridor, there are currently about 8,500 acres of public land. Of that, about 4,600 acres are public parklands. In addition, there are about 2,000 acres proposed for acquisition by local governments in existing local and regional park and recreation plans. The parkland along the river in Minneapolis is almost continuous. Continuous public open space is planned in St. Paul, although it is not yet completed. St. Paul has some very large parks in the corridor, some of which are a major natural enclave in the heart of the city. Some of the smaller cities, such as Hastings, have made great progress in linking open space along the river and its tributaries. There are areas, however, on the river's left-descending bank in the south end of the corridor where there is no open space or trails, and none are planned. There are also long stretches in the north where the development pattern precludes open space continuity along the river in many places. It is desirable to coordinate the trail development work in the corridor and locate trails away from the river where necessary to provide a continuous trail — one of the important visions of this plan.

The Twin Cities metropolitan area has one of the most extensive urban trail systems in the country. It links the river, its tributary streams, and the many lakes in the region. Plans to extend the system the length of the corridor have existed for many years. With the exception of the northern stretch of the river, it should be possible to provide a continuous trail along or near the river, building on the existing system. Much of the south end of the corridor still lacks continuous trails, but Dakota County and many of the cities on the right-descending bank of the river have plans to complete a trail to connect to trails in St. Paul. On the left-descending bank of the river there are currently no local government plans to provide a trail near the river. The MNRRA plan would be coordinated with the comprehensive regional trail plan that is currently being prepared by the Metropolitan Council. Encouraging and coordinating the completion of missing links in the trail system would be a high priority for MNRRA plan implementation. Wildlife habitat protection would be a key consideration in trail alignment.



BOUNDARY

HYDROLOGY

EXISTING PARKS

PROPOSED PARKS (CITY, COUNTY, OR REGIONAL PLANS)

EXISTING TRAILS

PROPOSED TRAILS (CITY, COUNTY, OR REGIONAL PLANS)

MAJOR OPEN SPACE OPPORTUNITIES

ADDITIONAL TRAIL NEEDS

NOTE: All locations are approximate; small areas are not shown.

MILES

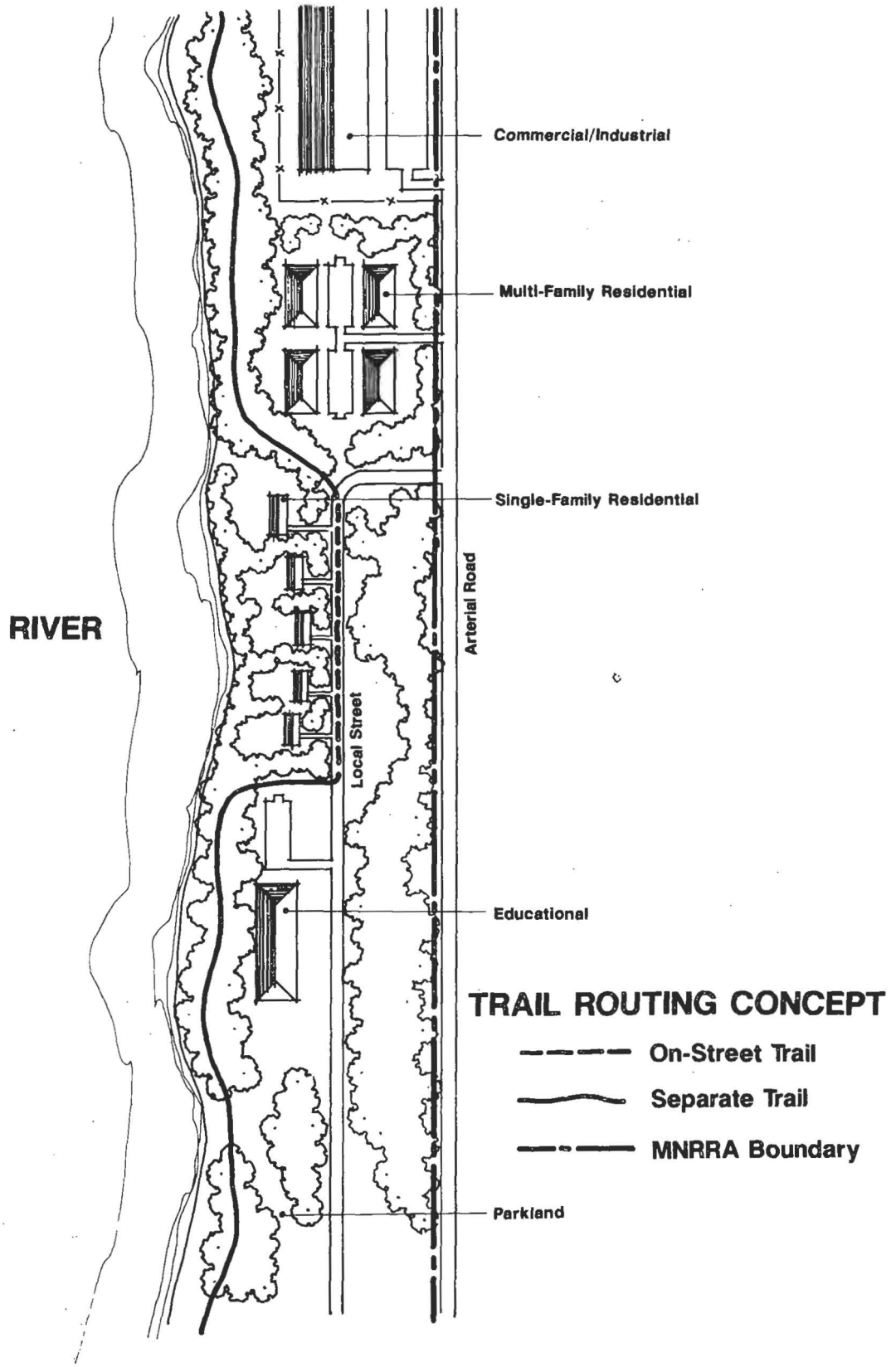
NORTH

OPEN SPACE OPPORTUNITIES FOR PARKS & TRAILS

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service

ON MICROFILM


Commercial/Industrial
Multi-Family Residential
Single-Family Residential
Arterial Road
RIVER
Local Street
Educational
Parkland
TRAIL ROUTING CONCEPT
On-Street Trail
Separate Trail
MNRRA Boundary

The safety of recreational users would be a major consideration in trail development. This plan recognizes that some portions of the riverfront have industrial activities or transportation facilities that could be hazardous to recreational users. However, it is often possible to route the trail around these areas, using nearby streets, existing trails, or utility corridors. It is also possible to make a riverfront corridor safe by adequately fencing the trail. These alignment and construction techniques would ensure that the vision of a corridor-long trail is achieved without compromising user safety. (See trail routing concept sketch.)

Open Space and Trails Concept. Open space is a critical resource in the corridor and its protection and enhancement is stressed in this plan. The open space and trail concept is based on the visions articulated above that promote a system of linear parks connected by the river and a continuous trail system allowing travel along the entire length of the corridor. The concept shown on the Open Space Opportunities map is built on the plans of local governments with additional land recommended to achieve continuity where practical. The areas identified on the map as potential open space opportunities are based on an analysis of the character of vacant land near the river done in consultation with local governments. Preserving open space would provide opportunities for active and passive recreation and protect sensitive resources such as valuable wildlife habitat and biological diversity. While open space in urban settings frequently means mowed lawns, trimmed trees, exotic vegetation, removal of aquatic vegetation, and an influx of people and their pets, open space of that type is of little or no value to wildlife habitat and biological diversity. In some parts of the corridor there should be open space set aside that is relatively free of human disturbance and is dedicated to habitat protection and biological diversity. The Open Space Opportunities map is conceptual in nature, the scale of the drawing does not permit display of small areas, and all trail corridors are approximate. The map does not show proposed land acquisition but only potential open space opportunities. The actual amount of open space would probably be considerably less, depending on local initiative and federal, state, and local funding limitations.

The proposal is to provide up to 50% matching grants to state and local governments to acquire land as authorized in the MNRRA legislation. This program would be a high priority for plan implementation but is contingent on congressional funding. Initial meetings have been held with local governments to discuss the feasibility of the proposal and more coordination would be necessary to further develop the open space and trails concept. This funding program would complement and be coordinated with other grant programs in the metropolitan area to ensure that available land acquisition and development funds are used in the most efficient and effective manner. The Grey Cloud Island area is an example of a large parcel in the lower river that has been proposed by local government for park land that would potentially be eligible for the NPS grant program. Key trail connections would be emphasized in the open space program. The National Park Service would work closely with local governments in the corridor to achieve the open space and trail development vision and policies identified in this plan. Additional work with local communities to identify needed open space and critical trail linkages would be pursued immediately following comprehensive plan approval.

Additional public and private open space would be provided through a continued local land and easement acquisition program. The goal would be to provide a continuous linear open space and trail along the riverfront in most of the corridor while protecting natural, cultural,

and economic resources. Open space would include public and private land that remains primarily undeveloped. This could include land devoted to active or passive recreational use or land retained for visual or natural resource protection purposes. Some undeveloped areas would be acquired on the upper river (above the I-694 bridge) for open space purposes, although it is not feasible during the life of this plan to acquire a continuous public open space along the upper river due to extensive residential development. However, a continuous trail system using available corridors such as nearby streets and utility easements is an important component of this plan. (See trail routing concept sketch.) The potential for additional open space increases in the middle part of the Mississippi below the Minnesota River and is greatest in the lower river area (below the I-494 bridge). It is recognized, however, that there are areas in all three portions of the corridor where a continuous public open space along both sides of the river is not practical. There would be an emphasis on working with local agencies to complete open space and trail connections to provide a continuous open space and trail system along or near the river and link with other areas outside the corridor.

The formation of a nonprofit land trust or partnering with an existing land trust would be encouraged. This would provide another technique to raise funds, seek land donations, and increase the public and private open space and provide additional trail opportunities in the corridor. Land acquisition could include fee-simple purchase or donation and scenic and trail easement purchase or donation.

Public Land Ownership. Most proposed and existing public lands, including associated historic structures, would be acquired or maintained by local units of government or the state. Proposals for additional public land would be developed cooperatively with these units of government, and land would be acquired as funds became available. National Park Service land acquisition would be limited to (1) acquiring land needed for an NPS interpretive facility as identified below, (2) using the authorized condemnation authority though procedures specified in the MNRRA act only when important sensitive areas are severely threatened by irretrievable loss and no other alternative for resource protection is available, or (3) selected parcels that a unit of government donates to the National Park Service if that unit of government and the Park Service, based on the advice of the commission, determine the land would be best owned by the Park Service. The National Park Service does not intend to use its general land acquisition or condemnation authority to acquire open space in the corridor. If any land is acquired by the National Park Service, the procedures specified in all applicable federal land acquisition laws, including those in the MNRRA legislation, would be followed. The Park Service and the commission would work with other agencies to monitor potential open space opportunities and encourage acquisition by others of most proposed public lands in the corridor. This would be done under existing state and local open space land acquisition authorities. Local parks would remain in existing ownership. The Park Service would therefore be a minor public land manager in the area, having direct responsibility only for managing a small parcel of land immediately surrounding an NPS interpretive facility.

The Park Service would transfer management of its island lands to other public entities. The islands would be managed as natural areas stressing habitat protection and biological diversity regardless of the managing agency. Recreation use would be secondary to this natural area management emphasis.

Proposed Policies & Actions —

(1) The following criteria would be used for funding open space acquisition grants to state and local agencies. Priority would be given to proposals that meet one or more of the following criteria (not listed in priority order):

protects a resource that cannot be protected by other means

contributes to a continuous vegetated shoreline

connects existing open space and trails

provides open space near the river, connects to a site along the shoreline, or provides an overlook of the river

contains a threatened sensitive resource

protects valuable wildlife habitat and biological diversity

relocates an inconsistent land use

takes advantage of an abandoned right-of-way

provides passive open space

implements the regional open space plan

contributes to a continuous open space

The unit of government receiving the grant should also be implementing the other elements of the MNRRA plan. If the program is funded by Congress, up to 50% matching grants for acquisition and development would be made available to communities that have adopted the second tier of planning and management and whose plans and ordinances, and their enforcement of the same, substantially conform with the MNRRA plan. Matching grants for projects proposed by a park district, county, regional, or state government would be made available only if the community in which the project would occur has plans and ordinances that conform to the second tier of planning and management described in this document or the project is fully within the boundaries of an existing recreation area or historic facility not managed by the subject community

Exceptions to this requirement could be made if the action proposed by a park district, county, regional, or state government would protect sensitive resources identified in the MNRRA plan.

(2) Provide easements for future trail corridors in new developments.

(3) When developing parks and open space in natural areas, design the sites to preserve most of the land in a natural state. Large tracts of open space that are currently

undeveloped should stress passive recreation, fish and wildlife resources, plant communities, and biological diversity.

(4) Coordinate with communities to develop links from neighborhoods to the corridor.

(5) Require new major private developments and all public facilities to provide appropriate public trails and river access.

(6) Provide pedestrian and bicycle paths to the greatest extent practical, developing separate alignments in heavily used areas to reduce conflicts. Ensure access across all new and rebuilt public bridges. These crossings must be feasible based on engineering and safety considerations.

(7) Use abandoned railroad rights-of-way when available, and monitor potentially abandoned railroad property as shown on system maps kept by the Minnesota Department of Transportation for possible trail development or other open space needs.

(8) Locate trails as close to the river as practical and provide strategic connections to other trails in the area.

(9) Use existing authorities to avoid, minimize, or mitigate actions that would convert land acquired with federal recreation grant assistance to uses other than public outdoor recreation and open space.

(10) Encourage the formation of a nonprofit land trust or partnerships with existing land trusts to acquire open space lands and interests in lands along the river to supplement the capability of public agencies.

Commercial Navigation

Commercial navigation provides an economical, safe, and energy efficient form of transportation for millions of tons of freight each year. It provides the Twin Cities region and the upper Midwest with a vital link from the nation's agricultural heartland to domestic and international markets. Commercial navigation is an integral part of a larger intermodal system, including truck and rail transport. Its impact on the economy is local, regional, and national in scope. The terminals in the region are a focal point for shippers that serve a large part of the Upper Midwest. River terminals in the Twin Cities region annually handle 15 to 20 million tons of commodities (see Existing Barge Terminals and Fleeting Areas map). The river system provides transportation to and from the region, including:

grain and mill products shipped to processors throughout the nation's heartland and to export terminals at the mouth of the river near the Gulf of Mexico

other major long-haul southbound shipments including coal, potassic fertilizer, scrap iron, and petroleum coke

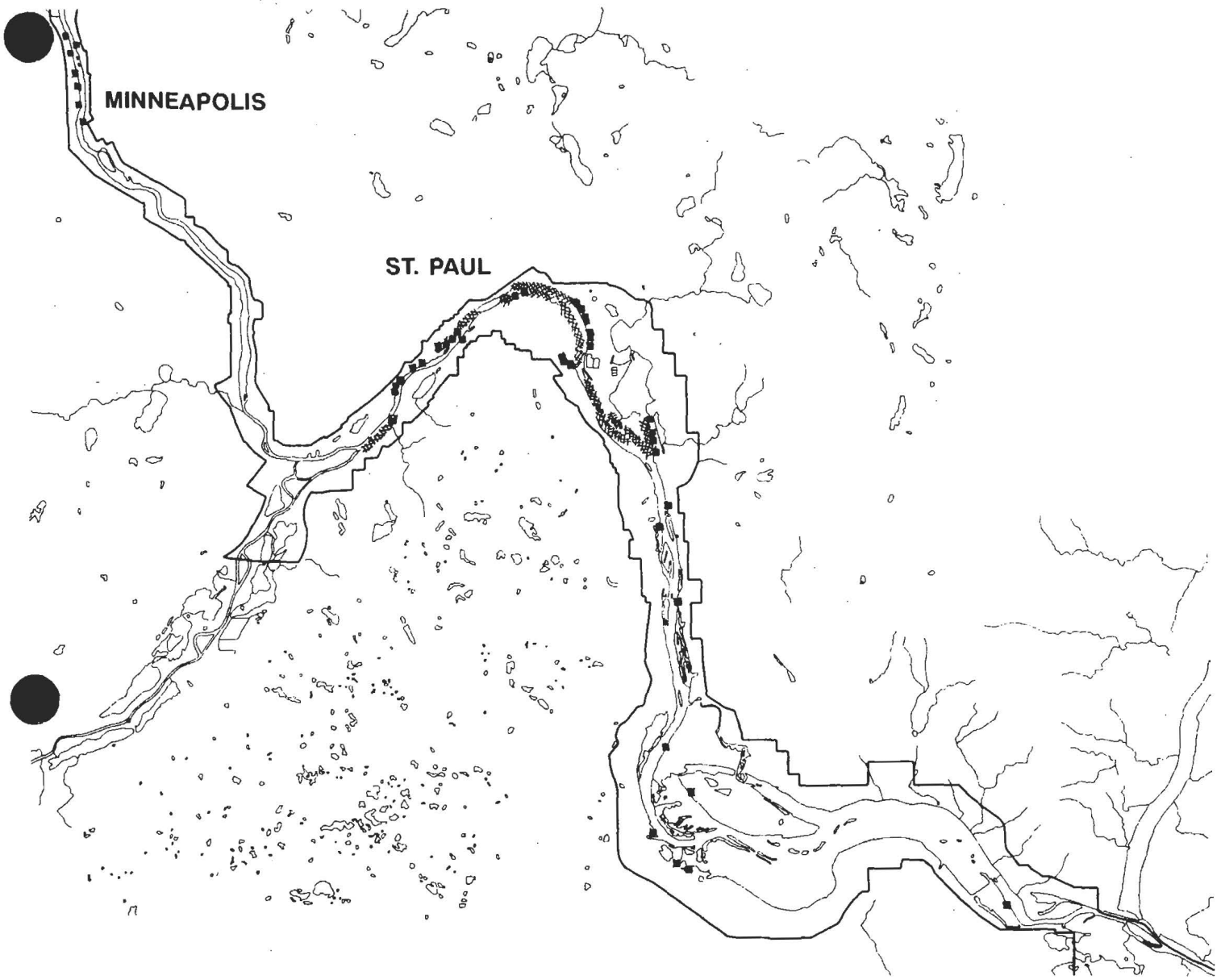
inbound shipments of coal, phosphatic and nitrogen fertilizer, salt, petroleum products, chemicals, cement, steel, and pipe

large local movement of sand, gravel, and petroleum products

The Upper Mississippi River–Illinois Waterway Navigation Feasibility Study, begun in 1993 by the Corps of Engineers and scheduled to take six years, focuses on the potential need to expand the river navigation system. Projections of future barge traffic levels are very important for the study. Since the opening of the navigation system, total barge traffic has steadily increased at annual rates averaging between two and three percent. The Corps of Engineers has contracted with independent experts that are projecting future commodity-specific barge traffic demands. These experts would be asked to identify the critical economic assumptions in their analyses and the uncertainties inherent in their projected demands. This information would be used by the study team to compile a "most likely future" set of barge traffic projections. In addition, other less likely sets of traffic projections would be developed to measure the risk and uncertainty of anticipated traffic demands. These sets of traffic projections would serve as an important input to identifying future opportunities and needs of the Upper Mississippi–Illinois navigation system.

General Concept

The working river is important to the economy of the metropolitan area and the entire upper Midwest. The need to continue the commercial navigation transportation system in the corridor, particularly for agricultural, construction, and energy commodities, is recognized in this plan. This proposal would achieve visions stressing the need to recognize the Mississippi as a working river, continue barge fleeting areas, and balance the needs of commercial and recreational river traffic. Commercial surface water use activities would be continued. Decisions about commercial navigation and facility activity would integrate the needs of the industry with the needs to protect natural, cultural, and economic resources in the corridor and provide for safe commercial and recreational traffic within the limits of river system capacity. River system capacity would include considerations of physical, biological, social, and safety limits. Nothing in this plan is intended to automatically preclude the consideration of new fleeting sites if corridor resources can be protected and an acceptable level of safety can be maintained. The use and expansion of commercial navigation, as an element of interstate commerce, is largely controlled by market demand and mode competition with consideration of environmental protection and safety. Local governments would continue to designate areas suitable for barge fleeting in their corridor plans consistent with this plan. The Corps of Engineers and Minnesota Department of Natural Resources would review these community plans for substantial conformity with the commercial navigation policies in the MNRRA plan. Specific fleeting area proposals would continue to require permit approval by the Corps of Engineers and the Minnesota Department of Natural Resources. The National Park Service would review all specific proposals for conformance with the MNRRA plan. A general review would be done periodically by the Mississippi River Coordinating Commission and the National Park Service to confirm that the cumulative activities are consistent with the findings and purposes of the MNRRA act and that the plan is being implemented. Local governments have the authority under Minnesota land use control law to regulate barge fleeting within their boundaries. The National Park Service would work with other federal agencies, state agencies, and local governments to encourage a coordinated approach to fleeting issues.



Boundary

Hydrology

Existing Barge Terminals and Service Areas

Existing Fleeting Areas

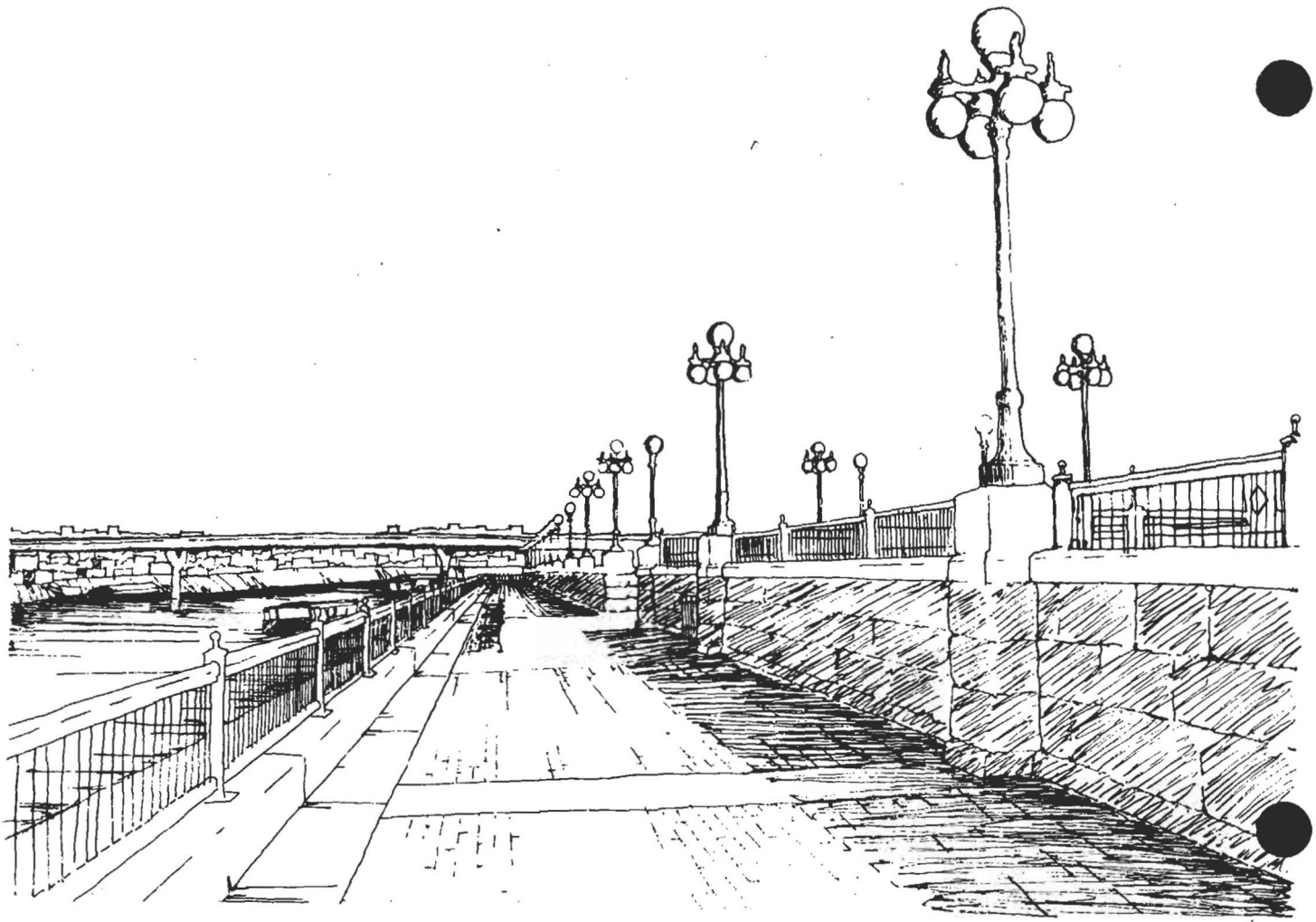
EXISTING BARGE TERMINALS AND FLEETING AREAS

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service
DSC • MAR 93 • 607 • 20008A

0 1 2 MILES

On Microfilm





A surface water use management plan would be prepared and would be a priority for MNRRA plan implementation. Among other features, the plan would provide guidance on:

suitable locations for additional barge fleeting and mooring areas

evaluating the potential for bottom disturbance, sediment resuspension, and shoreline disturbance from barge activities and recreational boating

suitable locations for dredge material disposal sites

the economic impact of surface water use

potential regulatory use controls and other measures for minimizing conflicts between commercial navigation and recreational boating use and among recreational uses

monitoring and evaluating river system surface use capacity, including considerations of physical, biological, social, and safety limits, and investigating the potential for different use zones along the river

developing alternatives to expanding existing or creating additional commercial fleeting areas, barge mooring areas, and recreational boating facilities

The plan would be developed with active public involvement, including representatives from all interested organizations, agencies, and the general public. It would be reviewed by the Mississippi River Coordinating Commission prior to approval.

Local governments, the Department of Natural Resources, and the Corps of Engineers would have the lead in implementing the following policies.

Proposed Policies & Actions —

(1) Consistent with the purposes for the Mississippi National River and Recreation Area as stated in the MNRRA legislation, continue the use of the river for commercial navigation, including barge fleeting activities, while protecting natural, cultural, and economic resources in the corridor. Set up monitoring programs to evaluate potential needs and impacts and allow for adjustments to existing fleeting areas or the establishment of new areas if needed to accommodate additional growth. Evaluate management alternatives to expanding existing areas or creating additional commercial fleeting areas. The benefits and impacts of commercial navigation on the local, state, and regional economies would also be considered when evaluating all plans and actions relating to commercial navigation system elements. The public would be involved in developing plans and policies affecting commercial navigation.

(2) To the extent possible, locate barge fleeting areas at least 200 feet from any marina and next to commercial or industrial areas. Fleeting area locations would be based on physical needs for effective operations subject to local, state, and federal environmental and safety regulations.

(3) Evaluate the potential for bottom disturbance and sediment resuspension from propwash and bank erosion caused by towboat wakes before making decisions to locate new (or relocate existing) barge fleeting areas. (Note: the impacts of recreational craft from propwash and boat wakes are addressed under visitor use management below.)

(4) Evaluate potential noise and visual impacts before making decisions to expand or locate barge operations.

(5) Interpret commercial navigation activities to corridor visitors and residents to create a broader understanding of the history of river traffic and the importance of the towing industry to the regional economy.

(6) Prohibit temporary casual mooring in the corridor except in emergencies.

(7) Continue maintenance of the navigation channel through periodic dredging by the Corps of Engineers. This includes the use of existing dredge material placement areas, most of which have adequate capacity to maintain the 9-foot channel in the river corridor during the life of this plan. Selection of new permanent placement sites is the responsibility of the interagency Mississippi River Resources Forum, which includes the Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the National Park Service, and the states of Minnesota, Wisconsin, and Iowa. Dredged material should be placed where it could be reused for beneficial purposes. New material placement sites in the corridor would be designated in a manner consistent with the visions and policies contained in this plan. See appendix E for information on existing channel maintenance activities.

(8) The impacts on local, state, and regional economies, with particular reference to agriculture, should be assessed and considered as part of the established federal, state, and local review process in connection with all plans and projects that could affect the commercial navigation system in the corridor.

These policies would be applied during local government planning activities and the Department of Natural Resources and Corps of Engineers permit processes, which include an assessment of the anticipated environmental impacts of proposed fleeting areas. The permitting process includes review by the National Park Service under the MNRRA act and opportunities for public input, including members of the barge industry.

There is a misconception held by some people that barge fleeting is not regulated. Local governments have the authority to identify and regulate the locations of permanent barge fleeting areas through community plans and ordinances. All specific proposals for barge fleeting areas are reviewed by the Minnesota Department of Natural Resources under state law, by the Corps of Engineers pursuant to section 10 of the Rivers and Harbors Act of 1899, and coordinated with the U.S. Coast Guard. Moored barges must not present an impediment to navigation (either commercial or recreational) and must not damage the integrity of the river.

Craft that tie off in undesignated areas (casual mooring) for a short period of time (generally less than a week) are currently not regulated. Temporary use of trees as mooring structures is not subject to permitting by the Corps of Engineers unless the trees are on government

property. However, the practice is discouraged due to its adverse environmental impacts. In contrast, permanently moored vessels do require Corps of Engineers permits. The Corps of Engineers and the Department of Natural Resources would require permits to ensure compliance with the plan, prohibit casual mooring, and achieve existing legal requirements.

The Corps of Engineers would have the lead in the commercial navigation management portions of this plan, working closely with the U.S. Coast Guard, National Park Service, Minnesota Department of Natural Resources, Minnesota Department of Transportation, and affected local governments. This would include taking the lead in facilitating the surface water use management plan. The National Park Service would coordinate with the Corps of Engineers to implement this plan and the monitoring program and would assist in securing funds for these efforts.

Management Zoning

Of the approximately 54,000 acres in the corridor, it is expected that less than 50 acres would be owned by the National Park Service. It is beyond the legislative mandate for this plan to cover all 54,000 acres in the corridor with an NPS management zoning scheme. The Harriet Island site (about five acres) would be classified as a park development zone (see discussion below regarding interpretive facilities). The 10 islands and one small upland parcel currently administered by the Park Service (totaling about 43 acres) would be managed as natural zones stressing wildlife habitat needs and biological diversity through a cooperative approach.

RESOURCES MANAGEMENT

This section discusses the general strategy for addressing resources management in the Mississippi National River and Recreation Area. Following completion of this comprehensive management plan, the National Park Service would work with other partners having a major interest in resource management in the corridor to prepare a more detailed resources management plan for the area. The resources management plan is an implementation plan prepared to detail research needs and proposals for managing resources in the corridor. It would summarize the resource values and purposes of the Mississippi National River and Recreation Area. The primary function of the resources management plan is to analyze and set priorities for resource management needs and problems. This priority list is used to determine specific actions and research projects necessary to effectively deal with resource issues. Many of these needs would require the preparation of action plans to further define and determine a course of action for specific resource issues, such as surface water use, pollution prevention, etc. The resources management plan would be prepared with public input. While the National Park Service would take the lead in preparing this plan, action plans might be facilitated by another more appropriate lead agency such as the Corps of Engineers or the Minnesota Pollution Control Agency.

The general resource management role of the National Park Service would be to monitor corridor-related resource issues and coordinate scientific research, data gathering, and habitat management actions as detailed in the subsequent resources management plan. A coordinated effort would be made by all partners to protect and manage sensitive and unusual habitat areas in the corridor. Research that would support corridor interpretive programs and

resource management objectives would also be encouraged. Research and resource management actions would primarily be the responsibility of existing federal, state, regional, and local entities. The Park Service would coordinate these efforts by others and provide historic preservation technical assistance, maintain the geographic information system (GIS) developed for the area, and serve as a central clearinghouse for information about the MNRRA corridor. Grants, cooperative agreements, and other sources of funding or technical assistance would be sought to assist partners in achieving the resource management policies for the Mississippi National River and Recreation Area.

Natural Resource Management

The natural resources of the area are considered to be the assets or values related to the natural world, such as plants, animals, water, air, soils, geologic features, fossils, scenic vistas, etc. Natural resources are those elements of the environment not created by humans. The most important natural resource in the corridor is the Mississippi River itself. It is a globally significant riverine ecosystem that must be protected and restored because it serves, in part, as a migratory corridor for wildlife, because it is essential to sustaining the biological diversity of the continent and the natural functions of the numerous aquatic and terrestrial communities of which it is composed, and because it supports the quality of life for the citizens who live and work and play on and near it.

The Mississippi River in the MNRRA corridor once offered good fishing for walleye, bass, pike, and even sturgeon. Schools of minnows and smaller fish, arthropods, worms, mollusks, protozoans, and the algae and vascular plants needed to support the trophic pyramid were found in the river. The growth of the metropolitan area was not good for native fish. Recent efforts by government, industry, and the public have helped native fish and other river life.

Air and Water. Pollution, especially water pollution, was identified as an important issue for the corridor during the scoping phase for this document. This plan has a vision that existing air and water quality pollution control standards would be met throughout the corridor, and the river should be swimmable and fishable through the entire 72-mile length. Improved water quality is a high priority for plan implementation, and fish caught in the river should be safe to eat. This plan encourages an emphasis on air and water pollution prevention and increased efforts for control and cleanup where necessary to address existing problems as outlined in the policies listed below. Improved monitoring and enforcement would be provided by agencies currently responsible for managing air and water quality in the corridor. Programs would be supported to improve enforcement of point and nonpoint source pollution standards. Pollution prevention and control policies should emphasize nonpoint sources because of the relatively greater impact such sources now have on the river. However, all sources of pollution would be given due consideration. Active cleanup efforts would also be undertaken to clear away waste and debris along the shoreline and efforts for spill prevention would be strongly encouraged. Existing federal, state, and local agencies that are currently responsible for implementing the federal Clean Water Act and the Safe Drinking Water Act and all other entities with an interest in water in the corridor would be asked to implement the policies below that are specific to water quality.

The Environmental Protection Agency and Minnesota Pollution Control Agency have the primary regulatory authority to address pollution problems in the MNRRA corridor. The NPS

role would stress education and the legislatively mandated review of water quality plans and projects requiring federal permits. The NPS would concentrate on providing advice from the perspective of an agency seeking to balance competing uses of the corridor under the visions, concepts, and policies in the MNRRA plan. This plan clearly recognizes the authorities of the Minnesota Pollution Control Agency or other existing agencies in establishing and implementing pollution control goals within the corridor. The Minnesota Pollution Control Agency would have the lead role in implementing most of the policies and actions that follow. The Minnesota Department of Agriculture (MDA) has regulatory authority in preventing and cleaning up groundwater contamination from agricultural chemicals, including pesticides and fertilizers.

It is beyond the scope of this comprehensive management plan to thoroughly address all the issues of pollution prevention and control in the area. Additional detail would be provided in a follow-up resources management plan and in related air and water quality management plans developed by the Minnesota Pollution Control Agency and other agencies with the assigned authority. The MNRRA plan encourages these efforts and encourages similar efforts for the entire Mississippi watershed that affects the MNRRA corridor.

Existing authorities are addressing pollution in the corridor so major new legal tools or regulatory programs are not proposed. Many existing programs are effectively reducing pollution in the corridor. The basic concept in the MNRRA plan is to stress pollution prevention and reduction efforts for the corridor using existing state and federal authorities, regulatory standards, and pollution prevention programs. Efforts to protect sensitive resources from pollution would be led by state and local governments under existing state law and existing (and updated) critical area plans and ordinances. Where latitude is allowed under state law, the MNRRA plan supports voluntary efforts. The plan encourages a somewhat greater emphasis than might have been given before the area was established as a unit of the national park system, but it recognizes that many factors, including impacts on natural, cultural, and economic resources, would be considered in the cleanup process. The plan supports new programs that are consistent with the intent and purposes of the MNRRA plan. The plan further encourages the effective implementation of existing programs with added emphasis and coordination to ensure protection for resources identified in the MNRRA act. It is envisioned that additional cleanup could be accomplished through incentives and voluntary efforts. The overall concept is that better implementation, consistency, and coordination would lead to sustainable development projects and higher environmental quality in the corridor.

Proposed Policies & Actions —

(1) Encourage compliance with existing air and water quality standards and provide incentives for reducing emissions and loadings beyond required levels. Potential new sources of pollution would be rigorously reviewed to maximize pollution prevention opportunities and to further reduce the effect of pollutant loadings on the quality of the fishery, the quality of drinking water supplies, or air quality in the corridor.

(2) Reduce runoff through coordinated efforts of state and local agencies to update development and enforcement standards for major new construction and redevelopment projects and by promoting increased stormwater retention in new construction and

redevelopment projects. Support existing educational, planning, and regulatory efforts by the Minnesota Pollution Control Agency, Metropolitan Council, and cities in the corridor.

(3) Develop educational programs to inform private landowners, public agencies, businesses, and industries about practices that would prevent pollution and help protect the Mississippi River watershed.

(4) Ensure strict enforcement of existing pollution control regulations. Increase cooperative ventures with industry to prevent or minimize pollution at the source through incentives and voluntary standards. Cooperate with other agencies to facilitate implementation of pollution prevention programs. Provide incentives to promote voluntary and innovative pollution prevention actions and to increase awareness of pollution-related issues in the MNRRA corridor.

(5) Encourage pollution prevention and increased pollution control in selected areas to protect sensitive resources in the corridor.

(6) Reduce the use of chemicals for fertilizer and pest control in agricultural and residential areas and on public lands, which would support sustainable land treatment activities and integrated pest management practices.

(7) Encourage ongoing efforts to clean up corridor lands that are adversely affecting or could adversely affect the river environment, such as landfill sites that are leaking, sites that could present a hazard to public safety, or sites that could delay recreational or other desired uses of the corridor.

(8) Evaluate noise issues, including noise from commercial and recreational boat traffic on the river and traffic on parallel roads and bridge crossings. Improve standards, education, mitigation, and enforcement if they are determined inadequate.

(9) Reduce the use of salt on area roads by encouraging greater use of alternative materials and increased efficiencies in winter maintenance, considering the needs of public safety.

(10) Increase the use of devices such as "skimmers" on small tributary creeks to capture and reduce the amount of floating debris carried into the river.

(11) Advocate an accelerated conversion to double-hull barges (including those under 5,000 gross tons) and encourage efforts to reduce the potential for spills from rail cars and tanker trucks carrying hazardous cargo through the MNRRA corridor. It is recognized that there are relatively few single-hull barges operating in the corridor (less than 3%). However, it is desirable to provide the additional protection of double-hull barges for all commercial traffic carrying hazardous substances through this congressionally established area.

(12) Complete the cleanup of contaminated sites more quickly by encouraging a higher priority rating for state and federal Superfund sites in the corridor. The intent of this policy is to recognize that the cleanup sites are now in a congressionally established unit of the national park system, and therefore deserve updated consideration regarding the site's impact on the environment. Care would be taken to ensure that sites outside the

corridor that pose a significant risk to human health are not diminished in priority relative to sites of lower risk inside the corridor. Generally, other things being equal, preference would be given to a site in the corridor.

(13) Encourage a comprehensive program of activities to pursue swimmable and fishable goals and achieve state and federal water quality standards throughout the corridor. These include a broad range of educational, interpretive, incentive, and enforcement activities.

(14) Encourage alternatives to lawns in the shoreline area to reduce fertilizer and pesticide runoff into the river.

(15) Encourage efforts to develop and implement spill prevention and response plans for the river. This should include all potential sources, such as point sources and pipelines, railroads, barge traffic, and other transportation modes.

(16) Support regional pollution prevention and control plans for the metropolitan area.

(17) Cooperate with the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, and others in establishing ongoing water quality monitoring programs to determine the types, loadings, and sources of pollutants being discharged to tributaries of the Mississippi River in the corridor (such as the Minnesota River), and work with watershed management organizations to incorporate monitoring results during revisions of local water plans.

(18) Support the Department of Natural Resources in developing a program to require all new marinas to have dumping stations to help prevent the discharge of human waste into the river. Encourage existing marinas to install and maintain dumping stations.

(19) Protect streambanks and water quality from the negative impacts of recreation activities.

(20) Review federal regional air quality permit applications to assist in preventing further deterioration of the corridor's air quality.

(21) Encourage rigorous enforcement of federal, state, and local floodplain and wetland protection policies and restore degraded wetlands to maintain and improve their natural cleansing abilities and protect water quality in the corridor.

(22) Support programs to better manage and decrease the volume of toxic wastes in the river corridor. Encourage programs to prevent and minimize the adverse impacts from toxic material use, moving toward a goal of less toxic materials used in the corridor. Encourage regulatory and pollution prevention efforts that would control toxic emissions into the corridor from new and existing sources.

(23) Work with the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, and other involved organizations to identify ways to encourage and supplement efforts to prevent and control sources of pollution, especially phosphorus loading, to the Minnesota River, which directly affects the quality of water in the MNRRA corridor.

(24) Encourage timely completion of the metropolitan combined sewer overflow separation project.

(25) Address the issue of contaminated river bottom sediments in the resources management plan, particularly in response to potential increases in river traffic. Strategies might include working with the River Resources Forum to continue management of dredging activity to reduce adverse impacts, restricting the placement of dredged material, establishing a coordinated toxics monitoring program, monitoring the effect of river traffic on the resuspension of sediment, developing biological criteria to more effectively assess the biological integrity of the corridor, and reviewing loadings and standards applied to toxic pollutants.

(26) Encourage efforts to reduce the effects of two-cycle boat engines on water quality in the river.

Native Flora and Fauna, Natural Communities, and Biodiversity. The Mississippi River corridor passes through the eastern deciduous forest and the tallgrass prairie biomes. Historically, land in the corridor was covered mainly by oak, woodlands, and brush. Other vegetation types included floodplain forest, upland prairie, and maple-basswood forest. The Minnesota Natural Heritage Program has identified nine additional natural community types in the corridor. Landcover data derived from 1988 satellite imagery for the corridor identified 28% as developed. The area contains a variety of wildlife habitats. About 50 species of mammals, 270 species of birds, and 150 species of fish reside in or travel through the corridor (see species list in appendix M). Research has shown that a 300-foot-wide natural corridor adjacent to the shoreline is desirable for wildlife movement along the river.

Protecting natural plant communities and native wildlife and plant diversity is a priority of the plan. The natural functions of the riverine ecosystem would be protected and enhanced.

Proposed Policies and Actions —

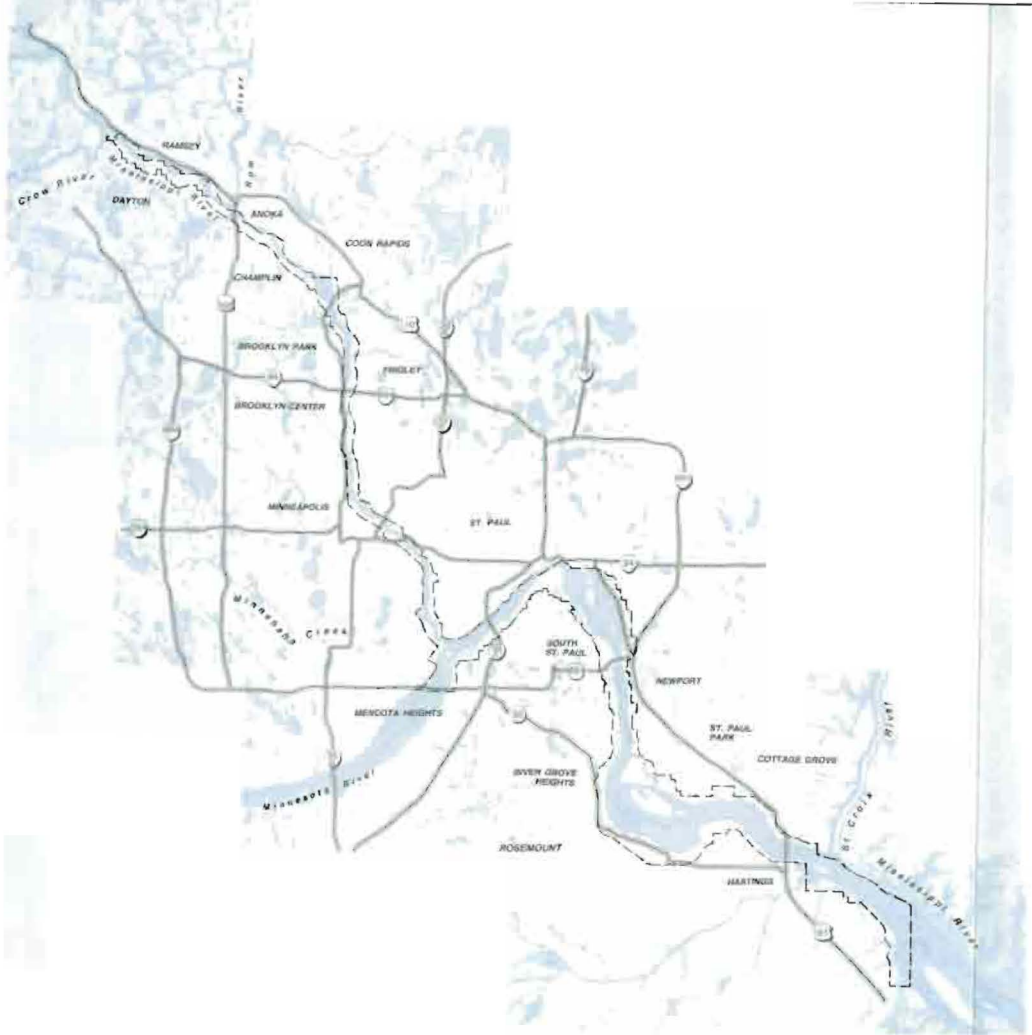
(1) Protect wildlife habitat and biological diversity.

(2) Work to increase and restore wildlife habitat and biological diversity in development projects. Protect bottomland forests and riverine habitats.

(3) Encourage uninterrupted vegetated shorelines that exceed the minimum 40-foot dimension (as discussed in site development policy number 2 in the land and water use section above) to facilitate wildlife movement along the corridor.

(4) Coordinate land development policies to protect natural resources using a system of preservation areas (as described in site development policy number 2 in the land and water use section above).

(5) Preserve native vegetation or encourage revegetation; use native and other compatible floodplain vegetation in redevelopment projects; develop a cooperative program for revegetating existing denuded areas along the shoreline; and use extensive native vegetation, including native trees and shrubs, in the more formal landscape treatments appropriate to downtown areas.



BOUNDARY

WETLANDS, FLOODPLAINS, OR SLOPES EXCEEDING 12%

0 2 4 MILES

NORTH

SENSITIVE NATURAL AREAS

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service

ON MICROFILM



CULTURAL RESOURCES
MISSISSIPPI NATIONAL RIVER & RECREATION AREA

ON MICROFILM

Threatened and Endangered Species. In accordance with the Endangered Species Act, endangered and threatened species would continue to be protected in all areas under direct NPS jurisdiction. The National Park Service has consulted with the U.S. Fish and Wildlife Service and would continue to consult with them on the management of listed species. A coordinated effort would be undertaken to preserve and protect threatened and endangered species in the national river and recreation area corridor. Endangered species are listed as a sensitive resource in this plan and their protection would be a high priority throughout the corridor through a partnership approach. This plan emphasizes the need for endangered species habitat efforts, including those aimed at state-listed species, while recognizing that implementation would depend primarily on the commitment of other agencies and the private sector. The National Park Service would coordinate with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources to further identify and protect federally and state-listed species and their habitats. This plan also supports efforts to control the spread of nuisance exotic species in the corridor, which often compete with threatened and endangered species for habitat. The Department of Natural Resources would have the lead in further developing this effort and the resources management plan would provide some additional detail.

Proposed Policies & Actions —

(1) Comply with federal, state, and local requirements to protect endangered, threatened, and rare species (including state-listed species).

(2) Encourage preservation and enhancement of habitat that is of special value to threatened and endangered species.

Floodplains and Wetlands. Floodplains and wetlands are listed as sensitive resources in this plan and are a high priority for protection in the corridor. They are very important areas for reducing the adverse effects of flooding, maintaining water quality, providing wildlife habitat, preserving visual variety, and maintaining biological diversity. They should be preserved, restored, and increased in the corridor. They would be protected and enhanced by increased education efforts, open space acquisition, preservation incentives, voluntary programs, and rigorous implementation of existing state and federal law and executive orders. The National Park Service would work with other agencies with lead responsibilities in this area, including the Corps of Engineers, the U.S. Fish and Wildlife Service, Environmental Protection Agency, and Minnesota Department of Natural Resources to emphasize resource protection and coordinate their activities.

Proposed Policies and Actions —

(1) Comply with federal, state, and local requirements to avoid floodplain and wetland development.

(2) Protect existing wetlands and, where practical, restore degraded wetlands.

Natural Resource Research Needs. Acquisition of additional natural resource baseline data and incorporation in the GIS database would be the primary focus of natural resource research activities in the Mississippi National River and Recreation Area. A natural resource focus group reported on research needs in the area. Recommended research areas include the

status and condition of endangered species, vegetation (including species composition), special ecosystems and habitats, ecological information on biological communities, historic wetland areas, and mineral resources. The focus group report is on file at MNRRA headquarters in St Paul. Specific research needs would be determined in the forthcoming resource management plan.

Cultural Resources Management

The cultural resources of the area consist of evidence of past activities on or near the river. These include burial mounds, campsites, village sites, and ethnographic resources that illustrate the nature of the occupation by Native Americans. The fur trading period, early settlement, and later urbanization, as well as agricultural and industrial activity on or near the river, are included in historic districts, national historic landmarks, national register properties, and locally designated historic sites. Additional properties that have not yet been evaluated lie within the corridor boundaries. The MNRRA boundaries contain more than 60 sites that are either on or eligible for the National Register of Historic Places. The lands currently owned by the Park Service have no national register properties.

All currently listed national register properties or those properties that have been determined eligible by the Minnesota Historic Preservation Office for national register listing were identified, plotted on the cultural resources map, and entered in the NPS geographic information system (GIS) database for MNRRA.

The State Historic Preservation Office (SHPO) would continue to have the central role in protecting cultural resources in the MNRRA corridor. Cities would also play a key role in the designation and protection of historic properties, with an emphasis on local heritage preservation ordinances. The plan recognizes that the "Certified Local Government" (CLG) program, which is administered by the State Historic Preservation Office and the National Park Service to certify and support local preservation programs, has special potential to advance plan goals. Ongoing efforts, such as the Minneapolis project to rehabilitate the Washburn-Crosby mill complex, are supported by this plan. NPS activities would stress interpretation and public education on the value of protecting our cultural heritage. Additional details on NPS, SHPO, and local government activities in the corridor can be found in the interpretation and partner roles sections of this document.

Proposed Policies & Actions —

(1) Continue the historic use of historic properties, particularly where interpretation of historic themes is planned, in preference to changing the use, even though the change might be compatible with the historic character of the resource. New uses of historic properties should be consistent with other policies in the MNRRA plan.

(2) Encourage open space land use in order to protect significant archeological resources. Provide adequate identification, evaluation, and site planning to preserve these resources.

(3) Preserve historic structures and cultural landscapes in their present condition if that condition allows for satisfactory protection, maintenance, use, and interpretation, or if another treatment is warranted but must be delayed.

(4) Rehabilitate historic structures and landscapes for contemporary uses if they cannot adequately serve in their current condition, and if rehabilitation would not alter integrity or character.

(5) Restore historic structures and landscapes to an earlier appearance if restoration is essential to public understanding of the cultural associations of the area and sufficient data exists to permit restoration with minimal conjecture.

(6) Encourage economic activities that preserve and rehabilitate historic resources in the corridor consistent with other policies in the MNRRA plan.

(7) Encourage cities in the corridor to participate in the certified local government program administered by the State Historic Preservation Office of the Minnesota Historical society.

(8) Develop incentives to retain historic uses and preserve cultural resources.

Cultural Resource Research Needs. While available data were compiled for this plan, a comprehensive inventory of potential properties eligible for the National Register of Historic Places should be conducted for the corridor either by the Minnesota Historic Preservation Office or a federal, state, local, or private group in the area. A complete inventory of all historic resources within the boundary of the Mississippi National River and Recreation Area is needed to provide an adequate database for future MNRRA resource management. Potential cultural landscapes were not identified as an issue during the scoping phase for this plan and no cultural landscapes are included in the current inventory. However, this would be addressed during the resources management plan process and appropriate inventories scheduled if determined necessary.

The Minnesota Historic Preservation Office is transferring the state's archeological site inventory to a computerized database that would aid in identification of sites within the MNRRA boundaries and provide the information necessary to determine research required. This information would be incorporated into the GIS database when it becomes available.

A complete inventory of archeological sites in the corridor is a priority research need. The identification of sites of importance to Native Americans remains to be done. No comprehensive listing of these sites now exists.

A variety of basic documents is needed. These include an archeological overview and assessment, ethnographic overview and assessment, a scope of collections statement, and a historic resource study. The purpose of these documents is to provide a complete inventory of historic resources throughout the corridor. These documents would provide guidance for the management of the Mississippi National River and Recreation Area. These projects would be more fully defined and additional research needs identified in the resources management plan for the area.

Economic Resource Management

The MNRRA legislation listed the importance of economic resources along with other traditionally cited national park system resources, and the plan must "recognize existing

economic activities in the area and provide for their management." "Nationally significant economic resources" were not defined in the legislation. The act charges the commission with developing "policies and programs for the commercial utilization of the corridor consistent with the values for which the area was established." Extensive economic resource data was collected and mapped for this plan. Land use and zoning data, barge facility information, and numerous socioeconomic factors were included. As with natural and cultural resource research needs identified above, existing economic resources in the corridor should be more intensively inventoried and evaluated. The National Park Service would encourage and facilitate this research, which would be carried out primarily by others. A more thorough inventory is needed following plan approval to assist in plan implementation. As is typical of any thorough research or inventory project, it should be preceded by more analysis of the purpose of the study (based on the legislative history), agreement on the definition of "economic resource," and a comprehensive identification of what should be included in the inventory.

Proposed Policies & Actions —

Following are policies and actions for economic resource management, most of which are also found in other parts in the plan and could be explained in greater detail in those sections of this document.

(1) Recognize the importance of economic activities and provide for commercial use in the corridor.

(2) Encourage business to invest in the river corridor consistent with the values identified in the MNRRA legislation.

(3) Preserve riverfront land for economic uses that rely on the river.

(4) Protect historic buildings for adaptive reuse.

(5) Encourage economic investment that preserves and rehabilitates historic structures.

(6) Continue existing land uses in the corridor.

(7) Allow redevelopment and expansion of corridor businesses.

(8) Encourage sustainable economic activities that improve the quality of life.

(9) Promote tourism in the corridor.

(10) Continue barge fleeting areas and allow for some expansion in fleeting activity.

(11) Interpret the working river.

(12) Encourage special events that draw people to the river.

(13) Increase visitor access and recreational use in the corridor.

(14) Minimize NPS land acquisition.

(15) Preserve riverfront investment and encourage riverfront improvement with a wide variety of land uses.

(16) Encourage local land use control and local, regional, and state economic development activities that promote sustainable development.

(17) Promote coordination and consolidation of regulations for new development and redevelopment activities.

(18) Recognize the transportation system's important role in the metropolitan economy and how transportation is necessary to preserve economic resources in the corridor.

Economic Resource Research Needs. Additional research and data collection would be done for economic resources. This comprehensive management plan/environmental impact statement includes considerable data and analysis on economic resources and impacts. A larger economic inventory was beyond the scope of the plan, and would have added considerable time and costs to the project schedule. This inventory, like several more detailed inventories of natural and cultural resources identified above, would be a priority during plan implementation. This research would include a broader inventory of transportation resources in the corridor and an analysis of future trends as identified in metropolitan transportation planning documents. An inventory of the number of jobs in the lower river was completed by Metro East Development Partnership during this planning process. This could be updated and expanded to include the entire corridor following agreement on definitions and a complete listing of research needs. There is a need for new forecasts and analyses of barge traffic trends by commodity and by terminal. Along with additional analyses and a comparison of barge transportation costs with competing modes, an assessment should be made of the long-term effectiveness of barge transportation and its impact on regional commodity producers and consumers. Research would investigate the relationship between barge transportation capacity and freight rates in the corridor. Previous barge fleeting requirement analyses and studies on the direct, indirect, and induced economic impacts of commercial navigation should be updated.

Research should include more detailed analysis of local, regional, state, and federal government expenditures for parks and recreation. Surveys and analysis to determine recreational land and facility benefits and estimates of tourism expenditures in the corridor are also needed.

Additional economic research and inventory needs would be identified in the resource management plan to be completed following approval of this plan.

Recreation Research Needs

During the course of the MNRRA planning process, local professionals generated lists of research needs specific to the corridor through participation in focus groups. One group categorized their concerns under the topics of public attitudes assessment and recreation user assessment. The focus group report is on file at MNRRA headquarters in St. Paul.

General information needs in recreation resource management, an assessment of research needs specific to the Mississippi National River and Recreation Area, and a list of information needs gained by combining the suggestions of several sources are available at the national river and recreation area headquarters. The National Park Service would coordinate research relating to visitor perceptions, use, and impacts to corridor resources. Research should also be done to investigate the effectiveness of corridor interpretation and education programs and facilities.

VISITOR USE AND INTERPRETATION

Visitor Activities and Recreational Resources

A variety of passive and active resource-related recreational activities would be encouraged in the MNRRA corridor. These include fishing, hunting, boating, canoeing, cross country skiing, snowshoeing, hiking, bicycling, jogging, picnicking, taking photographs, birding, and participating in a variety of interpretive and educational programs.

People now enjoy a wealth of recreational, educational, and contemplative activities in the corridor. The Coon Rapids dam attracts anglers and other river users from spring through fall. The river above the dam offers good boating and fishing. Above the Rum River confluence canoeists paddle the segment of the Mississippi River designated by the state as wild and scenic.

Recreational and residential users share the river corridor with commercial river traffic and industry below the Camden bridge in Minneapolis. Commercially operated excursion boats show residents and tourists the river from St. Anthony Falls to Hastings. Pleasure boats power past Pigs Eye and climb the locks as far as Minneapolis. Industrial uses are found along several stretches of the river, most commonly in North Minneapolis and from St. Paul downstream to Cottage Grove.

The Mississippi from the cities of Dayton and Ramsey to Hastings once offered good fishing; walleye, bass, pike, and even sturgeon were caught. Schools of minnows and smaller fish, arthropods, worms, molluscs, protozoans, and the algae and vascular plants needed to support the trophic pyramid all existed before much of the area developed. The growth of the metropolitan area was not good for native fish, nor was the arrival of exotics such as carp. Many recent efforts by government, industry, and the public have helped native fish and other river life. Biological diversity has increased in many areas, and trophy walleyes have recently been caught. Fishing is good again in many parts of the corridor, but some consumption advisories still exist.

This plan promotes more recreational use of the Mississippi for a variety of activities, including boating, fishing, canoeing, and sightseeing. River-related recreational opportunities would also be extensive along the riverbanks. Places for hiking, biking, or jogging along a riverside trail, picnicking, or just sitting in one of the many parks in the corridor would continue to attract people to the river. The river is a magnet for terrestrial and aquatic recreation, and this would be enhanced. The use of canoes, rowboats, kayaks, or other boats without motors would be encouraged. More liberal surface water use management would also be encouraged to provide additional quiet zones in the corridor and protect river shorelines.

Tour boat operations and other visitor-oriented commercial enterprises would be promoted. Safety would be a high priority in all these activities. If additional regulations are necessary, they would be established under existing legal processes, and public and agency input would be encouraged.

The primary direct involvement of the National Park Service in visitor activities would be through interpretive and educational programs, facilitating and coordinating the implementation of a corridor-long trail system, orientation to available interpretive services, education for low-impact recreation, visitor use impact monitoring, marketing research, and interpretive training for visitor contact personnel.

Proposed Policies & Actions —

(1) Use potential impacts and area characteristics such as resource quality, population density, existing development, and recreation use levels to evaluate the types of visitor activities and levels of access appropriate for specific areas in the corridor.

(2) Establish activity zones and manage visitor access where necessary to minimize use conflicts and enhance public safety.

(3) Provide diversity in public park and recreation facility types, high quality in construction, and some consistency in visitor use facility design along the corridor.

(4) Develop facilities, programs, and media to orient visitors to year-round recreational and interpretive opportunities and to interpret resources and their significance.

(5) Encourage resource-related special events and major interpretive activities that contribute to visitor understanding and appreciation of natural and cultural features.

(6) Coordinate and cooperate with the many excellent interpretive and recreational programs that already exist in the corridor. Identify areas where NPS interpretive activities could build on present programs or fill a missing need.

Visitor Use Management

This plan proposes to attract more visitors to the river in areas that are not already overcrowded or causing unacceptable impacts to corridor resources. Access would be provided at levels and locations consistent with resource protection. Some sensitive natural and cultural resources might not be physically accessible but could be visible from adjacent areas. Links would be developed to integrate neighborhoods into the corridor. Many visitor uses would be made accessible to persons with disabilities. A follow-up visitor use management program would be developed to assess visitor use issues and identify more detailed management strategies to keep impacts within acceptable levels. Cooperative efforts would be explored to link the river to parks, neighborhoods, open space, activity centers, and historic resources. Visitor access and activities would be managed to reduce conflicts among users. Additional visitor use would not be promoted in already crowded areas.

All general management plans for units of the national park system must, by law, address the issue of carrying capacity. Carrying capacity refers generally to a level of use a resource can sustain before incurring unacceptable change. It includes physical, biological, and social considerations. Current approaches on this issue argue that carrying capacity is not a simple number that can be applied to all resources under all circumstances. Rather, carrying capacity defines quantifiable objectives that specify desired natural, social, and managerial conditions for a resource. To establish a carrying capacity program, it is essential to develop a systematic framework to monitor conditions over time. The monitoring begins with the establishment of baseline conditions for an area, against which future conditions can be assessed.

Various proven frameworks exist that could be used for monitoring resource quality in the corridor. These include visitor impact management, limits of acceptable change, quality upgrading and learning, and the recreational opportunity spectrum. The Park Service also has a pilot program underway to develop a system to address visitor use planning and management in NPS areas. All of these approaches define indicators and standards of quality. Indicators are measurable variables that define the quality of the resource condition and visitor experience. Standards specify the desired or acceptable conditions of indicator variables. Determinations of carrying capacity are then made by monitoring the condition of the those variables. When indicator variables do not meet the standards specified, capacity has been exceeded and prescriptive management action is normally necessary to bring indicators back into compliance with standards.

In association with development of a visitor use management program, an *ad hoc* task force would be convened under the leadership of the Metropolitan Council, Department of Natural Resources, and the National Park Service. Any interested community or agency with parkland in the corridor would be invited to participate in the task force. The task force would work to define desired conditions and appropriate indicators and standards for parklands in the corridor. A monitoring framework would be established. The task force could follow one of the established systems or develop another strategy. Desired conditions and objectives would vary for specific areas of the corridor and would require different capacity thresholds. The impacts on commercial navigation would be considered in recreational capacity management efforts along with other relevant activities that affect visitor use in the corridor. The impact of recreational boat wakes on bank erosion and sediment resuspension from propwash would also be considered in visitor use management determinations. All interested parties would have input to recreation capacity management planning.

Proposed Policies & Actions —

(1) Encourage new major private developments and all public facilities to provide public trails and river access.

(2) Continue the use of existing marinas and river access sites. Monitoring programs would evaluate potential impacts and allow for adjustments to existing marina capacity or the establishment of new areas. Development of new marinas and launch ramps would be based on analyses of demand, impacts, and use capacity conducted through a follow-up visitor use management program. This would include consideration of the need for an adequate number of public launch ramps in the river corridor.

(3) Provide additional pedestrian and bicycle paths in the corridor consistent with resource preservation. Separate facilities in heavily used areas and ensure paths across all new and rebuilt bridges that are constructed using public funds. These crossings must be feasible based on engineering and safety considerations.

(4) Acquire abandoned railroad rights-of-way for trail development or other open space needs consistent with the National Rails to Trails Act.

(5) Encourage surface water use regulations such as no-wake zones on the main channel and in backwater areas to protect selected shorelands from erosion and reduce conflicts among recreational activities on the river while not significantly affecting the existing commercial navigation industry.

Under current law the National Park Service does not have the authority to implement surface water use regulations. The National Park Service would coordinate efforts and work with other agencies to develop a comprehensive visitor use management program, which could include recommendations for additional area-specific surface-use regulations. If additional regulations were to become necessary, they would be established under existing legal processes, and public and agency input would be encouraged. Implementation of surface water use regulations would rely heavily on the cooperation of area partners, such as the Department of Natural Resources and corridor communities. Surface water use regulations (speed limits, no-wake rules, horsepower limits, etc.) are adopted by local government ordinances. Before an ordinance could take effect, it must be reviewed by the Department of Natural Resources and found consistent with statewide standards. If the rule is to affect areas in more than one county or city, essentially identical ordinances must be adopted by all local governments with jurisdiction (both sides of the river, for example, although if a county adopts the ordinance it would not also have to be adopted by the affected cities). Once an ordinance is in place, it would be enforced by any law enforcement agency with jurisdiction, including the Department of Natural Resources.

(6) Assess the adequacy of visitor safety and enforcement in the corridor. Increased user safety, especially in the urban areas of the river corridor, would be a high priority for plan implementation. Actions could include adequate unbreakable lighting, emergency stations for calling for help, increased police patrols, and safe facility and trail designs.

(7) Provide visitor access and programs in compliance with all federal, state, and local regulations. Facilities would be accessible to all users to the maximum extent practical. For example, accessible fishing docks would be provided at selected locations. Compliance with the Americans With Disabilities Act throughout the corridor would be ensured.

(8) Evaluate the impacts of recreational boat wakes on bank erosion and the effects of propwash on the resuspension of contaminated sediment. Develop mitigation measures if impacts are beyond acceptable limits.

Interpretation, Education, and Visitor Services

Interpretive and educational activities and facilities would be designed to help secure the visions described earlier. Those visions particularly relating to interpretive activities are:

The public is aware through coordinated interpretive programs of the status of corridor resources and their stewardship.

The public has an understanding and appreciation of the multiple uses and purposes of the river.

Opportunities are provided to learn about and experience corridor resources.

The public has opportunities to learn about historic and archeological resources in the corridor through interpretive and educational programs.

Archeological and historic preservation, enhancement, and interpretation reflect the diversity of the people who have lived in the river corridor.

Special features are identified, developed, and promoted as tourist destinations consistent with the protection of cultural, natural, and economic resources.

Interpretive and educational opportunities provided in the corridor reflect cultural and ethnic diversity and are physically and financially accessible to all area residents and visitors.

The public has opportunities to learn about natural resources and values in the corridor through interpretive and educational programs.

Opportunities are provided for observation and interpretation of the Mississippi's role in the regional and national economy.

The National Park Service would play a significant role in interpreting corridor resources and providing visitor services. The Park Service would construct one interpretive center/headquarters, cooperate with partners to develop others, assist in staffing and programming at some, conduct interpretation and education programs at several places throughout the corridor, and design and produce interpretive media. While the Park Service would have a lead role in coordinating interpretive planning, much good work is already being done in the corridor and partnerships would play a significant role in providing and coordinating visitor services and interpretation. These actions would be designed to achieve the visitor experience goals, interpretive themes, and program objectives described below. Following are the major concepts for interpretation of corridor resources. A more detailed interpretive action plan would be prepared to implement the comprehensive plan. This would provide additional details on interpretive themes, corridor interpretive facilities, specify media and estimate their costs, and detail interpretive program needs. It would be developed in cooperation with all the key interpretive agencies and organizations in the corridor.

Visitor Experience. Experiences that would allow MNRRA visitors to best enjoy and appreciate and learn and benefit from their visit are listed below. Achieving these experiences

would involve partnerships, interpretive facilities and media, and interpretive and educational activities designed for all visitors, including those with special needs. Visitors should have the opportunity to:

understand and learn more about the ecological, cultural, economic, scenic, scientific, educational, and recreational values of the river corridor

directly experience the river by boat, canoe, or tour boat, or from the shore

feel safe while using corridor areas

experience the corridor without conflict with other visitors or private landowners

view plants and animals living on, next to, and underneath the water

view the cultural resources in the corridor

see activities that represent the working river

gain important and interesting information about the corridor as described by the interpretive themes identified below

demonstrate their caring about the river (e.g., volunteer opportunities, public involvement, friends groups, donations)

understand how their lives affect and are affected by the river

understand corridor management issues and identify how they can help solve problems

find activities and experiences that meet diverse interests, skill levels, abilities, learning styles, ages, and ethnic backgrounds

appreciate the 72-mile Twin Cities portion of the Mississippi River in context with its source in northern Minnesota, relationships to other metropolitan area rivers, and its relationship to the entire Mississippi as a regional, national, and international resource

Interpretive Themes. There is an almost endless list of stories and messages that could be conveyed about the Mississippi River. The interpretive themes listed below are the key ideas and stories that would be interpreted for corridor visitors. These themes would be further detailed in the follow-up interpretive plan referenced above.

(1) The Mississippi is one of the world's great rivers. The Mississippi is one of the longest rivers in the world. Conditions throughout the massive watershed can affect the river. It drains over half of the United States and has the second largest drainage basin in the world. It bisects the country, sustaining biological diversity throughout the continent. It is a force in American history, transports American products, and populates American mythology, arts, and literature. It is a name recognized worldwide.

(2) The stories of human life along the Mississippi River have unfolded over 12,000 years. These stories, about people who have lived along the river in villages, cities, and on farms, range from the routine to the extraordinary. The daily lives of many of these people have been intertwined directly with the river as a source of food, transportation, recreation, inspiration, and livelihood.

Human relationships with the Mississippi River, while changing over time, illustrate close interconnections among geographic, ecologic, economic, and cultural systems. The history of the cultures and individuals who have lived in association with the river is a dynamic story that helps us understand our modern relationships to these systems.

The presence of Native Americans along the Mississippi, from the retreat of the glaciers to the present, has left a legacy of cultural traditions, spiritual beliefs, place names, and legends. From the Laurel Culture to the Hopewell Indians of the Mississippi Culture to present-day Dakota and Ojibwa, Native Americans have been a part of the unfolding history of the river. Many sites in the corridor were important to the Dakota who traveled the shores and plied the waters of the river. The confluence of the Mississippi and Minnesota Rivers, given the name Mdo-te (Mendota), is an important place for the Dakota.

Native Americans followed the seasons and moved throughout the river valley, tending gardens of corn, beans, and squash during the growing season, hunting, and moving deep into the woods to escape freezing winter winds. Within the MNRRA corridor boundaries, numerous Native American sites have been identified, such as the burial mounds at Mounds Park and the site of the village of Kaposia.

Early contact between Europeans and Native Americans on the Mississippi was focused around the fur trade. With the establishment of Fort Snelling and its Indian Agency in 1819, the United States began an attempt to regulate fur trade in this area and extend its influence with the Native American people. Through treaties negotiated beginning in 1837, the United States purchased Dakota and Ojibwa lands along the Mississippi.

During the 1850s a rush of settlers, largely from the east, came up the Mississippi on steamboats. River towns, including St. Anthony, Minneapolis, and St. Paul, grew rapidly into culturally diverse communities. For a time, on the same street, one could encounter old voyageurs, Dakota, Ojibwa, and Winnebago people, southern tourists with a retinue of slaves, free African Americans, Metis ox cart drivers from the Red River Valley, utopian idealists from New England, eastern capitalists, Maine lumbermen, and farmers from Germany — women, men, and children of all ages and from many parts of the world.

Following the Civil War, with expansion of railroads east and west, life in the river towns changed. Settlement expanded away from the river but maintained important connections to the river cities. Trees cut in northern Minnesota were floated down the Mississippi to sawmills in Minneapolis, mills that provided lumber to build towns across the western prairies. As the northwest developed, people and goods flowed through the river cities; economies expanded to meet new needs for warehousing, commerce, and service.

During the 20th century, people from all over the world have chosen the region for their homes. The stories of immigration, cultural adaptation, and individual relationships to the Mississippi are many and varied and provide a rich tapestry of diversity.

(3) We must care for the Mississippi. The Mississippi needs our help and concern. It has been significantly affected by human activities. There are many good examples of river protection in the corridor. Although conditions vary greatly in different parts of the river, the biological diversity has generally decreased as human use of the river increased. Our challenge now is to demonstrate that a healthy river ecosystem can be maintained along with recreational and economic uses. Our challenge is also to encourage participation, education, and stewardship.

The river system is much larger than its apparent shorelines. Every contaminant that enters the water in the Mississippi's watershed can end up in the river. Contaminants range from household bleach and bug spray to industrial discharges and municipal sewage. What enters upstream ends up downstream. These products of human habitation, agriculture, and industry affect all forms of life in the corridor. Poor water quality also limits sustainable economic opportunities such as recreation, tourism, fishing, and waterfront revitalization.

Pollution comes from many sources throughout the watershed (farms, industry, municipal sewage, nonpoint sources, lawns, road runoff, air-borne particulates, etc.). Some pollutants are concentrated as they pass up the food chain; fish consumption advisories have been issued in some stretches of the river. The efforts of government, industry, and private citizens are needed to reduce the levels of pollutants in the river. Through extensive federal and state efforts with substantial industry and government outlays for pollution prevention and control, the water quality in the river has improved.

To protect and enhance the Mississippi, the issues that affect it must continually be discussed. Current issues of interest to the public include wetland protection, water quality, trail development, public access, barge fleeting, safety, zoning, landscape and building design, waste management, power generation, and transportation systems. Increased public knowledge and sensitivity would result in better policies and decisions affecting the river.

(4) Glacial and human forces shaped the river. The geological life of the Mississippi started about 12,000 years ago in the meltwater of retreating glaciers. Erosion carved the river channel through glacial sediments. The Mississippi before extensive human alteration was a different river than it is today. It was shallower, with shifting sand bars, different plants and animals, different channels, and different sediment loads, deposition, and erosion.

While geological influences (such as erosion and deposition) continue, human activities have become the primary agents of change, sculpting the modern river into a variety of ecosystems. None have had greater influence on the river than the engineering projects of the U.S. Army Corps of Engineers. The Corps of Engineers is responsible for maintaining the federally authorized 9-foot navigation channel upriver to north Minneapolis. Locks and dams created a series of pools. Humans have largely filled and developed the limited flanking backwaters and sloughs in the north, but some still exist in the southern part of the corridor.

(5) As a working river, the Mississippi's influence extends far from its shoreline. The Minneapolis/St. Paul urban area is located where it is today because of the Mississippi River. Recognizing the potential hydropower available at the Falls of St. Anthony (the only

waterfall on the entire Mississippi) the growing city of St. Anthony harnessed this power to drive sawmills that ripped logs into planks and beams. Across the river, turbines driven by water ran flour mills, and Minneapolis became the flour milling capital of the world.

Today, the Mississippi River provides power, drinking water, cooling water, waste dilution and dispersal, and an economical method for transporting commodities. These benefits have affected settlement patterns, industry, and commerce far from the riverbanks and help support agriculture, manufacturing, high-tech business, commodity transportation, recreation and tourism that make up the area's river-related economy.

The lock and dam system improved modern transportation on the river, enabling the commercial navigation industry to play a significant role in the region's economy and changing recreational patterns.

Barges are an important part of a larger transportation system (including railroads and trucks) and can frequently be seen on the river carrying goods to and from the region.

Modern river industries and commerce affect the river system in many ways. They provide jobs, afford energy-efficient and lower cost transportation, and benefit other parts of the economy (farming, mining, chemicals). Negative impacts include pollution (petroleum products, potential toxic spills), loss of habitat, and visual impacts (that can be perceived in many ways). Balancing economic, historic, and ecological concerns is a major challenge for river corridor management.

(6) The MNRRA corridor includes a variety of organisms and ecosystems; improved biological diversity is a goal. The Mississippi National River and Recreation Area ecosystems include a variety of river systems, backwaters, wetlands, bottomland forest, ponds, streams, prairie, parkland, and industrial, commercial, and residential land. All ecosystems are affected by human activities in the entire watershed, even in areas far beyond the MNRRA boundaries. Aquatic life in the river varies greatly along the corridor. Biological diversity is slowly improving in several areas because of improved sewage treatment, reduced nonpoint source pollution, and better disposal of toxic materials.

Several species have been extirpated from the upper Mississippi in the last 100 years, and a number are listed as threatened or endangered. Several immigrant species have moved into the corridor in the last 200 years, including zebra mussels, carp, milfoil, and purple loosestrife. These "aliens" are, at least for now, better adapted than many native species to the present conditions in the river, often forcing out native species that could not adapt. The presence of the nonnatives has had serious and sometimes devastating effects on river ecosystems.

Preserving and restoring biological diversity is a goal throughout the national park system. Achieving that goal at the Mississippi National River and Recreation Area would require additional research, effective management, extensive public education and involvement, and extensive interagency cooperation.

(7) All living things (including humans) in the MNRRA corridor are interdependent. All are affected by the physical environment; for the river this includes current, substrate, pollutants, nutrients, dissolved minerals and gases, pH, sediment, turbidity, debris,

shoreline development, effluents and discharges, temperature, and weather. All are affected by the biological environment. For the river this includes fish, birds, arthropods, molluscs, worms, protozoa, algae, vascular plants, and mammals (including humans). The ecological health of the river depends on the interactions among all living things and the physical environment. Changes to the physical, sociocultural, or biological environments in the river watershed can affect resident organisms, sometimes to the point of disease, overpopulation, or extirpation.

(8) The resources of the MNRRA corridor are nationally significant; the area is a unit of the national park system. The Mississippi is a significant asset of the region, the state, the country, and the world. Its values are economic, scenic, ecological, mythological, historical, scientific, recreational, and spiritual. The Mississippi National River and Recreation Area was created in part to "protect, preserve, and enhance the significant values of the waters and land . . ." The corridor enriches the lives of metropolitan residents and visitors by enhancing natural, cultural, economic, recreational, and aesthetic resources.

Although the Mississippi National River and Recreation Area is much different than the older and more familiar park areas, such as Yellowstone or Gettysburg, it still has the NPS mandate to preserve resources and provide for their enjoyment by the public. Making park experiences accessible to all populations, ages, backgrounds, and abilities is a major MNRRA vision.

Visitor Programs. Visitor program goals would include information and orientation, interpretation, coordination, environmental and heritage education, and other visitor activities.

Orientation — The National Park Service, in addition to other groups and agencies, would provide information and orientation to corridor resources, recreational opportunities, and visitor services. Orientation would be accomplished mostly through interpretive media (books, brochures, maps, video), print media (newspapers, magazines), and digital media (such as multimedia interactive systems, bulletin boards, and CD-ROM). Intended audiences would include area residents, national and international visitors, and national and international tourism organizations. Orientation services would be available at five interpretation centers, unattended kiosks, bulletin boards, wayside exhibits, and through outreach programs, including access to digital information. Orientation would include information about other units of the national park system.

Interpretation — The National Park Service, in partnership with other groups, agencies, and individuals, would interpret major corridor themes, concentrating especially on areas not covered by existing programs or facilities. The interpretive centers would house interpretive media such as exhibits, videotapes, and publications. Wayside exhibits and trail brochures would interpret outdoor resources and views. Interpretive programs would include guided walks, slide programs, seminars, lectures, river tours, and living history. These facilities and programs would be coordinated with other groups and agencies in the corridor as outlined below.

Coordination — The National Park Service, in partnership with other groups and agencies, would provide coordination and a forum for issues relating to visitor use and resource management of the corridor. With the variety of interpretive services, education related to the river, recreation, visitor services, tourism, research, and resource management services in the corridor, there is a need for better coordination. For interpretation and environmental and heritage

education, coordination would be provided in a number of ways. A committee composed of groups and individuals active in interpretation and education would be one means. The Park Service would play a lead role. Additional coordination would include direct consultation with other groups and individuals, membership in appropriate organizations, and monitoring of interpretation and education services. Appropriate coordination activities could include information distribution and networking, needs assessments, wayside planning and development, marketing and effectiveness research, media relations, planning and design, training and quality assessment, extensive use of volunteers, and fund raising.

Environmental and Heritage Education Activities — The National Park Service, in partnership with other groups, agencies, and individuals, would provide environmental and heritage education to organized groups and individuals desiring educational opportunities — concentrating especially on topics and areas not covered by existing programs or facilities. Activities would include programs for schools and scout and community groups and public seminars and workshops relating to corridor issues and stories. Activities would relate to corridor themes or resource management issues. Outreach programs would include nontraditional methods and target nontraditional audiences to increase access to MNRRA resources and experiences. In-depth and supplementary activities such as seminars and workshops could be offered on a fee basis.

National Park Service Interpretive Facilities. The Mississippi National River and Recreation Area is a 72-mile-long urban corridor; it is varied, segmented, and intertwined with contiguous communities and resources. Facilities would be dispersed along the corridor to best serve visitors and interpret resources. At the same time, the facilities would provide a central focus for the National Park Service identity in the corridor. MNRRA interpretive facilities would have four general functions:

(1) interpretation of the overall story and parts of the story that are best told indoors

(2) environmental and heritage education for organized groups such as schools and scouts with seminars or public workshops

(3) orientation to corridor resources, recreational opportunities, and visitor services

(4) visitor services, including restrooms, emergency assistance, safety services, and health and convenience items

These general functions can be broken down into the following more specific functions. The first four specific functions would be best performed by the National Park Service:

provide focus and identity for the Mississippi National River and Recreation Area and the National Park Service

provide interpretation of the identified themes

orient visitors to resources and educational and recreational opportunities provided by the NPS, other federal agencies, state and local governments, nonprofit corporations, and other private organizations throughout the corridor and nearby areas

provide information and orientation to other units of the national park system

The remaining specific functions listed below could be performed by the National Park Service or other partners, such as the Minnesota Historical Society, Minnesota Department of Natural Resources, St. Anthony Falls Heritage Board, Minneapolis Park and Recreation Board, Suburban Hennepin Regional Park District, St. Paul Parks and Recreation Department, or the Science Museum of Minnesota. These functions are to:

interpret historical events where physical remains are absent or inaccessible

provide staging areas for public and environmental education programs

interpret complex stories

provide indoor space for interpretive activities during inclement weather

provide security and environmental controls for displaying original objects

provide temporary exhibits

provide audiovisual interpretation

provide workshops, seminars, educational classes

provide books and other educational products for sale

tell cultural, historical, economic, geological, and aquatic ecology stories

A basic idea is that a major interpretive facility needs "critical mass" to be successful. Interpretive facilities in an large urban area should be approached somewhat differently than in a remote area. There are many attractions competing for people's leisure time in the Twin Cities area, such as the Science Museum of Minnesota, the Minnesota Zoo, the Minnesota Historical Society, the Childrens' Museum, the Walker Art Center, several interpretive centers, and innumerable shopping malls, parks, lakes, jogging trails, and other recreational facilities. To accomplish their functions, the two central interpretive centers for the corridor would require sufficient critical mass to attract visitors.

For purposes of this document, critical mass is defined as including the combination of experiences that would make an interpretive center a good choice for a family Saturday afternoon, for an elementary school field trip, for a stop on an afternoon boating trip, as a place to bring the out-of-town visitors, the kids, or the media, or just as a place for an individual to pass time.

There is internal and external critical mass. Internal critical mass refers to the activities, media, and other attractions within a center or site. External critical mass includes attractions in the surrounding area. A center located near numerous existing attractions would require fewer attractions inside to attract an audience. Conversely, a site in an area devoid of existing attractions would need a larger profile to entice people to visit. Critical mass might be obtained by locating the interpretive center near a major museum or other attraction, creating a symbiotic relationship between the two functions. The National Park Service and the commission are working with other entities in the corridor to explore possibilities.

This plan depends on an educated and concerned public to accomplish its goals. Metropolitan residents must often understand complex issues, exercise stewardship, and pursue their vision for both the balanced preservation and sustainable use of the corridor. It is a major goal for the MNRRA centers to provide interpretation and education needed by both local and out-of-town visitors. To do this would require a more intensive and extensive combination of interpretive media and conducted activities than is usually required at NPS visitor centers in more remote areas. Many of the media and activities might be provided by partners. The specific media and activities needed in the corridor would be described in a more detailed interpretive plan to be developed after the comprehensive plan is final.

There would be three types of facility partnerships: NPS-operated, cooperative, and associated.

The center at Harriet Island in St. Paul would be developed and operated by the National Park Service in close cooperation with the city of St. Paul. The city would provide land and adjacent site improvements. Additional partnerships with complementary programs such as science museums, zoos, or recreational or educational organizations would be actively pursued. The Park Service would encourage other similar entities (such as a museum, recreation site, or educational program) to locate nearby, establishing "external critical mass." As this plan was being finalized new opportunities were developing in the St. Paul riverfront area. The interpretive facility concept in this plan would remain flexible to take advantage of new opportunities in the Harriet Island vicinity.

The cooperative centers (Minneapolis, Hastings, Fort Snelling State Park, and Coon Rapids Dam Regional Park) would be developed through partnerships. In Minneapolis the National Park Service and one or more local agencies would share responsibility and funding for the steps needed to complete the project. Each agency would continue to meet its mandate. The apportionment of center operations would be developed in follow-up planning. The National Park Service would assist the Minnesota Department of Natural Resources with planning for the proposed Fort Snelling Center and seek funding to assist the development of interpretive media. These centers could actually be linked with associated facilities programmatically.

The associated centers would be facilities such as nature centers, park visitor centers, or museums whose location, mission, and activities match MNRRA goals. The National Park Service might provide some assistance with media design and interpretive programming. In addition, a Mississippi National River and Recreation Area logo and other publicity could help to identify associated sites as part of the Mississippi River story. National Park Service interpretive programs could periodically be offered at these sites.

It is anticipated that the St. Paul and Minneapolis centers would be staffed by the Park Service and other partners year-round, while the other centers would probably only be staffed seasonally. At this time it is not anticipated that NPS interpreters would be stationed on a regular basis at the proposed Fort Snelling center, although some interpretive programs offered at the center would include NPS personnel. The specifics of this cooperative arrangement have not been finalized and would be further detailed in the interpretive plan for MNRRA and a follow-up cooperative agreement between the National Park Service and the Department of Natural Resources.

Partnerships. The Mississippi National River and Recreation Area is a partnership project. There are dozens of organizations, agencies, and individuals who are already providing excellent interpretation and education related to the corridor. The National Park Service would accomplish parts of each visitor experience goal through partnerships with these groups and individuals. NPS programming would be designed so that it does not significantly compete with other public, nonprofit, and private providers of interpretation in the area.

National Park Service staff would maintain an inventory of recreation, visitor services and tourism activities, organizations, and facilities in the corridor and nearby areas. The Park Service would maintain direct and active liaisons with groups, agencies, and individuals providing recreational services. It would participate as appropriate in committees, task groups, and organizations that provide coordination, information sharing, facility planning, and oversight of recreation, visitor services, and tourism services.

The National Park Service would cooperate with other agencies and organizations to provide research and resource management in the corridor. Activities such as needs assessments, priority setting, information sharing, assistance with educational programs (through internships, fellowships, tutorials, mentor programs, etc.), and research projects could be accomplished cooperatively.

Interpretation and Education Activities. Interpretation and education programs at the interpretive centers would be planned, designed, delivered, and evaluated by the partnerships of agencies and groups involved in operating the centers, including the National Park Service. Park Service staff would be stationed or give programs at these areas and would supervise NPS interpretation, education, orientation, and visitor services operations. The National Park Service would play a significant role in providing training for interpreters (including volunteers) from other agencies.

The National Park Service would take a lead role in interpretation and education activities at the St. Paul/Harriet Island center. All interpretive themes would be interpreted to some degree at this center. However, as shown in table 1, several major themes would be emphasized at this area because nearby resources enhance the ability to tell certain stories.

These themes would be interpreted through interpretive media (such as interactive computers and models, exhibits, audiovisual programs, and publications), representations of living ecosystems (such as aquariums and wetland terrariums), and personal programs (such as interpretive talks, guided walks, seminars, and environmental and heritage education programs). Many activities would take place around the center and at nearby areas such as Lilydale Park.

Access to the river would be important for recreational, interpretive, and educational activities. The National Park Service could have a boat at the Harriet Island marina for use in environmental education programs. Cooperative interpretive programs could also be done with commercial tour boat operators.

Activities in and around the St. Paul center could include regional, national, and international visitors observing aquariums, playing food web games on a computer, and discovering that the Mississippi really is a living system. Suburban fourth graders could wade into Pickerel

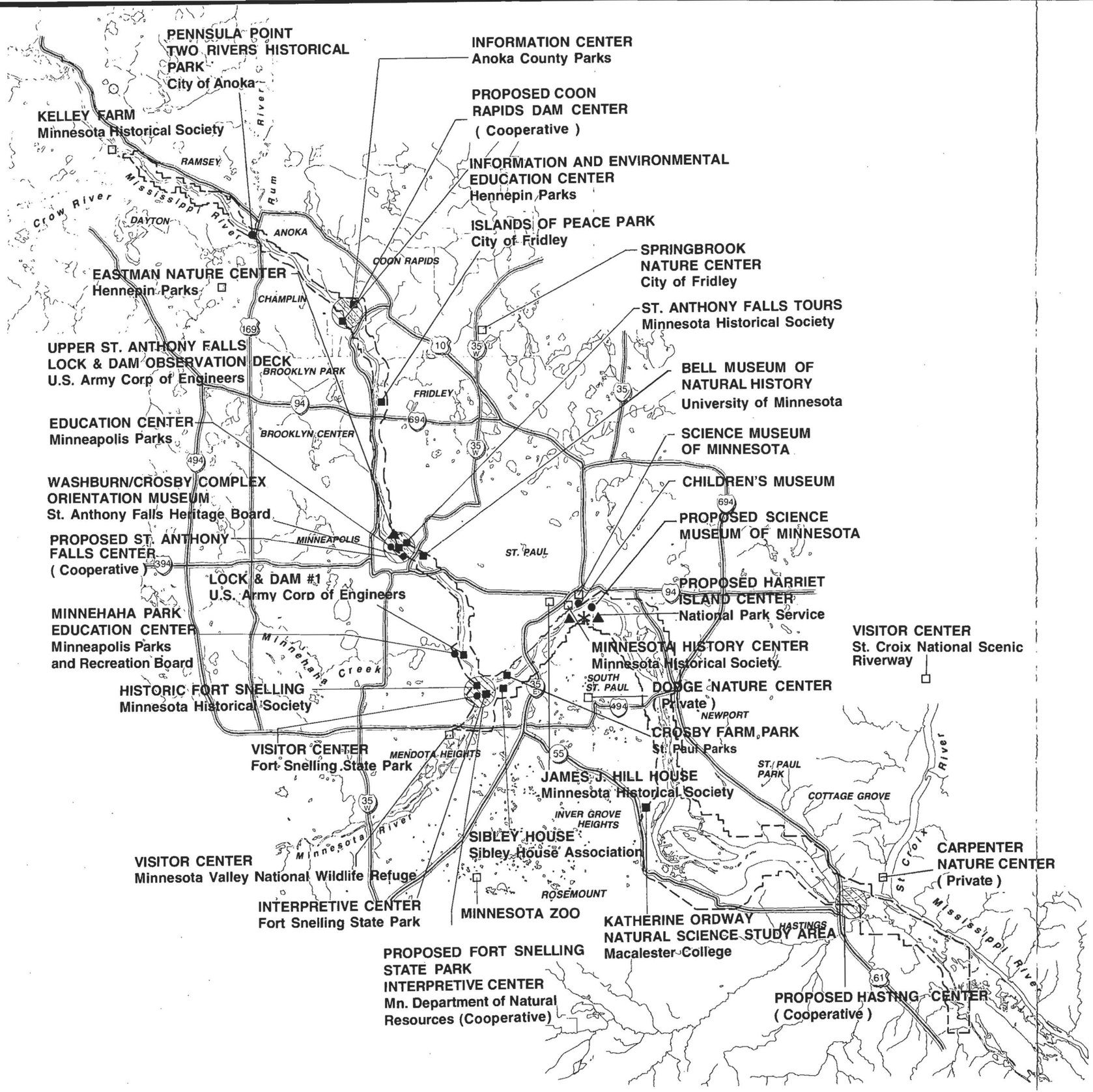
Lake in Lilydale Park and discover the aquatic ecology of a bottomland lake; an inner-city high school biology class could study water quality at the Minnesota River confluence on an NPS boat; bird watchers might spot endangered, threatened, and other interesting species without disturbing nesting areas near Pig's Eye; and public workshops in the St. Paul center auditorium could explore complex river issues. All would add to the knowledge and appreciation of the Mississippi River. Additional ideas for interpretive programs at the Harriet Island center are contained in appendix K.

Because the location and functions of the Minneapolis/St. Anthony Falls interpretive center have yet to be finally determined, and several feasibility issues remain, an interim site would be negotiated with cooperators in that area. Activities could be held at several sites or at one central facility. Components could include an orientation center, which would provide information needed to orient visitors to the attractions in the area, and interpretive services, which could include outdoor wayside exhibits, portable indoor exhibits, audiovisual programs, guided walks, interpretive talks, and heritage education programs with organized groups. The primary theme areas interpreted in this area would be cultural history, stewardship, and forces shaping the river. Tourists and metropolitan residents could take advantage of the existing guided and self-guided tours that explore the historic buildings, foundations, millraces, mills, tunnels, locks, and dams of the St. Anthony Falls area.

At the new visitor center proposed by the Department of Natural Resources at Fort Snelling State Park, themes on Native American cultures and the interdependence of all living things would be emphasized. The confluence of the Mississippi and Minnesota has special significance to Native Americans. The National Park Service would cooperate with state park staff in developing interpretive media and presenting interpretive and educational programs and events.

Programs on the natural and cultural history of the MNRRA corridor and watershed originate from the smaller interpretive centers at Hastings and the Coon Rapids Dam Regional Park. Programs would concentrate on the resources around the centers but would deal with the bigger picture as well. Environmental and heritage education programs would serve primarily schools and groups from nearby areas. Orientation to the Mississippi National River and Recreation Area and nearby attractions would be available at Hastings and the Coon Rapids Dam Regional Park. Interpretive media would supplement the activities in the interpretive center on the east side of the river at the Coon Rapids Dam Regional Park. Interpretive programs would be offered in and around all five NPS/cooperative center sites.

Interpretive Media. The National Park Service would produce interpretive media for the corridor. The interpretive centers would house exhibits, publications, videotapes, and interactive interpretive devices. Outdoor wayside exhibits would interpret interesting and significant views. Trail signs and brochures would provide self-directed interpretation. Brochures, maps, handbooks, and educational materials would be available at interpretive centers and other outlets, by mail, and through educational programs. Interpretive materials would be sold through a cooperating association (see glossary) or by corridor interpretive partners.



BOUNDARY

HYDROLOGY

EXISTING NEAR CORRIDOR

EXISTING WITHIN CORRIDOR

PROPOSED (LOCAL PLANS)

EXCURSION BOAT DOCK

PROPOSED NPS INTERPRETIVE CENTER

LOCATION OF PROPOSED NPS COOPERATIVE INTERPRETIVE CENTERS

0 2 4 MILES

NORTH

SELECTED EXISTING & PROPOSED INTERPRETIVE AND EDUCATIONAL FACILITIES

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service
DSC • OCT 94 • 807 • 20004C

ON MICROFILM



Washburn-Crosby mill complex



Old courthouse in Hastings

Proposed Policies & Actions —

(1) Develop sites to observe and interpret river corridor vistas and river activities, including commercial river transportation.

(2) Provide information about interpretive and recreational activities and sites in the metropolitan area and coordinate and link these with other activities in the region.

GENERAL DEVELOPMENT

The only facility development directly funded by the Park Service would be the proposed interpretive facility/park headquarters in St. Paul and a share of the interpretive center in Minneapolis. The latest sustainable design concepts and materials and access for persons with disabilities would be incorporated into all NPS facility design, and technical assistance would be provided to corridor partners for design of other facilities. The following sections provide more detail about these facilities and those provided by other partners in the corridor.

National Park Service Facilities in the Corridor

Because of the nature of the corridor and the proposed management concept, NPS facilities would be limited to interpretive centers and administrative offices. With the partnership arrangement and extent of local interpretation, these would be cooperative ventures, with only one interpretive center owned and operated by the National Park Service. Based on the audience, site analysis, functions of each facility, and the potential partners, a system of interpretive facilities is proposed. Table 1 illustrates these facilities and factors leading to this scheme. This proposal capitalized on the excellent interpretive work already being done in the corridor and seeks to fill the interpretive gaps and offer coordination of existing interpretive facilities, activities, and programs.

There are two major interpretive facilities planned; a primary information and orientation center in the corridor at Harriet Island opposite downtown St. Paul and a cooperative information and orientation center in the corridor near downtown Minneapolis. The Harriet Island site is not actually on an island. It was an island at one time, but the channel that once created the island has been filled in, and the area is now on the right descending bank of the river. It is still known locally as Harriet Island. The St. Paul/Harriet Island facility would be combined with the MNRRA administrative headquarters, strategically located to continue extensive interaction with the government agencies included in the MNRRA partnership. These facilities would be developed using the latest sustainable design principles and accessibility standards.

Three smaller cooperative interpretive centers are planned, one at Fort Snelling State Park, one in the Hastings area, and another at Coon Rapids Dam Regional Park, each with a different interpretive emphasis and potential visitor experience (see Interpretive and Educational Facilities map).

Potential Partner Roles. Table 1 identifies lead partners based on area of expertise and the extent of activity involved. For instance, at Coon Rapids Dam Regional Park, both Anoka

County and the Suburban Hennepin Regional Park District have interpretive activities and facilities. Therefore, they would take the lead in the operation of the joint facility. In Hastings the National Park Service is working with the city to identify other potential partners.

Funding would be arranged between the partners, with the National Park Service assuming responsibility for that share of the facility occupied by or needed for NPS interpretive functions. In addition the National Park Service could supply staff and design assistance. Table 1 illustrates how this arrangement might work.

Site Selection. Potential interpretive facility sites were analyzed using the following criteria:

accessibility and connections

critical mass of nearby attractions

catalyst for local actions

visibility/identity

fits the functions and interpretive themes

contributes to resource preservation

located appropriately to provide information and orientation

interested partner/complementary activities

accessibility to the river — visual and physical

minimizes adverse impacts to corridor resources

St. Paul —

Many possible locations were considered for a center in St. Paul, including sites on both sides of the river and in downtown. Suggestions for sites were made by commissioners, city of St. Paul staff, and others. Site inventories were completed and options were analyzed using the criteria listed above. Alternative locations ranged between Fort Snelling and Pig's Eye Lake. This included consideration of several downtown sites. Many of these locations were ruled out because they are in the 100-year floodplain or would be isolated during floods. Others were excluded because they did not have good access or a connection to the primary resource, the river. The potential to coordinate activities with other nearby attractions was also a key criterion. After extensive work with area partners and considerable discussion by the Mississippi River Coordinating Commission, a preferred site on Harriet Island was jointly identified by the city of St. Paul, the commission, and the National Park Service. This site offers the opportunity for a rich visitor experience because of the site's connection to downtown, natural areas in Lilydale, access by water, and nearby attractions such as the Padelford tour boat operation. It has a distinct identity and a history of recreation use that would augment the desired identity that this facility would provide for the entire corridor. It also integrates well with St.

TABLE 1: MISSISSIPPI NATIONAL RIVER AND RECREATION AREA INTERPRETIVE FACILITIES

LOCATION	MINNEAPOLIS	ST. PAUL	ANOKA AREA	HASTINGS AREA	FORT SNELLING STATE PARK
Potential lead agency	City or state historical society	National Park Service	Anoka County/Hennepin Park District	To be determined	Minnesota DNR
Potential partner roles	City leads rehabilitation, construction, maintenance of facility; state provides lead for historic interpretation; NPS provides assistance in construction funding, staffing, and exhibits; possible joint venture with museum or other party;	City provides land and adjacent site improvements such as road and trail connections and bridge access; NPS provides facility construction, maintenance, staff, and exhibits; possible joint venture with major museum or other attraction	Anoka County or Hennepin Parks has lead; NPS provides some staff and exhibit design assistance	To be determined	Minnesota DNR leads in construction, maintenance, and operation of center. NPS provides assistance in planning interpretive media, funding its production, and cooperates in interpretive programming.
Nearby amenities	"Mississippi Mile;" historic resources, Stone Arch bridge, linear park system, walking tours,lock and dam, Great River Road	"Cultural Corridor," Lilydale Park, Harriet Island Park, tour boat, marina, trails, river access	Parks, trails, river access, Coon Rapids Dam	Downtown, parks, lock and dam, marina, trails, river access	Confluence of Mississippi and Minnesota rivers, Historic Fort Snelling, trails, picnicking, river access, MN Valley Refuge and center, Mall of America
Audience	International, national, regional, local	International, national, regional, local	Regional, local	Regional, local	International, national, regional, local
Major themes	• Shaping the river — glacial and human forces • The stories of human life along the Mississippi have unfolded over 12,000 years • MNRRA is a nationally significant resource (cultural emphasis) • We must care for the river • All plants and animals in the corridor are interdependent	• The Mississippi is one of the world's great rivers • Plants, animals and humans in the corridor are interdependent • The corridor protects biological and cultural diversity • We must care for the river • MNRRA is a nationally significant resource (natural emphasis) • As a working river, the river's influence extends far from its shoreline	• All plants and animals in the corridor are interdependent • The stories of human life along the Mississippi have unfolded over 12,000 years • We must care for the river	• The Mississippi is one of the world's great rivers; • We must care for the river • The stories of human life along the Mississippi have unfolded over 12,000 years (river town emphasis)	• The stories of human life along the Mississippi have unfolded over 12,000 years • All plants and animals in the corridor are interdependent
Primary functions	Interpret cultural resources, orientation to MNRRA, orientation to NPS, outdoor walking tours, historic preservation, environmental and heritage education	Big Miss picture, focus/identity, natural history themes, orientation to MNRRA, orientation to NPS, outdoor experiences, interpretive media, environmental and heritage programs	Orientation to MNRRA, environmental and heritage education	Orientation to MNRRA, environmental and heritage education	Orientation to MNRRA, Interpret Native American theme, environmental and heritage education
Major location advantages	St. Anthony Falls area — historical context, visual excitement, urban experiences, connections to entertainment and historic and cultural resources, park system, and an opportunity for adaptive reuse	Harriet Island area — visibility, road access and parking potential, flexibility in design, connection to natural resources, river access for recreational boats, commercial river traffic, adjacent tour boat landing	Near upper end of corridor, major roads, canoe route; existing regional park with interpretive centers	Near lower end of corridor, near major highway and historic downtown, near dam overlook, parks, and trails, offers good example of riverfront rehabilitation	Near airport and other parks and historic sites.
Funding	Cooperative; NPS provides its share of construction and staffing; exhibit and facility rehabilitation design assistance	City provides land and adjacent improvements; NPS provides facility construction, operation, maintenance	Cooperative; NPS provides some staffing & exhibit design assistance	Cooperative, to be determined by partners	Cooperative; NPS helps fund interpretive media and provides staffing for joint programming.

Paul's cultural corridor concept and proposed riverfront improvement programs. It could also provide the catalyst for other riverfront redevelopment projects. As stated above, while this plan was being finalized new opportunities were developing in the St. Paul riverfront area. The interpretive facility concept in this plan would remain flexible to take advantage of new opportunities in the Harriet Island vicinity. If there are significant changes in the proposed concept, they would be subject to environmental review and public input. Additional details on the current proposal are provided in the development concept plan section below.

Minneapolis —

The NPS planning team members identified potential sites for an interpretive center in the St. Anthony Falls area from a list prepared by the Minneapolis Riverfront Technical Advisory Committee. After a comprehensive site inventory, NPS staff worked with the committee to develop a recommendation. The Minnesota Historical Society, Minneapolis Parks and Recreation Board, Minneapolis Community Development Agency, Northern States Power (NSP), Minneapolis Heritage Preservation Commission, and the St. Anthony Falls Heritage Board worked together to choose a preferred site.

Each partner developed a proposal for their contribution to the development of the preferred site and to the three alternative sites. This step was included to focus on the partnerships that would be needed at some of the sites to make their development possible. The National Park Service conducted a concurrent analysis of the sites (based on the criteria listed above).

When the analysis was complete, the Washburn/Crosby complex (a national historic landmark) was identified as the preferred site. The Northern States Power Main Street Station was chosen as a fully acceptable option. However, the analysis also identified concerns that would have to be resolved before either of these sites could be developed as an interpretive facility. Examples of the concerns include safety and health issues and uncertainties about structural soundness. Other sites might be evaluated later if these sites prove infeasible.

The Washburn/Crosby complex is a National Historic Landmark. A portion of it burned in 1991. It was identified as the best site in the area through extensive discussions with interpretive partners. It must be viewed in the context of a vision of major rehabilitation for the waterfront in this area, which is planned by the city of Minneapolis and supported by this document. This includes proposals for Mill Ruins Park, the Heritage Trail, and major concepts for rehabilitating and adaptively using the Washburn/Crosby complex and its immediate environs. The cost of stabilizing and maintaining the complex without adaptive reuse would be prohibitive. A developer is needed to facilitate the rehabilitation. A final NPS commitment to move into the complex would occur after more facility planning is completed, it is rehabilitated, and there is a commitment for a compatible mix of uses. If the right combination of uses is assembled and a portion of the building that is in better shape is used, the cost to locate the interpretive center in the complex might not exceed the costs to use other historic buildings in the area.

While answers to the concerns continue to be sought, an interim strategy would be implemented to provide interpretation and information in the St. Anthony Falls area. A

small information center in a location that can be made useable without great expense would be established. Interpretive and educational programs could be planned for other locations in the St. Anthony Falls area. A portable interpretive exhibit that could be erected at various locations in the area would also be produced. The exact site for the interim information center would be chosen with the St. Anthony Falls partners. Possible sites include the Fuji-ya building, St. Anthony Main, Army Corps of Engineers lock observation area, the Crown Roller Mill building, or a moveable, tent-like structure operated on a seasonal basis.

Hastings Area —

NPS staff also worked with city of Hastings staff and others to gather information for an inventory of possible interpretive center sites and to review available sites. Examples of sites reviewed were the current city hall, the LeDuc House owned by the Minnesota Historical Society, historical residences west of downtown, the renovated courthouse, Spring Lake Park, and the area near Lock and Dam 2. No active interpretive programs are currently operating at these sites. The courthouse was identified as a preferred location, but it is not available for interpretive center use at this time. Further discussion would be needed to identify and select a site and partners for an interpretive center in the Hastings area.

Anoka Area —

Three sites were considered for an interpretive center in the Anoka vicinity: Peninsula Point Two Rivers Historical Park, an area currently being developed by the city of Anoka, and two existing interpretive facilities, one on either side of the Coon Rapids dam. After the site inventories, meetings to discuss the possibilities at the Peninsula Point Two Rivers Historical Park area were held with the city of Anoka staff. To explore possibilities at the Coon Rapids Dam Regional Park, meetings were held with representatives from Suburban Hennepin Regional Park District and Anoka County parks. Suburban Hennepin County Regional Park District owns the land and the two interpretive buildings in the area of the dam. Anoka Parks operates the interpretive building (which is leased from Hennepin Parks) and the portion of the regional park on the east side of the river.

Interpretive functions would be placed in all three sites. NPS staff would cooperate with Anoka County staff in providing information at the visitor center on the Anoka side of the Coon Rapids Dam Regional Park. The National Park Service would also provide assistance with interpretive exhibits in this facility. The walkway over the river on the Coon Rapids Dam makes the connection between interpretive centers on either side convenient. It is currently closed. If the walkway is not reopened or replaced, the NPS exhibits, information, and interpretive programming on each side would have to be designed to be independent from the other side. Cooperative interpretive and educational programming that complements programs already being provided by partners would be offered at all three sites. Information/interpretive kiosks or waysides would be installed as a part of the development of Peninsula Point Two Rivers Historical Park. Other visitor services such as restrooms and first aid would be provided by partners.

Fort Snelling State Park —

The Department of Natural Resources in Fort Snelling State Park interprets the significance of the confluence of the Minnesota and Mississippi rivers. From prehistory to the present, this meeting place of rivers has been the focus of cultural contact, interaction and change. It is the center of an ancient homeland of the Dakota people, whose many villages were located along the Mississippi and Minnesota Rivers. This was a lifestyle and economy based on the rich diversity of the floodplain. Today, the spiritual significance of the park to Native Americans still revolves around the meeting of rivers and historic sites such as the 1805 treaty and the 1862 Dakota Internment Camp.

The state park's interpretive and environmental education program focuses on the relationship between people and the rivers through time. A special emphasis is placed on the importance of Native American history and culture. Educational projects and citizen involvement foster understanding and stewardship of river floodplain and wetlands in the park and surrounding communities. An interpretive center is proposed by the Department of Natural Resources for the park that would provide accessible interpretive and environmental education services.

The Department of Natural Resources' proposed Fort Snelling interpretive center was identified as a potential cooperative center during the draft comprehensive management plan/environmental impact statement public review process. Comments from many sources encouraged the National Park Service to strengthen its commitment to the interpretation of the Native American culture and its relationship to the river. These comments, along with the DNR proposal to develop the new center at the state park, which would emphasize interpretation about Native Americans, led to the identification of this facility as a cooperative center in the MNRRA plan.

Facility Needs

Following are proposed long-range space needs for the five interpretive facilities discussed above. The interpretive facility proposals in this comprehensive management plan are general plan concepts. All size and cost estimates should be considered approximate and subject to change during additional planning and design for the facilities, which would be based on further discussions with the involved partners and the final mix of activities.

Harriet Island Center — 19,000 square feet (includes 7,000 for administrative headquarters)

St. Anthony Falls — 12,000 square feet (half funded by the National Park Service)

St. Anthony Falls (interim) — 1,000 square feet (space provided by partners and/or National Park Service)

Hastings Area — 2,500 square feet (space provided by others)

Coon Rapids Dam Regional Park — 2,500 square feet (space provided by others)

Fort Snelling State Park — 8,000 square feet (space provided by others)

The interpretive center on Harriet Island would be built and maintained by the National Park Service. Partnerships with complementary programs would be sought to increase the critical mass at this site. The National Park Service would also be responsible for site improvements at the Harriet Island facility. These include parking, landscape development, and utility connections within NPS property boundaries. The facility would be of high-quality design and construction, a model of partnerships, fully accessible, and also serve as a model of sustainable development to demonstrate environmentally friendly site planning and building practices. Additional details on the Harriet Island center are provided in the following section.

Responsibilities for the other centers would be shared by partners. In the St. Anthony Falls area, the National Park Service would jointly operate an interpretive center with one or more partners. The portion of space and building remodeling costs to be allocated to each partner has not been determined. For purposes of this plan, half of the costs would be assumed to be paid by the National Park Service and half by partner(s). Since the total size of this center is relatively small compared to the size of the existing buildings at the preferred site, other attractions would have to be found to occupy the remaining space and enable comprehensive redevelopment.

The interim center in the St. Anthony Falls area would be considerably smaller with some interpretive functions being operated in remote locations. This center could be less than 1,000 square feet in size.

At the Coon Rapids Dam Regional Park there would be no costs for building rehabilitation, as existing facilities would be used or space would be provided by partners.

At Hastings, a facility has not yet been identified. At Fort Snelling State Park, an interpretive facility has been proposed by the state of Minnesota, but funding is still being sought.

The Existing and Proposed Interpretive and Educational Facilities map shows selected facilities in and near the corridor.

Harriet Island Development Concept

A National Park Service interpretive center is proposed at Harriet Island on land proposed to be donated by the city. The facility would also house the MNRRA administrative headquarters, and there would possibly be another partner on adjacent land to increase the area's critical mass. The site selection process identified this as the preferred location because (1) it has potential to offer a special visitor experience through linkages to downtown, Lilydale, and the river, (2) it has potential for relationships with other major attractions, and (3) it has potential to act as a catalyst for riverfront improvements. Other major considerations were the extensive interest and cooperation shown by the city of St. Paul and the many benefits of a location at Harriet Island. It has a history of public use and is near Lilydale Regional Park, a natural area in the heart of the city. It is also near downtown St. Paul, with its complementary activities. The city of St. Paul plans to make major park improvements at Harriet Island and Lilydale, and the NPS interpretive facility would complement these plans. A concept plan map for the interpretive facility and the related portions of Harriet Island Park has been jointly prepared by the city of Saint Paul and the NPS staff and is described below (see Harriet Island Development Concept map and cross-section sketch).

Site Analysis. The proposed interpretive center site is located on a former industrial site adjacent to Harriet Island Park. The site is in an authorized expansion area for the city park. It is located behind a levee, which would be rebuilt in the next few years offering opportunities for improvements in the area. It is adjacent to commercial and industrial uses on three sides, but buildings on the west side would be removed by the levee construction.

The site offers a number of opportunities for design and has advantages of proximity to nearby features and potential linkages to adjacent resources. The city plans numerous park improvements that would enhance access to and from the site and would greatly improve the appearance of the area. A bike and pedestrian trail would replace a road that is currently on top of the levee (construction by the Corps of Engineers and the city), linking the site to downtown, an existing promenade to the east, and Lilydale Park. In addition, a riverwalk is proposed by the city along the river. The site would be linked to this feature, giving direct access to the shoreline. It is located near two marinas and a tour boat operation, providing opportunities for related visitor activities that could be linked by road and trail. The site is part of the city's cultural corridor, which is an area of St. Paul with many civic, cultural, and historic facilities. The Wabasha Street bridge is scheduled for replacement in the next few years, offering an opportunity to improve pedestrian and bicycle access from downtown St. Paul and to generally improve the aesthetic environment in the area. Riverfront land east of this site is being considered for an outdoor amphitheater and/or a new Science Museum of Minnesota facility. Development of either of these could have a significant impact on the proposed NPS interpretive center.

The site has a number of physical constraints. The first is its location behind the levee. Although the levee presents some design problems and could act as a barrier to the river, it also offers some site planning opportunities. By constructing the building into and higher than the levee, views of the river would be maximized, and a direct link to the trail system would be achieved. NPS interpretive centers must not be located in a 100-year floodplain, so a site behind the levee is needed. Most sites that were considered in the St. Paul area were ruled out because they were located in the floodplain.

The site vicinity includes a building listed on the National Register of Historic Places — the Harriet Island Pavilion. It is about one-quarter mile northwest of the proposed NPS interpretive center. The pavilion would be preserved by the city of St. Paul in the joint plan for the Harriet Island area (see Harriet Island Interpretive Center map).

The area south of the interpretive center site on the other side of Water Street is occupied by an industrial use, including a large building. Because the interpretive center site is behind the levee and in the middle of a historic bottomland island, it is somewhat isolated from the river both physically and visually. It does not provide the best views of the river, although the views could be improved through design of the building and proposed city park improvements. Views of downtown are excellent, including views of the Saint Paul cathedral. Following levee reconstruction, access would be via the Wabasha bridge, then along Water Street, or from Wabasha to Plato Boulevard, the major city park entrance. It is anticipated that nonlocal visitors would use the Plato route, while many residents would know to use the Water Street route, which is a bit more direct. Both routes are somewhat inconsistent in appearance as park entrances because of their industrial character. Design features and extensive landscaping are planned by the city to soften this effect.

Proposed Development. Following is a list of actions for the Harriet Island area.

- The city of St. Paul would transfer about five acres to the National Park Service for the interpretive center (see Harriet Island Interpretive Center Development Concept map).

- The site and building relationship to river would be maximized through facility design, placement, and orientation.

- A multilevel building would be constructed, locating administrative headquarters, storage, and classrooms on the bottom and the interpretive facility on the top in order to provide the best views of the river and downtown and facilitate access to walks and trails in the area.

- Water would be used as a unifying element through architectural treatments for the exterior and the interior of the building and continuing though the interpretive displays, which could include aquatic displays.

- Direct visual and physical connections to the river would be provided using windows on the river side, a plaza focused on the river, and a view preservation area between the building and the river, which would be kept clear of parking and major structures and a path to the river.

- The site would be extensively landscaped. Design techniques and plant materials would be used to screen less desirable views and to soften the effects of a relatively large NPS building.

- Windows would focus on good views in the area and minimize undesirable views.

- Parking lots providing a total of about 100 spaces would be located on either side of the building to avoid large expanses of asphalt and would be convenient to either approach to the building. The west parking lot would be used for bus parking and by the city for overflow parking during peak activity periods.

- City plans to revegetate the back of the levee would be followed by the National Park Service on its lands. Landscaping on the site would generally be native to the river valley and could reflect riparian character in order to demonstrate revegetation techniques.

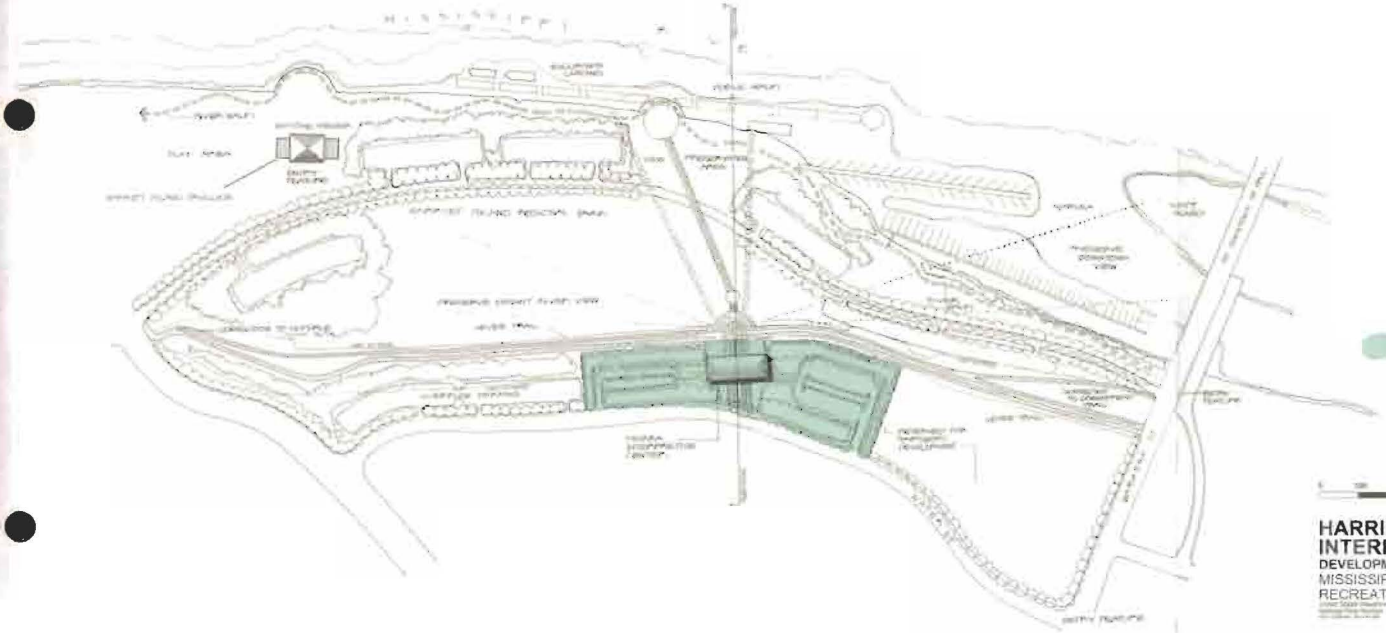
- The building entry would be designed to be inviting, incorporating a plaza with a water feature that would tie into the interior to overcome the effect of the road approaches.

- Building design would reflect the river and its urban setting. It should not be designed in a rustic park architectural style but would consider its relationship to the historic pavilion that is in the general vicinity of the site and the river and its setting.

- The building and site improvements would incorporate and demonstrate sustainable design, such as the use of recycled materials, construction of permeable parking surfaces for aquifer recharge, high energy efficiency, and water conservation. Measures could include the use of natural lighting, energy efficient electrical fixtures, automatic light timers, "smart" windows, low-water use landscaping, and water conserving plumbing



NOTE: This is a concept drawing. Details, including provisions to ensure full accessibility, will be developed during facility design.



LAND TO BE TRANSFERRED TO NATIONAL PARK SERVICE

HARRIET ISLAND INTERPRETIVE CENTER
DEVELOPMENT CONCEPT PLAN
MISSISSIPPI NATIONAL RIVER & RECREATION AREA

ON MICROFILM



View of downtown St. Paul from Harriet Island

fixtures. Building design would also include consideration of its location behind a levee and be constructed to withstand flooding in the unlikely event of a levee failure.

- The building and site would be designed to provide total accessibility in compliance with the Americans With Disabilities Act and related federal laws and regulations. (Note that the map is a concept only. Details on access to the building and around the site are not currently shown but would be developed during the design phase, and all facilities would be fully accessible).

The Preliminary Partner Responsibilities. Both the city and the National Park Service would share resources to the greatest extent possible, and both partners would be fully involved in decisions at Harriet Island of mutual concern. For example, personnel from both the city and the National Park Service would work together on a number of activities, including programming and outdoor interpretive activities.

The city would provide the following improvements, most of which are part of approved city plans:

landscape Plato Boulevard

construct the riverwalk

provide a view preservation area from the NPS center to the river

improve the marina area

relocate the boat storage area prior to NPS facility construction

construct the bike and pedestrian trail on adjacent lands

provide entry features at park entrances

clear and clean up the interpretive center site and remove hazardous waste before it is transferred to the National Park Service

clear adjacent industrial sites owned by the city as a part of the levee improvements

work to improve the appearance of the surrounding industrial sites on private lands

provide pedestrian access from the reconstructed Wabasha bridge.

redevelop the Harriet Island Park per the master plan as revised by the cooperative site plan

The National Park Service would provide:

funds for design, construction, and operation of the center and its immediate environs

space for temporary exhibits that would be available for community exhibits related to the river

a cooperative venture with a major partner for an expanded or complementary interpretive facility on site or on adjacent land

wayside exhibits interpreting the river

staff for joint interpretive programs

cooperative planning for interpretive facilities and functions with the city

space in the building for operational partners

There might also be grants available through the National Park Service for up to 50% of the cost of city improvements on adjacent land in the Harriet Island/Lilydale Regional Park if the MNRRA grant program is funded by Congress, and the city adopts tier two of plan implementation. Additional information on the proposed grant program is provided in the plan implementation section below. For a detailed description of interpretive media and activities at the Harriet Island center see appendix K.

Other Facilities in the Corridor

Besides the NPS interpretive facilities, there would continue to be many other local and regional visitor use facilities in the MNRRA corridor. Local interpretive facilities would continue as discussed in the section on interpretation, sometimes in conjunction with the National Park Service interpretive facilities, but most would be independently operated. It is beyond the scope of this plan to provide detailed facility needs for the entire corridor. These needs would continue to be the prerogative of local and state agencies. The National Park Service would encourage recreational and interpretive facilities that are consistent with the visions and policies contained in this comprehensive plan. The NPS staff would work with other entities to provide advice on park and open space development that best meets the intent of this plan. The National Park Service would encourage other entities to comply with the resource protection policies contained in this plan, use the latest concepts in sustainable development, and comply with all accessibility standards in new and reconstructed facilities.

NATIONAL PARK SERVICE OPERATIONS

Administrative offices for the Mississippi National River and Recreation Area would be located in conjunction with the interpretive facility at Harriet Island in St. Paul. This site is preferred because other government offices are located in St. Paul and it would be most efficient to have the Park Service headquarters and primary interpretive facility offices in one location.

National Park Service Staffing Needs

The estimated NPS staffing needs for the Mississippi National River and Recreation Area are about 34 full-time equivalent positions at an estimated annual cost of about $1.5 million, which includes salaries, benefits, and support costs (equipment, utilities, etc.). Estimated costs are subject to change based on the final role established for the National Park Service and other partners in managing the corridor as documented in the final comprehensive management plan and follow-up implementing plans. This is a long-range staffing concept that would take several years to implement. Support staff for the Mississippi River Coordinating Commission are included in this estimate. Other than one administrative clerk, these commission support duties are spread among several existing (and proposed) NPS staff members. Descriptions of work to be done by additional staff and a table showing existing and proposed NPS staff are found in appendix F.

Maintenance

As the National Park Service would only own one facility, a full scale maintenance staff and program would not be necessary. Maintenance of the St. Paul interpretive facility and surrounding grounds would be contracted to local building maintenance and landscaping businesses or performed by NPS personnel. The private businesses could perform custodial, repair, lawn care, landscaping, and snow removal services.

Maintenance of the interpretive facilities at Minneapolis, Coon Rapids Dam Regional Park, Fort Snelling State Park, and Hastings would be the responsibility of the building owner.

Cooperating Association

The National Park Service would seek an agreement with one or more cooperating associations to provide sales outlets at the corridor interpretive centers. The National Park Service would provide office, storage, and sales space to the association consistent with NPS policy on sales permitted of cooperating associations. Cooperating associations are typically nonprofit and provide NPS areas with benefits such as donations and scholarships. To the extent possible, cooperating associations also provide staff for operating sales outlets. This association would be different from the associated interpretive facilities discussed above, which would be owned and operated by other agencies in the corridor.

PLAN IMPLEMENTATION

Public Law 100-696, establishing the corridor as a unit of the national park system, required in section 703(i) that the plan include:

> a program for management of existing and future land and water use . . . (covered above)
>
> a program providing for coordinated implementation and administration of the plan with proposed assignment of responsibilities to the appropriate governmental unit at the federal, state, regional, and local levels

a coordination and consistency component that details the ways in which local, state, and federal programs and policies could best be coordinated

a program for the coordination and consolidation, to the extent practical, of permits that might be required by federal, state, and local agencies having jurisdiction over land and waters within the area

The following sections were developed to comply with the three closely related directives on coordination and consistency and NPS guidelines on general management plans.

General Concept for Implementation

The legislation for the Mississippi National River and Recreation Area and the nature of the issues in the corridor require cooperative action that transcends the political boundaries of the corridor. The future of the corridor could be shaped and directed through the concerted actions of citizens, public officials, and business leaders. The past record of excellent but fragmented efforts in the corridor lead to the management recommendations that follow. The plan proposes extensive partnerships among federal, state, regional, and local agencies, the private sector, and the Mississippi River Coordinating Commission. The success of the plan would be dependent on coordination and cooperation to achieve the identified visions. The commission, the Metropolitan Council, the Department of Natural Resources, and the National Park Service would work together to serve as catalysts and provide forums for these partnerships. Land use management would continue to be primarily the responsibility of local governments. The National Park Service would develop cooperative agreements with the Metropolitan Council and the Minnesota Department of Natural Resources to provide technical assistance, oversight, and coordination of land use implementation.

The implementation framework for the MNRRA comprehensive management plan envisions two levels. The first level, tier 1, incorporates the planning and regulatory requirements and standards already in place as part of the Critical Areas Act and Shoreland Management Act. The MNRRA plan envisions that with administrative reorganization and increased funding, the critical area and shoreland management programs could become a viable way of achieving many of the MNRRA plan visions and assuring minimum standards for the Mississippi corridor. Tier 2 consists of the additional land and water use, resource protection, and open space concepts, policies, and guidelines that have been developed as part of the MNRRA plan, which in some cases go beyond the minimum state and regional requirements. Compliance with the MNRRA plan by communities would not be mandatory; however, compliance with tier 2 would be necessary in order to the receive acquisition and development grants authorized under the MNRRA act. Compliance with the MNRRA plan does not ensure automatic grant funds, however.

Detailed tier 2 planning guidelines and standards would be developed jointly by the Metropolitan Council, Department of Natural Resources, and National Park Service following approval of the MNRRA plan by the secretary of the interior. This guidance would then be used to review local plans and regulations to determine if they substantially conform with the MNRRA plan. These guidelines would provide some additional direction on how communities should respond to the MNRRA plan and possibly further explain the concept of "tailoring" the MNRRA plan policies to local conditions, but they would not serve as a

substitute for a thorough analysis of the comprehensive management plan. These guidelines would be presented to the Mississippi River Coordinating Commission for review during their development.

This comprehensive management plan adopts and incorporates the state critical area program, shoreland management program, and other applicable state and regional land use management programs that implement the visions identified above. The National Park Service would seek federal funding to support the state in achieving more effective implementation of these programs, which would achieve many of the MNRRA plan visions. This is described as tier 1 above. The National Park Service would also encourage and seek federal funding to help corridor communities move to tier 2; to update their plans and ordinances to substantially conform to the MNRRA plan. This effort to encourage communities to achieve tier 2 would be a high priority for MNRRA plan implementation. The National Park Service would emphasize the grant program for land acquisition and development as the primary incentive to encourage communities to implement tier 2 and achieve MNRRA plan compliance. Other than withholding grants and the possible use of other limited enforcement authorities specified in the MNRRA legislation, section 705(d)(3), local governments that choose to remain in tier 1 (comply only with existing state and regional land use management requirements) would face no penalty for doing so. The National Park Service and the commission do not have approval authority over local plans and ordinances, and they do not have authority to approve or deny project-specific land use decisions. Existing local plans and ordinances could be amended to substantially conform to the MNRRA plan and need not be replaced entirely. The MNRRA plan does not propose a moratorium on development while local plans and ordinances are updated. Development activity would continue during this process and the National Park Service would encourage MNRRA plan consistency.

The MNRRA legislation specifies that NPS regulatory authority, in the *Code of Federal Regulations* (36 CFR), which includes regulations on the use of NPS lands, only applies to lands that the National Park Service owns, which are envisioned in this plan to be less than 50 acres. The National Park Service does not have 36 CFR or other regulatory authority outside of these federal lands. Special regulations under 36 CFR could be established for these small NPS-owned land areas if necessary to address issues not covered in the general regulations, but that is not contemplated at this time.

The Metropolitan Council would assist local governments with modifications to their comprehensive and critical area plans to promote consistency with this plan (if local governments elect to adopt tier 2). These plans would be reviewed concurrently for consistency with regional objectives under existing Metropolitan Council authorities. The Department of Natural Resources would assist local governments with ordinance modifications to ensure that they substantially conform with modified comprehensive and critical area plans (if the local government elects to implement the second tier of planning and management described in this plan), and it would monitor local government implementation of those ordinances. The National Park Service would review major proposals that have potential for significant impact. The National Park Service and the commission would facilitate multiagency discussion of major issues. The National Park Service is the primary advocate for national interests in the corridor and has mandated review responsibilities for federally funded or permitted activities. The Park Service would also have major roles in providing interpretive leadership and allocating grants (if funds are provided by Congress).

A common concern during the planning process was the imposition of another layer of government bureaucracy. That concern would be satisfied with this plan, because the Metropolitan Council is already involved in comprehensive plan modification issues and the Department of Natural Resources is already involved in land use ordinance matters. The existing critical area program review by the Environmental Quality Board would be transferred to the Department of Natural Resources and coordinated with the shoreland management process, which would help streamline existing state authorities.

Reviews under the MNRRA plan would be coordinated with existing review processes. NPS review of undertakings by other federal agencies in the corridor, as well as other reviews discussed in this section, would be completed within existing review timetables to the maximum extent practical. The National Park Service would not have approval authority over actions by other agencies — federal, state, or local, except on lands owned by the federal government and managed directly by the National Park Service (anticipated to be less than 50 acres).

The surface water use management plan is a priority and should be prepared as soon as practical. It is an important component of the tier 2 planning process, although it might not be completed when the tier 2 planning process goes forward. The Corps of Engineers, Metropolitan Council, Department of Natural Resources, Department of Transportation, and National Park Service would be responsible for the timely completion of the surface water use management plan. The National Park Service would promptly explore and work to secure federal funding, and assist partners in identifying other funding sources for preparation of the plan. All interested persons, including commercial navigation transporters, agricultural, recreational, environmental, and municipal representatives, and the general public would be involved in the planning process.

Citizen participation would be an important part of ongoing national river and recreation area management, including appropriate involvement on task forces and committees.

Partner Roles

The major partners have a number of roles in implementing the comprehensive management plan. There are many other agencies and organizations, such as the U.S. Coast Guard, that would be critical to the success of the plan. The following includes descriptions of selected partners, which are not listed in priority order. This section presents an overview of their responsibilities. Additional details on roles and relationships would be worked out in follow-up cooperative agreements and memoranda of understanding.

The Commission. In addition to its key role in preparing this plan, the 1988 MNRRA legislation directs the Mississippi River Coordinating Commission to assist the secretary of the interior in reviewing and monitoring implementation of the plan by other federal, state, and local agencies. It also authorizes the commission to recommend modifications to the plan. The commission would not have approval authority over land use plans or development or pollution control permits in the corridor, but it would serve as a forum to bring involved organizations together to discuss major land and water issues in the corridor. The commission would receive reports from the National Park Service, Metropolitan Council, and Department of Natural Resources and would make reports to the secretary of the interior on the progress

of plan implementation. The Park Service would continue to provide funding and staff services for the commission. The major functions of the commission would be to:

act as catalyst and facilitator for local efforts

regularly monitor progress toward plan implementation

recommend modifications to the comprehensive plan and prepare draft amendments (with public input)

raise issues to the public and to state government

provide general oversight and periodic status reports to the public on the progress of plan implementation

serve as a forum to resolve disputes, including major site-specific issues in the corridor

advise the secretary of interior and the governor on the progress of plan implementation

provide recommendations on follow-up implementation plans prepared by the Park Service and other corridor partners

Federal law authorizes the establishment of a state commission after the 1998 sunset of the Mississippi River Coordinating Commission. Prior to its sunset, the commission would recommend to the state what entity should continue to provide the above functions.

The National Park Service. The Park Service would monitor general implementation progress along with the commission. The National Park Service would have the lead role in coordinating interpretive activities for the corridor. The Park Service would offer various types of technical assistance to communities on matters related to the river corridor or plan implementation. The Park Service would contract with the Metropolitan Council and Department of Natural Resources to provide assistance to corridor communities to encourage substantial conformance of their plans and actions with the MNRRA plan. The National Park Service (acting for the secretary of the interior) would make the final determination on whether communities are conforming to the MNRRA plan, as specified in section 705(c) of the MNRRA legislation. The Park Service would administer the grants program authorized by the enabling legislation for communities that choose to implement tier 2 and substantially conform to the MNRRA plan, and the National Park Service would assist local governments in identifying and seeking other funding that could be used for river corridor projects that are compatible with this plan. The Park Service, working with the commission and other agencies, would have the lead to develop more detailed plans, such as a resource management plan and visitor use management plan. The National Park Service would carry out its mandated federal review responsibilities, emphasizing natural, cultural, and economic resource protection as articulated by the visions, concepts, and policies contained in the plan. The National Park Service could also review other major nonfederal actions that require a state environmental assessment worksheet, or if requested by another agency or the project applicant. These reviews would be done within existing project review processes, with an emphasis on coordinated timeframes. The National Park Service does not have approval authority over state or federal permit applications, local critical area plans, or zoning

ordinances. The National Park Service does not have authority to approve or deny specific local land use decisions. The major functions of the National Park Service would be to:

provide general oversight on the progress of plan implementation with commission

have the lead role to prepare selected implementation plans with advice from the commission and extensive involvement by other corridor partners and the public

make final determinations on whether communities are substantially conforming to the MNRRA plan and issue grants to implement the plan

provide the lead role in coordinating interpretive planning and a major role assisting with interpretive media production, publications, and exhibit development

provide the major role in developing an interpretive center and cooperating on other interpretive facilities

participate in efforts to promote tourism in the MNRRA corridor

coordinate interpretive services and provide missing programs

provide technical assistance, such as on historic preservation techniques

serve as federal and state grant information clearinghouse

review selected land use proposals (as specified above) and all federal, federally funded, or federally permitted proposals, emphasizing the use of existing review processes and timeframes

monitor overall progress of local governments to update corridor plans and ordinances

provide staff for the commission

act as catalyst and facilitator for plan implementation along with the commission

liaison with other units of government on corridor issues

implement the MNRRA plan on NPS lands

enforce 36 CFR (limited to NPS-owned lands)

The Metropolitan Council. The Metropolitan Council would conduct a review of local comprehensive and critical area plans for consistency with the first and second tier of compliance with the MNRRA plan. The council staff would assist local governments electing to implement the second tier of planning and management, identify those plans needing modification to achieve tier 2, coordinate review of draft plan amendments, provide technical assistance on amending these plans, and administer small planning grants to local governments. In preparing draft local plan amendments, communities could propose policies and provisions that are generally consistent with the MNRRA plan, but that tailor the plan

to fit the specific resources in their section of the river and thus might not be in strict compliance with specific policies of the plan. The local community should state the reasoning for the proposed local policies. The inconsistent policies and provisions would be considered by the Metropolitan Council in reviewing the proposed local plan amendment and, if it is determined that the plan's visions and general concepts are achieved and resources are protected in a balanced and sustainable manner, the provisions would become part of the approved local plan and determined to be in substantial conformance with the MNRRA plan. In reviewing draft plan amendments, the council staff would seek comments from the Park Service, and especially from the Department of Natural Resources, because the department would be responsible for monitoring land use implementation. The Metropolitan Council would advise the National Park Service on whether the updated plans substantially conform to the MNRRA plan. The final determination on whether conformance has been achieved and whether a community is ultimately eligible for the acquisition and development grant program would be made by NPS.

There is nothing in the MNRRA plan that exceeds the existing Metropolitan Council authority. There is no intervention or control over local land use decisions proposed for the Metropolitan Council, except for efforts carried out on behalf of the National Park Service to encourage communities to revise their plans to substantially conform to the MNRRA plan, similar to what they have done under the state critical area program. The MNRRA act requires that the National Park Service contract with the state or a political subdivision to review community plans and amendments for conformance to the comprehensive management plan. The Park Service would develop an agreement with and provide funds to the Metropolitan Council to accomplish its responsibilities.

The existing land use planning process occurs under the authority of the Metropolitan Land Planning Act (Minn. Stat. # 473.851-473.872) and the Critical Areas Act of 1973 (Minn. Stat., ch. 116G). The council's role in the land use planning process under these statutes is as follows. Pursuant to the Critical Areas Act of 1973, the council has the authority to review local plans and regulations to determine their consistency with regional objectives and the provisions of the governor's order designating the area of critical concern. The council then submits its evaluation of the plans and regulations to the Minnesota Environmental Quality Board for approval (proposed to be transferred to the Department of Natural Resources).

The Metropolitan Land Planning Act, which was passed in 1976, subsequent to the Critical Areas Act, requires that each local community in the seven-county metropolitan area prepare comprehensive plans that are reviewed by the Metropolitan Council for their consistency with regional policies. The council might require modifications to local comprehensive plans if the plans could constitute a substantial impact on or a substantial departure from the council's plans for the four metropolitan systems of wastewater treatment, transportation, aviation, and parks and open space. Local comprehensive plans must also contain an implementation program, including a description of official controls addressing at least the matters of zoning and subdivision and a schedule for the preparation, adoption, and administration of the official controls. The Metropolitan Land Planning Act also requires that local communities adopt official controls that are consistent with the objectives of the local comprehensive plan.

The major functions of the Metropolitan Council would be to:

assist implementation of tier 1 (improve existing state land use programs)

assist the National Park Service in analyzing existing critical area plans and developing guidance on how they should be amended to substantially conform to the MNRRA plan (tier 2)

provide technical assistance to help communities bring their plans into compliance with the comprehensive management plan

review local plans for conformance to the MNRRA plan

assist the Department of Natural Resources in developing a model ordinance for compliance with the MNRRA plan

monitor progress toward land use planning implementation

recommend modifications to the MNRRA comprehensive management plan to address local government concerns

participate in regulatory coordination and consolidation efforts

coordinate with the Mississippi National River and Recreation Area Minnesota Pollution Control Agency on water quality planning for the metropolitan area

The Department of Natural Resources. The Department of Natural Resources would have the lead in administering existing state land use management programs for the corridor, which is a key to achieving tier 1 implementation of the MNRRA plan. It would also develop a model ordinance in consultation with the National Park Service and the Metropolitan Council and assist local government adoption and enforcement of ordinances that are consistent with the MNRRA plan (if they choose to implement the second tier of planning and management described in this document). Local governments would have an active role in the model ordinance preparation, and they would have the lead in preparation of their own plans and ordinances. The model ordinance would be provided as a sample of how an ordinance could be revised for substantial conformance with the MNRRA plan but would not be made mandatory. Communities would be able to tailor the ordinance to their needs or write their own ordinance to substantially conform to the MNRRA plan. Their critical area plans would be revised to achieve substantial conformance. The Department of Natural Resources would review these updated ordinances and advise the National Park Service on whether they substantially conform to the MNRRA plan. A final determination on whether conformance has been achieved and whether a community is eligible for the acquisition and development grant program would be made by the National Park Service.

To increase coordination between existing state programs and between state programs and the MNRRA plan, the Mississippi River Critical Area Program would be transferred to the Department of Natural Resources from the Environmental Quality Board and would be

administered by the Department of Natural Resources.[2] In reviewing draft local ordinance amendments, the Department of Natural Resources would seek comments from the Park Service and especially from the Metropolitan Council since the council would be responsible for the plans on which the ordinances are based. The MNRRA act requires that the National Park Service contract with the state or a political subdivision to review local ordinances and monitor enforcement and land use implementation actions for conformance with the comprehensive management plan. It is understood that there is some low level of action that could be excluded from this review without violating the intent of the MNRRA law to monitor development in the corridor. This threshold level would be worked out in follow-up discussions between the National Park Service and the Department of Natural Resources in consultation with the affected communities. The Park Service would develop an agreement with and provide funds to the Department of Natural Resources to accomplish its responsibilities under this plan. This agreement would also confirm that the Department of Natural Resources would implement the MNRRA plan on its lands in the corridor. Under this plan, the Department of Natural Resources would have no more authority than available under existing state law. The Department of Natural Resources would not create a new review process for this effort but rather build on its existing relationships with local governments and the shoreland management program. The Department of Natural Resources would not have certification (veto) authority over local decisions except to certify to the National Park Service that revised ordinances and implementation programs are consistent with the MNRRA plan. The Department of Natural Resources would:

lead implementation of tier 1 (improve existing state land use programs)

develop a model ordinance and adopt guidelines to implement land use management portions of the MNRRA plan

assist the National Park Service in analyzing existing ordinances and developing recommendations on how they should be amended to make them substantially conform to the MNRRA plan (tier 2)

review development proposals for conformance to the comprehensive plan

monitor progress toward land use management plan implementation

review variances for conformance to the plan

lead regulatory coordination and consolidation efforts

implement the MNRRA plan on its land

The Minnesota Pollution Control Agency. The Minnesota Pollution Control Agency would continue to have the lead role in pollution prevention and control for the corridor. The Minnesota Pollution Control Agency would be the primary agency to implement most of the policies and actions that affect air and water quality in the corridor. The agency is also

2. If the critical area program is not transferred to the Department of Natural Resources, the National Park Service would contract separately with the Environmental Quality Board for the critical area program and Department of Natural Resources for the shoreland management program.

working on a major effort to reduce nonpoint source pollution on the Minnesota River, which would lead to better water quality in the Mississippi River through the lower half of the river corridor. The Minnesota Pollution Control Agency would:

continue its lead role in pollution prevention and control programs

coordinate with Metropolitan Council on water quality planning

monitor progress toward pollution prevention and control plan implementation

The Minnesota Department of Agriculture. The Minnesota Department of Agriculture would continue to be responsible for pesticide and fertilizer storage and use requirements and cleanup activities in the MNRRA corridor under existing state law. The Minnesota Department of Agriculture would also continue its authorized role in regulation of land use under the Minnesota Agricultural Land Preservation Act. The Minnesota Department of Agriculture would continue:

its lead role in regulating agricultural chemicals, including pesticide and fertilizer storage and use

its lead role in cleaning up ground and surface water contamination from agricultural chemicals

regulating land use in the corridor through the Minnesota Agricultural Land Preservation Act

State Historic Preservation Office of the Minnesota Historical Society. The State Historic Preservation Office would continue to have the central role in protecting cultural resources in the MNRRA corridor. This plan also supports a strong emphasis on historic preservation efforts at the community level. The state's "certified local government" program would be emphasized. The State Historic Preservation Office would:

continue its central role in protecting cultural resources

promote the enactment of new local historic preservation ordinances

offer technical assistance to communities in establishing local preservation programs and reviewing critical area plans

work with local preservation commissions to integrate MNRRA policies and objectives into local preservation plans

help fund local historic preservation survey and planning efforts through the certified local government grants program

continue its section 106 of the National Historic Preservation Act review responsibilities

work with local units of government to integrate cultural resource concerns into community plans and ordinances

The Corps of Engineers. Commercial navigation management would continue to be the responsibility of the U.S. Coast Guard and the Corps of Engineers, with day-to-day coordination and consolidation efforts provided by the Corps. The Corps of Engineers would be responsible along with the Department of Natural Resources and National Park Service for periodically reviewing the commercial navigation and barge fleeting program, including consolidating and coordinating permits, communication, and education, to ensure conformance with the MNRRA plan. The National Park Service would also review all individual permit applications under the MNRRA legislated review authority. The Corps of Engineers would:

continue the lead role on regulation of commercial navigation

lead coordination and consolidation efforts for commercial navigation regulation

coordinate development of the surface water use management plan

report to the commission on efforts to implement the MNRRA plan

implement the MNRRA plan on its lands

Local Governments. Local governments would be the primary vehicle for implementing the land use management and open space portions of this plan, and local control of those authorities would be retained. Land use management would continue to be the responsibility of local governments, but their actions would be reviewed by the Metropolitan Council (plans) and the Department of Natural Resources (actions). Communities that choose to participate in the NPS grant program would update their plans and ordinances to the second tier management framework and substantially conform to the MNRRA plan. Federal cost-sharing funds would be made available to local governments for plan and ordinance revision. Local governments would continue to have the lead in local economic development planning activities. They would:

comply with existing critical area law and shoreland management regulations (tier 1)

be encouraged to revise their plans and ordinances to substantially conform to the MNRRA plan (tier 2)

continue implementation of land use controls

acquire and develop parkland and build trails

receive acquisition and development grants if implementing the MNRRA plan (tier 2)

conduct economic development activities

operate local parks and interpretive facilities

implement the MNRRA plan on their lands

Private Sector. The citizens, interested organizations, and businesses in the metropolitan area are critical to the success of the MNRRA plan. Concern has been expressed by some parties interested in the river that the plan would hurt their interests. It is hoped that by working cooperatively to develop a joint understanding of the problems and a shared vision for the future of the corridor, citizens, organizations, and businesses would recognize the benefits a coordinated plan could bring to everyone in the area. If implementation proceeds, the commission and partner agencies would make a major effort to enlist the help of businesses, organizations, and landowners in corridor activities, including pollution prevention, bank cleanup, trail building, enhancing economic resources, and public education. Much has already been done by local industry and nonprofit organizations for the good of the river, and this could be a sound basis for more. The private sector would:

propose land use and site development actions consistent with the plan

provide private sector funding for partnership efforts

sponsor citizen efforts to clean up the corridor

redevelop or improve areas to accomplish the plan's visions and concepts

increase efforts to prevent and reduce pollution in the corridor

operate private interpretive facilities and commercial recreation activities consistent with the plan

provide input to comprehensive plan implementation, including follow-up plans

implement the MNRRA plan on their lands

Coordination and Consistency

While the majority of land management responsibilities would remain with local governments, more effective management would result from corridorwide cooperation and improved coordination. Without this cooperation and coordination, individual cities might not protect resources such as bluffs or shorelines as well as their neighbors. Also, they could make zoning decisions without regard to the visual, traffic, or environmental impacts to neighboring communities or the river. Several of the previous planning efforts identified the need for consistency and coordination in managing the river corridor. The studies and the MNRRA legislation also identified the need for consolidating and coordinating the permit process, which is discussed below.

At present, local governments are responsible for land use decisions in the corridor (state designated critical area) with oversight from the Environmental Quality Board. In the case of violations or lack of implementation, this arrangement has not been particularly effective. Many excellent individual local efforts have occurred over the years, but there is little coordination or communication. A brief analysis of the state critical area work follows, which points out the need for improved consistency and coordination of use and development in the corridor.

The Mississippi River critical area was created in 1976 by a governor's executive order in response to concerns about preservation and enhancement of the Mississippi River. The purpose was to:

promote orderly development of the residential, commercial, industrial, and public areas in the river corridor

conserve the natural and scenic beauty of the corridor

conserve and develop natural resources in the corridor

provide for the compatibility of land use throughout the corridor

The program required local governments to prepare plans addressing land use, resource protection (especially riverbanks, bluffs, vegetation, water quality, wetlands, and floodplains), barge fleeting, trails, parks and recreation, view preservation, and erosion. Although most of the local governments prepared plans, they varied widely in content and quality. In spite of several excellent plans and implementation programs (the results of which are visible today), the program did not result in an overall vision for the river corridor, or result in consistency in plans or coordination of implementation. It did not result in a unified land or resource protection program or comprehensively address barge fleeting. Implementation by local governments varied. However, the critical areas program raised local and public awareness of the importance of the river and its resources and resulted in some excellent plans. These plans were used as a basis for provisions in this comprehensive management plan. The Mississippi was formally redesignated as a state critical area by state statute in 1991, but little has been done to implement that statute.

There is a perception that the procedures for obtaining permits required by local, state, and federal agencies are onerous, confusing, and redundant. There seems to be no one authority or source of information on a number of river-related subjects. This perception is widely held by industry and even by local government officials. Those officials also believe that they are being affected negatively by new mandates without corresponding funding. The next section addresses these issues. Some of the problems are being addressed by local, state, and federal agencies; activities resulting from the MNRRA plan would build on work that is ongoing.

Proposal for Consistency, Coordination, and Consolidating Permits. The following recommendations define responsibilities for improvements in coordination and consistency:

design guidelines — corridor partners (see sample design guidelines in appendix C)

oversight and coordination of local land use decisions — Metropolitan Council and Department of Natural Resources

review of federal activities — the National Park Service and other partners

coordination of corridor activities — the commission and National Park Service

coordination and consolidation of permits and regulations — a temporary task force

coordinated land use plans and regulations consistent with the MNRRA plan — Metropolitan Council, Department of Natural Resources, and, in the case of lands within the scope of the Minnesota Agricultural Land Preservation Act, the Minnesota Department of Agriculture

In order to address the MNRRA mandate to coordinate policies, programs, and permits of federal, state, and local agencies, the identification of those governmental activities to be considered is necessary. Planning and regulatory authorities could cover several activities. Land acquisition and resource management is one. An agency could also have the authority to establish standards that might be enforced by the agency or by another level of government. A third category is issuing permits (Minnesota State Planning Agency 1975). An agency might also have the authority to participate with another on projects with a specific purpose. This last type of activity might involve programs and plans based on a policy, but not through a permitting or regulatory activity. Finally, tax policy also influences land use decisions. Tax policies often impact investments in land that ultimately affect land uses.

Previous reports and studies list a large number of governmental bodies with many responsibilities. This section of the plan concentrates on those with direct regulatory authority. This does not negate the importance or impact of planning and management efforts of nonregulatory agencies, nor does it exclude such efforts from coordination and consolidation. Several models for planning coordination currently exist among MNRRA governments and could be expanded. Examples of coordination of direct regulatory responsibilities also exist among governments in the Mississippi National River and Recreation Area that could be used as models for the future by all levels of government. The existing efforts to coordinate permitting and other direct approval roles would be part of the foundation for the interagency coordination proposal. In December 1992 the governor of Minnesota directed all state agencies to review their programs and eliminate or reduce rules and regulations affecting Minnesota business (E.O. 92-15).

Several studies have addressed the often unwieldy regulatory system that results in many levels of review and a number of permits necessary for certain development activities in and along rivers. An inventory showing the complex array of permitting and regulatory authorities is contained in appendix J.

A Program for the Coordination and Consolidation of Permitting. Coordination and consolidation of permits and regulations is a high priority for implementation. The National Park Service would support the current efforts of the state to address this issue.

A management structure for the Mississippi National River and Recreation Area must take into account the existing authorities and institutional arrangements. Such an assessment was undertaken as part of the Metropolitan River Corridors Study Committee project. Management agencies were found to have the requisite authorities. However, program planning has developed independently due to legislation that fosters unit-by-unit planning and due to funding mechanisms based on state or national priorities rather than river system perspectives. Improvement of land use regulation was recommended along with better clarification of the roles of the varying governmental agencies and levels (MRCSC 1986).

With the land use management strategy outlined in this plan, there should be little duplication with existing land use control systems. Existing review structures would be used,

reviews would be concurrent, and existing agencies would be responsible for the review. NPS review of federal actions is mandated by the MNRRA legislation. Coordination would be a major goal in all of these processes.

An effort to address coordinating and consolidating permits should supply:

a mechanism to expand cross-program coordination based on a river system perspective that fulfills congressional and other legislative mandates

a mechanism to address funding priorities from a river system perspective

the time involved in obtaining permits

duplication of effort

the results of state agency action pursuant to the governor's executive order to reduce regulations

improve mechanisms to facilitate citizen understanding of and participation in permitting processes

The recommendations from past studies all agree that the many governmental levels and agencies should work together regularly, in whatever venue is most appropriate, to make the management and regulatory structure more efficient and less burdensome on the private and public sector. An example of cooperative planning exists in an informal, interagency committee that meets regularly to discuss riverfront activities and plans in downtown Minneapolis. A similar team made up of representatives from regulatory bodies would facilitate communication and reveal the redundancies and other inefficiencies now present.

Coordination and consolidation normally evolves slowly, often coming after long-term familiarity with a routine situation. The general section 404 and section 10 permits issued by the Corps of Engineers are examples. The general permit reduces duplication between the Corps of Engineers and the Department of Natural Resources by granting section 404 and section 10 permits to projects of certain types that are approved by the Department of Natural Resources. This includes small projects such as dock and boat ramp construction, small sand blankets, minor discharges, and the installation of submerged utility line crossings.

While such general permits could require specific authorizing legislation, other regulatory actions on a smaller scale could be consolidated. Great opportunity lies in reducing redundancy of federal, state, county, and municipal permits or approvals. Recommendations could be made to change state legislation regarding delegating review authority and cooperative agreements.

In order to address these issues, the following initial strategies for coordination and consolidation would be pursued:

(1) Existing permits and regulatory activities would be inventoried and analyzed. Appendix J provides a foundation by displaying the large number of agencies and permits

currently involved in the development process. This inventory should be expanded and made more specific in regard to activities that do or might require permits.

(2) A forum for all regulatory agencies would be provided in order to examine the potential for coordination. One large meeting or a series of meetings could provide the momentum needed for an interagency effort. A logical outgrowth of such a forum would be public and intergovernmental educational presentations. There is a lack of understanding between municipal, county, and state entities about jurisdictions. This leads to a perception by permit applicants that there is confusion that delays development projects and increases costs.

(3) A small task force consisting of representatives of local government, the Metropolitan Council, the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, the Minnesota Department of Agriculture, the private sector, and other interested organizations could be charged by the governor with improving the process in a limited time frame. Minnesota Department of Natural Resources should have the lead in facilitating this effort.

(4) A guide to corridor development and river activities could be published. Such a publication would require sharing expertise in specific areas, would provide a tangible product for focus, and would reduce or avoid duplication of efforts. The knowledge gained by the participating parties about other agencies would facilitate further understanding. Several publications exist that could serve as models, such as the DNR *Shoreland Development Guide*. This effort could include completing a corridorwide set of design guidelines.

(5) The Department of Natural Resources would identify specific staff to assist permittees with the process. Like the publication suggested above, this would necessitate familiarity with issues beyond those normally expected of the agency. It would also provide an objective liaison between parties in conflict situations.

(6) The commission would use the work of the task force in coordinating and consolidating the permit process as a model for other coordination and consistency measures.

(7) The commission would monitor progress on the governor's executive order on reducing regulation and would incorporate the results into corridor management strategies.

(8) The task force would assess the need for and feasibility of creating a clearinghouse for permit applications and approvals.

Compatibility with Other Plans and Programs

The proposed visions, concepts, and policies of the comprehensive management plan are, in principle, compatible with existing local, state, and federal plans and programs, and the existing channel maintenance program on the Mississippi River. This consistency review is required by the MNRRA legislation, section 703(i)(2)(C). Plans and programs reviewed

include general or comprehensive plans or programs covering the entire MNRRA corridor (or at least significant portions), such as community critical area plans. There are a very large number of site-specific plans for parcels of land or small pieces of the corridor and a multitude of local, regional, state, and federal programs having some impact on corridor sites, but it is beyond the scope of this plan to analyze each one and make a consistency determination. Few conflicts have been identified between major site-specific plans or programs and this comprehensive management plan.

Local and Regional Plans and Programs. The most pertinent local plans and programs are the cities' and townships' critical area plans, local zoning ordinances, local comprehensive plans, parks and recreation plans, and special area plans such as the *St. Paul Riverfront Plan*. These have been analyzed and the cities have been asked for input. Some inconsistencies were pointed out during this process and have been resolved. However, since this plan contains a few policies that are more restrictive than some existing critical area plans, the existing plans would have to be revised or amended if the community chooses to participate in the grant program and is determined in substantial conformance with the MNRRA plan (tier 2). After the comprehensive management plan is completed, local governments would be encouraged to review and update their critical area plans and ordinances, which would be reviewed by the Metropolitan Council, the Department of Natural Resources, and the National Park Service to determine whether they have achieved substantial conformance as described in the plan implementation section above. If substantial inconsistencies exist between the local plans and the more restrictive policies in the MNRRA plan, and the community wishes to participate in the NPS land acquisition and development grant program, the Metropolitan Council and the Department of Natural Resources, working under agreements with the Park Service, would work with the unit of government to resolve the inconsistency. This includes the possibility of amending the MNRRA comprehensive management plan if significant new information is found during the local plan reviews.

The Metropolitan Council's *Recreation Open Space Plan* is an important regional plan. The MNRRA plan envisions more local land acquisition along the river than contained in the current Metropolitan Council plan. It is anticipated that the regional plan would be updated to reflect the more ambitious open space concept articulated in this document. There have been no conflicts identified with the Metropolitan Council's regional development framework. A representative of the Metropolitan Council serves on the Mississippi River Coordinating Commission and the council was asked to review this document for consistency with regional plans. No conflict was identified.

State Plans and Programs. The state plans and programs reviewed for consistency with the MNRRA plan are:

Metropolitan Land Use Planning Act and Metro Governance Act
Shoreland Management Program
Minnesota Floodplain Act
Waters and Watercraft Safety Act
Metropolitan Surface Water Act
Minnesota Critical Area Act and Governor's Executive Order 130
Minnesota State Comprehensive Outdoor Recreation Plan
Wetland Conservation Act

Minnesota Groundwater Protection Act
Minnesota Agricultural Land Preservation Act

There have been no conflicts identified with these plans and regulations. In addition, members of the commission include representatives of the Minnesota Department of Natural Resources, the Minnesota Historical Society, and the Minnesota Environmental Quality Board. These members were asked to review the plan for consistency or potential conflicts with their agencies' plans. These state agencies were asked to review the draft comprehensive management plan/environmental impact statement during the public review process and potential conflicts were addressed in this final plan.

Federal Plans and Programs. No conflicts have been identified between this plan and other federal agency plans for the corridor. Plans specifically reviewed were the *Minnesota Valley National Wildlife Refuge Master Plan* and the *Upper Mississippi Land Use Allocation Plan* (Corps of Engineers).

The commission includes members from the U.S Fish and Wildlife Service and the Corps of Engineers, who were asked to review this plan for consistency with their plans and programs. No conflicts were identified.

Channel Maintenance Program. No conflicts have been identified between this plan and the channel maintenance program for the Mississippi River. The Corps of Engineers has a representative on the commission, and the agency was asked to review this plan for consistency with the channel maintenance program. No conflicts were identified.

Water Quality

The MNRRA legislation, section 703(i)(2)(D), requires a statement on coordinated implementation regarding the provisions of the Clean Water Act and Safe Drinking Water Act. The provisions that pertain to the surface waters would continue to be implemented by existing federal, state, and local agencies. The National Park Service and the commission would periodically review actions taken to implement the plan to facilitate coordination and determine if progress is being made toward meeting water quality standards and achieving improvement in overall water quality in the corridor. Specific policies and actions are discussed in the resources management section above.

Costs and Priorities (Financial Plan)

Following are estimated costs to implement the proposed plan. This section constitutes the financial plan referred to in the MNRRA legislation, section 703(i)(2)(B). NPS facility construction cost estimates were prepared by an NPS estimator (based on the cost of similar facilities in the midwest region) to comply with NPS guidelines for preparing general plans. The Mississippi River Coordinating Commission neither agrees nor disagrees with these estimates.

Development. NPS development costs would be incurred for the St. Paul/Harriet Island interpretive/headquarters facility and the Minneapolis/St. Anthony Falls interpretive facility.

Development costs cannot be estimated in great detail at this time. Estimates provided below are "class C," which means they are based on general size assumptions and the cost of constructing similar facilities in the Midwest. They should be considered rough, preliminary estimates subject to change during additional planning and design.

The Harriet Island building would be the first phase for NPS facility construction because it would provide the primary center for corridor orientation and area headquarters. It would cost about $8 million for construction contracts, furnishings, interpretive exhibits, and site development, including construction supervision and contingencies. These costs are very preliminary estimates and based on only a conceptual site plan. They include a factor for inflation due to the uncertainty of when funding might become available and the fact that even if funds were available the year after plan approval, actual construction would still require a couple of years to allow for interpretive planning, project site planning, and design development. NPS planning directives require that all cost estimates in general planning documents be shown as "gross" costs, including the cost for construction supervisors (NPS or contract). Contingencies must also be included to cover potential unforeseen costs related to site development, such as difficult soil conditions or archeological mitigation work. The MNRRA plan makes a commitment to total accessibility, sustainable design, and high quality construction that could require a greater up front cost, but would result in lower long-term operation and maintenance costs and provide a showcase for environmentally friendly development. Site surveys and design costs (advance and project planning costs) would add about $1.6 million to this cost. Funding for this facility would be provided through an appropriation from Congress or from other funding sources. For additional details on this cost estimate see appendix K.

The St. Anthony Falls interpretive facility would be developed in later phases. The total costs of that facility cannot be estimated until additional details are worked out with the partners in that area. Assuming a 12,000-square-foot facility, of which half would be funded by the Park Service, the NPS construction and interpretive display development would total about $2,286,000, which includes construction supervision and contingencies for 6,000 square feet of this space. Because a specific space has not been identified, this was estimated as if it were equivalent to a new building. Actual costs could be significantly higher or lower than this estimate, depending on the condition of the space selected for the interpretive center and potential historic preservation treatment needs. Park Service facility and interpretive exhibit design costs would be about $460,000 for this center (NPS share), again assuming new construction cost equivalency. The interim center for this area would be done as soon as possible. There would be no construction cost for the interim center.

The Washburn/Crosby complex is a national historic landmark. A portion of it burned in 1991. It was identified as the best site in the area through extensive discussions with interpretive partners. It must be viewed in the context of a vision of major rehabilitation for the waterfront in this area, which is planned by the city of Minneapolis and supported by this document. This includes proposals for Mill Ruins Park, the Heritage Trail, and major concepts for rehabilitating and adaptively using the Washburn/Crosby complex and its immediate environs. The cost of stabilizing and maintaining the complex without adaptive reuse would be prohibitive. A developer is needed to facilitate the rehabilitation and the city of Minneapolis is seeking an investor. A final NPS commitment to move into the complex would occur after more facility planning is completed, it is rehabilitated, and there is a commitment for a compatible mix of uses. If the right combination of uses are assembled and a portion of

the building that is in better shape is used, the cost to locate the interpretive center in the complex might not exceed the costs to use other historic buildings in the area.

NPS wayside exhibits in the corridor would cost about $180,000, including design and production. These would be done during the second or third phase of NPS construction at the Mississippi National River and Recreation Area. There would also be NPS costs in the design and production of interpretive media for other cooperative centers. It is not possible to estimate these costs at this time.

The MNRRA legislation authorizes matching grants of up to 50% of the cost for development of lands by others in the corridor consistent with the plan. Congress would be asked to fund this program through the federal budget appropriations process. This would be a high priority for plan implementation. A detailed inventory of state and local park land development needs that are consistent with this plan has not been assembled and is beyond the scope of this plan. Therefore, it is difficult to estimate total costs of development that might be funded by this program. Projects that would be funded are those achieving the visions and concepts of this plan and in compliance with the policies articulated in this document. Within one year after approval of the plan, a framework for the grants program would be developed. The process would include scoping with river corridor communities to assess the magnitude of projects potentially eligible for grant funding. Based on this scoping, a report would be prepared detailing possible costs and priorities for grants projects. It is probable that needs would far exceed funds available, and a priority system would be set to fund the most important projects first. If the grant program is funded by Congress a written process would be developed to determine grant recipients and amounts with selection criteria further spelled out.

National Park Service Operations. Total annual salaries for Park Service staff when the area is fully operational would be about $994,000 (based on 1994 salary tables). Benefits add, on average, about 30% to salaries. Total staff benefits would be about $298,000. The staff would also need support materials and services (such as equipment, travel, and training). Support materials and services should total about $248,000 (or about 25% of salary). Thus, total annual personnel costs would be about $1,541,000. Support for the Mississippi River Coordinating Commission is included in this figure.

The cost of maintaining the St. Paul interpretive center and surrounding grounds is estimated at about $180,000 per year. This includes contract custodial, general repair, lawn care, landscape upkeep, and snow removal services. The estimated maintenance costs for the Minneapolis center cannot be determined at this time. The annual cost and how it would be accomplished are subject to further planning and negotiation with the facility partners. It is anticipated that there would be no NPS maintenance costs at the other cooperative interpretive centers.

Other Agency Operations. As stated above, the Metropolitan Council and Minnesota Department of Natural Resources would provide monitoring and implementation review of land use plans and proposals for conformance with the MNRRA plan. Local governments would be asked to update their plans to conform to the MNRRA plan. These state and local activities would require an estimated annual budget of about $300,000, which could be allocated to these agencies under the cooperative planning authority in the MNRRA legislation, section 706 (b). Local agencies would be eligible for grants under this funding

source to update their critical area plans and ordinances to substantially conform to the MNRRA plan. The details of how this funding would be distributed would be worked out in follow-up agreements with the involved agencies. The National Park Service would seek funds through the appropriations process to cover these needs, and this would be a high priority for plan implementation.

Land Acquisition. There would be no costs for NPS land acquisition as the proposed plan is written. The land for the interpretive center/headquarters facility in St. Paul would be donated by the city of St Paul. Pursuant to Secretarial Order 3127 the site would be surveyed for hazardous waste. Cleanup costs, if any, would be borne by the city. Land for interpretive facilities in Minneapolis, Fort Snelling State Park, Hastings, and Coon Rapids would be owned by other partners. There is the possibility that land acquisition costs would be incurred if eminent domain proceedings are required to protect threatened resources under the terms of the MNRRA legislation and this plan; however, eminent domain would be used only as a last resort in very limited circumstances, and any associated costs cannot be estimated at this time.

Local land acquisition would be facilitated by the grant program authorized in the MNRRA legislation (if appropriations are made by Congress) in coordination with existing state and regional funding programs. This would be a high priority for plan implementation. Criteria for land acquisition priorities are contained in the open space proposal. There is insufficient detail at this time to estimate the total cost of this program, but it would be significant. Again, the needs would probably exceed funding available, and projects would be funded based on the criteria articulated in the open space section above. NPS staff would work with local governments in the corridor to more thoroughly estimate these needs and within one year after this plan is approved would provide an estimate of total funding needs in the report discussed in the development cost section above. If the grant program is funded by Congress written grant application procedures and selection guidelines would be developed.

Funding. Funding for plan implementation would come from federal grants, state and local programs, donations from the private sector, and appropriated increases in the NPS operating budget. Funds from these sources would be sought through the normal budget process and administered by the Park Service in consultation with the commission. If funded by Congress, the Park Service would provide direct grants for up to 50% of the cost for public land acquisition and development by other entities for projects that conform to the MNRRA plan. The MNRRA legislation in section 706 (a) is not limited to park land, but it does limit these grants to "acquisition and development." The grant program would be a high priority for plan implementation. This funding would be available to communities that move to tier 2 of plan implementation and choose to update their critical area plans and ordinances to be consistent with the concepts and policies in this plan. The Park Service would also assist in identifying and pursuing other grant funds available to local communities. However, other federal funds could not be used to provide the local 50% match for the program authorized in the MNRRA legislation.

The commission would stimulate fund raising activities by others to implement the visions, concepts, and policies contained in the plan. The National Park Service would seek congressional authorization for a more general authority, if determined necessary during review or implementation of this plan, to make a broader range of grants available. This might include a range of local government activities that would be carried out to implement

the plan. Priorities for these grants would be developed if the broader authorization is granted.

Following are alternatives to the proposed plan. The text emphasizes where the alternatives differ from the proposal. Where the alternatives are the same as the proposal the text is normally not repeated. Due to the conceptual nature of the proposal and the extensive reliance on cooperation and coordination for the MNRRA plan, all alternatives, including the proposed plan, cannot be developed in great detail at this time.

ALTERNATIVE A (NO ACTION)

GENERAL CONCEPT

The no-action alternative would continue existing trends and plans for the corridor. No overall comprehensive plan would be adopted for the river corridor, and local communities would continue to manage the river with existing coordination and cooperation efforts. Political boundaries would continue to delineate different management regulations, so segments of the 72-mile stretch of the Mississippi River would be managed according to different plans and programs.

LAND AND WATER USE

Land Resource Protection Concept

This alternative would continue existing city and county land use programs. No comprehensive land use management concept would be implemented for the 54,000 acres in the river corridor. Continuous open space would only be found where it already exists or where planned by individual communities, such as Minneapolis and St. Paul. There would be no comprehensive attempt to maintain a natural appearance from the river or its approximately 275 miles of shoreline in the corridor.

Land Use and Protection Policies

Land use, including riverfront location decisions, would be based on local plans without an overall concept or a consistent land use or site development policy. There would be no coordinated policy to encourage selective use of the approximately 16,400 acres within the riverfront area as described in the proposed plan. Some communities currently require that development along the river be related to the river, but others have no such requirement. Setbacks vary and other resource protection regulations differ. No new incentives would be developed to encourage industries that no longer rely on the river to relocate away from the riverfront.

DNR shoreland and critical area rules and local ordinances would continue to govern shoreland development, including setbacks and vegetation clearing. Some local requirements might continue to be stricter than the statewide standards. There would be no NPS grant program to encourage communities to update their corridor plans to be consistent with the MNRRA plan.

Open Space and Trails

Open Space and Trails Concept. Open space development would take place pursuant to local plans without a comprehensive vision or coordinated plan for the river corridor. Ownership of existing public recreational land would not change. Neighborhood links to the river and access for persons with disabilities would be developed on an individual site basis rather than

as part of a corridorwide initiative. Trails would be developed based on existing local and regional plans (see Existing Parks and Trails map). This map shows approximate locations for parkland proposed by local units of government in the corridor, and small areas cannot be displayed at this scale. Proposed trail corridors are concepts only and specific alignments are subject to refinement during more detailed planning by local agencies. There would be no NPS plan to stimulate additional land acquisition and trail development in the corridor under alternative A.

Land Acquisition Concept. Existing local plans for land acquisition would be implemented, which would add about 2,000 acres to the existing 4,600 acres of public parkland in the corridor. No coordinated, corridorwide effort would be made to acquire continuous open space through the riverfront area. There would be no National Park Service/Mississippi National River and Recreation Area land acquisition grant program as authorized in the MNRRA legislation. Bicycle and pedestrian paths would continue to be developed in some areas but not in others.

Public Landownership. Acquisition of land for public open space and recreation would take place according to the individual plans of the political jurisdictions with no special coordination efforts in the river corridor and no financial incentive from the National Park Service. There would be no additional NPS lands in the corridor. As in the proposed plan, individual communities would be the primary public park landowners in the corridor.

Commercial Navigation

Commercial navigation would continue under existing management. The existing permitting system would continue. Existing barge fleeting along nine miles of shoreline would continue under different local jurisdictions, and impacts would vary. No coordinated effort would be undertaken to identify additional barge fleeting areas. No criteria would be designed for coordinated decision making for fleeting locations. Barge fleeting areas would increase based on the results of individual permit requests.

Management Zoning

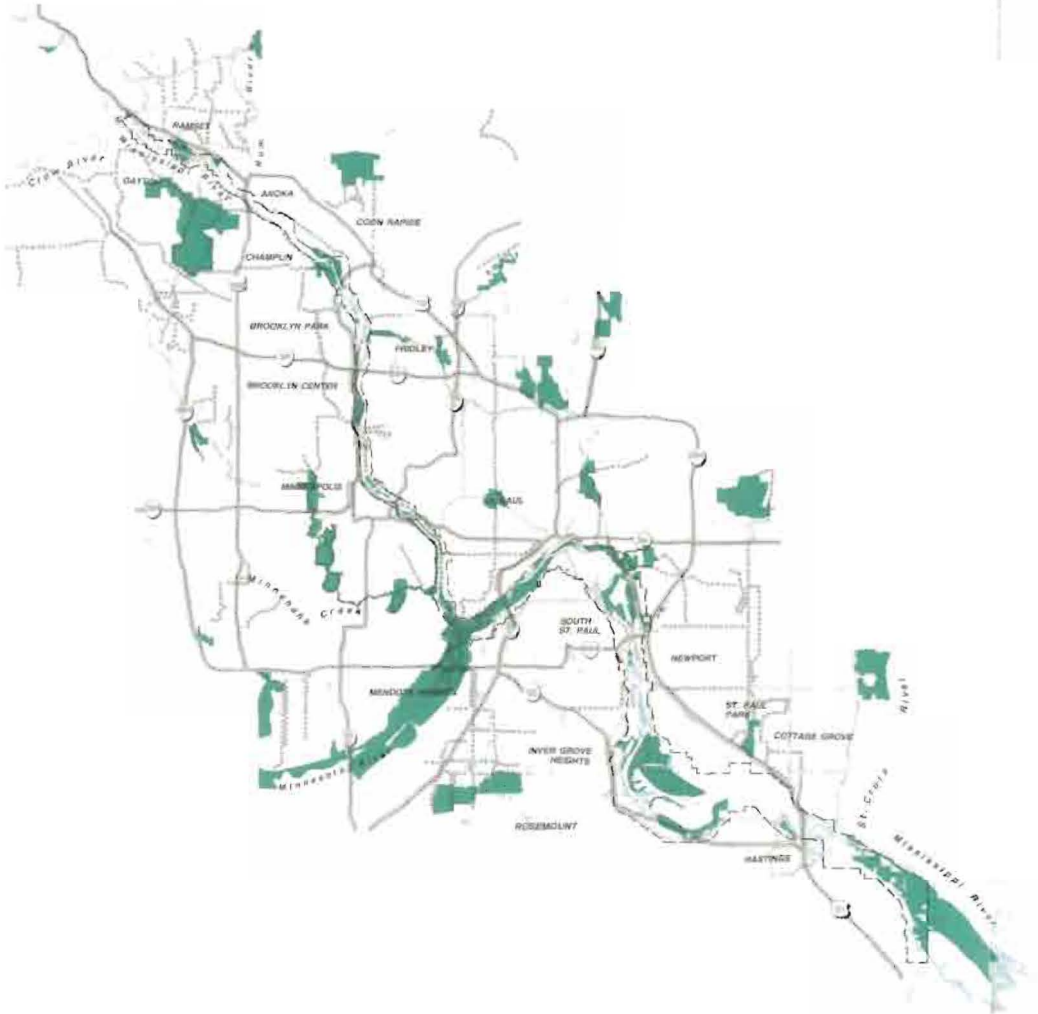
There would be no NPS land or management zoning in this alternative.

RESOURCE MANAGEMENT

Natural Resource Management

Under this alternative there would be no additional emphasis on pollution prevention due to a comprehensive MNRRA plan; existing pollution control and prevention programs would continue without the support of a MNRRA plan.

Existing policies and programs for the preservation and protection of threatened and endangered species would continue with no corridor-specific coordination efforts or additional input from the National Park Service. There would be no increased emphasis on



BOUNDARY

HYDROLOGY

EXISTING PARKS

PROPOSED PARKS (CITY, COUNTY, OR REGIONAL PLANS)

EXISTING TRAILS

PROPOSED TRAILS (CITY, COUNTY, OR REGIONAL PLANS)

MILES

NORTH

EXISTING PARKS AND TRAILS
MISSISSIPPI NATIONAL RIVER & RECREATION AREA
United States Department of the Interior
National Park Service

ON MICROFILM

habitat acquisition and management in the corridor resulting from a MNRRA plan. There would be no MNRRA resource management plan to determine further research needs specific to the river corridor and help coordinate resource protection activities in the corridor.

Cultural Resource Management

Cultural resources would be subject to existing plans and programs. No comprehensive management strategy would be adopted for the corridor. There would be no MNRRA resource management plan to determine further research needs specific to the river corridor.

Economic Resource Management

Federal, state, and local policies and regulations would continue to guide economic resource protection. The recent state recognition of the inseparable connection between a healthy environment (intact ecosystem) and economic activity would assist in the development of a framework for sustainable development. There would be no additional effort to increase tourism and associated visitor activities in the corridor or better define and coordinate economic resource protection activities in the area. There would be no resources management plan to determine further research needs for the corridor.

VISITOR USE AND INTERPRETATION

Under this alternative tourism and visitor use would continue to be guided by state and local efforts without additional coordination or input from the National Park Service or the Mississippi River Coordinating Commission. Current services would continue. Current user conflicts would be addressed using the present management structures. There would be no coordinated effort to plan for and manage recreational use in the corridor.

The responsibility for interpretation would remain with existing entities. No new programs would be developed that portray the national significance of the Mississippi National River and Recreation Area. There are many excellent programs at present, which would continue, and many opportunities exist for coordination between state and local programs and facilities. Any such coordination efforts would be the responsibility of the existing agencies with no single agency taking the lead.

GENERAL DEVELOPMENT

In this alternative no NPS interpretive centers would be built and no cooperative centers would be established. No NPS headquarters would be constructed. Other development would proceed according to local plans. There would be no coordinated effort for park and recreation development, and no National Park Service/Mississippi National River and Recreation Area grant program.

PARK OPERATIONS

There would be no significant change in NPS staff, and administrative offices would continue to occupy leased space in St. Paul.

PLAN IMPLEMENTATION

Policies and programs now being implemented or planned by local jurisdictions and state and federal agencies would guide action in the river corridor.

This alternative would require significant changes in the MNRRA legislation by Congress, as it would not meet basic mandates in the act. This could entail disbanding the Mississippi River Coordinating Commission and rescinding the mandates for a MNRRA plan, including those regarding coordination of policies and programs and consolidation of permits.

Monitoring and review activities by the National Park Service could continue or these duties could be rescinded by congressional action.

Ultimately, Congress could deauthorize the Mississippi National River and Recreation Area, removing the national designation and ending all further MNRRA activities.

Costs and Priorities

No federal funding for new activities would be needed to implement this alternative. Current programs would continue, as needed, for NPS operations, interpretation, and GIS assistance. No additional federal funding would be required. Raising and acquiring funds for local programs would remain the sole responsibility of the implementing agencies.

Funding

No additional federal funding would be provided. State and local agencies could continue to apply for parkland grant funds through the federal Land and Water Conservation Fund.

ALTERNATIVE B

GENERAL CONCEPT

This alternative would emphasize greater natural, cultural, and economic resource protection and enhancement, increased open space preservation, more rigorous riverfront policies, greater shoreline restoration, and an emphasis on passive visitor use. Efforts for resource protection would be coordinated between the National Park Service and existing state, federal, and local programs, with the Park Service taking the lead on protection of the natural and cultural resources. While alternative B has some elements of a more traditional national park, it would still involve a major partnership effort consistent with the MNRRA legislation.

LAND AND WATER USE

Land Resource Protection Concept

Under this alternative, MNRRA activities would focus greater attention on the protection of the natural, cultural, and existing economic resources in the 54,000-acre corridor. Economic development activities would continue to be the responsibility of existing state and local programs, as in the proposal, and there would be no NPS effort to increase economic uses in the corridor. The National Park Service would guide and coordinate the efforts of local, state, and federal agencies in resource protection, open space, and passive visitor use activities. In the event of conflicts between resource management goals, natural and cultural resource preservation would be given preference over corridor use and development activities. Solutions that address all aspects of the resources in the corridor would be sought.

Greater open space would be encouraged than in the proposed plan, and developments would be designed to appear more natural from the river. The natural appearance and function of sensitive features would be protected or restored. Further degradation or alteration of these features would be strongly discouraged.

Land Use Protection Policies

These policies would be strengthened by implementing programs and guidelines to actively protect, maintain, and restore the natural appearance of the river, wetlands, bluffs, vegetation, and shorelines. Cultural resources would also receive more protection, and preservation would be encouraged to a greater degree than the proposal. There would be a more extensive land acquisition program than in any other alternative. Regulations would be enacted and enforced for land use locations, designs, and construction. Currently undeveloped areas, totaling about 19,000 acres, would be kept open and used for habitat protection and recreation to the maximum degree possible. It is recognized that the actual amount of public open space in this alternative would be far less than the 19,000 acres that are currently agricultural or vacant lands. Alteration of bluffs, shorelines, wetlands, or the floodplain would be prohibited.

The riverfront policy in alternative B would be more restrictive than in the proposal or the other alternatives. The riverfront area, that is the floodplain or first 300 feet back from the

river (about 16,400 acres total), would be reserved exclusively for open space and river-dependent land uses. Terminals, marinas, and similar activities would continue to be allowed, but other uses would favor open space and recreational activities. Shoreland restoration would be stressed more in this alternative to provide a continuous, wide, and heavily vegetated area along the river wherever possible. Setbacks would be more restrictive. Land use policies would place greater emphasis on resource protection, commercial activity expansion would be discouraged, inconsistent uses in the riverfront area would be phased out, and funds would be provided for purchases of such uses. No river-dependent uses would be developed in conjunction with open areas or in isolated or unrelated sites, and none would impair public access to or views of the river. Only native vegetation or natural-appearing materials would be used to halt bank erosion. New river-dependent uses would be clustered or would replace uses not dependent on a river location.

Vacant, nonhistoric structures in the riverfront area would be recommended for removal if no new use or site improvements were implemented. Economic uses would be discouraged along the riverfront unless they were traditional, river-related uses. Historic structures would be rehabilitated or adaptively reused to maximize preservation and interpretation.

The bluff line policy would be more restrictive in alternative B than in the proposal or other alternatives. The first 100 feet back from the bluff line would be preserved in a natural state or revegetated to screen development in order to minimize visual impacts and protect views.

Open Space and Trails

Open Space and Trails Concept. More extensive open space and trail development would be provided in this alternative than in the proposal. The general concept is similar to the proposal but on a larger scale. The amount of open space to be acquired in this alternative cannot be determined at this time. The amount of undeveloped land in the corridor is about 19,000 acres. Of that, over 9,000 acres are already zoned for future development, and it is likely that pressures would grow to rezone and develop additional lands as the Twin Cities region grows. Under this alternative the National Park Service would work with state and local agencies to identify and cooperatively ensure maximum open space opportunities for the corridor.

Pedestrian and bicycle paths would be emphasized to a greater degree in this alternative. The riverfront area would be preserved as open space to a much greater degree than in the proposal or other alternatives, and this area would be the top priority for land acquisition. Open space acquisition criteria would place a greater emphasis on natural and cultural resource protection. Abandoned railroad rights-of-way would be aggressively acquired for trail development or other open space needs. Easements would be required in new developments for future trail corridors as in the proposal.

The downtowns would continue to appear more structured than the rest of the corridor, although more natural-looking designs would be encouraged in this alternative. There would be an increase in corridor-related activities for residents and visitors. As with the proposal, efforts would be made to integrate neighborhoods and activity centers into the corridor.

Land Acquisition Concept. The National Park Service would take a much greater role in promoting additional park land acquisition in the corridor, including direct NPS land acquisition. Many existing parklands would be voluntarily transferred to the National Park Service through donations by local governments. It is likely under this alternative that the Park Service would cooperate with existing land management agencies and share management of many parks, open spaces, and trail corridors.

Commercial Navigation

Commercial navigation activities and barge operations would continue to operate at current levels and existing fleeting areas would be protected. There would be a freeze on new fleeting sites, and existing fleeting areas would be maintained in their current state, which occupy about nine miles of shoreline in the corridor. New areas would only be allowed if research verified the necessity of the action and documented that there would be no adverse effect on natural or cultural resources. Comprehensive planning would include identification and mapping of all proposed fleeting sites in the corridor before any new ones are approved. No-wake zones and other surface use regulations would be established and enforced. The National Park Service would also cooperate with the commercial navigation industry and respective permitting agencies to ensure that natural and cultural resources were not impaired by current activities.

Management Zoning

Much more land would be managed by the National Park Service than in the proposal, although the amount is impossible to specify at this time. With exceptions for developed areas, NPS landownership would be primarily in the natural environment or historic preservation category.

RESOURCE MANAGEMENT

The National Park Service would focus on natural and cultural resource management and have a greater leadership role in research and coordination than in the proposal. The general management strategy for addressing resource management is somewhat similar to the proposal except the Park Service would more actively manage and monitor resources, provide greater technical assistance, administer larger grants, and develop extensive cooperative agreements. The Park Service would also provide expanded information clearinghouse functions, coordinate and administer research grants, and actively conduct scientific research.

Natural Resource Management

The National Park Service would more actively encourage strict enforcement of point source pollution control regulations throughout the entire corridor, setting up its own supplemental air and water quality monitoring program to identify noncompliance and pursue corrective action. The National Park Service would seek to fill in gaps in existing monitoring programs and supplement those efforts rather than duplicate existing activities. Nonpoint source

pollution would be reduced through extensive NPS and cooperator education programs and promotion of the use of native species that do not require fertilizers or pesticides. Contemporary construction techniques and new techniques for stormwater retention would be encouraged to reduce runoff. A larger program of coordinated cleanup efforts would take place along the length of the corridor under NPS leadership, which would be expected to improve the scenic quality of the area, reduce pollution, and improve wildlife habitat. The National Park Service would stress the reduction of sediment toxins to levels that would allow removal of all fish consumption advisories in the corridor. Every effort would be made to attain swimmable and fishable water quality in the entire corridor. The National Park Service would work more extensively with other agencies to speed the cleanup of the Minnesota River.

Protection of floodplains, wetlands, and threatened and endangered species would be a high priority. An extensive NPS effort to identify and protect species, biological diversity, and habitat would be undertaken, including NPS land acquisition for habitat protection. The National Park Service would take a leadership role in habitat management for all species in the corridor under this alternative.

Natural Resource Research Needs. Research needs and actions in this alternative would be greater than the proposal. The National Park Service would actively conduct research that focuses on maximum natural resource protection. A coordinated effort would be made to identify these research needs, develop an information clearinghouse, administer research grants, and provide technical assistance. The database of the NPS geographic information system (GIS) would be expanded to meet greater corridorwide research needs. An inventory of existing research and programs would also be conducted and coordinated with new research efforts.

Cultural Resource Management

Research needs and management actions for cultural resources would be greater than the proposal, and there would be an increased emphasis on cultural resource protection. Historic uses of historic structures would be strongly encouraged as would adaptive compatible uses that would not damage the significance of the resource in any way. If necessary for adequate protection of cultural resources, new state, federal, or local legislation would be sought. Direct NPS acquisition might be used to protect the most significant resources.

Economic Resource Management

Economic resource protection would be undertaken in this alternative as in the proposal, but most management activities would continue under existing federal, state, and local programs. New economic development would be allowed only when totally compatible with resource protection objectives. There would be additional economic research but it would be limited to baseline data collection on the significant existing economic resources in the corridor. Identification of natural and cultural resource research needs would include an exploration of their effects on economic resources.

VISITOR USE AND INTERPRETATION

Visitor Activities and Recreational Resources

Visitor activities and recreational resources would be similar to the proposal, but would have a greater emphasis on passive recreation activities and minimal impact on corridor resources. Activities consistent with high levels of resource protection would be encouraged. Visitor use levels would minimize impacts on corridor resources. A visitor use management plan would be prepared that would establish activity zones for visitor activity and access and more aggressively control visitor use. Activities that would cause minimum impact include contemplation of nature, hiking, cross country skiing, snowshoeing, and fishing. Increased motorcraft activity would be limited to desired levels.

The use of canoes, rowboats, kayaks, or other boats without motors would be more strongly encouraged throughout the corridor. More liberal use of no-wake zones would also be encouraged to provide additional quiet zones in the corridor and protect shorelines. Tour boats and other visitor-oriented commercial enterprises would also be promoted. Conflicts between uses would be settled in favor of those less damaging to the environment.

Visitor Use Management

A visitor use management plan would be prepared as in the proposal but with a greater emphasis on resource protection and minimizing conflicts between users. Additional visitor use would not be encouraged for the corridor and any growth would be carefully managed to protect resources. Visitor activities would be limited to protect natural resources but would include hiking, biking, canoeing, cultural education, nature study, cross country skiing, snowshoeing, fishing, and quiet contemplation.

Recreational motorboating and marina expansion would be controlled, and some areas would become inaccessible by boat. No marina or boat ramp development would be allowed until the visitor use management program was final. Activities would be designed to emphasize stewardship and resource protection with selective access. Area characteristics, resource quality, and potential impacts would all be evaluated before appropriate visitor uses would be determined. Activities would vary according to the nature of the resource and the location; resource-related special events and major interpretive activities that contribute to an understanding of corridor resources would be emphasized.

Access would be provided at levels and locations consistent with maximum resource protection. Some sensitive natural and cultural resources might have access restricted to insure their integrity but could be visible from adjacent areas. Parkland site development would emphasize natural conditions (cultural in historic areas). Trail access would be provided in all new development.

Interpretation, Education, and Visitor Services

Interpretive activities would be similar to the proposal with a greater emphasis on enhancing knowledge of resource values and protection needs. The interpretive emphasis would stress

stewardship of corridor resources. Threats to the resources would be detailed and emphasis would be placed on the need for greater protection efforts. Examples of wise stewardship would be portrayed and activities that degrade the environment would be listed. Restoration demonstrations would be given. NPS-operated tour boats would be used to aid in interpretation for visitors and school groups.

GENERAL DEVELOPMENT

The National Park Service would develop a interpretive center in St. Paul as in the proposal. The Park Service would also have a more direct responsibility for interpretive centers in Minneapolis and interpretive centers at Coon Rapids Dam Regional Park, Fort Snelling State Park, and Hastings.

More emphasis would be placed on care of the resources in the corridor and on preserving the species that are dependent upon a clean and thriving Mississippi River. More waysides and kiosks would be provided than in the proposal. They would be placed at a variety of sites and would have more direct NPS involvement.

NATIONAL PARK SERVICE OPERATIONS

A larger National Park Service staff would be required than in the proposal due to the increased role in corridor management. Numbers cannot be estimated until additional information is available on the amount of land to be managed, extent of resource management responsibilities, and the direct responsibilities for facility management, but it would be considerably greater than in the proposal. Administrative headquarters would be located at the NPS facility in St. Paul as in the proposal. District ranger stations would be established in outlying areas; the numbers and locations would depend on the amount of land managed directly by the Park Service.

In this alternative the National Park Service would have an increased role in law enforcement on the river, with concurrent jurisdiction on both the river and NPS lands.

PLAN IMPLEMENTATION

Under this alternative the National Park Service would have more direct authority to implement the land use, resource management, visitor use, and development components of the comprehensive management plan and would work with other entities to ensure plan implementation. For example, additional federal or state legislation could grant the National Park Service the authority to require permits for certain land use activities, such as major development proposals in the corridor. The Park Service would continue to monitor all activities in the corridor pursuant to existing mandates in the MNRRA act.

Partner Roles

The National Park Service would take a more direct role in the management and protection of most publicly owned park resources in the Mississippi National River Recreation Area in this alternative. The National Park Service would work with other agencies to develop a detailed land acquisition plan. Implementation of the comprehensive management plan would be achieved by the Park Service in cooperation with other entities. Other partner roles would be similar to the proposed plan.

Coordination and Consistency

In addition to actions cited in the proposal, coordination and consistency would be accomplished under this alternative by:

a federal requirement for local plans to conform to the MNRRA plan

MNRRA commission veto power over major developments determined to be detrimental to corridor resources (this would require additional legal authority from Congress)

a National Park Service-led effort to streamline and coordinate permitting and regulatory actions

additional federal legislation to grant regulatory authority to the Park Service or the commission

greater leadership and oversight on commercial navigation management activities by the National Park Service and the commission

Costs and Priorities

Most necessary funding would come from federal appropriations to the National Park Service. It would be supplemented by other federal and state grants and donations issued to the local and state governments to implement the plan.

Due to the conceptual nature of the alternatives and their dependence on cooperation by others in the corridor, detailed cost estimates cannot be developed at this time. It is likely that the cost of this alternative would be significantly higher than the proposal due to its more active NPS role, additional NPS land acquisition, enlarged NPS land acquisition grant program, and need for more NPS staff. If this alternative is selected as the preferred alternative for the final plan, more detailed cost estimates would be developed within one year of final plan approval.

ALTERNATIVE C

GENERAL CONCEPT

Promoting active recreation and tourism in the MNRRA corridor is a primary focus of alternative C. This alternative would provide for greater levels of development with the same high quality design standards as in the proposal. No significant new land use policies would be proposed or encouraged. As in the no-action alternative, the individual corridor communities would continue to delineate different land use management regulations, so individual segments in the MNRRA corridor would be managed according to different plans and regulations without significant efforts for consistency. The MNRRA visitor use and interpretive plan would serve in a similar manner to the proposal to guide and assist certain aspects of those plans, such as parks and recreation planning.

LAND AND WATER USE

The most significant resources would be protected, enhanced, and marketed to stimulate recreation and tourism. Alternative C would provide for a greater variety of development, using high visual quality standards throughout the corridor, with locations to be determined by the market, subject to existing local controls and site development guidelines. Existing legal authorities or limited land acquisition would be used to protect the most significant resources. A maximum level of river access would be provided.

Land Resource Protection Concept

Locations of various land uses would be determined by local governments, including consideration of economic development opportunities, especially commercial recreation and tourism opportunities. Some land would be acquired to provide increased public recreation and tourism. Development location decisions would be based to a greater degree on economic development opportunities, consistent with resource protection stressing nationally significant resources. Design guidelines would be used to ensure attractive developments that stimulate tourism and encourage quality business. Technical assistance could be provided by the National Park Service, Metropolitan Council, or other agencies to encourage desired land uses.

Land Use and Protection Policies

Recreation and tourism development would be emphasized and other compatible development would be encouraged. New uses would be clustered to reserve some open space. As in the proposal, new uses should be compatible with adjacent uses. The amount and location of open space would be determined by recreational demand, particularly tourism needs.

There would be no new riverfront policy for land use in the approximately 16,400 acres in the riverfront area. No additional natural shoreline restoration would be encouraged and bluffs would receive protection under existing state and local programs and ordinances.

Existing state and local setback restrictions and height limits would continue with less coordination and consistency than in the proposal or alternative B. Design guidelines would be developed for the corridor and local agencies would be encouraged to adopt them to ensure quality individual developments. Adaptive reuse of historic structures would be encouraged to ensure attractions for tourists and to preserve the most significant cultural resources in the corridor. Visual impacts would be important in this alternative but would be regulated on a local basis.

Open Space and Trails

The primary emphasis in this alternative would be the promotion of recreation and tourism in the area. There would be some additional public park land acquisition, but the preference would be placed more on larger noncontiguous parcels to support active recreational pursuits, especially those that would draw more tourists to the area and less on continuous open space along the river. Land acquisition by the most appropriate public entity would be encouraged, especially when the land would serve to promote active recreation and increased tourism. No additional NPS lands would be acquired and existing NPS holdings would be transferred to another agency.

Some additional open space would provide for the desired visitor experience and encourage tourism, but it is expected that this would be somewhat less overall than in the proposal and considerably less than in alternative B. Overlooks would be provided for river viewing at strategic locations. Additional pedestrian and bicycle paths would be provided, although a continuous trail would be a lower priority.

The priorities for land acquisition would be, in order of importance, public recreation, public river access, loop trails (including motorized vehicle trails) in large blocks of land, and land that would assist local economic development by promoting tourism. Resource protection acquisitions would be limited to nationally significant resources immediately threatened by development.

Commercial Navigation

Commercial navigation would continue under existing management. No new regulations would be adopted. Barge operations and fleeting areas would accommodate market demands while protecting nationally significant resources. The present permitting system would continue with the minimum additional involvement by the National Park Service to meet the requirements of the MNRRA legislation. Existing barge fleeting along nine miles of shoreline would continue under varying local jurisdictions. Criteria for decision making for fleeting locations and other issues would result from other coordination efforts. Conflicts would be minimized between commercial and recreational river traffic through expanded educational programs.

Management Zoning

There would be no NPS land in this alternative and therefore no NPS management zoning.

RESOURCES MANAGEMENT

The NPS role in science and resource management would be somewhat similar to the proposal, except limited to minimum monitoring of corridor-related resource issues and coordination of scientific information related to the corridor. The National Park Service would lend some technical assistance, such as providing information for the preservation of historic structures to encourage adaptive reuse.

Natural Resource Management

Under this alternative existing pollution control standards would be enforced. A system of incentives for reducing pollution below existing standards would be provided. The NPS staff would act as a clearinghouse for information on innovative techniques to reduce pollution. Educational programs would be developed to inform private landowners, businesses, and industries about practices that would protect the river environment.

Resource management actions would continue to be the responsibility of existing federal, state, and local entities. Coordinated cleanup efforts would take place along the length of the corridor to make it more attractive to visitors. Attaining swimmable and fishable water quality along the entire corridor would be a continuing goal based on existing state and federal programs and the probable increase in tourism that would result.

Protection of threatened and endangered species is required under federal law and would be done but with no increased effort by NPS staff. No intensive effort to identify such species and protect them in the recreation area would be undertaken, but existing agency programs would continue, and each locality would conform to existing laws and regulations. Wildlife observation, particularly of rare species, could be promoted to attract visitors to the area.

Research needs would be similar to the proposal. In addition, research would be conducted on coordinating resource protection with increased visitor use.

Cultural Resource Management

Management of cultural resources would be much the same as in the proposal, although the priority for resource preservation would be somewhat lower. Historic structures would be restored or adaptively reused as needed to increase visitor interest in the area and its story.

Restoration and preservation of historic and other cultural sites would be guided by their potential as visitor attractions more than in the proposal. Research needs would be similar to the proposal with a lower priority for comprehensive surveys.

Economic Resource Management

Increased tourism and visitor use would be a major focus of this alternative. Natural and cultural resources would be protected because they are powerful attractors for tourist dollars. Economic interests along the corridor would be encouraged to protect the area. The priority to preserve existing economic resources would be higher than in the proposal, and new economic development would help to ensure the economic health of the corridor.

Like the no-action alternative, federal, state, and local policies and regulations would continue to guide economic development. Recreation and tourism development would be encouraged. Cooperation would be facilitated between existing visitor services and industry to promote river corridor recreational opportunities. In addition, the coordination and streamlining of regulatory and management programs as mandated by Congress and described in the proposal would be pursued.

Recreation Research Needs

Recreation research needs would be greater than in the proposal. In addition, the National Park Service would conduct more research on increasing recreation and tourism in the corridor. For example, research linking improved water quality to increased recreational use and visitor expenditures in the area would provide an incentive for further pollution reduction. Market research on the types of recreation desired by visitors and on methods of attracting more visitors would be done.

VISITOR USE AND INTERPRETATION

Visitor use and interpretation programs would be similar to the proposal with the following differences. More active types of recreation would be encouraged. Expanded access to the river for recreational craft would be promoted, including canoes and small motorcraft such as fishing boats. Educational programs for recreational boaters of all types would be added. Additional water safety monitoring and enforcement activities would be pursued. on funding.

Visitor Activities and Recreation

This alternative would emphasize more active recreational activities, such as power boating. However, an extensive mix of experiences for visitors would also be provided throughout the corridor. Historic resources would be publicized to attract visitors. Diverse activities (from nature study to shopping) would be promoted. Transportation into and through the corridor would be provided, with maximum possible access by trail and road, including access for snowmobiles and off-road vehicles. New developments would be required to provide trail access. Activity zoning would be used to reduce conflicts.

Visitor Use Management

As in the proposal, a visitor use management plan would be prepared by the National Park Service and other entities in the corridor. The plan would use area characteristics, resource quality, economic benefit, and potential impacts on evaluate the types and levels of activity appropriate for specific areas. Visitor activities would be as varied as possible and would include hiking, boating, biking, snowmobiling, canoeing, cultural education, nature study, hunting, fishing, and shopping.

Recreational boating and controlled marina expansion would be encouraged. Activities would be designed for maximum possible economic benefit to the corridor. Resource-related special events and major interpretive activities that contribute to an understanding of natural and cultural features would be encouraged and could bring significant tourist traffic into the area.

Access would be provided at all possible levels and locations consistent with resource protection. Neighborhoods would be integrated into the corridor and access to parks, open space, activity centers, and historic resources would be similar to that of the proposal.

Interpretation, Education, and Visitor Services

The widest possible range of experiences would be provided consistent with the protection of significant resources. The interpretive emphasis would include more efforts to address the working river and the history of human interactions with the river for economic benefit.

GENERAL DEVELOPMENT

Information stations run by local agencies would be placed throughout the corridor and would encourage visitor activities and tourism. The main NPS role would be to market the area resources and stimulate visitor use though publications and other nonstructural means. There would be no NPS interpretive centers. Other entities would be encouraged to build and operate major visitor centers to attract people and provide interpretation stressing the working river. Numerous associated interpretive sites would be located in the corridor. Boats would be available for tours, and the Park Service would provide training for tour operators. Additional recreational facilities and related services would be needed to accommodate increased visitor use. These would be developed by the private sector and local agencies.

NATIONAL PARK SERVICE OPERATIONS

All entities would continue their current planning, staffing, and program implementation. The NPS role would be limited to technical assistance (if requested) such as program planning and media design or coordination of interpretive program information between areas. Overall staffing levels could be similar to the proposal. While there could be less need for land use management expertise, there is a possibility that more seasonal interpreters would be needed to accommodate increased visitor use and cooperative interpretive efforts. The National Park Service would hire staff with more marketing and tourism expertise. Administrative headquarters would continue to occupy leased space in St. Paul.

PLAN IMPLEMENTATION

Existing federal, state, and local responsibility for resource management and interpretation would continue, as in the no-action alternative. Implementation of the plan would be accomplished mainly through cooperative agreements between state and local units of government. The National Park Service would play a minimal role in management of the corridor but could serve as a facilitator between communities along the river and provide technical assistance and some leadership in interpretation and visitor use management.

Partner Roles

Cooperative agreements between all responsible entities would be used to implement the comprehensive management plan. The NPS role would be as a facilitator rather than as a land manager and implementor. The commission would have an advisory role after the comprehensive management plan is completed as envisioned by the MNRRA legislation, until it "sunsets" in 1998. State and local agencies would continue their existing roles, as in the no-action alternative.

In this alternative the National Park Service would develop an agreement with the Metropolitan Council only (without the Department of Natural Resources) to provide monitoring of land use planning and control in the corridor.

Coordination and Consistency

There would be no major effort aimed at coordination and consistency, although NPS staff would provide a minimal level of coordination activity. The NPS staff would work with existing tourism agencies to coordinate and supplement their programs.

Permitting and Regulatory Authorities

This alternative would be similar to the proposal, and there would be more extensive efforts to streamline the regulatory process to encourage high quality development and historic building preservation projects by corridor developers.

Costs and Priorities

All development, operation, and maintenance of facilities along the corridor would remain the responsibility of the existing management agency. Funding would come primarily from state and local entities and the private sector. The National Park Service could serve as a coordinator for existing federal grants and assistance programs and as an administrator of small grants for qualifying projects. There would be no costs for NPS land acquisition or development. The grants program would probably be similar to the proposal with greater emphasis on local park land development for recreation and tourism and less on land acquisition.

TABLE 2: ALTERNATIVES COMPARISON BY MAJOR PLAN ELEMENT

MAJOR PLAN ELEMENT	COMPREHENSIVE PLAN	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B	ALTERNATIVE C
Concept	•integrate and coordinate use, resource preservation, and sustainable development	•no additional coordination efforts; continue existing policies and programs	•emphasize resource preservation with some more use and development	•emphasize visitor use and tourism; protect significant resources
Land and Water Use	•coordinate resource protection/land use •continue existing uses •reserve riverfront area for river-dependent & river enhancing uses •protect shoreline and bluff •additional open space by local governments •monitor barge fleeting	•existing agencies continue to base decisions on individual policies •no corridorwide coordination efforts or regulations •continue existing barge fleeting policies	•greater open space than proposal •emphasize natural shoreline appearance •riverfront area for river-dependent uses only •phase out nonriver-dependent uses within riverfront area •protect bluff area •freeze barge fleeting areas	•land use, usually no action •encourage new, high-quality development •promote design excellence stimulating tourism •provide additional open space, focus on recreation & tourism •growth in barge fleeting per demand
Resource Management	•support efforts to prevent and reduce pollution •coordinate and facilitate research by existing agencies •monitor resource threats •NPS provides coordination and technical assistance	•continue existing programs •no new efforts to reduce pollution or improve monitoring •sustainable development would rely on state programs	• aggressively support pollution prevention, cleanup, enforcement •NPS more active in mgmt. and monitoring •increase emphasis on resource protection •continue economic resources/uses under existing management	•emphasize existing pollution control programs •promote recreation and tourism •resource protection to attract visitors and meet minimum legal requirements •continue nonrecreation uses
Visitor Use and Interpretation	•provide broad range of activities in appropriate areas •NPS lead role to coordinate efforts •NPS develops interpretive programs that focus on national significance of all corridor resources	•state and local efforts continue with no additional coordination efforts •user conflicts handled by existing management structure •existing interpretation programs continue without additional coordination	•emphasize passive visitor use activities with minimum impact •increased monitoring and use regulation •educational programs same as proposal •NPS lead role to coordinate interpretive programs	•emphasize active recreation use and increased tourism •provide additional access for boaters •increase safety education, enforcement •provide interpretive programs with greater emphasis on tourism and working river
General Development	•NPS interpretive/admin. facility in St. Paul, cooperative interpretive facility in Minneapolis, at Coon Rapids Dam Reg. Park, Ft. Snelling State Park, and Hastings area •additional local facilities	•no NPS visitor centers, other interpretive facilities developed per local plans	•develop extensive NPS interpretive and recreational facilities •install additional waysides and kiosks •support additional local facilities	•no NPS visitor centers; other interpretive facilities per local plans •support additional recreational facilities
National Park Service Operations	•expand NPS staff in planning & resource management, interpretation & administration •develop administrative office at St. Paul interpretive center	•no increase in NPS staff •continue to lease space for NPS administrative office	•expand NPS staff •additional NPS staff for increased monitoring and land management activities •NPS concurrent mgmt. jurisdictions on river	•possibility increased seasonal staff for increased recreation and visitor use •add expertise in marketing and tourism
Plan Implementation	•extensive partnerships, •coordination & progress review by MRCC and NPS •agreements with Metropolitan Council and Department of Natural Resources to review plans and actions for conformance to MNRRA plan	•existing policies and programs continue •no grant program •possible deauthorization of MNRRA by Congress	•extensive partnerships •NPS more direct role in resource management •NPS monitor activities as mandated in legislation under agreements with local governments	•extensive partnerships •agreements with another agency to monitor land activities as mandated in legislation •stronger NPS role in recreational development

TABLE 3: SUMMARY OF IMPACTS: PROPOSED PLAN AND OTHER ALTERNATIVES

Value	Proposed Plan	Alternative A (No Action)	Alternative B	Alternative C
Water Resources	some reduced water pollution	no effect	greater pollution reduction	minimal effect
Air Quality	minimal impacts on air quality	continued intermittent exceedances of some pollutants	greater pollution reduction	minimal effect
Soil and Vegetation	increased revegetation of river banks with native species; encouraging erosion prevention measures would retain soils	continued clearing of banks in some areas and associated erosion; inconsistent steep slope and bluff line protection with associated vegetation and soil loss	greater revegetation of river banks; increased use of erosion control measures, implementation of monitoring system	some loss of vegetation due to increased development
Wildlife	increased protection of dwindling wildlife habitat in corridor	continued loss of wildlife habitat to development	greater protection for wildlife habitat areas	possible loss of habitat to encouraged development
Threatened and Endangered Species	increased protection for threatened and endangered species	no effect	greater protection for threatened and endangered species/habitat in corridor	minimal effect
Cultural Resources	increased protection and adaptive reuse of cultural resources	continued deterioration of some cultural resources	increased protection of cultural resources	increased adaptive reuse of cultural resources
Economic Environment	minimal impacts; some lost opportunities due to open space acquisition and land use controls	no effect	greater adverse effects	greater economic benefits
Commercial Navigation	minimal effect	no effect	restricted expansion of barge fleeting areas	no effect; barge fleeting areas would expand as needed for demand
Recreational Use	increased recreational opportunities, both passive and active	no effect	limited increase of recreation use, primarily passive	expansion of recreation use emphasizing active uses to stimulate economic growth
Cumulative Effects	beneficial effects	no beneficial effect	beneficial effects	minimal beneficial effect

AFFECTED ENVIRONMENT



The Mississippi Gorge in the Twin Cities

OVERVIEW

From its source at Lake Itasca in northern Minnesota, the Mississippi River flows south some 2,400 miles to the Gulf of Mexico near New Orleans. The Mississippi National River and Recreation Area corridor includes 72 miles of the Mississippi and adjacent lands (see Boundary map). Also included are four miles of the Minnesota River and adjacent lands upstream from its confluence with the Mississippi. Dayton and Ramsey mark the northern limit of the Mississippi National River and Recreation Area; the southern limit is about 4 miles south of Hastings.

The Mississippi National River and Recreation Area draws a curve through the heart of Minnesota's Minneapolis/St. Paul metropolitan area. The boundary includes approximately 54,000 acres of public and private land and water and incorporates land and water in five counties — Anoka, Ramsey, Washington, Dakota, and Hennepin. Two major tributaries enter the Mississippi in the MNRRA corridor — the Minnesota and the St. Croix rivers. Together these three bodies of water are sometimes called the "tri-river" system.

To assist in understanding the alternatives and their impacts, more detailed information is provided for Harriet Island and the St. Anthony Falls area, which are the two primary areas identified for possible visitor centers for the Mississippi National River and Recreation Area. Harriet Island is located on the west shore of the Mississippi opposite downtown St. Paul. The St. Anthony Falls historic district straddles the Mississippi River near downtown Minneapolis, encompassing approximately 800 acres.

NATURAL RESOURCES

GEOLOGY AND PHYSIOGRAPHY

The heart of the Mississippi River corridor is a bedrock depression known as the Twin Cities basin, a depression filled with a series of sedimentary rocks overlain by a cap of recently deposited glacial drift (Anfinson 1984). During the early and middle Paleozoic Era (600 to 430 million years ago), a shallow sea covered the region. The upper three rock layers were deposited by an Ordovician Period sea that encroached on eastern Minnesota from the west about 500 million years ago. The lowest of these three upper strata is the St. Peter sandstone, which is a very soft white rock that is up to 155 feet thick near the center of the basin. Above this is the Glenwood shale — a soft, grey layer that reaches depths of 16 feet southeast of Minneapolis but is only a few feet thick in the vicinity of St. Anthony Falls. The uppermost rock layer is the Platteville limestone, a relatively hard formation that is 35 feet thick beneath much of Minneapolis but rapidly thins and bevels upward to the north in the central riverfront area. In the late Paleozoic and Mesozoic Eras (600 to 65 million years ago), sedimentary layers continued to build and erode. Later this sandstone proved ideal for the formation of numerous natural caves, primarily in the St. Paul area.

Glaciers advanced and retreated over eastern Minnesota several times during the Pleistocene ice age. These forces formed and changed the course of the incipient Mississippi River. Between 14,000 and 12,000 years ago the last of the glaciers retreated from the Twin Cities area. As the glaciers north of Minnesota continued to melt, the engorged Mississippi River formed a waterfall where the river encountered the hard Platteville limestone. The waterfall, now known as St. Anthony Falls, moved slowly up the Mississippi during the next 10,000 years, through St. Paul, and toward its present location in downtown Minneapolis. As the soft rock beneath the limestone was gradually undercut at the brink of the falls, the limestone collapsed and the falls slowly moved upriver.

Climate and environmental change accompanied the final melting of the ice sheets at the end of the Pleistocene after about 8,000 B.C. Fluctuations in rainfall and temperature occurred. The modern geographical positions of the major life zones were approximated, and the modern meander pattern of the Mississippi River developed as sea level rose.

The central portion of Minneapolis is topographically characterized by a relatively flat terrain bisected by the Mississippi River gorge. The flatness of the downtown area is a sharp contrast to the hills west, south, and east. This flat land is due to the erosion and deposition caused by glacial meltwater. Below St. Anthony Falls, the river created a true gorge with 100-foot-high cliffs of limestone and sandstone on either side of the river. Intersecting the river at various points were ravines; some of the ravines were cut by surface streams while others developed due to the collapse of subterranean caves cut in the soft St. Peter sandstone by groundwater seepage.

Using information contained in the GIS database, slopes greater than 12% in the corridor equal about 5,500 acres or approximately 10% of the corridor's 54,000 acres.

MINERAL RESOURCES

The Mississippi River corridor in the Twin Cities area has been and continues to be an important area for mining industrial minerals. As the ice age glaciers receded from Minnesota, the flood of meltwaters cut the modern river valley, exposing the bedrock from which certain industrial minerals are mined. As the meltwater abated, it deposited the sand and gravel that is presently mined from the river terraces.

Aggregate is derived from two major sources in the metropolitan area (Meyer and Jirsa 1984). Surficial deposits of sand and gravel, or natural aggregate, are the primary source. These are deposits of rock detritus broken down and sorted by the actions of glacial ice and running water. A second and increasingly important source is carbonate (limestone and dolomite) bedrock, which is converted to aggregate by blasting and crushing.

An inventory of aggregate resources in the seven-county metropolitan area (Meyer and Jirsa 1984) delineated a wide variety of aggregate deposits. Lands deemed inaccessible to the aggregate industry (lands in urban development, in parks and public open space, and in the St. Croix National Scenic Riverway) and bedrock deposits less than 10 feet thick were not included in the inventory. Exposed bedrock formations in the metropolitan area include Decorah shale, Platteville formation, St. Peter sandstone, Prairie du Chien group, Jordan sandstone, St. Lawrence formation, and Franconia formation. Both the Prairie du Chien and the Platteville have been quarried in the seven-county metropolitan area for over 100 years. Sand and gravel and bedrock deposits were recorded and mapped for all five counties in the study area.

SOILS

The predominant soils in Anoka County are level to undulating, excessively drained to very poorly drained soils that are dominated by fine sands throughout. These soils are well suited to urban development, moderately well suited to farming, and provide sites for recreational facilities. The population of the metropolitan area is growing rapidly; areas that were recently used for farming have virtually all been converted to nonfarm uses.

Dakota County contains a large number of distinctly different soils. Most of these soils formed in glacial deposits or in loess that varies in properties and age. Some soils formed in weathered bedrock and recent alluvium.

Soils along the Mississippi River north of Minneapolis are nearly level to undulating, coarse and moderately coarse textured, and developed in deep sand.

Washington and Ramsey Counties have dark colored and light colored, level to very steep soils that formed in loess or glacial material. Most of the soils in Ramsey County have been altered by urbanization and other activities of man.

Prime Farmland

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Prime farmlands have an adequate and dependable water supply, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. The slope ranges mainly from 0% to 6%. Prime farmland has been identified by the Soil Conservation Service (1980) only in Dakota County, which bounds the Mississippi River from the Spring Lake Park area to Hastings. Nearly 54% of Dakota County meets the soil requirements for prime farmland, but most of this is in the southern part of the county away from the river.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. None has been identified in the MNRRA corridor.

Hazardous Waste Sites

The Park Service (NPS 1992) has compiled a list of identified waste sites within or near the MNRRA boundaries. This list includes hazardous waste sites and other identified waste sites taken from the *MPCA Master Facility List* and the *Superfund Permanent List of Priorities*. There are 114 sites; 10 are in Anoka County, 27 in Dakota County, 27 in Hennepin County, 41 in Ramsey County, and 9 in Washington County. Of the 114 sites, 19 are on the state *Superfund Permanent List of Priorities* and six are on the national Superfund list.

VEGETATION

Three major biomes meet in Minnesota — tallgrass prairie, northern coniferous forest, and eastern deciduous forest. The Mississippi National River and Recreation Area passes through the eastern deciduous forest and tallgrass prairie biomes. The vegetation types that define these biomes are distributed on the landscape according to climate, soil, and landform patterns. Historically, land adjacent to the Mississippi River through the corridor was covered mainly by oak woodland and brushland. This vegetation type ranged from small groves of trees mixed with open prairie to a chaparral-like community of scrub forest and dense shrub thickets. The dominant trees were bur oak and northern pin oak. Other vegetation types included floodplain forest, upland prairie, and maple-basswood forest.

Floodplain forests are especially well developed in the Mississippi River valley. The lowland sites occupied by these forests are subject to periodic flood and drought. Spring floodwaters enrich the soil as they deposit silt over the forest floor. Silver maple, American elm, green ash, black willow, and cottonwood are the dominant trees, with poison ivy and stinging nettle the characteristic understory plants. The original distribution of this forest type has not been greatly modified. Intact floodplain forests are often the only large pieces of native habitat remaining in heavily agricultural areas.

Tallgrass prairie once covered one-third of the state, occupying a wide variety of landforms such as morainic hills, steep bluffs, and rolling plains. Along these landforms, there is a predictable change in dominance of a few major prairie grasses. In general, prairie cordgrass

and bluejoint dominate the wet lowlands, big bluestem and Indian grass occupy the deep fertile soils of the moist uplands, and little bluestem and sideoats grama live on the thin soils of dry uplands. Throughout the upland prairie are numerous wetland communities dominated by sedges and rushes rather than grasses.

Minnesota's maple-basswood forests are dominated by elm, basswood, sugar maple, and red and white oak, and can be found at the western edge of the deciduous forest biome of eastern North America. The boundaries of maple-basswood forest were largely controlled by the frequency of fire. The dominant trees are highly fire sensitive and were restricted to areas where natural firebreaks such as the Mississippi and its tributaries prevented the spread of fire from adjacent prairie lands. After more than a century of European settlement, nearly all the natural communities composing the three major biomes have been substantially altered.

The Minnesota Natural Heritage Program (MDNR 1991) has identified additional natural community types in the corridor — mixed oak forest, dry sand prairie, bluff prairie, wet blacksoil prairie, dry cliff, moist cliff, sand beach riverine subtype, submergent and emergent marsh, and calcareous fen.

Landcover data derived from 1988 satellite imagery for the corridor identified 14,863 acres (28%) forest; 8,174 acres (15%) crop/field/pasture; 5,917 acres (11%) sparse tree/shrub; and 11,021 acres (21%) water. The other 28% is developed land.

Numerous exotic plants are found in the corridor, such as the aquatic Eurasian watermilfoil, purple loosestrife, and many landscape plant species typical of an urban setting.

FISH AND WILDLIFE

Importance of the Corridor

The Mississippi National River and Recreation Area covers a 72-mile piece of the 2,400-mile long Mississippi River corridor, the largest and most important riverine ecosystem in North America (and the northern hemisphere). The global importance of this floodplain ecosystem cannot be overstated. The Mississippi River provides the most important migration corridor on the continent for waterfowl and other migrating birds; the survival of literally millions of birds is dependent on the quality of this habitat. The river and its floodplain and adjacent upland corridor are essential to the survival and dispersal of a great portion of the vertebrate (particularly birds, amphibians, and fish) and aquatic invertebrate species that inhabit this continent.

While the Mississippi National River and Recreation Area comprises only a small portion of this vital 2,400-mile corridor, it provides an essential link for the conservation of biological diversity. Undeveloped fragments of natural ecosystems and protected habitat areas must be linked. Since habitat loss and fragmentation are the primary causes of species extinction, it is critical that corridors be maintained for the conservation of biological diversity and for migrating animals. The Mississippi River is of global importance as a habitat corridor, certainly. On a smaller scale it is clear that the Mississippi provides virtually the only opportunity to link habitats that lie to the north and south of the Twin Cities area. Urban

development provides a barrier to wildlife movement; the river corridor exists as a conduit for wildlife moving through the metropolitan area.

Aquatic Habitat

The Mississippi River within the national river and recreation area exhibits diverse habitat types. Between Dayton/Ramsey and Anoka the river has free-flowing segments characteristic of those found between Brainerd and Minneapolis. Similarly, the reach from below Coon Rapids Dam to Fridley is typified by shallow, relatively clear water and coarse stream substrates such as gravel and rubble. These substrate types are productive for many aquatic organisms. Where the upper Mississippi River navigation system begins at Minneapolis, stream habitats show greater complexity, but substrates become predominantly fine grained except for the areas immediately below navigation dams and artificial wing dikes. The main channel is the only portion of the river through which large commercial craft pass.

The river upstream from Minneapolis has few off-channel riverine habitat types, although the mainstem stream is a highly productive environment. Within the navigation system, inundation by dams changed an already diverse aquatic habitat. These habitats can be classified as tailwater, navigation pool, river, lake, pond, slough, main channel, main channel border, and side channel. Approximately 100 species of fish are known to live in the management area. While dam construction extirpated some migratory fish that once frequented the area, the Mississippi in the MNRRA area remains among North American's most diverse fisheries.

Many fish species live in the backwaters and side channels of the Mississippi River. Predominant commercial species are catfish, carp, and bigmouth buffalo. Typical gamefish are northern pike, largemouth bass, and bluegill. Deeper water areas with sufficient flows in these habitat types provide wintering areas for largemouth bass, walleye, sauger, crappie, northern pike, and bluegills. Aquatic vegetation found in backwaters provides spawning habitat for northern pike during spring high water. Bluegills, bullheads, largemouth bass, buffalo, and carp are common species found in sloughs and side streams year-round, although numerous other species depend on these areas as spawning and juvenile nursery sites. The section of river leading into the MNRRA corridor and the upper portion of the corridor (above Anoka) is considered among the best smallmouth bass fisheries in North America. The area between Minneapolis and Hastings is managed as a trophy walleye fishery.

Commercial fish species present include sturgeon, paddlefish, freshwater drum, and channel catfish. Lake sturgeon and paddlefish are no longer fished commercially in Minnesota. Predominant gamefish are walleye, sauger, smallmouth bass, and white bass. Fish-eating birds such as gulls, bald eagles, and ospreys use the main channel. Mergansers and some diving ducks and fur bearers also use the area.

Tailwater areas provide valuable habitat for a number of fish species because of their available food sources and fast, highly oxygenated water. A trophy fishery is found below the Ford dam. However, fish in the river are contaminated with PCBs and advisories are posted for fish consumption.

The corridor is extremely important for migratory birds, both waterfowl and upland species. The Mississippi Valley is one of the major flyways in the United States. River lakes, ponds, side channels, and sloughs are used by migratory water birds, including ducks, geese, swans, egrets, and herons. Resident wildlife using these aquatic environments include muskrat, beaver, mink, otter, and raccoon. In addition, these areas serve as feeding locations at certain times of the year for migratory raptors.

Large, active colonial waterbird nesting sites are located in the MNRRA corridor. Specifics on these sites are kept on file at MNRRA headquarters and at offices of the Department of Natural Resources and the U.S. Fish and Wildlife Service. These rookeries are important to great blue heron, great egret, black-crowned night heron, yellow-crowned night heron, little blue heron, and double-crested cormorant.

Exotic Species

The European zebra mussel, an exotic species that resembles a freshwater barnacle, has spread quickly from the Great Lakes into the inland river system. In September 1991 they were discovered in the Mississippi River near LaCrosse, Wisconsin, and since then they have been found in at least two other reaches of the upper Mississippi. Since their discovery in Lake Erie in 1987 the mussels have caused major problems for boat owners and water works and utility managers throughout the Great Lakes basin. Experts fear they will spread quickly throughout the Mississippi River basin, forcing cities, industries, and shippers on the river to spend millions on cleanup and control.

Shoreline/Upland Habitat

Bottomland hardwood forest provides habitat for tree-nesting ducks, such as wood ducks and mergansers, and for raccoons, white-tailed deer, cottontail rabbits, foxes, songbirds, upland game birds, salamanders, frogs, snakes, and turtles. This habitat includes areas that are seasonally flooded but generally well-drained during the growing season. When these areas are inundated, they also provide habitat for several of the fish species mentioned above.

Meadow and prairie habitats are used by migratory waterfowl, raptors, deer, pheasants, wild turkeys, squirrels, mice, songbirds, and by fish when inundated.
Bat concentrations identified in the corridor include a colony at Lilydale regional park, St. Paul, and a colony at Riverside Park, Minneapolis, both on the west bank (MDNR 1991).

THREATENED AND ENDANGERED SPECIES

Twelve federally listed species have been identified by the U.S. Fish and Wildlife Service as potentially existing in the MNRRA corridor (see table 4). The table also includes the Minnesota natural heritage database (MDNR 1992) information, which has siting records for *Carex formosa*, a sedge, *Besseya bullii*, kitten tail, *Haliaeetus leucocephalus*, bald eagle, *Cirsium hillii*, Hill's thistle, *Falco peregrinus*, peregrine falcon, and *Emydoidea blandingii*, Blanding's turtle. Minnesota has listed 32 species as either threatened or endangered. State-listed species known to be in the corridor are *Desmodium illinoense*, prairie mimosa, and *Carex plantaginea*,

plantain-leaved sedge. A complete state list of threatened and endangered species, including species of special concern, is available from the Minnesota Natural Heritage Program.

The peregrine falcon (*Falco peregrinus*), formerly nested on the bluffs along the Mississippi near Red Wing and along the St. Croix River. Extirpated by pesticide poisoning in the 1950s and 1960s, a substantial reintroduction effort began in 1982 after initial attempts in 1976 and 1977 failed. Hack boxes are in downtown St. Paul. Peregrine falcons are now successfully nesting on tall buildings near the river in downtown Minneapolis and St. Paul and are nesting in the Minnesota Valley National Wildlife Refuge. Beginning in 1986 breeding pairs of falcons were seen defending cliff sites along the river near the Mississippi National River and Recreation Area. The falcon's preferred habitat is on cliff ledges, mostly along rivers or lakes, and the population might be limited in part by the availability of suitable cliffs for nesting. The importance of cliffs for peregrine habitat within the MNRRA boundary is unknown.

In recent years the bald eagle (*Haliaeetus leucocephalus*) has gradually begun to reoccupy portions of its former range in east-central Minnesota, including Anoka county. Among the 50 states, Minnesota has the third largest bald eagle breeding population, following Alaska and Florida. Environmental contamination by DDT was the primary cause of the decline of the species. Since the banning of DDT in 1972, eagle populations have increased nationwide from their lows in the late 1960s.

The Mississippi River valley provides wintering habitat for hundreds of bald eagles; bluffs along the river provide critical night roosting habitat. The species is classified as threatened in Minnesota because of its status nationwide and because of its sensitivity to environmental contamination, habitat deterioration, and human harassment. The MNRRA area is of special importance to breeding bald eagles, and the corridor contains several active nests. The floodplain forests, islands, and wooded bluffs are of particular importance as breeding habitat for bald eagles. Specifics about nesting sites are not published in this document.

Minnesota lies on the northwest periphery of the Blanding's turtle (*Emydoidea blandingli*) range. An extensive area of sand dunes and marshes along the Mississippi south of the recreation area is recognized as a major concentration area for the turtle and may hold one of the largest breeding populations in the entire range. Its preferred habitat includes calm, shallow water, rich aquatic vegetation, and sandy uplands for nesting. The recent destruction of wetland habitats by drainage and/or inundation for agricultural purposes, river channeling, and water impoundment has greatly decreased available habitat for the species. It is also vulnerable to collecting as a pet species. Population and reproduction dynamics suggest viable populations of Blanding's turtles are dependent on large numbers and adequate areas of undisturbed habitat.

The Higgins eye freshwater mussel (*Lampsilis higginsi*) formerly inhabited the Minnesota, Mississippi, and St. Croix rivers. It is now restricted in Minnesota to the lower reaches of the St. Croix and Mississippi rivers. A small population is known to exist in the St. Croix River and specimens have been found in the Minnesota River. Existing records prove that the distribution of healthy populations in the Mississippi River and tributaries have been drastically reduced since the turn of the century by overfishing, habitat destruction, and pollution. Live specimens have been collected at only six locations in Minnesota since 1965. Alteration of river channels for navigation is the primary reason that mussels are on the state-

protected species list. The mussel has been found on mud-gravel bottoms in deep water (3 to 5 meters) and in moderate to swift current.

In Minnesota the loggerhead shrike (*Lanius ludovicianus*) is classified as a common to uncommon breeding species. Today it is absent or very rare. There are only a few localities, primarily in western and east-central Minnesota, where the species is consistently reported each year. Habitat destruction could be responsible for some of the decline. The shrike is primarily an inhabitant of open country and dry upland prairie with hedgerows, shrubs, and small trees. The loggerhead shrike is a summer resident of Minnesota.

Carex formosa, a species of sedge, has a very restricted and disjunct range and is usually considered rare or local in the states and provinces where it exists. Historical records indicate that it lived at four locations in Minnesota, but all were in the metropolitan area and prior to 1938. The expansion of the Twin Cities area since that time has eliminated or degraded much of the native habitat that may have supported this species. There are currently no known populations of *C. formosa* in Minnesota, but even though this species has not been found in Minnesota since 1937 and its habitat is under considerable pressure, it may still survive. Based on what is known from nearby states, it probably exists in the low, moist wooded ravines and valleys of the Mississippi and Minnesota river systems in the metropolitan area.

The kitten-tail plant (*Besseya bullii*) is a midwestern endemic and is considered rare or endangered. More than half of the historically known population of this species in Minnesota was located on the bluffs and terraces of the St. Croix, Mississippi, and Minnesota river valleys where they converge in what is now the Minneapolis-St. Paul metropolitan area. Only five of the 21 documented sites are known to survive. Distribution of the species is limited to a discrete habitat type that is regionally uncommon and frequently exploited. Because of these geographical and ecological restrictions, the kitten-tail has always been uncommon. However, it has recently suffered a significant decline because of habitat loss, and its survival is a matter of immediate concern. Habitat threats include gravel mining, limestone quarrying, landfills, and industrial development. The kitten-tail plant prefers the gravelly soils of dry prairies, bluffs, and high-lime prairies commonly found along major river valleys.

Recent records of Hill's thistle (*Cirsium hillii*) in Minnesota indicate it is not nearly as common as it once was. This decline appears to be widespread due to the general loss of habitat that resulted from the conversion of prairies to agricultural production. The Minnesota populations are largely restricted to the transition zone between the major forest and prairie biomes. Populations are typically small and remote but are apparently stable where their habitat is protected. Hill's thistle typically prefers dry, sandy, or gravelly soil in prairies, savannas, and open woods.

Ginseng (*Panax quinquefolium*) is a woodland herb native to mesic forests in eastern North America. Commercial exploitation has resulted in numerous local extirpations and a contraction of range. The fragmented condition of forest habitat could prohibit the natural reestablishment of this species in heavily harvested areas. Because of the serious rangewide decline, the harvest and trade of ginseng is now controlled by international treaty. The species lives in loamy, subneutral soil in undisturbed hardwood forests.

Eared gerardia (*Agalinis auriculata*) also has suffered a recent decline caused by loss of habitat. There are only three records from the state — all from wet meadows in the lower Minnesota River valley where development pressure is very high. The preferred wet meadow habitat type of the eared gerardia can often be found in complex mosaics with wet prairies and occasionally with fens. They are typically located at the base of river bluffs or on terraces where calcareous groundwater is discharged.

Like most prairie species, the western prairie fringed-orchid (*Platanthera praeclara*) suffered a decline when the prairies were converted to crop production. It is now threatened with extinction throughout its range. The few plants that still survive are restricted to small, isolated colonies that are widely separated by cultivated land. Other factors contributing to the decline of this species in Minnesota include the widespread use of herbicides, cattle grazing, and gravel mining of beach ridges. *P. praeclara* grows on moist, calcareous, or subsaline prairies and sedge meadows.

Although relatively widespread in the northeastern U.S., the tubercled rein-orchid (*Platanthera flava* var. *herbiola*) appears to be rare or threatened throughout most of its range. Minnesota lies at the extreme northwestern edge of that range and contains a limited amount of suitable habitat. The wet, acidic prairies and meadows and wet depressions where this orchid can grow are especially vulnerable to land conversion. The expanding residential, agricultural, and commercial activities in east-central Minnesota are particularly devastating. The species can also exist in sandy or peaty habitats along lakeshores or in swales.

The state-listed Illinois tick-trefoil (*Desmodium illinoense*) is largely restricted to midwestern prairies; it reaches the northern limit of its range in Minnesota and is very rare. The marginal prairie habitat and northern climate in Minnesota may simply be unsuitable for this species. The few populations recorded in Minnesota are very small and remote and are usually in association with transitional or successional communities. A general decline of *D. illinoense* is presumed to have followed the dramatic disappearance of the prairie ecosystem that probably served as the primary habitat of this species.

Plaintain-leaved sedge (*Carex plantaginea*), also listed by the state, appears to be one of the rarest sedges in Minnesota and may no longer survive in the state. The state's two known historic populations have not been relocated and probably no longer exist.

TABLE 4: THREATENED OR ENDANGERED SPECIES

Common Name (Scientific Name)	Federal	State
Animals		
Loggerhead shrike (*Lanius ludovicianus*)	C2	T
Peregrine falcon (*Falco peregrinus*)	E	E
Bald eagle (*Haliaeetus leucocephalus*)	T	T
Higgins eye mussel (*Lampsilis higginsi*)	E	E
Blanding's turtle (*Emydoidea blandingii*)	C2	T
Uncas Skipper (*Hesperia uncas*)		E
Plants		
Ginseng (*Panax quinquefolium*)	C2*	SC
Kitten-tail(*Besseya bullii*)	C2*	E
Sedge (*Carex formosa*)	C2	PE
Hill's thistle (*Cirsium hillii*)	C2	SC
Eared gerardia (*Gerardia auriculata*)	C2	E
Western prairie fringed-orchid (*Plantanthera leucophaea*)	T	E
Tubercled rein-orchid (*Habenaria flava* var. *herbiola*)	C2*	E
Tooth-cup (*Rotala ramosior*)		PT
James polanisia (*Polinisisia jamesii*)		E
Cross milkwort (*Polygala cruciata*)		E
Linear-leaved sundew (*Drosera linearis*)		T
Valerian (*Valeriana edulis*)		T
Wild petunia (*Ruellia humilis*)		E
Illinois tick-trefoil (*Desmodium illinoense*)		T
Plantain-leaved sedge (*Carex plantaginea*)		PT
Rock clubmoss (*Lycopodium porophilum*)		T
Margined rush (*Juncus marginatus*)		PT
Slender naiad (*Najas gracillima*)		PE
Tall nut-rush (*Scleria triglomerata*)		E
Twisted yellow-eyed grass (*Xyria torta*)		T
Sullivants milkweed (*Asclepias sullivantii*)		T
Tuberous Indian-plantain (*Cacalia plantaginea*)		T
Sterile sedge (*Carex sterilis*)		T
Beaked spike-rush (*Eleocharis rostellata*)		T
Hair-like beak-rush (*Rhynchospora capillacea*)		T
Whorled nut-rush (*Scleria verticillata*)		T

Status:

* Indicates former status

E Endangered species are those whose prospects for survival are in immediate danger because of a loss or change of habitat, over-exploitation, predation, competition, or disease. Immediate assistance is needed to prevent extinction.

T Threatened species are those that may become endangered if conditions surrounding the species begin or continue to deteriorate.

C2 Federal category 2 (a species proposed for federal listing, but additional biological information is usually required before a status determination can be made.

PE Proposed endangered (not a legal designation)

PT Proposed threatened (not a legal designation)

SC Special concern species (not a legal designation)

WATER RESOURCES

Surface Hydrology

Even with its relatively flat terrain, Minnesota gives rise to three of the great drainage systems of North America. Within the borders of state, the Mississippi River drainage system drains central and southern Minnesota; the St. Lawrence/Great Lakes system drains the northeast; and the Hudson Bay system drains the northwest. The boundaries of these systems limit plant and animal species distribution. However, within drainage systems, rivers and streams provide corridors for species migration and dispersal.

Minnesota can be divided geographically into nine watersheds that are biologically distinct with respect to the distribution of riverine organisms. The Mississippi National River and Recreation Area spans three of these watersheds: the Mississippi River above Coon Rapids Dam; the St. Croix; and the Mississippi River below Coon Rapids Dam. The divisions between watersheds are controlled by naturally formed boundaries and by manmade structures that act as barriers to biological dispersal. Waterfalls and dams separate what would otherwise be continuous watersheds.

The commercially navigable section of the Mississippi River has a series of regulated pools created by low dams built primarily in the 1930s. The dams were designed to maintain water levels for navigation and have no effect on flood flows. The water is normally high during spring snowmelt and rains and low in late summer through winter. When floods occur the gates of the dams are opened and the river flows freely. The channel width on the Mississippi River is 300 feet except at bends, where additional width is provided.

Water Quality

The Mississippi River is a primary source of drinking water for much of the population in the Minneapolis-St. Paul metropolitan area and it is the depository for 85% of the area's treated wastewater. The Mississippi River in the MNRRA corridor has water quality problems because of discharges in excess of standards, urban runoff, and contaminated sediments (MRCSC 1986). The 72 miles of Mississippi River in the MNRRA corridor are affected by a variety of point, nonpoint, and mobile sources that contribute millions of pounds of pollution each year to its environment. A number of the point sources affecting the river are outside the corridor. The Minneapolis-St. Paul metropolitan area has water quality problems because there is a considerable pollutant load, including pesticides, heavy metals, hydrocarbons, and phosphates from various metropolitan sources and from the Minnesota River.

The region's groundwater supplies are in danger of contamination. Almost all suburbs in the metropolitan area rely on groundwater; however, hazardous waste sites in and near the MNRRA corridor are contaminating aquifers and effectively reducing the amount of groundwater available for the drinking water supply. Oil spills are a potential threat to the area's water supply.

Water quality goals set by the Minnesota Pollution Control Agency and required by the Clean Water Act, call for the Mississippi River to be suitable for warmwater fisheries and aquatic recreation, including boating and swimming. The Minnesota Pollution Control Agency

currently has pollution control programs in place that are striving to meet these goals. Some of theses programs are underfunded due to fiscal constraints; the MNRRA plan encourages full implementation of these programs in order to assist in meeting the stated goals.

The primary determinant of whether a body of water is classified as swimmable is the fecal coliform count in the water. Based on this criteria the water quality of the river is acceptable for swimming except in the Minneapolis-St. Paul metropolitan area, which includes much of pool 2. Throughout most of the river corridor (St. Anthony Falls to below the St. Croix River) fish consumption advisories prevail, although Minnesota has classified the Mississippi River as partially or fully supporting the fishable use (UMRBA Report 1989). The state advises no fish consumption for high risk groups of people. The Minnesota Department of Health recommends that buffalo fish, white bass, sucker, catfish, and carp are not safe to eat. They also issue consumption advisories for other fish depending on size.

The degraded fishery resource is an indicator of sediment quality problems, since sediment is one of the major sources of contaminants in fish and sedimentation is one of the most significant threats to the long-term health of the river ecosystem. Erosion is widespread throughout the river basin, with sediment sources including the region's extensive agricultural and forest products industry, its urban areas, and the banks of the river and its tributaries.

The upper Mississippi River is vulnerable to sedimentation not only because it drains such a vast land area, but because its system of locks and dams inhibits the river's natural sediment transport capacity. As a result, the river corridor has some sediment accumulation. Sedimentation in backwater areas has resulted in a loss of habitat diversity. Sediment also accumulates in portions of the main channel, requiring annual dredging.

There is extensive organic and heavy metal contamination within portions of the river corridor. Bottom sediments in portions of the river and backwater areas are contaminated, and these sediments are resuspended by motorboats, including towboats and recreational craft. Sand is the primary river channel material. When dredged it should be placed in approved disposal areas and made available for beneficial use.

During recent years the quality of the water has improved considerably in much of the Mississippi National River and Recreation Area. To address the major water pollution problem, a major combined sewage overflow control plan was mandated in the 1980s. It was scheduled for completion by the end of 1995. This plan entails separating the sewage from the stormwater in the metropolitan area, which would eliminate untreated discharges from combined storm and sanitary sewers that overflow into the Mississippi River during rainfall and snowmelt. Even with the separation of the sewers, however, stormwater would continue to enter the river untreated, depositing pollutants from urban and agricultural runoff. These nonpoint pollution sources, especially agricultural runoff from the Minnesota River and other streams and tributaries that flow into the Mississippi, could become a major problem affecting water quality in the Mississippi.

The state has assigned a major part of the responsibility for addressing nonpoint pollution in the metropolitan area to watershed management organizations. Each of these is to prepare a plan addressing water resource goals and problems, including water quality issues. The Metropolitan Council has been directed by the legislature to develop target loading for each watershed. The council is also preparing a plan to reduce nonpoint pollution in the Minnesota

River. The Minnesota Pollution Control Agency is coordinating a related effort in the greater Minnesota portion of the basin.

Floodplains

Information on 100-year floodplains along the corridor has been obtained from federal flood insurance rate maps developed by the Federal Emergency Management Agency and entered into the MNRRA GIS database (see Sensitive Natural Areas map). These maps identify areas that would be inundated by a 100-year flood.

Approximately 50% (27,073 acres) of the MNRRA corridor is in the 100-year floodplain. This includes the river surface. Floodplain maps are not available for all municipalities along the river; the actual percentage could be higher.

While most of the Harriet Island regional park is in the 100-year floodplain, the proposed interpretive facility site is behind the levee outside the floodplain. All sites considered for the St. Anthony Falls area are outside the floodplain except the NSP Main Street Power Station.

WETLANDS

The construction of the lock and dam system on the Mississippi River significantly altered the natural river system, which initially created hundreds of additional acres of wetlands, as well as a series of sediment-trapping pools.

Increasing numbers of wetlands in the river corridor are lost by draining or filling. The survival of some wetlands, such as the calcareous fen near the expanding Seneca wastewater treatment plant on the Minnesota River, is threatened from a process known as "dewatering," or removal of underground water.

Forty percent (21,525 acres) of the corridor is classified as wetlands (includes open water — see Sensitive Natural Areas map) and 231 different classifications of wetlands have been identified. These 231 different classifications are in six types as identified by the U.S. Fish and Wildlife Service in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979). In the MNRRA corridor the full spectrum of open water, emergent, submergent, scrub/shrub, and forested marshes can still be found. Numerous islands, backwater lakes, ponds and sloughs, and side channels provide diverse habitat for fish, wildlife, and plant species found living in and along the river. This habitat is key to the survival of threatened and endangered species such as Higgins eye freshwater mussel, peregrine falcon, bald eagle, and the kitten-tail plant.

The Harriet Island interpretive facility site in St. Paul is not in a wetland, and all facility sites being considered in the St. Anthony Falls area of Minneapolis are not wetlands. The NSP Main Street Station is in the Mississippi River floodplain.

CLIMATE

The subhumid, continental climate in the five-county area is cold and snowy in winter and quite warm with occasional cool periods in summer. About 70% to 75% of the annual precipitation falls between April and September. Occasional tornadoes and severe thunderstorms are usually localized and of short duration.

AIR QUALITY

Air quality is a major concern in the Mississippi National River and Recreation Area because the corridor passes through a large and growing metropolitan area. Mobile and stationary sources contribute to air quality degradation.

All or portions of the Twin Cities metropolitan area is designated nonattainment (not meeting national air quality standards) for particulate matter (PM-10) sulfur dioxide, carbon monoxide, and lead. This contributes to degradation of visual resources in the corridor.

The corridor is in a class II clean air area as designated under the Clean Air Act. This means that moderate, well-planned industrial growth may be permitted in the river corridor as long as the class II maximum allowable increases (increments) for particulate matter, sulfur dioxide, and nitrogen dioxide are not exceeded. Air quality violations in the corridor result from motor vehicle emissions and from commercial/industrial sources.

NOISE POLLUTION

Noise levels along the corridor are varied, with relative tranquility in some reaches (above Coon Rapids dam), typical urban sounds in more developed areas, and seasonal sounds of motorboats in other areas. A portion of the corridor is in the flight path of two airports and has frequent high decibel noise levels generated by low-flying aircraft. This could affect the biological resources of the corridor, but research has not been completed to assess these effects.

MISSISSIPPI RIVER OVERVIEW

Prehistory

Human occupation of North America began about 12,000 years ago as the glaciers retreated from the Twin Cities area. The first known people along the upper Mississippi river valley were Paleo-Indians. Called the big game hunters by archeologists, these people hunted and scavenged large mammals at the front of the glacier. A variety of flaked stone projectile points from the Paleo-Indian era (including a Clovis point on the Minneapolis riverfront and Folsom points in southern Anoka County) have been found. Some Plano points in the Minnesota Historical Society's Lewis collection are from a site below Indian Mounds Park. Most of the points from the St. Paul area resemble Dalton points that were originally defined in Missouri. Such points may have been made as early as 7000 B.C.

The final melting of the ice sheets at the end of the Pleistocene after about 8000 B.C. set the geographical positions of the major life zones, and the meander pattern of the Mississippi River developed as the glacial melt waters receded. Large mammals, including the mammoth, the giant beaver, and certain species of bison, became extinct and were not replaced.

The Archaic stage (ca. 6000 B.C. to 800 B.C.) brought a proliferation of regional tool traditions that indicate adaptation to local environments. Typical artifacts include chipped and ground stone tools, atlatls, grinding stones, copper knives, and various styles of projectile points. Late in the stage, fully grooved axes, bannerstones or boatstones, and tubular pipes were added to the material culture. In southern Minnesota, settlement began concentrating in river valleys, especially where broad floodplains offered rich and varied subsistence. Some cultigens were also introduced; river bottom gardens would have been well watered and easy to till.

The use of pottery marks the transition from the Archaic to the Woodland cultures. The Woodland period (ca. 900 B.C. to 900 A.D.) saw the emergence of cord- and fabric-marked ceramics and the construction of burial mounds and other earthworks. The earliest Woodland ceramics found in Minnesota are thick-walled conoidal vessels with exterior cordmarking and decoration limited to fingernail impressions on the rim. Some of these have been found in the Grey Cloud Island vicinity.

Stone crypts and clay death masks found in a 19th-century excavation at the Indian Mounds Park site suggest the northwesternmost extension of Hopewell influence. The collapse of the Hopewell Interaction Sphere about 400 A.D. led to the development of numerous regional traditions collectively called Late Woodland. Horticulture began to play an increasing role in subsistence, and settlements became more permanent. The introduction of the bow and arrow is evidenced by smaller projectile points.

The Late Woodland period ended about 900 A.D. in southeastern Minnesota with the appearance of people who practiced the intensive maize horticulture associated with the Middle Mississippian and Oneota traditions — a culture distinct from the Woodland. These people lived in large villages made up of permanent houses that were often protected with wooden palisades. Most village sites were on river terraces above fertile floodplains where

corn and other crops were grown. Some shell-tempered pottery typical of this culture has been recovered from Indian Mounds Park and the village site below it.

Early European Exploration

The first recorded visit to the area by Europeans came in 1680. Bands of Dakota Sioux regularly traversed the area, although no villages were recorded in the immediate vicinity until nearly 100 years later. One of these bands, traveling southward from a settlement at Mille Lacs, brought along two French captives — Father Louis Hennepin and Antoine Augelle. They portaged around the falls of the Mississippi, and Hennepin named the cataract after his patron saint, St. Anthony of Padua.

The next explorer to describe his impressions was the New Englander Jonathan Carver in 1766. The Dakota were moving south under pressure from the Ojibwa (Chippewa) tribe to the north, and Dakota villages were being established in the Minnesota and Mississippi river valleys. In the 1780s and 1790s British fur traders regularly frequented the area, and the junction of the two rivers became a recognized trading rendezvous.

In 1805 Lieutenant Zebulon Pike, on an expedition to the source of the Mississippi, held a council with leaders of the Dakota at the mouth of the Minnesota River and arranged for purchase by the United States of two parcels of land — one at the mouth of the St. Croix and one extending up the Mississippi from the mouth of the Minnesota, including the Falls of St. Anthony. No further action was taken until after the War of 1812, when the government, seeking to consolidate control over its northwestern frontier, moved to establish a fort. In 1819 the land purchase at the mouth of the Minnesota River was renegotiated by Major Thomas Forsyth, but the exact boundaries remained vague. In the same year Colonel Henry Leavenworth and a detachment of the 5th Infantry arrived to begin construction of the fort.

An encampment called Cantonment New Hope was established below what later became Mendota, but work was delayed by flooding and epidemic illness. In 1820 Leavenworth was replaced by Colonel Josiah Snelling, who moved the troops to higher ground and laid the cornerstone for the fort that would bear his name. During the next 20 years Fort Snelling was the focus for Euro-American activity in Minnesota. Steamboats, which first reached the fort in 1823, soon replaced canoes and keel boats in bringing military supplies and personnel along with other travelers up the Mississippi. The troops constructed a sawmill at St. Anthony Falls. The trading post at Mendota became the center for American Fur Company operations in the area. A number of mixed-blood families and some refugees from the British settlement on the Red River became squatters on the military land and missionaries arrived to establish a school and farms among the Dakota.

Settlement and Growth of Communities

Treaties signed in 1837 with the Dakota and Ojibwa tribes ceded the left-descending side of the Mississippi to the United States and opened it to settlement by nonnatives. The first good landing point for steamboats below the fort became the site of a thriving village and took the name St. Paul. In 1849 it was made the capital of Minnesota Territory. St. Paul remained the highest point on the Mississippi to which large riverboats could ascend. It became a transfer

point for fur trading and a supply point for other kinds of business and industry. During winter freeze-up most activity was suspended.

Another result of the 1837 treaty was the surveying of the Fort Snelling military reservation and the designation of fixed boundaries. When this was done, care was taken to exclude the left-descending bank of the Mississippi at the falls, thus making a valuable waterpower claim available for private preemption as soon as the treaty was ratified. Franklin Steele, sutler at the fort, was the first to establish ownership. In 1847 he constructed a dam across the left-descending channel of the falls below Nicollet Island and erected a sawmill. This became the nucleus for a small town platted in 1849 with the name St. Anthony.

Meanwhile the right-descending bank of the falls remained in limbo as part of the military reservation. It was occupied by the abandoned government mills and a collection of squatters, who were constantly in peril of being evicted. The situation was not rectified until 1855, when pressure from local politicians influenced Congress to pass a bill that allowed retroactive preemption by existing settlers rather than putting the land up for public auction. In 1856 the community was incorporated as Minneapolis.

Sawmills and other businesses developed rapidly on both sides of the river, all based on the mechanical technology of the time, which utilized the power of falling water by connecting waterwheels with machinery on shore through an elaborate system of shafts, pulleys, and belts. This was soon replaced in Minneapolis by a more efficient but capital-intensive system of tunnels that directed the rushing water to the mills. In 1855 the first bridge built across the Mississippi River at Nicollet Island joined the two communities, and in 1872 they were consolidated into a single city.

During these years St. Paul continued as the center of government and a hub of transportation. Steamboat arrivals reached a peak in the late 1850s, and the town at the head of navigation on the Mississippi was connected (first by trails and territorial roads and soon by railroads) with Lake Superior, the Red River, and the vast agricultural regions to the west. In 1865 its levee was graced with a state-of-the-art warehouse erected for James J. Hill & Co.

Settlement also took place both above and below these two centers on the river. Above the falls in 1847 John Banfill built a residence (now known as the Locke House). Banfill laid out a townsite called Manomin, which is now part of the city of Fridley.

Below St. Paul, across from the mouth of the St. Croix River, Alexis Bailly built a trading post in 1850. The Treaty of Mendota, negotiated the following year with the Dakota, opened the area to nonnative settlement, and the site of Bailly's business soon became the town of Hastings. Waterpower supplied by the falls of the Vermillion River combined with logs from the St. Croix pineries and wheat from the farms of Dakota County to make Hastings into a modest milling center during the 1850s and 1860s.

Damming the Falls of St. Anthony

For several millenia the falls had been moving upriver and were slowly drawing toward the end of the natural limestone ledge that created them. Industrial use greatly accelerated this process. Millions of board feet of logs floated down the Mississippi each year and hammered away at the natural stone apron, periodic floods undermined it, and in the late 1860s workers started digging a tunnel beneath it to channel water toward riverside industries. In 1868 the river broke through the limestone, swept into the tunnel, and threatened to collapse the falls.

Frantic emergency measures delayed the destruction, but the permanent solution involved massive government assistance and a decades-long effort by the U.S. Corps of Engineers. By 1884 a 40-foot by 1,850-foot dike that served as an apron had been placed across the falls, and two protective dams were constructed.

Growth of Industry

Development and change in both industry and transportation were rapid during the last 30 years of the 19th century. The spread and consolidation of railroads during the 1870s was climaxed in 1878 by the completion of Hill's St. Paul, Minneapolis, and Manitoba line, which funneled grain from the Red River valley and the plains of Manitoba to flour mills at the St. Anthony Falls. Fifteen new flour mills and an assortment of other industrial facilities were constructed along the right-descending riverfront in Minneapolis, and by 1880 the city led the nation in flour milling. The next decade saw the building of the Pillsbury A Mill, briefly ranked as the world's largest, and the completion of Hill's Stone Arch Bridge, which still curves across the river below the falls.

Sawmilling and many other industries gradually moved away from the crowded area around the falls. The improvement of steam power and, toward the end of the century, the development of hydroelectric power, facilitated this dispersion.

The River as a Transportation System

While railroads played an important role in developing the river's industrial potential, they had a disastrous impact on its status as a transportation route. By the mid 1870s railroads competed with river traffic. Rail transportation was cheaper, faster, and more dependable than water. From 1880 to 1920 there was a long, steady decline in river traffic. Discriminatory rail rates and the purchase of wharf and barge facilities by railroad companies to eliminate river competition increased the trend.

Attempts to revive river transportation were in response to pressure from riverside communities and economic interests and the result of widespread resentment of the monopoly power wielded by railroads. Government programs of dredging, snag removal, and bank stabilization continued over many years. At one point during this period it was said that the upper Mississippi "has a 5-foot channel, 6-foot ambitions, 9-foot possibilities, a great history, and a dwindled commerce."

In 1918, as a wartime measure, the United States government went into the inland shipping business by operating a federal barge line on the lower Mississippi. During the 1920s this service, which concentrated on the efficient hauling of bulk freight, was extended to the upper river. A deeper channel was needed to handle modern steel barges, and in 1927 the Army Corps of Engineers was authorized to assess the feasibility of a 9-foot channel between St. Louis and St. Paul. The Corps of Engineers drew up a plan calling for a series of locks and dams to provide slack-water navigation and a 9-foot depth. In response to pressure from Minnesota representatives in Washington and the need for public works to create employment during the depression, the program was adopted. Construction of the system of 26 locks and dams was substantially completed in the 1930s. It served the nation during World War II and has become the basis of a major revival in river transportation over the past 40 years. A final milepost was reached in 1963 when the upper harbor project was completed, allowing shipping to bypass the St. Anthony Falls and making Minneapolis a riverport.

The River as a Metropolitan Presence

As early as 1872 landscape architect Horace W. S. Cleveland presented a recommendation to the St. Paul City Council to provide for parks that would give views of the Mississippi River and for boulevards that would connect St. Paul and Minneapolis along the river. These ideas were not acted on until 1883 when Charles M. Loring secured Cleveland's services and began to implement the proposals. Loring's commission purchased land for parks, including the land around Minnehaha Falls, and planning began for development of a scenic parkway linking the falls and the Minneapolis lakes. Land on both sides of the river, from the University of Minnesota to Fort Snelling, was secured for a parkway. A foundation was laid for a historic and cultural presence in the life of the Twin Cities.

During the 1920s the industrial vitality of the Minneapolis riverfront began to decline. Sawmilling had ended with the exhaustion of Minnesota's forests. Flour milling started to move elsewhere. Railroads were giving way to highways, automobiles, and trucking. Decay set in, and the tall, impressive cluster of stone buildings that had been the milling district at the falls emptied. In St. Paul industry was scattered along the river, but on the floodplain opposite the downtown area a tightly knit ethnic community had taken root. Generally regarded as a slum and repeatedly flooded, the west side flats had been home to successive waves of immigrants. By the 1950s the area was the center of a small but vital Hispanic community, with significant remnants of early Jewish and eastern European settlement.

For years historic preservation was seen only in terms of earlier and more romantic objects. Private efforts early in the century had rescued the stone houses built in 1836 at Mendota by Henry H. Sibley and Jean Baptiste Faribault. Public affection centered on the ivy-draped round tower and other remnants of early Fort Snelling, which had been treated with benign neglect until the 1950s. Proposed destruction of those remnants for highway construction in the early 1960s alerted the community to the need for preservation.

The historic reconstruction at Fort Snelling and the establishment of Fort Snelling State Park provided a foundation for spreading park development and preservation efforts in both directions along the river during the 1970s and 1980s.

SITE-SPECIFIC INFORMATION

Historic properties (sites, structures, and historic districts) are numerous in the vicinity of the Mississippi National River and Recreation Area. Of the 197 known, 60 are within or partially within the legislative boundaries of the Mississippi National River and Recreation Area. These properties are either on the National Register of Historic Places or the Minnesota State Historic Preservation Office considers them eligible for the national register. In order to provide an understanding of the resource variety in the corridor, the section below describes a selected list of properties that are national historic landmarks, historic districts, or nationally significant sites and structures (as identified on the national register forms), organized by county. Anoka County does not have any sites that fit these categories. All 60 properties in the corridor listed on the national register (or determined eligible for listing) are significant and are therefore worthy of protection, but with the limited space available in this comprehensive plan only the 16 designated by the National Park Service or the State Historic Preservation Office as nationally significant properties are described below. All known historic sites were mapped and entered into the MNRRA GIS database and additional information on all the properties is on file at MNRRA headquarters and the at the Minnesota Historical Society. A comprehensive inventory of archeological sites in the corridor is not available.

Dakota

Fort Snelling (See Hennepin County for Fort Snelling Historic District)

Fort Snelling-Mendota Bridge
Location: Minnesota Highway 55 over Minnesota River
City or Township: Mendota
National Register Status: National
Significance Statement: This 1926 bridge replaced a ferry operating between Mendota and Fort Snelling. According to American bridge authority David Plowden it "is usually considered to be the most sophisticated design for a concrete arch built in the 1920s." Another bridge expert, Carl Condit, has written that "the whole complex of ribs, spandel posts, and long deck has a finely articulated quality that has seldom been matched in American bridge design." This is significant in the areas of engineering and transportation.

Mendota Historic District
Location: Vicinity of Willow Street and Minnesota Highway 13
City or Township: Mendota
National Register Status: State
Significance Statement: Contains several buildings dating back as early as 1835. The district includes the Church of St. Peter's, Henry H. Sibley House, Jean Baptiste Faribault House, and the Hipolite DePuis House. This area is significant in the areas of agriculture, commerce, philosophy, politics/government, religion, and transportation.

East Second Street Commercial Historic District
Location: East 2nd Street, two blocks from river
City or Township: Hastings
National Register Status: Local

Significance Statement: The district contains relatively unaltered commercial buildings and a retail area that served the needs of the community since the mid 19th century. The area is significant in the areas of architecture and commerce.

West Second Residential Historic District
Location: West 2nd Street, two blocks from river
City or Township: Hastings
National Register Status: Local
Significance Statement: The district contains relatively unaltered residential buildings that date back to around the mid 19th century. This area is significant in the area of architecture.

Hennepin

University of Minnesota Old Campus Historic District
Location: Vicinity of University and 15th avenues southeast and Pillsbury Drive
City or Township: Minneapolis
National Register Status: State
Significance Statement: This historic district contains structures that were constructed as part of the university from 1886-1907. The significance of these buildings is in the area of architecture.

Minnehaha Historic District
Location: Vicinity of Hiawatha and Minnehaha avenues and Godfrey Road
City or Township: Minneapolis
National Register Status: State
Significance Statement: This district contains early park and open space development. This district is significant in the areas of architecture, commerce, community planning, conservation, literature, and transportation.

Minneapolis Warehouse (Historic) District
Location: Bounded by 1st Avenue North, 1st Street North, 10th Avenue and 6th St.
City or Township: Minneapolis
National Register Status: State
Significance Statement: This area is significant for its contributions to commerce and architecture that date back to 1865.

Cappelen Memorial Bridge
Location: East Franklin Avenue over Mississippi River
City or Township: Minneapolis
National Register Status: National
Significance Statement: This bridge is significant for its engineering. It was constructed between 1919 and 1923 and is one of a series of concrete arch bridges constructed in the Twin Cities area. This technology was later used throughout the nation.

Chicago, Milwaukee, Saint Paul, and Pacific Depot, Freight House, and Train Shed

Location: 201 3rd Avenue South
City or Township: Minneapolis
National Register Status: National
Significance Statement: Significant for its architecture and engineering as well as its importance to commerce, industry, and transportation. The construction on this structure dates from 1879, 1897, and 1898.

Washburn A Mill Complex

Location: 1st Street South at Portland Avenue
City or Township: Minneapolis
National Register Status: National Historic Landmark
Significance Statement: This complex symbolizes the revolutionary technological and organizational innovations that the Washburn Crosby Company contributed to the American milling industry. The birth and subsequent development of General Mills into the first truly national milling company took place in the complex. The Washburn A mill is the only structure that remains of the original Minneapolis milling complex established by Cadwallader C. Washburn. It was constructed in 1874 and rebuilt in 1879-80. The national historic landmark properties include the Washburn A mill and wheat house, A mill office, utility building, Humboldt Mill, elevators, and five small structures. This complex suffered a major fire in 1990 that seriously damaged the mill. The city stabilized the walls and is seeking a developer to rehabilitate the structure. Because of the 1990 fire the Washburn A mill building is now considered a threatened structure in the national historic landmarks program.

Pillsbury A Mill

Location: 116 3rd Avenue Southeast
City or Township: Minneapolis
National Register Status: National Historic Landmark
Significance Statement: Symbolizes the role of Minneapolis as the chief flour-milling center of the United States from 1880 to 1930. The six-story mill is still being used by Pillsbury.

Fort Snelling Historic District

Location: Bounded by Minnehaha Park, the Mississippi River, the airport and Bloomington Road
City or Township: St. Paul Vicinity
National Register Status: National Historic Landmark
Significance Statement: Fourteen stone buildings and two log structures, built on a site recommended by Zebulon Pike, became an important post on the edge of Euro-American settlement in the old northwest. It is one of the few such posts with substantial remains from the period. Later, additional lands were used as a training center in the Civil War and World Wars I and II. The historic landmark includes 800 acres that contain nearly 125 structures constructed between 1819 and 1969 and represent these various periods.

Minnesota Soldier's Home Historic District
Location: Roughly Minnehaha Avenue, Godfrey Parkway and the Mississippi River
City or Township: Minneapolis
National Register Status: State
Significance Statement: Buildings designed to resemble well-known resort hotels and spas. The contributing historic structures were build between 1888 and the late 1930s.

St. Anthony Falls Historic District
Location: Vicinity of Mississippi River between Plymouth and South 10th avenues
City or Township: Minneapolis
National Register Status: State
Significance Statement: This historic district includes many sites and structures that relate to the historic use of the falls for production of power. This district contains structures that date back to 1848 and is significant in the areas of architecture, commerce, industry, and transportation. Contributing structures include the Main Street Power Station and the St. Anthony Main complex. The Washburn A mill complex and Pillsbury A mill are national historic landmarks found in this district. The Stone Arch bridge is a national engineering landmark.

Ramsey

Irvine Park Historic District
Location: Vicinity of Ryan Avenue, Chestnut, Sherman, and West 7th streets
City or Township: St. Paul
National Register Status: State
Significance Statement: An area of homes built during the period of 1848 to 1900, this district is significant in the areas of architecture, commerce, communications, community planning, conservation, education, and engineering.

Washington

Schilling Archeological District
Location: South of Cottage Grove
City or Township: Cottage Grove
National Register Status: State
Significance Statement: This archeological site contains Woodland and Mississippian influences.

EXISTING VISITOR USE/INTERPRETIVE PROGRAMS

RECREATION USE PATTERNS AND FACILITIES

The following section provides a general overview of the recreation use patterns of the Mississippi National River and Recreation Area (MNRRA). Use patterns are primarily treated in the context of the Twin Cities metropolitan area and statewide use patterns. When possible, data specific to the corridor is used.

A variety of recreational activities take place in the MNRRA corridor. These include fishing, hunting, boating, canoeing, cross country skiing, snowshoeing, hiking, bicycling, jogging, picnicking, bird watching, driving for pleasure, and taking photographs.

Recreational facilities in the area are diverse and provide numerous water-based opportunities such as boating, swimming, and fishing. Land-based facilities include picnic areas, parks, trails, educational centers, playgrounds, and cultural or historical attractions. Some stretches of the river are relatively undeveloped and provide the opportunity for solitude in a natural setting.

The array of recreational opportunities in the Mississippi River corridor mirrors the statewide spectrum in many ways. Use patterns are also similar.

OUTDOOR RECREATION IN MINNESOTA, THE TWIN CITIES AREA, AND THE MISSISSIPPI NATIONAL RIVER AND RECREATION AREA

Research by the Minnesota Department of Natural Resources (1985-86) produced information regarding the number of hours devoted to various outdoor recreation activities statewide. The survey results demonstrated the importance of outdoor recreation to the quality of life in all regions of Minnesota.

Minnesotans enjoy a wide variety of outdoor activities (figure 1). Walking, hiking, biking, fishing, and driving were the most popular activities in 1985, constituting 50% of the 225 annual activity hours per resident. The study also determined that nearly 75% of all recreation activity takes place within one-half hour from the place of residence, so there is more demand for recreation near large urban areas (MNDNR 1990).

Recreation patterns specific to the Twin Cities metropolitan area have been examined. Twenty-five park areas were studied; seven are in the vicinity of the Mississippi River corridor. These parks include Hidden Falls, Minnehaha Park, Minnehaha Parkway, Coon Rapids Dam, Crosby Farm, Harriet Island, and Fort Snelling State Park. When visitors were asked to rank the importance of a list of activities to their visit, they consistently identified relaxing, walking, picnicking, biking, and sunbathing as their primary reasons for visiting the park. Secondary attractions included nature study, running, sightseeing, using playgrounds, playing sports and games, swimming, boating, and fishing.

A more recent study (Lime 1992) focused more directly on the types of activities enjoyed within the MNRRA boundaries. Land-based activities were identified as the dominant use of

the MNRRA corridor (figure 2). Driving for pleasure is the most common activity in the metropolitan area and MNRRA corridor. Sixty-two percent of the population surveyed enjoyed a drive within the MNRRA boundaries during 1989-1992. Much of this travel was related to work or general travel, but it was considered "pleasure driving" by the respondents.

Walking, hiking, and jogging are very popular within MNRRA boundaries with a majority of the metropolitan population (54%) having participated in these activities in the area during 1989-1992. This constituted 63.8% of the metropolitan population that walked, hiked, or jogged for recreation during that time period.

The historic sites are also important attractions, and they drew 48% of the metropolitan population during 1989-1992. Consistent with the metropolitan council studies, picnicking, nature studies, and biking are also popular.

There was relatively little canoeing and fishing in the MNRRA corridor during 1989-92 (figure 3). There may be a lack of awareness regarding the quality and availability of access, and there may also be concerns about water quality. Concerns about the water quality in the Mississippi have been expressed by boaters and the general public. A majority of metropolitan residents (62%) feel the water quality is less than good. Similar sentiment exists statewide, where 52% of the boaters surveyed identified water quality as a barrier in using the Mississippi River between the metropolitan area and the Iowa border (Lime et al. 1989).

Boating levels in and below the Mississippi National River and Recreation Area are similar. Thirty-nine percent of the boaters statewide operated a boat on the Mississippi River between the Twin Cities and Iowa during 1983-1988 (Lime et al. 1989). In the metropolitan area 34.5% of the motorboaters used the Mississippi in the Twin Cities during 1989-1992.

Fort Snelling State Park provides a variety of recreational opportunities at the confluence of the Minnesota and Mississippi rivers. Over 700,000 annual visitors use park facilities, including a river boat launch, riverside trails, picnic area, swimming beach, fishing pier, canoe rental, and interpretive and educational services. Fort Snelling State Park is the trailhead for the Minnesota Valley State Trail, which will eventually connect Fort Snelling with LeSueur, Minnesota, along the banks of the Minnesota River. The Minnesota Historical Society operates a living history program at historic Fort Snelling on top of the bluff overlooking the confluence of the two rivers.

FUTURE DEMAND FOR RECREATION

The Minnesota Department of Natural Resources predicts that walking, hiking, golfing, and nature study will increase as the population ages (figure 3) (MNDNR 1990). Walking and nature study are already among the most popular activities within the Mississippi National River and Recreation Area boundaries.

Water-based activity might also increase. Lime et al. (1989) report that 44% of the boaters in the metropolitan area would like to boat more often on the Mississippi River. This desire to visit the river is more likely to result in actual visitor use if water quality improves, more information about boating on the Mississippi River becomes available, and access is improved.

INTERPRETIVE FACILITIES/PROGRAMS

Many programs are offered at interpretive facilities and parks within the MNRRA boundaries. Environmental and heritage education programs for schools and organized groups allow students to sample the quality of the water, explore forest communities along the river, and study first hand the development of St. Anthony Falls.

Outdoor exhibits provide another type of interpretation. Highway plaques, wayside exhibits, and interpretive panels tell stories of the people and the Mississippi. Brochures, newsletters, and special publications tell various parts of the river story.

The primary interpretive facilities and programs in the Mississippi National River and Recreation Area are:

Coon Rapids Dam Regional Park: Anoka County operates a visitor center and programs on the left-descending side of the river. Suburban Hennepin Regional Park District operates a visitor/education center with programs on the right-descending side of the river.

St. Anthony Falls: The Minnesota Historical Society offers guided history tours of the area.

Upper St. Anthony Falls Lock and Lock and Dam #1: The Army Corps of Engineers provides viewing of the operation of these locks; displays provide interpretation.

Fort Snelling History Center and Reconstructed Fort: The Minnesota Historical Society provides exhibits and a film in the center; interpretation focuses on fort life in 1827.

Fort Snelling State Park: The Minnesota Department of Natural Resources operates a visitor center and provides interpretive and environmental education programming.

Crosby Farm Nature Park: The city of St. Paul operates a visitor center and provides interpretive and environmental education programming.

Sibley and Faribault Houses: The Sibley House Association provides tours of the homes of these famous Minnesotans.

Katherine Ordway Natural Science Study Area: Macalester College operates a field station used by its students in a wide range of studies. Education programming is provided for the public.

Padelford Packet Boat Company provides commercially operated boat tours on the river. These include interpretive programs about the river corridor.

Facilities near the MNRRA corridor include historic houses, and farms, nature centers, museums, and interpretive trails.

SOCIOECONOMIC RESOURCES

The Mississippi River was for many years the primary economic resource of the Twin Cities area. St. Paul, located at the head of navigation on the river where the tributary flow of Trout Creek descended through the high, unbroken bluffs lining the upper Mississippi, developed as a transshipment point between steamboat and rail transportation. Fifteen miles upstream, St. Anthony Falls first provided power for pioneer lumber milling and later for the flour processing industry. During more than 140 years of settlement, the economic uses to which the Mississippi River has been put as it flows from Dayton/Ramsey to the confluence with the St. Croix have changed dramatically, but throughout modern settlement history, the Mississippi has been a working river.

Today, many of the industries that once depended on proximity to the river for waterpower have moved away from the river, led by changes in power technologies, transportation infrastructure, and workforce accessibility. The milling activity that once made Minneapolis the "Flour City" now is located in Buffalo, New York; much of the city's riverfront houses industrial activities that bespeak a glorious past but not a vibrant present.

East of downtown St. Paul the hundreds of spurs and sidings that served the warehousing and wholesaling activities at the break-of-bulk point between the Mississippi River and the railroads have dwindled to a few tracks, serving a handful of remaining customers in the Trout Creek valley, who today have little need for river access. Instead of carrying the passenger and freight traffic of the past, the Mississippi today is a highway for bulk goods and a recreational resource for pleasure boaters, nature lovers, and those seeking a respite from urban life. Strong reminders of the importance of the river to the local economy do remain in St. Paul, from the Ford plant in the northwest to the railroad humping yard below Mounds Park east of downtown. For additional information on transportation infrastructure in the corridor, see appendix L.

In the northernmost reaches of the MNRRA corridor, large homes line the banks of the impoundment created by the Coon Rapids dam. Further south, where the Mississippi broadens as it is joined by the Minnesota and St. Croix rivers, marshes, low-lying islands, and sand bars dominate, interspersed with industrial sites dependent on barge transportation and rail access.

Much of the MNRRA corridor appears undeveloped when viewed from the river, so it would be easy to underestimate the amount and importance of the economic activity that remains from earlier times or that has been developed more recently. Over 108,000 jobs are located in the corridor, representing 8.3% of the job base in the seven-county metropolitan region. There are also those jobs located elsewhere that are based on the economic activities in the corridor. Barge transport of fertilizer and agricultural chemicals into the corridor, and crops out of it, play a key role in farm production in the upper Midwest. Every job in the corridor creates multipliers as wages enter the local economy. The magnitude of these multiplier effects varies with sector of the economy and requires an input/output analysis for estimation of total impacts.

Recreation has a positive effect on the state and metropolitan area economy. The estimated economic impact of outdoor recreation in Minnesota in 1985 was in excess of $3 billion. Of

this figure, over $625 million was related to recreation in the metropolitan area. This represented approximately 1% of the total metropolitan area economy. Data are very limited on specific economic impacts and benefits of recreation in the MNRRA corridor.

In Minneapolis the Mississippi River changes character dramatically. In the northern part of the city the remnants of the river's industrial past can be found. Many parcels are currently used for light and general industrial purposes.

The historic center of Minneapolis, the Gateway district, has become an urban renewal area. The effective center of the city has moved many blocks south of its old location at Bridge Square. Nevertheless, there is considerable interest in Minneapolis in further redeveloping the downtown riverfront with a variety of residential and office uses. The Minneapolis Community Development Agency hopes to expand residential areas and office development along the river corridor, providing a critical population that would boost downtown economic activity.

A number of existing planning and development agencies have been working on the redevelopment of the Minneapolis portion of the Mississippi River for several decades. These agencies, especially the Minneapolis Community Development Agency and the Minneapolis Park and Recreation Board, have made significant investments in the Mississippi River corridor during the past ten years. Completed public/private partnership developments, ranging from those that cost over $100 million (Riverplace, Cowles Printing Plant) down to several projects that have been completed for less than $1 million have totaled almost $500 million (about $82 million in public funds). With the addition of two completely public facilities (the main post office expansion and the Minnesota Supercomputer Center) the expenditure totals almost $560 million ($146 million public funds). Land has been acquired and development is pending on an additional 10 projects in the Minneapolis central riverfront area, with an existing investment of about $150 million ($30 million in public funds) (MCDA 1992).

Institutional uses, including the University of Minnesota and several hospitals, are found along the river downstream of downtown Minneapolis. While there are few functional reasons for either to be located on the river, the amount of existing institutional investment makes it extremely unlikely that they could or would move from their present locations.

Between the University of Minnesota and Ford Parkway, the Mississippi River passes below beautiful bluffs. Public access and parklands are available, which enhance the residential quality of life and property values for those who live along the river. These residential areas are among the most desirable in the city, which is reflected in their relatively high valuations. Residential properties in the MNRRA corridor contribute significantly to the local tax base (City of Minneapolis Department of Public Works — Engineering Design Division 1992).

The Mississippi River still plays an important economic role in St. Paul. Although the river is no longer the major transportation artery for passenger and consumer goods, it still carries much of the bulk cargo through the Twin Cities area. Equally important, major economic entities are located in the MNRRA corridor in St. Paul, responsible for approximately 10,000 to 15,000 jobs (Minnesota Department of Jobs and Training 1992b).

The corridor also accounts for significant property taxes in Ramsey County. A list of the 500 top property tax-paying properties includes 23 that are in the MNRRA corridor in Ramsey County. In 1990 these properties generated approximately $9 million in property taxes for the county, on property worth an estimated $153 million (Ramsey County Department of Property Records and Revenue).

There are significant amounts of tax exempt property in the corridor. The amount of tax-exempt property in St. Paul increased from 21.0% ($1,747,839,100 on a total real property valuation of $8,317,744,182) in 1986 to 22.7% ($2,101,127,900 on a total real property valuation of $9,235,765,752) in 1992. Between 1986 and 1992 the estimated market value of tax exempt property in the city increased by 20.2%; the corresponding figure for taxable real property was an increase of 11.0% (City of St. Paul Department of Planning and Economic Development 1992).

St. Paul and Minneapolis have a high percentage of tax-exempt property within their borders. For instance, Bloomington's tax exempt property represented about 9.6% of the estimated market value of all real property in the city in 1986, compared to 21.0% for St. Paul and 21.6% for Minneapolis. High percentages of tax-exempt property affect several additional municipalities in the MNRRA corridor, including Coon Rapids (30.8%, or $444,179,600 of $1,441,236,424 total real property in 1986) and Anoka (City of St. Paul Department of Planning and Economic Development 1992).

The MNRRA corridor includes taxable and tax-exempt property in the communities through which it passes. In many instances communities already have a large proportion of the corridor in tax-exempt categories. Based on the information in the National Park Service GIS database for the Mississippi National River and Recreation Area, existing public land, which represents the vast majority of tax-exempt land, accounts for 15.8% of the corridor, or 21.7% of all land (excluding water bodies) in the corridor.

There is evidence that open space and parkland play a role in enhancing economic benefits in the corridor. The impact on property values neighboring recreation sites is dependent on the specific location and type of land use near the recreation area. However, some research suggests there is a relationship in some situations. Research conducted in Boulder, Colorado; Lubbock, Texas; and Philadelphia, Pennsylvania, suggests that there are identifiable zones around parks, greenbelts, and trails that increase property values. In certain instances the presence of a park accounted for 4% of total land value up to one-half mile away.

COMMERCIAL NAVIGATION

One of the most direct uses of the Mississippi River for economic activity is commercial navigation, specifically the movement of goods by barge. Commercial navigation provides the Twin Cities region with low-cost transportation of bulk goods to and from the central U.S. and foreign markets. As the effective head of navigation on the Mississippi River, local terminals have a large hinterland, extending especially north and west of the Twin Cities to include portions of the Dakotas and Canada. The river system is particularly important for the shipment of bulk commodities, both interregionally and intraregionally. Principal commodities include grain and associated products; southbound shipments of coal, potassic fertilizer, petroleum, and coke; inbound shipments of coal, phosphatic fertilizer, salt,

petroleum products, and chemicals; local movements of sand and gravel, and petroleum products (Temple, Barker & Sloane [TBS] 1987).

The towing industry provides service to the Midwest at costs below those of other bulk transportation modes and helps to maintain the competitiveness in the rates of competing modes. Beyond the industry's influence, in the western Dakotas, land transportation rates to export terminals are higher. Towing energy efficiencies produce much lower levels of exhaust emissions and use less fuel than other modes for the same volumes of freight movement.

A 1991 report by the Minnesota Department of Transportation analyzed the environmental impact of moving existing traffic from barge to rail/truck (*Environmental Impacts of a Modal Shift*). The study contains a synopsis of the effects of moving existing traffic from barge to rail/truck under four commodity/corridor scenarios. It found that such a shift would result in annual increases in

fuel use of 826%, from 455,274 to 4,218,250 gallons
exhaust emission of 709%, from 80.9 tons to 654.8 tons
probable accidents of 5,967% from .3 to 18.2
daily truck traffic increases of 1,333 vehicles in the corridors
the need to dispose of 2,746 truck tires each year (MNDOT 1981)

Elements of the barge transportation system in the Twin Cities area include terminals, intermodal connections to truck and rail systems, fleeting areas, local and linehaul towing, and cleaning and repair facilities. The Temple, Barker & Sloane study used 1984 as a base year for analysis of commercial navigation activity. During that year almost 23 million short tons were handled by barge terminals in the Twin Cities area — 47% in Ramsey County, 20% in Scott County, 16% in Dakota County, 13% in Washington County, and 5% in Hennepin County. The direct impact of river navigation services on the Twin Cities was estimated at $200 million in 1984, supporting about 2,500 jobs in the seven-county metropolitan region (TBS 1987). Total economic impact (direct, indirect, and induced economic effects) was $348 million for Minnesota, $332 million for the metropolitan region, $139 million for Ramsey County, $52 million for Dakota County, $27 million each for Scott and Washington counties, and $13 million for Hennepin County in 1984 dollars.

Statewide, river navigation services provided (directly and indirectly) almost 6,000 jobs (5,300 in the Twin Cities region). However, as a capital-intensive activity, the employment impact was much less than the overall economic impact. In 1984 commercial navigation provided 1.0% of the Twin Cities' regional economic activity and 0.6% of the state's activity. Wages were 0.5% of regional nonfarm personal income for the Twin Cities area and 0.3% for the state. Employment represented 0.4% of regional nonfarm employment for the Twin Cities area and 0.35% for the state.

Commercial river navigation is essential to several of the state's most important economic sectors, including agriculture, construction, and energy. If river transportation were not available for major commodities in these economic sectors, producers and consumers would pay an additional $74 million (in 1984 dollars) annually (TBS 1987).

In 1992 farm products such as grain from the five of the upper Midwest states constituted 67.9% of the barge traffic through the MNRRA corridor. Another 12.5% of the traffic was

fertilizer vital for successful agricultural production. Therefore, over 80% of the barge traffic was related to agriculture. Agriculture is Minnesota's largest economic sector. In 1992 Minnesota farm receipts totaled more than $7 billion and another $15 billion was added in value through food processing in the state. More than half of the state's $22 billion in agricultural production was exported, and this accounted for 22% of the Minnesota's exports. These exports generate significant revenue. Minnesota agriculture is estimated to directly generate 162,000 jobs in farming and food processing and to indirectly generate another 257,000 jobs, or 18% of the state work force. (Minnesota Department of Agriculture letter to MNRRA superintendent dated December 13, 1993)

Surveys of grain movements in the state of Minnesota underscore the river's importance to the state's agricultural industry. Those surveys show that over 60% of the grain raised for export in the state is carried to the final export market by barge. In the past 25 years the state's river terminals have handled an annual average of 7% of the total national grain export (Minnesota Department of Transportation 1993).

After a period of increasing shipping activity, river navigation underwent a period of declining commodity transport during the 1980s. Current projections are that shipping will increase at a rate of about 1.9% per year for the next twenty years (U.S. Army Corps of Engineers 1992). Temple, Barker & Sloane project a total economic impact increase of about 0.9% per year between 1990 and 2010 after a decline in the 1980s. Economic impact of commercial navigation in the Twin Cities region in 2010 is projected to total $123 million in sales, employment of 5,235 people, $121 million in wages, and taxes of $17 million. Measured in 1984 dollars, this impact is less than 1% over 1984 levels (TBS 1987). Total barge traffic declined, however, from 22.9 million tons in 1984 to 18 million tons in 1989. Even though a slow recovery was anticipated, there has been substantial growth since 1985. Corps of Engineer records show 1992 as the third highest level of tonnage on record.

For many years, the barge and towing industry has led in the use of closed systems for barge cleaning. These systems retain the cleaning water and solvent for proper disposal on land. None of the water or solvents is returned to the river. Techniques developed locally have been adopted in other locations. The barge industry also promotes water safety, visually monitoring water quality, identifying spills, and contributing to necessary cleanups when problems arise. The technology and implementation of cleanup procedures has advanced considerably in the past decade as awareness of the short- and long-term effects of contamination have spurred the industry to respond to public concerns.

Another major aspect of commercial navigation is the need for fleeting areas for barges. *The Upper Mississippi River-Illinois Waterway Navigation Feasibility Study,* begun in 1993 by the Corps of Engineers and scheduled to take six years, focuses on the potential need to expand the river navigation system. Projections of future barge traffic levels are very important to the study. Since the opening of the navigation system, total barge traffic has steadily increased at annual rates averaging between two and three percent. The Corps of Engineers has contracted with independent experts that are projecting future commodity-specific barge traffic demands. These experts will be asked to identify the critical economic assumptions in their analyses and the uncertainties inherent in their projected demands. This information will be used by the study team to compile a "most likely future" set of barge traffic projections. In addition, other less likely sets of traffic projections will be developed to measure the risk and uncertainty of anticipated traffic demands. These sets of traffic projections will be

important to identifying future opportunities and needs of the upper Mississippi-Illinois navigation system.

SOCIOECONOMIC CONDITIONS

According to state law, Minnesota townships near a large city can assume many powers held by incorporated cities. All four townships with land in the Mississippi National River and Recreation Area possess urban powers and are in many ways legal municipalities, though they retain a rural physical character.

In addition to the counties, cities, and townships, the Metropolitan Council holds certain authorities granted by the state legislature. The Minneapolis/St. Paul metropolis is referred to as the Twin City Metropolitan Area (TCMA), or simply the Twin Cities area. The Twin Cities include seven counties. Two counties, Carver and Scott, have no land in the MNRRA corridor, but all the cities are highly interdependent. Thus, it is important to include all the counties in a profile of the region.

Population

Over 50% of Minnesota's residents live in the Twin Cities metropolitan area and almost 25% live in Hennepin County. No other county's population approaches that of Hennepin. The nearest is Ramsey, with less than half the population of Hennepin.

All five MNRRA counties grew in the past decade. The central counties of Hennepin and Ramsey grew at rates of 9.7% and 5.7% respectively. The rate of growth varied greatly, ranging from Ramsey County's 5.7% to 41.7% in Dakota County. Population growth in the state and in the Twin Cities area is expected to continue at a lower overall rate through 2010.

At the city level, growth rates varied from a loss of 25.1% for Mendota, a city of 164 in 1990, to a gain of 87.1% for Champlin. Generally, the central cities and first-ring suburbs experienced slow or no growth while the outer suburbs saw moderate to high growth.

TABLE 5: POPULATION AND GROWTH RATES OF STATE, TWIN CITIES, AND COUNTIES, 1980-2010

	1980	1990	rate	2000	rate	2010	rate
Minnesota	4,075,970	4,375,099	7.3%	4,600,397	5.1%	4,755,934	3.4%
TCMA	1,985,873	2,288,721	15.3%	2,560,000	11.9%	2,765,000	8.0%
Anoka	195,998	243,641	24.3%	284,540	16.8%	312,200	9.7%
Carver	37,046	47,915	29.3%	62,620	30.7%	73,650	17.6%
Dakota	194,279	275,057	41.7%	341,980	24.3%	394,530	15.4%
Hennepin	941,411	1,032,431	9.7%	1,109,120	7.4%	1,164,220	5.0%
Ramsey	459,784	485,765	5.7%	504,610	3.9%	516,450	2.3%
Scott	43,784	57,846	32.1%	76,910	33.0%	95,800	24.6%
Washington	113,571	145,896	28.5%	180,180	23.5%	207,050	14.9%

Source: Minnesota figures from state planning department; others from Metropolitan Council, derived from U.S. Census

Race

The population of the seven-county metropolitan area is over 90% white (table 6). No single minority category comprises more than 4% of the population of the area as a whole. However, the nonwhite proportion is significant in some communities.

At the county level the minority proportion of the population is much larger in some places than in others. In both Hennepin and Ramsey counties, over 10% of the population belong to a minority. The city of Minneapolis has over 22% minority and in the city of St. Paul the proportion is 17%. The cities of Brooklyn Center and Brooklyn Park each have nearly 10% minority populations followed by the cities of Maplewood (5%) and Fridley (4%).

TABLE 6: POPULATION BY RACIAL CATEGORIES, 1990

	Total	White	Black	Amer.Ind. Eskimo, Aleut	Asian, Pacific Islander	Other	Hispanic*
Minnesota	4,375,099	4,130,395	94,944	49,909	77,886	21,965	53,884
TCMA	2,288,721	2,096,659	89,459	23,340	64,583	14,680	36,716
Anoka	243,641	236,791	1,289	1,865	2,934	762	2,269
Carver	47,915	47,167	103	112	444	89	252
Dakota	275,227	264,854	3,411	893	4,643	1,426	4,025
Hennepin	1,032,431	922,321	60,114	14,912	29,588	5,496	13,978
Ramsey	485,765	427,677	22,674	4,509	24,792	6,113	13,890
Scott	57,846	56,583	267	362	534	100	407
Washington	145,896	141,266	1,601	687	1,648	694	1,895

Source: Minnesota figures from state planning department; others from Metropolitan Council, derived from U.S. census
*Note: In this data Hispanic is an ethnic category, not a race. Hispanics transcend more than one racial category. The population in this column is also represented in the race columns.

Statewide and across the metropolitan area, the largest minority is Black, followed by Asian/Pacific Islander, American Indian/Eskimo/Aleut, and Other. Hispanics make up between 1% and 2% of both the Minnesota and the metropolitan area populations. This order is not necessarily mirrored in the counties and cities. Anoka County has more Asians (1.2%) and American Indians (0.8%) than Blacks (0.5%). Ramsey County also has more Asians (5.1%) than Blacks (4.7%). Washington County has almost equal numbers of Blacks and Asians (1.1%) while Hennepin County has twice as many Black residents (5.8%) as Asian (2.9%).

The greatest concentrations of minorities are in the cities of Minneapolis and St. Paul. In Minneapolis, 13% are Black, 4.3% Asian, and 3.3% American Indian. In St. Paul, proportions are 7.4% Black, 7.1% Asian, and 1.3% American Indian. The figures illustrate the population diversity found across the communities. Differences exist between distinct neighborhoods in individual cities, especially in the central areas.

Income

Median household incomes are listed in table 7 for the state, metropolitan area, and the seven related counties. The median household income for the region as a whole ($36,678) is higher than the median for the state ($30,909). All seven counties have higher medians than the state.

However, differences are seen between the counties. Medians range from a high of $44,122 in Washington County to $32,043 in Ramsey County.

TABLE 7: MEDIAN HOUSEHOLD INCOME

Minnesota	30909
TCMA	36678
Anoka County	40076
Carver County	39188
Dakota County	42218
Hennepin County	35659
Ramsey County	32043
Scott County	40798
Washington County	44122

Source: Minnesota figures from state demographer; others from Metropolitan Council, derived from U.S. census; metropolitan area median is a weighted average of the seven counties' medians. Figures are in 1990 dollars.

Even greater variation exists across the individual cities and towns of the region. Mendota Heights has the highest median household income at $60,514. The lowest is Minneapolis at $23,324.

Poverty

Of the seven counties, only Ramsey at 11.4% exceeds the state's 10.2% poverty rate. Poverty levels in the different minority categories show variation from community to community. With few exceptions, poverty is much more prevalent among minority populations than among Caucasians.

Employment

The state of Minnesota saw an increase in covered employment of 20.5% from 1980 to 1990. The Twin Cities metropolitan area saw growth of 23.3%. "Covered employment" is the number of employees covered by unemployment compensation, reported by job site rather than place of residence. Covered employment accounts for all but three to four percent of total employment.

Statewide, most jobs exist in trade, services, manufacturing, and government (in descending order).

See appendix I for additional socioeconomic information, including population below the poverty level and employment by industrial sector.

TABLE 8: POPULATIONS OF MINNESOTA, TWIN CITIES, AND MNRRA COUNTIES AND CITIES

	1980	1990	change	2000	2010
Minnesota	4,075,970	4,375,099	7.3%	4,600,397	4,755,934
7-County Twin City Metropolitan Area (TCMA)	1,985,873	2,288,721	15.3%	2,560,000	2,765,000
Anoka County	**195,998**	**243,641**	**24.3%**	**284,540**	**312,200**
Anoka (city)	15,634	17,192	10.0%	17,700	17,800
Coon Rapids	35,826	52,978	47.9%	63,500	69,500
Fridley	30,228	28,335	-6.3%	28,500	29,000
Ramsey (city)	10,093	12,408	22.9%	15,600	17,700
Carver County	**37,046**	**47,915**	**29.3%**	**62,620**	**73,650**
Dakota County	**194,279**	**275,057**	**41.7%**	**341,980**	**394,530**
Hastings (part)	12,811	15,440	20.5%	17,600	19,800
Inner Grove Hts.	17,171	22,477	30.9%	27,500	33,000
Lilydale	417	506	21.3%	540	570
Mendota	219	164	-25.1%	170	180
Mendota Heights	7,288	9,431	29.4%	10,800	12,150
Nininger Twp.	774	805	4.0%	830	840
Ravenna Twp.	1,683	1,926	14.4%	2,050	2,150
Rosemount	5,083	8,622	69.6%	14,800	22,300
South St. Paul	21,235	20,197	-4.9%	21,000	21,700
Hennepin County	**941,411**	**1,032,431**	**9.7%**	**1,109,120**	**1,164,220**
Brooklyn Center	31,230	28,887	-7.5%	29,000	30,500
Brooklyn Park	43,332	56,381	30.1%	65,500	71,000
Champlin	9,006	16,849	87.1%	22,500	25,500
Dayton (part)	4,000	4,392	9.8%	4,700	4,850
Minneapolis	370,951	368,383	-0.7%	370,500	373,000
Ramsey County	**459,784**	**485,765**	**5.7%**	**504,610**	**516,450**
Maplewood	26,990	30,954	14.7%	33,000	33,500
St. Paul	270,230	272,235	0.7%	275,000	280,000
Scott County	**43,784**	**57,846**	**32.1%**	**76,910**	**95,800**
Washington County	**113,571**	**145,896**	**28.5%**	**180,180**	**207,050**
Cottage Grove	18,994	22,935	20.7%	29,500	33,500
Denmark Twp.	1,140	1,172	2.8%	1,250	1,250
Grey Cloud Twp.	351	414	17.9%	490	560
Hastings (part)	16	5	-68.8%	0	0
Newport	3,323	3,720	11.9%	3,950	3,950
St. Paul Park	4,864	4,965	2.1%	5,100	5,200

Only cities with land in the Mississippi National River and Recreation Area are listed, so sums of city populations will not equal total county populations. Populations for 2000 and 2010 are projections. Source: Metropolitan Council

VISUAL CHARACTER ANALYSIS

The most significant visual features of the corridor, as seen from the river and shorelines, are identified in order to determine the resource protection measures necessary to preserve them (see Visual Resource Analysis map).

The river corridor has a relatively natural appearance through much of its 72-mile length. Confined in a steep, heavily wooded gorge through much of the metropolitan area, its lush bottomlands and wooded slopes also provide valuable wildlife habitat. The activities of the area's 2.5 million people are not often seen or heard from the river. Behind the forests or beyond the bluff top lies a sprawling urban landscape of highways, shopping centers, industries, airports, and residential areas. This sense of being away from it all while actually being in the midst of a metropolitan area is remarkable. When human activities are visible, they are diverse. Travelers on the river see natural areas, factories, homes, dense forests, urban plazas and skylines, bridges, trails, parks, farms, barges, and wildlife. The character of the river itself changes, too, from a broad flat floodplain to a narrow river held in by a steep gorge and from calm water to roaring falls. General observations about the character of the entire corridor include:

Visibility of the River

The river cannot be seen from many areas. This is usually due to vegetation, high bluffs, and existing development along the shore.

Access to the River

Access in some areas is very good. In many other areas, roads, railroads, industrial uses, large buildings, and single-family subdivisions are barriers to the river, as are floodwalls, levees, and grade differences.

Open Space

There is extensive open space throughout the corridor. In downtown Minneapolis continuous open space has been planned for over 25 years and the city has been successful in acquiring and developing extensive open space along the riverfront. In downtown St. Paul public open space development has not always been a priority. A continuous 15-mile open space corridor is currently planned for both cities. Elsewhere in the corridor, much of what is perceived as open space could be developed.

Vegetation

The heavily vegetated shoreline and wooded bluffs add to the corridor's natural character. The exceptions to this rule are the major residential and industrial areas and the Minneapolis and St. Paul downtowns. Vegetation often hides intense development and gives the impression of open space.

Landforms

The major landforms in the corridor range from open to closed landscapes consisting of wide, flat floodplain valleys, narrow valleys with steep bluffs, and wide valleys with more distant bluffs. There are a number of creeks and rivers feeding the river, each with its own character. Some of these offer physical connections to the river. The major identifiable features are the river, shoreline, floodplain forest, wooded bluffs, islands, and backwater areas.

Structural Elements

The built environment in the corridor adds to the visual character in some areas and detracts in others. It includes residential, commercial, transportation, and industrial development, ranging from low density single-family homes to high-density downtown office buildings. There are several visually distinctive bridges along the corridor, including many with traditional masonry or concrete arch designs. This degree of continuity in traditional arch bridge architecture in the MNRRA corridor is unusual in large metropolitan area river corridors.

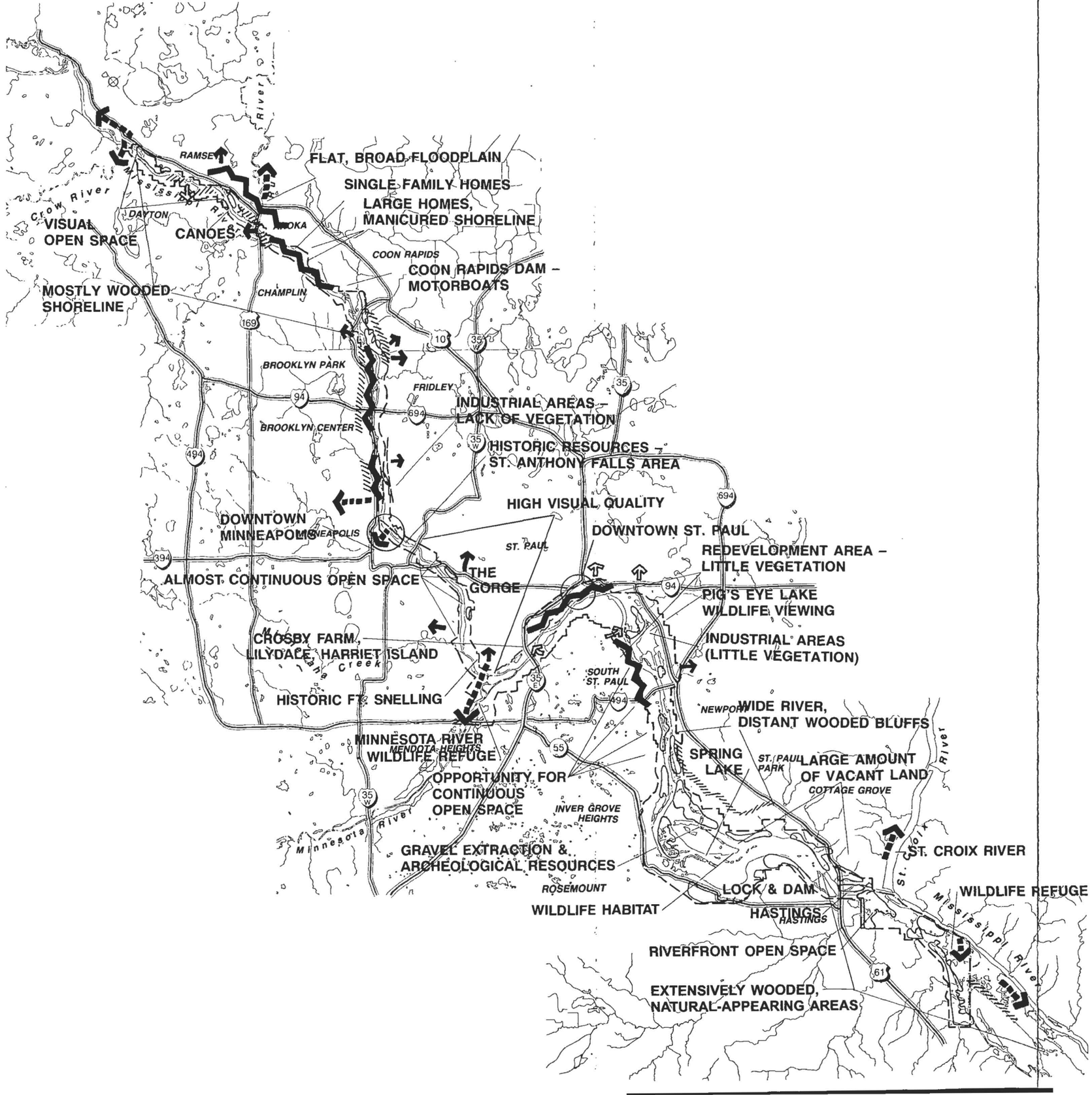
CHARACTER REACHES

Despite the diversity, some broad patterns can be identified. Major visual factors include landforms, land use and development patterns, open space, river character, water use, habitat, visibility, and views. The river changes in character from north to south.

Crow River to North Minneapolis

The upper reach of the Mississippi river corridor is held in a broad, flat floodplain with no visible bluffs but with extensive vegetation along the shoreline. The river is enclosed with vegetation but becomes wider above the Coon Rapids dam. There are some excellent parklands, but there is minimal access to the river for cars or pedestrians. The river is not visible from most areas, with the exception of residential areas or parks. In the upper reaches there are good examples of floodplain forests.

Uses of the lower portions of this reach (below Anoka) are primarily residential. The older developments appear to fit into the land better than the newer, more visible subdivisions. There are numerous private boat docks and stairs leading from residences to the river. There are few commercial and industrial uses visible. Commercial navigation does not extend to this reach of the river, but motorboats and canoes and other boats are popular. The pool above



BOUNDARY

HYDROLOGY

URBAN CENTER

BARRIER

URBAN WATERFRONT

CONNECTIONS:

EXISTING

PROPOSED

NEEDED NOT PLANNED

OPEN SPACE OPPORTUNITY (vacant & forested)

0 2 4 MILES

NORTH

VISUAL RESOURCE ANALYSIS

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service
DSC • MAR 94 • 607 • 20005B

ON MICROFILM



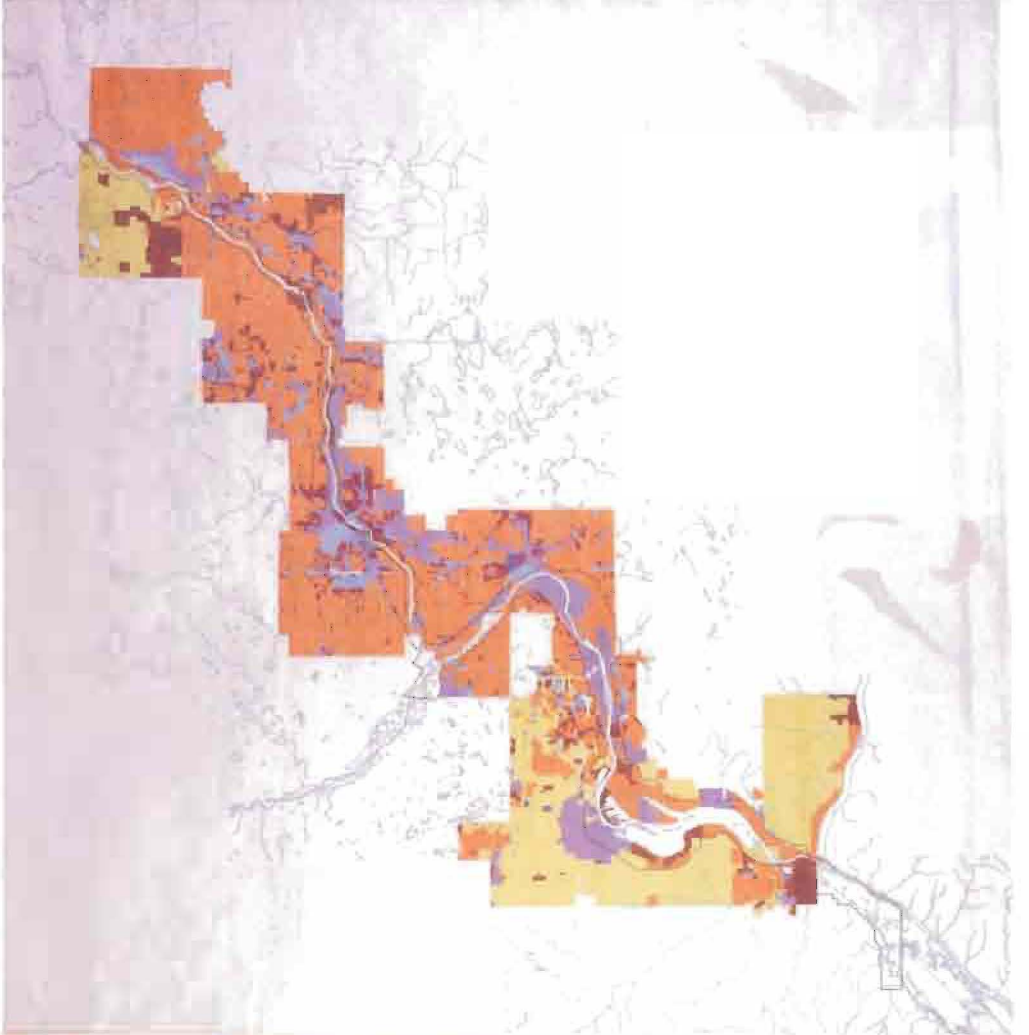
- BOUNDARY
- HYDROLOGY
- SINGLE FAMILY RESIDENTIAL
- MULTIFAMILY RESIDENTIAL
- BUSINESS/COMMERCIAL
- INDUSTRIAL
- PUBLIC (INCLUDES HIGHWAYS AND AIRPORTS)
- PARKS AND RECREATION
- AGRICULTURAL OR VACANT
- WATER BODIES

NORTH

LAND USE

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service



- BOUNDARY
- HYDROLOGY
- SINGLE FAMILY RESIDENTIAL
- MULTIFAMILY RESIDENTIAL
- BUSINESS-COMMERCIAL
- INDUSTRIAL
- AGRICULTURAL
- INSTITUTIONAL OR PARKS/OPEN SPACE
- OTHER

MILES

KILOMETERS

NORTH

ZONING

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

United States Department of the Interior
National Park Service

ON MICROFILM

the Coon Rapids dam offers motor boating, fishing, and water skiing. Above the pool and below the dam, the river is shallow and is suitable only for canoes and other small boats.

Significant visual features include the floodplain forest, vegetated shorelines, islands, and the Coon Rapids dam.

Minneapolis Area

This reach of the river may be the most diverse, with land uses ranging from intense industrial areas to relatively natural urban parks. Warehouses, small barge fleeting areas and terminals, and other water-related industries occupy large stretches of the river from the Camden bridge to downtown Minneapolis. These areas have no significant vegetation. The area from the Hennepin Avenue bridge to the gorge offers views of several architecturally distinctive bridges, urban plazas, St. Anthony Falls, two locks and dams, and many historic buildings. The downtown skyline on the right-descending bank of the river is particularly dramatic. The downtown riverfront on both sides is being developed with continuous urban parks, entertainment, residential uses, and adaptive reuses of historic structures. In some sections, though, the downtown is almost cut off from the river. The railroad lines, the street pattern, and several very large buildings block off the connecting streets.

Significant visual features include the Minneapolis skyline, distinctive bridges such as the Stone Arch (a national engineering landmark), mill district historic buildings, the falls, the riverfront parkland, and the upper lock and dam.

The Gorge to St. Paul

This section is a unique mix of natural and urban scenery and the hub of commercial river activity. The gorge is a very scenic natural area with almost continuous open space and thick vegetation that leads into the intense industrial and downtown development in St.Paul. The steep bluffs and thick vegetation in the gorge result in an enclosed feeling until the river moves out into a broad floodplain with steep bluffs, punctuated with rock cliffs near St. Paul. Land in the gorge is mostly publicly owned (University of Minnesota, city, and state), and the natural qualities of the corridor are preserved. Development is set back far enough from the bluff line with enough vegetation to render it almost invisible from the river outside the downtown area. Biking, walking, running, and cross-country skiing are popular in this area due to the almost continuous open space and trail system. Many visually distinctive bridges are found in this section, including several with the traditional concrete arch design and some newer bridges, such as High Bridge, that incorporate the arch concept into their design.

The Corps of Engineers operates Lock and Dam 1 (Ford Dam) in the area. The Minnesota River enters the Mississippi in this stretch with heavy sediment loads, which adversely affect water quality. The Fort Snelling area is not only scenic, with extensive open space, but rich in history. Limited barge traffic and small fleeting areas can be found, increasing in size and intensity as one moves downstream. Just before entering downtown St. Paul, extensive industrial development appears, much of it abandoned. Railroads, roads, and steep bluffs cut off much of the city from the river, although there are plans to move many of the barriers. On the right-descending bank there is extensive open space, with Lilydale and Harriet Island

parkland dominating the landscape, and there are some adjacent commercial recreation opportunities. On the right-descending bank of the river the bluffs and cliffs offer a scenic backdrop for the river, and development on the top of the bluff is mostly unobtrusive.

The downtown skyline on the left-descending bank of the river is particularly dramatic, but pedestrians are physically isolated from the river by roads, parking structures, and the bluff. Several large buildings, the most notable of which is the former West Publishing Company building, block the river view from downtown areas. However, because the St. Paul riverfront has not yet been redeveloped, increased visual and actual connections to the river could still be possible. Several plazas visually connect the river to the city.

Outside of downtown, the blufftop contains several attractive parks that serve surrounding neighborhoods. Connections to the river are physically difficult but offer stunning views.

Significant visual features include the wooded bluffs, islands, Fort Snelling, barges, the St. Paul skyline, wildlife, visually distinctive bridges, large natural areas, and broad panoramic floodplain views.

Below St. Paul (from Mounds Park downstream)

The river valley becomes broader downstream from downtown St. Paul, with extensive industrial development, some that is screened by vegetation and some that is highly visible due to lack of any shoreline vegetation. Significant developments include Holman Field and the Metropolitan Waste Treatment Plant, which treats 85% of the area's waste. This area is the hub of commercial navigation, with terminals, fleeting areas, and service areas. Pig's Eye Lake is in this stretch, with its wastewater treatment plant, barge fleeting areas, and wildlife habitat.

Braided river channels begin in this area, and floodplain forest habitat is found on many islands. Indian mounds provide evidence of prehistoric settlement. The skyline of St. Paul often dominates the view. Below South St. Paul the area becomes much more natural looking, with wooded bluffs visible in the distance. Another lock and dam is found in this reach of the river.

This section contains large amounts of open space and vacant land, with sensitive natural resources. Backwaters provide habitat for mammals, birds, amphibians, and reptiles. The Spring Lake backwater is an example. The 4,100-acre Gores Wildlife Management Area encompasses the backwater area below Hastings. There are several huge industrial complexes in this reach, some of which are visible while others are screened by vegetation or topography from the river. Large homes can be seen along the bluffs in this area.

Grey Cloud Island is significant because of its large natural areas, prehistoric resources, and large mineral extraction operations. The historic city of Hastings, with its trail and open space along the riverfront, is on the right-descending bank. Downstream is the city of Prescott at the mouth of the St. Croix. Several marinas serve both rivers in this location. Downstream from Hastings the wooded bluffs are up to 390 feet high and appear mostly undeveloped. Boating is the dominant recreational activity.

Significant visual features include downtown Hastings, open space, bluffs, Spring Lake, Grey Cloud Island, agricultural land, distant views, the lock and dam, and the mouth of the St. Croix.

EXISTING LAND USE AND ZONING

In order to recommend policies for the MNRRA plan, existing land use and zoning rules were inventoried and analyzed. The following maps and tables show existing land use and zoning in the corridor, followed by a brief discussion of the implications of the existing situation and an analysis of the amount of undeveloped land in the corridor that is zoned for development and areas potentially affected by the riverfront policy discussed in the plan.

TABLE 9: LAND USE IN THE CORRIDOR

Land Use	Acreage	%
Single family residential	6,127	11%
Multi-family residential	407	1%
Commercial	444	1%
Industrial	4,018	7%
Public	3,030	6%
Parks and recreational	5,928	11%
Agricultural or vacant	19,096	36%
Water bodies	14,677	27%
No data	53	0%

Note: Information for this table is from the MNRRA geographic information system. The original data source was 1990 air photos interpreted and digitized by the Metropolitan Council. Water bodies are greater than reported in the 1988 land cover map (developed from satellite imagery) due to drought conditions in that year and differences in the resolution of the data sources. Forest areas are included in the "agricultural or vacant" category.

The Land Use map and table 9 show the corridor's existing land use. There are several significant land use characteristics worth noting in the corridor. One is the large amount of park and recreation land. Another is the significant amount of vacant or agricultural land, which totals 36% of the land in the corridor, much of which could be subject to development, as discussed below.

Table 10 shows zoning in the corridor. The largest zoning category is single-family residential. Much of this acreage is undeveloped but zoned for future development (almost 10,000 acres). The amount of undeveloped industrially zoned land is also significant (over 4,000 acres). Much of the vacant land presently appears as visual open space in a rural environment. If developed without sensitivity to the significant visual features as discussed above, the results could be detrimental to the visual character in the corridor.

TABLE 10: ZONING IN THE CORRIDOR

Zoning	Acres	%
Single-family residential	15,727	29
Multi-family residential	1,458	3
Business/commercial	1,001	2
Industrial	8,601	16
Agricultural	2,783	5
Institutional/or parks and open space	4,077	8
No data (river, water bodies,etc)	20,103	37

Note: this table does not include all parks and open space, as some communities do not zone parks separately.

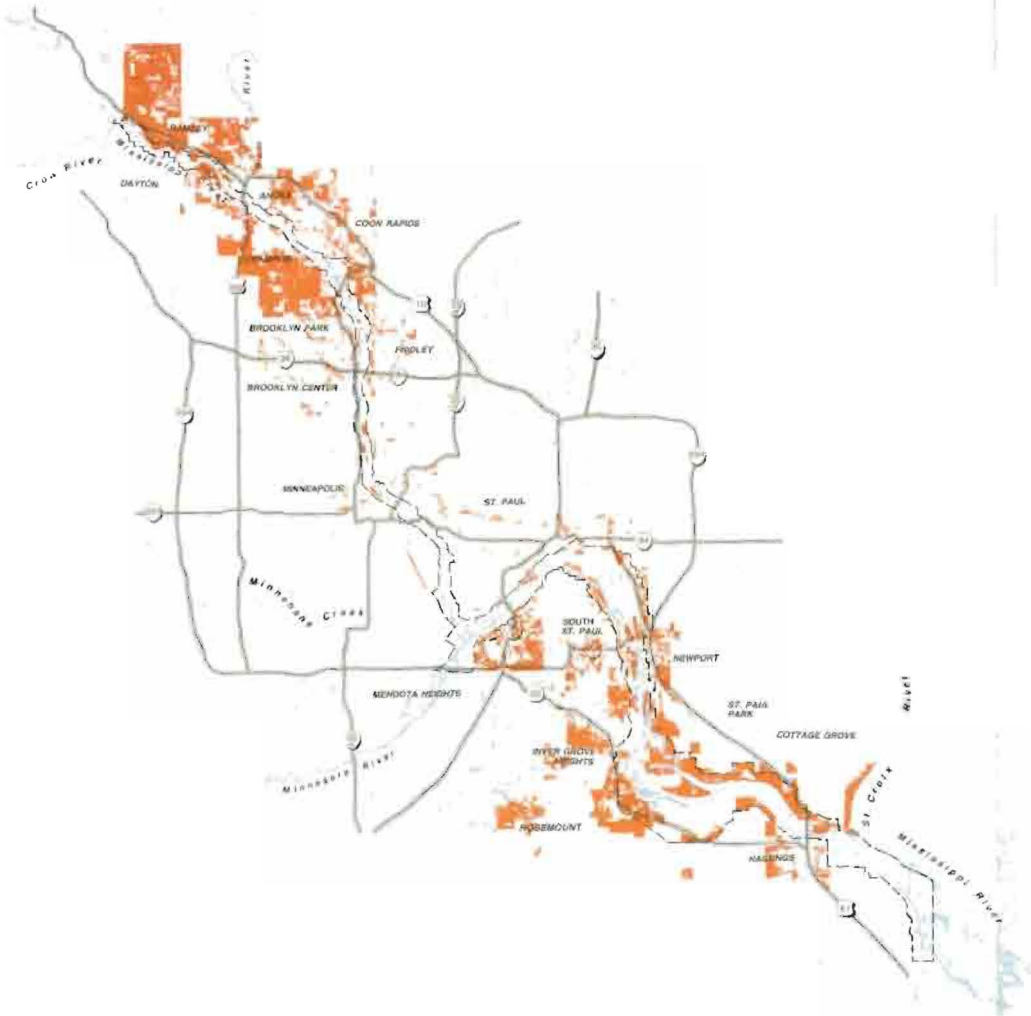
The Undeveloped Land Zoned for Future Development

Table 11 shows agricultural or vacant lands zoned for future development. This provides a good indication of the amount of land that could be developed for urban/suburban types of uses in areas that might presently be perceived as open space by the public. The table also shows land that should be considered undevelopable (wetlands and steep slopes). When these wetland and steep slope acres are subtracted, there are still over 7,800 acres of undeveloped land that could be developed in the corridor under current zoning, most of which is in the south end of the corridor. Much of this is currently zoned for low-density residential use, but would be lost as perceived open space if the corridor is developed under current zoning. To give some perspective on this figure, there are currently about 8,500 acres of existing public parks and open space in the corridor.

TABLE 11: LAND USE/ZONING ANALYSIS

Entire Corridor	Acres
Total land area in MNRRA corridor (total area minus water)	39,102
Agricultural or vacant land zoned for future development in MNRRA corridor	9,368
Undevelopable (wetlands and slopes 12%+)	1,553
Developable land zoned for future development in corridor	7,815
Riverfront Area	
Total land in corridor within 100-year floodplain or 300' of river	16,355
Agricultural or vacant land zoned for future development within riverfront area	2,485
Undevelopable (wetlands and slopes 12%+) within riverfront area	1,098
Developable land zoned for future development within riverfront area	1,387

The Undeveloped Land Zoned for Future Development map shows areas in the corridor that are not now developed but could be converted under current zoning. It shows agricultural or vacant lands that are subject to urban/suburban development. The undeveloped land zoned for development that is not excluded for sensitive area status is considered developable for purposes of this analysis. Floodplains were not excluded from these areas because under existing federal floodplain management regulations and typical local ordinances, many floodplain areas could be developed if certain stipulations are followed (such as elevating



BOUNDARY

HYDROLOGY

UNDEVELOPED LAND ZONED FOR FUTURE DEVELOPMENT

MILES

NORTH

UNDEVELOPED LAND ZONED FOR FUTURE DEVELOPMENT

MISSISSIPPI NATIONAL RIVER & RECREATION AREA

ON MICROFILM

buildings above the 100-year floodplain). If they were excluded there would be about 6,000 acres that would still fall in this category.

Relatively little undeveloped (but zoned for development) land is in the riverfront area, which is subject to locational policies discussed in the plan. There are about 16,400 total acres of land in the riverfront area (land within the floodplain or 300 feet of the river) along the entire 72 miles of the corridor. This is about 42% of the total land area (based on 1990 aerial photos). If a typical 100-foot setback is subtracted from this area, only about 13,400 acres remains, or about 34% of the corridor land that would be subject to the riverfront policy. Of the 16,400 acres within the riverfront area only about 2,500 acres are undeveloped and zoned for future development. Of that, only 1,387 acres are developable lands currently zoned for future development, and only about 1,100 acres of that could be built on under a typical 100-foot setback requirement. About 1,100 acres of the undeveloped lands zoned for future development within the riverfront area are in wetlands or on slopes greater than 12%. In addition, most of the riverfront area is in the 100-year floodplain and therefore even the 1,387 acres would be subject to greater development constraints under existing federal, state, and local floodplain regulations than other land in the corridor outside the riverfront area. It is recognized that some land currently zoned for agriculture or other nonurban use will eventually be zoned for more intensive use, and the 1,387-acre figure would increase somewhat. It is also recognized that some currently developed land in the corridor will be totally redeveloped during the life of this plan. These areas are not reflected in this analysis. It is impossible to predict how much land could be added under these two possibilities in the next 10-15 years, but it would probably represent a relatively small portion of the corridor.

TABLE 12: MNRRA ACREAGE FIGURES BY COUNTY

County	NPS-Owned Land (acres)	Other Public Land (acres)	Private Land (acres)	Water Bodies (acres)	Total Land and Water in MNRRA Corridor (acres)
Anoka	8	661	2,296	960	3925
Dakota	16	1,990	13,282	6,071	21,359
Hennepin	2	2,113	3,972	1,914	8,000
Ramsey	18	3,561	3,746	2,088	9,412
Washington	0	125	7,313	3,642	11,079
Total	**43**	**8,450**	**30,608**	**14,674**	**53,776**

Source: NPS GIS database (note: totals may not add up due to rounding).

Barge fleeting near downtown St. Paul

OVERVIEW

The Mississippi National River and Recreation Area Comprehensive Management Plan/Environmental Impact Statement covers a large and dynamic urban area. The plan includes only one proposal for direct NPS land acquisition and interpretive facility development. Other parts of the plan are heavily dependent on coordination and partnerships for implementation. Few of the specific elements of future land use in the corridor are known at this time. The legislation encourages the coordination of activities and provides a management framework to guide development in the corridor. The proposal and alternatives identify broad management guidelines and policies, and except for interpretive centers they contain no site-specific proposals. In many cases the plan relies on enforcement of regulations already in place and incremental change would relate to improvements in enforcement, coordination, and cooperation. Environmental consequences are extremely difficult to quantify because few tangible elements are known. This requires that, except for the Harriet Island interpretive center, the environmental consequences be analyzed at a more general, subjective level of analysis than an individual project would normally involve. The Harriet Island interpretive center is well enough understood to facilitate a more specific analysis.

This section presents an overview of potential impacts relating to the proposed concept under each alternative. More detailed environmental assessments would be written by the implementing agency for site-specific proposals (such as grant or permit applications) at sites other than the Harriet Island center. Other than the commitment of the Harriet Island site in St. Paul for an interpretive center, there would be no known irreversible or irretrievable commitment of resources in the plan.

Impacts of the proposed comprehensive management plan are presented first. The impacts of the alternatives follow and are more succinct because the discussions stress where environmental consequences would differ from the proposal. Table 3 (located at the end of the Alternatives section) summarizes the impacts of the proposal and alternatives.

IMPACTS OF THE PROPOSED PLAN

This proposed plan would encourage the adoption of policies that would advocate land and water uses that minimize adverse effects on the river corridor and conflicts between users while providing for a broad spectrum of activities and managed sustainable growth. The most significant visual resources would be protected and restored, including historic structures and landscapes, shorelines, wetlands, steep slopes, and other sensitive resources. The river corridor would have continuous public and private open space along the shoreline, and it would be connected to the downtowns and neighborhoods by open space and trails. Local governments would be encouraged to update their land use plans for the corridor to conform with this plan. Additional open space and trails would be acquired and developed by local governments. This would be facilitated by an NPS grant program, if funded. There would be minimal NPS land acquisition. The National Park Service would develop a major interpretive center and headquarters in St. Paul and cooperate on establishing a major interpretive center in Minneapolis and smaller interpretive centers in Hastings, at Fort Snelling State Park, and at the Coon Rapids Dam Regional Park.

IMPACTS ON NATURAL RESOURCES

Geology/Mineral Resources, Physiography, Soils

If the land management policies in the MNRRA plan are adopted and enforced by local governments, shoreline bank erosion would be reduced due to less disturbance in the shoreline protection area, which includes about 1,300 acres within 40 feet of the river. This would also result in less sedimentation and improved habitat for aquatic resources. The protection of up to 5,500 acres of steep slopes in the corridor that are greater than 12% would result in reduced soil loss from erosion and increased habitat. Increased protection of bluff lines would have a similar impact.

Development of new trails in the corridor would require some minor alteration of the topography through minimal cutting and filling. Removal of vegetation during construction periods could cause some temporary localized increases in erosion and sedimentation. This problem would be minimized by avoiding construction in highly erodible areas and by using control structures. Careful design and engineering techniques would be used in areas where soils are poorly suited to development. Increased trail use could result in soil erosion on unpaved trails, and there could eventually be congestion problems that could cause people to move off developed trails and cause soil erosion in nearby areas.

The 5-acre site at Harriet Island would have to be regraded to be useable for the intended purposes, but it is already disturbed by existing industrial activities and care would be exercised during the construction process to minimize soil erosion.

There would be no adverse effects on prime or unique farmland because it would either be used for agriculture under guidelines prepared by the Soil Conservation Service or otherwise protected. Proposed NPS interpretive facilities would have no effect on prime farmland.

There would be no known adverse effects on mineral resources in the corridor. Some resources could be acquired for parkland use under the grant program, which would make them unavailable for commercial use.

Vegetation

If the land management policies are adopted and enforced by local governments, vegetation would be preserved or restored in most of the 1,300-acre shoreline protection area and on up to 5,500 acres of slopes greater than 12% in the corridor. Additional vegetation would be protected in the bluff setback area, but the number of acres cannot be estimated with existing data.

The abundance and diversity of vegetation in the corridor would increase due to the land protection policies and design guidelines. Many unique natural communities would be protected and restored, which would result in improved habitat diversity.

The existing vegetation at the 5-acre Harriet Island interpretive center site consists mainly of early emergent growth of marginal quality. The quality of vegetation at the site would be improved by increasing the diversity and abundance to reflect native species of that area. The Harriet Island site would have little effect on vegetation. Every effort would be made to preserve the limited amount of valuable vegetation in place on this previously developed site.

The Saint Anthony Falls interpretive facility would use an existing building and little if any site disturbance would result.

The use of native plant species is encouraged by the proposal, and nothing in this plan would add to the spread of aggressive exotic plant species in the corridor.

Fish & Wildlife, Threatened and Endangered Species

Increased recreational use by resident and tourist populations would cause some disturbance to wildlife. Since the primary boating season does not coincide with either the spring or fall waterfowl migration, no significant impacts on migrating waterfowl are predicted. This could change if seasonal recreational boaters seeking to avoid crowds shift times of peak use away from the summer months to the spring and fall. Any additional boating traffic would mainly take place on the already heavily used main channel and main channel border. The shallow backwaters and side channels where most of the wildlife habitat and sensitive species are located would be minimally impacted. With increased boating traffic in the main channel, though, there could be some increase in side channel and backwater traffic — boaters seeking to avoid busier areas. Increased recreational boating could possibly degrade fish and wildlife resources. Increased boating is not expected to significantly alter the recognizable negative effects of boat wake erosion, noise, and physical disturbances.

There would be some effect on the abundance and diversity of fish and wildlife resources (habitat and species numbers) in the area. Further losses of these resources would be retarded and some increases in fish and wildlife abundance and diversity could be expected if all proposed land and resource protection policies and design guidelines are implemented. The

restored vegetated shorelines (along the Mississippi and its tributary streams and ravines) and additional open space would increase the amount of habitat, and wildlife would be attracted to and move more freely between adjacent natural areas. There would be minimal impacts on fish and wildlife in the corridor from proposed NPS facility development; some construction activities, such as trail, interpretive center, and parking construction, would result in a minor loss of habitat. Improved water quality would improve fish and wildlife habitat in the river. The site for the proposed Harriet Island interpretive center is currently used for light industrial purposes and has little value to fish and wildlife. Extensive landscape plantings on this site by the National Park Service would improve its habitat value somewhat.

There might be some increase in accidental wildlife injuries and deaths if habitat is increased as a result of this plan, and wildlife population increases proportionally. This impact would be due to additional road kills and aircraft strikes, and it is not possible to quantify them at this time.

The proposal encourages the use of native plants and improvements in water quality, which should encourage native wildlife habitation. There would be no substantial expected increase in the spread of exotic animal species in the corridor as a result of the proposal. Some increase in the spread of exotic plant and animal species could result from increased boating in the corridor. This would be mitigated to some degree by existing state programs and additional NPS educational programs to halt the spread of exotic species in the area.

There are twelve federal and 32 state-listed threatened and endangered species in the corridor (see table 4). There would be no major impacts on any of those species as a result of actions under the proposal. Increased visitor use might have some minor impacts on these species. Land use management, open space, and visitor use policies would have no adverse impacts on threatened and endangered species and should enhance potential habitat. Each site proposed for development of an interpretive center would be surveyed for the presence of threatened or endangered species or their critical habitat before any construction would begin. There are no known threatened or endangered species at the Harriet Island site. In the event that it is later determined that a federally listed species could be affected by actions under this plan, formal consultation would be initiated with the U.S. Fish and Wildlife Service.

Floodplains and Wetlands

The proposed plan would help protect floodplains and wetlands in the corridor. If adequate floodplain management policies are adopted and implemented by corridor communities, there would be no major impacts on the 27,000 acres of floodplains, or on floodplain values, from development in the corridor. The proposed plan identifies the floodplain as a sensitive resource and encourages local governments to regulate development in the floodplain areas. These facilities should not displace appreciable quantities of water or enlarge the floodplain. Trails in the floodplain could be relocated, but that would not provide the same experience that is available near the river.

The proposed NPS center at Harriet Island and cooperative interpretive centers at Coon Rapids Dam Regional Park, Fort Snelling State Park, and Hastings would not be located in floodplains or wetlands and would not adversely affect floodplain or wetland values. The Minneapolis/St. Anthony Falls interpretive center, if located in the Washburn-Crosby

complex, would also not be in a floodplain or wetland nor affect these values. The NSP Main Street plant is located in the floodplain and if that site is selected as the preferred site for the St. Anthony Falls area interpretive center, additional floodplain compliance procedures would have to be completed. Development of boat launching and takeout facilities by local and state agencies would be in areas that are in the 100-year floodplain. The National Park Service has determined in its floodplain management guidelines that boat launches are compatible uses of floodplains. The intent of these facilities is to provide access to water recreation activities, so the facilities must be near the water. These actions are therefore excepted from compliance with Executive Order 11988, "Floodplain Management." These facilities should not displace appreciable quantities of water or enlarge the floodplain. None of the existing 21,500 acres of wetlands (including open water) in the corridor would be disturbed, degraded, or altered as a result of the proposal because it supports strong compliance with existing state and federal wetland protection policies and regulations.

The proposed land management policies are expected to have no long- or short-term adverse effects associated with occupancy or modification of floodplains or wetlands. Rather, these values would be enhanced by cooperative efforts with other agencies and landowners to rigorously enforce existing state and federal requirements to protect floodplains and wetlands. Interpretive programs and recreational activities would further the public's appreciation of floodplains and wetlands, which should improve attitudes and care of the resources.

Water Quality

Additional recreation use in the corridor would have minimal effect on the water quality in the river, especially when compared to existing point and nonpoint pollution. The beneficial effects of the water pollution policies in the plan would be contingent on the success of efforts of the Minnesota Pollution Control Agency and other agencies responsible for water quality to address the major pollution sources affecting the corridor. Most nonpoint source pollutants affecting water quality would continue to come from sources outside the MNRRA corridor. The National Park Service and commission in coordination with regulatory agencies would support efforts to reduce outside pollution threats.

Under the proposal, some reduction in water pollution is expected. Implementation of existing water quality programs is encouraged and the attainment of water quality goals is supported, which would mean that, if successful, point source regulatory requirements would be attained and nonpoint pollution and runoff would be reduced, resulting in improved water quality, a healthier fishery, and improved fishing and swimming conditions.

Air Quality

A minor increase in air pollution would result from the increased motor vehicle and boat use related to increased visitation and recreation in the area. Point and nonpoint sources of air pollution would continue to impact air quality. Increased visitation under all alternatives would have some impact on air quality and noise. Watercraft could have local impacts on air resources. These increases would be generally insignificant on a corridorwide level, especially when compared to existing air pollution sources in the metropolitan area.

When interpretive center construction is underway, there could be a minor, short-term reduction in air quality in the immediate construction area due to fumes and dust. No significant impacts on air quality would continue over the long term.

Section 118 of the Clean Air Act requires federal agencies to meet all federal, state, and local air pollution control requirements. No air quality standards would be exceeded. The proposal would have an insignificant effect on air quality in the MNRRA corridor. Continued NPS participation in reviewing federal regional air quality permits would assist in preventing deterioration of the corridor's air quality from pollution sources outside the MNRRA boundary. For additional information on how the reviews would be done, see the partner roles section in the plan.

Noise and Visual Quality

The proposed interpretive facilities would cause some minor increases in noise due to anticipated increases in traffic at the sites.

Additional recreational use in the corridor would cause increases in noise; however, these would be insignificant, especially when compared to the existing background noise in a large urban area.

A mostly vegetated shoreline, the screening of developments from the river, and building setbacks would protect and restore a more natural appearance and improve the visual quality along the river.

IMPACTS ON CULTURAL RESOURCES

Nothing in this plan would contribute to the degradation or loss of cultural resources. Increased interpretation and preservation information would result in a greater awareness of the value of cultural resources. This could lead to greater support for preservation of the 60 properties on the National Register of Historic Places (or determined eligible for the register) within the MNRRA boundaries. This includes three national historic landmarks, three national register properties identified by the State Historic Preservation Office as nationally significant, and about 10 historic districts.

Shoreline treatments in areas with historic districts or historic properties could be tailored to the needs of the historic landscape and would contribute to the preservation of these properties.

Rehabilitation of historic properties would be effective in preservation; however, the amount of public and private funding available is limited in comparison to the need for rehabilitation. This would be likely to result in the continued loss of some properties that are lower priority.

Land use and resource protection policies in the plan could discourage some businesses (e.g. manufacturing) from moving into historic properties in the corridor, while other businesses (e.g. retail and entertainment) could be attracted by such policies. While exceptions are made

for the use of historic buildings in the location policies, prospective occupants might be deterred due to a perceived increase in government regulation in the corridor.

At the site selected for interpretive and administrative facilities in St. Paul, there are no known cultural resources. The area is already significantly disturbed from recent industrial use and levee construction. The development of walkways, parking areas, buildings, and utilities for the interpretive center could uncover unknown archeological resources, which would demand mitigation. Consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation would be undertaken following more detailed site surveys and if any resources are uncovered during construction.

If a new building was to be constructed in this area it could create a different structure density, but there are no historic resources at the proposed site, nor is it located near known prehistoric sites. Construction of contemporary structures could alter and impact the visual character of a yet undefined cultural landscape. The new NPS interpretive facility would be visible from the Harriet Island Pavilion, which is listed on the National Register of Historic Places and is about one-quarter mile from the proposed interpretive center site. There are other improvements in the vicinity that would be done by the city of St. Paul under the jointly prepared plan for the Harriet Island area (see Development Concept Plan map), but these would have no adverse effect on the pavilion. The development concept plan calls for the preservation of the pavilion, and visitors to the area could learn about the structure and its historic significance.

Development of an interpretive center in the St. Anthony Falls Historic District would contribute directly to the preservation of the adaptively used structure and indirectly to other historic buildings in the corridor through interpretation and education programs and media.

The cooperative interpretive centers would be located in existing structures or those planned by others and would not adversely affect cultural resources.

IMPACTS ON VISITOR USE

Recreational use of the corridor would increase under the proposal — especially activities such as hiking, bicycling, boating, canoeing, wildlife viewing, photography, and educational field trips. It is expected that this increase would be comprised mostly of regional residents, but it also would include additional tourists. Much of the use would involve unstructured public visitation; there would also be a significant increase in structured educational activities such as school field trips. Previously underrepresented groups such as minorities or inner-city residents would benefit from targeted outreach programs. It is not possible to predict how much of this increase in recreational use would be stimulated by the MNRRA plan and how much would take place without it.

In addition to increased educational activities, there would be an improved quality of services. There would be enhanced coordination of interpretive services (minimizing duplication and supplementing deficiencies), the addition of interpretive facilities and enhancement of existing ones, the design and installation of interpretive media, and the offering of personal services such as interpretive talks, guided hikes, and water ecology programs.

Along with increased interpretive activities and facilities would come increased awareness and concern for environmental protection. The regional public would become better informed about issues affecting the corridor and would be better able to participate in developing optimum solutions. Increased personal accountability should result in reduced levels of vandalism and other destructive behavior, and increased citizen monitoring of environmental and social conditions.

Increased use would cause impacts on recreational resources. Large increases in numbers of boats and canoes could detract from scenic values for some viewers (a small increase would probably have few impacts on scenic values). Increased trail use could cause crowding on unpaved trails, particularly in the Minneapolis gorge.

An increase in demand for commercial services and products would follow. Recreational users need food, lodging, equipment, training, orientation, and group associations. Some of these needs would be filled by governmental units (the National Park Service and other agencies would improve orientation services and offer expanded environmental education programs), and a significant portion (such as equipment rentals, boat rides, food, and lodging) would be provided by the private sector.

IMPACTS ON ECONOMIC ENVIRONMENT

This section concentrates on a series of economic issues raised during the scoping process for this document regarding the potential effects of the plan on corridor business activities. While it covers all aspects of the proposal, it concentrates on proposed land use, resource protection, and land acquisition policies, which were identified as major concerns during scoping efforts for the document. The conclusions were based in part on a report prepared by the University of Minnesota on the impacts of the proposal and alternatives (Miller 1992) and on other data and literature on the subject.

Costs of Complying with Land Use and Environmental Protection Policies

Additional costs of compliance might affect businesses in the corridor. If the land use and resource protection policies are adopted and implemented by state and local agencies, additional resource protection would be achieved through more consistent enforcement of existing legislation, revised regulations, and design guidelines. Businesses already must plan for compliance with existing regulations, although inconsistent enforcement could have allowed some businesses to avoid the costs of these regulations. To the extent that revised regulations or more consistent enforcement results, some firms might incur additional costs or choose to locate elsewhere. Just the perception that there are additional regulations could deter some firms from locating or expanding in the corridor. A major area of concern has been the stipulation that the riverfront area (about 16,400 acres) be reserved for river-related or river-enhancing uses. This stipulation could increase the current typical 100-foot setback to 300 feet (or the limit of the floodplain if greater) for some new buildings that are not designed in a way that enhances the riverfront or protects its values. In some cases the setback and height restrictions could make a site impossible to develop for the proposed use, although it is also possible that these cases would be addressed through local variance procedures. Some businesses considering a corridor location might choose not to incur the

extra costs of complying with the requirements and could locate or expand elsewhere — in or outside the metropolitan area. The total cost and relocation impact is difficult to predict, because it would depend on the cooperation received by local governments in adopting and enforcing proposed (and existing) policies. Also, the decisions of businesses are made based on many factors, only one of which is compliance with land use and environmental policies.

The proposed riverfront policy would affect a relatively small area of undeveloped (agricultural or vacant) land currently zoned for future development. Using 1990 data entered into the NPS GIS database, of the 16,400 acres in the riverfront zone there are about 2,500 acres in the corridor that fit into this category. Of this, only about 1,400 acres are not in wetlands or on steep slopes (greater than 12%). Most of the riverfront area is within the 100-year floodplain, and development must comply with existing federal, state, or local floodplain regulations, most of which are equal to or more restrictive than the policies contained in the MNRRA comprehensive management plan. It is recognized that additional areas might be rezoned for future development at a later date, and this area would tend to grow. Also, there are areas that will be redeveloped during the life of this plan. However, the riverfront lands that would be affected are expected to remain a relatively small portion of the MNRRA corridor. Compliance with the plan would be encouraged through incentives; the National Park Service has no regulatory authority, and the overall economic impact should be relatively modest. See the Existing Land Use and Zoning section in the Affected Environment chapter for a more detailed description.

Corridor communities would have some additional costs in implementing the land use concepts and policies in this plan. The expense should not significantly exceed existing land use management costs because all corridor communities have planning and zoning programs and are required by state law to have special corridor plans and regulations. Implementation of the MNRRA plan would rely on these existing state and local programs. The costs of updating plans and ordinances might be partially offset by federal grants made to local units of government. The most significant relative impact would be to the unincorporated townships in the southern part of the corridor, similar to the relatively greater impacts of the existing critical area and shoreland management programs on these communities.

Lost Opportunities for Expansion Due to Land Acquisition for Parks and Open Space

The actual economic impacts on individual firms and government jurisdictions would depend on the level of recognition given to the role of economic activities in particular locations in the MNRRA corridor and the actual extent of land removed from private use. To the extent that the plan is oriented toward corridorwide consistency, impacts on local businesses and municipalities have the potential to be greater. Conversely, a greater emphasis on local decision making with a higher degree of flexibility in formulating and implementing the proposal would probably mitigate negative economic impacts. The proposal follows the latter approach, recognizing that the corridor varies in its opportunities and constraints for park land expansion, and different strategies for the acquisition of land for parks and open space would be pursued. There are currently about 4,600 acres of parkland in the corridor, and about 2,000 acres of additional parkland acquisition is planned by local governments. The actual amount of additional public land acquisition resulting from the MNRRA plan cannot be determined at this time, but it would be a small percentage of land in the corridor, including a relatively small portion of undeveloped land zoned for future development.

Business Displacement

Existing business displacement is not anticipated under the proposal. The plan explicitly permits land uses currently located along the river to continue at existing sites, and it recognizes the need to expand these uses, which would protect existing economic resources in the corridor. The costs of complying with regulations for new or major expansion is addressed above. There is a possibility that some businesses might choose to relocate to other areas rather than comply with existing or proposed policies.

Nonreplacement of Businesses

Some loss of economic activities in the corridor could take place through attrition. Whether this would result in a significant economic impact depends on several factors. First, if the businesses were unsuccessful for reasons having little or nothing to do with other MNRRA activities, nonreplacement could be economically sound and market driven. Second, if the businesses move to alternate locations in the metropolitan region, there would be no net loss of regional jobs or economic multipliers but merely a redistribution of their locations. While this could have substantial consequences on individual communities, the effect on the overall economy of the region would be minimal. It is not known how many businesses would remain in the area or leave the metropolitan area.

A wide variety of land uses are permitted in the corridor, subject to local zoning, but nonriver-related or nonriver-enhancing uses should be located out of the riverfront area. Since a typical setback area (averaging about 100 feet) already exists in much of the corridor, this new guideline represents a limited additional area of partially restricted use (or only about 1,100 acres) in the corridor under current zoning.

If an owner of an inconsistent land use desires to move away from a river location, the proposal encourages redevelopment of the riverfront to a consistent private use or to a public use. It is important to remember that the proposal does permit activities currently located along the river to remain, effectively protecting the current economic resources in the corridor.

Job Loss (and Economic Multiplier Loss) Incurred if Businesses are Displaced

Under the proposal most jobs would be retained in the corridor or regional economy; others might be lost permanently. However, given the expansion capability for existing uses, significant business displacement is not anticipated under the proposal. There is also the potential for additional job creation, which is discussed in other sections below.

Effects on Barge Operations

Impacts on barge operations would be minimal unless significant increases in levels of barge fleeting activities are experienced. Under present forecasts, it is uncertain if or when such levels might be reached (Fruin 1992). The plan does not prevent growth in commercial navigation or fleeting areas, but it does recognize that other resources should be protected and that there is a river system capacity that could be reached some day. The riverfront land

use policy would help keep limited land in the riverfront area for activities requiring a river location. Many of these are industries that traditionally use commercial navigation services. This would help maintain a limited and important economic resource in the corridor; use by the commercial navigation industry or those industries that support and rely on commercial navigation activities could be retained.

Loss of Tax Base from Land Acquisition

Minimal if any direct federal land acquisition of private land for MNRRA activities is anticipated. If there is direct federal purchase of land, tax base losses would be partially mitigated by payments in lieu of taxes for the federal land. It is important to note that payments in lieu of taxes apply only to land acquired at the federal level; to the extent that political jurisdictions at nonfederal levels remove land from the tax rolls, such payment would not apply, and there would be a loss of tax base without mitigation. Most land acquisition would be by local entities for which payments in lieu of taxes would not apply. The total amount of land to be removed from the tax roles cannot be estimated at this time, but it would be a relatively small portion of the corridor and would include an insignificant amount of the tax base in the metropolitan area.

The proposal envisions assisting local governments in acquiring additional open space along the river. In most of the municipal jurisdictions, the total increases in tax-exempt land should be relatively small. Much of the land is already planned for public use. Removal of additional properties from the tax rolls as a result of the MNRRA plan would probably have a relatively modest impact on individual communities. Impacts could be greater to communities (especially townships) in the lower river area because a greater number of local open space acquisitions are envisioned in that portion of the corridor, and acquisitions would affect a relatively larger portion of the existing tax base. The total impact on the tax roles cannot be predicted at this time.

Change in Land Values due to Amenity Effects

Generally, increases in land values could be expected on lands close to protected corridor environments. Residential land located near areas in which habitat and scenic values are preserved are particularly expected to increase in value. The magnitude of the increase cannot be predicted at this time. Higher land values would translate into increased property tax revenues for local communities but would also increase tax burdens on individual property owners.

Adverse impacts on existing residences in the corridor are expected to be minimal, if any. The impacts on undeveloped residential property is very difficult to specify because much is left up to individual communities to determine whether the policies in the plan are implemented.

Effects of Additional Tourism

Additional tourism would be expected. The total amount of additional tourism would vary depending on whether the MNRRA corridor serves as an attractor or an attraction. Attractors

are environments or activities that serve to bring additional tourists to the Twin Cities area. They represent tourist dollars entering the local economy that would not be present were the environments or activities not in place. Attractions are environments or activities that are used by local residents and individuals who have come to the region for other reasons (including a desire to see other attractors).

It is more likely that the resources and activities associated with the MNRRA corridor would serve as attractions rather than attractors. Thus, the Mississippi National River and Recreation Area would primarily serve to redistribute tourism revenues in the Twin Cities area, and there would probably be only a modest increase in the amount of new tourism revenues in the region. However, new attractions in the Twin Cities area would encourage longer visits by tourists, which could increase the money spent during their stay. The total amount of additional tourist traffic in the area as a result of this plan cannot be predicted at this time. Increased access and safety, an improved appearance, more visitor facilities, and visitor orientation and awareness would serve to increase tourism to corridor communities.

Facility Maintenance and Construction Costs and Benefits for Local Communities

Facility maintenance and construction expenditures, such as for corridor trails, might increase slightly in local communities due to the additional construction stimulated by the NPS grant program. The amount of such expenditures would depend on the type and number of facilities built, and this cannot be estimated at this time.

The National Park Service would construct an interpretive center and headquarters facility at a cost of about $8.4 million and cooperatively develop another interpretive facility at an estimated cost of about $2.3 million. If local communities were to build park facilities, construction would temporarily contribute to the economics of the area. The total amount of construction impact cannot be estimated at this time. While construction contracts could be substantial, they would probably be relatively small in comparison to other construction activities in the metropolitan area.

Positive Impacts of Improved Quality of Life in Attracting and Retaining Businesses

Preserving and enhancing the environmental and recreational value of natural and cultural resources contributes to quality of life in the Twin Cities area. The importance of quality of life in an area is cited as a major factor in business location decisions. The proposal would enhance quality of life in the Twin Cities area and could be expected to have a positive economic impact without substantially reducing the opportunity for economic activity.

Preservation of Economic Resources

The proposed comprehensive plan has a basic concept, which is rooted in the MNRRA legislation, to preserve existing economic resources in the corridor. Existing businesses and industries would be minimally affected by the proposal because the land use and land acquisition policies are aimed primarily at new development and at mostly undeveloped land. The river-related land use policy would help protect a very limited resource — about 150

acres of undeveloped riverfront property within 300' that is zoned for commercial and industrial use — for those businesses and industries that most need access to the river, such as barge terminals, marinas, etc. In that sense it would protect a rare resource from uses that could be located elsewhere in the corridor or metropolitan area. Existing businesses in the MNRRA corridor would be minimally affected by regulations that would not deprive an owner, temporarily or permanently, of their reasonable use and enjoyment of the land. New land use restrictions would permit alternative uses of the land and would allow useful development within reasonable business expectations.

CUMULATIVE EFFECTS

In analyzing cumulative effects, other agency plans for the corridor were reviewed for consistency. No major conflicts with the proposal were identified. There are no anticipated major adverse cumulative impacts when this proposal is assessed as an addition to other proposals for the corridor. The cumulative adverse effects on corridor resources that result from many individual projects being developed over time would be minimized. The National Park Service would continue to expand and improve its monitoring program to consider cumulative impacts. There would be a positive cumulative impact from cooperative management — the combination over time of funds, staff, and operations/services. Cooperative management should reduce the extent and magnitude of resource use conflicts in the long term.

The only foreseeable irreversible or irretrievable commitment of resources would be for the construction of the St. Paul visitor center on Harriet Island. The resources affected would be in a disturbed environment adjacent to areas used for warehousing and light industry.

IMPACTS OF ALTERNATIVE A (NO ACTION)

Under this alternative there would be no comprehensive management plan for the Mississippi National River and Recreation Area. Implementation of other plans and programs would take place and growth and development would continue in the corridor; change would continue without coordination and incentives provided by the National Park Service or the commission. It is possible under this alternative that there would be insufficient justification for continued NPS involvement, and Congress could choose to deauthorize the area and remove it from the national park system.

IMPACTS ON NATURAL RESOURCES

Geology/Mineral Resources, Physiography, Soils

Impacts of development on soils would continue under current state and local authorities without a coordinated management program. There would be no additional efforts resulting from a comprehensive plan for MNRRA. Shoreline bank erosion would continue, resulting in greater sedimentation and degraded habitat for aquatic resources. Development on steep slopes and bluff lines would continue, which is regulated to varying degrees in different communities and results in greater soil loss from erosion and reduction and degradation of habitat. The actual amount of impact cannot be estimated at this time.

Any development on prime and unique farmlands would result in the irretrievable loss of these lands.

Vegetation

Vegetation in the corridor would continue to be affected under current state and local programs, which vary in their degree of protection for corridor lands. There would be no coordinated effort for a revegetation program in the corridor, and existing revegetation programs would continue in their present form.

Fish and Wildlife

Lack of a coordinated approach to increasing recreational use of the river corridor has the potential for overall increased pressure on plants and animals and their habitats. As use of the main river channel increases, there would be some additional disturbance of vegetation and wildlife on the shoreline. Fish, mussels, and other wildlife living in the river would continue to be negatively impacted by siltation from accelerated bank erosion and resuspension of bottom sediments, both of which are caused by recreational use of the shore and increased boat wakes. General recreation impacts on fish and wildlife species and habitat, however, would probably be insignificant when compared to impacts caused by other activities in the corridor.

Growth in commercial, industrial, and/or recreational activity could affect sensitive species in two ways. First, resources might be directly impacted by development activities such as facility construction. Second, the additional related traffic on the river could impact threatened and endangered species and their habitats. Increased boating could add to the negative effects of boat wake erosion, noise, and physical disturbances.

Floodplains and Wetlands

The 27,000 acres of floodplains (includes river surface) and 21,500 acres of wetlands (includes open water) in the river corridor would continue to be protected under existing federal and state regulation. Some areas without the extra emphasis and incentives that the MNRRA plan would provide could be lost by draining or filling for development activities, including marina expansion and other water development projects, residential and commercial development, and agricultural conversion. The survival of some wetlands, such as the calcareous fen near the expanding Seneca wastewater treatment plant on the Minnesota River, which is threatened by removal of underground water, could be jeopardized.

Perhaps more of a concern than the total amount (acreage) of habitat lost each year along the Mississippi corridor would be the loss of habitat diversity, or the number of different habitats and their relative abundance in a community. Lack of a comprehensive plan and a small MNRRA staff would continue the loss of habitat diversity.

Water Quality

Certain types and densities of recreational boating activities would continue to degrade water quality, increase erosion along shorelines, resuspend sediments, degrade wildlife and fisheries habitat, and have other impacts on the riverine environment. However, these impacts would be minimal compared to other existing nonpoint pollution, industrial discharges, and other land use activities that degrade water quality in the river.

Nonpoint pollution sources, especially agricultural runoff from the Minnesota River and other streams and tributaries that flow into the Mississippi, could continue to be a major problem if existing and proposed state and local programs are not implemented in an effective manner. Bottom sediments in the river are contaminated, particularly by PCBs and heavy metals from surface runoff and industrial discharge. These sediments are resuspended by motorboats, especially towboats and barges. If water quality goals are not met, fish in the river would continue to be contaminated and fish consumption advisories would remain in effect for most of the river in the Mississippi National River and Recreation Area. Interpretive and educational programs on water pollution would not be provided by the National Park Service, and the resulting benefits would not occur.

Air Quality and Noise

Increased levels of commercial, industrial, and recreational activities could adversely affect air quality. Noise levels along the corridor would continue or could increase. Recreational activities would cause minor impacts relative to other activities in the corridor. There would

be no extra emphasis added to current efforts based on the MNRRA plan to prevent and help reduce air pollution and noise in the corridor.

IMPACTS ON CULTURAL RESOURCES

Fragmented preservation efforts would continue. It would be more likely than under the proposal that only a few properties would be maintained while others were lost.

Five municipalities (Minneapolis, St. Paul, Newport, Cottage Grove, and Hastings) would continue enforcement of local heritage preservation ordinances and local review processes for historic properties. Those areas without local heritage preservation ordinances would continue to treat historic properties on a case-by-case basis. There would be no extra emphasis provided by a MNRRA plan to protect important cultural resources and no coordinated approach by MNRRA staff to preserve resources in the corridor. NPS technical assistance for the preservation of cultural resources would also be less likely, resulting in an increased loss of cultural resources.

The amount of funding for cultural resources would be limited to present sources and no coordinated effort to secure additional funds would be made.

The historic use of properties along the river would continue or diminish based on the sites' market viability. Historic properties would continue to be lost as various businesses relocated away from the river.

The entire MNRRA corridor would lack a comprehensive preservation policy and focus for cultural resource preservation.

Inventorying of cultural resources would continue on a sporadic and localized basis as funding became available.

IMPACTS ON VISITOR USE

Recreational use of the corridor would increase somewhat, primarily due to population increases in the metropolitan region and the continuing activities of existing state and local interpretation and recreation programs. This increase could be reflected both in resident and tourist populations. Without increased funding for state, county, or city agencies, educational activities would continue at present levels.

The quality of services, public awareness of environmental issues in the corridor, and depreciative behavior in the corridor would continue under current trends.

As with the proposal, increased recreational use could cause crowding and impacts on scenic values. A slight increase in demand for commercial recreation and visitor services could accompany increased use. No coordinated effort to manage visitor use would be made in the corridor.

IMPACTS ON THE ECONOMIC ENVIRONMENT

No additional tourism would be expected beyond that drawn by a notation on the NPS system map.

The no-action alternative would place no additional restrictions on the location or expansion of existing economic activities. The proposed plan stresses voluntary compliance and incentives to induce communities to update their plans, so the differences between the no-action alternative and the proposal are impossible to predict. Inconsistent enforcement would benefit those businesses that choose not to comply with existing restrictions.

With no additional protected open space (beyond existing local plans) there would be no additional enhancement to land values related to open space protection.

No additional facilities would be built, and there would be no infusion of additional construction or maintenance money.

Limited riverfront property would not be preserved for uses that need the land most, such as barge terminals and marinas, unless a community preserves such property without the stimulus provided by a MNRRA plan.

CUMULATIVE EFFECTS

Because the corridor would not have a comprehensive plan, coordination would be more difficult and adverse cumulative impacts would be more likely.

IMPACTS OF ALTERNATIVE B

Under alternative B the National Park Service would take a more direct role in the management and protection of most publicly owned park resources. There would be additional beneficial effects on natural resources from greater single-agency management versus the proposal's multiagency management approach. To fully achieve NPS management objectives under this alternative, virtually all interests in open space land need to be in public ownership and transfers of public lands in the corridor to the National Park Service would be maximized. There would be a concomitant need to increase staff and funding levels to accommodate a more ambitious natural resource management program.

An active land acquisition program would increase protection of threatened resources, views, and sites, benefiting fish and wildlife and their habitats.

Stricter enforcement of development criteria, control of water use activities, and limited recreational activities would provide added protection to natural resources, potentially resulting in further increases in the abundance and diversity of fish and wildlife.

The riverfront protection zone, consisting of about 16,400 acres, would have a greater positive effect on wildlife habitat, the pollution buffering effect of wetlands, a continuous trail network adjacent to the river, and a restored shoreline area.

IMPACTS ON NATURAL RESOURCES

Geology/Mineral Resources, Physiography, Soils

Shoreline bank erosion would be reduced to a greater degree under alternative B than in the other alternatives. There would be less disturbance in the approximately 1,300-acre shoreline protection area as a result of the more aggressive shoreline protection and revegetation program. There would be reduced sediment loads and improved aquatic habitat. The increased protection of up to 5,500 acres of steep slopes and more restrictive protection for bluff lines would result in reduced soil loss from erosion and increase habitat value as compared to the other alternatives.

Vegetation

An extensive vegetation restoration program would be implemented to establish a nearly natural shoreline along the approximately 275 miles of shoreline in the corridor, and greater efforts would be made to provide vegetation in the riverfront zone. While much of the existing shoreline is wooded, there would be major additional areas where the shoreline vegetation would be restored. Attempts would be made to restore locally extinct and extirpated species that in turn would increase biological diversity in the corridor. However, there would still be areas that have been altered by the lock and dam system and that are necessary for river commerce that would not be restored to native vegetation.

Fish and Wildlife, Threatened and Endangered Species

The habitat for fish and wildlife would be analyzed and monitored more rigorously than in the other alternatives in order to determine the quality of habitat in the corridor. Once habitat quality is determined, more intensive programs would be developed to ensure maintenance of habitat at the highest attainable level. One attainable goal would be removal of all fish consumption advisories by reduction of suspended toxins in sediment loads. Threatened and endangered species would be more extensively inventoried and closely monitored in cooperation with the Department of Natural Resources and the Fish and Wildlife Service to determine the extent of critical habitat in the corridor. Access to critical habitat areas would be limited, which would preserve the areas for wildlife habitat.

Water Quality

The stricter pollution prevention measures advocated in concept under this alternative could result in improved water quality and fishable and swimmable waters if adopted by the state and local agencies with primary responsibilities for pollution prevention and control in the corridor. Efforts would also be undertaken to maintain a more consistent water quality standard at all points in the corridor. Details of this concept have not been developed so it is not possible to provide detailed information or quantification on the type or levels of impact.

Floodplains and Wetlands

This alternative would strongly discourage alterations of the 27,000 acres of floodplains and 21,500 acres of wetlands in the corridor and provide a greater emphasis on floodplain and wetland restoration; however, development of boat-launching and takeout facilities might be at least partially sited in areas that are in the 100-year floodplain. The National Park Service has determined that activities of this type are compatible uses of floodplains. The intent of these facilities is to provide access to certain recreational activities that cannot be accomplished without their proximity to the water. These actions are excepted from compliance with Executive Order 11988, "Floodplain Management." These facilities should not displace appreciable quantities of water or enlarge the floodplain. Trails in the floodplain could be located elsewhere, but that would not provide the same experience that is available near the river.

All wetlands in the corridor would be more likely to be preserved under the more aggressive wetland protection emphasis in this alternative. Areas that were wetlands historically would be restored to the greatest extent possible, resulting in the greatest level of wetland area of all the alternatives. The extent of wetland protection under this alternative cannot be quantified at this time. Additional wetland protection would assist in improving water quality by providing a greater natural filtration system of water before it enters the river's mainstem.

Air Quality, Noise, and Visual Quality

The impacts on air quality would be similar to the proposal. There would be some increased effort to maintain and improve air quality under this alternative beyond those in the proposal, but details of this concept have not been developed, and improvements in air quality cannot be quantified in this document.

IMPACTS ON CULTURAL RESOURCES

Greater interpretation and preservation information under this alternative could result in the saving of more resources than the proposed action or any other alternative. However, this could be somewhat offset by the de-emphasis on business activities, which often preserve and use historic buildings.

As in the proposal, shoreline treatment in areas with historic districts or historic properties and open spaces would contribute to preservation of these properties. The increased emphasis on vegetated shorelines in this alternative might come into conflict with the desire to preserve or restore historic landscapes that were devoid of vegetation during the period of significance.

Rehabilitation of historic properties would be more strongly promoted, resulting in more effective preservation of those resources. The greater amount of funding and technical assistance by the National Park Service for this activity would provide greater protection than that offered in the proposal or other alternatives. Some lower priority properties could still be lost.

More restrictive land management policies in this alternative could discourage some businesses (such as manufacturing) from using historic properties in the corridor, while other businesses (such as retail and service) could be attracted by such policies.

As in the proposal, the change in the historic use of properties could impact interpretation as well as result in the gradual degradation of historic properties as new uses supersede historic ones. At the site selected for the interpretive and administrative facility in St. Paul, the construction of walkways, parking areas, and buildings could disturb unknown archeological resources. A more complete determination of impacts would be determined upon completion of a site-specific archeological survey. Monitoring during construction would also ensure that significant cultural material was not lost.

As in the proposal, if a new building is constructed, it could add to the structural density in the area and be visible from the Harriet Island Pavilion. Construction of contemporary structures could alter and impact the visual character of a potential cultural landscape.

The greater emphasis on cultural resource protection and enforcement of preservation laws in this alternative would result in greater inventorying and protection for cultural resources in the MNRRA corridor.

IMPACTS ON VISITOR USE

Recreational use of the corridor would increase more than in alternative A but less than in the proposal. Actual increases in use cannot be predicted at this time but are not expected to be large relative to existing visitor use levels in the corridor. This increase would be reflected both in resident and tourist populations and would include both unstructured public visitation and structured educational activities. User diversity would also increase.

As in the proposal, there would be improved interpretive and educational services and increased awareness and concern for environmental protection throughout the watershed. Increased personal accountability would result in reduced levels of vandalism and other destructive behavior and increased citizen monitoring of environmental and social conditions.

Resource impacts would increase with increased use and decrease with increased stewardship; there could be a balance between these influences. Increases in demand for commercial recreation services and products would also increase.

The increased priority for resource protection would reduce some opportunities for active recreation, particularly those requiring developments such as trails and marinas. On the other hand, the greater effort to acquire open space would encourage more purely resource-based activities such as hiking and birding.

Under this alternative, the National Park Service would operate the designated interpretive centers and might not be able to assist associated facilities with interpretive media to the same degree as in the proposal. This would potentially restrict the effectiveness of partnerships in coordinating and delivering quality interpretation and recreation services in the corridor.

IMPACTS ON THE ECONOMIC ENVIRONMENT

The impacts of alternative B to the regional economy are generally the same as the proposal with some increases as explained below.

There would be a minimal amount of land acquisition by the National Park Service or local governmental bodies in order to prevent other economic uses of land in the corridor. The resource preservation emphasis in this alternative is somewhat more likely than the proposal to encourage set-asides and restrictions on the location or expansion of existing economic activities and would place a greater emphasis on relocating existing inconsistent uses outside the riverfront area. From a corridorwide perspective, there is considerable land available for expansion of economic activities. However, from the perspective of individual municipalities, which often must compete with other governmental jurisdictions for economic development, loss of local expansion opportunities could theoretically have a significant impact on the tax base. With the implementation of a 16,400-acre more restrictive riverfront zone, all undeveloped land in this zone would be available only for development that requires a riverfront location. This would restrict economic activities more than the proposal or the other alternatives, although much of the corridor would still be available for other activities. Increased protection of all wetlands and floodplains in this alternative would diminish development opportunities somewhat. The actual impact on business in the corridor cannot be predicted at this time.

Under this alternative, more land would be removed from the tax roles for open space than in the proposal; however, some of this loss would be offset by payments in lieu of taxes due to the increased NPS landownership in the corridor. The overall impact on the local tax base cannot be predicted, but as in the proposal, it would be relatively minor when compared to the tax base in the metropolitan area. Small communities would be more affected than large cities, with the greatest impacts on townships in the lower river where the potential for increasing the property tax base is very limited.

The expansion of barge fleeting would be limited to existing fleeting areas under this alternative, potentially adding to the cost of shipping grain and other commodities to and from the Twin Cities area. It is uncertain when real limits would be placed on fleeting. Commercial navigation would continue as an important economic activity in the MNRRA corridor without suffering greatly from additional costs or regulation. Far greater impacts could be expected from continued competition with other transportation modes, especially rail, and from changes in international market conditions, which affect bulk shipments of grains.

CUMULATIVE EFFECTS

As in the proposal, cumulative impacts would be minimized, and there might be more beneficial effects than in the proposal because a greater emphasis would be placed on resource protection in alternative B.

IMPACTS OF ALTERNATIVE C

Under alternative C the National Park Service would play a reduced role in the management of the corridor compared to the proposal, so natural resource protection might be a lower priority than other competing (economic) resources. Resource protection, including pollution prevention, would be encouraged by as yet undefined incentives and economic opportunities, so it is difficult to predict specific impacts on natural resources. Economic factors driving resource preservation would result in more disjointed resource preservation programs, which would be developed on a more site-specific or community-specific basis.

The most probable effects of this alternative would be less undisturbed land, less habitat preservation, and less consistent protection of riverfronts, shorelines, bluff lines or slopes compared to the proposal. The full impact on these important resources is difficult to determine at this time.

IMPACTS ON NATURAL RESOURCES

Geology/Mineral Resources, Physiography, and Soils

More land in the MNRRA corridor would be developed for economic activities than under the proposal or alternative B, and there would be an increased potential for impacts on soils. Increased development would require measures to minimize soil erosion and sedimentation in the river and its tributaries.

Any development on prime and unique farmlands would result in the irretrievable loss of these lands.

Fish and Wildlife, Threatened and Endangered Species

Growth in commercial, industrial, or recreational activity could affect sensitive species in two ways. First, resources located at or near the proposed development might be directly impacted by any subsequent activity, such as construction. Second, the additional related traffic on the river could impact threatened and endangered species and their habitat. Increased boating activity would magnify the recognizable negative effects of boat wake erosion, noise, and physical disturbances. The impacts on these resources would be greater than the proposal or alternative B, but the difference would probably be minor relative to existing impacts on the fish and wildlife resources in the river corridor.

Floodplains and Wetlands

Under this alternative the impacts on floodplains and wetlands would be similar to the proposal, but with the reduced emphasis on resource protection, there might be some additional impacts on floodplains and wetlands, and fewer acres of wetlands would be restored. The actual amount of impact cannot be estimated but would probably be relatively

minor due to the existing local, state, and federal programs to protect these resources, especially wetlands, which are a very high priority for protection under existing regulations.

Water Quality

Some additional adverse effects on water resources could result from greater development and resource-use activities in this alternative, including runoff from impermeable surfaces and chemical runoff from fertilizers. Adverse impacts could be mitigated by better construction techniques and farming practices. Water quality could be affected by runoff from increased mining in the recreation area.

Recreational boating activities would continue to have a minor impact on water quality, cause minor increases in erosion along shorelines, resuspend some sediments, degrade wildlife and fisheries habitat somewhat, and have other minor impacts on the riverine environment, especially when compared to other activities in the river corridor.

Air Quality, Noise, and Visual Quality

In a manner similar to the no-action alternative, increased levels of commercial, industrial, and recreational activities would adversely affect air quality in the corridor. Noise levels along the corridor would remain high in certain areas and could increase in others. The amount of increased impact expected to result from this alternative cannot be estimated at this time. However, these impacts would probably not be major, especially when compared to existing levels air pollution, noise, and visual intrusions in the metropolitan area.

IMPACTS ON CULTURAL RESOURCES

As in the proposal, increased interpretation and preservation information could result in the saving of resources that are currently being lost.

Flexibility in shoreline treatment based on economic emphasis in areas with historic districts or historic properties would result in less preservation of these properties than in the proposal or alternative B.

Rehabilitation of historic properties would effectively preserve them; however, the limited amount of funding available in comparison to the need for rehabilitation could result in the loss of some properties that are on the lower end of priority lists. This loss would be greater than in the proposal or alternative B.

Policies resulting from the plan's implementation could discourage some businesses (such as manufacturing) from using historic properties in the corridor, but this would be less than in the proposal or alternative B. Other businesses (such as service) would be attracted by such policies.

The change in the historic use of properties could impact interpretation and result in the gradual degradation of historic properties as new uses supersede historic ones.

In this alternative there would be no NPS-constructed interpretive center and therefore no potential to disturb unknown archeological resources.

IMPACTS ON VISITOR USE

Recreational use of the corridor would increase under this alternative and could be greater than under the proposal or alternative B. There would be more extensive opportunities for commercial recreational development and greater levels of public recreational development and use depending on the levels of funding provided for local recreation facility projects.

In the absence of new programs and facilities, awareness of and concern for environmental protection would increase only if environmental problems became worse. Levels of vandalism and depreciative behavior would probably stay about the same.

Increased economic activity with fewer guidelines would cause impacts on recreational resources. Recreational activity could cause increased crowding and visual impacts.

There would be some increased demand for commercial services and products. Services such as equipment rentals, boat rides, food, and lodging would be provided by the private sector.

IMPACTS ON THE ECONOMIC ENVIRONMENT

The impacts of alternative C to the regional economy are generally similar to the proposal, such as increased tourism due to corridor resource preservation and enhancement. There would be increases in land values proximal to protected open space (although less land is expected to be acquired for open space under this alternative). The emphasis on active recreation and tourism promotion could increase visitation to the corridor by people outside the local economy, which would create greater economic gains to the metropolitan area. Tourism increases (and thus economic input) could be greater under this alternative than the proposal, resulting in higher levels of economic income than under any other alternative.

As compared to the proposal, which encourages only river-related development for new uses in the 16,400-acre riverfront zone (within the floodplain or 300 feet from the river), there would be less impact on business in the corridor. No additional restrictions would be applied in the riverfront area, and the broadest range of developments could occur, similar to the no-action alternative. The adverse economic impacts in this alternative would be less than the proposal and alternative B, which is even more restrictive in the riverfront area. However, none of the alternatives would cause major adverse impacts on the metropolitan economy. In alternative C scarce riverfront property zoned for commercial and industrial uses would occupy sites that should be preserved for river-related uses, diminishing the availability of an economic resource for businesses that need it most, such as barge terminals or marinas. Currently there are only about 150 acres of undeveloped land zoned for industrial use within 300 feet of the river in the MNRRA corridor.

Inconsistent businesses could be replaced subject to the same circumstances as the proposal. However, there would be no restrictions on the kinds of economic activities considered consistent with a riverfront location in the MNRRA corridor. This, combined with the

likelihood of less land protected in open space, would result in a greater opportunity for business expansion. However, any expansion in the corridor would be influenced far more by market conditions than by the MNRRA plan.

With fewer environmental restrictions and more liberal land use requirements, there should be fewer costs imposed on some businesses than in the proposal or alternative B. These costs cannot be estimated at this time but would be relatively minor compared to existing costs for business location decisions.

Greater consideration would be given to the need for expanded barge fleeting space if such need arose in the future. Therefore, this alternative would have less potential adverse impacts on the towing industry than the proposal or alternative B. However, the future growth in fleeting needs is uncertain at this time.

CUMULATIVE EFFECTS

Cumulative impacts would be greater than in the proposal or in alternative B because in this alternative cumulative impacts would be less of a concern to managing agencies. They would be less than in alternative A (no action) because there would be a comprehensive plan for the corridor and a more extensive tracking program for impacts on the corridor than at present.

Coon Rapids interpretive center

CONSULTATION AND COORDINATION/ PREPARERS

CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT IN THE PLANNING PROCESS

This final comprehensive management plan is the product of an extensive public involvement effort undertaken by the Mississippi River Coordinating Commission and the National Park Service over a four-year period. The 22-member commission includes representatives from several federal, state, and local agencies, and the general public of the area. The commission held 20 public meetings while the plan was being developed. Members of public were provided with opportunities to speak at each one, and many people did so. In addition, National Park Service personnel worked extensively with other interested parties through informal meetings and telephone contacts.

Work groups and subset focus groups were formed early in the planning process to assist the commission and National Park Service planning team in developing vision statements, gathering data, and reviewing preliminary alternatives. About 180 people from state and local agencies, businesses, and organizations participated in these groups. See appendix D for a list of agencies and organizations that participated in the work groups.

As a result of these meetings, draft purpose and vision statements were issued for public review in a project newsletter in October 1991. A postage-free response form was included in the newsletter to facilitate public response. The vision statements contained in this document received strong public support. They are a result of that input and subsequent comments on later newsletters. The results of these and other newsletter response forms are contained in summary reports on file at park headquarters.

Conceptual alternatives grounded in these visions were developed for public review based partially on input received. They were issued for public comment in a second newsletter published in March 1992. A postage-free response form was also included in that newsletter to facilitate public feedback. A special round of meetings was held with local government representatives from communities in the corridor during that period. The resource protection alternative and the alternative emphasizing a wide range of uses and activities in the corridor were almost equally supported. There was little enthusiasm for the alternative emphasizing economic development. Among the management options there was a clear preference for the alternative that emphasized equal responsibility among the partners. One of the most distinct preferences was for strengthened pollution control. Another was a clear preference for a variety of visitor activities and access.

The University of Minnesota conducted a resident survey of attitudes about the river in 1992 that was used to help prepare the proposed plan.

Planning issues were identified for the project throughout the early phases of the project. A "notice of intent" to prepare an environmental impact statement (EIS) was published in the *Federal Register* on July 14, 1992, which officially announced the scoping process for the environmental impact statement, and public input was solicited on EIS issues throughout the remainder of that year.

A preliminary proposed action was developed and issued for public review in a third newsletter published in September 1992. Again a response form was provided. A series of three public open house meetings was held to further define issues and alternatives in this plan/EIS.

The draft comprehensive management plan/environmental impact statement was published in June 1993. Four public hearings were held in July 1993, and public input was accepted through the fall. Over 1,000 pages of written comments and more than 100 pages of hearing comments were received on the draft comprehensive management plan/environmental impact statement. Review comments were analyzed and summarized by the planning team, and proposed responses were developed by the commission and NPS team through a series of three working papers and commission meetings during late 1993 and early 1994. Additional public input was received during each of these meetings. A draft revised plan was made available for public inspection and comment at commission meetings in February and March 1994, and a motion was adopted by the commission in an April 1994 meeting (after public comment) to recommend the final plan for review by the governor of Minnesota and approval by the secretary of the interior.

NPS personnel and commission members have also held numerous additional meetings, one-on-one consultations, and telephone discussions with corridor communities, agencies, businesses, environmental groups, other interested organizations and individuals to seek advice, coordinate efforts, and help prepare this document. This extensive program to work with others in the area would continue through the final steps of the planning process and after plan approval. The commission and the National Park Service are sincerely grateful to everyone who contributed to make this a better plan.

LEGAL COMPLIANCE STATUS

National Environmental Policy Act

This final environmental impact statement was prepared pursuant to the National Environmental Policy Act and its implementing regulations and guidelines. A notice of intent to prepare an environmental impact statement was published in the *Federal Register* in July 1992. A *Federal Register* notice was published announcing the availability of the draft environmental impact statement, which was published in June 1993, and four public hearings were held during the public comment period. Following publication of this final environmental impact statement, the secretary of the interior will approve the plan and the National Park Service will issue a record of decision.

Section 7 of the Endangered Species Act

Because the corridor includes species listed on the federal endangered and threatened species list, the National Park Service has been informally consulting with the U.S. Fish and Wildlife Service. Lists of species were obtained from the Fish and Wildlife Service and the Minnesota Department of Natural Resources. Species locations were entered in the GIS database. Policies were developed to protect species, and data were used in the analysis of alternative interpretive facility sites. The Fish and Wildlife Service regional director sits on the

commission and all project documents were reviewed by his staff. The U.S. Fish and Wildlife Service reviewed the draft environmental impact statement and concurred in its conclusion that listed species would not be adversely affected by the MNRRA plan. If it is later determined that actions under this plan could have significant adverse effects on a federally listed species, formal consultation would be initiated with the U.S. Fish and Wildlife Service.

E.O. 11988 Floodplains and E.O. 11990 Wetlands Compliance

The MNRRA corridor includes extensive areas of floodplains and wetlands, and NPS activities are subject to executive orders protecting these areas. Available data were obtained from the Federal Emergency Management Agency, and floodplain boundaries were entered in the GIS database. Wetland information was collected from the U.S. Fish and Wildlife Service and also entered into the GIS database. The proposed NPS interpretive center/administrative headquarters at Harriet Island would be outside the 100- and 500-year floodplains, and the site is not classified as wetland. No other construction is proposed by the National Park Service that might adversely affect floodplain or wetland values. Policies were developed to protect floodplains and wetlands and the data were used in the analysis of alternative interpretive facility sites.

Section 106 of the National Historic Preservation Act

The National Park Service has the responsibility to seek preservation and protection for significant cultural resources within the boundaries of units of the national park system. The National Park Service also supports the secretary of the interior's guidelines for adaptation of historic resources. Because the corridor includes buildings and districts listed on the National Register of Historic Places, the National Park Service consulted with the Advisory Council on Historic Preservation (ACHP) and the Minnesota State Historic Preservation Officer (SHPO) pursuant to the programmatic agreement, including a review of the task directive, project newsletters, and the draft comprehensive management plan/environmental impact statement. Available data on cultural resources were gathered and sites mapped in the GIS database. Policies were developed to protect cultural resources and the data were used in the analysis of alternative interpretive facility sites. The state historic preservation officer is a member of the commission, and she or a representative of the Minnesota Historical Society has attended all commission meetings and commented on project documents. This final environmental impact statement documents the results of this consultation under section 106.

Following is a list of actions contained in the final comprehensive management plan and a notation as to need for additional SHPO/ACHP review after this plan becomes final.

(1) The most significant NPS action proposed in this plan that could potentially affect national register properties is the proposal to acquire land and build and manage a new interpretive center/headquarters facility in St Paul. The proposed site at Harriet Island does not contain any known cultural resources, but it would be surveyed for possible archeological resources prior to facility construction. The Harriet Island Pavilion, a building listed on the National Register of Historic Places, is in the general vicinity of the proposed interpretive center site. There would be no adverse effect on that structure. This project would require additional

SHPO/ACHP review after the comprehensive management plan becomes final and additional details become available.

(2) As currently envisioned, the cooperative interpretive facility in Minneapolis would involve adaptive use of a historic structure. A final site has not yet been selected. The city of Minneapolis or the Minnesota Historical Society would probably have the lead in this project. The National Park Service would not have the lead and would be a cooperating partner in the project. SHPO/ACHP review would be required when a preferred site is selected and enough is known about the adaptive use to facilitate review. Additional consultation would be sought after the comprehensive management plan is completed and as further details become available. The National Park Service would ensure that this consultation is completed.

(3) The cooperative interpretive facility at the Coon Rapids Dam Regional Park would use existing relatively new facilities and would not impact cultural resources. No further SHPO/ACHP review would be required for this proposal. NPS involvement would be limited to staffing and exhibits.

(4) The site for an interpretive center in the Hastings area has not been identified. If the final selection has potential to impact cultural resources, additional SHPO/ACHP review would be sought. When a preferred site is identified, additional consultation with the State Historic Preservation Office would be undertaken to see what 106 compliance steps, if any, are needed.

(5) The Fort Snelling State Park interpretive center is proposed by the Minnesota Department of Natural Resources. At this time the National Park Service proposes to be a cooperative partner and assist the state in interpretive planning for the facility, provide design and financial assistance for some exhibits, and supplement state-offered interpretive programs in the area. The National Park Service would make sure that any section 106 compliance consultation that is needed for this proposal is completed.

(6) The follow-up interpretive plan developed for the corridor would specify additional exhibits and programs that would be provided by the National Park Service. This plan would include involvement by the State Historic Preservation Office. If additional cultural resources might be affected, concurrent SHPO/ACHP review would be sought at that time.

(7) Land and water use management and pollution control activities in the corridor would continue to be the responsibility of local governments and other state and federal agencies. Except on lands that it owns, the National Park Service would not have a permitting authority, licensing authority, approval authority, or delegation of approval authority, and therefore these activities would not require SHPO/ACHP review.

(8) The National Park Service (acting for the secretary of the interior) has authority in the MNRRA legislation to give grants for state or local acquisition and development consistent with the plan. It is uncertain how much funding might be available for this program, and specific projects are not listed in the plan. All grants would be subject to additional SHPO/ACHP review.

During and following public review of the comprehensive management plan/environmental impact statement, additional consultation took place between the National Park Service and

the Minnesota Historic Preservation Officer and the Advisory Council on Historic Preservation to determine what additional 106 compliance would be needed from actions resulting from this plan. No comments were received from the Advisory Council on Historic Preservation on the draft plan. The above list of projects documents future compliance requirements as agreed to by the National Park Service and Minnesota Historic Preservation Officer. Because no comments were received from the ACHP, concurrence is assumed.

LIST OF AGENCIES AND ORGANIZATIONS TO WHOM COPIES OF THE FINAL ENVIRONMENTAL IMPACT STATEMENT WILL BE SENT

There are over 2,500 entries on the mailing list for this project. All persons on the list will be given an opportunity to receive the final document. The National Park Service is circulating the final comprehensive management plan/environmental impact statement to the agencies and organizations listed below. A complete list of individuals who will receive the document is available at park headquarters.

City/Township Government
City of Anoka
City of Brooklyn Center
City of Brooklyn Park
City of Champlin
City of Coon Rapids
City of Cottage Grove
City of Dayton
City of Fridley
City of Hastings
City of Inver Grove Heights
City of Lilydale
City of Maplewood
City of Mendota
City of Mendota Heights
City of Minneapolis
City of Newport
City of Ramsey
City of Rosemount
City of South St. Paul
City of St. Paul
City of St. Paul Park
Denmark Township
Grey Cloud Island Township
Minneapolis Community Development Agency
Minneapolis Parks & Recreation Board
Nininger Township
Port Authority of the City of St. Paul
Ravenna Township

County Government
Anoka County
Dakota County
Hennepin County
Ramsey County
Washington County

Regional Government
Metropolitan Council
Metropolitan Parks & Open Commission
Metropolitan Mosquito Control District
Metropolitan Waste Control Commission
Minnesota/Wisconsin Boundary Area Commission
Suburban Hennepin Regional Park District

State Government
Board of Water & Soil Resources
Department of Agriculture
Department of Natural Resources
Department of Trade & Economic Development
Department of Transportation
Environmental Quality Board
Minnesota Army/Air National Guard
Minnesota Historical Society
Minnesota House of Representatives
Pollution Control Agency
State Planning Agency
University of Minnesota

Federal Government
Advisory Council on Historic Preservation
Department of Agriculture
  Soil Conservation Service
Department of Commerce
Department of Energy
  Federal Energy Regulatory Commission
Department of Health and Human Services
Federal Emergency Management Agency
General Services Administration
Small Business Administration
Department of Housing & Urban Development
Department of the Army
  U.S. Army Corps of Engineers
Department of the Interior
  U.S. Fish & Wildlife Service
  Bureau of Indian Affairs
  Bureau of Land Management
  U.S. Geological Survey
  Bureau of Mines
Department of Transportation
  Federal Aviation Administration
  Federal Highway Administration
  Federal Transit Administration
  U.S. Coast Guard
  U.S. Maritime Administration
Department of Veterans Affairs
  VA Medical Center
Environmental Protection Agency
Federal Reserve Bank of Minneapolis

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Stone arch bridge in Minneapolis

APPENDIXES, SELECTED REFERENCES, GLOSSARY, INDEX





TITLE VII—MISSISSIPPI NATIONAL RIVER AND RECREATION AREA

Minnesota. Water Historic preservation

Subtitle A—Mississippi National River and Recreation Area

FINDINGS AND PURPOSES

SEC. 701. (a) FINDINGS.—The Congress finds that: 16 USC 460zz.

(1) The Mississippi River Corridor within the Saint Paul-Minneapolis Metropolitan Area represents a nationally significant historical, recreational, scenic, cultural, natural, economic, and scientific resource.

(2) There is a national interest in the preservation, protection and enhancement of these resources for the benefit of the people of the United States.

(3) State and local planning efforts along the River Corridor provide a unique foundation for coordinating Federal, State, and local planning and management processes.

(4) Existing Federal agency programs lack sufficient coordination and financial participation with State and local planning and regulatory authorities to provide for adequate and comprehensive resource management and economic development consistent with the protection of the Mississippi River Corridor's nationally significant resources, and the public use and enjoyment of the area.

(5) The preservation, enhancement, enjoyment, and utilization of the nationally significant resources of the Mississippi River Corridor can be accomplished by a cooperative Federal, State, and local comprehensive planning and management effort.

(b) PURPOSES.—The purposes of this subtitle are:

(1) To protect, preserve and enhance the significant values of the waters and land of the Mississippi River Corridor within the Saint Paul-Minneapolis Metropolitan Area.

(2) To encourage adequate coordination of all governmental programs affecting the land and water resources of the Mississippi River Corridor.

(3) To provide a management framework to assist the State of Minnesota and its units of local government in the development and implementation of integrated resource management programs for the Mississippi River Corridor in order to assure orderly public and private development in the area consistent with the findings of this subtitle.

ESTABLISHMENT OF NATIONAL RIVER AND RECREATION AREA

16 USC 460zz-1.

SEC. 702. (a) ESTABLISHMENT.—There is hereby established the Mississippi National River and Recreation Area (hereinafter in this title referred to as the "Area") which shall consist of the State designated Mississippi Critical Area encompassing that portion of the Mississippi River and adjacent lands generally within the Saint Paul-Minneapolis Metropolitan Area, as depicted on the map entitled Mississippi National River and Recreation Area numbered MINRA/80,000 and dated April 1987. The map shall be on file and available for public inspection in the offices of the Department of the Interior in Washington, District of Columbia, and in the offices of the Metropolitan Council of the Twin Cities Area in Saint Paul, Minnesota.

Public information. District of Columbia. Federal Register, publication.

(b) BOUNDARIES.—The Secretary of the Interior (hereinafter referred to as the "Secretary") shall publish in the Federal Register, as soon as practicable after the enactment of this title a detailed description and map of the boundaries established under subsection (a).

MISSISSIPPI RIVER COORDINATING COMMISSION

16 USC 460zz-2.

SEC. 703. (a) ESTABLISHMENT.—There is hereby established a Mississippi River Coordinating Commission whose purpose shall be to assist Federal, State, and local authorities in the development and implementation of an integrated resource management plan for those lands and waters as specified in section 702. The Commission shall consist of the following 22 members appointed by the Secretary of the Interior:

(1) The Director of the National Park Service, or his designee.

(2) The Chief of the Corps of Engineers, or his designee.

(3) The Director of the Fish and Wildlife Service, or his designee.

(4) Three individuals, from recommendations by the Governor of Minnesota, to represent the Minnesota Department of Natural Resources, Department of Transportation, and Minnesota Environmental Quality Board.

(5) One individual, to represent the Minnesota Historical Society.

(6) One individual, to represent the Metropolitan Council of the Twin Cities Area.

(7) Four elected officials, to represent the cities of Saint Paul and Minneapolis.

(8) Four elected officials, from recommendations by the Governor of Minnesota, to represent the interests of the other affected municipalities and counties.

(9) One individual, to represent the Metropolitan Parks and Open Spaces Commission.

(10) One individual, from recommendations by the Governor of Minnesota, to represent the interests of commercial navigation.

(11) Four individuals, from recommendations by the Governor of Minnesota, to be chosen from the general public.

(b) TERMS.—(1) Except as provided in paragraphs (2) and (3), members (other than ex officio members) shall be appointed for terms of three years.

(2) Of the members first appointed—

(A) Under paragraph (4) of subsection (a):

(i) One shall be appointed for a term of one year.

(ii) One shall be appointed for a term of two years.

(B) Under paragraphs (7) and (8) of subsection (a), one shall be appointed for a term of one year.

(C) Under paragraph (11) of subsection (a):

(i) One shall be appointed for a term of one year.

(ii) One shall be appointed for a term of two years.

(iii) One shall be appointed for a term of four years.

(3) Any member appointed to fill a vacancy occurring before the expiration of the term for which his predecessor was appointed shall be appointed only for the remainder of such term. A member may serve after the expiration of his term until his successor has taken office.

(c) COMPENSATION.—Members of the Commission shall serve without pay. While away from their homes or regular places of business in the performance of services for the Commission, members of the Commission shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in Government service are allowed expenses under section 5703 of title 5 of the United States Code.

(d) CHAIRPERSON.—The Chairperson of the Commission shall be appointed by the Secretary from among the members of the Commission nominated by the Governor of Minnesota to serve for a term of three years.

(e) QUORUM.—Twelve members of the Commission shall constitute a quorum.

(f) MEETINGS.—The Commission shall meet at the call of the Chairman or a majority of its members.

(g) DEVELOPMENT OF POLICIES AND PROGRAMS.—As a coordinator and advisory organization, the Commission shall assist the Secretary, the State of Minnesota and local units of government, endeavoring to use existing Federal, State, regional, and local plans and programs where consistent with the intent and goals of this subtitle, in developing the following:

(1) Policies and programs for the preservation and enhancement of the environmental values of the Area.

(2) Policies and programs for enhanced public outdoor recreation opportunities in the Area.

(3) Policies and programs for the conservation and protection of the scenic, historical, cultural, natural and scientific values of the Area.

(4) Policies and programs for the commercial utilization of the Area and its related natural resources, consistent with the protection of the values for which the Area is established as the Mississippi National River and Recreation Area.

(h) STAFF.—The Secretary shall provide the Commission with such staff and technical assistance as the Secretary, after consultation with the Commission, considers appropriate to enable the Commission to carry out its duties. Upon request of the Secretary, any Federal agency may provide information, personnel, property, and services on a reimbursable basis, to the Commission to assist in carrying out its duties under this subtitle. The Secretary may accept the services of personnel detailed from the State of Minnesota or any political subdivision of the State and may reimburse the State or such political subdivision for such services. The Commission may procure temporary and intermittent services under section 3109(b) of title 5 of the United States Code.

(i) PLAN.—Within 3 years after enactment of this Act, the Commission shall submit to the Secretary and the Governor of Minnesota a comprehensive plan for land and water use measures for the area to be developed and implemented by the responsible Federal agencies, the State of Minnesota, and local political subdivisions. The plan shall endeavor to use existing Federal, State, regional, and local plans and where consistent with the intent and goals of this subtitle shall coordinate those plans to present a unified comprehensive plan for the Area. The plan shall include but not be limited to each of the following:

(1) A program for management of existing and future land and water use which—

(A) considers and details the application of a variety of land and water protection and management techniques;

(B) includes a policy statement for the use of Federal, State, and local regulatory responsibilities to manage land and water resources in a manner consistent with the purposes of this subtitle; and

(C) recognizes existing economic activities within the area and provides for the management of such activities, including barge transportation and fleeting and those indigenous industries and commercial and residential developments which are consistent with the findings and purposes of this subtitle.

(2) A program providing for coordinated implementation and administration of the plan with proposed assignment of responsibilities to the appropriate governmental unit at the Federal, State, regional and local levels, including each of the following:

(A) Ways in which local, regional, State, and Federal policies and permits may better be coordinated to the goals and policies of this subtitle.

(B) A financial plan to provide and support the public improvements and services recommended in the plan; and a mechanism for coordinating local, regional, State, and Federal planning to promote the purposes of this subtitle.

(C) How the goals and policies of the management plan will be compatible with the existing channel maintenance program on the Mississippi River, and the existing Federal, State, regional, and local programs and goals on the Minnesota and Saint Croix Rivers.

(D) The provisions of the Clean Water Act and the Safe Drinking Water Act (title XIV of the Public Health Service Act) which pertain to the surface waters of the Mississippi National River and Recreation Area.

(3) A coordination and consistency component which details the ways in which local, State, and Federal programs and policies may best be coordinated to promote the purposes of this subtitle.

(4) A program for the coordination and consolidation, to the extent feasible, of permits that may be required by Federal, State, and local agencies having jurisdiction over land and waters within the Area.

(j) DEVELOPMENT OF PLAN.—

(1) In developing the plan the Commission shall consult on a regular basis with appropriate officials of any local government or Federal or State agency which has jurisdiction over lands and waters within the Area.

(2) In developing the plan the Commission shall consult with interested conservation, business, professional and citizen organizations.

(3) In developing the plan the Commission shall conduct public hearings within the Area, and at such other places as may be appropriate, for the purposes of providing interested persons with the opportunity to testify with respect to matters to be addressed by the plan.

(k) APPROVAL OF PLAN.—The Commission shall submit the plan to the Secretary and the Governor of Minnesota, for their review. The Governor shall act on the plan within 90 days and shall submit the plan to the Secretary along with any recommendations. The Secretary shall approve or disapprove the plan within 90 days. In reviewing the plan the Secretary shall consider each of the following:

(1) The adequacy of public participation.

(2) Assurances of plan implementation from State and local officials.

(3) The adequacy of regulatory and financial tools that are in place to implement the plan.

(4) Plan provisions for continuing oversight of the plan implementation by the Secretary and the Governor of Minnesota.

If the Secretary disapproves the plan, he shall, within 60 days after the date of such disapproval advise the Governor and Commission in writing of the reasons therefor, together with his recommendations for revision. The Commission shall within 90 days of receipt of such notice of disapproval revise and resubmit the plan to the Governor for his review. Following his review, the Governor shall submit the revised plan, together with any recommendations he may have, to the Secretary who shall approve or disapprove the revision within 60 days.

(l) INTERIM PROGRAM.—Prior to the adoption of the Commission's plan, the Secretary and the Commission shall monitor all land and water use activities within the Area to ensure that said activities are in keeping with the purposes of this subtitle, and shall advise and cooperate with the appropriate Federal, State, and local governmental entities to minimize adverse impacts on the values for which the Area is established.

(m) COMMISSION REVIEW.—The Commission shall assist the Secretary and the Governor of Minnesota in reviewing and monitoring

the implementation of the plan by Federal, State, and local governmental agencies having jurisdiction in the Area. The Commission may, after providing, for public comment and subject to the review and approval, as set forth in subsection (k), modify said plan, if the Commission determines that such modification is necessary to further the purposes of this subtitle.

(n) TERMINATION OF COMMISSION.—The Commission shall terminate on the date 10 years after the enactment of this subtitle. Following termination of the Commission the State is authorized to establish a State Commission which shall exercise the functions and authorities described in subsection (m). The Secretary of the Interior and the Secretary of the Army are authorized and directed to participate as members of such State Commission.

FEDERAL LANDS AND DEVELOPMENTS

16 USC 460zz-3

SEC. 704. (a) LANDS.—Notwithstanding any other provision of law, any Federal property located within the boundaries of the Area as identified on the map referred to in section 702, is hereby transferred without consideration to the administrative jurisdiction of the Secretary for use by him in implementing the purposes of this subtitle, except as follows:

(1) Facilities and lands administered by the Secretary of the Army through the Corps of Engineers for navigational and flood control purposes may continue to be used by the Secretary of the Army subject to the provisions of subsection (b).

(2) Federal property on which there is located any building or other structure which is in use (as of the enactment of this subtitle) or for which a lease is in effect shall not be transferred under this subsection without the concurrence of the administering agency.

(b) FEDERAL AGENCY ACTIVITIES.—

(1) IN GENERAL.—Before any department, agency, or instrumentality of the United States issues or approves any license or permit for any facility or undertaking within the Area and before any such department, agency, or instrumentality commences any undertaking or provides any Federal assistance to the State or any local governmental jurisdiction for any undertaking within the Area, the department, agency, or instrumentality shall notify the Secretary. The Secretary shall review the proposed facility or undertaking to assess its compatibility with the plan approved under section 703. The Secretary shall make a determination with respect to the compatibility or incompatibility of a proposed facility or undertaking within 60 days of receiving notice under this subsection. If the Secretary determines that the proposed facility or undertaking is incompatible with the plan, he shall immediately notify such Federal department, agency, or instrumentality and request such department, agency, or instrumentality to take the actions necessary to conform the proposed facility or undertaking to the plan. The Federal department, agency, or instrumentality shall, within 60 days after receiving the Secretary's request, notify the Secretary of the specific decisions made in response to the request. To the extent that such department, agency, or instrumentality does not then conform such facility or undertaking to the request of the Secretary, the Secretary is directed to notify the Congress in writing of the incompatibility of such

facility or undertaking with the plan approved under section 703.

(2) NAVIGATION.—(A) Nothing in this subtitle shall be deemed to impact or otherwise affect such existing statutory authority as may be vested in the Secretary of the Department in which the Coast Guard is operating or the Secretary of the Army for the maintenance of navigation aids and navigation improvements: *Provided*, That in exercising such authority the Secretary of the Army, through the Corps of Engineers and the Secretary of the Department in which the Coast Guard is operating, shall not take any action that would have a direct and adverse effect on the values for which the Area is established unless such action is essential for the protection of public health or safety or is necessary for national security or defense.

(B) In planning for the development and public use of the Area, the Secretary shall consult with the Secretary of the Army to assure that public use of adjacent or related water resource developments or flood control projects and that of the Area are compatible.

ADMINISTRATION

SEC. 705. (a) AUTHORITIES.—The Secretary shall administer the Area in accordance with this subtitle. Only those lands within the Area under the direct jurisdiction of the Secretary shall be administered in accordance with the provisions of law generally applicable to units of the National Park System. Our lands and waters within the Area shall be administered under State and local laws. In the case of any conflict between the provisions of this subtitle and such generally applicable provisions of law, the provisions of this subtitle shall govern. 16 USC 460zz-4

(b) STATE AND LOCAL AUTHORITIES.—The Secretary shall consult and cooperate with the State of Minnesota and its political subdivisions concerning the development and management of Federal lands within the Area.

(c) LAND ACQUISITION.—Within the boundaries of the Area, the Secretary is authorized, in consultation with the State of Minnesota and the affected local governmental unit, to acquire land and interests therein by donation, purchase with donated or appropriated funds, exchange or transfer, except as provided in paragraphs (1) and (2).

(1) Any lands or interests therein owned by the State of Minnesota or any political subdivision thereof may be acquired only by donation. Gifts and property

(2) Privately owned lands or interests therein may be acquired only with the consent of the owner thereof unless the Secretary makes a determination pursuant to subsection (d)(2). In no event may the Secretary use the authority provided in subsection (d)(3) to acquire land or interests in land without the owner's consent for any use exercised prior to January 1, 1987, that is consistent with the plan under section 703.

(d) REVIEW OF LOCAL PLANS.—

(1) AUTHORITY.—For the purpose of protecting the integrity of the Area the Secretary shall cooperate and consult with the State and the appropriate political subdivisions to review all relevant local plans, laws and ordinances to determine whether they substantially conform to the plan approved pursuant to

section 703. Additionally the Secretary shall in consultation with the State and its political subdivisions determine the adequacy of enforcement of such plans, laws, and ordinances, including review of building permits and zoning variances granted by local governments, and amendments to local laws and ordinances. The Secretary shall enter into agreements with the State or its political subdivisions to provide, on behalf of the Secretary, professional services necessary for the review of such local plans, laws, and ordinances, and of amendments thereto and variances therefrom, and for the monitoring or the enforcement thereof by local governments having jurisdiction over any areas to which the management plan applies.

Contracts.
State and local governments.

(2) PURPOSE.—The purpose of review under paragraph (1) shall be to determine the degree to which actions by local governments are compatible with the purposes of this title. Following the approval of the plan under section 703 and after a reasonable period of time has elapsed, upon a finding by the Secretary that such plans, laws and ordinances are nonexistent, are otherwise not in conformance with the plan or are not being enforced in a manner consistent with the plan, and if the Secretary detemines that there is no feasible alternative available to prevent uses which would be substantially incompatible with the plan, the Secretary may exercise the authority available to him under the provisions of paragraph (3).

(3) ENFORCEMENT.—In those sections of the Area where local plans, laws and ordinances, or amendments thereto or variances therefrom are found by the Secretary not to be in conformance with the plan approved pursuant to section 703, or are not being enforced in a manner consistent with the plan, the Secretary shall notify the local government authority concerned. The Secretary may withhold from the local government authority concerned or, require reimbursement of, (A) Federal funds made available for implementation of the plan, or (B) any grant under section 706(a) if the local plan, law, ordinance, amendment, or variance is not modified to conform with the plan and enforced in such manner as will carry out the purposes of this subtitle. If the State has not initiated, within a 60-day period, such judicial or other action as necessary to ensure conformity with the plan, and if noncompliance with the plan or failure to enforce the plan continues after the end of such 60-day period, the Secretary may acquire, subject to appropriations, land or interests in land under this subsection without the consent of the owner thereof. Land and interests in land acquired pursuant to this subsection shall be restricted to the geographical area of the local government unit failing to conform with the plan and shall be limited to those lands clearly and directly required, in the judgment of the Secretary, for the protection of the Area in a manner compatible with the plan.

(e) RETENTION BY OWNER OF USE AND OCCUPANCY.—The Secretary may permit the owner or owners of any improved residential property acquired by the Secretary under this subtitle to retain a right of use and occupancy of the property for noncommerical residential uses not incompatible with the plan approved under section 703. The provisions of subsection (c), (d), and (e) of section 102 of the Act of August 15, 1978 (16 U.S.C. 460ii-1) shall apply to the retention of such rights, except that for purposes of this subtitle, the applicable date shall be January 1, 1987 in lieu of January 1, 1975 and the

purposes of this subtitle shall be substituted for the purposes referred to in section 102(d) of such Act.

STATE AND LOCAL ASSISTANCE AND JURISDICTION

SEC. 706. (a) GRANTS.—Upon approval of the plan under section 703, the Secretary is authorized to make grants to the State of Minnesota, or its political subdivisions, to cover not more than 50 percent of the cost of acquisition and development within the Area of lands and waters or interests therein in a manner consistent with the purposes of this subtitle. 16 USC 460zz-5

(b) COOPERATIVE AGREEMENTS.—The Secretary is authorized to enter into cooperative agreements with the State of Minnesota or any political subdivision thereof pursuant to which he may assist in the planning for and interpretation of non-Federal publicly owned lands within the Area.

(c) TECHNICAL ASSISTANCE.—To enable the State of Minnesota and its political subdivisions to develop and implement programs compatible with the plan, the Secretary shall provide such technical assistance to the State and its political subdivisions as he deems appropriate.

(d) STATE AND LOCAL JURISDICTION.—Nothing in this subtitle shall diminish, enlarge, or modify any right of the State of Minnesota or any political subdivision thereof, to exercise civil and criminal jurisdiction or to carry out State fish and wildlife laws, rules, and regulations within the Area, or to tax persons, corporations, franchises, or private property on the lands and waters included in the Area.

AUTHORIZATION OF APPROPRIATIONS

SEC. 707. There is authorized to be appropriated such sums as may be necessary to carry out this subtitle. 16 USC 460zz-6

Subtitle B—Tri-Rivers Management

TRI-RIVERS MANAGEMENT BOARD

SEC. 711. (a) FEDERAL REPRESENTATIVES.—In furtherance of the integrated management of those portions of the Mississippi, Saint Croix, and Minnesota Rivers within the Saint Paul-Minneapolis Metropolitan Area, the Secretary of the Interior and the Secretary of the Army are authorized and directed to appoint representatives to a Tri-Rivers Management Board (hereinafter referred to as the "Board"), or any similar organization, which may be established by the State of Minnesota to assist in the development and implementation of consistent and coordinated land use planning and management policy for such portions of such rivers. 16 USC 460zz-7

(b) PERSONNEL.—Upon request of the Board, the Secretary of the Interior and the Secretary of the Army may detail, on a reimbursable basis, any personnel to the Board.

(c) AUTHORIZATION OF APPROPRIATIONS.—There is hereby authorized to carry out the purposes of this subtitle the sum of $100,000 annually; except that the Federal contribution to the Board shall not exceed one-third of the annual operating costs of the Board.

APPENDIX B: GEOGRAPHIC INFORMATION SYSTEM

Geographic information systems are computer tools used to store, retrieve, display, and manipulate spacial resource information. In a geographic information system, resource information is organized by resource type into map layers. A typical GIS database might include map layers of roads, slopes, land use, and political boundaries. Geographic information systems can be used to rapidly and efficiently overlay different types of resource information (map layers) to identify and measure areas with certain resource conditions.

A GIS database of resource information was created to aid in Mississippi National River and Recreation Area planning and to serve as a monitoring tool following completion of the plan. Information was gathered from a variety of sources, including regional, state, and national agencies, and existing maps and documents. The Metropolitan Council, Minnesota Department of Transportation, Minnesota Department of Natural Resources, and State Historic Preservation Office contributed information for entire map layers. Many other individuals volunteered their time and expertise to contribute more specific information to the database. Some of the ways the geographic information system was used in planning are described below.

Areas along the river with significant interpretive potential were identified by looking for clusters of interesting resources with good access. Cultural resources were superimposed with special plant communities, threatened and endangered species, parks, trails, roads, and river access sites.

Potential open space opportunities were identified. First, map layers of landcover, parks, and the MNRRA boundary were overlaid. Large areas of forested or shrubby lands within the boundary that are not currently parks or proposed for parks were located. The system was then used to determine the municipality where these lands lie. Potential park acquisition opportunities were then refined with input from affected municipalities.

The geographic information system was also used to study the structure or "framework" of the river corridor. Barriers to river access such as major roads, railroads, steep slopes, and industrial areas were identified. The visual character of the river was revealed by studying the concentrations of barge terminals and fleeting areas, marinas, cultural resources, and riverside terrain and vegetation. Connections across the river (indicated by bridges and mirrored land uses) and along the river (indicated by trails, parkland, and minor riverside roads) were identified. Areas within the boundary that might be expected to convert to urban uses were identified. Proposed (zoned) land use was superimposed over existing land use. The system was also used to compare the overall existing land use composition of the Mississippi National River and Recreation Area with proposed (zoned) land use.

Possible effects of proposed policies or actions on resources were identified. Interpretive facility placement and park acquisition opportunities were considered with respect to potential natural (floodplain, wetland, steep slope, threatened and endangered species), cultural, and economic resource impacts so that measures to avoid or mitigate adverse impacts could be taken. Consideration of land use regulations (such as the prohibition against developing the river bluff face) included using the geographic information system to locate and measure the lands they would affect.

THE MISSISSIPPI NATIONAL RIVER AND RECREATION AREA GEOGRAPHIC INFORMATION SYSTEM DATABASE

General Resource Information

Mississippi National River and Recreation Area boundary
Source: *Federal Register* legal description, mapped by the National Park Service Midwest Regional Office Cartographic Branch

County boundaries
Source: U. S. Geological Survey Maps (1:24,000 scale)

Municipal boundaries
Source: Minnesota Department of Transportation (1:24,000 scale, 1990 data)

Roads
Source: U. S. Geological Survey (1:100,000 scale, 1985 data)

Hydrology
Source: U. S. Geological Survey (1:100,000 scale, 1985 data)

Railroads
Source: U. S. Geological Survey (1:100,000 scale, 1985 data)

Elevation (topography)
Source: processed satellite imagery (1:24,000 scale, 1989 data)

Slope
Source: derived from elevation data

Aspect
Source: derived from elevation data

Parks and Recreation

Parks and open space
Sources: regional and local maps, documents (date and original scale vary)

Trails
Sources: regional and local maps, documents (date and original scale vary)

River access (marinas, launch ramps, designated carry-in sites)sources: Cumulative Impacts Analysis of Proposed Recreational Marina Expansions, Metro Area Rivers Guide (1990), Public Boat Launch Guide (1991), Department of Natural Resources

Great River Road
Source: Minnesota Department of Transportation map (no date, scale varies)

Land Use

Municipal zoning
Sources: municipal zoning plans (date and original scale vary)

Critical area districts (approximate)
Source: Minnesota Executive Order No. 79-19 (Critical Area Legislation)

Land cover
Source: processed satellite imagery (date: 1988)

Land use
Source: Metropolitan Council (1:9600 scale, 1990 data)

Utilities
Source: Metropolitan Council synthesis of a variety of sources (date: 1991)

Cultural Resources

Cultural resources
Source: Minnesota State Historic Preservation Office (1:24,000 scale, 1991 data)

Natural Resources

Threatened and endangered species
Source: Minnesota Dept. Natural Resources, National Heritage Program (date: 1991)

Special plant communities
Source: Minnesota Dept. Natural Resources, National Heritage Program (date: 1991)

100-yr. floodplain
Source: FEMA Federal Insurance Rate maps (date and original scale vary)

Wetlands
Source: U. S. Fish and Wildlife Service National Wetland Inventory (1:24,000 scale, 1991-1992 data)

Barge-Related Facilities

Nine-foot navigable channel
Source: U.S. Army Corps of Engineers navigation charts (1:36,000 scale, 1989 data)

Barge terminal and service areas
Source: Minnesota's River Terminals, Minnesota Dept. of Transportation, Ports and Waterways Section, (date: 1991)

Barge fleeting areas
Source: Barge Fleeting Study, Metropolitan Council (1981); St. Paul Port Authority (1990), individual industry representatives (1991)

APPENDIX C: SAMPLE DESIGN GUIDELINES

INTRODUCTION

A set of sample design guidelines are contained in this appendix. There is some repetition in this appendix with the policies in the plan. Guidelines below that are also found in the body of this document are considered part of the plan for compliance purposes. Other more detailed guidelines are included for illustrative purposes only to provide examples of how the policies could be applied to achieve the visions and concepts in the plan. The National Park Service, Metropolitan Council, and Department of Natural Resources would work with communities in the corridor to improve the guidelines and apply them to local conditions. The Department of Natural Resources and the National Park Service would also provide technical assistance to communities wishing to apply these on a site-specific basis.

The comprehensive management plan for the Mississippi National River and Recreation Area affirms that many of the resources of the Mississippi River corridor are nationally significant. Many aspects of the river are important, but a priority has been placed on preservation of visual character. Archeological resources, historic structures and sites, and key natural resources (the bluffs, shoreline, floodplain, vegetation, wetlands, and the water), and the views to and from the river provide this character.

Although the majority of the corridor is developed, much of the land near the river appears natural. Many Twin Cities area residents feel that this natural appearance contributes to the quality of their lives. For this reason, development should fit into this open appearance and respect the resources around it. Downtown areas should continue to reflect their urban character with more "hard" treatments of plazas, promenades, steps to the river, etc. The goal is to provide continuous landscaped open space in the city center while respecting both the new and historic urban context.

The following sample design guidelines are intended to protect resources while allowing sensitive, carefully planned, and coordinated development. The guidelines are intended to be flexible and provide options for achieving the goal. The guidelines are based on work done previously by the various cities in the corridor for the critical area program, augmented by updated policies from the MNRRA plan. The guidelines below generally concentrate on the riverfront area, the bluff preservation area, historic areas, and sensitive natural areas. However, many of the guidelines cover the entire corridor. These guidelines are applicable to typical development projects in the area. It is probable that there would be special circumstances where these guidelines do not apply. They are intended primarily for new development, substantial expansion, or major redevelopment activities. Safety would be a primary concern in applying these guidelines and would take precedence over aesthetic objectives where there is a direct conflict. In most cases, however, safety and aesthetic objectives could both be met in new development projects.

This document recognizes that special application of these guidelines would be needed for transportation and levee improvements, and some of these guidelines would not apply. As long as the basic visions and concepts of the plan are achieved, the guidelines could be modified as necessary to accommodate the needs of these special kinds of development.

When working on projects involving cultural resources these guidelines should be used in conjunction with the *Secretary of the Interior's Standards for Archeology and Historic Preservation.*

RESOURCES

General Concepts

- More uniform approaches to protecting bluffs, shorelines, wetlands, historic buildings, and other sensitive areas in the corridor should be used.

- The architectural statements in downtown areas should be enhanced through landscaping and shoreline improvements to improve the visual appeal of the downtown from riverfront areas.

- The bluffs, slopes, shoreline, vegetation, and other natural features should be maintained in a natural state.

- Development should be designed and located to fit its context, whether downtown, in a natural area, or in an historic area.

- Attractive developments should be ensured and the historic building scale should be maintained in historic districts.

- New development should avoid degradation or demolition of significant cultural resources.

- In historic areas development should be designed to fit the historic context, the street pattern, the streetscape, and the fabric created by the historic buildings. The historic landscape should be respected, while also providing a vegetated shoreline along the river (see Architectural Guidelines).

- Development should be clustered to give the appearance of more open space and to preserve resources.

- In natural or open areas development should be designed to be unobtrusive through building placement, material colors, vegetative screening, height, scale, and mass.

- Native plant materials, including trees, shrubs, and ground cover, should be used for erosion control. If rip-rap is used, it should not be mortared and should be planted using native plant materials. Use of structural methods is justified only when there is a major threat to property and all nonstructural methods have been exhausted.

- Adequate erosion control, vegetation retention, and materials that blend into the surroundings should be incorporated in designs for stairs and ramps to the river

Shoreline Area

New development could fit near the shoreline if properly located, designed, and screened while maintaining a relatively natural appearance along the shoreline. Providing at least a minimum narrow vegetative strip along the shoreline would aid in slope stabilization, help improve water quality, and maintain the natural appearance of the river. In downtowns and historic districts, the landscape and human environment would also be improved with the addition of vegetation and the preservation of the natural areas still in existence.

- New or substantially redesigned developments (outside downtown areas) should appear unobtrusive from the river

- The natural appearance of the shoreline should be preserved where it exists and restored by providing vegetative screening.

- Where a more natural appearance is desired, development should be unobtrusive as seen from the water and the opposite shore except in the downtowns and in some historic districts.

- New development should be designed to maintain views of the river.

- A 40-foot vegetated strip should be maintained along the shoreline. Native vegetation should be preserved for a natural appearance and for erosion control. If natural vegetation has been disturbed, revegetate using plant materials native to the river valley. In historic areas, downtowns, transportation corridors, and areas behind the levees, the design treatment might be different, but the intent of providing substantial vegetated screening should be met.

- Structures should be placed behind the 100-foot setback line (50 feet in downtown areas). In natural areas, 40 to 100 feet from the shoreline should remain relatively undisturbed. If disturbed, landscape treatments should use native plant materials. Minimize bluegrass, and retain mature trees. Small view windows to the river might be left open, or selectively pruned.

- Access to the river should not be reduced by new development. Where there is the possibility of trail connections along the river, to other trails, or to linear open space, trail connections should be provided.

Vegetation

Vegetation provides shade, bank stabilization, erosion control, wildlife habitat, aquifer recharge, and water filtration. It also minimizes the visual impact of development, frames views, and provides pleasure. Vegetation should be maintained and enhanced to provide a natural appearance, passageways for wildlife movement, and natural screening for development. These guidelines recognize the need for flexibility to remove trees with infectious diseases or to remove hazardous trees that pose a threat to public safety.

- Removal of healthy, nonhazardous vegetation is discouraged, particularly along the shoreline, bluff face, in wetlands, and on floodplains. Clearcutting is not appropriate in the corridor. Plant materials native to the river valley should be used in replanting.

- Cutting of trees of over 4-inch caliper is strongly discouraged.

- Vegetation removal is only appropriate in the area of the building envelope, driveways, and accessory parking areas and only if the cutting maintains a continuous natural cover.

- Grading should preserve the root aeration zone and stability of existing trees. It should provide an adequate watering area equal to at least 50% of the crown area. Fencing should be used to ensure this where necessary.

- Vegetation could be selectively pruned to improve views of the river and to open key scenic vistas, but the pruning should not alter the character or massing of the vegetation.

- For a natural appearance, pollution control and conservation of water, large areas of bluegrass should be avoided.

Bluffs

One of the most significant elements of the scenic beauty of the corridor is the line of bluffs above the river. Whether vegetated or a exposed limestone, the bluffs are an important visual resource that set the Twin Cities off from many other areas. Development could take advantage of the bluff location while respecting the character of the bluff. The natural appearance of the bluffs should be maintained while allowing sensitive development on the top of bluffs.

Development should be on the top of the bluff, preserving the bluff face and a narrow area behind the bluff line. Disturbance of the bluff face by grading, road building, construction, or tree cutting is not appropriate. Tracts of undisturbed land are vital to the health of the bluffs. To protect these lands, clustered development is often preferable to large-lot zoning.

- The line that marks the top of the 18% or greater slope (bluff line) should not be altered by adding fill, nor excavated so that the bluff line moves closer to the river.

- An area 40 feet back from the bluff line should remain undisturbed, retaining present vegetation and revegetating using native plant materials.

- All buildings should be placed behind the 40-foot line, with structures over 30 feet set back an additional 60 feet.

- Only minimal disturbances, such as landscaping, play areas, or patios are appropriate within 40 feet of the bluff line. If vegetation is present, it should be maintained. Road construction is not appropriate except for bridge approaches.

SITE DEVELOPMENT DETAILS

Note that these site development guidelines are meant primarily for site work in typical development projects within the corridor, such as a housing subdivision or commercial development project. They are not generally intended for transportation improvement projects, although many could be applied to such projects.

- Developments should be attractive and relate to the context, particularly in historic and natural areas. Development should work with site characteristics and should be located to minimize visual and natural impacts.

- Structures should be sited to blend with the land; site alteration and vegetation removal should be minimized.

- Larger developments should be clustered to take advantage of site amenities and to protect resources.

- Development not to be seen should be screened from the river.

- Projects should avoid degradation or demolition of significant cultural resources.

- New development should continue the vegetated appearance of the corridor as viewed from the river and shoreline areas.

- Development should be located away from slopes, ravines, ridgelines, wetlands, streams, and high points.

Preservation Areas

The following are areas of minimal disturbance:

the area between the 40-foot shoreline preservation area and the setback line (50 feet total in downtown areas and 100 feet elsewhere)

ravines

floodplains

wooded areas outside of the building footprint, driveways, and parking areas

The following are areas of no disturbance:

wetlands

slopes over 12%

bluff faces

the area 40 feet back from the river

the area 40 feet back from the bluff line

Parking

- Nonaccessory parking is discouraged in the area 300 feet back from the river.
- The amount of parking provided should be limited to that necessary to serve the need.
- Parking lots should be screened from the river and from surrounding uses with natural new natural materials.
- Several small parking lots are preferable to one large one. Curvilinear parking areas are preferred to long straight lots.

Building Setbacks

100 feet from the ordinary high water line (plus additional setbacks for tall buildings in the area 100-300 feet back from the shore — see architectural guidelines below). The setback in downtown areas is 50 feet

40 feet from the bluff line (plus additional setback of 60 feet for buildings over 30 feet — see architectural guidelines)

Accessory Parking

100 feet from the ordinary high water line (50 feet in downtown areas); 40 feet from bluff line

signs 100 feet from the shoreline and bluff line. In downtown areas the setback is 50 feet.

Erosion Control

Erosion and sedimentation should be minimized by:

- Development suited to the site, soil conditions, and existing drainage patterns.
- New development should minimize runoff rates and maximize the absorption rate of storm water. Encourage the use of porous surface materials to facilitate aquifer recharge and reduce stormwater runoff.
- Natural erosion control devices are preferred over structural devices such as culverts, ditches, and walls.
- Adequate erosion control measures should be maintained before, during, and after construction to ensure that soil loss does not degrade adjacent water. Methods to trap sediments should be used.
- The quality of surface water runoff that leaves the site and water that infiltrates the water table should not degrade the water quality in the river or in the groundwater aquifer below the site.
- Erosion control measures and revegetation plans should make maximum use of native vegetation.
- Fill should be stabilized with plant material and normally should not exceed a 4:1 slope.
- Wetlands and other water bodies should not be used as sediment traps.
- Detention ponds should be used for temporary water storage whenever practical.
- Walls should be no higher than 5 feet in most cases and should be constructed of wood or natural stone. If walls are terraced, the space between the terraces should normally be at least 15 feet and heavily planted.
- In the design of drainage facilities, consideration should be given to aquifer recharge, particularly by use of porous materials for parking lots and drainage facilities.

ARCHITECTURAL GUIDELINES

An architectural approach that allows buildings to blend with and complement their surroundings should be used. Development should fit the context, whether natural, historic, or urban. In natural areas buildings should be unobtrusive.

make new or substantially redesigned developments (outside downtown areas) appear unobtrusive from the river

ensure attractive developments throughout the corridor and maintain the historic building scale

locate and design buildings so that they do not loom over the river

minimize the overall size of the structure and the elevation facing the river; keep development low profile near the river

break up building mass using methods such as broken planes, varying rooflines, stepping back of upper stories, etc; minimize mass near the river

use simple forms

in historic areas the scale, roofline, and fenestration of the building should be similar to and compatible with surrounding buildings

use materials that blend with the setting; avoid the use of reflective materials

use suitable colors; subtle, subdued colors are best — bright colors are generally not appropriate near the river

Except for downtown areas, buildings in the riverfront area (which must be set back at least 100 feet from the river) should not exceed the following heights:

30 feet within 200 feet of the river
45 feet within 300 feet of the river

Buildings in the bluff preservation area (which must be set 40 feet back from the bluff line) should not exceed 30 feet, with an additional 60 feet of setback for buildings over 30 feet.

BRIDGES, POWERLINES, AND ROADS

- The visual impact of utility structures should be minimized in the riverfront area.

- Bridges should be designed using architectural treatments consistent with the historic character of other bridges in the corridor (e.g., the Lake Street, Ford Parkway, Hennepin Avenue, Robert Street, and High bridges)

- Except in downtown areas, construction of new roads and utilities should be avoided within 300 feet of the shoreline, within 100 feet of the bluff line, and on the bluff face.

- Roads within 300 feet of the river should incorporate design concepts used for scenic drives and parkways that provide recreational access to the river:

  design to be as narrow and as unobtrusive as possible

  minimize cut and fill and disturbance of vegetation

  design with a curvilinear alignment and to emphasize views

  locate on slopes less than 12% grade (except bridge approaches)

- Natural vegetation should be allowed to grow in utility and road rights-of-way. Where natural vegetation has been removed, it should be replaced with native vegetation. Herbicide use should be avoided.

- Where vegetation is lacking, landscapes should be designed and planted appropriately for the setting.

- Bridges should be designed with sensitive architectural treatments consistent with the traditional character of other bridges in the corridor (e.g., the Lake Street, Ford Parkway, Hennepin Avenue, Robert Street, and High bridges). For example, new or renovated bridges should reflect the traditional features of other bridges in the area if it is structurally feasible to do so. Whenever possible, historic bridges should be renovated, rather than replaced.

- Utility lines should be placed underground.

TIPS FOR HOMEOWNERS

In addition to meeting the guidelines that incorporate the concepts and policies of the MNRRA plan and DNR shoreland rules, there are local zoning ordinances with certain requirements. When there is a question or conflict between requirements or jurisdictions, the state law stipulates that the most restrictive applies. Impact on state-regulated wetlands or floodplains should be approved in advance by the Minnesota Department of Natural Resources. Other wetlands are regulated under the state Wetlands Conservation Act of 1991; landowners should consult with the Board of Water and Soil Resources for potential impact on these wetlands.

Bluffs

Constructing homes in harmony with the bluff lands protects the environment and preserves scenic beauty. By locating homes away from the bluff edge and below the treeline, views of the bluffs remain unspoiled. A strip of undisturbed forest along the bluff line minimizes potential runoff and erosion while providing wildlife habitat.

Vegetation

Retaining or restoring the natural vegetation is of benefit to landowners and the environment. Natural vegetation holds the soil and lessens the need for any other erosion control. It also attracts wildlife and provides a natural appearance from the river. Views of the river are usually improved if filtered or framed by vegetation, so only enough vegetation should be pruned to provide view windows from the house to the river. If the land is bare, native plants should be used in revegetation.

Runoff

The ability of the ground to absorb rainwater (before it runs off and causes erosion problems or carries nutrients and other materials into the river) could be increased by:

- installing gravel trenches along driveways and patios to collect water and allow it to filter into the soil

- maintaining natural plant materials along the shoreline

- minimizing bluegrass because it is relatively impervious to water and requires chemicals that run off into the river and cause pollution

- planting new native vegetation and allowing existing shrubs and trees to remain

- considering the use of porous materials for patios, decks, sidewalks, and drives; using brick, paving stones, or pavers set in a sand bed

Architecture

Building a structure that fits into the landscape and is not highly visible near the river is preferable to making an highly visible architectural statement. The architectural guidelines above suggest ways for homes to fit into the river setting.

Lots

Lots should be large enough and shaped to accommodate the intended structure. They should meet the setback requirements and allow the placement of the structure where it would cause the least site disturbance.

APPENDIX D: WORKGROUPS

Listed are organizations & agencies that participated in workgroups (with one or more persons participating).

In the early phases of the planning effort work groups of local experts were formed to advise the commission and National Park Service on certain matters. Focus groups were subgroups of the work groups formed to gather data.

Business and Industry

3M
American Iron & Supply
Burlington Northern Railroad
Capitol Barge Service
Cargo Carriers, Inc.
Dakota Barge Service
Ford Motor Company
J.L. Shiely Company
John Gorman, Inc.
Northern States Power
R.E.D. Marine Service
River Fleets
Riverway Company
Soo Line Railroad
Upper Mississippi Waterway Association
Upper River Services
Willie's Hidden Harbor Marina

University of Minnesota (departments)

Architecture
Bell Museum of Natural History
Forest Resources
Landscape Architecture
Plant Biology
Recreation, Parks, & Leisure Studies
Tourism Center
Wildlife

State Government

Department of Natural Resources
Department of Trade & Economic Development
Department of Transportation
Minnesota Army/Air National Guard
Minnesota Historical Society
Minnesota House of Representatives
Pollution Control Agency

Local/County/Regional governments

Anoka County
City of Anoka
City of Brooklyn Park
City of Cottage Grove
City of Fridley
City of Hastings
City of Inver Grove Heights
City of Minneapolis
City of South St. Paul
City of St. Paul
Dakota County
Metropolitan Council
Metropolitan Waste Control Commission
Minneapolis Park & Recreation Board
Minneapolis Community Development Agency
Minnesota-Wisconsin Boundary Area Commission
Ramsey County
Suburban Hennepin Regional Park District
Washington County

Federal Government

U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Fish & Wildlife Service

Other Organizations

Center for Urban & Regional Affairs
Hastings Historic Preservation Commission
Mankato State University-Dept. of Recreation
Minnesota Indian Affairs Council
North Metro Convention & Visitors Bureau
River Environmental Action Project
Science Museum of Minnesota
St. Anthony Falls Heritage Board
St. Paul Downtown Development Council
Upper Midwest Museum of Trans.
Upper Mississippi River Basin Association

APPENDIX E: NINE-FOOT NAVIGATION CHANNEL MAINTENANCE ACTIVITIES

Congress authorized the 9-foot navigation channel project with the Rivers and Harbors Act (RHA) of 1930, which extended from the mouth of the Missouri River to Minneapolis, Minnesota. The Rivers and Harbors Act of 1937 extended the northern reach to mile 857.6. The St. Paul Harbor and small boat harbor were authorized by River and Harbors Committee Doc. 44, 64th Cong. 1st session and by House Doc. 547, 76th Cong., 3rd session, respectively. The Hastings Harbor was authorized by House Doc. 559, 79th Cong., 2nd session. A 4-foot navigation channel was authorized on the Minnesota River up to mile 25.6 by the Rivers and Harbors Act of 1892 and a 9-foot channel up to mile 14.7 with the Rivers and Harbors Act of 1958.

Channel maintenance plans designating placement sites and operating procedures have been made through coordination with the River Resources Forum, and any maintenance dredging required is coordinated with the interagency On-Site Inspection Team (OSIT). In the metropolitan area, the team includes members from the cities of St. Paul and Minneapolis as well as the usual state and federal agencies.

Dredging and dredged material placement is conducted in accordance with section 404(b)(1) guidelines of the Clean Water Act and National Environmental Policy Act. The Corps of Engineers has a general permit and memorandum of understanding (MOU) with the Minnesota Department of Natural Resources to cover all previously designated permanent and temporary placement sites. Separate permits are required for those sites not previously designated and where placement of material is below the ordinary high watermark as outlined in the memorandum. The state could also require a separate permit if they determine that placement at a site could result in significant adverse impacts. The Corps of Engineers has a 5-year state disposal system permit with the Minnesota Pollution Control Agency allowing the construction and operation of disposal facilities on the Mississippi, Minnesota, and St. Croix rivers. The permit established procedures for approval of projects and outlines coordination that must take place between agencies. Certification is required for any placement operations in the state where either material or effluent must be discharged below the ordinary high watermark. Dredged material placement permits are received from the landowners of the placement sites used and permits are also required in accordance with the city of Minneapolis noise ordinance.

The city of Minneapolis is the local sponsor for the Upper St. Anthony Falls Pool navigation project and provides the land necessary for dredged material placement. An agreement with the city also designates placement site responsibilities in pool 1. The city of St. Paul is the local sponsor of the St. Paul small boat harbor and provides land necessary for dredged material placement. The Lower Minnesota River Watershed District is the local sponsor for the 9-foot channel on the Minnesota River and has dredged material site placement responsibilities.

Dredging is accomplished by the hydraulic dredges William A. Thompson and Dubuque and by mechanical methods including the Corps of Engineers derrick barge Hauser and Wade and similar contractor-owned dredging equipment. Most work above the St. Paul barge terminal is accomplished by mechanical methods due to placement site restrictions. The exception is that the Dubuque might be used to dredge at the turning basin at the head of navigation.

In the reach described above, there are nine permanent (P) and four temporary (T) placement sites in the following locations: USAF Pool 9 865.6RM(P); Pool 1 — 853.2LM(P), 851.3-LM(T), and 849.5RM(ST); Pool 2 — 840.4RM(P), 836.8-RM(P), 824.1-LM(P), 823.8-RM(T), 822.8-RM(P), 821.3LM(T), 820.5-LM(P); Pool 3 — 815-RM(P). There are also several sites on the Minnesota River that are within the MNRRA boundary.

Sediment contamination and effects on water quality from dredging operations are concerns due to the influence of the metropolitan area and the sediment characteristics. The sediment tends to be finer grained, which bonds more easily with contaminants. The Corps of Engineers conducts periodic sediment sampling and analysis of historic dredging locations to document the sediment quality. A 404(b)(1) evaluation is prepared for any dredging with an effluent return or when dredged material is placed below the ordinary high water mark. The evaluations are reviewed by state and federal agencies.

APPENDIX F: NATIONAL PARK SERVICE STAFFING NEEDS

Following is a table showing existing and proposed NPS staff for the Mississippi National River and Recreation Area, with a description of their primary duties. It is subject to refinement based on the results of follow-up implementing plans. This is a long-range staffing concept that would take many years to implement. Support staff for the Mississippi River Coordinating Commission are included in these positions. Other than one administrative clerk, these duties are spread among several existing and proposed staff members.

REVISED STAFFING REQUIREMENTS (INCLUDES EXISTING STAFF) SUMMARY

MNRRA Totals	Salary (1994 dollars)[1]	Benefits (est. 30%)	Staff Support (est. 25%)[2]	FTE	Total Staff Costs
All Divisions	$993,983	$298,201	$248,491	33.8	$1,540,678

1. All salary figures are based on step-3 for the full performance level
2. Support includes required equipment, travel, training, and other miscellaneous items.

DIVISION OF MANAGEMENT & ADMINISTRATION

Position	Grade	Salary (1994 dollars)[1]	Benefits (est. 30%)	Staff Support (est. 25%)[2]	FTE
Existing Authorized Staff					
Superintendent	GM-13	$52,693	$15,808	$13,173	1.0
Administrative manager	GS-05/06	22,479	6,744	5,620	1.0
Administrative clerk	GS-04	18,025	5,408	4,506	1.0
Additions to Staff					
Administrative officer	GS-07/09	$30,557	$9,173	$7,644	1.0
Clerk typist (MRCC)	GS-04	9,013	2,704	2,253	0.5
Secretary	GS-06	22,479	6,744	5,620	1.0
DIVISION TOTALS		**$155,246**	**$46,581**	**$38,816**	**5.5**

1. All salary figures are based on step-3 for the full performance level.
2. Support includes required equipment, travel, training, and other miscellaneous items.

DIVISION OF PLANNING AND RESOURCE MANAGEMENT

POSITION	Grade	Salary (1994$)[1]	Benefits (est. 30%)	Staff Support (est. 25%)[2]	FTE
Existing Authorized Staff					
Division chief, outdoor recreation planner	GS-12	$44,312	$13,294	$11,078	1.0
Resource management specialist[3]	GS-09/11	36,973	11,091	9,243	1.0
Outdoor Recreation Planner	GS-09/11	36,973	11,091	9,243	1.0
Additions to Staff					
Cultural resources specialist	GS-09	$30,577	$9,173	7,644	1.0
Resource management specialist	GS-09	30,577	9,173	7,644	1.0
Outdoor recreation planner (grants)	GS-07	24,980	7,494	6,245	1.0
Resource management technician	GS-05	20,166	6,050	5,041	1.0
Planning technician	GS-05/06	22,479	6,744	5,620	1.0
DIVISION TOTALS		**$247,037**	**$74,110**	**$61,758**	**8.0**

1. All salary figures are based on step-3 for the full performance level.
2. Support includes required equipment, travel, training, and other miscellaneous items.
3. Position is currently classified as cartographic technician GS-07/09. The position would be reclassified and responsibilities modified accordingly.

DIVISION OF INTERPRETATION AND VISITOR SERVICES

Position	Grade	Salary (1994$)[1]	Benefits (est. 30%)	Staff Support (est. 25%)[2]	FTE
Existing Authorized Staff					
Division chief, park ranger	GS-12[3]	$44,312	$13,294	$11,078	1.0
Additions to Staff					
Environmental education specialist	GS-11	$36,973	$11,091	$9,243	1.0
Heritage education specialist	GS-11	36,973	11,091	9,243	1.0
Interpretive spec. (volunteer development)	GS-09	30,577	9,173	7,644	1.0
Interpretive specialist (media)	GS-09	30,577	9,173	7,644	1.0
Interpretive specialist (native cultures)	GS-09	30,577	9,173	7,644	1.0
Interpretive spec. (neighborhood outreach)	GS-09	30,577	9,173	7,644	1.0
Interpretive spec. (special populations)	GS-09	30,577	9,173	7,644	1.0
Interpretive specialist (special events)	GS-09	30,577	9,173	7,644	1.0
Clerk typist (scheduling)	GS-05	20,166	6,050	5,041	1.0
Park interpreter	GS-05/7/9	122,308	36,692	30,576	4.0
Park interpreter (temporary guides)	GS-05	80,664	9,635	8,029	4.0
DIVISION TOTALS		**$524,858**	**$157,457**	**$131,209**	**18.0**

1. All salary figures are based on step-3 for the full performance level.
2. Support includes required equipment, travel, training, and other miscellaneous items.
3. Position would receive a one-grade increase over the existing level. Salary noted is for the higher grade level

DIVISION OF MAINTENANCE

Position	Grade	Salary (1994$)[1]	Benefits (est. 30%)	Staff Support (est. 25%)[2]	FTE
Additions to Staff					
Division chief, facility manager	GS-09	$30,557	$9,173	$7,644	1.0
Maintenance worker	WG-07	$29,072	$8,722	$7,268	1.0
Laborer	WG-03	$7,213	$2,164	$1,803	0.3
DIVISION TOTALS		**$66,842**	**$20,053**	**$16,711**	**2.3**

1. All salary figures are based on step-3 for the full performance level.
2. Support includes required equipment, travel, training, and other miscellaneous items.

DESCRIPTION OF WORK TO BE PERFORMED BY ADDITIONAL STAFF

Following is a list of new positions organized by division.

Division of Management and Administration

Administrative Officer. This position would be needed to coordinate budget tracking, personnel, contracting, purchasing, and related administrative programs. These programs would become increasingly complex as the area develops. This position would supervise and receive support from the existing administrative technician position.

Clerk Typist (Mississippi River Coordinating Commission). This part-time position would provide administrative support to the coordinating commission and assist the superintendent on commission matters.

Secretary. This position would provide general administrative support to all divisions, and would staff the area's communication center.

Division of Planning and Resource Management

Resource Management Specialist (Natural). The employee in this position would monitor natural resource issues in the corridor and would coordinate the collection and distribution of pertinent data about natural resources. The incumbent would provide technical assistance on natural resource management issues and help identify projects for possible grant funding. The incumbent would also coordinate NPS review of pertinent permit applications and establish a information clearinghouse for persons desiring more information on river-related permits. The incumbent would also be responsible for inspections and reports on national natural landmarks assigned to the area for monitoring.

Cultural Resources Specialist. The employee in this position would monitor cultural resource issues in the corridor and coordinate the collection and distribution of pertinent data about cultural resources. The incumbent would provide technical assistance on historic preservation and other issues related to cultural resources and help identify projects for possible grant funding. The person in this position would ensure coordination with the area's section 106 and section 110 programs and would be responsible for inspections and reports on national historic landmarks assigned to the area for monitoring.

Outdoor Recreation Planner (Grants). The employee in this position would be responsible for coordinating and processing grant applications (P.L. 100-696). The incumbent would provide assistance

to communities in preparing grant applications. The incumbent would help communities identify other possible sources of grant funding to accomplish projects compatible with the management plan, and coordinate with other park staff to develop a system for assessing grant applications.

Resource Management Technician. The employee in this position would provide technical support to professional staff on resource management applications. This would include day-to-day management of the geographic information system and construction and maintenance of digital data files.

Planning Technician. This position would provide technical and clerical support to all division personnel and programs.

Division of Interpretation and Visitor Services

Heritage Education Specialist. The employee in this position would be responsible for development of programs for schools, groups, and the general public relating to history, provides historical expertise to interpretive operations and park planning efforts, and manages operations of a major interpretive center. The incumbent would coordinate park cooperation in partnership interpretive efforts.

Environmental Education Specialist. The incumbent would be responsible for development of programs for schools, groups, and the general public relating to ecology, would provide environmental expertise to interpretive operations and planning efforts, and manage operations of a major interpretive center. The employee would coordinate park cooperation in partnership interpretive efforts.

Interpretive Specialist-Media. The person in this position would coordinate the development of interpretive media for the park. He or she would research and write text for waysides and exhibits and locate illustrations, develop concepts for computer interpretation and serves as park coordinator for the production of software and procurement of hardware, and participate as a member of park planning efforts.

Interpretive Specialist-Volunteer Development. This employee would develop a volunteer program in the corridor, identify volunteer opportunities in coordination with other corridor agencies and organizations, develop recruitment and training programs, and coordinate recognition of volunteers with cooperating partners.

Interpretive Specialist-Native Cultures. The person in this position would serve as park liaison to the Native American communities. He or she would specialize in using nontraditional methods to provide interpretation of park themes to the Native American communities and would research, prepare, and present interpretive programs on multiple themes.

Interpretive Specialist-Neighborhood Outreach. The incumbent would develop interpretive programs in cooperation with neighborhood organizations within the river corridor, maintains liaison with these groups and provides information and materials about the Mississippi National River and Recreation Area. He or she would research, prepare, and present interpretive programs on multiple themes.

Interpretive Specialist-Special Populations. The employee in this position would serve as park liaison to special populations, providing these groups with information and materials about the Mississippi National River and Recreation Area. The incumbent would research, prepare, and present interpretive programs on multiple themes.

Interpretive Specialist-Special Events. The incumbent would coordinate the park's participation in river-related events and develops exhibitry, programs, and/or materials to be used for these events. He or she would work with event organizers to arrange cooperative programming and resolve

questions concerning park participation. The employee would research, prepare, and present interpretive programs on multiple themes.

Clerk Typist-Scheduling. The incumbent would be responsible for scheduling all park interpretive and educational programs; responsible for mailing pre-visit and post-visit materials to participants. He or she would make periodic reports on participation in programs.

Park Interpreters. These employees would operate interpretive centers and provide on-site interpretive programming.

Division of Maintenance

Division Chief, Facility Manager. The employee in this position would oversee the maintenance services for the St. Paul interpretive center by supervising contracts or federal employees or a combination of the two. This would include the administration and coordination of internal maintenance programs such as cyclic and repair/rehabilitation. The incumbent would be responsible for maintenance of the park's radio and alarm systems. The incumbent would provide consultation and technical assistance to corridor partners on road/trail design and other park construction and lead inspections of construction projects funded via the grants program. The employee would also be responsible for the area's energy conservation and recycling programs.

APPENDIX G: HEADQUARTERS SPACE NEEDS

DIVISION OF MANAGEMENT & ADMINISTRATION		
Superintendent	180	
Administrative officer	120	
Administrative technician	120	
Administrative clerk (MRCC)	120	
Clerk typist/reception	200	
Mail room/files/copier/storage	400	
Computer work station	100	1240
DIVISION OF MAINTENANCE		
Facility manager	150	150
DIVISION OF PLANNING & RESOURCE MANAGEMENT		
Chief	150	
Community planner	150	
Resource management specialist (natural)	150	
Community planner/landscape architect	150	
Outdoor recreation planner	120	
Resource management specialist (cultural)	120	
Grants assistant	120	
Planning technician	120	
GIS lab	230	
Storage/flat file storage/plan library	350	
Computer work station	150	2040
DIVISION OF INTERPRETATION & VISITOR SERVICES		
Chief	150	
Environmental education specialist	120	
Park ranger (volunteer development)	120	
Project work space (volunteers)	400	
Scheduling office	150	
Computer work station	150	
Library	100	
Photographic collection	100	
Audio visual storage	100	1390
OTHER		
Cooperating association office	120	
Cooperating association storage	100	
Maintenance work room	120	
Maintenance storage	100	
Project room/recycling center	250	
Employee restrooms/showers/lockers	450	
Kitchen/break room	300	
Conference room	400	
General storage	120	1960
TOTAL HEADQUARTERS SPACE		**6780**

APPENDIX H: PREVIOUS EFFORTS TO ADDRESS REGULATORY ISSUES

The Metropolitan Rivers Corridor Study Committee (MRCSC) was created by an act of Congress to make policy recommendations for managing recreational, fish and wildlife, historic, natural, scientific, scenic, and cultural values of the Mississippi, Minnesota, and St. Croix rivers in the Twin City Metropolitan Area. The committee produced a body of documents that were precursors to the final report recommending the creation of the Mississippi National River and Recreation Area. *Inventory*, July 19, 1984, lists 15 federal agencies, three interstate bodies, six agencies of the state of Minnesota, and one regional body with regulatory, permitting, or planning authority over land or water use in the Mississippi National River and Recreation Area.

Another inventory of agencies and a description of their authorities can be found in *Programs, Policies and Legal Authorities Affecting the Use of Land in Minnesota*, published in May 1975 by the Minnesota State Planning Agency. This document describes an additional set of state level agencies — the soil and water conservation districts. Since the publication of the report, these conservation districts, along with the watershed districts under the purview of the Minnesota Water Resources Board, now are overseen by one body — the Board of Water and Soil Resources.

The MRCSC study cites several previous reports that addressed or made recommendations on the regulatory structure. Though the following recommendations focus on regulation of the commercial navigation industry, they can be applied as foundations for other regulatory activities as well.

The *Mid-America Ports Study*, by the U.S. Department of Commerce, recommends the creation of a single body to manage and promote orderly development and multigovernmental planning for multimodal transportation needs.

A Study of the Upper Mississippi River, by the Great River Environmental Action Team (GREAT I), developed comprehensive river management strategies using an interagency team.

The *Comprehensive Master Plan for the Management of the Upper Mississippi River System*, by the Upper Mississippi River Basin Commission, presents two options — an interagency committee for joint permit reviews and the creation of a new nonprofit corporation to provide centralized coordination for river system management.

The Mississippi National River and Recreation Area Commission was created in 1988. The MNRRA legislation directs the commission to assist the secretary of the interior and governor of Minnesota in reviewing and monitoring implementation of the plan by other federal, state, and local agencies. It also authorizes the commission to recommend modifications to the plan. Unless state legislation is passed increasing the authority of the commission, it has only the power to advise on permits and land use decisions.

APPENDIX I: ADDITIONAL SOCIOECONOMIC DATA

PERCENTAGE OF RESIDENTS BELOW POVERTY LEVEL

	Total	White	Black	American Indian, Eskimo, Aleut	Asian, Pacific Islander	Other	Hispanic
Minnesota	10.2	8.7	36.8	43.7	31.7	31.7	25.6
7-County Metro	8.1	5.6	37.1	40.6	32.3	23.8	19.4
Anoka County	5.3	4.9	40.3	23.4	7.3	16.7	9.6
Carver County	4.9	4.8	20.7	27.8	0	0	6.0
Dakota County	4.3	4.1	13.7	13.1	6.6	15.4	12.3
Hennepin County	9.2	6.1	38.0	47.3	27.0	23.1	20.2
Ramsey County	11.4	7.3	38.4	34.2	48.6	28.8	23.2
Scott County	4.1	3.9	24.1	12.8	16.7	2.1	18.6
Washington County	4.4	4.0	26.3	21.6	7.9	14.2	14.5

Source: State Demographer's Office and Metropolitan Council, estimates based on 1990 census

AVERAGE ANNUAL COVERED EMPLOYMENT BY INDUSTRIAL SECTOR, CALENDAR YEAR 1990

	Agriculture Forestry Fishery Mining	Construction	Manufacturing	Transport, Communi-cations, Public Util.	Trade	Finance, Insurance, Real Estate	Services	Gov't
Minnesota	25,470	79,772	397,781	101,175	520,365	122,358	512,222	302,362
TCMA	7,400	47,647	250,884	69,488	320,107	94,309	336,210	156,399
Anoka Co.	719	4,368	19,556	2,472	22,685	2,384	14,997	10,124
Carver Co.	210	707	7,242	733	2,498	492	2,762	2,405
Dakota Co.	1,293	4,783	18,890	6,403	33,223	5,719	19,836	12,322
Henn Co.	3,118	24,797	120,797	46,835	184,397	63,902	210,356	78,250
Ramsey Co.	943	9,520	72,444	10,302	61,857	18,901	75,662	43,958
Scott Co.	288	1,519	3,680	705	4,825	421	4,653	2,377
Wash Co.	831	1,954	8,289	2,040	10,634	2,497	7,958	6,990

The table shows "covered employment" from employers' reports on the number of employees covered under the Minnesota Employment Services Act (unemployment compensation).

Sources: Minnesota Department of Jobs & Training
Metropolitan Council

PERCENTAGE OF AVERAGE ANNUAL COVERED EMPLOYMENT LOCATED IN THE TWIN CITIES AND EACH COUNTY, 1990

	Agriculture, Forestry, Fishery, Mining	Construction	Manufacturing	Transportation, Communications, Public Utilities	Trade	Finance, Insurance, Real Estate	Services	Gov't
TCMA % of MN	29%	60%	63%	69%	62%	77%	66%	52%
Anoka Co.								
% of MN	3%	5%	5%	2%	4%	2%	3%	3%
% of TCMA	10%	9%	8%	4%	7%	3%	4%	6%
Carver								
% of MN	1%	1%	2%	1%	0%	0%	1%	1%
% of TCMA	3%	1%	3%	1%	1%	1%	1%	2%
Dakota Co.								
% of MN	5%	6%	5%	6%	6%	5%	4%	4%
% of TCMA	17%	10%	8%	9%	10%	6%	6%	8%
Henn Co.								
% of MN	12%	31%	30%	46%	35%	52%	41%	26%
% of TCMA	42%	52%	48%	67%	58%	68%	63%	50%
Ramsey Co.								
% of MN	4%	12%	18%	10%	12%	15%	15%	15%
% of TCMA	13%	20%	29%	15%	19%	20%	23%	28%
Scott Co.								
% of MN	1%	2%	1%	1%	1%	0%	1%	1%
% of TCMA	4%	3%	1%	1%	2%	0%	1%	2%
Wash Co.								
% of MN	3%	2%	2%	2%	2%	2%	2%	2%
% of TCMA	11%	4%	3%	3%	3%	3%	2%	4%

APPENDIX J: PERMITTING AND REGULATORY AUTHORITIES

The following table presents a partial inventory of regulatory responsibilities in the corridor. The table only summarizes the permits needed for development. For example, solid waste disposal on non-NPS lands might involve an actual operating landfill or the site of a demolished structure. A permit to discharge into the river might involve effluent from a wastewater treatment plant or material dredged from the river bottom in order to construct a permanent dock. The table's primary purpose is to illustrate the many agencies and levels involved in river corridor regulation. As coordinating efforts proceed, this table might serve as the foundation upon which to build a more complete inventory.

INVENTORY OF REGULATORY PERMITS FOR ACTIVITIES CONDUCTED IN THE MNRRA CORRIDOR

AGENCY	Permits or Other Direct Regulatory Authority/Responsibility
Federal Agencies	
Advisory Council on Historic Preservation	Provides comments to federal agencies on federally funded or permitted activities affecting historic resources under section 106 of the National Historic Preservation Act.
U.S. Army Corps of Engineers	The Corps of Engineers regulates work that could affect navigable waters, which are those bodies of water that have historically been used for commercial navigation. The agency issues permits for the placement of structures, dredging, and filling in navigable waters under section 10, Rivers and Harbors Act, 1899. They also regulate the discharge of dredged or other fill into all waters of the U.S. under section 404, Clean Water Act. No section 404 permit may be issued by the Corps of Engineers without a section 401 certification from the Minnesota Pollution Control Agency that the discharge of dredged or fill material would not violate state water quality standards.
National Park Service	The National Park Service was given the responsibility to work with the Mississippi River Coordinating Commission to create a comprehensive management plan for land and water use measures for the Mississippi National River and Recreation Area. Actual management or enforcement responsibilities are addressed in the plan. The MNRRA act mandates that the National Park Service review all federally funded or permitted activities in the corridor. The Park Service has no regulatory authority.
Federal Aviation Administration	The Federal Aviation Administration controls air traffic and regulates airport operations.
U.S. Coast Guard	The U.S. Coast Guard maintains the river channel buoy system and enforces safety standards, laws, and equipment vessels, barges, and floating plants. They enforce some pollution control laws, set bridge height standards, and inspect barges and recreational and commercial vessels.
U.S. Fish & Wildlife Service (USFWS)	The Fish and Wildlife Coordination Act of 1934 mandates all federal agencies to consult with the Fish and Wildlife Service on permit and license applications. Section 7 of the Endangered Species Act mandates all federal agencies to consult with the Fish and Wildlife Service to ensure that actions do not jeopardize endangered species. The Fish and Wildlife Service is a significant player in MNRRA regulatory activities.
Department of Energy	
Federal Energy Regulatory Commission	The Federal Energy Regulatory Commission has jurisdiction over all nonfederal hydroelectric power facilities that are located on or use water from a navigable stream, produce power that affects interstate or foreign commerce, are located on federal land, or use water impounded by a federal dam. The commission must issue a license before any such facility could be built.
Environmental Protection Agency	The Environmental Protection Agency establishes standards for water quality management, drinking water safety, solid and hazardous waste disposal, toxic substance management, air quality control, and general environmental quality review. Most enforcement is delegated to the states, although the agency retains oversight and could reassert its authority if it determines a state is not doing an adequate job. The agency may veto a 404 permit, and it may exercise the lead federal role for certain cases. In Minnesota the primary enforcement role for water quality is filled by the Minnesota Pollution Control Agency.

AGENCY	Permits or Other Direct Regulatory Authority/Responsibility
State Agencies	
Environmental Quality Board	The Environmental Quality Board designates the routes for pipelines and transmission lines in the state and issues permits for their construction. The agency also determines power plant sites and issues certificates of site compatibility. Any state critical areas (the Mississippi River Corridor is the only active one) are recommended by the board. The agency writes standards for local critical area plans and reviews and approves all plans or amendments for compliance with the standards.
Minnesota Department of Agriculture	The Department of Agriculture enforces laws designed to protect the public health and enhance the environment. It adopts and enforces rules to clarify laws and to prevent fraud and deception in manufacture and distribution of foods, animal feeds, fertilizers, pesticides, and seeds. The department is the only state agency that speaks for and promotes the development of agriculture and agriculturally related industries in the state. It is the lead agency in soil and water conservation programs and other programs designed to protect agricultural land. The department administers several laws that prevent surface and groundwater pollution from agricultural practices, such as pesticide application.
Department of Natural Resources	The department has responsibility for issuing permits for many activities. These include any appropriation of surface or underground water, mining activities, and underground gas or liquid storage. The department issues licenses for utilities to cross state land or water. Most broadly, a permit is required for any activity that changes the course, current, or cross section of state waters, which includes filling, excavating, or placement of structures, including dams. The department establishes standards for shoreline protection through its regulations that must be adopted by local governments. The agency must approve local floodplain ordinances, which are mandated by state law, and also establishes zoning standards along state-designated wild and scenic rivers. The department also investigates fish kills and assesses damages from polluters.
Minnesota Pollution Control Agency	The pollution control agency has responsibility for ensuring compliance with state and federal standards for all discharges into the air, land, or water. It exercises its regulatory authorities through an extensive list of permits as well as review processes. Air quality is protected through general air quality permits (for point source emissions), indirect source permits (e.g. parking ramps), and open burning permits. Waste disposal is regulated through solid waste facility permits as well as through permits for hazardous waste regulating storage, disposal, and treatment. Before any activity could proceed that could result in discharge into navigable waters of the state, the agency must issue a section 401 permit. Other permits include above-ground storage of liquids, a certificate of exemption for PCB users, animal feedlots, the discharge of municipal and industrial waste into state waters, a river dredging certificate, and a state disposal system permit for sanitary sewer systems. The National Pollutant Discharge Elimination System permit for any point source that discharges into waters of the U.S. is a federal permit, authority for which has been delegated to the agency. The agency also establishes standards for noise emissions and for general air quality.
Board of Water and Soil Resources	This board approves the establishment of special local tax districts, called watershed districts, which have regulatory authority over water management.
Minnesota State Historic Preservation Office	The State Historic Preservation Office is responsible for preserving historic sites through nomination to the National Register of Historic Places. The office also comments on federally funded or permitted activities under section 106 of the National Historic Preservation Act. The State Historic Preservation Office is housed at the Minnesota Historical Society.

AGENCY	Permits or Other Direct Regulatory Authority/Responsibility
Regional Agencies	
Metropolitan Council	The Metropolitan Council was created by the state legislature to do long-range planning for the seven-county metropolitan area. The council reviews projects for consistency with its development guide for regional systems (such as highways, transit, airports, sewers, and parks) and could require changes in local comprehensive plans. A number of commissions have been created to formulate and implement policies for these systems. Particularly relevant to lands in the Mississippi National River and Recreation Area are the Metropolitan Airports Commission, Metropolitan Parks & Open Space Commission, and the Metropolitan Waste Control Commission. The Metropolitan Airports Commission has broad authority over airports in the metropolitan area. It controls the international airport that abuts the Mississippi National River and Recreation Area near the confluence of the Minnesota River. Holman Field on the downtown St. Paul riverfront is also subject to MAC authorities over flight patterns and airport management. Through the Metropolitan Council, the airports commission is required to promulgate aircraft noise zones based on appropriate noise levels for each land use. Local governments are then required to incorporate these standards into local controls. This is the only instance where Metropolitan Council land use measures must be adopted by other bodies. The Parks & Open Space Commission has no regulatory powers. The Metropolitan Waste Control Commission is not a regulatory agency. However, the commission owns all the major municipal waste treatment systems and approximately 470 miles of the sewage collection system in the corridor and, through review, approval, and funding of local sewer management plans, serves in some ways as a *de facto* regulatory body.
Counties, Cities and Townships	There are 21 cities and 4 townships in the 5 Minnesota counties that encompass the MNRRA corridor. Local governments have broad planning and regulatory control over development in the corridor. Each of these political entities have regulatory power over land and water use through a variety of departments, agencies, commissions, etc. Minnesota state law gives these local governments primary authority over land use regulation. Local governments are often responsible for enforcement of standards written by state and county level agencies or the state legislature.

APPENDIX K: INTERPRETIVE CONCEPT AND COST ESTIMATE FOR HARRIET ISLAND CENTER

PRELIMINARY PROGRAM FOR INTERPRETIVE MEDIA AND ACTIVITIES

General Functions

The Harriet Island center in St. Paul would be designed to provide interpretation, education, orientation, and visitor services.

Specific Functions

- provide focus and identity for the Mississippi National River and Recreation Area and the National Park Service
- provide comprehensive interpretation of selected themes
- orient visitors to resources and recreational opportunities throughout the corridor and nearby areas
- provide information and orientation to other units of the national park system
- provide a staging area for public and environmental education programs
- interpret complex stories through interpretive media and a variety of personal programs
- provide security and environmental controls for displaying original objects
- provide books and other educational products for sale

Visitor Experience Goals

Visitors to the Harriet Island interpretive center would have the opportunity to:

- appreciate the importance, scope, significance, value, beauty, and grandeur of the Mississippi River
- learn about recreational opportunities in and around the MNRRA corridor
- learn specific and current information about the status and health of corridor resources
- learn information and stories related to interpretive themes
- find experiences and opportunities that relate to visitor interests and backgrounds
- learn to help protect and enhance the natural and cultural values of the MNRRA corridor

Interpretive Themes

All interpretive themes would be interpreted to some degree at this center. However, certain themes would be emphasized because resources nearby enhance the ability to tell certain stories. See the plan

text for a complete list of these themes and an identification of which ones would be emphasized at Harriet Island.

Audience

The Harriet Island Center would serve many audiences:

neighborhood residents
downtown office workers
metropolitan area residents
out-of-state tourists and visitors
international visitors
school groups
community groups
recreationists (cyclists, hikers, boaters, etc.)
families, individuals, peer groups
first-time visitors
return visitors
volunteers
seminar, workshop, or junior ranger program participants
people waiting for the excursion boat

INTERPRETIVE CENTER CONCEPT

The location of this center in a major metropolitan area emphasizes the importance of return visitation. Media and program planning would take this into account, and provide changing experiences in addition to more traditional approaches. The location also means that potential visitors would have many other choices of how to spend their leisure time. For this center to accomplish its goals, there must be sufficient critical mass, and it must be enough of an attraction to be appealing to potential visitors and corridor users. It should also be a comfortable place and encourage return visits.

The side of the center facing the river would have an expanse of windows. Visitors would be able to see the Mississippi River, the St. Paul downtown skyline, and Harriet Island park. Since ambient light can threaten archival materials such as paper and textiles and can fade graphics, sensitive materials would be kept away from windows, and treatments such as ultraviolet-reducing film on windows would be considered. Since this is a northern exposure, and the exhibits would not be rich in artifacts, accommodation between views and artifact conservation should not be too difficult. The center would have several areas for visitors:

Area	Approximate Square Feet
Lobby	1,500
Exhibits	3,500
Reference center	1,500
Book sales/storage	1,000
Temporary exhibits	400
A/V alcove	300
Auditorium (300 seats)	1,600
Classrooms/meeting rooms (2)	1,000

There would be additional space in the building for restrooms, utilities, and circulation that would bring the total interpretive center portion to about 12,000 square feet. There would be about 7,000 square feet of administrative offices housing the MNRRA headquarters staff, bringing the total size of the building to about 19,000 square feet. All space estimates are preliminary and subject to refinement during building design.

Lobby

The area indicated for the lobby (1,500 square feet) would include a vestibule, information counter, seating, and an orientation area. There would be sufficient space to accommodate the arrival of bus loads of up to 60 people at one time.

The identity of the center and of the Mississippi National River and Recreation Area would be established immediately inside the building.

The orientation area would inform visitors about recreational resources in and around the MNRRA corridor, and to visitor services such as food and lodging. Most of the space would be devoted to recreational opportunities; visitor services information could be handled with a brochure rack, computer, and/or a notebook with compiled listings.

Exhibits

Exhibits would be multisensory, many would be interactive or participatory, and they would offer enjoyable experiences to diverse audiences. In part because of the urban setting and clientele, the experiences would be more interactive, experiential, and, perhaps, contemporary than exhibits found in many national park service visitor centers. There would be computers, live fish, video, and virtual reality experiences. There would be experiences that appeal to teenagers and children, to inner-city residents, and to ethnic minorities who may have had little experience with national parks. Not everything would be interactive; there would be opportunities for more passive, intellectual, and contemplative experiences as well. Many visitors would find themselves unable or unwilling to take in everything in one visit, thus encouraging return visits. Temporary exhibits would also provide new attractions to metropolitan residents. Alcoves would help focus activities for educational groups and would feature specialized videotapes.

Visitors would find the exhibit area organized into three general spaces:

(1) **People and the River** — stories, issues, and experiences dealing with human interaction with the upper Mississippi; the working river and the recreation river; the river as scenic, recreational, historical, cultural, natural, economic, and scientific resource

(2) **Ecological Communities of the Upper Mississippi** — aquatic and associated ecosystems of the Mississippi would be represented; pool, riffle, and benthic communities, wetlands, tributary streams, lakes, urban river, farmland river, and recreational river

(3) **Welcome to the National Park System** — how, where, when, and why to visit national parks; trip planning assistance; Mississippi National River and Recreation Area is one of over 350 national park areas; how to use but not abuse our parks

The first two areas could be developed in partnership with other organizations. Commercial and recreational organizations could assist with the development of media exploring human interaction

with the river. The expertise of an organization like the Minnesota Zoo or the Science Museum of Minnesota would be sought for developing and operating the ecology wing.

Specific exhibit and other media recommendations would be developed later in the interpretive plan, which would be prepared following approval of the comprehensive management plan. In general, however, the following approaches could be used to provide enjoyable and educational experiences and are offered as examples.

(1) People and the River

Visitors would explore the many ways people interact with the river, how they benefit by it, how they change it, and how they take care of it.

The economic story, "the working river," would be a major emphasis. Visitors would be able to learn how the river provides transportation, energy, cooling, and waste disposal for millions. They would consider the costs and the benefits of the many ways people work the river.

Recreation is the other major use of the river. A significant interpretive objective of this center would be to help visitors enjoy safe and low-impact recreational activities in and around the Mississippi National River and Recreation Area. Exhibits could give visitors updated information on resource conditions, direct visitors to desired areas, inform them of behaviors that are unsafe or damaging, encourage involvement in new activities, and recommend further information.

Using virtual reality technology, visitors with computerized video headsets could steer a tugboat hauling barges to St. Paul, paddle a canoe exploring the Pig's Eye nature preserve, or pilot a motorboat through a lock and safely past a sailboat. They would learn the different requirements of the many craft that ply the river and how to use them safely and without harmful impacts.

Through interactive video, visitors could decide transportation policies, weighing options, and costs and benefits of moving commodities and other goods. The game could offer several levels, thus appealing to children and adults, and offering more to do in future visits.

Another interactive video program could let visitors explore issues of pollution control, energy use, waste disposal, land use, and other environmental issues that involve multiple objectives and interests. Activities such as this would help educate residents and river users to become more effectively involved in finding solutions to common problems.

Contemporary issues of human use of the river could be considered using updated displays of newspaper articles, television news segments, and books. Visitors would see multiple perspectives, better understand the relevance to their lives, and pay more attention at home to river-related issues.

Anything spilled, flushed, poured, deposited, or thrown away in a river's watershed can affect the river. The Mississippi's watershed covers two-thirds of the lower 48 states. Visitors should learn this basic relationship. One could start with a computer program that takes visitors' zip codes or home countries and places them in the watersheds of the Rum River, the Zumbro, the Mississippi or the Ganges. A model could illustrate to young visitors the dynamics of a typical watershed.

The diversity of MNRRA activities and changes over time could be interpreted with photographs, paintings, sketches, poetry and other literature, and music.

Visitors would have access to additional experiences and more in-depth information in the library, bookstore, other institutions, and the MNRRA corridor. The availability of these supplementary experiences could be announced through the display of library and sales publications and

description of other interpretive sites and locations to be visited. Staff and documents would also be available for further discussions.

(2) **Ecological Communities of the Upper Mississippi**

Visitors would discover aquatic and associated ecosystems of the Mississippi, see many of the plants and animals that live there and learn of their interrelationships, and find out how biological diversity could be restored and maintained.

The aquatic wildlife of the Mississippi National River and Recreation Area are mostly inaccessible. Even anglers catch only the top of the food chains. This center would provide access to and understanding of riverine and riparian communities and encourage stewardship.

Ecosystem-based tanks could show the larger residents of aquatic communities: the fish, reptiles, amphibians, molluscs, crustaceans, and plants. Microscopes would reveal the smaller residents ranging from insects and worms to single-celled creatures. Interpretation would emphasize ecological relationships more than the natural history of isolated organisms.

Associated communities such as bottomland forests, marshes, swamps, creeks, and ponds could be introduced in a similar fashion. Live animals would include only those that could be kept in aquariums or terrariums. The lives of river-dependent residents such as raccoons, muskrats, herons, and kingfishers could come alive with photographs and video.

Using computers, visitors could explore population dynamics, balancing different parameters (such as food, habitat, pollution, predation) in trying to maintain or create biological diversity in the Mississippi.

Visitors would have access to current scientific research on ecological systems of the upper Mississippi, concentrating especially on the MNRRA corridor but including related areas as well. This could be provided through a variety of media and programs. Changeable exhibit modules could present up-to-date research with photographs, text, and video. An alcove with a lab table, tanks, counters, and benches could host a variety of talks and demonstrations by staff and docents. Library resources would give visitors and students the opportunity for research.

(3) **Welcome to the National Park System**

The location of the Mississippi National River and Recreation Area in a metropolitan area offers an opportunity to reach out to populations that have had little previous access to national park areas and values. For metropolitan residents and out-of-state tourists, this center could offer needed services that would make visits to national parks more frequent, enjoyable and beneficial, and more respectful.

In 1986 a National Park Service task force developed recommendations to create a series of urban gateways that would help make national parks accessible to everyone. This center is an opportunity to bring about that vision.

Urban partnership areas such as the Mississippi National River and Recreation Area are a new concept to many. Visitors would learn why MNRRA is part of the national park system and would learn about the similarities and differences among areas such as MNRRA, Yellowstone, and Voyageurs national parks.

Attracted by powerful photography and videography of park resources and experiences, visitors (especially those unfamiliar with the national park system) could learn more about key issues and information.

Basic trip planning assistance would be available in person, through the use of interactive computer programs and by telephone.

The reference center would provide additional materials that could be used for planning trips to other NPS areas.

Temporary Exhibits

Rotating, traveling, or temporary exhibits would be an important service in the center, especially for encouraging return visits. This space would also be available for programs, workshops, and other activities.

Audiovisual Arts

In the auditorium there would be an introductory film that presents the significance and grandeur of the Mississippi River and defines the concept of the Mississippi National River and Recreation Area. This would be the primary vehicle for interpreting theme 1: the Mississippi is one of the world's great rivers. The river and watershed would be treated as an entire system. It would also enable visitors to understand the MNRRA's place in our system of protected areas, and it would encourage respectful use of corridor resources and associated areas.

Because there is already an Omnimax theater and other large format presentations in the area, consideration should be given to a 35mm film format with surround sound. This format would help tell the big story and would enhance the ability of the center to effectively communicate the important messages.

There would be short video programs available for visitors. These would be on a variety of subjects relating to MNRRA themes. Some would be produced commercially or by the news media; others would be specially produced to show in this center and elsewhere. These would be shown in the video alcove and elsewhere in the exhibit area. Generally, seating would be available unless the program lasts less than two minutes.

The video alcove would provide seating for about 40 people. Programs could be automatically scheduled as well as hosting special programs such as those for school groups. This area would give the operators increased flexibility, keep the auditorium free for the introductory program, and allow much greater access to the many excellent and relevant video programs already available.

Audiovisual programs could be developed through partnerships with other organizations.

Auditorium

This would be designed as a theater, with good acoustics, a partially sloping floor (with flat areas for wheelchairs), and fixed seating for about 100 people. Consideration would be given during facility design to making this facility suitable for theatrical productions.

Reference Center

This space would offer a wide range of materials pertaining to the Mississippi National River and Recreation Area, the entire Mississippi River and its watershed, riverine and riparian ecology, urban

parks, and the national park system. The emphasis would be on providing these materials in digital format to facilitate access by computer from remote locations. These materials could be offered in partnership with existing library services in the Twin Cities area.

Classrooms

Two classes of 60-70 people would be able to meet in this area for environmental education programs. The space could function as one large area or be divided in half. Facilities would maximize flexibility and include laboratory tables, sinks, aquariums and terrariums, storage, and movable seating. Groups would be likely to spend part of their visit in these rooms and the rest in the exhibit area, auditorium, video alcove, on a boat on the river, and outdoors.

Bookstore

A cooperating association bookstore would offer publications, videotapes, postcards, and other theme-related and educational items for sale about the Mississippi River, MNRRA, and other NPS areas. Contiguous storage would be provided.

OUTDOOR INTERPRETIVE AND RECREATION EXPERIENCES

For many people a visit to the interpretive center would be part of a recreational package that could include a hike, bike ride, boat ride, picnic, or driving tour. Trails from the center would lead to Harriet Island park, the riverfront (including excursion boat, promenade, and marina), and pedestrian/bike trails to Lilydale Park.

At Harriet Island park there would be several points where a view or a place is significant, interesting, theme-related, and accessible, and wayside exhibits might be installed. Interpretation and environmental education programs would be conducted on and along the river. The National Park Service would have a boat for environmental education programs. It would be moored at the Harriet Island marina and would be used in aquatic ecology programs for schools and other scheduled groups.

At Lilydale Park, which is currently being planned and developed by St. Paul Parks and Recreation, there would be an important part of MNRRA visitors' experiences. Harriet Island visitors could walk, jog, bicycle, roller blade or drive to Lilydale. There they would find opportunities for more hiking, jogging, etc., plus fishing, canoeing, nature and geology study, interpretation and environmental education programs, old home sites, and picnicking.

Plans are currently in place to develop a hiking/biking trail west of Lilydale, eventually reaching the Minnesota Zoo and connecting with several other trails. Harriet Island would be part of a metropolitan system of trails that would complement the NPS interpretive center.

COST ESTIMATE

Following is a cost estimate for the Harriet Island facility. Development and interpretive media costs cannot be estimated in great detail at this time. Estimates provided below are "class C," which means they are based on general size assumptions and the cost of constructing similar facilities in the Midwest. They should be considered rough, preliminary estimates subject to change during additional planning and design. These cost estimates were prepared by an NPS estimator (based on the cost of similar facilities in the Midwest) to comply with NPS guidelines for preparing general plans. Facility

estimates include construction costs, project supervision, and contingencies. The Mississippi River Coordinating Commission neither agrees nor disagrees with these estimates.

The facility development costs would break out approximately as follows:

Visitor center space (12,000 sf)	$3,773,000
Headquarters space (7,000 sf)	1,421,000
Furnishings	377,000
Interpretive exhibits	1,500,000
Landscape development/site preparation	1,039,000
Utility connections	14,000
Parking (100 cars)	223,000
Subtotal	**$8,347,000**
Site surveys/design costs	$1,600,000
Harriet Island Total	**$9,947,000**

Audiovisual media design, equipment, and production costs are not included in these figures.

APPENDIX L: SELECTED TRANSPORTATION DATA FOR MNRRA CORRIDOR

RAILROAD BRIDGE ANNUAL TONNAGES[A]

	Railroad	Bridge Location	Annual Tonnage (millions)
1)	Chicago, Milwaukee,	Mile 813.7 (Hastings)	43.4
2)	Chicago Northwestern	Mile 835.7	15.0
3)	Chicago Northwestern	Mile 839.3 (Robert Street)	5-10
4)	Chicago Northwestern	Mile 841.4	9.4
5)	Chicago, Milwaukee, St.Paul & Pac./Soo Line	Mile 850.7	3-5
6)	Chicago, Milwaukee, St.Paul & Pac./Soo Line	Mile 853 (near Washington	3
7)	Burlington Northern	Mile 854.5	3
8)	Burlington Northern	Mile 855.8	65
9)	Soo Line	Mile 857.6	22.7

Total annual railroad bridge tonnage in the MNRRA corridor: 169.5 - 176.5 million tons

[a] These 1992 railroad tonnages gathered through the Minnesota Department of Transportation analysis system.

Annual Aviation Operations

Facilities Within or Adjacent to the MNRRA Corridor

Facility	Operations
Holman Field	152,378
Fleming Field	39,800
MSP International	415,902
Total Operations	608,080

Total freight tonnage at international airport: 335,339 tons

Source: Minnesota Department of Transportation

Roadways in the MNRRA Corridor
Average Daily Traffic Volumes 1992[1]

Location	Traffic Volume
Minneapolis (East Side of River)	
T.H. 169/10 (North of Anoka)	37,900/ 1,800
East River Road	18,000/540
I-94 from Emerald to Oak St.	119,000/3,570
University Ave. S.E.	20,600/618
Oak Street	9,100/273
Minneapolis (West Side of River)	
I-94 from Fridley to 42nd Ave. N.	96,000/2,880
Washington Ave. N.	34,300/1,029
Riverside Ave.	12,600/378
Marshall Ave.	8,900/267
Hiawatha Ave.	42,000/1,260
T.H. 5 (near Airport	48,000/1,440
St. Paul (East Side of River)	
Shepard Rd.	23,000/625
Warner Rd.	15,500/465
Kellogg Blvd.	33,000/990
Cleveland Ave.	4,800/144
McKnight Rd.	3,900/117
Carver Ave.	850/26
I-494 to Maxwell	44,000/1,320
Maxwell Ave.	6,200/186
4th Ave. (Newport)	4,800/144
Grey Cloud Island Dr.	4,500/135
T.H. 61	41,500/1,450
T.H. 10	9,000/300
St. Paul (West Side of River)	
Water Street	600/18
Plato Blvd.	14,300/429
T.H. 3 (Lafayette Rd.)	41,000/1,230
T.H. 13	9,900/297
Butler	3,100/93
T.H. 56 (Concord)	14,000/420
Inver Grove Trail	1,600/48
T.H. 52	24,500/3,000
T.H. 55	9,200/660

Total average annual daily highway traffic in corridor: 755,650 vehicles

Total average annual daily heavy commercial traffic in corridor: 26,152 vehicles

1. These 1992 traffic numbers gathered through the Minnesota Department of Transportation analysis system. The first number represents the average daily traffic on the roadway in the MNRRA corridor. The second number represents the heavy commercial (truck) portion of the first number.

MNRRA CORRIDOR
AVERAGE DAILY HIGHWAY BRIDGE TRAFFIC 1990/1991

Highway	Location	Total Traffic/Truck Traffic[1]
1) T.H. 10/61	Mile 813.9	23,000/1,175
2) County Rd. 22	Mile 830.3	4,200/126
3) I-494	Mile 832.4	62,000/4,900
4) T.H. 3 (Lafayette)	Mile 838.8	59,000/3,000
5) T.H. 52 (Robert St.)	Mile 839.2	16,000/600
6) T.H. 56 (Wabasha St.)	Mile 839.5	16,000/480
7) T.H. 49 (High Bridge)	Mile 840.4	15,500/425
8) I-35E	Mile 843.3	55,000/1,800
9) T.H. 5 (Fort Snelling)	Mile 845.6	49,500/2,300
10) T.H. 55 (Mendota)	Mile 1.7 (Minnesota	29,000/2,100
11) I-494	Mile 4.1 (Minnesota	51,000/3,500
12) Ford Parkway	Mile 847.8	14,500/435
13) T.H. 212 (Marshall Ave.)	Mile 849.9	14,500/435
14) Franklin Ave.	Mile 851.5	9,500/285
15) I-94	Mile 851.7	115,000/7,100
16) Washington Ave.	Mile 852.6	25,000/750
17) I-35W	Mile 853.2	113,000/6,800
18) T.H. 8 (3rd Ave.)	Mile 854.1	18,600/558
19) T.H. 12 (Hennepin Ave.)	Mile 854.3	22,000/660
20) Plymouth Ave.	Mile 855	8,300/249
21) Broadway Ave.	Mile 855.4	18,300/550
22) Lowry Ave.	Mile 856.4	19,000/570
23) Camden Ave.	Mile 857.8	23,500/705
24) I-694	Mile 860.4	100,000/8,400
25) T.H. 610	Mile 865	46,000/1,800
26) T.H. 169	Mile 871.6	32,500/675
Total Average Daily Traffic Volume		**959,900/43,378**

1. Traffic numbers gathered through the Minnesota Department of Transportation analysis system. The first number represents the average daily traffic across the bridge. The second number represents the heavy commercial (truck) portion of the first number.

1992 RIVER BARGE TONNAGE IN THE MNRRA CORRIDOR: 15,422,492 TONS

This tonnage figure includes traffic passing through Lock and Dam #2 at Hastings and the local metropolitan traffic of sand, gravel and petroleum products.

APPENDIX M: FISH AND WILDLIFE OF THE MNRRA CORRIDOR

MAMMALS

Virginia opossum
Masked shrew
Shorttail shrew
Least shrew
Eastern mole
Starnose mole
Little brown bat
Keen's bat
Eastern pipistrel
Big brown bat
Red bat
Hoary bat
Whitetail jack rabbit
Eastern cottontail
Woodchuck
Thirteen-lined ground squirrel
Franklin ground squirrel
Eastern chipmunk
Eastern gray squirrel
Eastern fox squirrel
Plains picket gopher
Beaver
Western harvest mouse
Deer mouse
White-footed mouse
Southern bog lemming
Meadow vole
Prairie vole
Pine vole
Muskrat
Norway rat
House mouse
Meadow jumping mouse
Nutria
Coyote
Red fox
Gray fox
Raccoon
Least weasel
Mink
Badger
Spotted skunk
Striped skunk
River otter
Lynx
Bobcat
White-tailed deer

Additional Recent Species

Moose
Black bear
Longtailed weasel
Porcupine
Snowshoe hare

BIRDS

Loon
Red-throated loon
Holboell's grebe
Horned grebe
Eared grebe
Pied-billed grebe
White pelican
Double-crested cormorant
Great blue heron
American egret
Green heron
Blue-crested night heron
American bittern
Tundra swan
Canada goose
White-fronted goose
Snow-blue goose
Black duck
Mallard
Gadwall
Baldpate
American pintail
Green-winged teal
Blue-winged teal
Cinnamon teal
Shoveler
Wood duck
Red head
Ring-necked duck
Canvasback
Lesser scaup duck
Greater scaup duck
Golden-eye
Barrow's golden eye
Bufflehead
Old squaw
White-winged scoter
Surf scoter
Cooper's hawk
Red-tailed hawk
Red-shouldered hawk
Broad-winged hawk
Rough-legged hawk
Ferruginous rough-leg
Golden eagle
Bald eagle
Marsh hawk
Osprey
Gyrfalcon
Duck hawk
Pigeon hawk
Sparrow hawk
Ruffed grouse
Prairie chicken
Sharp-tailed grouse
European partridge
Ring-necked pheasant
Bobwhite
Sandhill crane
King rail
Virginia rail
Sora
Yellow rail
Florida gallinule
Coot
Piping plover
Semipalmated plover
Killdeer
Golden plover
Black-bellied plover
Ruddy turnstone
Woodcock
Wilson's snipe
Upland plover
Spotted sandpiper
Solitary sandpiper
Western willet
American scoter
Ruddy duck
Hooded merganser
American merganser
Redbreasted merganser
Turkey vulture
Swallowtailed kite
Goshawk
Sharp-shinned hawk
Stilt sandpiper
Semipalmated sandpiper
Buff-breasted sandpiper
Marbled godwit

Hudsonian godwit
Sanderling
Avocet
Wilson's phalarope
Northern phalarope
Herring gull
Ring-billed gull
Franklin's gull
Bonaparte's gull
Forester's tern
Common tern
Least tern
Caspian tern
Black tern
Mourning dove
Rock dove
Yellow-billed cuckoo
Black-billed cuckoo
Screech owl
Great horned owl
Snowy owl
Hawk owl
Barred owl
Great gray owl
Long-eared owl
Short-eared owl
Saw-whet owl
Whippoorwill
Greater yellow-legs
Lesser yellow-legs
Knot
Pectoral sandpiper
Baird's sandpiper
Least sandpiper
Red-backed sandpiper
Dowitcher
Yellow-bellied flycatcher
Alder flycatcher
Least flycatcher
Wood pewee
Olive-sided flycatcher
Horned lark
Tree swallow
Bank swallow
Rough-winged swallow
Barn swallow
Cliff swallow
Purple martin
Canada jay
Clue jay
Magpie
Raven
Crow

Black-capped chickadee
Hudsonian chickadee
Tufted titmouse
Whitebreasted nuthatch
Redbreasted nuthatch
Brown creeper
House wren
Winter wren
Bewick's wren
Carolina wren
Long-billed marsh wren
Short-billed marsh wren
Mockingbird
Cat bird
Brown thrasher
Nighthawk
Chimney swift
Rubythroated hummingbird
Belted kingfisher
Flicker
Pileated woodpecker
Red-bellied woodpecker
Redheaded woodpecker
Yellow-bellied sapsucker
Hairy woodpecker
Downy woodpecker
Arctic 3-toed woodpecker
King bird
Western kingbird
Crested flycatcher
Phoebe
Starling
Bell's vireo
Yellowthroated vireo
Blueheaded vireo
Redeyed vireo
Philadelphia vireo
Warbling vireo
Black and white warbler
Prothonotary warbler
Worm-eating warbler
Golden-winged warbler
Blue-winged warbler
Tennessee warbler
Orange-crowned warbler
Nashville warbler
Parula warbler
Yellow warbler
Magnolia warbler
Camp May warbler
Blackthroated blue warbler
Myrtle warbler
Audubon's warbler

Blackthroated green warbler
Robin
Wood thrush
Hermit thrush
Olive-backed thrush
Gray-cheeked thrush
Veery
Bluebird
Townsend's solitaire
Blue-gray gnatcatcher
Golden-crowned kinglet
Ruby-crowned kinglet
American pipit
Bohemian waxwing
Cedar waxwing
Northern shrike
Migrant shrike
Baltimore oriole
Rusty blackbird
Brewer's blackbird
Bronzed grackle
Cowbird
Scarlet tanager
Cardinal
Rosebreasted grosbeak
Indigo bunting
Dickcissel
Evening grosbeak
Purple finch
Pine grosbeak
Hoary redpoll
Redpoll
Pine siskin
Goldfinch
Red crossbill
White-winged crossbill
Towhee
Savannah sparrow
Grasshopper sparrow
Leconte's sparrow
Cerulean warbler
Blackburnian warbler
Hooded warbler
Chestnut-sided warbler
Bay-breasted warbler
Blackpoll warbler
Pine warbler
Palm warbler
Ovenbird
Northern water-thrush
Louisiana water-thrush
Connecticut warbler
Mourning warbler

Yellowthroat
Yellowbreasted chat
Wilson's warbler
Canada warbler
Redstart
English sparrow
Bobolink
Eastern meadowlark
Western meadowlark
Yellow-headed blackbird
Orchard oriole
Henslow's sparrow
Nelson's sparrow
Vesper sparrow
Lark sparrow
Slate-colored junco
Oregon junco
Tree sparrow
Chipping sparrow
Clay-colored sparrow
Field sparrow
Harris' sparrow
White-crowned sparrow
White-throated sparrow
Fox sparrow
Lincoln's sparrow
Swamp sparrow
Song sparrow
Lapland longspur
Snow bunting
Western grebe
Yellow night heron
Western tanager
Red-winged blackbird

FISH

Blue sucker
Northern hog sucker
Smallmouth buffalo
Bigmouth buffalo
Black buffalo
Spotted sucker
Silver redhorse
River redhorse
Golden redhorse
Shorthead redhorse
Greater redhorse
White catfish
Blue catfish
Black bullhead
Yellow bullhead
Brown bullhead
Channel catfish
Stonecat
Tadpole madtorn
Freckled madtorn
Flathead catfish
Pirate perch
Trout perch
Burbot
Northern Studfish
Blackstripe topminnow
Starhead topminnow
Blackspotted topminnow
Western mosquitofish
Brook silverside
Inland silverside
Brook stickleback
White bass
Yellow bass
Striped bass
Hybrid striped bass
Shadow bass
Rock bass
Flier
Green sunfish
Pumpkinseed
Warmouth
Orangespotted sunfish
Bluegill
Longear sunfish
Redear sunfish
Smallmouth bass
Spotted bass
Largemouth bass
White crappie
Black crappie
Crystal darter
Western sand darter
Mud darter
Rainbow darter
Bluenose darter
Iowa darter
Fantail darter
Johnny darter
Orangethroat darter
Banded darter
Yellow perch
Logperch
Blackside darter
Slenderhead darter
Dusky darter
River Darter
Sauger
Walleye
Freshwater drum
Banded sculpin
Striped mullet
Bull shark
Chestnut lamprey
Silver lamprey
Lake sturgeon
Pallid sturgeon
Shovelnose sturgeon
Paddlefish
Spotted gar
Longnose gar
Shortnose gar
Alligator gar
Bowfin
American eel
Alabama shad
Skipjack herring
Gizzard shad
Threadfin shad
Goldeye
Mooneye
Rainbow smelt
Rainbow trout
Brown trout
Brook trout
Lake trout
Central mudminnow
Grass pickerel
Northern pike
Muskellunge
Central stoneroller
Largescale stoneroller
Common carp
Goldfish
Grass carp
Silverjaw minnow
Western silvery minnow
Brassy minnow
Silvery minnow
Plains minnow
Bighead carp
Speckled chub
Sturgeon chub
Flathead chub
Sicklefin chub
Silver chub
Gravel chub
Hornyhead chub
Golden shiner
Pallad shiner
Pugnose shiner

Emerald shiner
River shiner
Bigeye shiner
Ghost shiner
Striped shiner
Common shiner
Bigmouth shiner
Pugnose minnow
Blacknose shiner
Spottail shiner
Red shiner
Ozark minnow
Rosyface shiner
Silverband shiner
Spotfin shiner
Sand shiner
Weed shiner
Redfin shiner
Blacktail shiner
Mimic shiner
Channel shiner
Suckermouth minnow
Northern redbelly dace
Southern redbelly dace
Bluntnose minnow
Flathead minnow
Bullhead minnow
Creek chub
Pond dace
Blacknose dace
River carpsucker
Quillback
Highfin carpsucker
White sucker

Source: Minnesota Department of Natural Resources

GLOSSARY

Access — a way of approaching, entering, or using an area; river access includes boat ramps and canoe launches.

Adverse effect — an effect that diminishes the values that establish the area's national significance, impairs the structure and functioning of resources and ecosystems, impairs the quality of the visitor experience, or any combination of these.

Alternative — a possible course of action, one of several different ways to achieve an objective or vision (in this document the term is used to describe options to the proposed plan).

Attraction/attractor — Attractors are environments or activities that serve to bring additional tourists to the area. Attractions are environments or activities that are used by local residents and individuals who have come to the region for other reasons (including a desire to see other attractors).

Balance — to weigh by comparing; to estimate the relative weight or importance of different factors or resources and proportion properly the parts or elements in a planning or decision-making process. This does not mean that there are winners and losers in the process; but rather, that all elements are considered before plans are developed or decisions are made.

Barge fleeting area — a parking or staging area for barges awaiting loading, unloading, or transport.

Bluff — a topographic feature such as a hill, cliff, or embankment with steep slopes (exceeding 18%) rising above the river corridor floodplain (see related but different definition for steep slopes).

Bluff Impact Area — a 40-foot-wide area adjacent to the bluff line that is subject to preservation stipulations.

Bluff Preservation Area — includes the bluff face, bluff impact area, and bluff setback area.

Bluff setback area — a 60-foot-wide area that is subject to development limitations. This area in combination with the bluff impact area creates a 100-foot setback for buildings from the bluff line.

Bluff face — that portion of the steep slope exceeding 18% between the river bottomland and the bluff line where development is strongly discouraged (see related but different definition for steep slopes).

Bluff line (top of the bluff) — the transition point between the steep bluff face and more level terrain at the top of a bluff.

Buffer — a method of minimizing the impact of adjacent activities by the use of setbacks, vegetation screening, and other means.

Cluster — locating similar facilities together rather than spreading them out over the landscape. This land planning approach saves open space.

Commercial development (or use) — the creation or placement of buildings or facilities for business purposes, principally for the sale, lease, rental, or trade of products, goods, or services.

Commercial navigation — use of the river for hauling cargo into and out of the area, or between points in the corridor. Most commercial navigation is represented by the barge towing industry.

Comprehensive management plan — a general plan that sets forth a vision, management concepts and policies, and participant roles in the context of regional plans and trends for conservation, land use, recreation, transportation, economic development, and other identified issues.

Cooperating associations — nonprofit organizations formed to assist national parks with the publication and sale of items associated with park areas. Associations often offer donations for park purchases and scholarships for park-related study.

Consistent land use — land use activities that are consistent with the land use concepts and location policies contained in this plan.

Corridor — a long, relatively narrow area that is centered on a linear feature, such as a river. In this document "corridor" is normally used to define that area contained within the Mississippi National River and Recreation Area boundary.

Critical habitat — habitat that is important to the survival of a species.

Critical mass — In this document critical mass is used to describe the grouping together of visitor facilities to achieve a minimum desired level of activity. It is the combination of visitor experience necessary to create a major attraction that provides high-quality interpretive services to the visitor.

Cultural resources — significant for their cultural association and integrity. They include archeological resources, cultural landscapes, historic buildings and structures, museum objects and archival materials, and ethnographic resources. This includes (but is not limited to) historic resources described in the National Historic Preservation Act, which are "any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on the national register, including artifacts, records, and material remains related to such a property or resource."

Design guidelines — recommendations for development of buildings and sites relating to scale, form, materials, color, and texture. They often deal with aesthetic issues and blending new development into the surroundings (see appendix C).

Economic development activities — activities carried out primarily by local governments and chambers of commerce to attract new business and industry to an area to create jobs and increase tax revenues.

Economic resources — include existing facilities, land uses, and activities that benefit the local, regional, national, and international economy, such as (1) residential, commercial, agricultural, and industrial property, equipment, and services, (2) public facilities used for economic purposes such as locks and dams, roads, bridges, municipal water systems, municipal waste water treatment plants, municipal power generating and transmission facilities, boat launching facilities and other infrastructure, (3) jobs and their associated payrolls, and (4) the value of commodity shipments into and out of the area, including the economic value of river navigation services to the local, regional, national, and international economy. This is an interim definition for comprehensive planning purposes only. A more thorough, updated definition would be developed during resource management planning after the comprehensive plan is complete.

Endangered and threatened species — are those plants and animals that are listed by the U.S. Fish and Wildlife Service and offered protection under the Endangered Species Act. There are also state-listed species that are protected under state law.

Environmental education — Activities with organized groups (schools, scouts, community groups, etc.) or seminar participants that are designed to develop understanding, appreciation, and caring for the natural environment.

Floodplain — an area of land adjacent to a water body subject to periodic inundation. The 100-year floodplain is an area where the probability of being inundated is once in a 100 years. The 100-year floodplain is frequently used by federal, state, and local agencies for floodplain management purposes. In this document the floodplain refers to the 100-year event unless otherwise noted.

GIS — geographic information system, a computerized system for storing, analyzing, and displaying geographically oriented data, such as vegetation, topography, roads, historic sites, and land use (see appendix B for a description of the MNRRA GIS database).

Heritage education — Activities with organized groups (schools, scouts, community groups, etc.) or seminar participants that are designed to develop understanding, appreciation and caring for our historic and prehistoric heritage and for the manmade or built environment.

Historic resources — historic resources are defined in the National Historic Preservation Act as "any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on the national register, including artifacts, records, and material remains related to such a property or resource."

Inconsistent land use — land use activities that do not conform with the location concepts and policies contained in this plan.

Industrial development (or use) — the creation or placement of buildings or facilities for the production, manufacture, warehousing, storage, or transfer of goods, products, commodities, or for resource extraction purposes.

Integrate — make into a whole; unify; or join together. All elements of an integrated plan or integrated effort to resolve an issue are analyzed and factored together to make better decisions.

Integrated Pest Management — the coordinated use of pest and environmental information with available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment.

Interpretation — educational activities designed to reveal meanings and relationships through the use of presentations, original objects, by firsthand experience, and by graphic illustrations. Activities or media designed to help people understand, appreciate, and care for the natural and cultural environment. The similarities among interpretation and environmental education and heritage education are far more numerous than the differences. In this plan, interpretation refers to activities and products for the general public. Educational activities and products could be designed with the same objectives but are intended for specific groups and those who sign up for workshops or seminars. Interpretation also deals more with the immediate environment (that which one could see, hear, smell, touch or imagine), while educational activities could take participants farther afield.

Interpretive media — Visual, auditory, and textual products (such as exhibits, films, videos, books, pamphlets) designed to provide interpretation and education.

Law enforcement — The act of ensuring that laws or regulations are followed, including rules for management of visitor use and resource protection.

Location policies — policies that affect where activities should be sited in the landscape. They generally define desirable and undesirable land uses for a given area.

Major land use — a land use that (1) has regionwide significance, (2) would cause significant adverse impacts to the river corridor, or (3) would set a precedent committing land use in the area to significant new directions.

Monitoring — a program established to track the condition of a resource over time or evaluate the effectiveness of implementation of plan elements.

Natural area — an area that visually exhibits primarily nonhuman created qualities, such as an urban forest or wetland. In this case natural does not mean pristine or without any influence by humans.

Natural resources — assets or values related to the natural world, such as plants, animals, water, air, soils, geologic features, fossils, scenic vistas, etc. Natural resources are those elements of the environment not created by humans.

Natural river — a stream of water flowing in a natural channel characterized by a variety of aquatic species (including native fish), adjacent wildlife habitats, wetlands, and floodplains where biophysical systems have not been severely disturbed (or have been substantially restored) by humans.

Nonpoint source pollution — pollution from a broad area resulting from activities such as agriculture (pesticides, fertilizer, etc.) or urban activities (oil, salt, etc.).

Open/enclosed landscape — unimpeded views or spatial enclosure from vegetation and landforms in the landscape.

Open space — includes public and private land that is retained as primarily undeveloped. This could include lands devoted to active or passive recreational use or lands retained for visual or natural resource protection purposes.

Ordinary high water level — a more precise way to designate the shoreline based on seasonal fluctuations in water level. It is defined as the boundary between upland areas and the public waters and wetlands in the state of Minnesota shoreland management program. It is commonly the point where the natural vegetation changes from predominantly aquatic to terrestrial. For watercourses, the ordinary high water level is the elevation of the top of the bank of the channel. For reservoirs and flowages, it is the operating elevation of the normal summer pool.

Oversight — periodic review of a program's effectiveness or the success of plan implementation to determine if objectives are being met. Reviews could take place monthly, quarterly, annually, or even less often based on the need.

Permits — government authorization to proceed with an activity.

Point-source pollution — pollution coming from a single source, such as a sewage treatment plant discharge.

Pollution — that which violates, or is likely to violate, any environmental quality standard, limitation, rule, order, license, or permit of any instrumentality, agency, or political subdivision or that which materially adversely affects or is likely to materially adversely affect the environment.

Purpose — simple statement of the reason that a unit of the national park system was created. These statements are broad goals generally derived from the enabling legislation or legislative history. They are used to guide development of more detailed visions and management plans for an area.

Recreational resources — those elements of the environment that are used by humans for outdoor recreation purposes. They include natural and manmade features such as rivers, lakes, parks, trails, etc.

Residential development (or use) — creation or placement of buildings or facilities for residential (living) purposes.

Resource — something of value to be preserved, protected, and enhanced. The Mississippi National River and Recreation Area act lists nationally significant historical, recreational, scenic, cultural, natural, economic, and scientific resources. It is typical for Congress in establishing a new area to include in the enabling legislation a long list of overlapping resource categories, such as the one found in the MNRRA act. The National Park Service normally defines resources in two broad categories (natural and cultural) for management purposes. This plan includes a third broad management category, economic resources, to ensure that all items listed in the MNRRA act are addressed.

Resource management — the art or manner of treating, directing, or handling resources.

Riverfront area — includes the floodplain or a 300-foot-wide area (whichever is greater) adjacent to the shoreline where certain types of land uses are encouraged — activities that relate to the river, require a river location, or enhance the river corridor. This area is consistent with the state shoreland management zone in the MNRRA corridor.

Riverine system — includes the river channel and all associated wetlands and deepwater habitats (non-upland areas).

Sensitive natural areas — include shorelines, floodplains, wetlands, endangered or threatened species habitat, steep slopes, and bluff lines.

Setback — minimum horizontal distance that buildings, structures, or activities are positioned back from a natural or manmade feature, such as a shoreline, bluff line, road, or property line.

Shoreline — the line marking the edge between a water body and the land, including backwaters attached to the main stream. This would normally be the same as the ordinary high water level along the river.

Shoreline area — a 40-foot-wide area along the shoreline where a natural appearance is encouraged (except in downtown areas and historic districts).

Shoreline setback area — a 60-foot-wide area subject to development restriction that together with the shoreline area creates a 100-foot total setback for buildings in the riverfront area.

Site development policies — those policies that affect a development after it has been located in the landscape. These are normally more detailed than location policies and deal with specific issues such as setbacks. They provide a basis for even more specific design guidelines.

Socioeconomic conditions — combination of social an economic elements of the environment.

Steep slopes — are defined in this plan as slopes over 12% (or more than a 12-foot vertical rise for every 100 feet of horizontal distance) where development is not recommended (see related but different definitions for bluff and bluff face).

Stewardship — care of resources to preserve and protect them for future generations.

Sustainable development (or use) — a shared commitment to orderly economic development and use, along with an understanding and respect for the capabilities and limitations of the environment to support growth and economic activity over time. Sustainability means managing resources in a manner that meets the needs of present generations without compromising the ability of future generations to meet theirs. Sustainable developments do not adversely affect people living elsewhere (near or far) and allow all elements of the community to flourish.

Swimmable and Fishable — a term commonly used to describe a goal contained in the Federal Clean Water Act that specifies ". . . wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish and wildlife, and provides for recreation in and on the water . . ."

Tier 1 — Achieving the first level of MNRRA plan compliance. Under tier 1 the Metropolitan Council and Department of Natural Resources would work with corridor communities to more effectively implemment existing state and regional land use planning and management requirements.

Tier 2 — Achieving the second level of MNRRA plan compliance. Under tier 2, corridor communities would adopt and implement the requirements that exceed existing state and regional land use management requirements and substantially conform to the land use, resource protection, and open space concepts and policies in the MNRRA plan.

Tourism — all activities related to the leisure use of the river corridor by individuals from outside the immediate area.

Urban uses — land uses that have an urban or suburban character, such as commercial areas, industrial facilities, developed parkland, institutional uses, and residential subdivisions (including low-density housing areas), regardless of their location. This includes almost all land uses in the corridor. Exceptions are agricultural lands and vacant parcels.

Variance — an exception made to a land use regulation to accommodate special situations. A variance process is included in most local zoning and subdivision ordinances to ensure that they are reasonable. In Minnesota "variance" is defined by state statute.

Vision — simple statement of agreement indicating what an area should be in the future; delineates broad objectives for the corridor that normally lead to more detailed planning alternatives, concepts, policies, and management strategies, and that generally guide more specific decisions where unusual conditions exist.

Visitor activity zones — areas managed to provide for certain types of recreational activities.

Watershed — the land area that drains into a river.

Wetland — a surface water area classified by the U.S. Fish and Wildlife Service as a wetland. They include swamps, marshes, bogs, river overflows, sloughs, potholes, wet meadows, etc., where the ground is permanently wet or wet during significant periods of the year, providing habitat for water-loving or water-tolerant flora and fauna.

Working river — a river that includes natural and manmade features used for utilitarian purposes. The Mississippi has been extensively used for over 200 years for navigation, municipal and industrial water supply, hydropower, waste disposal, commercial and industrial development, and intermodal transportation connections. The commercial navigation industry is the best example of an activity that defines the Mississippi as a working river.

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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