Management Plan

July 2004

Mississippi Scenic Riverway

Minnesota Department of Natural Resources
Division of Waters

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The Mississippi River between the cities of St. Cloud and Anoka was designated as a State Wild and Scenic River in 1976, under authority of the Minnesota State Wild and Scenic Rivers Act (M.S. 103F.301-103F.345). This legislation directs DNR to conduct studies, develop criteria for classification and designation of rivers, and adopt rules to manage and administer the wild and scenic rivers system. The designation procedure requires a management plan to be prepared for each river within this system.

The Mississippi Scenic Riverway management plan has not been updated since its original publication. This new plan replaces the original 1976 plan. Along with the new scenic riverway management plan is a map atlas that illustrates many different aspects of the riverway corridor. Geographic Information System (GIS) technology was used to produce maps of the riverway, enabling a resource and land use analysis to be conducted graphically as part of the development of this plan.

The DNR used a community-based planning process in developing this plan; its objective was to update the original plan to reflect current needs within the scenic riverway corridor. To implement the concepts in this new management plan, the DNR must update Minnesota Rules Chapter 6105 for wild and scenic rivers. The adoption of new rules and subsequent amendments to local government ordinances will assist in resolving many land use conflicts that are occurring along the corridor due to rapidly developing cities and counties within the scenic riverway district boundaries. The 1976 plan was not designed to address those urban growth and development issues.

One outcome from the community-based planning process is a modified riverway district boundary to better address local development concerns and increase protection of sensitive areas, while making the boundary easier to find in the field. The riverway land use districts will be changed from scenic and recreational to rivertown, rivertown expansion, rural residential, and rural open space. A second outcome of the community-based planning process is increased flexibility given to local units of government within each of these scenic riverway districts to determine lot size and width, and use density to help determine development patterns. A third important outcome is an emphasis on riverway stewardship.

This management plan is considered a guidance document for the vision of the riverway. To implement this vision, Minnesota Rules Chapter 6105 will need to be amended. As is true for many management plans, it will need to be updated periodically as conditions change within the riverway, and the plan becomes outdated. Local zoning ordinance amendments will be needed following an update to the rules. Local ordinance amendments should be based on the new rules, not on this management plan.

Introduction

Located in central Minnesota, the 53-mile stretch of the Mississippi River between the cities of St. Cloud and Anoka drops from 990 feet above sea level to 835 feet, a total of 155 feet, on a gradient of about three feet per mile. Its watershed consists of about 3,700 square miles in 12 counties of north central Minnesota.

As one of the first rivers to be designated under the Minnesota Wild and Scenic Rivers Act of 1973, this segment of the river contains many scenic, historical, and natural amenities. When the river was designated in 1976, the Mississippi Wild and Scenic River Management Plan was developed; in the 25 years since, it has not been formally reviewed or revised. Changes in land use patterns, the effects of development on water quality, scenic features and other resource values, increased understanding of resource management, and experience with outdated land use controls adopted pursuant to the 1976 plan have driven the need for a reassessment and revision of this plan.

The DNR used a community-based planning process beginning in 1998. This process brought state agency representatives, local government officials, landowners, river users, environmental groups, and interested citizens together to participate in meaningful discussions about the river and the adjacent lands and the future, and how best to manage them.

This management plan provides the background, objectives, and framework for reaching the vision that was developed by the citizens who are closest to the resource. It provides a framework for cooperative management of the river, which helps it remain clean, healthy, sustainable, and beneficial to those who love and use the river. To fully implement the vision of this management plan, amendments to Minnesota Rules Chapter 6105 will be needed, followed by local government zoning ordinance updates as well as stewardship efforts by those closest to the river.

(Note: while three maps are included in this plan, the expense of reproducing colored maps limited the number of mapped features that could be included here. A number of maps appear in a separate Map Atlas that is referenced several times in the plan. Printing the Map Atlas was limited; copies are available for review in public libraries, DNR offices, and on the DNR Waters website.)

History

The Mississippi River is one of the most commonly known geographic features in the world. This river, whose name in Algonquian, the language spoken by the Ojibwe, translates to "great river" or "gathering of all the waters," has played a prominent role in shaping the history of the United States. The Mississippi has carried a wide variety of people and goods over time: from Native American Indians and fur traders; to rafts and boats of the early homesteaders; to logs and log rafts during the lumber era; to paddle-wheeled steamboats providing goods and services to the towns along the river; to canoes and powerboats of today filled with anglers and other recreationists. This natural heritage is one of the greatest attributes of the Mississippi River as it serves as a type of flowing history lesson.

Original Vegetation

The best information we have about vegetation in the Mississippi River corridor prior to the Euro-American settlement is that collected by the original land survey in the middle 1800s. The vegetation at that time consisted of a variety of plant communities, determined by studying and interpreting the surveyors' notes (Marschner 1974) and by examining topography, soils, and present-day vegetation.

The river floodplain supported floodplain forest, with American elm, green ash, cottonwood, boxelder, silver maple, willow, aspen, and hackberry making up the woody component.

On sandy and gravelly terraces and slopes above the river, a mix of oak woodland-brushland, oak savanna, and prairie occurred. Oaks often had a gnarly, open-grown form, and occurred sparsely or in scattered groves. Brush and thickets were common. Prairie vegetation occurred on steep south-facing slopes and areas that burned frequently.

Upland forests in the corridor varied widely. South of the river, the northern edge of the "Big Woods" adjoins the corridor. Here, a mix of elm, basswood, sugar maple, and oaks dominated the canopy. North of the river, on the southern edge of the Anoka Sand Plain landscape, oak and aspen-oak forest were more common.

First Inhabitants

The Mississippi River had been inhabited by Native American Indians long before the first Europeans arrived. Due to the river's great importance as a transportation network, the Mississippi enabled an almost constant movement of people and goods, and as a result, witnessed a large number of conflicts among Indian nations.

The Dakota nations occupied much of the area when the first white explorers and fur traders arrived in the 1600s. The Dakota were primarily woodland dwellers, with limited forms of agriculture, mainly tobacco and corn.

European Exploration for the Source of the Mississippi

Throughout the early 17th century, fur trappers and traders occupied this area, trapping and trading for beaver, mink, and other plentiful animals. In addition to the early trappers and traders, a number of explorers traveled through the area, writing records of their travels. One of the first white explorers on the river was Father Louis Hennepin. Hennepin and two of his companions were captured by the Dakota near Lake Pepin in 1680 and taken up the Mississippi River to the Rum River and north to one of their villages on Mille Lacs Lake. Father Hennepin was later released and returned to France, publishing his adventures in 1683.

In 1787, Jonathan Carver explored the Mississippi as far upstream as Elk River. He is credited with being the first to use the spelling "Mississippi". Carver was particularly impressed by the surrounding country and the abundance of wildlife.

After the Louisiana Purchase in 1803, Thomas Jefferson set out an ambitious plan to map the unexplored regions of this new country. As the Lewis and Clark expedition left for the northwest, a young soldier named Zebulon Pike was leaving on a military mission to explore the Upper Mississippi. Pike and his men left St. Louis in August 1805, bound to find the source of the Mississippi River. While Pike was unsuccessful in achieving this final goal, he did substantially increase the knowledge of geology, wildlife, people, and general characteristics of the region.

The well-educated aristocrat J.C. Beltrami traveled through the area in 1823, returning from a trip further north. Beltrami wrote about the scenic beauty of the area that he saw, becoming particularly fascinated with the Clearwater River and Thousand Islands areas. Beltrami believed that he had found the source of the Mississippi River (Lake Julia in Beltrami County). In 1832, Henry Schoolcraft identified and named Lake Itasca, now recognized as the source of the Mississippi.

With Schoolcraft's "discovery" of Lake Itasca in 1832, the age of exploration on the Upper Mississippi River was essentially complete. Resource exploitation and European settlement on the river were just beginning, however.

Early Commerce

Fur traders in the region were originally French, then British and finally American as control of the region changed. While each established trading posts in turn, the posts were short-lived - most were occupied for only a year or two. While some were located in the northern portions of the Mississippi and others were downstream (including at the mouth of the Rum River in Anoka), there is little record of early fur-trade settlement in the river segment

between St. Cloud and Anoka.

A treaty with the Ojibwe in 1837 opened the land east of the Mississippi for logging and other development by European settlers. Additional treaties with the Dakota and Ojibwe in 1851 opened the west side of the river for European settlement. For most of the rest of the 19th Century, logging drove the economic development of the region.

Vast areas of white pine and hardwoods from surrounding forests and those further north were logged and either floated downstream or processed at sawmills spread along the river. Principal sawmills within the study area were in the new towns of St. Cloud, Anoka, Clearwater, Elk River, and Champlin. In 1874, almost 30 million board feet of timber was sawn along this stretch of the Mississippi. Rafts of logs and the steamboats pushing them down the river were very common sights along the river. The steamboats transported timber downstream to the mills and transport settlers upstream on the return trip.

As forested areas were cleared, settlers arrived to begin farming the region. In addition to sawmills, flour mills were also present along this stretch of the Mississippi, with several in operation before and during the 1880s. These included mills near the mouths of St. Augusta and Otter creeks, the Clearwater, Elk, Crow, and Rum rivers, and at the Sauk Rapids near St. Cloud.

Settlement of the Area

With the increase of industry along the river, many areas became settled by families and immigrants, with agriculture soon becoming the dominant land use. Many towns grew up alongside the Mississippi to serve as transport routes for this movement of people and goods. The Red River Ox-Cart Trail paralleled the river on the east, connecting St. Paul and Sauk Rapids to settlements further west and north, such as Fargo and Winnipeg. By the 1850s, this route was used by 500-600 carts per year, until its transformation into a territorial/government road between St. Paul and Fort Ripley was completed in 1855. The present U.S. Highway 10 roughly parallels the route of this earlier road.

In 1850, regular steamboat trips began between St. Anthony Falls and St. Cloud, carrying passengers and freight upstream, and wheat downstream. This continued until the 1860s when the dam at Sauk Rapids and the completion of a railroad line between St. Paul and St. Cloud virtually eliminated this run. Although U.S. Army Corps of Engineers attempted to improve navigation, constructing small dams, removing obstacles, and dredging a channel; travel remained very difficult. In 1879, all efforts to maintain navigation by the Corps were eliminated.

One of the first homesteads along this portion of the river was started by Oliver H. Kelley, who staked his claim at the townsite of Itasca, between Elk River and Anoka. Kelley developed many innovative methods for improving agriculture, helping to further agricultural success in the area. Kelley's agricultural improvements and the railroad line on the east

side of the river helped to expand agriculture and increase the population in the area. It allowed for the movement of people, goods, and farm commodities between Minneapolis/St. Paul and northern regions of Minnesota.

Today, St. Cloud is a sprawling urban area of 165,000 people linked to the Minneapolis-St. Paul area by Interstate 94 on the west side of the river and Highway 10 on the east side. The highways provide easy access for commuters, and suburban development northwest from Anoka and southeast from St. Cloud has blurred the boundaries of what once were two separate urban areas.

Designation of the Mississippi River

America's first effort to protect natural, free-flowing rivers was the National Wild and Scenic Rivers Act of 1968. This federal law established the National Wild and Scenic Rivers System, designated eight rivers as initial components of the system and identified others for study as potential additions to the national system. In January 1975 an amendment to the 1968 act identified a number of rivers for study, including the Upper Mississippi River between Lake Itasca and Anoka.

The federal study was to determine the suitability of the Upper Mississippi for federal designation and, if it was to be included in the national system, provide recommendations and guidelines pertaining to the administration and management of the river and its environment. The study was conducted by the federal Bureau of Outdoor Recreation, with involvement by a number of other federal agencies, the Minnesota Department of Natural Resources and Northern States Power Company. Citizen involvement was also encouraged in the planning and decision-making process. Five public meetings were held in December 1975 to present study findings and gain public comment on the various river preservation alternatives and concepts proposed, which resulted in additional information for the federal study and was a determining factor in whether to federally designate the river.

In 1973, the Minnesota Legislature passed the State Wild and Scenic Rivers Act to preserve and protect rivers that were viewed as possessing outstanding scenic, recreational, natural, historical, scientific and similar values. In 1976, the 53-mile stretch of the Mississippi River from St. Cloud to Anoka was deemed best suited for protection under the authority of the State Wild and Scenic Rivers Act by the DNR Commissioner. The following resource values were reviewed and determined to be the principal resources for inclusion of this stretch of river into the State Wild and Scenic Rivers system:

- **Historic Values**: The corridor contains many sites that are important to the state's exploration, settlement, and development history.
- **Scenic Values**: The wooded islands, bluffs, and shoreline contain many areas of outstanding scenic value.
- **Recreational Values**: The corridor provides excellent fishing, canoeing, and boating

opportunities.

- **Natural/Scientific Values**: The corridor contains areas of native vegetation, rare plant species, and abundant wildlife.

The federal Bureau of Outdoor Recreation study concluded that state administration was most appropriate for this 53-mile stretch of river, finding that federal control was unnecessary due to the very similar state management program already in place. Although this section of river was eligible for inclusion in the National Wild and Scenic Rivers System as a state-administered segment, the state didn't seek the federal designation due to a high level of controversy at that time.

The river stretch from Lake Itasca to St. Cloud, however, was not designated for any state control. It was therefore recommended for Congressional designation as a federally administered component of the National Wild and Scenic Rivers System. A preliminary draft plan was completed by the Bureau of Outdoor Recreation in May 1977. While a subsequent National Park Service study was being conducted, a joint powers agreement was signed by eight counties along the stretch of the Upper Mississippi above St. Cloud, organizing the Mississippi Headwaters Board (M.S. 103F.361). Proposed federal designation was not considered further by Congress. Between the state designation downstream of St. Cloud and the multi-county designation further upriver, a 28-mile reach of river in Benton and Stearns Counties has no special designation or protection.

Minnesota's Wild, Scenic, and Recreational Rivers Program

The purpose of the State Wild and Scenic Rivers Act (M.S. 103F.301) is to preserve and protect the outstanding scenic, recreational, natural, historical, and scientific values of certain Minnesota rivers and their adjacent lands. The Act's intent is not to restore presettlement conditions, but rather to prevent damage to these rivers caused by intensive development and recreational overuse.

By law, the extent of lands covered by the program is a maximum of 320 acres per river mile on both sides of the river combined. All state, local, and special governmental units (councils, commissions, boards, districts, agencies, etc.), and all other authorities must exercise their powers so as to further the purpose of the Act and management plans adopted thereunder. In the case of conflict between a provision of the Minnesota Wild and Scenic Rivers Act and other state laws or existing ordinances, the more protective provision applies.

Eligibility and Classification

To be eligible for inclusion, the river or segment of river and its adjacent lands must possess outstanding scenic, recreational, natural, historical, scientific, or similar values. The river shall be classified into one of three classes: wild, scenic, or recreational (based upon development patterns at the time of designation), with each river managed

to preserve and protect the values that qualify it for the program. The classifications are defined in M.S. 103F.311. The designated stretch of the Upper Mississippi River (St. Cloud to Anoka is divided into two classifications: scenic and recreational. The river is classified as "scenic" between St. Cloud and the Highway 24 bridge at Clearwater, and as "recreational" downstream of that point. Classifications are based on the amount of development at the time of designation and do not necessarily reflect management goals, other than a broad goal to ensure that development does not cause a river segment to degrade from one classification to another.

This plan does not use these classifications for development of land use districts. Instead, a series of four land use districts are proposed as described in the section titled "Riverway Landscape Character."

Scenic rivers are those that exist in a free-flowing state with largely undeveloped adjacent lands. The stretch of the Mississippi River between St. Cloud (10th Street/Michigan Avenue bridge) and the Highway 24 bridge at Clearwater is classified as scenic. "Largely undeveloped" means that the river contains an overall natural character. Agricultural, residential, and other land use development has been permitted, though at a smaller scale compared to recreational rivers.

Recreational rivers are rivers that may have undergone some impoundment or diversion in the past, along with adjacent lands that are considerably developed for a full range of agricultural and other land uses. Recreational rivers may also be readily accessible by preexisting roads or railroads. The portion of the Upper Mississippi and adjacent lands contained within this recreational designation are from the Highway 24 bridge at Clearwater to the northwest boundaries of the cities of Anoka and Champlin.

State River Management Plans

By law, the DNR must develop a management plan for each river included in the state wild and scenic rivers program that emphasizes the rivers' scenic, recreational, natural, historic, and similar values, while not placing unreasonable restrictions upon compatible, preexisting, economic uses of particular tracts of land.

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Land Use and Local Government

In order to preserve and protect designated rivers and adjacent lands, land use ordinances must be adopted and enforced by local governments. M.S. 103F.335 requires each local government unit with jurisdiction over a portion of the Wild and Scenic Mississippi River to adopt or amend their local zoning ordinances and land use district maps to the extent necessary in order to comply with the standards and criteria of the management plan. The ordinance must be adopted or amended within six months after the effective date of state rules or rule amendments. DNR staff will provide technical assistance to local governments in implementing the new rules by reviewing ordinance amendments and providing suggestions to local governments on projects as requested. Local governments will be responsible for enforcing their ordinances.

Mississippi River Critical Area

Through executive order of the governor as authorized by the Minnesota Critical Areas Act, a portion of the Mississippi River was designated as a state critical area in 1976 and later made permanent by the Metropolitan Council. Executive Order 79-19 establishes standards and guidelines that must be followed by local governments when preparing plans and regulations that affect lands within the designated critical area, and in implementing those regulations. State and regional agencies must take actions and manage their land consistent with the order. This designation covers 72 miles of the Mississippi and overlaps with the Mississippi Scenic Riverway designation in the cities of Dayton and Ramsey. The landward boundaries of the Mississippi Critical Area and the Mississippi Scenic Riverway are nearly identical and this plan proposes they become identical.

Perceived Threats to the River Corridor in 1975-1976

Development

Situated between the two growing population centers of St. Cloud and the Twin Cities, development pressure posed a serious threat to the scenic qualities and natural resource base of the river, including unique plant and animal habitat. Residential development on small lots in rural areas introduced land clearing, and was leading to forest and grassland fragmentation. Tree cutting for roads, building sites, driveways, lawns, and unobstructed views of the river and placement of homes and accessory buildings were considered potentially harmful to the scenic qualities of the river corridor. While the threat seemed insignificant on an individual basis, the potential cumulative effects of this type of development throughout the river corridor posed concerns over losses of plant and animal species as well as reducing the overall scenic quality of the river.

In 1975, the draft management plan stated that “residential or industrial development is negligible, but growing–in the 30 river miles between St. Cloud and Monticello”. (By 2000, the population of the entire corridor had grown rapidly and it was viewed as one of the

fastest growing areas in the state.) The 1975 report stated that there was much greater evidence of man-made changes to the landscape on the stretch between Clearwater and Anoka, particularly an increased number of houses located within sight of the river, lawns and clearcut areas, and bank erosion and stabilization techniques used to help support the riverbank.

Public River Use

In the 1970s, public use of the river was predicted to become a potential problem in the near future, due to the river's proximity to the expanding St. Cloud and Twin Cities metropolitan areas and a greater number of people wanting to use the river. Designating the river provided for regulation of public use "where necessary to insure that the use does not adversely affect the values for which the river qualified for designation." The Mississippi River between St. Cloud and Anoka is also a designated Canoe and Boating Route, which encourages public use of the river through the construction of public water accesses, campsites and rest areas. The two programs need to be balanced so that people can enjoy the river, while preserving its scenic and other values.

River Crossings

Railroad, transmission line, roadway, and pipeline crossings and associated impacts were recognized as detrimental to the scenic quality of the river corridor. Better methods to assure appropriate development of such ancillary services was necessary.

Current Conditions

The Mississippi River corridor between St. Cloud and Anoka is a unique scenic area in Minnesota, with approximately 70 percent of the river corridor wooded, including numerous heavily wooded islands. The floodplain and bluffs (some of which are over 100 feet high) include remnants of the original prairie and oak savannah plant communities. The contrasts provided by the proximity of these two landscapes provides for a diversity of plant and animal species, as well as unique and varied landscape experiences and valuable residential building sites.

From St. Cloud to Clearwater, the river retains a very natural appearance, with much of the shoreline wooded or used for agricultural purposes. In some areas, the banks are high, limiting sight lines to the immediate river corridor; while in other areas the riverbanks consist of low wetland areas.

Currently, residential development is fairly common throughout the river corridor. Development is most dense in and adjoining the built-up urban centers of the river cities and smaller towns. The rural areas of the river corridor have been largely divided into development lots of 20 acres or less.

The largest undeveloped area is on land owned by Xcel Energy (formerly Northern States Power Company), which buffers two major power plants in the river corridor. Other undeveloped parcels, 40 or more acres in size, are scattered along the river corridor and are generally part of active farming operations.

Population Trends

Residential and commercial development within the Mississippi River corridor is among the fastest growing in the state. This rapid development is expected to continue in the future, with most of the growth centered in townships along the Mississippi River. Based on current trends from the State Demographer's Office, most of the townships along this corridor are expected to increase 50 percent or more in population by the year 2020, with some larger communities such as Clearwater, Becker, and Monticello more than doubling. By 2020, Becker is expected to have a 402 percent population increase, while Elk River is projected to increase by 232 percent over 1990 levels. It is also expected that Sherburne County's population will more than double its 1990 levels by 2020, with Anoka and Wright counties predicted to experience an increase in their populations of more than 50 percent. The development pressures resulting from this population growth are significant, with destruction, degradation, and fragmentation of natural terrestrial habitats a major concern. The DNR believes habitat destruction is the most significant cause of species loss today. Future population pressures are likely to continue to threaten habitat. The percent change, as shown in Table 1 below, is the increase in population estimated between 1970 and 2000, and between 2000 and 2020. This percentage helps to underscore potential future impacts to the natural resources of the Scenic Riverway corridor.

Table 1: Population Estimates for Counties in the Corridor Study Area

County	1970	2000	% Change		2000	2020	%Change
Anoka	154,712	298,084	93%		298,084	370,530	24%
Hennepin	960,080	1,116,200	16%		1,116,200	1,103,090	-1%
Sherburne	18,344	64,417	251%		64,417	91,620	42%
Stearns	95,400	133,166	40%		133,166	144,050	8%
Wright	38,933	89,986	131%		89,986	105,550	17%
Minnesota	3,806,103	4,919,479	29%		4,919,479	5,243,620	7%

Source: United States Census Bureau

Development Issues

Rapid population growth means significant residential development will continue to occur in the region, including the river corridor. The local land use regulations based on the 1976 management plan are constraining orderly growth by municipalities and require lot sizes too large to justify expansion of municipal sewer and water services.

The current river corridor boundary was established following existing government section and lot lines, but with section and lot lines oriented north-south or east-west and a river that runs northwest to southeast, the boundary varies from 42 feet from the river's edge to over 3,000 feet. This jagged boundary creates inequitable zoning between properties and adds to confusion about the regulations governing proposed development near the river.

Community Land Use Conflicts within the Riverway

Several of the townships, municipalities, and counties identified issues or concerns over the practicality of administering the current management plan and related zoning standards. These issues/concerns are described in the following table:

Table 2: Community Land Use Conflicts

Name of Community	Issue(s)/Concern(s)	Status
Dayton	Bridge crossing	Unresolved
	Make river more publicly accessible	Not intended to be addressed by plan
	Riverway boundary	Plan proposes resolution
	Minimum lot size	Plan proposes resolution
	Building standards	Plan proposes resolution
	Hunting regulations	Not intended to be addressed by plan
	Bank erosion/bluff protection	Plan proposes resolution
Ramsey	Bridge crossing	Unresolved
	Make river more publicly accessible	Not intended to be addressed by plan
	Riverway boundary	Plan proposes resolution
	Minimum lot size	Plan proposes resolution
	Building standards	Plan proposes resolution
	Bank erosion/bluff protection	Plan proposes resolution
	Land uses within district	Plan proposes resolution
Elk River	Minimum lot size	Plan proposes resolution
	Downtown businesses	Plan proposes resolution
	Riverway boundary	Plan proposes resolution
Monticello	Land use within district	Plan proposes resolution
	Lack of training	Ongoing from DNR staff
	Tributary setbacks	Plan proposes resolution
Otsego	Riverway boundary	Plan proposes resolution
	Land use within district	Plan proposes resolution
St. Cloud	Riverway boundary	Unresolved
	Make river more publicly accessible	Not intended to be addressed by plan
	Minimum lot size	Plan proposes resolution

During the planning process, the DNR worked with a Data and Technical Committee, consisting of representatives from the local governments within the scenic riverway. This committee recommended changes to the boundary and the land use districts based on their issues with administration of the program. This resulted in proposed boundary changes and four new land use districts. The Rivertown, Rivertown expansion, Rural residential, and Rural open space districts will allow local governments more flexibility to plan, develop, and grow as needed in their communities, but still maintain and protect the outstanding values of the scenic riverway. These proposed changes, developed in partnership between the DNR and the Data and Technical Committee, address many of the concerns each of the communities had with the Wild and Scenic Rivers Program.

DNR staff have sought to address these issues within the scope of the existing law, rules and management plan. Some of the issues have been resolved or eliminated; however, a sizable number remained and are addressed by this plan.

During the period of implementation of the first management plan, local governments successfully adopted the zoning provisions of the Wild and Scenic Rivers program. Although development activity in the river communities has been high, the location and construction of new homes along the river has been consistent with the 1976 management plan standards.

Local Comprehensive Plans and Ordinances

Several counties and cities (as well as Xcel Energy) located within the river corridor have prepared comprehensive land use plans. The townships, cities, and counties have ordinances in place to uphold the land use standards established in the 1976 plan. These local plans and ordinances help manage land use along the Mississippi River, but each plan reflects a different vision for that community.

All local units of government are required to adopt ordinances that are at least as restrictive as state rules, but some communities decide to be more restrictive with their ordinances. For example, Sherburne, Stearns, and Wright counties have all adopted at least the minimum land use standards required within the riverway boundary. Stearns County, however, has made building height more restrictive than state rules by limiting building heights to a maximum of 30 feet, below the 35-foot limit in state rules. Other communities use a combination of the state wild and scenic rules and the state shoreland rules as their basis for zoning within the riverway corridor.

The riverway rules establish minimum lot sizes for each land use district. Many counties now have zoning ordinances designed to preserve agricultural landscapes that are far more restrictive than riverway zoning by designating large acreage minimums in agricultural zoning, such as 20 or 40 acres.

Transportation Issues

Rapid development in the Mississippi River corridor has increased traffic on area roadways and driven interest in highway improvements and commuting alternatives. Growth in the St. Cloud area has generated a proposal for a new bridge crossing of the river in the southeastern portion of that community. Growth in the northwestern suburbs of Minneapolis has produced a proposal for a new bridge in the Dayton/Ramsey area. Between the two, MnDOT sees a need for a high-speed connector between I-94 and Highway 10 to benefit traffic flow. These new bridge proposals are being discussed, and a commuter rail proposal may increase interest in moving automobile traffic from the west side of the river to rail stations on the east side.

Proposed Northstar Commuter Rail Service

The Northstar Corridor Development Authority (NCDA) and the Minnesota Department of Transportation are working together to research the feasibility of commuter rail service to connect St. Cloud to downtown Minneapolis. This rail plan would run along existing Burlington Northern Santa Fe (BNSF) railroad tracks on the east side of the river, which run generally between the river and Highway 10.

Initial estimates for the NCDA call for eight round trips per day, Monday through Friday, with an estimated 9,300 rider trips per day and annual ridership of nearly 2,700,900 by the year 2005, increasing to 10,700 riders per day and 3,210,000 riders annually by 2020. Potential station locations include St. Cloud, Clear Lake, Becker, Big Lake, Elk River, Ramsey and Anoka.

This expansion of rail traffic along the Mississippi River corridor would increase track maintenance and other disturbances caused by rail operations. This could have adverse effects on the variety of animal species present, including the Blanding's turtle and the loggerhead shrike, by disrupting nesting patterns. The expansion would also increase noise levels in some areas. There is also concern that traffic from residential developments west of the river would increase congestion on existing bridge crossings, increasing pressure for additional bridges.

Proposed Bridges

Three different projects are in the early stages of planning: one in the southeast part of the St. Cloud area, one between Dayton and Ramsey, and a third regional connection between Interstate 94 and Highway 10. The Federal Highway Administration has asked MnDOT to prepare a cumulative impacts analysis of the three projects and their potential impact on the Mississippi Scenic Riverway.

Interstate 94-Highway 10 Regional Connection

Rapid regional growth and increasing traffic between the Twin Cities and the Brainerd lakes area is reflected in the rapid increase in weekday traffic volume using the highway crossings in Clearwater and Monticello. The average daily traffic on Highway 24 in Clearwater has grown from 3,900 vehicles per day in 1980 to 13,200 in 2000. Similar growth on Highway 25 in Monticello is evident as traffic has increased from 8,300 vehicles per day in 1980 to 23,800 vehicles per day in 2000. Highway 101 at Elk River has also experienced similar increases with daily traffic flow of nearly 40,300 in 1999 compared to 7,500 vehicles per day in 1980.

Significant pressure is placed on the existing river crossings by traffic traveling to and from the recreational areas in central Minnesota and the Twin Cities. During peak recreational periods (such as Friday evenings in summer), traffic can be stopped on westbound I-94 at the Trunk Highway 24 exit near Clearwater.

One of the primary regional transportation issues is where to locate a new, high capacity roadway and Mississippi River bridge to connect Interstate 94 and Highway 10. A number of alternative connections have been identified and discussed in past planning studies conducted by the Minnesota Department of Transportation (MnDOT). Several potential crossing locations were examined:

- Alternative A: East of St. Cloud, Interstate 94 would be intersected approximately 4.5 miles northwest of the Highway 24 interchange, with the connection running northeast across the river, intersecting with Highway 10 near its intersection with Sherburne County Road 3.

- Alternative B: The current Highway 24 bridge through Clearwater could be widened.

- Alternative C: An additional connection could be constructed approximately 2.5 miles downstream from the existing Highway 24 bridge at Clearwater.

- Alternative D: An additional connection could be constructed west of Becker.

Alternative C has been chosen as MnDOT's preferred alternative and is currently moving through the Environmental Impact Statement process. Bridge construction is likely to occur sometime after 2017.

St. Cloud Bridge Locations

The St. Cloud Urban Area Master Plan (January 2000) promotes two separate bridges across the Mississippi Scenic Riverway. One of them, southeast of the city, is the northwest-most alternative considered by MnDOT for the regional connection described above. The other, located in southern St. Cloud, is approximately aligned with 33rd Street and is intended to serve local, east-west traffic movements. This is a key element in

connecting the growth areas planned for the southwestern and southeastern portions of the St. Cloud urban area. In 2001, the St. Cloud Area Planning Organization developed a series of alternatives north and south of 33rd Street and began preliminary scoping for preparation of an Environmental Impact Statement. Construction is not anticipated until after 2010.

Dayton-Ramsey Bridge Location

The cities of Ramsey and Dayton initially proposed separate sites for a Mississippi River crossing, one at the Mississippi West Regional Park and the second approximately one mile further west. In 2001, MnDOT began a preliminary scoping process for preparation of an Environmental Impact Statement for a crossing in this general area. Construction is not anticipated for at least 15 years. The new bridge would connect Highway 10/169 in Ramsey to Interstate 94 in Maple Grove.

Significance of Bridges Over Wild and Scenic Rivers

While statewide wild and scenic river rules allow the construction of new river crossings, the rules establish stringent requirements for new crossings. New crossings of a river corridor have the potential to be disruptive to scenic, natural, and recreational values. Despite obvious visual impacts (which can only be reduced by locating a structure in the same corridor as an existing bridge), new river crossings also produce noise impacts that can extend significant distances up- and downstream. They also tend, unless properly designed, to introduce evening light sources and to diminish air and water quality. The existing rules prohibit new bridges across wild and scenic rivers unless transportation agencies can document need. If needed, new bridges must be in existing bridge corridors unless there is no feasible alternative to a new corridor. Then the bridge's impacts must be avoided (where possible), minimized and mitigated. DNR is working closely with transportation agencies to evaluate the need for proposed bridges, their alternative locations, impacts (including the cumulative impacts of multiple proposals), and opportunities to avoid, minimize and mitigate impacts. The significant negative impacts of bridges in the area designated "scenic" (upstream of Clearwater) have also been documented.

Scenic Resources

The river corridor contains outstanding scenic values. The riverine environment, with its channels, islands and occasional riffles, provides a scenic setting of significant value. Its wooded banks and bluffs, occasional wetland areas and undeveloped floodplains greatly enhance the scenic character of the river environment. The Beaver Islands (Thousand Islands) and Grand Island areas are of especially high scenic quality. These scenic characteristics are described in more detail in the Natural Resources section of this document.

Recreational Resources

Outstanding recreational values are found throughout the river corridor. The entire corridor has exceptional value for canoeing. The corridor's proximity to large populations, the natural setting and relatively easy access make it a very appealing canoe destination. Small boat use is popular in some areas. Much of the corridor is popular for angling, especially the river's renowned smallmouth bass fishery and the corridor has significant values for birdwatchers. Developed recreation areas provide opportunities for picnicking and other passive recreational activities.

When the river was designated in the 1970s there was concern that intense recreational use would follow population growth in the area and would lead to resource degradation. Recreational use does not appear to have increased at the rate anticipated at that time, although the lack of research leaves river managers with very little information about user populations, resource conditions or conflicts among user groups. There is potential for conflict between Off-highway vehicle (OHV) users and other forms of recreational use. There is also potential for conflict between personal watercraft users and other forms of water-based recreational use. Because the river is quite shallow through most of the designated reach, motorboats tend to be quite small and slow-moving, mostly focused on angling, and appear to present little conflict for canoeists.

There are a number of designated recreation areas along this stretch of the Mississippi River in both state and municipal ownership. These parks contribute greatly to the overall recreational use of the river by providing recreational facilities and public access points to the river. In addition to enhancing public enjoyment and recreation, these areas also act as green corridors, allowing for the flow of animal species between parcels. Following is a list of some of these parks and recreation areas located within the scenic riverway corridor.

Parks and Recreation Areas

St. Cloud Area
- Riverside Park
- Talahi Area
- Beaver Islands Trail Park

Clearwater Area
- Clearwater County Park
- Pudelko Park
- Municipal Park
- Clear Lake SNA

Monticello Area
- Montissippi County Park
- Monticello Municipal Park
- Ellison Park

Otsego Area
- Otsego County Park

Elk River Area
- Kelly Farm Homestead
- Mississippi River Islands SNA

Dayton Area
- Wayside Park
- Hanvik Park
- Mississippi West Park
- Ramsey City Park
- Wildwood Springs Park

Becker Area
- Snuffie's Landing City Park

Public Water Access Points

St. Cloud Area
- Mississippi River Public Water Access (Beaver Island Landing)- St. Cloud

Clearwater Area
- Mississippi River Public Water Access- Hwy 24

Becker Area
- Mississippi River Public Water Access- Snuffies Landing

Monticello Area
- Mississippi River Public Water Access/fishing pier- Montissippi Co. Park
- Mississippi River Public Water Access- Ellison Park

Otsego Area
- Mississippi River Public Water Access- Otsego County Park (carry-in only)
- Mississippi River Public Water Access- City of Otsego

Elk River Area
- Mississippi River Public Water Access- Elk River (in Babcock Memorial Rest Area)

Dayton Area
- Mississippi River Public Water Access (Daytonport Hwy Rest Area) (carry-in)
- Crow/Dayton PWA

Other Recreational Features along the River

St. Cloud Area
- Mississippi River Fishing Pier- St. Cloud
- Putnam's Pasture Canoe Campsite

Clearwater Area
- Boy Scout Canoe Campsite
- Oak Island Canoe Campsite

Monticello Area
- Montissippi County Park Canoe Campsite
- Monticello Bridge Park Campsite
- Dimmick Island Campsite

Natural Resources

The natural resources of the river corridor provide the basis for its outstanding scenic, recreational and scientific appeal. It provides a green corridor for animal movement and bird migration. It contains high quality natural communities, common and uncommon plant and animal species, and an outstanding fishery. The rich natural resource base is described in the following sections.

Vegetation and Special River Features

The vegetation in the Mississippi Scenic Riverway has changed greatly since the Government Land Office surveyors described the landscape in the mid 1850s, along with the landscape of the entire state. The river floodplains have remained relatively intact, as farming and building are difficult in these areas. Upland forests, however, are present today only in relatively small remnants surrounded by farmlands or developed areas. Some larger wooded tracts located beyond the bluff line are found between St. Cloud and Monticello, with acreage around 40 acres or more. Oak woodlands are more common, scattered throughout the length of the river, especially between Monticello and Anoka. Of the original vegetation types, the true *open prairie* has been the most depleted. The vast majority of the prairie areas are now being used for agriculture.

Those areas that are similar to the way they would have looked in the mid 1850s are the natural communities, described below. More detailed descriptions can be found in Minnesota's St. Croix River Valley and Anoka Sandplain: A Guide to Native Habitats (Wovcha et al 1995).

Natural Communities

Natural communities are classified by taking vegetation, topography, hydrology, landforms, and soils into account. (Minnesota Department of Natural Resources 1993). Surveys for high quality natural communities are conducted by the Minnesota County Biological Survey (MCBS) to identify and preserve important natural ecosystems in the state. For natural communities to be mapped by MCBS, they must be relatively high quality and meet minimum size standards. The following natural communities were documented and mapped by the MCBS within the Mississippi Scenic Riverway in recent years:

Dry Oak Savanna (sandgravel subtype)- The principal trees in this community include bur oak and northern pin oak. These are relatively open communities of scattered (10 to 70% canopy cover), short, open-grown oaks, generally widely scattered or occurring in groves. Shrubs can be dense or sparse, with American hazelnut and oak brush predominating. Common herbaceous plants are prairie grasses such as little bluestem and porcupine grass, and forbs adapted to dry conditions such as spiderwort and puccoon.

Floodplain Forest- The tree and shrub species in the floodplain forest vary greatly

depending on the annual cycles of river flooding and the length of time spent inundated by water. For this stretch of the Mississippi River, silver maples dominate the tree canopy, with green ash, cottonwood, and American elm also present, though usually as saplings or seedlings. Hackberry, bur oak, and box elder are also present in this community, with box elder becoming increasingly more common due to human disturbance. Understories are generally occupied by vines and annual forbs such as wood nettle and clearweed.

Oak Forest (Dry Subtype)- This community is present on slopes and sandy uplands in the Mississippi River Valley. Tree canopies are dominated by northern pin oak, bur oak, red oak, and quaking aspen, with black cherry, red maple, and bur oak often present in the subcanopies. Shrubs are often dense, with American hazelnut, gray dogwood, chokecherry, and other species common. Ground layers are composed of a variety of species adapted to shady forest conditions.

Oak Woodland-Brushland- This community contains a canopy generally more open than forest, but more closed than savanna. Oak woodland-brushland was once the dominant community across the Anoka Sandplain, but much of it has either converted to forest in the absence of fire, or been turned into cropland. The dominant trees are open-grown northern pin oak and bur oak, occurring in groves or somewhat scattered. Shrubs are usually dense, with American hazelnut, gray dogwood, and other species. Ground layers are a mix of species adapted to sunny conditions and those adapted to shady conditions.

Dry Prairie (Sand-GravelSubtype)- Steep slopes and upland river terraces support several small dry prairie remnants. Once common on river terraces where fire was frequent prior to European settlement, prairies are now confined to small areas where steep slopes and southern to western exposures have kept tree growth to a minimum. Several sand-gravel prairies persist in the Mississippi River Valley. They are open grasslands dominated by grass species adapted to dry, sandy soils, including little bluestem, side-oats grama, big bluestem, Indian grass, and porcupine grass. Many forbs occur there too, with some common ones including rough blazing star, butterfly-weed, and large-leaved pussytoes. Recently, introduced grasses such as Kentucky bluegrass and European brome grass have become present at most of these sites. In addition, many prairies contain patches of invasive shrubs such as eastern red cedar and sumac, that spread in the absence of fire.
Wet Meadow- Wet meadows occur sparsely in the Mississippi Scenic River area, generally at the edges of river floodplains in moderately moist areas. They are composed primarily of wide-leaved sedges and grasses, with high forb cover. Common species include Hayden's sedge, bluejoint grass, tall meadow-rue, and mountain-mint. Shrubs are generally sparse, but may include slender willow, red-osier dogwood, and blueberry. Where natural hydrology is disturbed or fires are excluded, wet meadows often succeed to willow swamps. Standing water is present in the spring and after heavy rains, causing nutrient levels to be maintained through siltation; water levels drop the rest of the year to leave soils moist or even dry later in the season

Willow Swamp- Willow swamps occur in the river floodplain where they are generally adjacent to floodplain forests or wet meadows. They are wetlands with over 70% cover of

tall shrubs. They are dominated by willows (especially pussy willow, slender willow, and Bebb's willow) and dogwood. Other shrubs may also be present such as alder and bog birch. Herbs such as tussock and lake sedge, broad-leaved cattail, and northern marsh fern are also present.

Loss/Fragmentation of Natural Communities

Of the three major categories of vegetation present within the riverway, the *bottom-land forests* have remained the most intact, as there has been fewer development pressures inflicted on them. These forests are common in low lying areas near the mouths of tributary rivers and streams, backwater sloughs, and alluvial deposits on floodplains which may be covered at times by high water.

Relatively small remnants of *Big Woods forest* remain, often on small tracts of bluff tops or beyond. These woods have often been used for pasture or development and as a result are usually widely scattered in location. Some larger wood tracts located beyond the bluff line are found between St. Cloud and Monticello, with acreage around 40 acres or more. The *prairie grove* forests are still fairly common, scattered throughout the length of the river, especially between Monticello and Anoka. Of the original vegetation types, the true *open prairie* has been the most depleted. The vast majority of the prairie areas are now being used for agriculture. The remaining prairie areas are constantly in danger of being destroyed for agriculture or residential development, and are also in danger of being overtaken by exotic species from gardens and lawns.

Wetlands

The floodplain forest, wet meadow, and shrub swamp communities described above are all wetlands. There are additional wetlands within the Mississippi Scenic Riverway that do not meet the quality or size standards to be mapped by MCBS. Many of these are cattail marshes, disturbed floodplain forests, or formerly farmed areas dominated by the invasive plant reed canary grass. While they do not contain the species diversity of the native plant communities described above, they have many important environmental functions.

Wetlands have generally been regarded as obstacles to development rather than opportunities. Only recently has this public attitude started to change, with increased understanding of wetland importance and sensitivity to a variety of human-made changes. There are many wetlands located within the Mississippi River floodplain, as well as within the designated riverway boundary. Because wetlands are a valuable resource for a variety of reasons, such as storing essential surface waters and helping to alleviate the danger of droughts and floods, there needs to be more attention paid to their importance in the ecosystem. In addition, wetlands also help support diverse wildlife populations and are a primary method of recharging aquifers, which helps ensure a continued supply of groundwater to a given area. A wetland also serves as a buffer, cleansing and purifying the water flowing into it by removing nutrients and other contaminants in stormwater and runoff.

Wetland preservation provides a wide variety of benefits for human, plant, and animal species. Wetlands help diminish the effects of flooding, help minimize sedimentation downstream, and provide important habitats for fish, plant, and animal species. They also provide recreational benefits, drawing anglers, hunters, and birdwatchers to the area. The overall importance of wetland environments on the entire ecosystem are often under-represented, as they play such a wide role in the overall health of the neighboring environment.

Islands

Islands are some of the most important resources on the Mississippi River. On this stretch of river, there are more than 100 islands ranging in size from a fraction of an acre to more than 100 acres. One of the largest islands, Grand Island, is over a mile long. Each island, regardless of its size, holds great value for scenic, natural, scientific, and historical reasons. Although a few islands have been used for pasture in the past, most are now wooded, improving the river corridor's aesthetic quality. The islands within this stretch of the Mississippi River offer scientists the unique opportunity to study rare species and those adapted to a life of fluctuating water levels. These islands are also valuable for recreation.

In 1991 the U.S. Department of the Interior's Bureau of Land Management transferred control of 50 federally owned islands comprising 247.3 acres to the DNR. Management of these islands had been very limited and little research has been conducted to determine resource conditions prior to 2003, when management determinations were made for each island. The DNR's Section of Fisheries manages 31 of these islands (some of which may be designated as Aquatic Management Areas), the Trails and Waterways Division manages four islands, and the Ecological Services Division manages the remaining 15. All DNR islands will be managed in a manner consistent with this plan.

Bluffs

Along the Mississippi River there are a number of steep bluffs, which provide habitat for the forest, woodland, savanna, and prairie natural communities described above as well as additional wildlife habitat. Bluffs add to the beauty of the river, but are also a very fragile part of the entire ecosystem so need special protection. Bluff erosion and bluff destruction due to development are the greatest problems facing bluffs along the Mississippi River corridor. Slumping of the bluff results from surface or ground water reaching the bluff, causing the soil to become unstable and fall away. This erosion can be prevented by reducing the amount of runoff reaching the bluff through planting moisture-absorbing vegetation and minimizing disturbance near the top of the bluff and on the slope itself. The weight of structures on the bluff also increases the rate of slumping, so they should be placed further away from the bluff in order to alleviate potential problems. In addition to bluff slumping, river currents may erode the soil along the river's edge, causing the bluff to further erode from the base. Despite the fact that they look invincible, they are fragile and can easily be destroyed through misuse and poorly planned development.

Potential Impacts to Vegetation

One of the most immediate threats to vegetation stems from increasing development of shoreline and adjacent areas for residential development. The ideal choice for such developments are often in scenic areas, usually wooded parcels, which directly affect the surrounding habitat. Increasing development of roadways, creation of additional farmland, and the sprawling nature of many expanding towns today lead to further depletion and harm to vegetation and natural community areas. Other threats include a serious exotic invasive plant problem, such as buckthorn, tartarian honeysuckle and purple loosestrife, and a lack of needed management, such as controlled burning of prairies and oak savanna.

Plants and Animals

Fisheries

The DNR Division of Fisheries completed an electro-fishing study of the portion of the Mississippi River from St. Cloud to the mouth of the Crow River at Dayton in 1991. This was the same 47-mile stretch electro-fished in 1974 and described in the original management plan.

The 1991 study found that suckers and redhorse made up the largest percentage of the total catch, amounting to 64 percent. Carp represented 12 percent of the total catch. Game fish species were found to represent about 23 percent of the total catch by number, with smallmouth bass the most abundant, representing nearly 17 percent of the total fish population. Channel catfish were found to be second-most in abundance, as they were found in all sections of the river and represented nearly 3 percent of the total game fish population. Additional game fish species found in lesser abundance included: northern pike, bluegill, largemouth bass, white and black crappie, walleye, and muskellunge.

These fish samples were similar to those found in the 1974 study, though a few noticeable changes had occurred over the time period. Rapid water level fluctuations were observed during the 1991 survey due to the hydroelectric operations at St. Cloud and Sartell. These fluctuations may harm riffle habitat for invertebrates and displace fish from preferred habitats. These habitat problems have been exacerbated by past droughts, with the 1988-1990 drought having a dramatic influence on water levels over those years. In addition to those direct impacts on fish habitats, rapid expansion and residential development along the Mississippi River corridor continues to degrade riparian vegetation. This rapid development, along with an increase in purple loosestrife invasion, has led to greater loss of desirable shoreline cover needed for fish habitat.

Fish consumption advisories are in effect for this portion of river. These advisories include consumption guidelines that vary for each species of fish found in the river. They are updated annually by the Minnesota Department of Health. There are also special angling

regulations in place to protect and improve the important smallmouth bass fishery on the Mississippi River, starting at the St. Cloud Dam to the confluence with the Crow River. The possession limit for smallmouth bass in this stretch of river is three (3), with only one (1) over 20 inches. All smallmouth bass from 12 inches through 20 inches must be immediately returned to the water. The DNR will regularly evaluate these special regulations to see whether they are worth continuing in the future for the benefit of the fishery.

Mississippi smallmouth bass fishing is reputed to be nearly the best in the state. Electro-fishing surveys have turned up record-size fish near Monticello, with anglers occasionally reporting catches of five- and six-pound bass. The St. Cloud-Anoka stretch is known for harboring walleyes, northern pike and crappies, and muskellenge larger than 30 pounds have been caught near Clearwater.

Other Animals

This section of the Upper Mississippi River plays a crucial role in the preservation and protection of a variety of bird and mammal species. This section is a part of the Mississippi Flyway, one of the major waterfowl migration routes on the continent. This flyway is used by numerous species of waterfowl during the fall and spring migrations, as it provides ample habitat for food and shelter. Among these migrating species include ducks, geese, and cranes, all utilizing the wetland habitat areas along the Mississippi River.

In addition to these migratory birds, a number of wetland birds use the Mississippi River as their summer river home, among them are the great blue heron, black-crowned night heron, blackbird, and marsh wren. Additional birds found within this stretch include major game species such as grouse, wild turkey and pheasant; hawk, owl, and bald eagle; and many species of songbirds. Recently there have been increased numbers of bald eagles wintering on the Mississippi River, due to increased breeding. Additionally, the numbers of swans and Canada geese are also increasingly found year-round, due to open water from power plant discharge areas and feeding by humans.

Mammals found along this section of the river include beaver, muskrat, otter, mink, raccoon, white-tailed deer, woodchuck, red and grey fox, cottontail rabbit, and coyote. Smaller animals include the chipmunk, squirrel (ground, red, and grey), weasel, and pocket gophers. Additionally, there are numerous species of bats, mice, moles, and shrews along this stretch, as well as amphibian populations, such as frogs, salamanders, newts, etc., and snakes.

Rare Species

Among the plants and animals that occur within the Mississippi River corridor in the Scenic Riverway, several have legal rarity status, and are protected by state law. These species are rare in the area primarily because most of their habitat has been lost to development and farming over the years. Remaining populations are in danger of being lost as

development continues. Actions that would help ensure their survival include appropriately managing and restoring their habitats, maintaining or improving water quality in the river, and helping to protect adjacent habitat outside the Scenic Riverway.

There are eight state-listed rare plant and animal species that have been documented in the Mississippi Scenic Riverway corridor, including three bird species, one turtle species, two mussel species, and two plant species (Table 3). There may be additional rare species in the corridor that have not been documented.

It is important to maintain the whole complex of prairie, oak savanna, forest, wetlands, and open water habitats along the Mississippi River in order to ensure that these rare species will persist in the future. The two rare mussel species that occur in the river are sensitive to water pollution, siltation, and other disturbances to the river; maintaining riparian and upland vegetation will help maintain and improve aquatic habitat for the rare mussels as well as more common mussels and other aquatic animals and plants.

Three of these rare species require dry grassland habitats for at least part of their life cycle. Blanding's turtles nest in grasslands on sandy soil. Loggerhead shrikes nest in shrubs in grasslands. Hill's thistle occurs in prairies and oak savannas on sandy and gravelly soils.

Wetlands are also important habitats for these rare species. Eagles nest and feed in floodplain forests, marshes, and open water. Blanding's turtles hibernate and feed in marshes and ponds, and use riparian forests as travel corridors. Butternut, a tree that is fast disappearing because of butternut canker, occurs in forests on river floodplains and terraces above the river. Peregrine falcons, which once nested in cliffs along the river downstream of the Twin Cities, now nest in an artificial nest box in Monticello.

Table 3: State Listed Rare Species in the Mississippi Scenic Riverway

Common Name	**Scientific Name**	***State Rarity Status**	**Habitat**
Birds			
peregrine falcon	*Falco peregrinus*	Threatened	Nest box
bald eagle	*Haliaeetus leucocephalus*	Special concern	Floodplain forest
loggerhead shrike	*Lanius ludovicianus*	Threatened	Grasslands
Turtles			
Blanding's turtle	*Emydoidea blandingii*	Threatened	Grasslands, lakes, emergent marshes
Mussels			
black sandshell	*Ligumia recta*	Special concern	Mississippi River
creek heelsplitter	*Lasmigona compressa*	Special concern	Mississippi River

Plants			
Hill's thistle	*Cirsium hillii*	Special concern	Dry prairie
butternut	*Juglans cinerea*	Special concern	Forested floodplains and river terraces

*An endangered species is one that is jeopardy of extinction throughout all or a significant portion of its range in the state. A threatened species is one that likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota. A species of special concern, although not endangered or threatened, is extremely uncommon in Minnesota, or has unique or highly specific habitat needs and deserves careful monitoring of its status.

Mussels

Mussels, sometimes also called clams, are invertebrate aquatic animals that live on river and stream bottoms for most of their lives, but their larval stages are spent as parasites on fish. Mussels were once common in the Mississippi River. Today, mussel beds in the river have been severely affected by over-fishing, siltation, and pollution. Within the last 80 years, mussels have been vastly reduced in numbers in the river, and a number of formerly common species are now rare. The presence of healthy mussel populations is often thought to be an indicator of a relatively healthy river system.

Six live mussel species were found in a recent mussel survey in the Mississippi River just below St. Cloud, including two species designated special concern in the state. Five of these species were also found in the river just above the Coon Rapids dam. Table 4 lists these species.

Table 4: Mussels found in the Mississippi Scenic Riverway

Common Name	Scientific Name	Population size in survey
plain pocketbook	*Lampsilis cardium*	448
fatmucket	*Lampsilis siliquoidea*	107
white heelsplitter	*Lasmigona complanata*	5
giant floater	*Pyganodon grandis*	9
creek heelsplitter	*Lasmigona compressa*	1
black sandshell	*Ligumia recta*	139

Specially Designated Areas

Scientific and Natural Areas

Designated Scientific and Natural Areas (SNAs) contain natural features of exceptional scientific or educational value. In Minnesota these sites vary greatly, containing a wide variety of plant and animal habitats and communities.

One of the most important values of scientific and natural areas is for scientific and

educational use. Some SNAs are places where school children can see firsthand a rare orchid or learn about prairies, while others are areas where scientists can study the soil requirements of trees in remnant stands of forest or learn about natural processes such as the life cycle of the threatened Blanding's turtle. Most SNAs are designated as public-use units, meaning that they are open for recreational activities such as hiking and birdwatching, as long as the activity does not disturb the natural community. These areas, along with Wildlife Management Areas, are more likely to contain threatened or rare species, as the necessary habitat is protected and less disturbed than other habitats along the river.

On this stretch of the Mississippi, there are two SNAs, encompassing a little over 130 acres:
Mississippi River Islands SNA contains 73 acres and is located in the Mississippi River between Monticello and Elk River. This site includes five islands formed by outwash and sediment deposited by the Mississippi River. The islands now rise as high as 30 feet above river level. Flooding, erosion, and sedimentation have resulted in various stages of succession, creating a mosaic of wet floodplain forest, drier floodplain forest, upland oak forest and sandbar plant communities all within the island sites.

Clear Lake SNA contains 78 acres and is located 2.5 miles southwest of Clear Lake. This has the distinction of being the first land parcel acquired under the State Wild and Scenic Rivers Program. It contains a mosaic of oak forest, floodplain forest, and old field sumac thicket, along with a small population of the very rare Hill's thistle, designated a species of special concern in Minnesota. The Hill's thistle is generally found in transition zones between major forest and prairie communities on dry, sandy or gravelly soil. It has declined as Minnesota's prairie has been converted to agricultural uses.

Wildlife Management Areas (WMA)

Wildlife management areas are set aside by the DNR to allow for the propagation and management of wildlife populations, while providing for educational activities and wildlife-oriented recreation such as hunting and fishing. These areas are designed to maximize the preservation of critical habitat or habitat threatened by development or other nearby destructive factors. Public access is mandated by law, though overnight camping and motorized vehicles are prohibited within the WMAs.

There are no wildlife management areas within one mile of the riverway. However, numerous WMAs are situated nearby, within the Mississippi River watershed. These WMAs provide habitat and protection for species that travel to and from the river via undeveloped or wooded corridors.

The Clear Lake Wildlife Refuge is a designated area upstream of the Highway 24 bridge in Sherburne County. While not a WMA, it is located partially in the riverway; it is privately owned and managed by a group of landowners.

Aquatic Management Areas (AMA)

Aquatic Management Areas are set aside by DNR to allow for angler access, to protect fish spawning, rearing and other unique aquatic habitats, and to protect critical shoreline areas. These areas are also designed to maximize the preservation of critical habitat or habitat threatened by development or other nearby destructive factors. Public access is mandated by law, although overnight camping and motorized vehicles are prohibited within AMAs. While there are currently no AMAs within the riverway, future designation is likely to protect certain areas, particularly islands acquired from the U.S. Department of the Interior -Bureau of Land Management.

Soil Composition and Suitability

Deposits of glacial till, outwash sand and gravel, and alluvium are the major parent soil sources along the Mississippi River. All of the material was deposited during the last major glacial stage. Less extensive soils are recent deposits of alluvium and organic material. Alluvium deposits that run parallel to the river contain sand that is coarse in areas near the river and becomes increasingly finer with increasing distance from the river. The major soils in these areas are Hubbard, Mosford, and Sandberg. Soils on the flood plains primarily include Elkriver and Fordum.

The Hubbard-Mosford association consists of moderately to excessively drained, loamy sand soils that are characteristic of outwash plains, stream terraces, and flood plains with slopes between 0-12 percent. The Hubbard soil series occurs in Sherburne, Stearns, and Wright counties along the river corridor.

The Elkriver series consists of moderately well drained and somewhat poorly drained, coarse-loamy soils with slopes between zero and three percent. The Elkriver series occurs in Sherburne and Wright Counties.

The Fordum series consists of very poorly drained, coarse-loamy soils with zero to one percent slopes. These soils are most commonly found in flood plain areas and often have visible standing water due to their poor drainage and saturated nature. These soils occur primarily in Stearns County.

Suitability and Limitations of Soils for Septic Tank Absorption Fields

Soil properties are important in determining the overall suitability of an area for septic tank absorption. A number of factors are examined, including soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock, and flooding potential all affect absorption of effluent, thereby influencing the overall suitability ranking for the area. Poorly drained soils are unsuitable for septic tanks due to their low infiltration rates and frequent pooling. Similarly, excessively drained soils are also poor sites for septic systems due to their high infiltration rates and subsequently lower capacity.

Soil limitations of *slight*, *moderate*, or *severe* are given for septic tank absorption fields, depending on their number of limitations. These limitations include poor filtration, slow percolation, wetness, flooding, ponding, and high slopes. A more detailed examination of these limitations and their locations in the corridor is shown in Maps 7B and 7C of the *Map Atlas*. A *severe* rating indicates that overcoming these limitations is difficult or impractical. Increased maintenance will most likely be necessary to maintain proper absorption of effluent and meet local health regulations. A *moderate* rating indicates that these limitations should be recognized but can generally be overcome through special design or management.

The vast majority of the land contained in the Mississippi River corridor is given a *severe* limitation rating, meaning that future developments must be mindful to these septic system limitations. Additional means of waste disposal will be necessary, possibly including municipal sewer extensions into new developing areas or clustering developments connected to one central treatment station, given the expanding development pressures along the corridor in the coming years.

Soil Drainage Properties and Annual Flooding Potential

Map 7A of the *Map Atlas* shows the locations of soil types based on their drainage properties. The frequency of annual flooding that is likely to occur for specific soils within the Mississippi River Corridor relies, in part, on soil drainage properties. The greater the limitations on drainage, the greater the chance is for flooding to occur. The frequency of annual flooding looks to be *rare* (0-5% chance in any given year) overall, though areas with *occasional* (5-50% chance) or *frequent* (50% chance) ratings are found mixed throughout the corridor. For this analysis, the influence of slope and ground cover was not included.

Aside from areas with poor draining soils (i.e. slow infiltration/transmission rates), greater flooding potential is primarily found in low-lying areas and areas with minimal vegetation. Due to the extent of the Mississippi River watershed, most flooding is due to a combination of snowmelt and widespread spring precipitation. The typical flood event occurs after a cold, wet fall, above normal snowfall and a rapid spring snowmelt.

With this information, agencies are working together on sound floodplain management practices, which include limiting land uses within the floodplain area. Encroachment of floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself.

River Hydrology

The hydrology of a river is the study of how the river works, which includes an important set of data and information that focusing on the distribution of water and interaction with the land surface and underlying soils and rocks.

Part of river hydrology includes aspects of the hydrologic cycle, such as climate and rainfall levels. The Mississippi Scenic Riverway lies between two major climate stations that record data such as precipitation, temperature, and wind speed. These climate stations are located at St. Cloud and at the Minneapolis/St. Paul International Airport.

The climate is influenced by atmospheric moisture flowing into the state from the Gulf of Mexico and the Pacific Coast. Air masses that carry moisture, which is eventually released as precipitation, may travel nearly 1,500 miles. Due to this long trek, a minor change in the wind system can result in the area receiving well below or well above the normal precipitation. Rainfall is generally ample for farm and garden crops. Although the total amount is important, its distribution during the average 140-day growing season from mid-May to the end of September is even more significant. Thunderstorms are the principal source of rainfall during this period. Winter also provides some precipitation through snowfall. This snowfall is fairly dry, which provides excellent winter recreational opportunities. These conditions exist from about late December into early March.

Table 5: Typical Climate Conditions for the Mississippi Scenic Riverway

Stations	Normal Daily Temperature	Highest Recorded Temperature	Lowest Recorded Temperature	Normal Annual Precipitation	Month with Highest average Precipitation	Month with highest average snowfall
St. Cloud	52.7F	103F (1947)	-43F (1977)	27.43 inches	June 4.6 inches	March 9.8 inches
MSP	54.3F	105F (1988)	-34F (1970)	28.32 inches	June 4.05 inches	January 12.5 inches

Source: U.S. Department of Commerce

Stream flow is an important measurement taken of the river that allows river managers to predict and react to flooding events as well as determine river levels for recreation. There are several stream flow gaging stations on the Mississippi Scenic Riverway. These stations located at the St. Cloud Dam, the City of Clearwater, the City of Elk River, and the City of Anoka. Table 6 describes the flooding frequencies and when the river has met or exceeded the 10-year flow frequency at each gage over the course of

the gage history. Floods occur along the Mississippi River due to spring snowmelt, excessive rainfall, or both. Occasionally an ice jam forms and creates a local flood condition, which would not cause the type of flooding listed in the table below.

Table 6: Flooding Frequencies on the Mississippi Scenic Riverway

Gaging Station	**Flow Frequency** Cubic Feet per Second (cfs)	**Peak Flood Events** Cubic Feet per Second (cfs)
St. Cloud Dam Data collected between 1989 and 2001	10 year – 33,970 cfs 50 year – 48,955 cfs 100 year – 57,450 cfs 500 year – 78,000 cfs	1997 – 46,900 cfs 1999 – 33,800 cfs 2001 – 44,300 cfs
Clearwater Data collected between 1972 and 1994	10 year – 35,460 cfs 50 year – 52,000 cfs 100 year – 59,570 cfs 500 year – 77,100 cfs	1972 – 33,500 cfs 1975 – 35,600 cfs 1979 – 33,900 cfs
Elk River Data collected between 1916 and 1969	10 year – 36,400 cfs 50 year – 53,300 cfs 100 year – 61,000 cfs 500 year – 79,000 cfs	1917 – 34,000 cfs 1943 – 37,700 cfs 1950 – 39,000 cfs 1952 – 49,200 cfs 1965 – 62,000 cfs 1969 – 48,100 cfs
Anoka Data collected between 1931 and 2001	10 year – 50,200 cfs 50 year – 74,800 cfs 100 year – 85,500 cfs 500 year – 116,000 cfs	1943 – 47,000 cfs 1950 – 50,700 cfs 1952 – 75,900 cfs 1965 – 91,000 cfs 1969 – 72,500 cfs 1975 – 59,200 cfs 1979 – 49,600 cfs 1986 – 50,300 cfs 1997 – 69,800 cfs 2001 – 65,600 cfs

Source: USGS Water Data Report MN – 01-1

The gaging station at Anoka has the longest period of record, which also was recording data during the period with the most flooding occurrences from 1931 to 2001. If there had been gaging stations recording data consistently at all four stations for the same periods of time, more could be analyzed with regard to flooding frequencies and trends on the Mississippi Scenic Riverway.

Only once since 1917 – in 1965 – has the Mississippi River reached or exceeded the 100-year flood stage. Most floods that have occurred along the river have been below the 50-year flood stage. Even at the 50-year flood stage, property damage can occur to homes and other structures, as well as increase stream bank erosion and sediment loading to the river. Property owners along the Mississippi Scenic Riverway are fortunate to have a river corridor that is fairly contained between bluffs on much of the

river, which helps prevent substantial damage to property during periods of high flows. With the help of proper planning and development practices, structural damage due to flooding has remained at a minimum for this stretch of the river.

Stream flow gages that monitor river levels for recreation are usually measured by DNR volunteers. There are three of these gages along the Mississippi Scenic Riverway. These are located at the St. Cloud Dam, the Highway 24 bridge in Clearwater, and the City of Elk River water intake channel. The gage readings that the volunteers provide are posted on the DNR website and used by recreationists in planning canoe or boating trips. Typically this stretch of the Mississippi River flows through riffles and across many sandbars, but does not have any difficult rapids. There are no special paddling skills required for this part of the river. However, in periods of high flows, such as 13,000 cfs or higher, recreationists should use caution and may need to avoid using the river during these times depending on the person's abilities. The river may also become difficult to navigate during periods of low flow, such as flows below 2,000 cfs.

Historical and Cultural Features

This stretch of the Mississippi River served as a major transportation artery for the region for thousands of years. In the early years of European settlement, the river carried logs and grain downriver and settlers upriver.

Talahi Park in Haven Township has archaeological significance. The Thousand Islands (Beaver Islands) area was frequently mentioned by early European explorers. The 1856 ferry landing at Clearwater and the Baker's ferry site at Otsego were important during the time of early settlement. The 10th Street Bridge in St. Cloud and the Highway 25 bridge at Monticello have architectural significance.

Map 8 in the *Map Atlas* depicts cultural and historical features along the river corridor. These areas are important for future generations as they help to portray the stories and struggles of our predecessors.

The Great River Road National Scenic Byway provides people with a way to discover the historical and cultural significance of the area. This roadway runs along the Mississippi River from its headwaters to its confluence with the Gulf of Mexico. The Great River Road National Scenic Byway Minnesota Interpretive Plan, completed in June 2001, identifies the Mississippi Scenic Riverway as one of its six destination areas. These destination areas identify significant cultural, historical, or biological features, and give the area visibility through interpretive signs and other features to gain public interest.

Water Quality

The river's good water quality in the corridor provides the basis for many of its values, including recreational and as a high-quality fishery. According to Minnesota Pollution Control Agency data, the river fully supports swimming. According to the Minnesota Department of Health, the river's water meets all of the state drinking water standards. St. Cloud takes its drinking water from the river just upstream of the corridor, and the cities of Minneapolis and St. Paul (along with several inner-ring suburbs) take their drinking water from the river just downstream of the corridor.

But despite the river's excellent water quality, threats exist that could affect the river's character in the future. Municipal wastewater discharges in the corridor include St. Cloud, Monticello, and Elk River, and all are facing rapid population increases and the resulting increases in wastewater discharge. In addition, suburban growth along the Crow River may exceed that stream's capacity to assimilate wastewater. The Crow enters the Mississippi between Otsego and Dayton, and could affect the Mississippi's quality in the downstream portion of the corridor.

Nutrient and sediment loading to this portion of the Mississippi from agricultural sources has not been significant to date, since much of the watershed in north central Minnesota is forested. Tributary watersheds closer to the corridor are primarily agricultural, however, and agricultural best management practices are needed to ensure the river's water quality is not degraded in the future. Similarly, rapid urban development from just north of St. Cloud to Anoka can affect the river's water quality unless communities require urban best management practices during site development and require careful stormwater management throughout the corridor. New development in areas without municipal sewer services will need to carefully locate on-site treatment systems to ensure the systems operate properly and do not contribute to water quality problems in the river.

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) required the Minnesota Department of Health (MDH) to complete source water assessments for public water systems. The City of St. Cloud was included in this assessment and intends to use it as a basis and framework for the development and implementation of a source water plan. While this is not a requirement of the SDWA, St. Cloud has been working jointly with the cities of Minneapolis and St. Paul and the MDH to develop a source water protection planning strategy. As part of this strategy, the Upper Mississippi River Source Water Protection Initiative (UMRSWPI) was created to act as a coordinating entity and serve as a facilitator for the three public water systems. The UMRSWPI established the framework for development and implementation of source water protection plans in the Mississippi River watershed above the water supply intake for the City of Minneapolis. The community water suppliers being addressed by this initiative include 1) the cities of St. Cloud, St. Paul, and Minneapolis, which use the Mississippi River, and 2) 29 communities located along the Mississippi River that use ground water.

Analysis of Scenic Quality, Environmental Sensitivity, Cultural Importance

Three separate geographic information system (GIS) analyses were conducted to partially quantify scenic quality, environmental sensitivity, and cultural importance within the Mississippi River Wild & Scenic corridor. The purpose was to identify areas along the corridor with high numbers of features contributing to these qualities. The results aided discussion of potential boundary modifications, proposed land use districts, and opportunities for additional protection within the river corridor. The results are found on maps 8, 9 and 10 of the *Map Atlas*.

GIS Procedures

The general procedure was to identify features contributing to scenic quality, environmental sensitivity, and cultural importance within the corridor. Features within one-half mile of the river channel were considered, and choice was limited to those for which GIS coverages were available. Buffers were added around each feature to convey the concept that the quality or importance of a feature extends to some distance beyond the feature boundary. Features were buffered to 500 feet, with the exception of rare features, which were buffered to 300 feet.

Individual feature layers were converted into grid layers composed of 10-meter by 10-meter square cells. Each cell containing a feature was assigned a value of 1. For each of the three categories, all individual grids were overlaid and added together to produce an output grid. Cells in the output grid were colored based on the number of features present, with increasing color intensity representing areas with greater scenic quality, environmental sensitivity, and cultural importance.

Several features were used in more than one analysis, due to the multiple properties inherent to that feature. Some features were adjusted for overlap with other features so as not to count features twice in the analysis. For example, DNR acquired lands considered to have scenic value due to absence of development on these lands. However, acquired lands which were also islands (all undeveloped in the corridor) were counted only once in the analysis. Other features were not adjusted because there was deemed to be “added value” for the presence of multiple features. For example, natural vegetative communities occurring within a park would warrant a double score in the analysis.

In this analysis, features considered to have cultural importance included not only what are typically referred to as “cultural resources” (historic properties), but also parks and recreation areas, recreation points of interest, and sites identified during citizen input meetings as favorite places.

Table 7: Features Used In Analysis

SCENIC QUALITY	ENVIRONMENTAL SENSITIVITY	CULTURAL IMPORTANCE
Natural vegetative communities	Natural vegetative communities	Parks and Recreation Areas
Wetlands	Wetlands	Recreation Points of Interest (PRIM maps)
Islands	Islands	Historical Features (In 1976 report)
Rare Features (County Biological Survey)	Rare Features (County Biological Survey)	Favorite places (From citizen-input)
Bluffs	Bluffs	
Scientific & Natural Areas (SNA)	Scientific & Natural Areas (SNA)	
Wildlife Management Areas (WMA)	Wildlife Management Areas (WMA)	
DNR Acquired Lands & Easements	Floodplain (100-year, 500-year)	
NSP Land (wild; undeveloped)	Soil Drainage Properties	
Parks and Recreation Areas		
Scenic Features (1976 report)		
Scenic Detractors (1976 report, received negative rating)		

Community-based Planning

Planning Process

The Mississippi Scenic Riverway management plan had not been reviewed or revised since it was completed in 1976. A statement of purpose and five core principles were developed at the beginning of the community-based planning process to articulate the philosophies that would be vital in assuring that the revised river management addressed the river's and communities' needs.

Statement of Purpose

The wild and scenic river management planning process should be community-based in order to gain as much input as possible from local governments and citizens are affected by the river. The planning process should be highly visible and visual, foster a sense of community along the entire corridor, and use new technologies and techniques to encourage effective and meaningful citizen participation and decision-making.

> **Core Principle One**: The entire planning process should be supported by a highly visible and visual communications approach to receiving, exchanging and disseminating information.
>
> **Core Principle Two:** The planning process should initially proceed with an emphasis on understanding the socio-economic systems of the river corridor to develop the social context for decision-making.
>
> **Core Principle Three:** The river's natural resource conditions, characteristics and functions should be used as the framework from which to develop the landscape context for decision-making.
>
> **Core Principle Four:** The planning process must develop a shared ownership of the river and a commonality of purpose within the river corridor; and build deliberately towards a locally driven and supported planning process.
>
> **Core Principle Five:** The planning process should be informed by existing legislation, but should not be constrained in its approach to applying new processes, technologies, and techniques.

Community Involvement Activities

Discussion of rule amendments to the Wild and Scenic Mississippi River rules began in April of 1992. The active development of a new riverway management plan began in January 1998. A series of four open houses were conducted in the river communities of St.

Cloud, Clearwater, Monticello, and Elk River. These open houses provided the basis for the initial, citizen-identified issues and concerns that would be addressed in future planning work sessions called RiverForums.

Fifteen RiverForums were held. Participation at these meetings was voluntary and open to any citizen, any local government official or staff, and any state or federal agency official or staff. All RiverForums were designed to allow participants to enter the discussion and decision-making process at their discretion. This open-door policy can sometimes complicate and slow the decision-making process, but in this case successfully allowed full participation by interested citizens on issues of greatest concern and importance to them.

Local government officials, many with broad experience in land use planning and local zoning administration, formed a Data and Technical Committee. That group met regularly to work through technical issues related to land use regulations and boundary adjustment options.

Newsletters (i.e., “RiverTalk”), mail-back surveys, a website, special events (e.g. canoe trips, library programs), radio interviews, and news articles were also used to disseminate information on the river management plan revision process, encourage active involvement by interested citizens, and promote and raise the awareness of the importance of the Mississippi Scenic Riverway.

In addition to gathering information and input from the public, a Geographic Information System (GIS) was employed to display in map form information related to the river corridor’s natural and recreational resource basis, land use, transportation system, political subdivisions, and current local and state land use regulations. A Mississippi Scenic Riverway Map Atlas has been developed that catalogs and displays a broad range of information.

The Map Atlas, in conjunction with the views, opinions, and agreed-upon conclusions of the citizens attending the RiverForum and local officials attending the Data and Technical Committee, have formed the basis for the conclusions and recommendations contained in this plan. This plan replaces the Mississippi Wild and Scenic River Management Plan of 1976 and provides the foundation and rationale for making changes to the Minnesota Rules that provide the legal basis for administering the plan.

Outcomes of Community Meetings

Formulating a Vision

Articulating a vision of how the Mississippi Scenic Riverway would look, feel and function in the year 2020 was the first task of attendees of the RiverForums. Without a collective vision, it would be difficult to determine whether proposed management actions would be beneficial to achieving and maintaining a high quality of life not just for humans, but also for

maintaining a robust river environment that supports healthy and thriving flora and fauna populations.

The following vision statement is a combination of statements of importance, statements of concern, and statements of partnership that were voiced by RiverForum attendees. Numerous drafts were reviewed. This version is the most widely accepted and supported:

> ***A VISION FOR THE RIVER IN THE YEAR 2020***
>
> *The river continues to be an important resource for people to respect, use and enjoy. The river is clean and its environment supports healthy, diverse and sustainable populations of plants and animals.*
>
> *A high quality of life is enjoyed by residents of the river communities and region. River communities benefit greatly from the river and their relationship to it. Land use and development activities are well planned, compatible and consistent with commonly held river community goals and objectives.*
>
> *Effective stewardship and management of the river and its resources is achieved through the responsible undertaking of individuals, communities and agencies that respect the diversity of interests within the region; while at the same time promoting sustainable uses of river resources.*

Additionally, RiverForum participants were asked to identify the most significant aspects, unique features or conditions as well as any other considerations that make the Mississippi Scenic Riverway important, special and unique. From this starting point, the resulting significance statements were revised, with citizen input, to reflect what they additionally would like to see the Mississippi Scenic Riverway reflect in the year 2020. The resulting revised significance statements were renamed Vision Goals. These goals present more detail on the conditions that are envisioned along the river in the year 2020.

Vision Goals

The Mississippi

- The entire Mississippi River is a world-class resource by virtue of its watershed size; ecological, historical and cultural significance; economic impact, and world-wide recognition. This stretch of river (10th Street dam in St. Cloud to Anoka) adds to the entire river's environmental diversity.

Riverway Landscape Character

- The diverse landscape and scenic character of the river is defined by: river bluffs and high banks, streams and creeks, native vegetation along the shore and on the banks, islands, and changes in the river from a wide to narrow channel, from still

waters to rushing rapids, from high to low river flows, from farmland to forest, and from rural to urban land use.

- Shorelines on stretches of the river that are high in scenic quality appear primarily undeveloped and undisturbed; large tracts of land remaining in primarily a natural condition and undeveloped add greatly to maintaining a natural river landscape character.

- The scenic river landscape is enhanced by relatively few bridges and other river crossings.

- Existing land uses and land use patterns are an integral part of the river landscape; land use management practices define what the river landscape is and what it will become.

- The character of the river landscape is also defined by the type and level of river stewardship and land caretaking practiced by landowners.

Riverway Flora and Fauna

- The river provides an important flyway for migrating waterfowl and songbirds, and a corridor that allows the movement of plants and animals.

- Open water on the river during late fall, winter and early spring months provides opportunities for wildlife and waterfowl to feed and rest in the region.

- The river provides habitat for a variety of fish, particularly a very significant smallmouth bass fishery, and provides good opportunities for fishing success.
  Riverway Relaxation and Recreation

- Opportunities to experience quiet and peaceful surroundings exist along the river.

- The river landscape provides unique and scenic settings for parks, trails, and public open spaces as well as enhancing the recreational experiences available.

- Opportunities to participate in water recreation activities (e.g., boating, canoeing, kayaking or tubing) in quiet, relaxing and uncrowded conditions exist on the river.

- The river corridor provides unique opportunities to observe a large variety of wildlife, (e.g., bald eagles and osprey).

- Access to the river is provided through a variety of means such as boat launches, parks, trails and roads.

Defining Lives – Culture and History

- The river has significantly defined past cultures and the history of the region, and continues to provide cultural definition today.

Issue and Concern Statements

When the Mississippi River corridor from St. Cloud to Anoka was studied in 1976 and recommended for inclusion in Minnesota's State Wild and Scenic Rivers Program, the primary concerns were encroaching and unregulated development, degradation of the scenic qualities of the river, water pollution, and an overall decline in the quality of recreational experiences and available open space.

In 1999, many of those same concerns persisted. The population was growing as fast as any region in the state. Development pressures continued to mount, with competing factions arguing for and against stricter rules and regulations. As one RiverForum participant said, "There is only one Mississippi River and we are loving it to death." The rush to develop near the river was significant. Large farm tracts were being divided and sold off as smaller residential building sites.

In 1999, the primary issues regarding management of the Mississippi River still included over-development, impacts on scenic quality and loss of unique plant and animal habitats. A summary of the 350 issue and concern statements that were collected at RiverForums are included as Appendix A.

Favorite Places

Favorite places are locations that were highlighted by participants to the January 1998 open house sessions. These locations were areas used most often or areas where respondents stated that they most enjoyed spending time. Analysis showed many of these areas contained high scenic value and were either parks or state-owned Scientific and Nature Areas. These findings further highlight the significance of these areas for recreational purposes and help to reaffirm the importance of protecting these areas in the future.

Some overlapping responses included Wilson Park, Riverside Park, the Beaver Islands and Beaver Island Trail, Montissippi Park, Otsego County Park, the Elk River Islands between Monticello and Otsego, Putnam Woods oak savanna in Sherburne County, and various locations with wildlife activity such as active eagle nests, etc.

Overview of Problems and Opportunities

This management plan reflects several major issues that were identified during the planning process that are reflected in this management plan. All of these issues are important to the overall quality of the river corridor as it relates to natural and cultural resources, land use, and recreation. Some of these issues and concerns will not be fully resolved with this management plan, but the framework that has been established in this plan will allow these issues to be resolved in the future.

Riverway District Boundary

A riverway district boundary was established in 1976 using section, quarter-section and other land survey lines and some roadways. While this provides a legally defined, well-documented boundary, it produces a "stair-step" pattern along the river corridor. In many cases, land close to the river lies outside of the boundary, while land farther from the river lies within the boundary. The uneven boundary creates situations where land-based activities very close to the river are not subject to the Wild and Scenic Rivers rule, causing potential environmental impacts. Inequity of regulation between adjacent landowners creates a "patchwork" development pattern along the river. Efforts to control land use and development in these areas may not be adequately serving the intent to protect the riverway.

Impacts of Changing Land Uses

The increasing population in this river corridor reflects the fact the region is among the fastest growing in the state. With population growth comes increased urbanization and changes in land use patterns. These changes are affecting the riverway's natural and cultural resources, scenic quality, cultural character, water quality and recreational experiences.

Inconsistencies in the application and enforcement of land use regulations

Local governments have adopted zoning ordinances to reflect mandates in the state wild and scenic river rules. These rules are confusing at times to the public, local units of government and agency staff. The language used in many of the ordinances is unclear or confusing and is subject to arbitrary interpretation. Complicating the situation further, the Department of Natural Resources has final certification approval over some types of local riverway zoning decisions.

Impact of New River Crossings

Partly due to increasing development pressures, river crossings such as bridges, communication lines, and energy systems will be in more demand. These crossings can negatively affect the river resources in a variety of ways, especially when private

companies, local units of government, and river management agencies lack sufficient coordination. A balance among the interests of the developers, utility companies, local and state transportation agencies, and the environment needs to be accomplished. River crossings, especially bridges are among the most damaging in terms of impact to a river corridor. Bridges results in direct physical impacts in the immediate vicinity of the structure (destruction of fish and wildlife habitat, disturbances to breeding patterns of wildlife near the area due to increased human activities, reduced scenic and aesthetic qualities), as well as farther-reaching impacts (noise, visual impact, etc.).

Access to the Riverway

Though there are a number of accesses along the corridor where people can get their watercraft onto the river, many feel that there are not enough developed for public use, while others feel there are too many. Some private landowners feel that they should be allowed to develop their own access from their land.

Conflicts Between River Users and Riparian Landowners

Riparian landowners occasionally face conflict with recreational users on the river. Some riparian landowners express concern over the number of watercraft on the river or have had recreational users trespass on their property.

Interest in Private Property Rights

Though the state has purchased some scenic easements and fee title lands along this segment of river, the majority of the shoreline is in private ownership. Riparian landowners have purchased their property for a variety of reasons, but all have similar sentiment on their right to use their land as they chose. Guidelines are needed that allow landowners to use their property largely as they see fit, but still maintain the integrity of the river resource for others.

Need for Stewardship of River and Surrounding Land

There is no organized stewardship program in this stretch of the Mississippi, and many people are unaware of what is meant by stewardship. An organized stewardship program would benefit this corridor by bringing important issues to the forefront and bringing people together for better watershed and river corridor quality.

Impacts to the River from Recreational Use

As recreational use increases, so do impacts to the resources, which could lead to alterations in the river's soils, vegetation, wildlife, and water quality in highly used areas of the corridor. Shorelines can be eroded and vegetation trampled at landings, campsites, and on private land. People looking for solitude and an undisturbed natural setting can have a degraded river experience if too many recreational users are on the river.

Impacts on Water Quality

Several cities use the river as a means to dispose of sanitary wastewater. The population is increasing, which has led to more septic systems and increased capacity needs for municipal wastewater treatment plants, further increasing pollutants to the water. Agricultural lands within the watershed also contribute to pollution in the river through runoff into tributary streams or the river directly. Though standards have been established for many of these land uses, water quality monitoring is not always completed on a regular basis, and many contaminants come from non-point sources which are not easily regulated.

Lack of Coordination

Coordination between federal, state, and local units of government is crucial to good management of the river and the surrounding watershed. This coordination doesn't always happen, however, and inconsistencies in management of the river lead to problems, such as unwanted developments, new river crossings in poor locations, and confusing rules and regulations. This frustrates all parties involved, including private landowners and the public using the river.

Planning Outcomes

Riverway Boundary

The original Mississippi Wild & Scenic River management boundary was delineated in 1976. The intent was to create a boundary along the river corridor within which land use controls and limited acquisition would protect the qualities for which the river was originally designated. By law, the DNR was limited to including no more than an average of 320 acres per river mile within the riverway boundary. For the 53-mile length of river from St. Cloud to Anoka, the maximum allowable acreage was 16,960 acres (i.e., 320 acres/river mile x 53 miles).

As noted, the existing boundary uses section, quarter-section and other land survey lines and some roadways. The advantage of using land survey lines for a management boundary is that they are legally defined, well-documented and relatively stable. However, using such lines as the basis for a boundary produces a "stair-step" pattern along the river corridor, since the river runs northwest to southeast and legal boundaries must run north-south or east-west. In many cases, land close to the river lies outside of the boundary, while land farther from the river lies within. Distances from the riverbank to the boundary edge range from a minimum of 42 feet to a maximum of 3,014 feet. The uneven boundary creates situations where some land-based activities very close to the river are not regulated by the program, causing potential environmental impacts as well as scenic and aesthetic concerns along the river corridor. Inequity of regulation between adjacent landowners

creates a “patchwork” development pattern along the river, as neighboring properties are subject to different land use controls. In other cases, areas far from the river (sometimes on the other side of a major highway) are within the boundary. Efforts to control land use and development in these areas may not be adequately serving the intent to protect environmental and scenic values of the river corridor.

These long-recognized problems with the existing boundary have led to evaluating alternative boundaries that might better serve the needs of the river and surrounding communities. Analysis was performed on the following alternative boundaries:

- Existing boundary
- Bluffline-based boundary with 500-foot buffer
- Equidistant buffer boundary
- Modified boundary (road-based)

Existing Wild and Scenic Boundary

The existing boundary follows political boundaries, mainly section and quarter-section and other land survey lines, and some roadways. The original Mississippi River Draft Management Plan (1976) outlined 15,501.84 acres of land for inclusion in the Wild and Scenic boundary. Following public hearings on the draft plan, some boundary modifications were made by the DNR Commissioner during his adoption of the state rules in 1976. Since then, the boundary was amended three times. One amendment affected land near State Highway 101 in Wright County, another amendment affected an area near Interstate 94 in the southeastern corner of St. Cloud and a recent amendment occurred in the City of Otsego. The current boundary is reflected in existing Minnesota Rules and covers approximately 14,950 land acres, including islands. This is about 2,650 acres less than the maximum allowable acreage. The advantages and disadvantages of this boundary are described above.

Bluffline-based boundary with 500-foot buffer (alternative)

This boundary would be based on existing bluffline topography. The bluffline was delineated by connecting points along the river corridor where the elevation slope becomes less than 13 percent (i.e., “bluffline” as defined in riverway rules). To make a continuous boundary, gaps in the bluffline (where the slope was less than 13 percent) were filled in by following the nearest contour lines and vegetative stands. A 500-foot buffer was added to the entire boundary to increase acreage and protection of bluffs and blufftop areas.

This boundary would cover approximately 15,100 land acres (including islands) and completely encompass the floodplain. This is about 1,850 acres less than the legal maximum of 16,960. A boundary based on topography makes more “ecological sense” than one based on political boundaries, as it is more likely to encompass similar landforms, natural community types, and environmental features without cutting across them. This boundary would include more scenic qualities, environmentally sensitive features, and

culturally important features than the existing boundary (see Table 8). Where a definite bluffline is present, limits of the boundary are readily visible, but may be difficult to define in the field and to map accurately.

Although environmentally desirable, this boundary would likely be very problematic from a regulatory perspective. Gaps where the bluffline is difficult to define or non-existent would prove difficult to defend in cases where development or other activities were proposed. Only trained personnel would be able to conclusively define the boundary, leading to confusion, frustration, and potential legal battles for DNR, local governments, and citizens. Areas where the boundary follows contour lines due to gaps in the bluffline are often very convoluted, resulting in a complicated boundary. In areas where the bluffline comes very close to the river, the amount of riparian protection would be minimal (just 500 feet from the bluff). Because the bluffline varies in its distance from the river, the equity for riparian landowners would be highly variable.

Equidistant Buffer Boundary (alternative)

An equidistant boundary is one that extends a constant distance from each bank along the river corridor. In this analysis, we used a constant distance of 1,240 feet from the river channel, chosen to maximize the acreage included within the boundary. Total land acreage encompassed by this boundary was 16,947 acres (including islands). This is 13 acres less than the legal maximum.

The main advantage of the equidistant boundary is that it creates equity among riverfront landowners by setting the boundary at 1,240 feet from the river's edge for all properties. It aims to protect the land that lies closest to the river (i.e., riparian buffer strip concept), which is important for protection of many environmental and scenic qualities. A major disadvantage is that the boundary is not easily definable visually. One cannot look at the landscape and immediately "see" where the boundary is drawn or what areas are affected. While it could be readily found in the field by a surveyor or anyone with the right equipment, most property owners could not know where a boundary crossed their property. Another disadvantage is that this boundary makes no consideration for land types, land forms, environmental features, or existing structures. The boundary may pass directly through a wetland, forest, house or other existing landscape feature.

Modified Boundary (Road-Based) (alternative)

This potential boundary arose as a compromise to address some of the persistent problems with the current boundary, while avoiding radical changes and the disadvantages associated with the alternates described above. It is based mostly on the current Wild & Scenic River management boundary and the existing road network. Areas outside of major roadways which are less likely to have an impact on the river's environmental and scenic qualities are removed from the boundary. Conversely, areas between the river and the roadways, especially those close to the river or floodplain, are added in for greater protection. This minimizes the stair-step effect and creates a greater consistency in river

protection. Downstream from the Hennepin and Anoka county lines (encompassing both Dayton and Ramsey) the modified boundary exactly corresponds with the existing MNRRA and Mississippi Critical Area boundary. This modified boundary encompasses 15,396 acres. This is 1,564 acres less than the legal maximum.

An advantage of using a combination of political lines and roads is that the boundary is based on legally-defined, relatively stable features. Roadways provide stable, visible landmarks and are logical boundaries for protection of scenic features. Although this boundary is less than ideal for addressing both environmental and equity concerns, it is likely to be supported by the local communities. During the community-based planning process, the general response to making major changes to the boundary has been "If it ain't broke, don't fix it," indicating that citizens and local governments are used to the boundary as it is and don't desire major changes. The existing boundary has been in place since 1976, and the local communities have written their comprehensive plans and zoning ordinances in accordance with this boundary. The Data & Technical Committee (composed of local officials, planning staff, and agency representatives from the various local communities) have made suggestions for minor fixes, mostly to remove areas beyond major roadways and to accommodate anticipated development as outlined in their comprehensive plans. Many of these suggested changes are reflected in the proposed modified boundary. Some of the suggested roadway boundary modifications, however, were not able to be used because of a conflict with Minnesota Statute 103F.325 Subd. 1b(3) which states that "…the boundaries of the area along the river…may not include more than 320 acres per mile on both sides of the river." When the acreages for the roadway boundary modifications were analyzed using Geographic Information Systems, it was revealed that in some of the areas with proposed changes the acreage totaled more than the 320 acres that the statute would allow. These areas were further modified, primarily back to the original 1976 boundary, in order to meet the statute criteria. These changes are reflected in Maps 2 and 3 of this document. One other minor change in southeastern St. Cloud was needed because the original boundary followed a railroad right-of-way that no longer exists.

Conclusions

Making major, corridor-wide changes to the existing boundary would affect numerous landowners as well as the comprehensive and zoning plans of local governments. Many existing structures and land uses would become substandard or nonconforming. All three alternate boundaries considered protect more sensitive features than the existing boundary (see Table 8). However, both the bluff-based boundary and the equidistant boundary fail to demonstrate large advantages that would justify the significant changes necessary. Modifying the current boundary to address local concerns and increase protection of sensitive areas minimizes community impact, while improving protection in some areas and making the boundary easier to find in the field. This alternative removes some areas beyond major roadways, while expanding the boundary to protect bluffs and floodplains in other areas. This alternative also adjusts boundaries within the cities of Dayton and Ramsey to correspond exactly to the Mississippi River Critical Area boundary (which is also

the boundary of the Mississippi National River and Recreation Area) so those two land use districts are identical.

Table 8 compares the alternate boundaries based on GIS analysis of scenic quality, environmental sensitivity, and cultural importance, which are all outstanding river resource values. This analysis helped quantify the scenic, environmental, and cultural values as a way to determine the pros and cons to each boundary alternative. Values for scenic, environmental, and cultural features indicate the percentage of features covered by each proposed boundary. In comparison to the existing boundary, coverage is improved by all alternate boundaries for each of the feature categories.

Table 8: Comparisons of Alternate Boundaries

BOUNDARY	PROS	CONS
Existing W&S Boundary (Approx. 14900 acres) scenic features: 57% environmental features: 48% cultural features: 61%	• generally accepted after 24 years • local comprehensive plans compatible with boundary	• landowner inequity • distance of boundary from river highly variable • not ecologically-based
Bluffline-based w/ 500ft buffer (Approx. 15100 acres) scenic features: 64% environmental features: 49% cultural features: 64%	• easy to visualize limits where bluffline is present • ecologically-based • best distinction between land types • Covers highest % of scenic features	• difficult to delineate 13% slope; need experts to define • minimal protection where bluffline is close to river • bluffline discontinuous; gaps between 13% slope are hard to define; complicated boundary • difficult enforcement
Equidistant 1240-foot buffer (Approx. 17000 acres) scenic features: 62% environmental features: 53% cultural features: 72%	• equity among adjacent landowners • emphasizes protection of riparian land (buffer strip concept) • Covers highest % of environmental and cultural features	• difficult to "visualize" boundary • defining on landscape requires precision tools • cuts through land types, environmental features, buildings • difficult enforcement
Modified Boundary (Approx. 15000 acres) scenic features: 60% environmental features: 49% cultural features: 63%	• addresses concerns of local governments • increases acreage of sensitive areas • most likely to gain mass support; less radical changes for property owners	• landowner equity still highly variable • distances of boundary from river still variable; unequal protection • not ecologically-based

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Riverway Landscape Character

Landscape character is a way of thinking about the character of various river segments in terms of existing development, vegetation, topography, and general visual character. This 53-mile riverway is not the same throughout its length, and establishing landscape character districts is a way of clustering descriptions of various river segments. The eventual outcome is not just a description of different river segments, though, but the use of those landscape character districts to establish land use zoning districts.

Existing Condition

Under the existing rules for the State Wild and Scenic Rivers System, river segments are classified as wild, scenic or recreational based on the amount of development that existed at the time of a river's designation. This formed the basis for three land use zoning districts used on all the state's designated rivers. In the Mississippi Scenic Riverway, the area from St. Cloud to Clearwater is designated scenic, and the area from Clearwater to Anoka is designated recreational. The result is that there are two land use zoning districts in the riverway and each has strict development standards focused on protecting rural and largely undeveloped conditions.

The state's policy of classifying rivers as wild, scenic or recreational based on the amount of development existing at the time of designation is consistent with and modeled on the National Wild and Scenic Rivers System. However, the federal system did not use those classifications as models for future management, but only as benchmarks to ensure future development did not degrade an area classified as wild, for example, to scenic.

In using the classifications as the models for land use zoning districts, the state ignored the existing landscape character of the valley and imposed zoning standards that were in some cases inappropriate. In addition, the standards imposed in most cases did not take into account the anticipated growth of riverway communities.

Creating Landscape Character Districts

In developing this plan, RiverForum attendees were asked to describe the character of different segments of the river. Landscape character districts were developed and RiverForum attendees then participated in an exercise to identify districts for each riverway segment based on existing conditions. A subsequent exercise focused on adjusting landscape character district boundaries based on attendees' vision for the river in 2020.

RiverForums attendees were asked to "ground-truth" the general locations and descriptions of the landscape character areas using their general knowledge of and familiarity with each landscape district. Attendees were encouraged to concentrate on areas most familiar to them. Map 12: Citizen Favorite Places depicts the final results of the exercise and can be found in the Map Atlas.

Proposed Landscape Character Districts

This section provides descriptions of the proposed landscape character districts. The actual boundaries of the districts will be determined through a public rulemaking process. Map 3: Proposed Land Use Districts, shows the approximate location of the land use districts that are being considered as part of this plan.

Rivertown

This district is largely developed, often with city services (i.e., sewer and water, curb/gutter, etc.) within existing municipal boundaries. Development may include a mixture of land uses, including residential, commercial, institutional, parks and open space. Residential neighborhoods may be compact and urban in character. This district often encompasses the oldest and most historic sections of a community. These communities have a long history and strong relationships to the river. Population is concentrated in the heart of the community, generally fanning out and away from the river.

Rivertown Expansion

This district adjoins existing urban areas and is either currently developing or slated for development in the near future. City services are expected to be extended within these areas over time and in an orderly fashion. Residential land use, parks and open space are the most likely land uses to occupy these areas in the future. Current land use includes residential, parks, open space, limited commercial, and extractive uses (i.e. gravel pits).

Rural Residential

Decidedly rural in character, single-family residential land uses dominate a narrow band along the river's bluffline, sometimes only one lot deep. Numerous subdivisions exist in these areas where lot sizes range from 2-20 acres. Some developments contain numerous homes. No city services are provided, with most homes on individual wells and on-site waste treatment systems, although some may be on shared systems. It is highly unlikely that city services would ever be available to much of this area because development density is low and will remain so. Many lots have river frontage. The area is high in scenic quality, with most of the homes built in wooded settings. Away from the river and behind the residential subdivisions, agricultural land use is dominant.

Rural Open Space

Non-farm related development is extremely limited and land use is primarily agricultural. If the land is not farmed, it is generally wooded or semi-open, providing savanna type (i.e. park-like) settings, except in those areas currently occupied by electric power generating facilities. The potential for future development exists in some areas. Like the river islands, these areas are generally undisturbed and natural looking in character, high in scenic quality and support many plant and animal communities.

Mississippi River Critical Area, Mississippi National River and Recreation Area

This process of developing and identifying landscape character districts did not address the river segment in Dayton and Ramsey, in which the state riverway designation overlaps with the Mississippi River Critical Area and the Mississippi National River and Recreation Area (MNRRA). Executive Order 79-19, which created the Mississippi Critical Area, creates a land use zoning district that is somewhat different than the standards established by the state riverway. Inconsistencies between these two state standards will be resolved by developing a single set of development standards, which will be adopted by each community.

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Land Use Controls

A primary tool for protecting the values for which this riverway was designated is the use of land use controls for development of private land. This is accomplished through state-developed standards that local governments must adopt and enforce through their zoning ordinances.

The existing regulations were adopted in the mid-1970s when land use controls, especially outside municipalities, were fairly new and relatively untested. While the riverway standards were strong by comparison, much has changed in the last 25 years and many counties now have zoning ordinances designed to preserve agricultural landscapes that are far more restrictive than riverway zoning. Agricultural zoning is encouraged as a way for counties to provide stronger protection for the riverway. As a result of the Wild and Scenic Rules, some of the greatest rural residential densities in area counties occur in the riverway. Much development has occurred in the river corridor based on those development standards.

The state's shoreland management rules, which affect management of all of the state's rivers except those designated under the State Wild and Scenic Rivers Program, were amended in 1989 and in some cases are actually more restrictive than the existing riverway rules.

A fundamental problem with the existing standards, as discussed in the previous section, is that there are only two land use districts and both are designed for rural, relatively undeveloped landscapes. The rules provided municipalities with a mixture of special standards, but in most cases did not take into account their anticipated growth.

With the creation of four land use districts in this plan, communities have greater flexibility to address not only current conditions but obvious growth patterns as well, consistent with protection of the riverway's fundamental values. Tables 9A and 9B summarize the standards in the existing two land use districts and the four proposed land use districts. The proposed standards would require rule amendments to be completed and adopted.

Minimum lot size requirements are appropriate in rural areas where new development could affect the values for which that river segment is being protected, but are less relevant in urban and urban-edge areas, where city services are generally available and the landscape is already dominated by urban development. Existing rules allow lot sizes as small as 10,000 square feet in St. Cloud, Clearwater, Monticello and Elk River, and 15,000 square feet in Otsego. Larger lot size requirements are appropriate in the rural open space district, where very little development exists and natural values need to be protected. Since the riverway was created in the 1970s, counties have adopted large-lot standards in rural areas to protect agricultural land. Counties are encouraged to adopt those standards in the riverway.

Similarly, minimum lot width standards are appropriate in the rural areas and should be the greatest in the rural open space district, while minimum lot width requirements are less relevant in developed areas. Existing rules allow lot widths as narrow as 75 feet in St. Cloud, Clearwater, Monticello, Elk River and Otsego. Lot density is limited to one dwelling unit per parcel in the existing rules and allows local governments to set density in St. Cloud, Monticello, Elk River and Otsego. The DNR does not propose any changes to the lot sizes or density.

Water setback standards are greater in rural areas and greatest in the rural open space district. Somewhat reduced standards are appropriate in communities when the lots are served by city sewer. The existing rules allow a 50-foot setback under certain conditions in St. Cloud, Clearwater, Monticello and Elk River; the DNR recommends increasing the setback to 75 feet.

Structure height standards protect visual character, especially in undeveloped areas like the rural open space district, where the structure height limit is proposed to be reduced to 30 feet from 35 feet. In fully developed communities, the rivertown district can rely on underlying local zoning standards for structure height. The existing rules establish a 35-foot height standard in all areas; the DNR proposes to lower the standard to 30 feet in the rural open space district and to eliminate a state standard in the rivertown district.

Land use should be limited to single-family dwellings except in the developed rivertown district, where underlying zoning standards may permit multiple-family dwellings, commercial uses, etc. The DNR does not propose changes to the existing rules, with the exception of allowing duplexes in the rivertown expansion district.

The shore impact zone is a concept developed when the statewide shoreland standards were revised in 1989 and therefore wasn't addressed in the existing riverway rules, which are much older. The DNR recommends incorporating the shore impact zone concept and defining the zone as land located between the ordinary high water level and a parallel line set at 50 percent of the structure setback, across the entire width of the lot. The DNR also recommends that 75 percent of that land area be retained in native vegetation. This vegetative buffer is an important tool for protecting scenic character and water quality, while giving landowners flexibility to maintain a mowed area for pedestrian and visual access between the house and the water.

Bluff setback standards are very important to protect scenic character and prevent erosion. The DNR proposes standards to require a minimum 30-foot setback in the rivertown and rivertown expansion districts, 50 feet in the rural residential district and 100 feet in the rural open space district. The proposed standards provide protection for blufftop areas, recognizing that building construction always disturbs an area larger than the building footprint. The existing rules allow bluff setbacks of as little as 20 feet in some rural areas and zero in most developed areas; those standards are not adequate to prevent blufftop disturbance, which often leads to erosion and resulting visual impacts.

Impervious surface includes those portions of a lot where water will not infiltrate the soil, such as driveways, sidewalks, patios and the footprint of structures. The existing rules establish that not more than 30 percent of a lot's area be impervious in St. Cloud, Clearwater, Monticello and Elk River. In the remainder of the riverway, the existing rules do not establish an impervious surface standard.

Later, revised statewide shoreland standards established a 25 percent impervious surface requirement. Limiting the amount of impervious surface on a lot limits the amount of runoff to the river and its tributaries, affecting water quality and erosion. Recent studies show that detrimental impacts to the health of a watershed occur when impervious surface is 15 percent or greater. While that standard is nearly impossible to reach in urban areas, storm sewers and urban best-management practices can limit the negative impact of runoff. The Minnesota Pollution Control Agency (MPCA) has data, information, and a permitting process in place for storm water management. MPCA has published *"Protecting Water Quality in Urban Areas, Best Management Practices for Dealing With Storm Water Runoff from Urban, Suburban and Developing Areas of Minnesota*," which is a storm water best management practices manual outlining practices, techniques, and measures that prevent or reduce water pollution from nonpoint sources. The DNR proposes following these urban BMPs when developing within the Mississippi Scenic Riverway.

In more rural areas, there is ample research showing the importance of limiting impervious surface. The flaw in using a percentage of a lot as an impervious limit is that large lots would then allow unreasonably large amounts of land to be impervious. The DNR proposes to allow up to 15 percent of a rural lot to be impervious, but not more than 13,000 square feet. While 13,000 square feet is 15 percent of the area of a two-acre lot, there is no reason to construct more impervious surface than that on a larger lot, such as a four-acre lot.

Table 9A: Existing Land Use Standards (Minnesota Rules Chapter 6105) Mississippi Scenic Riverway

Existing rules							
District	**Scenic**	**Recreational**	**St. Cloud, Clearwater, Monticello, Elk River**	**Becker, Dayton, Ramsey**	**Elk River Township (when annexed)**	**Otsego (rural part)**	**Otsego (urban part)**
Lot size	4 acres	2 acres	20/15/10[1]	2 acres	20/15/10[2]	2.5 acres	40/20/15[3]
Lot width	250 feet	200 feet	100/75[4]	200 feet	100/75[5]	200 feet	150/75[6]
Density	1 unit	1 unit	Local	1 unit	Local	1 unit	Local
Water setback	150 feet	100 feet	75/50[7]	100 feet	100 feet	100 feet	100/75[8]
Tributary setback	100 feet	100 feet	75/50[9]	100 feet	100 feet	100 feet	100/75[10]
Structure height	35 feet	35 feet	35 feet	35 feet	35 feet	35 feet	35 feet
Land use	Single family	Single family	Local	Single family	Local	Single family	Local
Shore impact zone (% natural)	0	0	0	0	0	0	0
Bluff setback	30 feet	20 feet	0	20 feet	0	20 feet	30 feet
Impervious Surface	0	0	30 percent	0	30 percent	0	0

[1] 20,000 square feet if unsewered, 15,000 square feet if sewered and riparian, 10,000 square feet if sewered and nonriparian.
[2] 20,000 square feet if unsewered, 15,000 square feet if sewered and riparian, 10,000 square feet if sewered and nonriparian.
[3] 40,000 square feet if unsewered, 20,000 square feet if sewered and riparian, 15,000 square feet if sewered and nonriparian.
[4] 100 feet if unsewered, 75 feet if sewered.
[5] 100 feet if unsewered, 75 feet if sewered.
[6] 150 feet if unsewered, 75 feet if sewered.
[7] 75 feet if unsewered, 50 feet if sewered.
[8] 100 feet if unsewered, 75 feet if sewered.
[9] 75 feet if unsewered, 50 feet if sewered.
[10] 100 feet if unsewered, 75 feet if sewered.

Table 9B: Proposed Land Use Standards, Mississippi Scenic Riverway*

Proposed rules				
District	**Rivertown**	**Rivertown Expansion**	**Rural Residential**	**Rural Open Space**
Lot size	Local	Local	2 acres	4 acres
Lot width	Local	Local	200 feet	250 feet
Density	Local	2 units	1 unit	1 unit
Water setback	100/75[11]	100/75[12]	100 feet	150 feet
Tributary setback	100/75[13]	100/75[14]	100 feet	100 feet
Structure height	Local	35 feet	35 feet	30 feet
Land use	Local	Single family, duplex	Single family	Single family
Shore impact zone	75% native	75% native	75% native	75% native
Bluff setback	30 feet	30 feet	50 feet	100 feet
Impervious Surface	Urban BMPs	Urban BMPs	15% or 13,000 sq. ft.	15% or 13,000 sq. ft.

Local standards would be established by the local government, usually through its underlying zoning ordinance and still meet all minimum Minnesota Shoreland Rules and Standards that apply.

Planned cluster development (PCD) concepts can be used and should be encouraged in all land use districts. Lot size and lot width standards can be deviated from under the condition that PCD is used to cluster homes in order to achieve 50% green space for natural resource and shoreline protection on a parcel of land. Each PCD project should be evaluated carefully to make sure that this type of development is appropriate for the given parcel of land. PCDs are not appropriate in all cases.

* Any changes in standards require a public rulemaking process and will not take effect until the rule process is completed and finalized. DNR proposes to amend Minnesota Rules Chapter 6105 with the proposed land use standards as described above.

[11] 100 feet if unsewered, 75 feet if sewered.
[12] 100 feet if unsewered, 75 feet if sewered.
[13] 100 feet if unsewered, 75 feet if sewered.
[14] 100 feet if unsewered, 75 feet if sewered.

Planned Cluster Development (PCD)

The DNR encourages the preservation of green space and the scenic values of the Mississippi Scenic Riverway. Planned cluster development (PCD) will be encouraged in the riverway district and will strongly emphasize green space preservation and scenic aesthetic protection. Though PCD has been a development option from the time of the Wild and Scenic Rivers Program's inception, this plan for the Mississippi Scenic Riverway will help explain and customize the concept to reflect the specific needs of this stretch of river.

Planned cluster development allows the clustering or concentration of housing units on one portion of a tract of land, in order to preserve the remaining portion as natural, undeveloped green space. By establishing maximum, allowable densities for a given area, dimensional standards for a parcel, such as lot size, can be modified to allow for the same or an increased number of dwellings to be concentrated in one area, while green space and shoreline along the river are protected in the remaining portion of the parcel. While many local governments allow PCDs, the open space standards sometimes contain a flaw that allows developers to use grassy areas around structures, stormwater holding ponds, etc., as part of their open space requirement. In this plan, "green space" means open space retained in an undisturbed vegetative condition (i.e., wetlands, forests, meadows, shorelines, etc.). It includes lands in a natural state where clearing and grading did not occur during development.

There are many benefits to planned cluster development. It can permanently protect the natural resources in the area, such as woodlands, rivers, lakes, or wetlands. This type of development can preserve scenic views and rural amenities across individual tracts of land. If planned carefully, PCDs can create an interconnected network of protected green space within a community or along a river corridor. This could result in the preservation of wildlife corridors and habitat, river quality protection, and permanent green space, which can be used and enjoyed by all. This connectivity between tracts of land promotes habitat diversity and a healthy ecosystem, as well as leaves land open so a community can decide if it would like to develop some limited recreational facilities on the land at a later date.

PCD can also be economically beneficial by reducing infrastructure costs. Smaller lots clustered in an area can reduce the length of streets and utility lines, and also reduce the cost of installing public sewer and water service if it is needed. The current Wild and Scenic River Statewide rules require central sewage facilities for all PCDs.

Local units of government can encourage the use of PCDs within the scenic riverway in many ways. The primary means of creating PCDs is through the local zoning ordinance. Local zoning ordinances need to provide a mechanism so developers can plan and negotiate new housing developments that consider green space and shoreline protection, while allowing for cost effective, planned development. In some cases, local units of government may, through their ordinances or other means, provide incentives, such as density bonuses, to developers for providing conservation-minded designs.

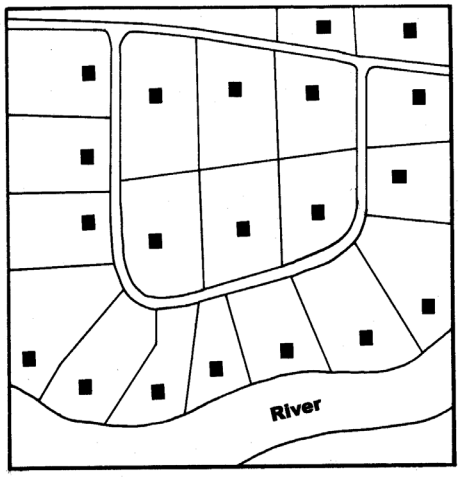
Another way to encourage open space conservation practices is establishing minimum lot sizes and standard densities in the zoning ordinance, and only allowing deviation from those standards if the developer or landowner is willing to cluster dwellings and provide green space within the subdivision design. Table 9B outlines the proposed land use standards for the various land use districts within the riverway, including lot size, width, and maximum allowable density. PCDs require a review procedure and usually some negotiation with the developer. The planned cluster development, however, is not appropriate for all parcels. A careful examination of the site suitability and a natural resource assessment should be conducted in order to determine the best use of the parcel.

Once green space is designed into a development, the appropriate parties (i.e., the local unit of government and the developer) need to ensure that the green space will remain as such according to current plans, rules, and desires of the parties involved. There are several ways to accomplish this, such as deed restrictions or easements. Another consideration for the established green space is maintenance. A homeowner's association can be established in the development to help maintain the communal green space. Sometimes the green space is the responsibility of the local government or the developer/landowner can retain ownership of the property and maintain it themselves.

The DNR encourages maximizing green space and scenic aesthetic preservation along the river corridor, while still enabling local units of government (LUGs) to plan for growth and development. This is accomplished by allowing LUGs to deviate from the lot size and width requirements through the use of PCDs. A local unit of government will have the flexibility to develop a parcel of land based on density rather than lot size as long as procedures for securing a PCD are used and at least 50 percent of the total parcel is preserved as green space along the river frontage. Scenic Riverway standards for setbacks, structure height, land use, and the shore impact zone will also need to be met as part of the development criteria when using Planned Cluster Development. The statewide shoreland rules outline criteria for the appropriate use of PCDs. The DNR recommends incorporating the criteria from the shoreland rules, so that structures will be set back further from the river and the setback area preserved as green space. The DNR recommends allowing density increases in the first tier of no more than 50 percent and increases in the second tier of no more than 100 percent.

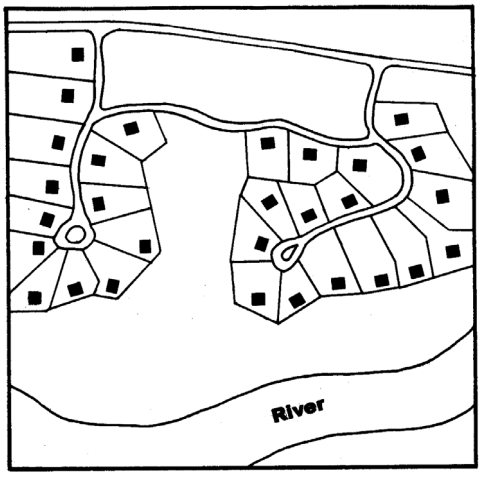
A conventional subdivision design and zoning ordinance typically establish minimum lot sizes and usually do not include common green space areas in new developments. As shown in Figure 1, the typical housing development tends to divide the land into larger parcels without regard for green space or natural resources. Figure 2 illustrates how green space design development can preserve natural resources and provide a community area for all to use and enjoy.

Figure 1: Conventional Development
40 acre parcel
20 lots approximately 2 acres each
Lots with river view: 7



Results:
- Decreased shoreline and natural resource protection
- Lack of public green space

Figure 2: Planned Cluster Development
40 acre parcel
29 lots approximately 1.4 acres each
Lots with river view: 10



Results:
- Increased density for development
- Increased shoreline and natural resource protection
- Public green space
- Increased number of lots with river view, including other lots that view the green space

Local and State Responsibility for Land Use Controls

Under the implementation of the existing management plan, DNR is responsible for overseeing local government administration of land use controls, and for providing technical assistance to local governments. DNR currently certifies local ordinance adoptions and amendments, along with variances and inconsistent plats. These local actions cannot take effect until DNR approves, or certifies, the action. Other local actions, such as conditional use permits, are not subject to state approval, but the state may comment if it chooses.

This has in some cases proved an unnecessary burden on local governments and the DNR, requiring review and action on many routine matters, while unnecessarily delaying landowner actions. The current program has also enabled some local governments to defer to the DNR when decisions are difficult.

Under this revised plan, DNR will continue to certify local ordinance adoptions and amendments. DNR will also continue to certify variances in the rural residential and rural open space districts, but not variances in the river town or river town expansion districts, nor inconsistent plats in any district. Where DNR certification is being dropped, DNR can initiate legal action to challenge a local government's decision if appropriate. This is just like the existing situation with conditional use permits, and with all development permits under the statewide shoreland program.

Vegetation Management

The primary goals for vegetation management are to screen structures from view as seen from the river, to prevent disturbance of environmentally sensitive areas such as steep slopes or riverfront bluffs, and to protect natural vegetation along shorelines.

A secondary goal is to encourage and promote vegetation management that would maintain and restore historically and ecologically significant plant communities and enhance diversity. Oak savanna, floodplain forest, oak forest, oak woodland/brushland, prairie remnant, wet meadow and willow swamp would be the preferred native vegetation types in this corridor. However, vegetative screening of existing structures and potential development sites would take priority over restoration and maintenance of significant plant communities.

This plan emphasizes voluntary actions, coupled with education and stewardship, to preserve and restore plant communities. Removal of exotic species would be encouraged on all lands within the riverway. Control of insects and disease would be recommended if there were a high likelihood that an outbreak would threaten large areas of vegetative cover in the riverway. In addition, pruning or removal of hazard trees would continue to be allowed (hazard trees exhibit damage resulting from insect, disease, age or storm and, if they were to fall, would be a safety risk to people or property). Pruning of normal tree growth to prevent property damage would also be allowed.

On local government lands, voluntary efforts should be encouraged to maintain and restore historically and ecologically significant plant communities. On state lands, the managing agency will maintain and restore historically and ecologically significant plant communities. On private lands, landowners are encouraged to voluntarily maintain and restore native vegetation. The DNR and local authorities and organizations should work together to provide education and technical assistance to landowners regarding vegetation management practices.

Under existing rules, clearcutting is prohibited within 150 feet of the river in the scenic segment and within 100 feet of the river in the recreational segment. These restrictions also apply to steep slopes and to lands 30 feet behind the bluffline in the scenic segment and 20 feet behind the bluffline in the recreational segment. Under this revised plan, clearcutting will be prohibited within the bluff setback area (50 feet in the rural residential district and 100 feet in the rural open space district).

Clearcutting shall not be allowed where soil, slope, or other watershed conditions are fragile and subject to injury. Selective cutting of trees in excess of four inches in diameter at breast height (dbh) is permitted provided that cutting is spaced and continuous tree cover is maintained, uninterrupted by large openings.

Grading and filling in the natural topography within the land use district is prohibited, unless it is an accessory to a permitted or conditional use. If permitted, it must be conducted in a manner so as to minimize earth moving, erosion, tree clearing, and destruction of natural amenities. Exposure of bare ground should be kept to a minimum, with temporary ground cover used until permanent ground cover is planted.

Land Acquisition

When the Mississippi River segment between St. Cloud and Anoka was designated in 1976, the DNR was authorized to acquire land or certain interests in land by fee title, scenic easements, or other interests in land by purchase, grant, gift, exchange, lease, or other lawful means. It did not, however, authorize the DNR to acquire land by eminent domain (condemnation).

Land management maps developed for the 1976 plan show lands recommended for acquisition by fee title or scenic easement. Criteria were developed for selecting and recommending lands to be acquired for fee title or scenic easement. The criteria used were as follows:

Fee Title Criteria

- Lands that possess outstanding scenic, natural, recreational, scientific, historical, and other similar values which can best be protected by placing such lands in public ownership.

- All islands in private ownership.
- Lands that would consolidate existing “blocks” of public ownership, providing for the recreational use of such lands and the preservation of its natural character.
- Lands to be used for active recreation as recommended in the recreation management section of the Wild and Scenic River Management Plan.

Scenic Easement Criteria
- Lands highly visible from the water surface.
- Lands adjacent to, or across the river from, state-owned parks, forests, and other units.
- Environmentally-sensitive lands which would be adversely effected by development.
- Lands which possess outstanding scenic, scientific, natural, historical, and other similar values.

Using these criteria, 846.74 acres of land were recommended for fee title acquisition, and 5,363.37 acres of land along the corridor recommended for scenic easement acquisition. The lands originally proposed for acquisition and the actual land acquired are shown on Map 5 of the Map Atlas. The land or interests in land were to be acquired where funds are available for such purchases.

Because acquisition of land, or interests in land, is from willing sellers at the appraised value, some lands recommended for scenic easement acquisition could be purchased in fee title. This change from the recommended acquisition would be based on the mutual agreement between the state and the landowner(s). Furthermore, additional lands, or interests in land, may be purchased in order to further the policies established in the Wild and Scenic Act and this management plan.

Land exchanges will be expedited, wherever feasible, in order to acquire lands within the land use district boundaries. However, land exchanges will not be recommended if such exchanges would adversely affect other DNR management programs. Local units of government will be encouraged to focus their land acquisition efforts, as they arise, to properties located within the riverway boundary in order to establish public access areas.

The land acquisition program has been relatively inactive in recent years, primarily due to a lack of willing sellers and a lack of funding. Acquisition priorities need to be reevaluated. DNR needs to systematically evaluate development patterns and the resource values of remaining undeveloped sites.

Purchase of Land in Fee Title

Since 1976, the DNR has acquired 657.17 acres of land acquired as fee title or gift. This is about 78 percent of the original goal of 846.74 acre. In addition, 50 islands containing 247.3 acres were acquired by DNR through transfer from the U.S. Department of the Interior’s Bureau of Land Management. Some of the state-acquired acreage includes islands in the Beaver Islands area near St. Cloud. These islands are known to provide

good habitat for endangered or threatened species, such as the Blanding's turtle. There has also been land acquired near Clearwater, Mississippi River Islands, and in the Dayton/Ramsey area. Currently DNR-owned land within the Wild and Scenic corridor is managed by various divisions within the DNR. Some are managed Scientific and Natural Areas (SNAs). The majority of this fee title land is managed by the Trails and Waterways Division.

Purchase of Scenic Easements

The 1976 plan recommended the purchase of extensive scenic easements to preserve the shoreline and vegetation, and the use of land use controls to manage growth in the riverway. As of November 2001, 149.4 acres of the proposed 5,363.37 acres of scenic easements had been purchased, only about three percent of the total goal from the 1976 plan. This was partly due to the property owners' expectations for high land values in the future. Therefore the DNR was unable to find willing sellers. As a result, the focus of land management has relied primarily on enforcement of zoning ordinances by local governments, with oversight by DNR.

Proposed Acquisition

This river management plan does not propose additional land acquisition over and above the 1976 objectives. However, donations of easements or fee title to the state by river corridor landowners would be generally accepted. A scenic easement monitoring program has been developed to provide technical assistance to landowners and DNR field staff about the intentions of the scenic easements, identify land parcels with easements, determine where violations may have occurred, and create a database that can be updated following changes in land ownership.

The land acquisition goals stated in the 1976 Mississippi River Management Plan were not met and will therefore remain as areas identified for special protection through easements and fee title land acquisition. There are several options for pursuing protection of these lands along the river. Some of these options include working with other organizations such as the Minnesota Land Trust or The Nature Conservancy as a partnership. Another option could be working directly with local governments to assist them in identifying shoreline in their communities that could be preserved as open space or greenways. The DNR could work with these communities to develop plans for parks, rest areas, public accesses or open space, and then seek funding through the various sources, including the DNR Outdoor Recreation Grant program and the Canoe and Boating Route program, among others.

Development on Public Lands

Development on public lands within the riverway should be planned and designed through cooperation among DNR, other agencies, local governments, landowners and interest groups. All development on public lands will be subject to a review process that assures such development is consistent with this plan. Development includes construction (new or rehabilitation) and/or uses designated on lands owned or managed by any unit of government. This includes recreational or nonrecreational facilities or uses, including but not limited to day-use facilities, camping facilities, public water accesses, non-motorized and motorized trails (including grant-in-aid snowmobile trails), temporary and permanent structures, roads, highways, etc.

Each jurisdiction owning public land is responsible for using a public review and approval process that provides for notification and opportunities for public review and comment by citizens and other units of government, and demonstrates consistency of the proposed development with this plan and the following criteria:

1. The proposed development is to:
    A. Contribute to the preservation and protection of the corridor's scenic, recreational, natural, historical and scientific values;
    B. Prevent damage to the corridor by intensive development and/or recreational overuse;
    C. Protect any remaining natural communities, rare species and their habitats, and wetlands within the project site, including providing for the removal of or management of any invasive, exotic species;
    D. Retain or increase the existing vegetative cover, unless otherwise provided in an approved natural resource management plan;
    E. Protect any bluff on or adjoining the site from disturbance;
    F. Use best management practices in accommodating storm water runoff;
    G. Protect historical and cultural features, and
    H. Reinforce the character of the riverway land use district in which it lies.

2. Further, any recreational development is to:
    A. Provide for river-related recreation;
    B. Respond to demonstrated need for the recreational facilitiy or use in that reach of river, with reasonable spacing between comparable facilities;
    C. Be able to be maintained and operated sustainably and without impacts on the natural resource, and
    D. Reduce, minimize or mitigate any impacts of recreational use, including but not limited to trespass, noise, overuse, etc., on the site and adjoining properties.

Recreation Management

The reach of the Mississippi between St. Cloud and Anoka is an important segment of our nation's greatest river. Not surprisingly the river and surrounding environs has attracted numerous state and federal designations. In addition to its State Wild and Scenic River status, the river has been established by the Minnesota Legislature as a Canoe and Boating Route. Smallmouth Bass fishing is said to be some of the best in the state and the gentle oak woods and prairie along the banks have scenic value. Thus, recreation opportunities are rich and varied and it is time to assess recreation's status and future needs as the corridor faces high rates of residential and population growth.

Importantly, recreational use of the Upper Mississippi River valley is not limited to the waterway alone. Paralleling the Mississippi River in its entirety, the Great River Road has been designated as a National Scenic Byway for auto tourists and the Mississippi River Trail has been designated as one of this nation's sixteen "Millenium Trails" for bicyclists. All of the Mississippi's designations encourage travelers to follow the routes of early explorers, visit historic Indian village sites, explore historic trading posts and forts, and revel in the splendor of the Mississippi River.

The purpose of this plan is to encourage a range of high quality recreation opportunities consistent with the river's designation and capacity for use. The development and maintenance of selected land and river-oriented recreational facilities will help protect the rights of private landowners, ensure quietude, prohibit trespassing, and maintain the essential quality of the scenic riverway.

About 75% of the potential recreation facilities identified in the original plan have been acquired and developed. There are currently fourteen river accesses along this 53-mile river segment between St. Cloud and Anoka, however, the existing access sites are not evenly spaced. Additional access sites are needed to fill gaps where they exist. Most accesses are public but some are private and require user fees. A few of the access sites are canoe carry-in only. Research is needed to evaluate whether this facilities infrastructure is sufficient to meet current and anticipated demand. This management plan proposes to preserve the existing character of the recreational experience, while anticipating and providing for the growth in recreational demand that could accompany the growth in housing and population in the river corridor. Should additional access and recreation facilities be needed, there are several options to explore. These include:

- An additional access site in Monticello;
- Improvement and expansion of Lily Pond Road where it meets the river approximately one mile downstream from the Lily Pond Islands;
- An access for anglers and boaters two miles above Otsego County Park; and
- An access in Plum Creek Park, City of St. Cloud.

This segment's designation as a state Canoe and Boating Route means there is an

identified, although limited, budget for construction of recreational facilities along the river corridor, such as canoe campsites, rest areas, and river accesses.

The major recreational uses on the river will likely continue to be fishing, hunting, boating, and canoeing. Current uses of public lands adjoining the river, such as picnicking and related activities will likely continue as well. In addition to this Scenic Riverway Plan, an additional recreation management plan would assist in assessing the recreational needs of the river. Information on present use levels is lacking but creel census work carried out by DNR's Fisheries Division in 1997 provides the following:

- Over 53,000 angler hours counted in a five month period on the stretch between St. Cloud and Dayton, Minnesota with the highest use between Elk River and Dayton;
- Total hours of boat use in the entire riverway came to about 23,000.

While these figures do not approach the use levels of popular lakes, they do show that the river corridor is a popular fishing and recreation destination. Current use surveys are needed for this segment of the river to better guide management decisions.

The former Bureau of Land Management (BLM) islands throughout this river segment add another recreation asset the DNR will explore as the islands' manager. Fifty islands containing 247.3 acres were transferred to DNR from BLM, including 19 islands in Sherburne County, 16 in Stearns County and 15 in Wright County. The DNR's Section of Fisheries manages 31 of these islands, the Trails and Waterways Division manages four, and the Ecological Services Division manages 15 of these islands

Canoe camping is provided for at designated water access-only campsites. The six primitive canoe campsites on the river are designed to accommodate overnight use. There are also five designated rest areas along this segment of the Mississippi River. These are intended for day use only. Campsites and rest areas will be built upon demand, and include consideration of privately offered alternatives, and public need. For example, the re-establishment of the Goodin Island campsite is needed, as well as another campsite somewhere between Monticello and Anoka.

Federal Great River Road and the Mississippi River Trail designations provide a unique opportunity to partner with the Federal Highway Administration and others in the development of mutually beneficial interpretive media and kiosks as well as camping and other wayside development that serves the interests of those traveling upon the river as well as those traveling on its adjoining roads/trails.

In recent years there has been great demand for snowmobile and off-highway vehicle (OHV) trail development in Minnesota. The Wild and Scenic River corridors are no exception to this trail development pressure. Minnesota rules currently allow for snowmobile trails on public lands if developed in accordance with the river's management plan, but prohibit OHVs and similar vehicles. The DNR recommends limited development

of OHV and snowmobile trails on public road rights-of-way in the Mississippi Scenic Riverway**,** primarily for the purpose of crossing the river corridor.

Development of snowmobile, OHV and other multipurpose trails in Wild and Scenic River corridors should be coordinated among the managing divisions in the DNR and with other outside parties, such as other state and federal agencies, local units of government, and private organizations, to ensure protection of the wild and scenic qualities of these designated rivers. The DNR's trail assistance and trail grants programs should be considered by local governments as one source of funding for trail development and maintenance. Other funding sources for trails and trail amenities include Federal National Recreational Trail Funds and funds available under the TEA-21 Enhancement Program. The DNR document, Funding Your Trails (2000) provides a guide to some of these grant sources.

Xcel Energy is currently working with Sherburne County and the City of Becker on the development of a multi-use, non-motorized trail in the buffer property on the Sherburne County side of the river between its Sherco and Monticello electrical generating plants. The trail system will be primarily located away from the river bluffs with a few picnic sites located at the river overlooks.

Existing trails within the Wild and Scenic river corridor should be managed according to best management practices and applicable laws and rules in order to protect the river corridor**.** In order to protect resource values for which the corridor was originally designated, new motorized trails should be generally discouraged on public lands within the corridor. Where necessary, DNR divisions will work together to create the best alternative route for any new trails. Non-motorized trails should be designed and managed to balance the goal of providing trail users a high quality outdoor recreation experience while not destroying the values for which the corridor was originally designated. Existing trails or structures will be considered for use wherever possible when developing additional multipurpose trails within the Wild and Scenic river corridor.

There are many areas along the river to enjoy birdwatching and wildlife viewing. The Clear Lake Wildlife Refuge is the only wildlife area located directly adjacent to the Mississippi Scenic Riverway. This refuge is privately owned and managed by a group of landowners in Sherburne County. Birdwatching is also popular at Bridgeview Park Reserve. Hunting is not allowed on the Clear Lake Wildlife Refuge, except in special circumstances. Xcel Energy owns a large tract of property along the Mississippi Scenic Riverway between the Sherco and Monticello generating plants. The public has access to hike, bike, or watch wildlife on the buffer property along the river with annual written permission from the Xcel Energy land coordinator. Coordination between the DNR and Xcel Energy regarding this land is important if the property ever becomes available for purchase. This property could be important for DNR to acquire for public access of the Mississippi Scenic Riverway.

Hunting will be allowed on the river and on posted, publicly owned lands adjoining the river in accordance with applicable hunting laws and regulations. All other hunting that occurs

on private lands will require prior approval from the landowner and is subject to all applicable hunting regulations and trespass laws.

In cooperation with local units of government, private individuals, and groups, the Department of Natural Resources can, as authorized under the State Canoe and Boating Route legislation, mark points of interest, portages, campsites, dams, rapids, and other serious hazards. In order to maintain scenic aesthetics along the river, posting of signs for these recreational facilities will be kept to a minimum, but still provide the user with information to have a safe and interesting trip.

Maintenance of public facilities, such as campsites and river accesses is an important aspect of this plan. The DNR Division of Trails and Waterways is responsible for maintaining these DNR recreational facilities along the river. This includes the development of new facilities, replacement of signs, and general maintenance of DNR property. Each local government will be responsible for the maintenance of their respective lands, as they have in the past. Private landowners will be responsible for their own property as well.

The recreational use of the Mississippi scenic and recreational river and adjacent public lands will be regulated where necessary to ensure that the use does not adversely affect the values for which the river qualified for designation. Hiking and biking trails may be allowed within the riverway, but should avoid the river's edge and should limit the use of impervious surface near the shoreline. Personal watercraft, hovercraft and air boats have strong potential to conflict with the purposes for which the riverway was designated and with the small fishing boats and canoes that predominate in this reach of the Mississippi River. State law prevents personal watercraft use at greater than no-wake speed within 150 feet of shore or of nonmotorized craft; since this reach of the Mississippi is rarely more than 300 feet wide, personal watercraft are essentially restricted to no-wake speeds throughout the riverway. There is a need to increase enforcement of this rule**.** Hovercraft and air boats should be prohibited in the riverway.

Historical and Cultural Resources

To maintain the important historic values that were reasons for the river's Wild and Scenic designation, steps for preservation need to be taken. Minnesota's State Historic Preservation Office (SHPO) administers programs to identify, evaluate, and protect the state's historic and archaeological resources under the National Historic Preservation Act of 1966. SHPO has identified numerous sites along the river corridor that are important to Minnesota history, as well as national history.

Through partnerships with local, state, and federal agencies, Indian Tribes, and private citizens, SHPO works to protect these historic and archaeological resources. Actions taken by federal agencies, such as construction of a new highway, are subject to the Section 106 process, which allows the review of the federal project plans by SHPO and other state

agencies to determine if there are any significant historic or archaeological resources that could be harmed. Upon review, appropriate actions are taken by the agencies to minimize the impact to these resources. Projects under state control have similar guidelines that are followed, which are governed by the Minnesota Field Archaeology Act of 1963 and the Minnesota Historic Sites Act. These two acts provide a system for review of projects that could potentially affect historic and archaeological resources, and provide rules for enforcement of preservation measures by all state agencies.

Local units of government also have ways of protecting these important resources through local historic preservation ordinances. By taking steps to establish a local preservation ordinance, a local unit of government is eligible for the Certified Local Government Program. After certification, a local unit of government is eligible to receive grants and technical assistance from SHPO for historic preservation projects. The cities of Anoka, Otsego, and St. Cloud all have local historic preservation ordinances in place. Other cities in the river corridor, such as Monticello or Elk River, who have numerous historic and archaeological resources, should give special consideration to establishing a local historic preservation ordinance in their community.

Natural features

The Mississippi Scenic Riverway corridor lies within two main ecological classification subsections:

- Anoka Sand Plain, consisting of a flat sandy lake plain and terraces, including low moraines and small dunes.
- Big Woods characterized by gently to moderately rolling topography and originally forested by red oak, sugar maple, basswood, and American elm. Presently, it is 75-85% farmed.

Because of this location, there are many natural features along the river corridor, both inside and outside the designated Scenic Riverway boundary. Map 6 of the Map Atlas: Natural Features, shows the general location of special animals or colonies, special plants or other natural features, and geologic formations or fossil evidence. Some of the natural communities found in the corridor include dry oak savanna forest, floodplain forest, and dry prairie. Each of these natural communities is unique and therefore provides important habitat to a specific variety of plants and animals.

Endangered and threatened species

Due to the unique natural communities and habitats found along the Mississippi Scenic Riverway corridor, endangered and threatened species can be found in this area. An endangered species is one that is jeopardy of extinction throughout all or a significant portion of its range in the state. A threatened species is one that likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota. A species of special concern, although not endangered or threatened, is

extremely uncommon in Minnesota, or has unique or highly specific habitat needs and deserves careful monitoring of its status.

The Mississippi Scenic Riverway corridor is home to one of Minnesota's threatened reptiles, the Blanding's turtle. Also found in this river corridor is the butternut tree, which is a species of special concern in Minnesota. Several other species of concern along this corridor include the Loggerhead shrike, black sandshell mussel, creek heelsplitter mussel and Plains pocket mouse, while some rare plant species include the Georgia bulrush, Half bristly bramble, and Hill's thistle.

As the Interstate 94 corridor continues to develop with housing and commercial businesses, the threat to the natural communities and plant and animal species currently found along this river corridor will continue to increase. When planning for future expansion of housing and economic developments, and transportation systems, special consideration needs to be made for these species and their habitats.

River Stewardship

River stewardship is an important aspect of this river management plan. The importance of the resource to the stakeholders in the river's vicinity is evident through the vision statement that was developed by citizens participating in the planning process.

> "...*Effective stewardship and management of the river and its resources is achieved through the responsible undertaking of individuals, communities, and agencies that respect the diversity of interests within the region; while at the same time promoting sustainable uses of river resources."*

Stewardship by local citizens and groups will be the most effective means of ensuring the vision for the river is achieved. The public planning process conducted during this plan's revision captured a number of issues/concerns of local citizens, among them land stewardship. Many citizens highlighted the importance of education for landowners and suggested developing a stewardship manual concerning watershed quality, river corridor charcteristics and basic information on proper ways to profit from while caring for riverfront property. Another suggestion was for hands-on education, such as stewardship workshops or a "stewardship seminar". Simple publications, such as individual fact sheets or newsletters, were also suggested as ways to promote river stewardship.

Several citizens at the RiverForums suggested that better coordination among government agencies was a way to make information on the river resources, regulations, and stewardship opportunities more readily available. A final suggestion from the public was to encourage landowners to become educated on land stewardship, such as the value of the river and ways to maintain the watershed quality, with the transfer of deed. This could be accomplished when the landowner applies for a building permit or through voluntary

training sessions.

The general public awareness of the river and its special designation as Wild and Scenic needs to be increased. This can be accomplished in a variety of ways. Signs, such as those designating Scenic Byways in the State, could be used much the same way to designate Wild and Scenic rivers. This would be a simple way to get people to recognize specially designated rivers in the state of Minnesota. With increased awareness, comes increased interest about rivers and watersheds.

A stewardship program could be developed. The St. Cloud to Anoka segment of the Mississippi River would be a good pilot area for such a program. There is currently no organized program that spans the entire corridor. There is some effort taking place to clean up the river in St. Cloud. The assistance of volunteer groups will be encouraged to help in the removal of litter from Department of Natural Resources water access campsites and rest areas. The Kiwanis Club of St. Cloud participates in the DNR Adopt-A-River program, which gathers volunteers to cleanup litter in and along the river during the year.

“Friends of the River” is another concept that could work well in this river corridor. The Friends of the Mississippi River group already exists, but primarily supports the Twin Cities metropolitan segment of the river. This group could be expanded to include the portion of river between St. Cloud and Anoka. The Rivers Council of Minnesota and the Sierra Club have groups throughout the State participating in similar projects. The National Park Service also has the Rivers, Trails, and Conservation Assistance (RTCA) program that provides local units of government and organized groups with technical support to accomplish projects in a variety of ways. RTCA can assist communities with resource assessment and mapping, public meeting facilitation, planning, project management and coordination, and identifying potential sources of funding for conservation efforts.

The DNR is promoting stewardship in the corridor as part of its initiative to deliver information and technical assistance aimed at areas experiencing rapid growth. Communities in the corridor may contact Central Region’s Community Assistance Coordinator. Some of the services offered include information on managing storm water, methods for identifying key ecological features and functions in the community, assessing wildlife habitat potential, designing and maintaining shoreline for the long-term, and much else. The Department also offers grants for shoreline improvement projects and for natural area protection.

Partnerships will be the key link for creating a successful stewardship program within this river corridor and its surrounding watershed. These partnerships will need to be between public citizens, local units of government, state agencies, and private interest groups. All of these stakeholders need to work together to protect the resource effectively.

APPENDIX A

RiverForum Issue and Concern Statements

The 350 issue and concerns statements, collected at previous RiverForums, have been summarized and the primary points categorized.

Land Use General

1. Land uses adjacent to the river, which are not enhanced by or dependent upon the river per se, are degrading the scenic quality and environmental value of the river corridor.

2. Industrial land uses should not be permitted in the river corridor.

Land Use - Commercial
1. Unregulated commercial development will impact the water quality of the river.

2. Commercial development areas that existed prior to the wild and scenic designation need to be allowed for and permitted; particularly historic commercial areas.

3. New commercial development needs to be controlled, but allowed in appropriate areas; particularly in and around existing built-up commercial districts in existing urban areas.

4. Any new commercial development needs to have special rules and requirements to be met that make sure the scenic and aesthetic values of the river are protected.

5. Commercial uses of the river should be encourage if it provides a broader public benefit and use (e.g. restaurants, canoe rentals, etc.); buildings and developments that limit public access should not be permitted (e.g. office buildings, grocery stores, etc.)

6. Commercial development should not be allowed in the wild and scenic river corridors.

Land Use – Residential

1. Residential development should only take place in areas that are not environmentally sensitive.

2. Poorly designed residential developments will degrade the river corridor environment and impact the high quality of life enjoyed by residents.

3. Residential development should be allowed on smaller lots (> 2 acres) if urban sewer and water services are available.

4. Wild and Scenic rules currently preclude providing urban services economically to

homes on large lots.
5. There should be more flexibility in the wild and scenic rules and regulations, particularly for residential development when it can show the impacts are minimal.

6. Current wild and scenic rules are too confusing for the average landowner/homeowner to understand.

Land Use - Bridges and River Crossings

1. The scenic quality and character of the river is compromised by having too many river crossings.

2. Bridge crossings and high capacity roadways along the river introduce noise pollution into areas that would otherwise be quiet.

3. The current rules regarding river crossings are adequate to protect the river, but confusion exists on how the rules are implemented and by whom.

4. There will be a need for additional bridge crossings in the future; must figure out a way to accommodate them without compromising the river environment.

5. The number of new river crossings needs to be minimized.

Land Use - Development and River Landscape Character

1. Any development along the river corridor must be sensitive to the visual and ecological impacts that may occur.

2. The character of the river needs to be maintained; that includes recognizing the mix of land uses (e.g. residential) and scenic areas.

3. Over-development and careless development in the river corridor will ruin the environment and the scenic and aesthetic qualities of the river.

4. Too much shoreline vegetation is being lost to inappropriate cutting and removal.

5. Development always has impacts on the river environment and ecology; people must remember this when making decisions about development in the river corridor.

Land Stewardship

1. Landowners and homeowners do not fully understand how their individual actions on the river affect the river's environment and scenic quality.

2. Property owners generally prefer to do the "right thing" environmentally, but are

unaware of what that means.

3. Property owners are unaware of the ecological significance of plant and animal communities on their property and how to protect these special features.
4. Natural areas and sensitive plant and animal communities are disappearing due to a lack of understanding of their importance as well as development pressures.

5. Landowners need help in defining the ecological and historical significance of their property.

6. Landowners who develop their property should be given guidelines and encouragement to develop their property in ways that are environmentally friendly and sustainable.

7. Land stewardship - what it means and what it takes to be a good steward - is not a familiar concept to many landowners; particularly what it means in the context of the river environment.

8. An understanding and knowledge of the cause and effect of land development and use is important if river resources are going to be protected.

9. Voluntary land use practices that help the river environment are not widely publicized and made available to the right people.

Environmental Resources

1. There is a lack of effective water quality monitoring.

2. Enforcement of existing water quality and land development regulations needs to be done more comprehensively.

3. Municipal wastewater treatment plants need to be fully regulated and monitored.

4. Agricultural land use practices that degrade water quality from polluted runoff need to be eliminated.

5. Riparian landowners don't understand how their property management actions can impact the river's water quality, particularly lawn fertilization and mowing.

6. Aging and improperly maintained septic systems are health hazards when they fail and the inadequately treated sewage enters the river.

7. Beaver Islands are important areas maintaining sensitive and unique communities of plants and animals; they should have special preservation protection.

8. Wetlands in the river region are being degraded by and lost to development; they are

important to maintaining good water quality.

9. River bank erosion is severe in some areas and increasing.

10. The smallmouth bass fishery is important on the river and should continue to be properly managed.

11. Wildlife habitat should be a consideration when planning open spaces.

Recreation and Tourism

1. Recreational use on the river; particularly boating; has negative impacts on the river environment and property owners.

2. Littering and trash dumping is occurring on public and private property.

3. Off-road vehicles and all-terrain-vehicles are inappropriately using gravel beds when the river is low and trespassing on private property.

4. Ways should be found to encourage use of the river corridor and for communities to benefit from it.

5. Personal watercraft are being inappropriately used; they disrupt wildlife and are a major source of noise pollution.

6. Personal watercraft must be strictly controlled.

7. Watercraft use of the river is appropriate.

8. Trails connecting communities and open space areas are lacking and should be considered where appropriate.

9. Public access to the river and riverbanks is limited to only a few areas.

10. More public campsites should be developed along the river; people are camping on private land.

Administration and Implementation of Wild and Scenic River Plans

1. Generally, the current regulations are working well; no need for change.

2. Rules are vague and subject to arbitrary interpretation.

3. Management regulations do not allow enough flexibility for existing development uses and creative use of new techniques.

4. Classification of the river needs to be revised; it no longer reflects the real intent of the original classification scheme.

5. The existing management plan does not reflect the existing character of the river; especially in areas where development has occurred.

6. The riverway boundary is inconsistent in helping protect the river environment.

7. The current riverway boundary should be revised to follow natural features and be adjusted to better protect the river corridor.

8. The existing riverway boundary is too close to the river in some areas and too far from the river in other areas; this results in great inequities to individual property owners.

9. The current Wild and Scenic rules are poorly administered at times (e.g. vegetation cutting); sometimes ignored entirely.

10. Private property rights must be respected; wild and scenic rules cannot be allowed to unfairly restrict private development.

APPENDIX B

Comments and Responses
on the January 2003 Draft Management Plan

(See supplemental document)

APPENDIX C

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