

Mississippi Blufflands State Trail

Master Plan



Minnesota Department of Natural Resources

Division of Parks and Trails

September 2016

The Minnesota Department of Natural Resources (DNR), Parks and Trails Division would like to thank all who participated in this master planning process. Individuals and groups in local communities have been working for years to support this trail. Many DNR staff, city, county and state officials, trail committee members, and local citizens contributed their time and energy to the planning process.

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For more information on this management plan, please contact the DNR Parks and Trails Division at (651) 259-5600.

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Minnesota Department of Natural Resources

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Minnesota Department of Natural Resources Approval of Mississippi Blufflands State Trail Master Plan

Minnesota Statutes, Section 86A.09, requires that a master plan be prepared for units of Minnesota's outdoor recreation system, including state trails. This master plan addresses the Mississippi Blufflands State Trail, which is authorized to extend about 18 miles from the Cannon Valley Regional Trail to Lake City. This trail was authorized in 2015, in Minnesota Statutes, Section 85.015, Subdivision 6a.

The Minnesota Department of Natural Resources interdisciplinary team developed the master plan with assistance from many trail advocates, local government agencies, and other stakeholders located throughout the trail corridor. The plan received input and comments from the public during a 30-day public review period and an open house meeting held in Lake City.

The Mississippi Blufflands State Trail Master Plan has been reviewed by the Division of Parks and Trails and by the Central Regional Management Team.

I have reviewed this master plan and determined that it complies with Minnesota Statutes 86A.09 and find it provides for the administration of the Mississippi Blufflands State Trail in a manner that is consistent with the purposes for which the trail was authorized.

Erika Rd Rivers

Erika Rivers, Director
MNDNR, Division of Parks and Trails

9/19/2016

Date



TABLE OF CONTENTS

Executive Summary.....	i
1. Planning Process, Context and Goals.....	1
Planning Process	1
Statewide Context.....	2
Regional Context.....	6
Guiding Principles for Sustainable Trails.....	7
Vision and Goals.....	8
2. Recommended Trail Uses	9
3. Trail Routes	12
Segment 1: Red Wing to Wacouta	15
Segment 2: Wacouta to Frontenac	16
Segment 3: Frontenac to Lake City	19
4. Community and Recreational Connections	21
Segment 1: Red Wing to Wacouta	21
Segment 2: Wacouta to Frontenac	25
Segment 3: Frontenac to Lake City	30
5. Trail Management.....	32
Projected Trail Use	32
Trail Maintenance	33
Information and Education	34
Enforcement	37
6. Trail Corridor Resources.....	38
Ecological Classification System.....	38
Blufflands Ecological Subsection.....	38
Climate Change	40
Vegetation.....	41
Water Resources, Recreation and Fisheries	47
Wildlife and Habitat	51
Historical and Cultural Resources	53

7. Implementation: What Happens after the Master Plan is Finished? 56

References 60

Appendix A: Legislative Authorization and Outdoor Recreation Act..... 62

Appendix B: Summary of Public Participation 65

Appendix C: Special Concern, Threatened or Endangered Species, and Natural Features 69

FIGURES AND TABLES

Figure 1: Trail Planning Process 3

Figure 2: Authorized and Developed State Trails 4

Figure 3: Regional Context..... 5

Figure 4: State Trail Search Corridor..... 13

Figure 5: Segment 1, Red Wing to Wacouta 14

Figure 6: Segment 2, Wacouta to Frontenac 18

Figure 7: Segment 3, Frontenac to Lake City 20

Figure 8: Frontenac State Park..... 27

Figure 9: Wildlife Management Areas 29

Table 1: Visits to Area Recreational Facilities 32

Table 2: Estimated and Projected County Population 33

Figure 10: Ecological Subsections 39

Figure 11: Presettlement Vegetation..... 45

Figure 12: Native Plant Communities 46

Table 3: Vulnerability Factors for Species in Greatest Conservation Need 52

Table 4: National Register of Historic Places 55

Table 5: Summary of Public Review 66

EXECUTIVE SUMMARY

The Mississippi Blufflands State Trail was authorized in 2015 to extend from the Cannon Valley Regional Trail in Red Wing to Lake City. This master plan provides a long-term vision and direction for development and management of the Mississippi Blufflands State Trail. The plan was developed through a public planning process that involved many stakeholders and local partners.

Several complementary routes and trails comprise a regional trail system in southeast Minnesota. The Mississippi Blufflands State Trail will expand upon existing off-road trails, which provide similar experiences. Other routes, including the Mississippi River Trail bicycle route, Great River Road National Scenic Byway and Mississippi River State Water Trail, provide complementary recreational opportunities in the area.

The trail will be developed primarily for non-motorized users. The trail will be paved to accommodate biking, hiking, and other summer uses. Cross-country skiing, snowshoeing, and other snow-based uses may be accommodated in the winter. Limited portions of the trail may be used for snowmobiling.

This plan identifies a search corridor for state trail routes, and describes several potential routes in more detail. The trail will extend about 18 miles from Red Wing to Lake City, with connections to Frontenac State Park and other important destinations. Trail connections may be made through a combination of local, regional and state trails. The goal is to provide a route that will take users away from highways and provide access to, and vistas of, the Mississippi River and surrounding bluffs. Land acquisition from willing sellers will be necessary to accomplish this goal. However, portions of the trail may be located within existing public rights-of-way like U.S. Highway 61.

The plan also includes recommendations for trail management and resource management. Trail maintenance, enforcement and orientation are critical to providing a quality trail experience. The ecological value of the trail corridor will be enhanced wherever possible by implementing best practices for trail development and resource management.

In 2015, the Department of Natural Resources (DNR) Parks and Trails Division completed a Parks and Trails System Plan to advance new approaches to managing portions of the DNR's outdoor recreation system. The system plan recommends a differentiated approach to managing the system. Each of the state trail system's legislatively authorized trails were assessed and placed in one of the following investment groups: Destination, Core: division-led, and Core: partner-led. The Mississippi Blufflands State Trail is in the Core: division-led investment group. Core: division-led trails will be well maintained, provide basic services, and provide a safe and enjoyable experience for people using the trail. The division will partner with other organizations to provide additional amenities for trail users.



View of Lake Pepin and Sand Point from the Frontenac State Park picnic area.

1. PLANNING PROCESS, CONTEXT AND GOALS

Planning Process

Planning History and Purpose

A group of trail advocates in Southeast Minnesota has worked for years to advance the concept of a trail along the Mississippi River. The trail group worked with state agencies, local governments, non-profits and trail users. Recently, this group focused its efforts on a trail segment between Red Wing and Lake City. This engagement led to authorization of the Mississippi Blufflands State Trail in 2015.

In 1975, the Minnesota Legislature enacted the Outdoor Recreation Act (ORA). This act established an outdoor recreation system comprised of eleven components or “units” classifying all state-managed recreation lands. State trails are one unit of the state’s outdoor recreation system. The ORA requires that the managing agency prepare a master plan for the establishment and development of each unit. This master plan fulfills this mandate for the Mississippi Blufflands State Trail. See [Appendix A](#) for additional details about the ORA and legislative authorization of the Mississippi Blufflands State Trail.

The planning process and management of state trails are guided by the Minnesota DNR mission and Parks and Trails Division vision (see sidebar).

Planning Process

The Department of Natural Resources (DNR) prepared the Mississippi Blufflands State Trail Master Plan through a public planning process. The planning process provides multiple points for public input and makes every effort to incorporate reliable, up-to-date resource information. [Figure 1](#) illustrates the general planning process. However, each process has its own combination of partners, advocates and stakeholders.

The trail group hosted a kick-off meeting with local officials and the Minnesota Department of Health on October 28, 2015. The meeting was an opportunity to introduce area residents and stakeholders to the state trail concept and the benefits of trails. DNR staff provided an overview of the state trail system and the master planning process.

The DNR began the master planning process following the kick-off meeting. The DNR gathered information from the trail committee and other stakeholders about opportunities and constraints for trail development. An online questionnaire allowed many people to provide early input on the project.

The DNR held two planning advisory committee meetings for stakeholders to provide input and review courses of action. The first committee meeting was held on February 7, 2016 to discuss the vision, goals and recommended trail

Department of Natural Resources Mission

Our mission is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.

Division of Parks and Trails Vision

Our vision is to create unforgettable park, trail, and water recreation experiences that inspire people to pass along the love for the outdoors to current and future generations.

uses. A second committee meeting, held on April 26, focused on trail routes and trail management. The DNR also met with other groups and area stakeholders during the planning process.

The DNR held a 30-day public review period in May and June of 2016 to provide information on the project and solicit input on the draft master plan. A public open house meeting was held during the public review period on June 3 in Lake City. The DNR also provided information about the project during registration for the annual Tour de Pepin bicycle ride.

See [Appendix B](#) for a summary of public participation opportunities and input received throughout the planning process.

Statewide Context

State Trail System

The Mississippi Blufflands State Trail is one of Minnesota's legislatively authorized state trails (see [Figure 2](#)). The state trail system currently consists of over 2,900 potential trail miles, though only approximately 1,500 miles are developed and open for public use. The gap between the miles of authorized state trail and the miles of developed state trail is growing as new state trails, and extensions to state trails, are authorized.

Parks and Trails System Plan

In 2015, the Parks and Trails Division completed a Parks and Trails System Plan to advance new approaches to managing the DNR's state parks, recreation areas, trails, forest recreation areas and water recreation system. The System Plan recommends a differentiated approach to managing the system, rather than trying to be all things to all people.

Each of the state trail system's legislatively authorized trails were assessed by eight criteria and placed in one of the following investment groups: Destination, Core: division-led, and Core: partner-led. The investment groups differ by the amount and type of investment the division makes, how the division works with partners, and how the division communicates about trail experiences. The division will continue to assess and refine the investment groups as the system plan is implemented. Some trails may be re-categorized as local conditions change and as development occurs.

The Mississippi Blufflands State Trail is in the Core: division-led investment group. Core: division-led trails will be well maintained, provide basic services, and provide a safe and enjoyable experience for people using the trail. Amenities that go beyond basic services, like interpretation of special events, may be provided in conjunction with partners or through outside fundraising.

Figure 1: Trail Planning Process

Who's Involved

- Community Recreation, Active Living, and Economic Development Committees
- Trail Advocacy and User Groups
- DNR Resource Managers
- Scenic Byways
- Elected Officials
- Local Governments
- Other Agencies
- Community Leaders
- Trail Users
- Area Residents

Steps in the Process

Information Gathering: Natural and Cultural Resource Inventory

Issue Identification: Opportunities and Constraints



Develop Vision for the Trail, Goals for the Trail, and a Design Concept



Formulate Trail Route, Trail Development, and Trail Management Recommendations



Prepare Draft Master Plan



Review Draft Master Plan
Public Workshops
Evaluation and Adjustment



Prepare Final Master Plan



Master Plan Adopted
Implementation Begins



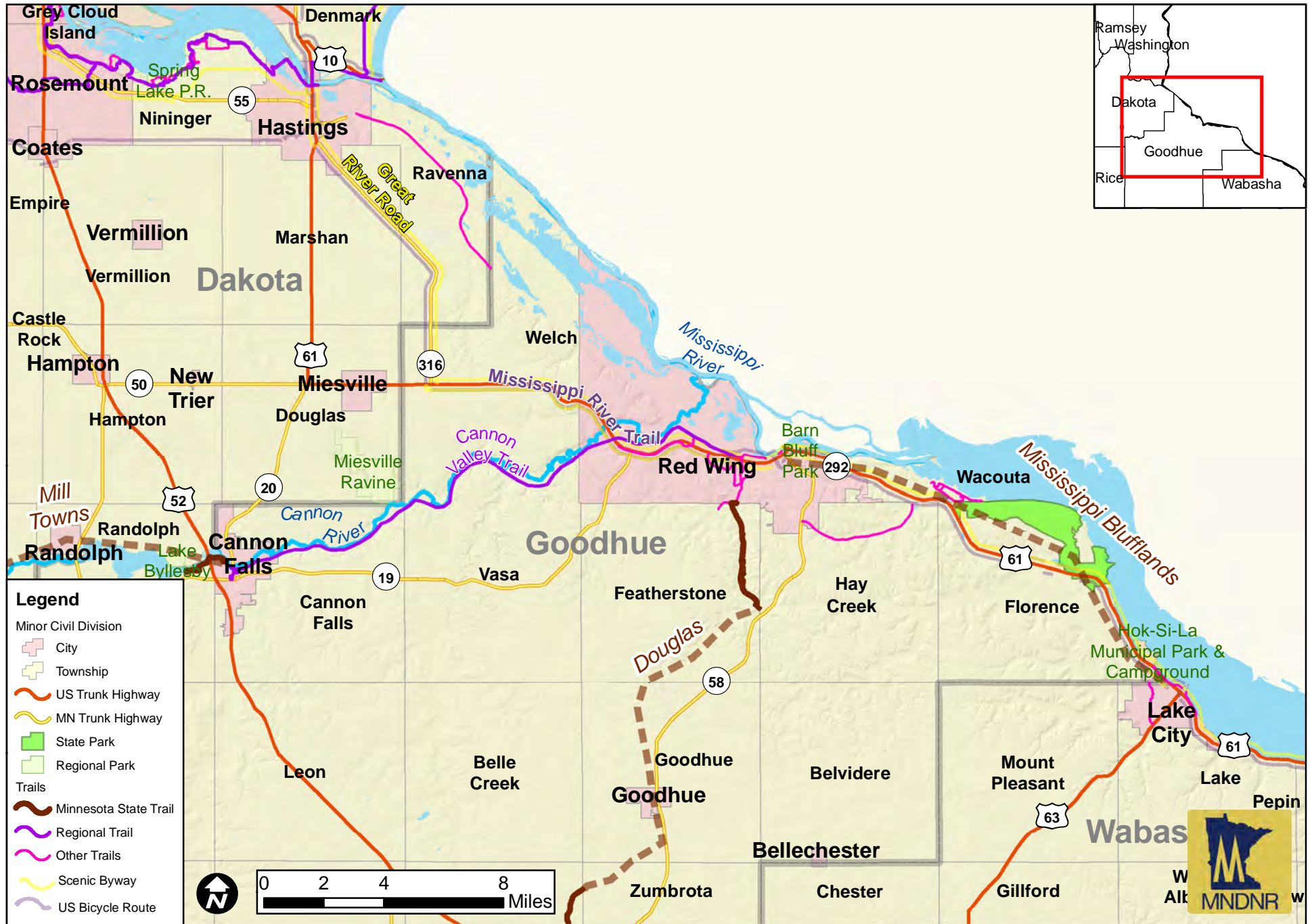
Mississippi Blufflands State Trail

Figure 2: Authorized and Developed State Trails



Mississippi Blufflands State Trail

Figure 3: Regional Context



Regional Context

Several complementary routes and trails comprise a regional trail system in southeast Minnesota. Many of these routes and trails share similar paths through the state trail search corridor. The Mississippi Blufflands State Trail could expand on, or connect to, existing off-road, multi-use trails. Other routes, including the Mississippi River Trail bicycle route, Great River Road National Scenic Byway and Mississippi River State Water Trail, provide complementary recreational opportunities and could enhance access to the Mississippi Blufflands State Trail.

There are many important community and recreational connections in the search corridor that are not discussed here. See [Chapter 5](#) for more information about local connections.

Goodhue-Pioneer State Trail

The Goodhue Pioneer State Trail is authorized to extend about 47 miles from Red Wing to Pine Island. Two segments of the trail are completed with paved surfaces and are used for hiking, biking and snowmobiling. Five miles of the trail are paved, extending north out of Zumbrota. A four mile section is completed south of Red Wing. This section has an adjacent natural surface trail, used for horseback riding.

Cannon Valley Regional Trail

The Cannon Valley Regional Trail follows the Cannon River 19.7 miles from Cannon Falls to Red Wing. Trail users can experience panoramas of the river valley and bluffs and enjoy the wildlife and native plant communities in the area. The trail is used for bicycling, hiking, in-line skating and cross-country skiing.

Mississippi River Trail

Minnesota hosts more than eight hundred miles of the three-thousand mile Mississippi River Trail bicycle route. The route, designated as U.S. Bicycle Route #45, starts at the Headwaters at Itasca State Park and moves south with the Mississippi River to the Gulf of Mexico. The route is located on road shoulders as well as segments of state, regional and local trails to connect trail users to the diverse Mississippi River corridor. The bicycle route typically follows U.S. Highway 61 through the Mississippi Blufflands State Trail search corridor, diverging at times for alignment with different community connections like the Red Wing Riverfront Trail.

Great River Road Scenic Byway

The Great River Road Scenic Byway is a series of roads that extend south down the Mississippi River three thousand miles from northern Minnesota to the Gulf

of Mexico, traversing ten states. The designated route through the trail search corridor primarily follows U.S. Highway 61. It connects many points of interest including Barn Bluff Park in Red Wing, Frontenac State Park and Hok-Si-La Municipal Park in Lake City.

Lake Pepin

Lake Pepin is the largest lake on the Mississippi River, located near the end of the Mississippi Blufflands State Trail search corridor. The lake is well documented throughout history; first mentioned in relation to Fort Beauharnois in 1727, and in recent history as the birthplace of water skiing.

Mississippi River Water Trail (Great River Water Trail)

The Mississippi River Water Trail provides countless opportunities for water recreation, wildlife viewing and cultural interpretation. It is a combination of many federal and state public lands and private property. It chases the Mississippi River through Minnesota and beyond. The section through the trail search corridor is an opportunity for paddlers and other water trail users to enjoy some of the attractions of the Mississippi River and the blufflands while engaging in water recreation activities.

Guiding Principles for Sustainable Trails

Guiding principles for ecologically sustainable trails provide the underlying rationale for actions related to protecting, restoring and managing natural environments associated with trail development. There are seven core principles:

1. Avoid sensitive ecological areas and critical habitats.
2. Develop trails in areas already influenced by human activity.
3. Provide buffers to avoid/protect sensitive ecological and hydrologic systems.
4. Use natural infiltration and best practices for storm water management.
5. Provide ongoing stewardship of the trails and adjoining natural systems.
6. Ensure that trails remain sustainable.
7. Formally decommission and restore unsustainable trail corridors.

Applications of these principles will minimize the impact of trails on natural resources and sensitive ecological systems. Importantly, the strict application of these guiding principles must be balanced with the desire to locate trails where they will be of high recreational value to the targeted users, who often want to be close to nature, enjoy beautiful scenes and observe wildlife. This is an important consideration and underscores the need for resource managers, trail designers, and other interested individuals to work together to determine which values are the most important for any given trail route.

Vision and Goals

Vision:

The Mississippi Blufflands State Trail will connect communities, trails and recreational hubs while showcasing scenic vistas of Lake Pepin, its tributaries and the surrounding bluffs. The trail will be a safe and accessible complement to the Mississippi River Trail bicycle route providing opportunities for people of all experience levels, including long-distance cyclists and families with children. The trail will foster a healthy lifestyle for area residents, preserve natural and cultural resources, be a community asset, and promote tourism.

Goals:

- Provide scenic vistas of Lake Pepin and the surrounding bluffs.
- Complement the Mississippi River Trail bicycle route by providing a safe and accessible off-road route for cyclists.
- Connect to Frontenac State Park, Colvill Park, Hok-Si-La Park, and other recreational hubs in the trail corridor.
- Connect existing and planned trails including the Cannon Valley Trail, Rattlesnake Bluff Trail, Red Wing Riverfront Trail, Flower Valley Trail and Lakeside Trail.
- Assess the opportunity to link destinations and scenic corridors through use of the U.S. Highway 61 right-of-way.
- Utilize existing trail routes to minimize new land acquisition and development needs.
- Partner with area organizations to provide services, including food, restrooms and wayfinding, for people using the trail.
- Partner with area organizations to identify and interpret natural and cultural resources.
- Protect natural and cultural resources and adhere to the guiding principles for sustainable trails.
- Develop and manage the trail in accordance with the direction for Core: division-led trails in the 2015 Parks and Trails Division System Plan.

Vision Statement

The Mississippi Blufflands State Trail will connect communities, trails and recreational hubs while showcasing scenic vistas of Lake Pepin, its tributaries and the surrounding bluffs. The trail will be a safe and accessible complement to the Mississippi River Trail bicycle route providing opportunities for people of all experience levels, including long-distance cyclists and families with children. The trail will foster a healthy lifestyle for area residents, preserve natural and cultural resources, be a community asset, and promote tourism.

2. RECOMMENDED TRAIL USES

The Mississippi Blufflands State Trail will be a multi-use, multi-season trail. The trail is intended primarily for non-motorized uses, though portions may be open to snowmobiling. The trail and its supporting facilities will be universally accessible to the greatest extent possible, as required by the Americans with Disabilities Act. Not all uses will be accommodated for the entire length of the trail due to limited right-of-way width, landowner agreements or compatibility with adjacent land uses.

Bicycling

The route will be desirable for cycling because it parallels the Mississippi River Trail bicycle route and connects to existing bicycle trails. The Mississippi River Trail is located primarily on the shoulder of U.S. Highway 61 between Red Wing and Lake City. The Mississippi Blufflands trail will provide a complementary route for cyclists who are not comfortable riding on the road. The Mississippi River Trail route could shift to the state trail once it is developed.

Bicycling is recommended as a use along the entire length of the trail. Winter biking, or fat biking, is a possible use when snow conditions permit.



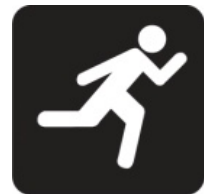
Walking and Hiking

Hiking or walking is second only to bicycling as a popular low-impact cardiovascular fitness activity on state trails. Grades are likely to be moderate throughout the majority of the trail route, making it suitable for most people to walk and hike. Hiking and walking are recommended as uses on the entire length of the trail.



Running/Jogging

Many people use state trails for running and jogging. In addition to individuals who regularly use the trails for exercise, local school track and cross-country teams will be able to use this scenic trail for training purposes. Running and jogging are recommended uses along the entire length of the trail.



Dog Walking

Dog walking is a recommended use along the entire length of the trail so long as dogs are leashed and owners properly dispose of pet wastes. State trail rules require all pets to be attended and restrained by a leash of not more than six feet in length.



In-Line Skating/Roller Skiing

While participation rates for in-line skating on state trails have declined, it remains a popular sport. Roller skiing is a summer training tool for cross-country skiers. In-line skating and roller skiing require a paved trail with a smooth, wide



surface such as asphalt. In-line skating and roller skiing are recommended uses for the entire length of the trail.

Snowshoeing

Snowshoeing is a recommended use along the entire trail when snow conditions permit. Snowshoeing is also feasible within the trail corridor, outside of paths groomed for cross-country skiing or snowmobiling.

Cross-Country Skiing

Cross-country skiing is a possible use when snow conditions and funding permit. Cross-country skiing may be accommodated on trail segments that connect to other facilities with groomed trails. The trail could expand on existing groomed trail systems at Frontenac State Park, Memorial Park and Hok-Si-La Park.

Snowmobiling

Minnesota has over 22,000 miles of groomed snowmobile trails, serving over 213,000 registered snowmobiles (2015 figures). In addition to the grant-in-aid trail system, snowmobiles can legally ride in the right-of-way of roads unless prohibited by local ordinance and on frozen public waters. Snowmobilers are interested in trail connections, quality of trail grooming, safety and funding stability for their programs. As urban and suburban development expands, existing grant-in-aid routes may be lost.

MnUSA snowmobile route 95 connects Lake City and Red Wing, with a spur trail to Frontenac, Frontenac State Park and Lake Pepin. Snowmobiling is a recommended trail use where the corridor can improve and secure existing grant-in-aid trail connections. Snowmobiling may be restricted by local ordinance, landowner agreements or park regulations.

Hunting

State trails allow hunting within the trail right-of-way during the legal hunting season, except where restricted by local ordinance. The trail could provide access to other public hunting lands in the area. The current rule states: “No firearm or bow and arrow shall be discharged within the trail at any time, except for the purpose of lawful hunting during the period from September 15 to March 30 only. No rifle, shotgun with slug, or bow and arrow shall be discharged upon, over, or across the trail treadway at any time.”

Community ordinances or road right-of-way rules may also restrict hunting. Communities may restrict firearms or bow and arrow discharge, or trapping, by ordinance. These restrictions take precedence over state trail rules.

Natural Resources Education/Interpretation

Use of the state trail for natural and cultural resources education, both for individual trail users and formal groups, is encouraged. Schools or organizations



that wish to use a trail can work with DNR staff on specific projects. Interpretive displays on the environment and history of the area can enhance the experience of people using the trail.

Wildlife Viewing

The state trail will provide opportunities for birdwatching and other types of wildlife viewing. The trail corridor is located within the Mississippi River flyway and the area is renowned for birdwatching. For example, about 260 species of birds can be found in Frontenac State Park. Trailheads, waysides and scenic overlooks could be designed to enhance wildlife viewing in the area.



Accessibility

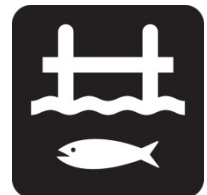
The trail will be accessible to people with disabilities wherever possible. Grades in excess of 5% may be unavoidable in some locations where the trail must match a parallel transportation corridor or where one of the exceptions in the Federal accessibility guidelines is met.



People can use wheelchairs (manually-operated or power-driven, including electric scooters) and manually-powered mobility aids (such as walkers, crutches, canes, or braces) on all state trails. People with a mobility disability can use other power-driven mobility devices on state trails in accordance with DNR policy (www.mndnr.gov/accessible_outdoors/opdmd/index.html).

Water Access

The state trail may provide improved or additional public access to local ponds and lakes. People could use public accesses for shore fishing and carry-in access. This is a secondary trail use, which is dependent upon location of the trail route.



3. TRAIL ROUTES

The Mississippi Blufflands State Trail is authorized to extend about 18 miles from the Cannon Valley Regional Trail in Red Wing to Lake City. A specific route has not been determined and actual trail mileage will depend on which routes are selected during implementation.

The trail must connect to Lake City, Frontenac State Park, Cannon Valley Regional Trail, and the Rattlesnake Bluff Trail. Community input led to identification of other important connections throughout the trail corridor. A final trail route must connect points of interest while balancing the need to find a feasible, safe and scenic route.

This plan identifies a search corridor for the Mississippi Blufflands State Trail. Any route, or combination of routes, within the search corridor is a potential trail alignment. A final trail route will be selected after additional feasibility assessments are completed and through coordination with area trail advocates and landowners (see [Chapter 8](#) for a description of the trail development process).

Most potential state trail routes in this chapter generally follow road rights-of-way. While portions of the trail may be located within road rights-of-way, the goal is to find safe and scenic trail routes that provide access to natural, cultural and scenic resources. Preferred trail routes will take users away from highways, be located near the river, connect to business centers, link existing recreational hubs and provide a scenic corridor.

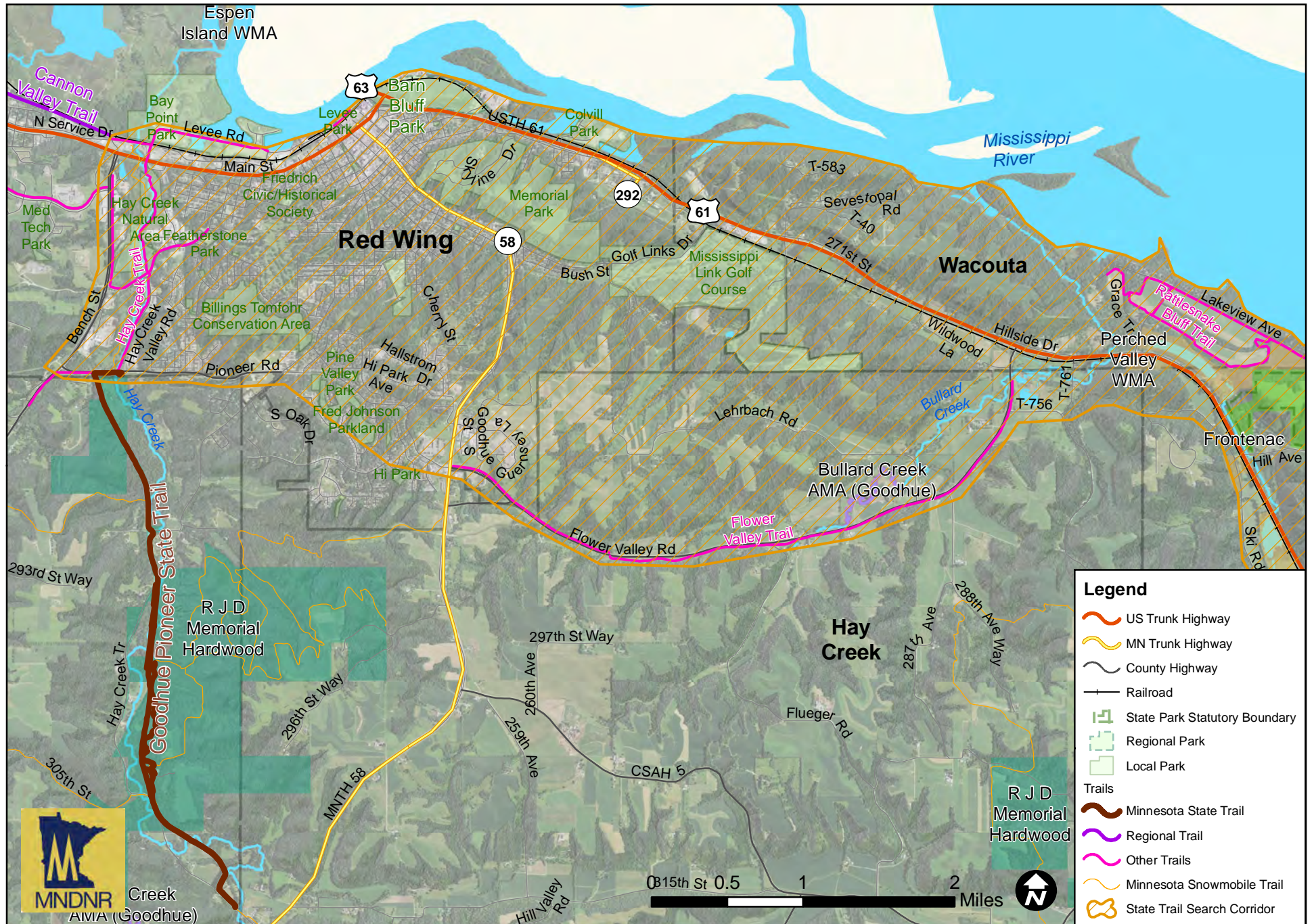
The right-of-way for U.S. Highway 61 is an option for the trail route throughout the corridor. Portions of the old U.S. Highway 61 roadbed could be repurposed or improved to serve as a state trail route. The DNR will coordinate with the Minnesota Department of Transportation to assess if parts of this right-of-way could be utilized for the Mississippi Blufflands State Trail.

For the purposes of this plan, the trail has been divided into three planning segments:

1. Red Wing to Wacouta
2. Wacouta to Frontenac
3. Frontenac to Lake City

Potential trail routes for each of these segments are discussed in the remainder of this chapter. This chapter also includes maps of each of the three planning segments.





Segment 1: Red Wing to Wacouta

Segment Overview

This segment begins in Red Wing at the Cannon Valley Regional Trail and extends to Wacouta. The trail will travel through the City of Red Wing and Wacouta Township, and may traverse portions of Featherstone and Hay Creek townships. Trail connections through this segment will be made utilizing a combination of state trail segments and other trails.

Potential Trail Routes

There are several potential routes for the Mississippi Blufflands State Trail through this segment. The goal is to provide a scenic route that connects people to parks, recreation areas, and access points to the Mississippi River and Lake Pepin. Other potential routes would take people further away from the river but allow for alternative trail connections.

One potential route would go through Red Wing along the Mississippi River. The Cannon Valley Regional Trail ends near the intersection of Bench Street and Old West Main Street in Red Wing. This route would utilize Red Wing's existing Riverfront Trail, which extends from the Cannon Valley Trail to Levee Park. The city has adopted plans to extend this trail to Colvill Park. The proposed route wraps around the base of Barn Bluff Park to East 5th Street. A portion of this trail has been constructed around the city's wastewater treatment plant. The trail will cross the Canadian Pacific Railway near 5th Street. The proposed route is located between U.S. Highway 61 and the railroad until reaching Nymphara Lane and Colvill Park. This portion of trail may be developed as a local, regional or state trail.

This potential route could continue on either side of U.S. Highway 61 between Colvill Park and Flower Valley Road. A route to the north would likely require portions of the trail to be located within the U.S. Highway 61 right-of-way. This route could utilize several remaining segments of the old U.S. Highway 61 roadbed, now known as 271st Street and Hillside Drive. A route to the south would be located in front of the Minnesota Correctional Facility and connect to Mississippi National Golf Course and the Flower Valley Trail.

After Flower Valley Road this potential route generally follows U.S. Highway 61 to Wacouta. A spur of the Mississippi Blufflands State Trail could connect to the Rattlesnake Bluff Trail and Wacouta Town Hall along 301st Street.

Several existing trails could be used to provide an alternative route for the Mississippi Blufflands State Trail along the southern edge of Red Wing. The Hay Creek Trail connects the Cannon Valley Trail to the Goodhue Pioneer State Trail. A trail route could begin at the Goodhue Pioneer State Trail and go east along Pioneer Road to the Red Wing High School. From here, the Flower Valley Trail

provides a connection to U.S. Highway 61. A trail route could follow Circle S Road or Bullard Creek towards Grotes Pond.

Additional connections in Red Wing could be completed through a combination of on-road bicycle routes and sidewalks.

Segment 2: Wacouta to Frontenac

Segment Overview

This segment begins in Wacouta and extends to the intersection of U.S. Highway 61 and County Highway 2, south of Old Frontenac. A portion of the trail will travel through Frontenac State Park. This segment includes potential connections to Frontenac Station and Old Frontenac.

Potential Trail Routes

Trail routes through this segment generally follow U.S. Highway 61. Opportunities to take users away from the highway will be pursued if they are feasible and do not negatively impact resources.

The preferred trail route through this segment is located to the north and east of U.S. Highway 61.

Beginning at Wacouta Town Hall, a potential trail route could travel south along 301st Street to U.S. Highway 61. The trail could be located within the U.S. Highway 61 right-of-way, between the highway and Grotes Pond, until reaching Hill Avenue. This potential trail route continues along U.S. Highway 61 to Frontenac Station.

Alternatively, a portion of the Rattlesnake Bluff Trail could be used for the trail route. The route could include a dual treadway or widened trail surface when the alignment is shared with the existing Rattlesnake Bluff Trail. This route travels away from the highway on the north side of Grotes Pond. The route would turn south, at the toe of Rattlesnake Bluff, and approach the U.S. Highway 61 right-of-way near the intersection with Hill Avenue.

A route along 296th Street presents an opportunity to separate trail users from U.S. Highway 61 in this corridor.

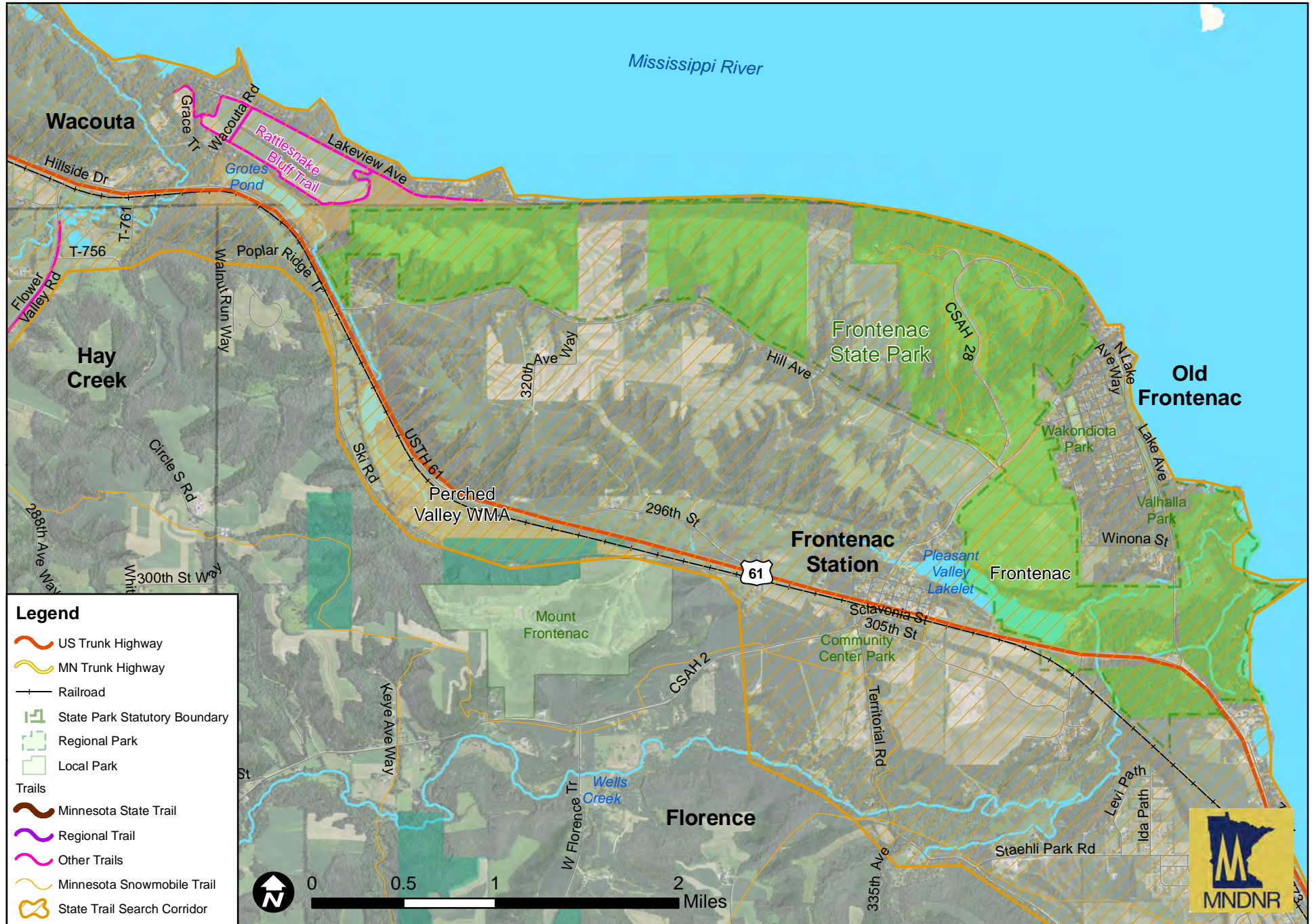
Upon reaching Frontenac Station, the potential trail route turns north, and follows County Highway 2. This route could provide a connection to the Frontenac State Park entrance. The route traverses the prairie by Pleasant Valley Lakelet to Wells Creek. The trail route could cross Wells Creek near County Highway 2, or on a separate bridge.

An alternative corridor through this segment could follow Hill Avenue along the southern boundary of Frontenac State Park. This corridor is more scenic and would take people away from highway traffic. However, this road right-of-way is

narrow and the grade exceeds state trail standards. This route may have greater potential to impact natural and cultural resources.

Trail routes on the southwest side of U.S. Highway 61 are less desirable through segment 2 than routes on the northeast side. If the route were on the southwest side, additional highway crossings would be necessary to provide trail connections to Frontenac State Park and the Rattlesnake Bluff Trail. Wetlands and limited space between the highway and railroad restrict trail development potential on this side of the highway.

The DNR considered a trail route along Lake Pepin, to the Frontenac State Park day-use area, and determined this is not feasible. This route would be detrimental to resources due to the amount of clearing and grading necessary to construct a trail. It is not feasible to construct an accessible trail directly between the Rattlesnake Bluff Trail and the state park campground due to the difference in elevation.



Segment 3: Frontenac to Lake City

Segment Overview

This segment extends from Old Frontenac to Lake City. The trail will travel through Florence Township and Lake City. The state trail could end at one of several destinations in Lake City including existing trails, Hok-Si-La Municipal Park or downtown Lake City.

Potential Trail Routes

There are two concepts for the trail route through this segment; both routes are located primarily west of U.S. Highway 61. One potential route begins south of Old Frontenac and another potential route starts near Frontenac Station.

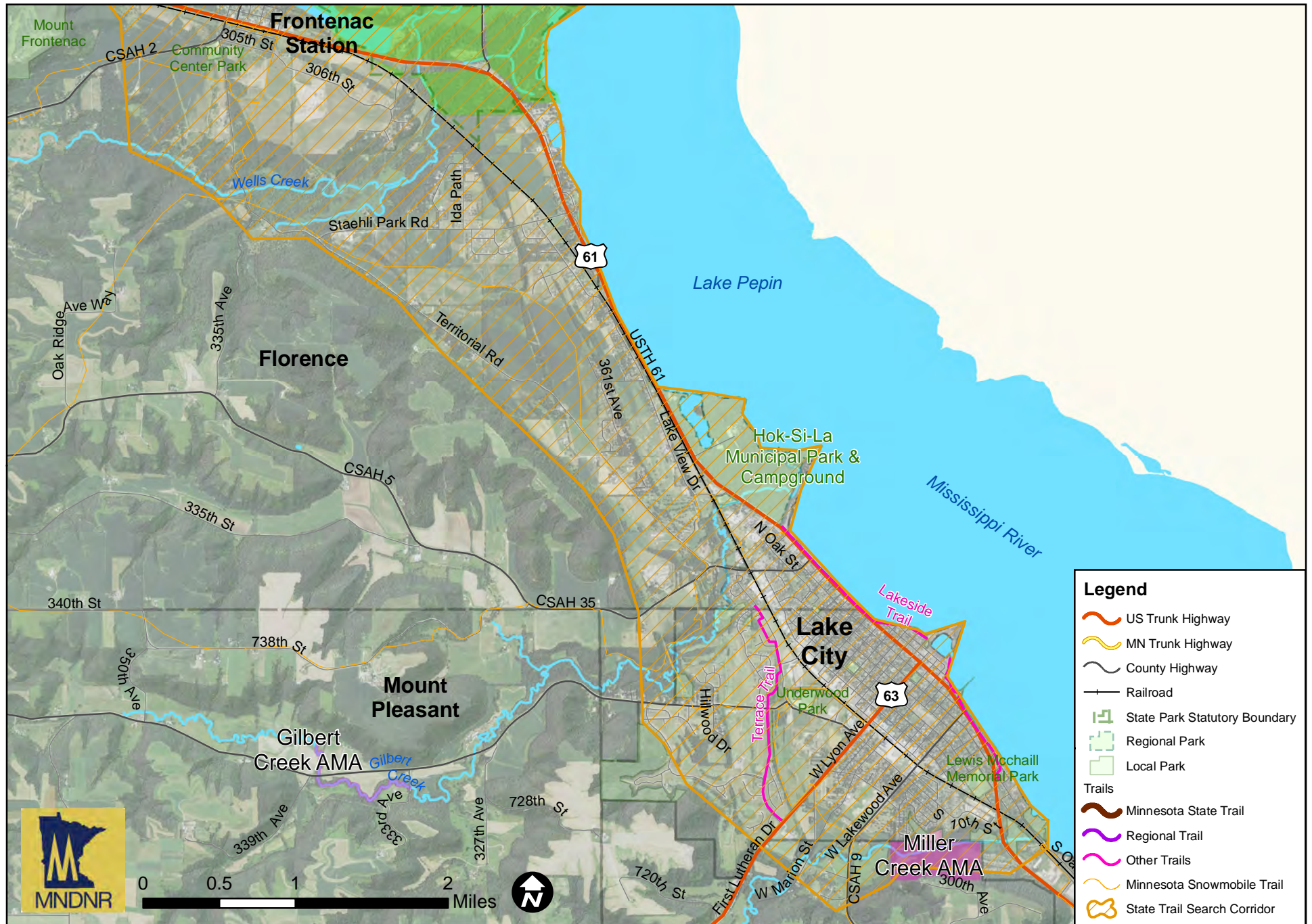
The first potential state trail route begins at the intersection of County Highway 2 and U.S. Highway 61, south of Old Frontenac. The trail could be located along the east side of U.S. Highway 61 until it reaches the MnDOT rest area near Staehli Park Road. This option could utilize a route along Frontage Road.

Another option is for the trail to go under U.S. Highway 61 near Wells Creek, and continue south along the east side of the railroad to Staehli Park Road.

From Staehli Park Road, this potential route is located along Lakeview Drive until the intersection with 332nd Street. The trail will connect to Hok-Si-La Park utilizing an existing bridge under U.S. Highway 61 at Gilbert Creek. This option provides a connection to Lake City's Lakeside Trail, which connects to several parks and points of interest near downtown Lake City. The Lakeside Trail is currently a narrow pathway along Lake Pepin. A conversion of U.S. Highway 61 from four to three lanes could provide space to widen the Lakeside Trail and improve the trail connection to downtown Lake City.

A second potential state trail route begins near County Highway 2 in Frontenac Station. This route crosses U.S. Highway 61 and could connect to the Frontenac Sportsman's Club. The trail route continues south and east along Territorial Road until entering Lake City.

The route could turn east near the Lake City Country Club to connect to Hok-Si-La Park and the Lakeside Trail. Alternatively, the state trail could connect to the Terrace Trail, which begins at 10th Street and Hidden Meadow Lane. The Terrace Trail extends past Underwood Park and Fields, residential neighborhoods, and the Jewel Golf Club to the intersection of Green Parkway and U.S. Highway 63.



4. COMMUNITY AND RECREATIONAL CONNECTIONS

Segment 1: Red Wing to Wacouta

Cannon Valley Regional Trail

Prior to 1983, the Chicago Great Western Railroad line connected the cities of Cannon Falls, Welch and Red Wing, carrying passengers around the Midwest. When the railroad announced that it could not compete with an overpopulated railway system and that it would abandon the track, community members began to realize the potential that the corridor provided for recreation. The Minnesota Parks Foundation purchased the right-of-way through donated funds; and identified the need for a trail that offers opportunity for biking, hiking, in-line skating and cross-country skiing, without the complications of motorized vehicles.

This trail was completed in 1992 and follows the Cannon River 19.7 miles from Cannon Falls to Red Wing. It allows users to experience beautiful panoramas of the river valley, views of overhanging cliffs and a look at some of Minnesota's extensive wetland complexes. The Cannon Valley Regional Trail also hosts an interpretive program from May through September called Voices of the Valley in which visitors can explore and learn the history of the Cannon River Valley. The Mississippi Blufflands State Trail will connect to the Cannon Valley Trail in Red Wing.

City of Red Wing

Red Wing is located in Goodhue County on a sharp elbow of the Mississippi River, with a population around 16,459 (2010 Census) and a land area of 41.2 square miles. The city was originally platted in 1853 with land set aside for a courthouse, a school and a church. It was the first Minnesota town to be listed in the National Trust for Historic Preservation's Distinctive Destinations list.

In 1904, Red Wing became home to The Sheldon Theatre, which hosted large traveling shows popular at the turn of the century. The Sheldon was run down, restored, and packed full through the 1900s and into present day showcasing local, regional, and national arts and entertainment. Red Wing offers an abundance of outdoor recreation opportunities, including reservable shelters and pavilions in different city parks. Trail users and community members can also choose to spend the night at the Hay Creek Campground in one of 150 campsites adjacent the Hay Creek Trout Stream and Richard J. Dorer Memorial Hardwood State Forest. Red Wing hosts segments of the Cannon Valley Trail, Hay Creek Trail and Flower Valley Trail, as well as other hiking and mountain



Cannon Valley Regional Trail near Red Wing.

biking trails. There are an abundance of park facilities and vista opportunities in and around the city.

Red Wing Riverfront Trail

The Red Wing Riverfront Trail was planned in 2014 to connect multiple points of interest in the City of Red Wing. It provides access to Bay Point Park and Levee Park in the Downtown Historic District. There are other community attractions along the trail like the historic St. James Hotel, Sheldon Theatre and the Red Wing Visitor Center. This trail also provides a link to the Cannon Valley Trail and the Goodhue Pioneer State Trail.

The Riverfront Trail could provide a nearly two and a half mile route through Red Wing with opportunities for spur trips to other regional trails or local community attractions.

Bay Point Park

Bay Point Park was designated in Red Wing just north of U.S. Highway 61 along the Mississippi River. It is a place for artists and photographers to relax and become inspired by the nearby historic Boat House Village. The Boat House Village is a point on the bay where storage sheds float, tethered to gin poles; so named during prohibition when people would hide gin bottles by tying them to the anchored poles under water.

Bay Point Park users have access to many community amenities, and could serve as an opportunity for leisure for trail users. The park offers several picnic areas, playground, volleyball court, restrooms, a nearby boat launch and a walking path. This path is open year-round and is illuminated during evening hours. There are also two furnished, open air shelters that can be reserved for extended use.

Levee Park

Levee Park is an example of the City Beautiful movement of the early 20th century that inspired the beautification and planning reformation of many North American cities. It was built with donated funds from the Chicago, Milwaukee, St. Paul and Pacific Railroad Company to contrast the construction of a new railroad depot. The park was secured in 1903 and the levee wall and park improvements were completed by 1906. This is a dedicated sitting park consisting of trails, a natural atmosphere, benches and historical monuments. One monument is the Sea Wing Memorial, which celebrates the giant sternwheel ship that operated from Diamond Bluff, Wisconsin to north of Red Wing in the late 1800s until it capsized in a storm on Lake Pepin in 1890.

Levee Park has since been renovated and made a community staple. It is a part of the Red Wing Civic Mall Historic District and still used as a riverboat landing

area where recreationalists can stop, eat and shop downtown. For this reason, it could potentially serve as a trailhead or destination for state trail users.

Barn Bluff

Historic Barn Bluff stands tall as an island in the Mississippi River. The limestone bluff was carved by rivers flowing from the rapidly expanding Glacial Lake Agassiz roughly 10,000 years ago. Later, Barn Bluff was an important landmark during European exploration, as described by the Minnesota Historical Society:

Thousands of years passed. American Indians of the Woodland period lived in communities some five miles from the high limestone bluff. In the late 1600s, Frenchmen exploring their nation's claims in "New France" traveled along the Upper Mississippi. They encountered the river bluff. To them it appeared like a barn, so they named it "La Grange" (the barn).

Tatankamani, the able Mdewakanton Dakota war leader, brought his small band of followers near the foot of Barn Bluff around 1815. Tatankamani, "Walking Buffalo" in English, was also known as "Red Wing." He allied himself with the United States during the War of 1812. After the war, Americans moving up the Mississippi stopped at Red Wing's village. Many visitors climbed to the top of the river bluff to enjoy the view, a broad vista that included the glacial river valley and the Mississippi. Americans anglicized the French name to Barn Bluff.

Through the years it has served its community as a Mississippi River steamboat lookout, a source of rock for railroad lines and lime for quarriers, and currently as an impressive town landmark. There are four trails that run over and around Barn Bluff: Prairie Trail along the summit, Midland Trail and South Trail around the bluff and quarry, and Carlson Lime Kiln Trail to the Kiln Structure. These trails could be used as connecting or side trails to the Mississippi Blufflands State Trail, providing additional points to access to the trail and encouragement for trail users to extend their hike.

Colvill Park

In July 1963 Colvill Park was created in Red Wing with land donated to the city by Civil War Captain William Colvill. Captain Colvill led the First Minnesota volunteer infantry during the Battle of Gettysburg in a charge against the Confederates, a brigade four to five times larger than his own. This attempt to slow the Confederates was successful, but left Colvill with chronic injuries.

Today, the park is well known in the community as a place for family recreation. It is the site of the city's Aquatic Center, and also offers a discovery garden, universal playground, boat launch, and areas for sports like tennis, volleyball,

horseshoe and shuffle-board. The Colvill Courtyard is a fully enclosed, heated and air conditioned building that, like the various open air shelters, can be reserved year-round. Park users can also enjoy a one-mile walking path around the park which, during the winter, can be a great place to look for bald eagles. Colvill Park is a potential trailhead for the Mississippi Blufflands State Trail.

Flower Valley Trail

The Flower Valley Trail follows a 4.5 mile path from Minnesota Trunk Highway 58, near Red Wing High School, to U.S. Highway 61. It mirrors County Highway 21, also known as Flower Valley Road, in close proximity to Bullard Creek and Bullard Creek Aquatic Management Area, on the way toward Wacouta and the Rattlesnake Bluff Trail. The Flower Valley Trail is owned and managed by Goodhue County and could be a connecting route for the state trail or an access trail to local points of interest.



Flower Valley Trail.

Wacouta

Wacouta Township has a population of 386 (2010 census) and occupies 9.8 square miles in Goodhue County. It was first settled by George W. Bullard in 1853 and named after Wakute (Wacouta), Mdewakanton Tribal Chief of the Dakota and the last chief bearing this name. This township was platted around a trading post, and would come to rival Red Wing for designation as the county seat. Wacouta was bustling with lumberjacks and rivermen who would fasten together millions of logs and send them downriver to St. Louis and Kansas City, MO to build homes. Some of the summer homes built with these logs are still in place today. The historic Wacouta Town Hall is located adjacent to the Rattlesnake Bluff Trail near the river. The Rattlesnake Bluff Trail originates near the northwest corner of Frontenac State Park just outside the park boundary. It consists of a loop and two spurs that follow local roads, like Lakeview Avenue along the Mississippi River.



The Rattlesnake Bluff Trail in Wacouta consists of a loop and two spur trails totaling about 4 miles. Rattlesnake Bluff, part of Frontenac State Park, is in the background.

Segment 2: Wacouta to Frontenac

Frontenac State Park

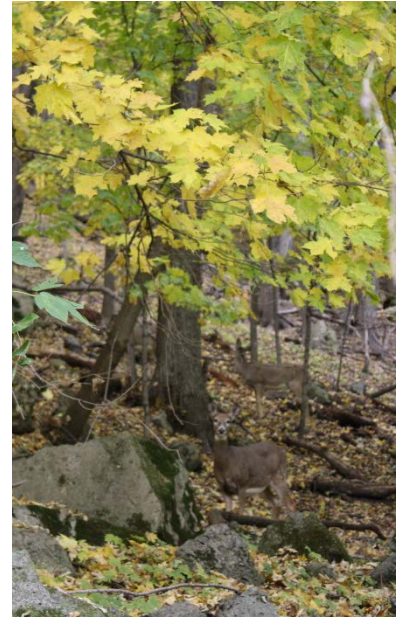
Frontenac State Park embraces 2,899 acres of land and water in Goodhue County, and is located ten miles southeast of Red Wing on U.S. Highway 61. It was established in 1957 as an opportunity for visitors to see the unique set of natural resources that the Mississippi River blufflands has to offer. It is most well-known for its birding opportunities. The area's diverse habitats attract 260 species of birds, as well as a multitude of other exciting fauna. Birders and other park users can make use of two different campgrounds and various hiking, biking and skiing trails around the beautifully wooded property.

The Mississippi River and Lake Pepin, the widest naturally occurring part of the Mississippi River, formed as the result of millions of years of deposition and erosion. This provided a diverse habitat and scenic backdrop for future communities. Archeologists have uncovered Hopewellian artifacts from burial grounds and living spaces that date as far back as 400 B.C. Frontenac State Park attempts to interpret the rich history between the European exploration and settlement, the native peoples' resource management techniques, and current efforts to provide recreation opportunities to visitors.

The park hosts a picnic area near the bluffs incorporating spectacular vistas of the valley. Visitors have the option of using provided picnic tables with in-ground fire rings, or taking advantage of the open and enclosed shelters on the property with electricity and wood stoves. The enclosed shelter doubles as a warming house during the winter near Sliding Hill.

According to the Frontenac State Park Management Plan, the park should *“provide visitors with varying interests and physical capabilities a variety of trail opportunities to explore the park and learn about its natural and cultural resources.”* The Mississippi Blufflands State Trail could help meet this objective by providing accessible trails and accommodating multiple recreational uses. The management plan includes the following recommendation: *“participate in planning for regional pedestrian, bike, and equestrian trail systems. Determine what types of trail connections to a regional system are appropriate for the park.”* An amendment to the Frontenac State Park Management Plan may be required when a specific state trail route through the park is developed.

A trailhead at or near the existing state park office is preferred. Additional trailhead sites within the park may be considered depending on the final state trail route. Bicycle camping could be provided at existing, or new, remote camping sites in Frontenac State Park. These accommodations are consistent with the Frontenac State Park Management Plan and existing park uses.



Several deer near point-no-point in Frontenac State Park.

Old Frontenac

Old Frontenac is on the lakeshore two miles east of Frontenac Station halfway between Red Wing and Lake City. It was established in the mid-1800s when Minnesota was still a territory. Old Frontenac grew as the result of increased trade in the area, and with help from the Garrard brothers became a popular tourist destination in the 1880s. The Lakeside Hotel emerged from a converted grain elevator. Houses and churches were developed in the area, which soon attracted a bank and a saloon. As Frontenac Station began to decline, so did Old Frontenac. Today there are no commercial businesses in the town and, with the exception of a modern county road, the roads remain unpaved gravel and dirt as an attempt to remain reminiscent of early settlement. The area is listed as a historic district on the National Register of Historic Places as an example of early Midwestern mid-19th century town planning and architectural design.

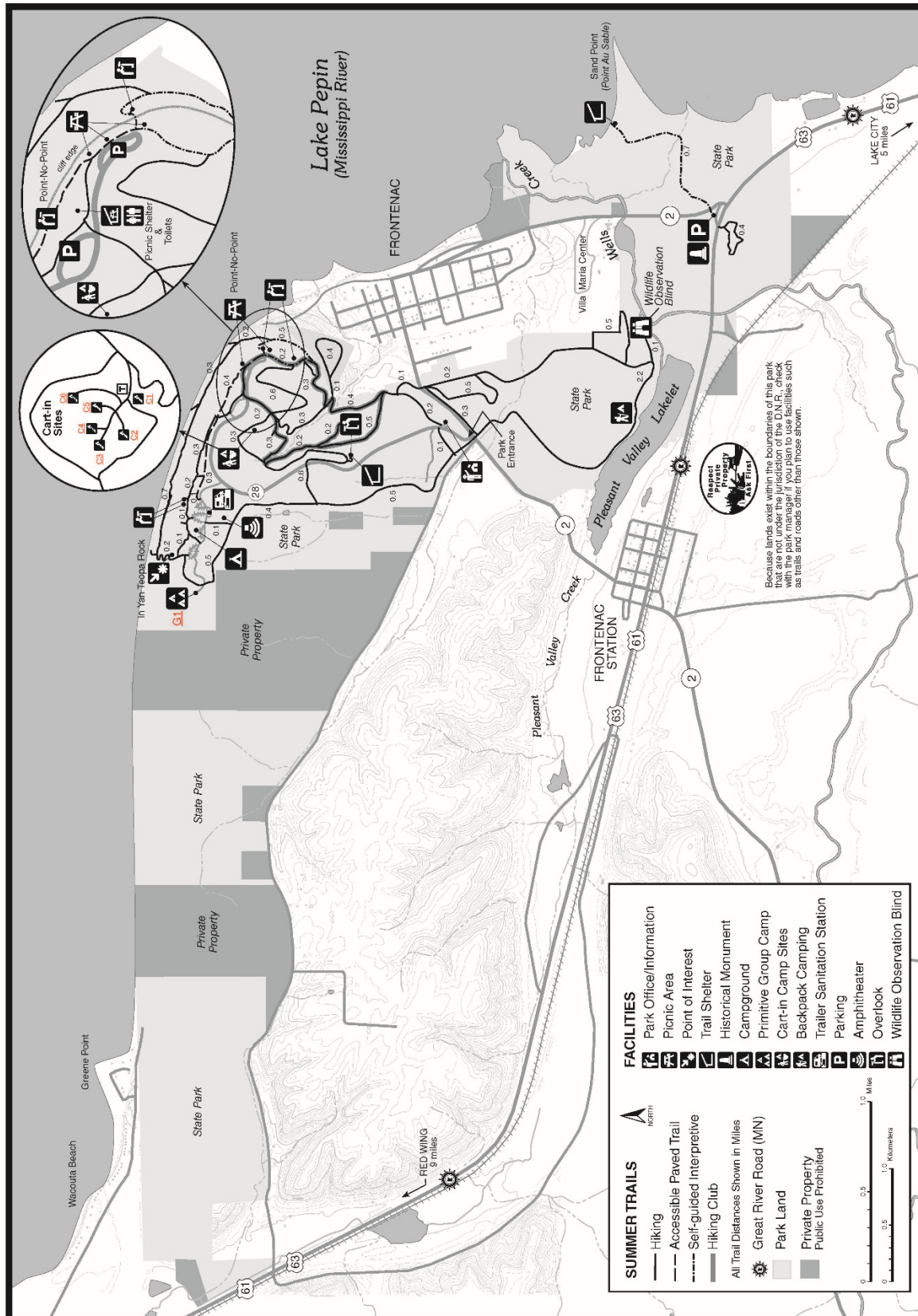
Frontenac Station

Frontenac Station is just 11 miles outside of Red Wing, in Florence Township. It is a massive eight-block railroad station for the former Chicago, Milwaukee, St. Paul and Pacific Railroad Company. The Milwaukee Road (as it was commonly called) was an all-purpose rail servicing central and northern states from Chicago to Seattle. In 1880 it became the first railway west of Chicago to incorporate electricity and steam heat in its passenger trains. The Milwaukee Road operated an impressive 10,000 miles of track before eventually declining. The company went through a period of bankruptcy in 1935 and then again in 1977, this time having to sell and abandon much of its transcontinental line and passenger service.

Frontenac Station was platted in 1871 and grew as a result of the ever popular Milwaukee Road, integrating a small business district at first, and eventually a little community. With a population of one hundred at the time, it was larger than some present-day Minnesota towns. By the 1950s the Milwaukee Road was beginning to lose business to truck transportation, and consequently, so did Frontenac Station.

Today, anyone can wander through the still populated area and enjoy the history it has to offer. Several businesses and locations in Frontenac Station, including the Sportsman's Club, could serve as trailheads. The historic town of Old Frontenac is just two miles away, also within the state trail search corridor.

Figure 8: Frontenac State Park



Wildlife Management Areas

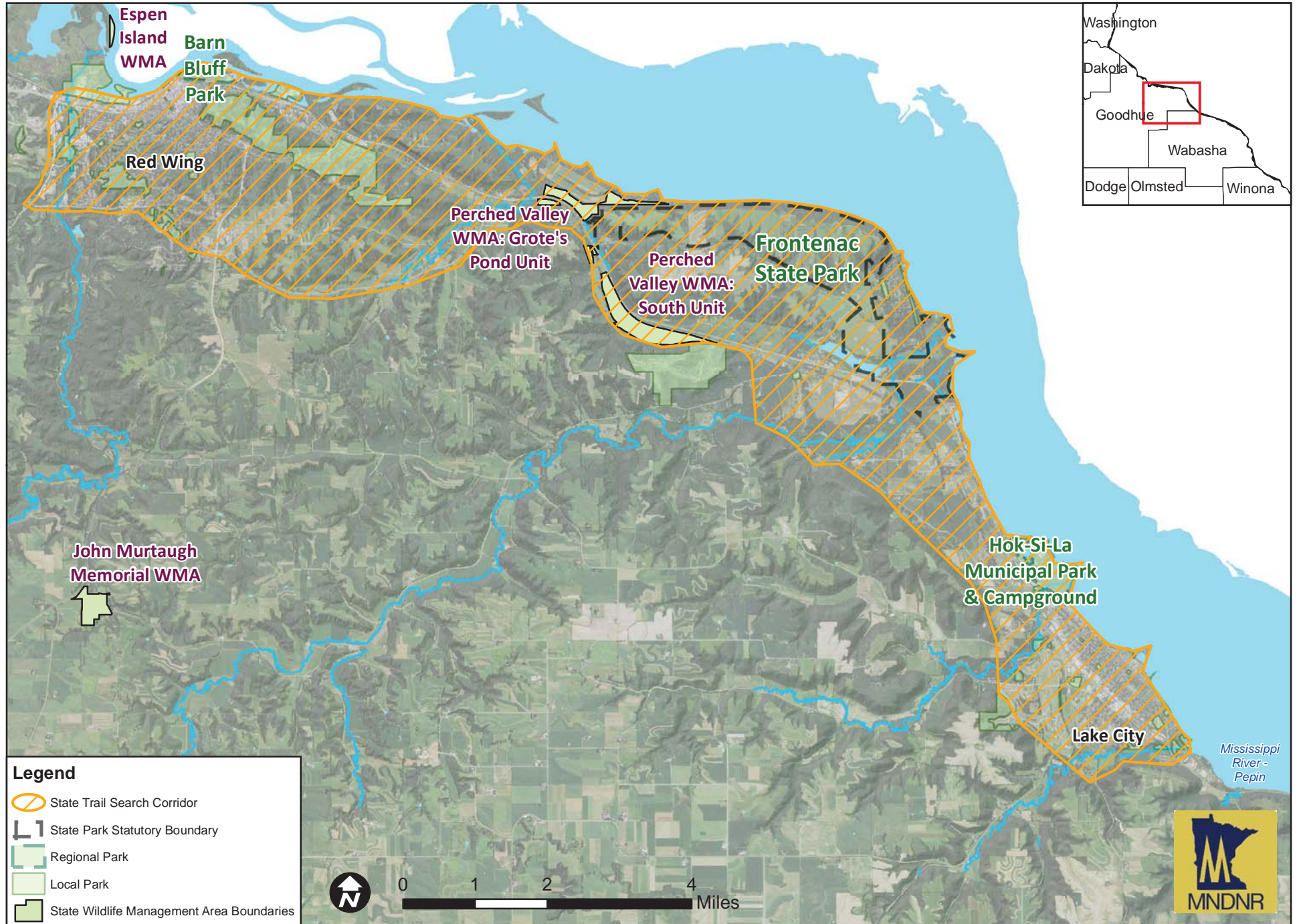
Trail users interested in wildlife viewing can find excellent opportunities at one of the several wildlife management areas (WMA) in the region. Espen Island WMA, located north of Red Wing at Mississippi River Mile 792, provides bottomland hardwood forest habitat that is often flooded. Recreation opportunities include wildlife viewing for riparian and forest species, as well as hunting for small game, forest game birds and waterfowl.

Perched Valley WMA, located between Red Wing and Frontenac, is primarily composed of wetland plant communities. This WMA offers the increasingly rare opportunity to view a calcareous fen, a peat-accumulating wetland dominated by cold, oxygen-poor groundwater with specific chemical characteristics. This WMA consists of a north and south unit. The north unit, Grotes Pond, is closed to hunting, while hunting is allowed in the south unit. Each unit offers opportunities for potential trail users to view wildlife.

One potential trail route in segment 2 crosses Perched Valley WMA near Grotes Pond. This tract of the WMA was acquired with federal aid from the Pittman-Robertson Wildlife Restoration Program. State trail development in this tract may require a land transfer and federal review by U.S. Fish and Wildlife Service.

Mississippi Blufflands State Trail

Figure 9: Wildlife Management Areas



Segment 3: Frontenac to Lake City

Lake Pepin Rest Area

Staehli Park Road is located about three miles north on U.S. Highway 61 from Hok-Si-La Municipal Park. Lake Pepin Rest Area sits on this road, providing a modern rest area with multiple amenities. It offers restroom facilities, pay phones, vending machines, a pet exercise area, picnic shelters and interpretive information. Staehli Park Road begins on Great River Road near Hansen's Harbor, which offers boat docks and a small recreation beach. This road and the Lake Pepin Rest Area could serve as a trailhead.

Lake City

Lake City is settled along the bank of Lake Pepin in Goodhue and Wabasha counties, with a population of 5,063 (2010 census) in an area of 4.6 square miles. As early as 1654, Europeans began to explore the Lake City region. They came with the expansion of the fur trade on the Mississippi River, and in 1853 became the first settlers in the area.

Lake City is the birthplace of water skiing, invented in 1922 by 18 year old Ralph Samuelson. Ralph, alongside his brother, strapped two wooden boards to his feet and ventured into Lake Pepin to be pulled by a motorboat. Each year local community members and visitors meet in the last weekend in June to hold an event called Waterski Days in celebration of Ralph Samuelson.

Trail users and community members can benefit from the great Lake City hiking and biking event opportunities. Each year on the first Saturday in June the town hosts an event called Tour de Pepin, in which individuals or groups can bicycle around the Lake Pepin area. The Lakeside Trail takes advantage of the two and a half miles of open shoreline in the city. Hok-Si-La Park, Ohuta Park, Underwood Park and Fields, Roschen Park and downtown Lake City could serve as trailhead locations.

Hok-Si-La Municipal Park

Hok-Si-La Municipal Park is a 252 acre park situated on the Minnesota side of Lake Pepin two miles north of Lake City on U.S. highways 61 and 63. It is open year round for general use and is a popular family tent camping destination April through October; however sleeping cabins are available as well. The park's facilities include a dining hall, picnic area, restrooms, day use shelters and showers. The main attraction to Hok-Si-La Park is its one mile stretch of beach shoreline for recreation. Visitors can rest and relax by visiting the interpretive center or with one of many recreational activities like swimming, hunting agates, fishing, using the sports courts and playing horseshoes.



Ohuta Park and Lake City Marina.

Lake City Marina

The Lake City Marina is located on South Franklin Street just north of U.S. Highway 61. Originally The Point, as the area was called in the 1800s, was nothing more than a slough with a nearby lumberyard and a few homes. It took a huge overhaul and push for public acquisition to transition to the marina and point as it is today. In 1934 the harbor was dedicated by President Franklin D. Roosevelt following a 1933 dock installation and widening of the original north entrance. Because of World War II, further improvements would not come until 1945 when a push for new growth and enhancements produced the need for a new marina entrance. Lake City Marina continued to grow in size and popularity through much of the 20th century until it reached its present day size of 635 slips. Facility improvements and acquisitions continue today as the demand for guest satisfaction grows.

The marina is open seven days per week from April through October. It boasts a 10,000 square foot administration building, state of the art floating docks, restroom and shower facilities, swimming beach and tennis courts. The Lake City Marina is a potential destination for state trail users.

Lakeside Trail

Lakeside Trail, also known as River Walk, provides a nearly four mile direct route to Lake City starting in the southern tip of Hok-Si-La Park, moving along U.S. Highway 61 and the west shore of Lake Pepin ending near the Miller Creek Aquatic Management Area. It traverses the Lake City Marina and allows access to multiple points of interest. The Lakeside Trail could be a connecting route for the Mississippi Blufflands State Trail.

Terrace Trail

The Terrace Trail moves off road around the west boundary of Lake City, intersecting the Lakeside Trail at Gilbert Creek. It provides pedestrians with views of open farm fields, old apple orchards, woodlands near the bluffs, and floodplain areas. This could serve as a connecting route for the state trail.

5. TRAIL MANAGEMENT

Projected Trail Use

Usage of the Mississippi Blufflands State Trail can be anticipated by comparing it to other trails and outdoor recreation facilities in the area. The trail will be desirable for local and tourist use because it makes connections to population centers, Cannon Valley Regional Trail and Frontenac State Park.

A contiguous trail corridor featuring bluff and river vistas and a connection to Frontenac State Park will be desirable to tourist users (a tourist trail user travels over 50 miles to use the trail and/or has lodging away from their permanent home). The Root River State Trail has a high proportion of tourist use and had 111,580 user hours in 2008. The Mississippi Blufflands State Trail is unlikely to have this volume of use because it is a shorter trail corridor, however it could have similar usage patterns.

Usage of the Mississippi Blufflands State Trail can be approximated by studying the annual visits to outdoor recreation facilities in the trail corridor, as shown in the table below.

Table 1: Visits to Area Recreational Facilities

	2012	2013	2014	2015
Frontenac State Park	116,851	115,593	99,619	131,715
Cannon Valley Regional Trail	89,662	86,631	94,476	98,411

Providing a connection to Frontenac State Park will promote usage of the trail by park visitors. According to a DNR report, state park visitors also use state trails. On the portion of the Paul Bunyan Trail near Lake Bemidji State Park, 65% of tourist trail users were found to also be visitors to the state park. Connections to regional, city, and local parks will also encourage trail use.

State trails also provide important recreational opportunities for area residents. DNR surveys show that local users, who reside within ten miles of the trail, comprise a larger share of state trail use. Tourist use of state trails has declined since the 1990s, while local use has increased or remained stable. The population of Goodhue County is projected to increase over the next 20 years. These trends point to the need to provide recreational opportunities for growing populations while opportunities exist.

Table 2 shows past and projected population in nearby counties from 1990 to 2030. While the area as a whole experienced growth between 1990 and 2010, Wabasha County remained fairly static since 2000. Dakota County increased in population by nearly 50%, Goodhue increased by 14%, and Minnesota as a whole increased in population by about 25%. The population of Wabasha

County is projected to remain fairly constant, while the surrounding area including Goodhue County is projected to increase. The Mississippi Blufflands State Trail will support an increased need for open space recreational opportunities by the growing population.

Table 2: Estimated and Projected County Population

County	1990	2000	2010	2020*	2030*	Estimated Percent Change 1990-2030
Dakota	275,227	355,904	398,552	439,201	471,291	71%
Goodhue	40,690	44,127	46,183	50,589	53,435	31%
Wabasha	19,744	21,610	21,676	23,364	24,355	23%

*Population projections from Minnesota State Demographic Center

Trail Maintenance

Monitoring and maintenance of the Mississippi Blufflands State Trail will be critical to provide users with a safe trail experience and prolong the life of the trail. A routine monitoring and inspection schedule is important to catch maintenance issues at an early stage. A suggested inspection schedule for paved trails is provided in the DNR publication, *Trail Planning, Design and Development Guidelines* (2007).

Maintenance activities are numerous and diverse. Several maintenance activities common in Minnesota are listed below. This list is generalized and specific practices must be tailored to local trail conditions.

- Mow vegetative buffers along the side of the trail. A two to three foot wide strip is a typical minimum for most trails.
- Clear woody vegetation that encroaches on the trail corridor.
- Sweep and clear debris from the trail surface and corridor.
- Seal cracks.
- Repair failing trail edges.
- Patch holes caused by erosion, culvert failure, subgrade problems, animals or other factors.
- Sealcoat.
- Rehabilitate the trail surface. Hot or warm mix overlayments are possible solutions, but total reconstruction may be needed if the trail surface is substantially degraded.
- Maintain trailhead facilities.
- Place and maintain signage for the purposes of orientation, interpretation, safety and boundary enforcement.
- Maintain fencing and railings for trail safety and boundary enforcement.

- Repaint pavement markings.

While developing and maintaining the Mississippi Blufflands State Trail, the Parks and Trails Division will follow the guidelines established under Operational Order #113, “Invasive Species,” in consultation with the Ecological and Water Resources Division. The guidelines prescribe methods for avoiding the introduction or spread of invasive species, and managing and treating infestations of such species.

Trail counting can be used to increase understanding of trail usage, provide justification for investments, and improve decision making for the future. Trail counting can record and distinguish trail use, direction of users and time of use. This information can be valuable for future state trail planning and management.

Maintenance Recommendations

Recommendation 1: *Conduct year-round inspections to detect maintenance issues before safety is compromised.*

Recommendation 2: *Monitor trail use to understand usage patterns, provide justification for trail investment, and improve decision making for trail development and management.*

Recommendation 3: *Pursue additional maintenance funds necessary for maintaining the trail after it is developed.*

Information and Education

Trail User Orientation

Trail users must have reliable information about the trail system so they can make choices about destinations appropriate for their time frame, skill level, need for services such as food and lodging, links to regional or local trails, and the type of scenery and other recreational opportunities available along the route. This type of information should be displayed on information boards at parking areas, in communities, and at trail junctions. It should be available on maps and on the DNR website. Information should include distances between communities, options for other trail connections, and locations of services. If any significant deviation from the typical trail design occurs, such as when a trail enters a community, it should be noted on signs or informational kiosks to assist trail users in understanding what the trail experience will be.

Context specific information for signs and kiosks can be developed with local partners. Division standards and best practices for wayfinding and trail user orientation will be implemented throughout the trail.

Identification of Services

Trail users benefit from knowing where they can obtain services (e.g., medical assistance, telephones, gasoline, food, lodging, restrooms, campgrounds, repair facilities or other retail) and local businesses benefit from an increase in customers. A listing of the services available in each community displayed on information boards at trailhead locations could be developed, maintained and updated by local partners.

Trail Courtesy and Safety Information

Trail courtesy and safety information aimed at educating trail users about appropriate behavior, promoting safe trail use, and protecting the quality of the trail environment should be developed and posted at trailheads and other key locations.

Interpretation of Natural and Cultural Resources

The DNR Parks and Trails Division interpretive program *“forges emotional and intellectual connections to Minnesota’s natural and cultural heritage by provoking curiosity, encouraging discovery, and inspiring stewardship across generations.”*

The division’s interpretive services program connects people with the outdoors with self-guided and staff-led experiences. Professional interpreters present information in a variety of ways: personal experiences such as naturalist-led talks, special events and outdoor skills building programs; and self-guided experiences such as interpretive trails, exhibits, brochures and electronic media.

There are many natural, historic, and cultural resources of significance and interest along the trail. These include Native American spiritual sites, historic settlements, unique geological features, native plant communities and rare wildlife. Interpretive themes have been identified through the planning process. The identified themes help tie together spatially separated interpretive sites and provide continuity in the messages presented. Providing information about these resources can add enjoyment to the trail experience.

Each state park has interpretive themes, programs and signs for interpreting its cultural and natural resources. The themes presented at Frontenac State Park and Goodhue-Pioneer State Trail can inform interpretive signage for the Mississippi Blufflands State Trail. Coordination between park and trail interpretation and programming will improve trail users’ experience.

Themes for the trail could include the following:

Evolving transportation in an industry-driven area

The Mississippi River and Lake Pepin have a fascinating history. From logging to clay mining, steamboats to barges, transportation and

industry have played a major role in the development of the area. The trail should highlight these development changes, and the transition from Native American foot paths along the river to the onset of railroads.

The importance of protecting biological diversity

The Blufflands Ecological Subsection hosts the most Species of Greatest Conservation Need of all subsections in Minnesota. The trail should highlight the importance of protecting biological diversity for the sake of both the environment and for the trail user experience.

Unique resource management challenges emerging in the area

The spectacular blufflands landscape presents unique challenges to resource managers because it is always changing. The trail should seek to inform users of current concerns like agricultural erosion and sedimentation filling in Lake Pepin or the spread of invasive species.

Interpretive material will be developed in consultation with other DNR divisions, Minnesota Historical Society and Goodhue County Historic Society. Themes, in addition to those listed above, may be identified and interpreted over time.

Other sites, parks and museums offer educational and interpretive services that could be complementary to those provided by the DNR. Trail users would be encouraged to visit some of these sites if they are seeking a particular experience.

Information and Education Recommendations

Recommendation 1: *Follow division standards and best practices for wayfinding and orientation. Provide community services information, trail orientation and wayfinding signage, trail rules, and trail courtesy information at key locations and intersections along the trail. Include universal trail use symbols to indicate shared uses along the trail.*

Recommendation 2: *Include segments of the Mississippi Blufflands State Trail in interpretive planning for other state facilities in the area, so that users better understand the unique natural, historical and cultural features of the Mississippi River and the blufflands.*

Recommendation 3: *Parks and Trails staff should cooperate with schools to use the trail for natural resources education purposes.*

Recommendation 4: *The DNR should partner with other organizations such as Great River Road Scenic Byway, tribes, local historical societies, chambers of commerce and municipalities to develop content for interpretive displays. Displays could utilize alternative methods to increase trail users' engagement with interpretive material.*

Enforcement

Minnesota State Trails are safe and generate very few complaints. Surveys of state trail users indicate that 80 to 90 percent of state trail users have no problems or conflicts with other trail users. The most common problems that people identified include other trail users blocking traffic, problems with people's pets, and other generally discourteous behavior. A survey of law enforcement agencies and officers shows that trail incidences and unlawful activity on trails tend to be issues among users and depreciative behavior toward the trail, not issues of crimes against people or private property. Ninety-four percent of officers surveyed expressed that trails are as safe, or safer, than other public spaces and public recreation areas.

However, adequate enforcement is a vital aspect of maintaining a safe and secure trail environment. User conflicts, unauthorized use of the trail, and trail users leaving the treadway designated for their use are often among the concerns identified during the planning process, and are all likely areas for enforcement.

Enforcement of state trails rules and regulations, information and education, trail design, trail maintenance, and the mix of trail uses are all factors that contribute to the maintenance of a safe, secure trail environment. The DNR has the primary responsibility for law enforcement on DNR-owned and operated recreation areas. Enforcement assistance is also sought from local police departments and county sheriffs, as necessary.

The DNR's goal is to deal with issues as they arise and provide an adequate level of enforcement to maintain a safe and secure trail environment, to encourage trail users to understand and obey trail rules, and respect other trail users and adjoining properties.

Enforcement Recommendations

Recommendation 1: *Provide an adequate level of enforcement via a multifaceted approach to help maintain a safe and secure trail environment, and to encourage trail users to understand and obey trail rules, and respect other trail users and adjoining properties.*

Recommendation 2: *Develop on-site information that targets important trail courtesies and rules necessary for a safe and enjoyable experience.*

Recommendation 3: *Enforcement related costs will be noted when providing information about trail costs to legislators and local government officials.*

6. TRAIL CORRIDOR RESOURCES

Ecological Classification System

The Ecological Classification System (ECS) is part of a nationwide system for ecological mapping and landscape classification. The ECS classifies regions based on climate, geology, topography, soils, hydrology and vegetation information. There are six tiers to the ECS: provinces, sections, subsections, land type associations, land types and communities. The ECS allows resource managers to better understand the landscape and manage resources sustainably.

Minnesota lies at the center of North America where the prairie, boreal forest, and eastern deciduous forest meet. There are four major ecological provinces in Minnesota: the Eastern Broadleaf Forest, the Laurentian Mixed Forest, the Prairie Parkland and the Tallgrass Aspen Parklands. All four are parts of much larger systems that cover major areas of central North America.

The Eastern Broadleaf Forest province, primarily made up of deciduous forest, extends eastward from Minnesota all the way to the Atlantic Ocean. The Laurentian Mixed Forest Province, largely consisting of coniferous forest, extends northward into Canada. The Prairie Parkland Province extends westward into the Dakotas and across the Central Plains of the United States. The Tallgrass Aspen Parklands Province represents the southern tip of a large province that extends north and west in the Canadian Prairie Provinces. The Mississippi Blufflands State Trail search corridor lies entirely within the Eastern Broadleaf Forest province.

These ecological provinces are divided into subsections – distinct landscapes of Minnesota, defined by vegetation, geology, and other resource criteria. Descriptions of the subsections are important for trail planning purposes because they provide the context for trail routes, trail development, resource management and interpretation recommendations. The following descriptions are drawn from the [DNR website](http://mndnr.gov/ecs) (mndnr.gov/ecs).

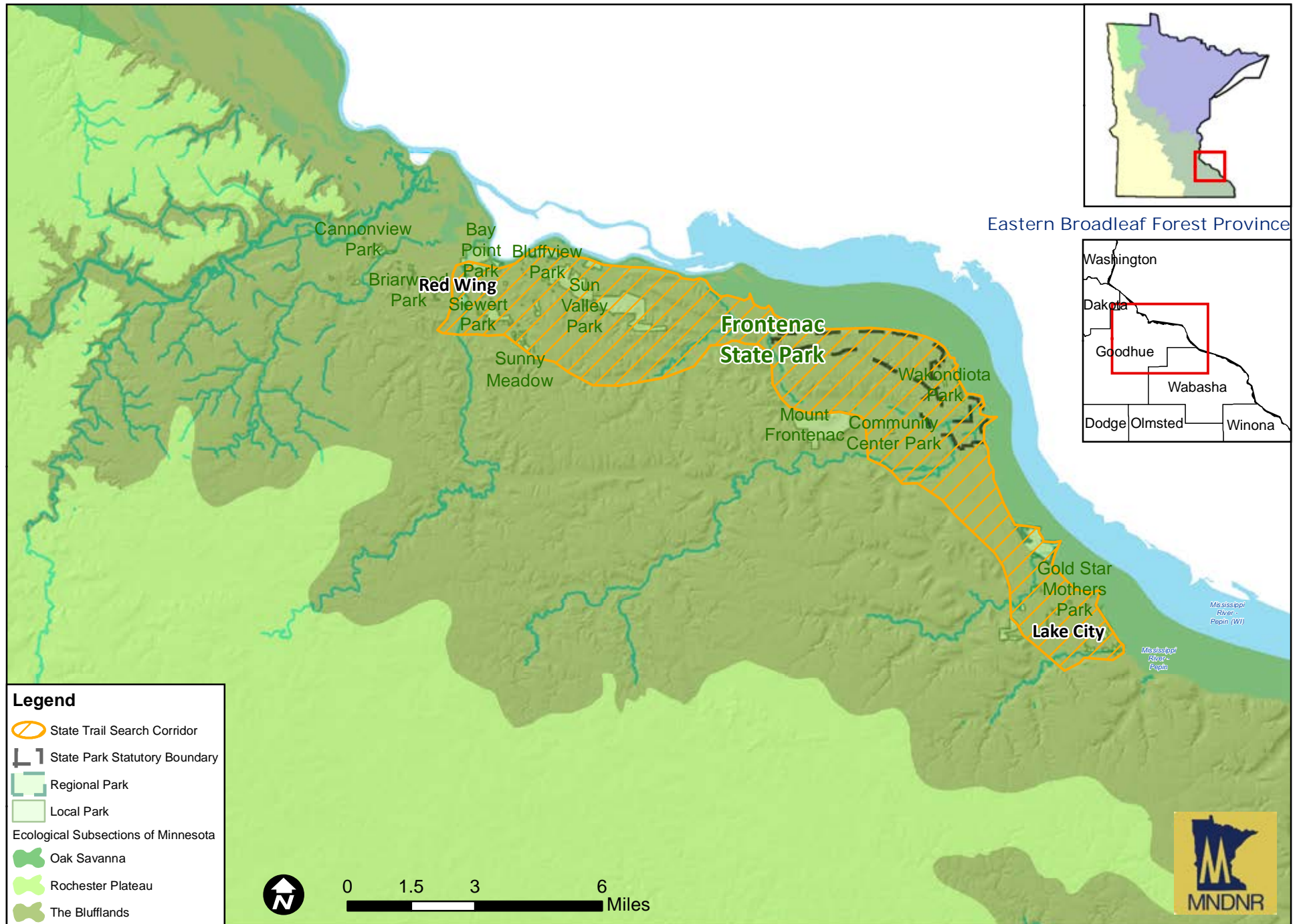
Blufflands Ecological Subsection

The Mississippi Blufflands State Trail will be located within the Blufflands Ecological Subsection. This subsection consists of an old plateau covered by windblown silt that has been extensively eroded along rivers and streams. It is characterized by highly dissected landscapes associated with major rivers in southeastern Minnesota. Bluffs and 500 to 600-foot deep stream valleys are common. River bottom forests grew along major streams and rivers.

The west boundary of the subsection is complex, following major river valleys. The northern boundary marks the northern extent of windblown silt deposits. There is also a small outwash plain that marks the northern boundary.



The four ecological provinces in Minnesota: Eastern Broadleaf Forest (green), Laurentian Mixed Forest (violet), Prairie Parkland (yellow), and Tallgrass Aspen Parklands (bright green).



Climate

Annual normal precipitation ranges from 29 inches in the western portion of the Blufflands Ecological Subsection to 34 inches in the southeast. Growing season precipitation ranges from roughly 11 to 16 inches and growing season length ranges from 136 to 156 days.

Geology

The area is a windblown silt-capped plateau, deeply divided by river valleys. The greatest relief occurs along the Mississippi River, where elevation change is up to 600 feet. The windblown silt lies directly on bedrock in the east, on top of red clay in the southeast, and covers the exposed sedimentary rock in valley walls. Topography is controlled by underlying glacial till along the western edge of the subsection, where the windblown silt is several feet thick. As glacial drift thins to the east, the topography transitions to bedrock. Sinkholes are common in the southwestern portion of the subsection.

Soils

Windblown silt thickness is variable; the deposits range from 30 feet thick on broad ridgetops, to less than a foot on valley walls. The predominant soils are usually wet along the floodplains of major rivers. Cambrian siltstones, sandstones and shales influence soil properties.

Climate Change

Climate change alters the character of the state's lands, waters, plants, fish and wildlife. It affects the DNR's ability to manage these resources for the long-term benefit of the public. The DNR's responsibility is to use the best available science to implement adaptation strategies that will minimize the negative impacts of climate change on the state's natural resources, outdoor recreation opportunities, and commercial uses of natural resources.

The DNR will develop and implement land management practices that sustain Minnesota's natural resources while helping to reduce future climate change by mitigating the environmental impacts of increased carbon emissions. This will be guided by Operational Order #131, "Climate Adaptation and Mitigation in Natural Resource Management." The DNR is committed to enhancing ecosystem resilience and reducing the negative impacts of climate change on the state's resources and outdoor recreation opportunities.

Climate change will impact temperature and precipitation patterns. The rate of increase of average annual temperature in Minnesota from 1970-2014 has been 5.0°F per century. Temperatures are expected to continue increasing into the foreseeable future with the greatest change reflected in winter minimums. Annual average precipitation is anticipated to increase by 3-5" per century. In

addition, the number of heavy precipitation events has increased, resulting in more frequent and heavier flooding events.

Climate change is likely to have several impacts on outdoor recreation opportunities and state trail management. A decline in winter snowfall amounts and a shortened winter season could impact the feasibility of snow-based activities like cross-country skiing and snowmobiling. On the other hand, warmer temperatures in the spring and fall could extend the season for summer uses. An extended summer season may increase demand for bicycling, hiking and other traditional summer trail uses. Trail development near streams and rivers may require additional consideration due to more frequent and heavier flooding events.

Vegetation

Presettlement Vegetation

Presettlement vegetation in the trail search corridor can be determined based on early historical records and F. J. Marschner's 1930 Original Vegetation of Minnesota map, based on interpretation of the Public Land Survey records from 1853-1854. Presettlement vegetation communities in the state trail search corridor included tallgrass prairies, oak openings and barrens, upland deciduous forests, floodplain forests and wet prairies. See [Figure 11](#) for a map of presettlement vegetation in the trail corridor.

Oak Openings and Barrens

Oak openings and barrens were by far the most prevalent presettlement plant communities in the trail search corridor. These are characterized by scattered trees and groves of oaks with some brush and thickets. These areas typically have succeeded to woodland-brushland or oak forest systems since European settlement.

Big Woods

There was also a system of upland deciduous forests (referring to Marschner's "Big Woods") that stretched the length of the trail search corridor along the Mississippi River. These are mesic forests, typically in moderate- to well-drained soil, with a canopy dominated by oaks. The upland deciduous forest system is the next stage of succession after an oak opening, and was prevalent from what is now Barn Bluff to Frontenac State Park.

River Bottom Forest

River Bottom Forests, more commonly known as Floodplain Forests, occupy both major and minor water courses throughout the state. The lowland sites occupied by these forests are subject to periodic flood and drought. Spring floodwaters enrich the soil as they deposit silt over the forest floor. Silver

maple, willow and cottonwood are the dominant trees while poison ivy and stinging nettle are common on the forest floor. These forests were located along rivers and streams in the search corridor.

Upland Prairie and Prairie Wetland (Prairie and Wet Prairie)

Tallgrass prairie covered one-third of the state at the time of the public land survey in the 1850s. It occupied a wide variety of landforms, including beach ridges and swales, glacial lake beds, morainic hills, steep bluffs and rolling till plains. Along these landforms, important differences occurred in the plants and animals that compose the prairie ecosystem. The most striking indicator was the predictable change in dominance of a few major prairie grasses. The distribution pattern of these grasses coincided with differences in soil moisture levels related to topography. In general, prairie cordgrass and bluejoint dominated the wet lowlands; big bluestem and Indian grass occupied the deep fertile soils of the moist uplands; and little bluestem and sideoats grama occurred on the thin soils of dry uplands. Throughout the prairie biome, numerous wetland communities dominated by sedges and rushes, rather than grasses, were interspersed with upland prairie.

Present Day Vegetation

Agriculture, including row crops and pastures, takes place in former savanna and prairie areas and is the most prominent land use in the Blufflands Ecological Subsection. Forestry and recreation are also important land uses. Significant amounts of public lands and recreational opportunities can be found along river corridors through the subsection.

Many native plant communities remain within the state trail search corridor. These plant communities tend to occur along rivers or on bluffs. The following native plant community systems exist within the search corridor ([see Figure 12](#)).

Mesic Hardwood Forests

Of the multiple native plant communities present in the trail search corridor, the most prevalent are the mesic hardwood forests. These forests occur along bluffs where wind-deposited silt is present or in rolling till plains. The canopy is typically a continuous block of deciduous trees, with occasional conifer interruption. In most instances in the area, the moist soils and the scenery are protected from fire and other catastrophic occurrences. Mesic hardwood forests are characterized by maple-basswood and oak forests dominated mostly by red oak, white oak, sugar maple, basswood, green ash and bitternut hickory. White pine is present in a few places. Many of the mesic hardwood forests that occur within the search corridor are located along the Mississippi River and Lake Pepin.

Fire-Dependent Forests

The trail search corridor also contains fire-dependent forest communities occurring mostly in Goodhue County, within Frontenac State Park. These forest areas are subject to prescribed burns and wildfire. Frontenac State Park has a history of using fire as a management tool, which the staff has reintroduced and continues to use.

Floodplain Forests

In the area around Hok-Si-La Municipal Park, trail users have the opportunity to experience floodplain forest systems. This native plant community can occur in periodically flooded sites along large rivers, in this case the Mississippi River. They are highly tolerant of saturated soils and erosion, but can vary greatly due to the changing hydrology of the area. Floodplain forests are dominated by silver maple, usually with some green ash, black ash, hackberry, cottonwood, American elm and/or slippery elm.

Cliff/Talus Systems

Cliff/Talus communities are abundant in the Blufflands subsection, and in the trail search corridor. They exist on slopes or steep sided bluffs, streams, ridges, and in areas where bedrock is exposed. They are dominated by lichens and moss, but present sparse vascular vegetation in places where soil is available. Cliff habitats can be warm or cold, wet or dry depending on the aspect of the slope. Talus plant communities are composed of rock that has been fractured or separated from the cliff.

Marshes

Marsh plant communities occur throughout the Eastern Broadleaf Forest province and the Blufflands subsection. They are characterized by consistent and stable standing or sluggish water. Water drawdown is not seasonal and coincides with drought conditions. This system provides high nutrient levels and oxidation of organic materials, which allows diversity in plant life, predominately emergent species with extending vegetative and flowering structures. Common plants found in marsh systems are cattails, bulrushes and arrowheads.

Open Rich Peatlands

The typical Open Rich Peatland found in the Eastern Broadleaf Forest Province is a wetland dominated by graminoids like fine-leaved sedges, and low-shrubs such as leatherleaf or bog rosemary. These plant communities form on top of actively forming deep peat, often greater than 16 inches. In the Eastern Broadleaf Forest Province, however, these peat communities are often confined

to floating maps, or areas where groundwater discharge sufficiently offsets the higher rates of evapotranspiration when compared to northern floristic systems.

River Shores

Because River Shore Systems occur in riparian zones along rivers and streams, they experience frequent flooding. They are annually inundated with spring flooding and heavy rains, leaving sparse vegetation. The plants that withstand ice scouring and water disturbance are subject to erosion, and must therefore establish strong root systems. Annuals are common along exposed sediments, once the seasonal flooding has receded.

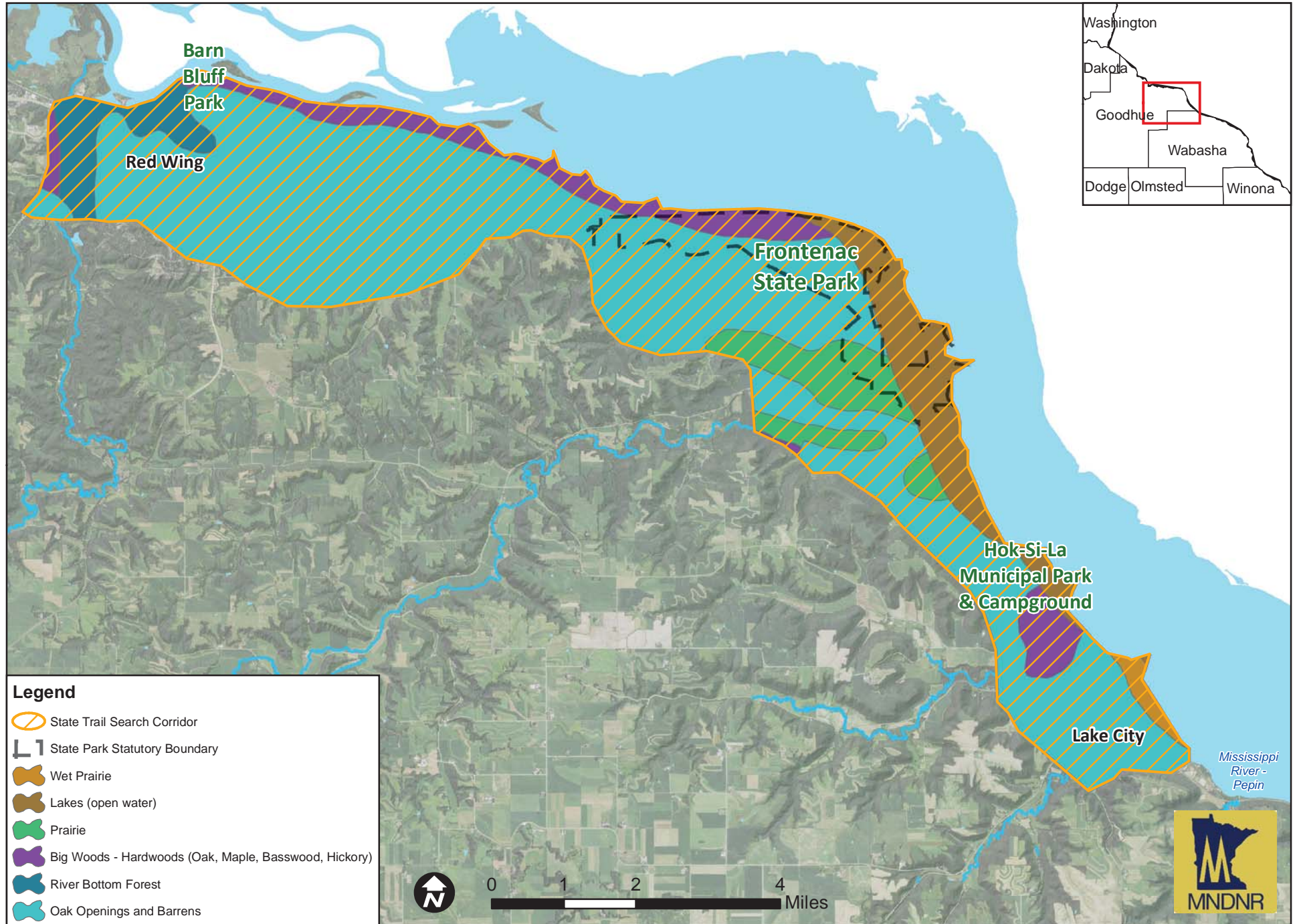
Upland Prairies

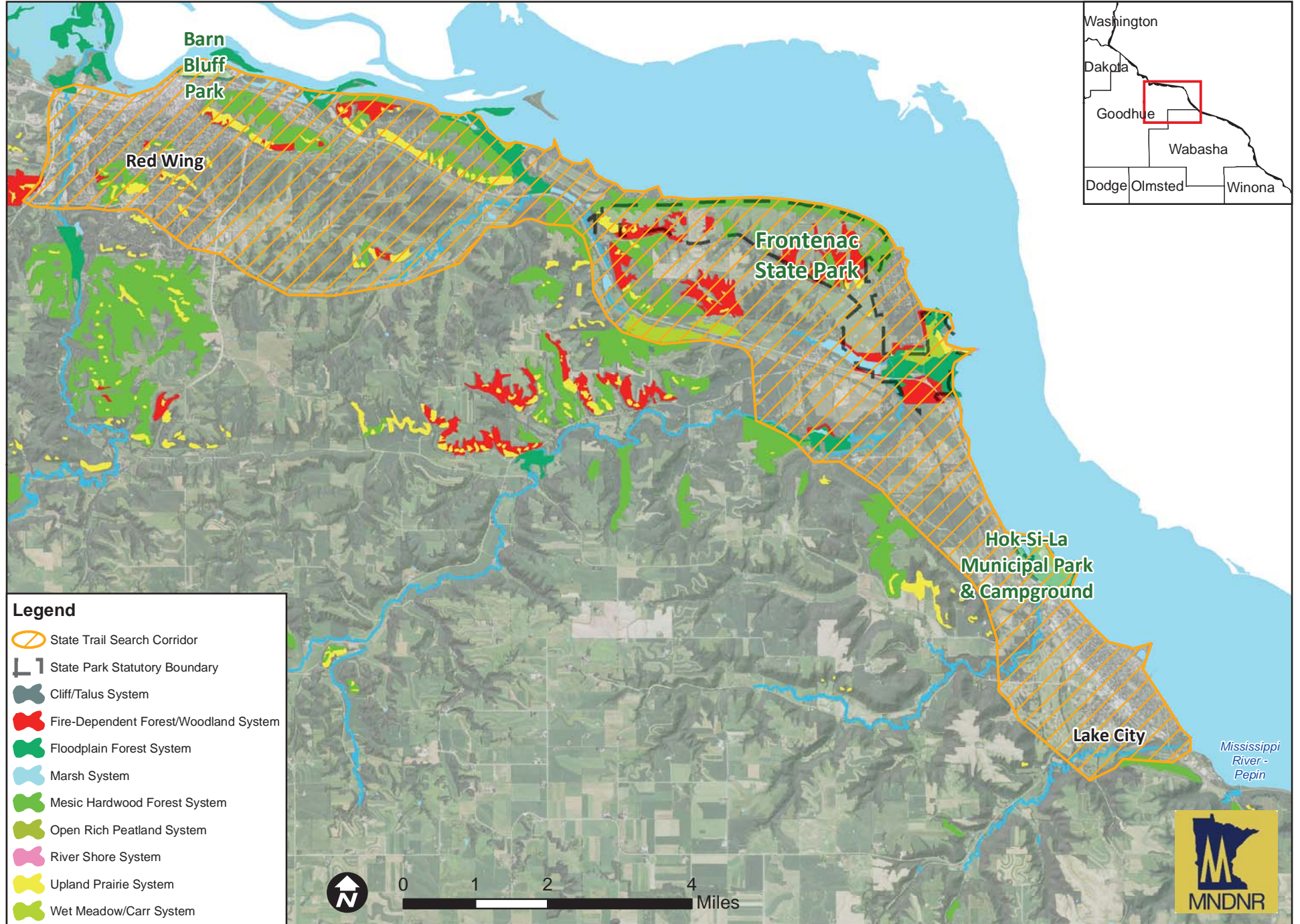
Upland Prairies are herbaceous plant communities dominated by tall grasses like big bluestem, mid-height grasses like prairie dropseed, and occasionally by various sedges and semi-shrubs like leadplant or prairie rose. Prairie systems in Minnesota are closely tied to the frequent occurrence of fire. Where fire is less severe or common, brush-prairie and savannah communities can occur.

Wet Meadow/Carr Systems

Wet Meadow/Carr communities are typically dominated by grasses and sedges, with scattered shrubs where dry enough. Seasonal flooding is normal, with drawdown usually in the summer months. Because of this water drawdown, the soil switches between anaerobic and aerobic, and can support a multitude of communities.

Maps showing locations of Native Plant Communities and Rare Species throughout the trail corridor are provided online by the DNR Ecological and Water Resources Division (<http://www.dnr.state.mn.us/eco/mcbs/maps.html>).





Vegetation Management Recommendations

Recommendation 1: Avoid threatened, endangered, or special concern species and high quality plant communities, as defined by the Minnesota County Biological Survey (MCBS) maps.

Recommendation 2: The trail can be a tool for improving habitat quality by decreasing edge and increasing connectivity.

- The trail can be used to smooth edges by restoring the vegetation of the trail corridor to make a more regular edge.
- The trail can be used to connect patches of natural areas. Vegetation within the corridor should be planted and managed to encourage a contiguous habitat type.
- The trail can be used to enlarge existing natural habitats.
- Some native plant community management may include cooperative efforts with adjacent land owners.

Recommendation 3: Restore, or if necessary, establish native woodland, prairie, or wetland along the trail to supplement native plant communities already present in the valley, utilizing locally sourced seed and plant stock.

Recommendation 4: Control the spread of invasive species; trail corridors are especially vulnerable through maintenance operations such as mowing and the island effect from adjoining parcels of land.

Recommendation 5: Trail routes should avoid fragmentation of high quality plant communities.

Recommendation 6: Vegetation should be used to screen unsightly areas, deter trespassing, and to assist in retaining snow cover on the treadway, where appropriate.

Water Resources, Recreation and Fisheries

The majority of the trail search corridor for the Mississippi Blufflands State Trail lies within the Rush-Vermillion watershed. The main water body in this watershed is the Vermillion River, which is considered a “prairie river.” It flows through the southwest Twin Cities Metropolitan Area into Wisconsin. The surrounding watersheds are predominately agricultural, however the Vermillion River is one of few designated trout streams in the Twin Cities Metropolitan Area. Wells Creek in the Minnesota portion of the Rush-Vermillion watershed basin meanders through the subsection, forming the extensive floodplain forest system.



Pleasant Valley Lakelet near Wells Creek.

Mississippi River and Lake Pepin

The Mississippi River is the fourth longest river in the world, flowing 2,350 miles from Lake Itasca in Minnesota to the Gulf of Mexico. In Minnesota, the river flows through valleys, bluffs, prairies and woodlands in a variety of flow rates and widths. Portions of the river have been designated as a Wild and Scenic river.

The segment of the river that coincides with the state trail search corridor is surrounded by bluffs. These bluffs were formed when the river cut down through the layers of rock and carved out the valley in which it flows. The main river channel deviates from the east bank at times to the west bank at other times. Extensive backwaters often extend to the bluffs on the side opposite the main channel. There is a great body of water filling this valley, which provides water recreation experiences. Wildflowers can be spectacular along this stretch of the river. Inland seas advanced and retreated several times over millions of years, leaving sediments that became the dolomite, shale and sandstone that form the river bluffs.

There are 113 species of fish recorded in this stretch of river; only half of that many species exist above St. Anthony Falls in Minneapolis, which has prevented the upstream migration of fish. Fishing is excellent throughout the river system and is permitted in accordance with state regulations. The river valley is a major migration route for ducks, geese, swans, raptors (especially bald eagles) and other birds. The Minnesota-Wisconsin stretch of the Mississippi harbors at different times 285 species of birds. Along the backwaters, two of the most common yet impressive birds are the great blue heron and the common egret. Fifty-two species of mammals are found from Hastings to Iowa. Those most often seen are beaver, muskrat, deer and raccoon; the mud along the shore will show their tracks. Also common in the river valley are red and gray fox, cottontail rabbit, gray and fox squirrel, thirteen-lined ground squirrel, chipmunk, striped skunk and several species of moles, shrews and mice. Twenty-three species of reptiles and 13 species of amphibians are found in this section of the river. This stretch is also rich in freshwater mussels. There are more species of mussels in the Mississippi River watershed than in any other in the United States.

Lake Pepin is the largest lake on the Mississippi River. It is a naturally occurring lake formed by the backup of water behind sedimentary deposits of the Chippewa River's delta. The lake is 21 miles long, averages 1.7 miles wide and covers 29,295 acres. It has a maximum depth of 60 feet and an average depth of 21 feet. Since 1991, 89 animal species have been identified in the lake by the Lake City Long Term Resource Monitoring Program.

Angling is said to be excellent for largemouth bass, smallmouth bass, walleye and sauger. Recreational fishers can also catch white bass, black crappie, northern pike, bluegill and yellow perch.

Multiple aquatic invasive species are present in Lake Pepin including bighead carp, grass carp and zebra mussels. Some of the invasive aquatic plants include Eurasian watermilfoil and purple loosestrife, which is illegal to possess, plant, transport or sell in the state of Minnesota.

Vermillion River

The Vermillion River flows through urban and agricultural landscapes. In the early twentieth century, the area was farmed heavily. Farmers that grew wheat and corn used the river as a reliable source of water for irrigation, while farmers who raised livestock used the clean water to cool cattle during the summer.

Today, the area is still dominated by agriculture, but urbanization due to the nearby Twin Cities is increasing. The Vermillion River and some of its tributaries are designated trout streams and have a significant groundwater influx. This inflow saturates the soil of the surrounding floodplain forest, and creates a unique area for wildlife and human enjoyment.

Cannon River

Stream flow usually peaks in early April when very heavy rains can cause the river to flood. Because there are few rapids to cause paddlers problems in low water, the level is usually sufficient for paddling. The dam at Lake Byllesby, affects water levels and paddling downstream. The Cannon River falls 280 feet, an average of 4.8 feet per mile.

In the reservoirs and slow stretches of river above Faribault the most common game fish are northern pike, black crappies, bluegills and bullheads.

Downstream from Faribault the most common species are smallmouth bass, northern pike, walleye and channel catfish. Wildlife seen in the river valley includes white-tailed deer, beavers, otters, raccoons, bobcats, red and gray foxes and coyotes.

Streams and Creeks

The creeks in the blufflands area are unique in that they rise from streams and are therefore cool in the summer. There is an abundance of insect life, compared to the North Shore streams, providing enough food to support a healthy trout population. In some areas the trout are self-sustaining, but others require periodic restocking.

Bullard Creek

Bullard Creek in Goodhue County is a stream corridor that flows through Bullard Creek Aquatic Management Area and into Lake Pepin. It offers recreational

fishing opportunities for brook trout. The DNR has trout stream easements and stream restorations in this area.

Hay Creek

Hay Creek and the Hay Creek Day-Use Area are about two miles south of Red Wing in Goodhue County. The creek is a designated 2A cold water stream that flows directly into the Mississippi. The Hay Creek Management Unit is 1,500 acres and hosts a segment of the Goodhue-Pioneer State Trail.

Wells Creek

Wells Creek is a major stream in Goodhue County. It flows southwest to northeast, before reaching the Mississippi River near Frontenac State Park. It is classified as a medium priority stream for anglers and is stocked biennially with brown trout fingerlings.

Gilbert Creek

Gilbert Creek flows through northern Goodhue and southern Wabasha Counties. It has several unnamed tributaries that flow northeast before dumping into Lake Pepin. This stream provides anglers an opportunity to fish for brook trout and brown trout.

Miller Creek

Miller Creek is another designated cold water stream that is located in northern Wabasha County and flows north into Lake Pepin. It offers opportunity to fish for brown trout.

Water Resources Recommendations

Recommendation 1: *Seek development of a trail route that avoids and minimizes additional disturbances to wetlands, flood plains and other sensitive hydrological features.*

Recommendation 2: *Where the trail is located near hydrological features, provide a permanent vegetative buffer strip and/or other stormwater best management practices (BMPs) between the paved trail and water. Riparian zones will be planted with native grasses, shrubs and trees to help stabilize banks.*

Recommendation 3: *A trail too close to the river may be subject to bank failure affecting the trail route over time. Trail location must consider the potential impact of bank failure as preventing or mitigating this process is costly.*

Recommendation 4: *Connections to the river should be made whenever possible. These connections may include facilities adjacent to the trail designed for shorefishing.*

Recommendation 5: *Interpretive displays should emphasize the historical significance of the river, geological history of the valley, and create an awareness of water quality issues and conservation efforts.*

Wildlife and Habitat

The Blufflands Ecological Subsection provides a critical migratory corridor for forest songbirds, raptors and waterfowl. It is the most important subsection for reptiles and one of the most important subsections for mollusks. It is a critical area for birds such as Henslow's sparrows, prothonotary warblers, red-shouldered hawks, Louisiana waterthrushes and peregrine falcons. It is also an important area for Karner blue butterflies and Blanding's turtles. Reptiles, amphibians, snails, mussels, and fish are special features of this landscape, including timber rattlesnakes, milk snakes, paddlefish, shovelnose sturgeon, pallid shiners, American eels, pirate perch, skipjack herrings and several Pleistocene snails.

Species in Greatest Conservation Need

Species in Greatest Conservation Need (SGCN) have been identified for each ecological subsection in Minnesota. This category, which includes both plant and animal species, includes:

- Species whose populations are identified as being rare, declining, or vulnerable in Minnesota, including species with legal protection status (federal or state endangered or threatened species).
- Species at risk because they depend upon rare, declining or vulnerable habitats.
- Species subject to specific threats that make them vulnerable (e.g. invasive species).
- Species with certain characteristics that make them vulnerable (e.g. highly localized distribution).
- Species with stable populations in Minnesota that are declining outside of Minnesota.

One hundred and fifty-six SGCN are known or predicted to occur within the Blufflands Ecological Subsection – the most of all the subsections in Minnesota. This includes amphibians (3), birds (53), fish (26), insects (14), mammals (9), mollusks (32), reptiles (16) and spiders (3). Eighty-two of these species are federal or state endangered, threatened or of special concern.

There are many factors influencing the vulnerability of SGCN. Vulnerability factors refer to the degree to which a natural community or population size of a species is likely to be diminished by environmental changes. The factors known or predicted to occur in the subsection are listed in Table 3.

Table 3: Vulnerability Factors for Species in Greatest Conservation Need

Problem	Percentage of SGCN in the Subsection for Which This is a Problem
Habitat Loss in MN	82
Habitat Degradation in MN	88
Habitat Loss/Degradation Outside of MN	27
Invasive Species and Competition	29
Pollution	35
Social Tolerance/Persecution/Exploitation	23
Disease	1
Food Source Limitations	4
Other	21

Some areas important for SGCN in this subsection include the Whitewater, Gores Pool and McCarthy Lake WMAs; Upper Mississippi River National Wildlife Refuge; Great River Bluffs, John Latsch, Whitewater and Frontenac state parks; and Cannon River Turtle Preserve, Kellogg Weaver Dunes and Mound Prairie scientific and natural areas.

Threatened, Endangered, and Special Concern Species

The Minnesota Natural Heritage Information database was used to identify species that are threatened, endangered or of special concern in and around the trail search corridor. These species are protected by state law, and protecting their habitat must be considered during trail planning, development and maintenance. A table of species known to occur within, or adjacent to, the search corridor can be found in [Appendix C](#).

Wildlife Management Areas

There are twelve different Wildlife Management Area (WMA) units in Goodhue County. Wildlife Management Areas are publicly owned land that are acquired and managed for a diversity of habitats. Most of the Goodhue County WMAs are relatively small, and located near agricultural land. Together, they provide a combination of wetland, grassland and oak woods habitats. These WMAs are acquired and managed in a way that provides benefit to wildlife in intensely farmed areas. The Espen Island and Perched Valley WMAs are located within or near the trail search corridor. They offer bottomland hardwood forest, wetland, and a look at the increasingly rare calcareous fen plant communities.

Richard J. Dorer Memorial Hardwood State Forest

The Richard J. Dorer (RJD) Memorial Hardwood State Forest was created in 1961 as a memorial to the state's pioneers and veterans. Like all state forests, the RJD Memorial Hardwood Forest provides recreational and aesthetic opportunities. The founders of the RJD Memorial Hardwood Forest also set out additional conservation goals of: improved wildlife habitat, prevention of erosion, stability of streams and timber production.

The RJD Memorial Hardwood State Forest is unique in that the state owns just a fraction of the land. Out of nearly one million forested acres, the state only owns 45,000 acres. The RJD Memorial Hardwood State Forest represents what used to be forested land. It is also unique in that it is the only forest where the use of mountain bikes, horses, off-highway vehicles and all-terrain vehicles is restricted to designated trails only.

Wildlife and Habitat Recommendations

Recommendation 1: *Avoid impacts to threatened and endangered species, and avoid or minimize impact to special concern species and natural features in trail planning, development and maintenance. Parks and Trails Division natural resource staff will keep current with Natural Heritage data, consult with regional plant ecologists and land managers, and perform on-the-ground surveys.*

Recommendation 2: *Avoid critical habitats; manage and enhance habitats, where possible; consider fish and wildlife needs when designing water crossings; and use native species – consistent with the natural communities of the area – when re-vegetating areas disturbed by trail construction and maintenance.*

Recommendation 3: *The occurrence of endangered species was noted within and near the search corridor. The sites of these occurrences will be considered when selecting a trail route and no adverse impacts are anticipated by trail development. Interpretation of these species will create an awareness, appreciation and understanding of their importance among trail users.*

Historical and Cultural Resources

The following section is adapted from Brown's Creek State Trail Master Plan prepared by DNR Parks and Trails Division in 2012, and from the Goodhue Pioneer State Trail Master Plan prepared by the DNR Trails and Waterways Division in 2002.

Presettlement

Migratory peoples started moving into Minnesota during *the Paleoindian Period (10,000 B.C. – 6,000 B.C.)* as the glaciers retreated from the Upper Midwest. Stone knives and projectile points found throughout Minnesota suggest that hunters of the late Paleoindian Tradition pursued prairie animals such as mastodons and bison, as well as the deer and elk of the northern forests.

The Archaic Period (6,000 B.C. – 800 B.C.) was a time of changing climate, resulting in increased diversity of plant and animal communities. Humans also diversified their hunting, trapping, fishing, foraging and woodworking technologies. Chipped stone tools, notched projectile points, and pecked and ground stone tools are evidence of this time period.

The Woodland Period (800 B.C. to Historic Contact) brought the beginnings of plant domestication and more intense settlement patterns, especially near stream and lake areas. Early farmers worked the sandy soil of the river bottoms and terraces with bone hoes and other hand tools. Their settlements were typically large villages of 600 to 800 inhabitants surrounded by fields of corn, beans, squash, sunflowers and tobacco. The development of ceramics and mound construction for burial activities were significant advances in this time period.

During *the Oneota/Plains Village Occupation (900 A.D. to Historic Contact)* in southern Minnesota, there was much development along major river valleys. Subsistence strategies were developed based on simple agriculture, gathering and bison hunting.

Settlement

American Indian culture was continuously present in southeastern Minnesota from prehistoric times until well into the nineteenth century. Europeans began settling in the mid-1800s, motivated by the search for farmland. The primary crop for the area was wheat, which soon brought the construction of flour mills and gristmills. As the towns grew, so did the transportation system.

Soon a new system of roads and railroads developed to accommodate the increasing demands of population and travel. The advance of railroads into the valley spurred additional growth. Railroads quickened transport of grains to mills and brought additional goods and settlers to the area.

Railroad History

The Chicago, Milwaukee, St. Paul & Pacific Railroad (referred to as the Milwaukee Road) operated in the “Golden Age” of railroading (1880s to 1920s), until its decline in the 1970s. It extended through much of the Midwest and eventually all the way to the Pacific Coast in Seattle, Washington. The Milwaukee Road is best remembered for its passenger train, the Hiawatha. In 1880 it became the first railway west of Chicago to incorporate electricity and steam heat in its passenger trains. The Milwaukee Road operated an impressive 10,000 miles of track before eventually declining. The company went through a period of bankruptcy in 1935 and then again in 1977, this time having to sell and abandon much of its transcontinental line and passenger service.

National Register of Historic Places

There are a number of historic sites located within the state trail search corridor, and over 400 listed sites in Goodhue County. Table 4 lists the resources that are located within the search corridor. These resources need to be considered in the location, design and interpretation of the trail.

Table 4: National Register of Historic Places

Red Wing	
Barn Bluff	Oakwood Cemetery
G.A. Carlson Lime Kiln	Pratt Tabor House
Chicago Great Western Depot	Red Wing City Hall
Gladstone Building	Red Wing Iron Works
Dr. Charles Hewitt Laboratory	Red Wing Civic Mall Historic District
E.S. Hoyt House	Red Wing Residential Historic District
Kappel Wagon Works	Red Wing Waterworks
Keystone Building	T.B. Sheldon Memorial Auditorium
James L. Lawther House	Theodore B. Sheldon House
Mendota to Wabasha Military Road	Spring Creek Petroglyphs
Minnesota State Training School	St. James Hotel
Minnesota Stoneware Company	Towne-Akenson House
Hay Creek	
Bridge No. 12	
Wacouta	
Dammon Round Barn	
Florence	
Florence Town Hall	Old Frontenac Historic District
Lake City	
Lake City City Hall	James C. and Agnes M. Stout House
Williamson-Russell-Rahilly House	

7. IMPLEMENTATION: WHAT HAPPENS AFTER THE MASTER PLAN IS FINISHED?

Chapter 86A.09 of Minnesota Statutes requires that a master plan be prepared for state trails before trail development can begin – although planning, design and land acquisition can take place before the plan is complete. The completion of a master plan is only one step in what is typically a long process of implementation.

Local trail advocates have worked throughout the planning process to identify feasible routes, contact landowners, seek funding from a variety of sources, and work with DNR staff. The process has been, and will continue to be, lengthy and complex.

The first generation of state trails in Minnesota were developed primarily on abandoned rail rights-of-way that state or local governments were able to acquire. Since that time, most of the remaining abandoned rail rights-of-way in the state have reverted to private ownership. The next generation of trails, including the Mississippi Blufflands State Trail, must cross a variety of public and private lands, making them much more challenging to develop than the rail-trails of the past.

Identification of State Trail Routes

DNR Parks and Trails staff work with individual landowners to acquire land or easements on a willing seller basis. A series of acquisitions on adjoining properties will be needed in order to create a contiguous trail segment with a logical beginning and end. In other words, a trail segment should begin at an existing park or town center that can serve as a trailhead, preferably with parking and restroom facilities. It is also desirable for a segment to end at a logical destination. Logical beginning and ending points could include city or community centers, existing trails or bicycle routes, parks, natural areas or wildlife preserves, historic sites, trailheads and roads.

In this process, DNR acquisition and development staff frequently work with city and county governments, conservation organizations, and local trail interest groups to assess the feasibility of a particular trail route. Acquisition is done on a willing seller basis.

Land can be acquired or otherwise set aside for trail development through a variety of methods:

- A trail may be located on non-DNR public land, such as county or city-owned land or public road right-of-way, through a cooperative agreement.

- A local government or not-for-profit organization can acquire land from a willing seller and then sell or donate it to the DNR.
- Local interest groups and/or DNR staff may make the initial contact with landowners, after which DNR staff will assess the feasibility of a particular trail route and complete the land acquisition.

No matter which method is used, advance coordination with DNR staff is essential in order to ensure that the selected trail route is feasible to develop.

In the course of trail implementation, it may become apparent that a specific trail route will not be obtainable for some time – for example, until a parcel is sold or passed to another family member. In such situations, it may be advisable to assess the feasibility of utilizing a designated bicycle route like the Mississippi River Trail as an interim route for a portion of the trail.

A combination of off-road trails and on-road bicycle routes could create a contiguous corridor while continuing the process of securing an entirely off-road route. Coordination between local governments, Minnesota Department of Transportation, and the DNR will be critical throughout this process. The Southeastern Minnesota Association of Regional Trails (SMART) is a trail advocacy group in the blufflands region. This group could facilitate coordination during implementation of the Mississippi Blufflands State Trail.

Sequence of State Trail Planning and Development

The following is a typical sequence of events in trail planning and development. However, the steps will likely overlap and the process will often require several rounds of feasibility assessment and landowner contacts.

- **Complete the master plan.** The plan identifies a broad search corridor for the trail, within which one or more alternative routes are identified. The intent of the plan is to provide flexibility while identifying the most feasible routes, rather than “locking in” a specific route.
- **Explore feasibility of each route.** Assess land ownership, road right-of-way width (is there enough room for a trail within the right-of-way?), connectivity, physical conditions such as slope, wetlands and natural resources, scenic qualities and historical significance. The route must allow state and federal design guidelines and rules to be met, including trail width, shoulders, curvature and accessibility. Therefore, it is important for local governments and trail groups to coordinate their efforts with DNR staff.
- **Initial informal landowner contact.** It is often preferable for landowners to be initially contacted by local trail supporters (rather than DNR staff). Landowner concerns frequently relate to privacy, safety, and liability,

and there are many information resources available to address these concerns.

- **Formal landowner contact; complete acquisition process.** As mentioned above and with proper coordination, the DNR or other entities may take the lead on land acquisition.
- **Seek funding.** State trails are typically funded through a variety of sources that include state bonding appropriations, Federal Transportation Enhancement (TE) funds and federal trail grants. DNR may partner with other agencies and local groups when seeking funding.
- **Trail engineering and design.** The design process offers a final opportunity to assess feasibility, including the need to avoid sensitive natural or cultural resources and address constraints such as wetlands or steep slopes. Trail routes may shift during the design process.
- **Construction.** Initiate construction on one or more segments, while the processes of negotiation and design continue on others.
- **Ongoing maintenance and stewardship.** Trail associations often act as “eyes on the trail” to monitor conditions, notify the DNR of concerns and volunteer on certain efforts. Local units of government may provide trail maintenance via a cooperative agreement.
- **Orientation and interpretation.** All trails are developed with traffic safety and directional signs. Some trails provide interpretive signs that highlight notable natural and cultural resources and landscape features. Interpretive signs for the Mississippi Blufflands State Trail should be provided in conjunction with partners or interpretive investments for other outdoor recreation facilities in the area.

Actions Local Governments Can Take to Support Trail Development

City and county governments can play an important role in trail development through their planning and development review processes, including the following:

- **Integrate the trail concept into community plans,** including comprehensive and land use plans, park and open space plans, and transportation plans.
 - Through the local park and trail plan, link the state trail corridor to local and regional trails; integrate it with local parks. If a proposed trail is within the state trail corridor, consult DNR staff during planning and development.

Basic Design Standards for Hard-Surface Shared use State Trails

The following standards briefly highlight key points from the DNR publication *Trail Planning, Design and Development Guidelines*:

- Pavement width: 10 feet is typical; 12 feet an option in high-use areas, 8 feet is an option where limitations exist or lower use is expected.
- Shoulders: 2 to 5 feet, depending on conditions such as side-slopes and hazards.
- Maximum grade: 5% preferred, with certain exceptions.
- 2% maximum cross-slope (the slope from one side of a trail to the other).
- Corners gently curved to meet standards rather than right angles.
- 50’ to 100’ wide corridor width where possible to allow for buffers, storm water control and grading.

- Seek opportunities to meet multiple goals through trail development – e.g., to improve water quality, protect natural areas, provide educational opportunities or provide additional transportation options.
- **Require park and trail set-asides.** Through their subdivision ordinances, cities and counties may require that developers dedicate a reasonable portion of land within a development to public use for such things as streets, utilities, drainage, and parks, trails and recreational facilities (Minnesota Statutes; Chapter 394.25, Subdivision 7c [applies to counties] Chapter 462.358, Subdivision 2b [applies to cities]). If the set-aside is within a state trail corridor, coordinate with DNR staff in advance.
- **Work with DNR staff to seek funding for state trail acquisition and development.** State trails are typically funded by the State Legislature via bonding money or special appropriations, or through the Legislative-Citizen Commission on Minnesota Resources (LCCMR). Some federal grants are also eligible to be used in conjunction with state funding for development. Transportation enhancement (TE) project grants and other transportation funding sources may also be used for state trails. It is important for local government representatives to work closely with DNR regional staff in any pursuit of state trail funding.

The master plan allows the DNR to use state funding to develop and manage trail segments within the state trail corridor; it does not prohibit another unit of government from developing a trail within the corridor. The DNR encourages local governments to develop local and regional park and trail facilities. In fact, trail development may be more successful if local governments take the lead on projects within their jurisdictions. Local governments should consult with DNR staff if they are planning or developing a trail within the state trail corridor.

Local and regional trails are frequently utilized to connect state trails to communities and local destinations. Existing and planned local or regional trails could be utilized to make connections within the state trail corridor. Trail segments developed by cities and counties will be managed by the agency that developed them, unless another agreement is in place.

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APPENDIX A: LEGISLATIVE AUTHORIZATION AND OUTDOOR RECREATION ACT

Legislative Authorization

Legislation authorizing the Mississippi Blufflands State Trail was passed in 2015 (Minn. Statutes Chapter 85.015, Subd. 6a). Current legislative language is as follows:

Subd. 6a. Mississippi Blufflands Trail; Goodhue and Wabasha Counties.

(a) The Mississippi Blufflands Trail shall originate at the Cannon Valley Trail and thence extend generally southeasterly along the Mississippi River through Frontenac State Park in Goodhue County and continue through Goodhue and Wabasha Counties to the city of Lake City, and there terminate. The trail shall include connections to the Rattlesnake Bluff Trail.

(b) The trail shall be developed primarily for riding and hiking.

(c) In establishing, developing, maintaining, and operating the trail, the commissioner shall cooperate with local units of government and private individuals and groups whenever feasible.

Outdoor Recreation Act

In 1975, the Minnesota Legislature enacted the Outdoor Recreation Act (ORA). This act established an outdoor recreation system comprised of eleven components or “units” classifying all state-managed recreation lands. State trails are one unit of the state’s outdoor recreation system. The ORA requires that the managing agency prepare a master plan for the establishment and development of each unit. This master plan fulfills this mandate for the Mississippi Blufflands State Trail.

The Mississippi Blufflands State Trail meets the following criteria established for state trails in the ORA:

- a. *A state trail shall be established to provide a recreational travel route which connects units of the outdoor recreational system or the national trail system, provides access to or passage through other areas which have significant scenic, historic, scientific, or recreational qualities or reestablishes or permits travel along an historically prominent travel route or which provides commuter transportation.*
- b. *No unit shall be authorized as a state trail unless its proposed location substantially satisfies the following criteria:*
 1. *permits travel in an appropriate manner along a route which provides at least one of the following recreational opportunities:*
 - (i) *travel along a route which connects areas or points of natural, scientific, cultural, and historic interest;*

The Minnesota Blufflands State Trail will pass through or travel adjacent to a number of high quality natural resource features like designated trout streams, wildlife management areas, areas of high biodiversity significance, and the Mississippi River.

The trail connects four communities (Red Wing, Wacouta, Florence, and Lake City) and Frontenac State Park managed by the DNR Parks and Trails Division. The state park contains significant points of natural, scientific, cultural, and historic interest. The communities along the trail have numerous and diverse cultural and historic resources including historic districts and interpretive facilities.

(ii) travel through an area which possesses outstanding scenic beauty;

Trail users will enjoy the diverse topography and views of colorful landscapes that the Mississippi Blufflands State Trail has to offer. Frontenac State Park will allow users to experience a diversity of natural environments including floodplain forests, mesic hardwood forests and fire-dependent forest systems. Vistas of Lake Pepin from the various bluffs will be a highlight.

(iii) travel over a route designed to enhance and utilize the unique qualities of a particular manner of travel in harmony with the natural environment;

The design of the trail is intended for pedestrian and non-motorized uses, though portions may be open to snowmobiling. This will encourage recreation in a natural setting.

(iv) travel along a route which is historically significant as a route of migration, commerce, or communication;

A portion of the trail may follow the railroad formerly owned by The Chicago, Milwaukee, St. Paul & Pacific Railroad Company. This railroad was integral in the formation of Frontenac Station and surrounding points of interest. The trail will also connect to the Cannon Valley Regional Trail, formerly The Chicago Great Western Railroad.

The route will be located along the Mississippi River and Great River Road. The Mississippi River was important to Native Americans for transportation and fishing, and the river still serves as an important shipping and transportation route today.

(v) travel between units of the state outdoor recreation system or the national trail system; and

The Mississippi Blufflands State Trail will connect to Frontenac State Park and the Mississippi River Trail. It will also connect multiple local parks like Barn Bluff Park, Hok-Si-La Municipal Park, Levee Park and Baypoint Park. The trail is expected to serve as a route for the Mississippi River Trail/United States Bicycle Route #45.

- 2. Utilizes, to the greatest extent possible consistent with the purposes of this subdivision, public lands, rights-of-way, and the like;*

Portions of the trail will be located on existing state owned land. Other portions may be developed in road rights-of-way or other publically owned lands.

- 3. Provides maximum potential for the appreciation, conservation, and enjoyment of significant scenic, historical, natural, or cultural qualities of the areas through which the trail may pass; and*

Overlooks, waysides and interpretive facilities are proposed to increase trail users' appreciation and understanding of the natural and cultural resources of the area. Portions of the trail may pass through local parks, historical markers and communities of historical significance.

4. Takes into consideration predicted public demand and future uses.

The master plan evaluates and uses the current research and trends on existing use of trails and demand for trail opportunities. Current demographic data is taken into account, as well as information gathered at public workshops.

APPENDIX B: SUMMARY OF PUBLIC PARTICIPATION

The Mississippi Blufflands State Trail Master Plan was prepared by the DNR through a public planning process. The planning process provided multiple opportunities for people to stay informed about the project and provide input. The DNR used in-person meetings, a project Web page, a DNR-maintained mailing list and targeted communications to engage people in the master planning process.

Some of the most effective outreach was completed by community organizations, local governments and the trail committee. These groups engaged their members and stakeholders to inform them of the project and invite them to participate in the process. The DNR appreciates the role these organizations played in development of this master plan.

Initial Public Engagement

The trail committee and Goodhue County State Health Improvement Program hosted a kick-off meeting with local officials on October 28, 2015. DNR staff provided an overview of the state trail system and the master planning process. Other speakers provided information about the project history and the benefits of trails. Over 80 attendees received information about the planning process and were able to sign up to a project mailing list to remain informed about the project.

The DNR gained early public input through two primary means. First, staff gathered information informally from trail committee members and local stakeholders. Second, an online questionnaire was developed to gain a wide breadth of input about the project. The questionnaire link was available on the project Web page and dispersed through the project mailing list.

The planning team used this input when refining the project scope. This input is reflected in the vision and goals for the trail, as well as recommended trail uses. Input was also considered when developing recommendations for trail routes and connections.

Planning Advisory Committee

The DNR convened an informal planning advisory committee (PAC) to assist the DNR during development of the master plan. Members were recruited to be representative of trail user groups, organizations, and communities throughout the trail search corridor. Meetings were open to the public and about 30 people attended each PAC meeting. The DNR announced PAC meetings on the project Web page, DNR event calendar and through the project mailing list. Summaries were posted online following each meeting.

About 30 people attended the first PAC meeting was held on February 7, 2016 in Red Wing. This meeting included a discussion of the draft vision, goals and recommended trail uses. The meeting concluded with a mapping exercise where attendees identified potential trail routes and connections.

The second PAC meeting was held on April 26, 2016 in Wacouta. About 35 attendees reviewed draft trail routes and connections. The meeting included a workshop to gain input on trail management topics including natural and cultural resources, trail connections, and orientation and interpretation.

The DNR also met with several other groups and area stakeholders during development of the master plan.

Public Review of Draft Master Plan

The DNR held a 30-day public review period in May and June of 2016 to provide information on the project and solicit input on the draft master plan. The public review period was announced with a news release on May 26, 2016. The review period was also announced on the project Web page and with an email to the project list. The draft master plan was available on the project Web page and comments were accepted until June 27, 2016.

A public open house meeting was held during the public review period on June 3, 2016 in Lake City at the public library. About 20 people attended the meeting. DNR staff were present to answer questions about the master plan and trail development. Posters around the room displayed information about the state trail system and potential trail routes. Copies of the draft master plan were available for review. About 20 people attended this meeting.

The DNR also provided information about the project during registration for the annual Tour de Pepin bicycle ride at Ohuta Park on June 3, 2016. The DNR provided the same materials during this event as the public open house meeting. DNR staff discussed the project and state trails with about 30 people at this event.

Comments were received through mail, email and phone, and in-person at the open house meeting and Tour de Pepin event. The themes from these comments are summarized in the following table. The issues, comments and concerns included here are thematic and representative of all comments received during the public review period. However, this summary does not include every individual comment submitted.

Table 5: Summary of Public Review

Comment	DNR Response	DNR Explanation
Alternate route options were suggested including avoiding U.S. Highway 61 and utilizing private land.	No change to the master plan.	The proposed trail routes in this plan are not concrete. The DNR will continue to work with local landowners and trail advocates to find a specific trail route.
Prioritize trail routes and trailheads that bring people to downtowns.	Criteria for trail routes clarified in master plan.	Trails that connect to public and private amenities provide quality experiences for trail users and support local economies. The master plan has been revised to reflect these priorities for trail development.
Concern about potential safety and trail user conflicts.	No change to the master plan.	State trails tend to be safe with few conflicts between users. Potential trail use conflicts will be taken into account when determining which uses will be accommodated on specific trail segments. Some trail uses will not be accommodated for the entire length of the trail.

Comment	DNR Response	DNR Explanation
<p>Opposition to state trail connection to Rattlesnake Bluff Trail.</p> <p>Support for state trail connection to Rattlesnake Bluff Trail.</p>	<p>No change to the master plan.</p> <p>No change to the master plan.</p>	<p>Some area stakeholders have expressed an interest in a state trail connection to the Rattlesnake Bluff Trail throughout the planning process. This connection is also specified in legislation, “The trail shall include connections to the Rattlesnake Bluff Trail.” The plan includes several alternates for trail routes through Wacouta, including a spur trail. It could be possible to find a route that separates the state trail from the existing Rattlesnake Bluff Trail.</p>
<p>Trail use recommendations:</p> <ul style="list-style-type: none"> • Include horseback riding • Include fat biking • Exclude snowmobiling 	<p>No change to the master plan.</p>	<p>Trail uses are examined and analyzed throughout the planning and trail development process. Specific uses will be determined for each trail segment as development occurs.</p>
<p>Concern that construction of the trail would disrupt or displace area wildlife, or disturb natural and cultural resources.</p>	<p>No change to the master plan.</p>	<p>This master plan suggests making use of preexisting routes as much as possible. Before any construction can commence, the division will conduct a thorough investigation of the natural and cultural resources.</p>
<p>Highlight opportunities for collaboration with Minnesota Department of Transportation (MnDOT).</p>	<p>Additional references added to the master plan.</p>	<p>The DNR frequently partners with MnDOT on state trail projects. There may be additional opportunities for collaboration on the Mississippi Blufflands State Trail due to the presence of U.S Highway 61, the Great River Road and the Mississippi River Trail in the project area.</p>
<p>Suggested topics for the ‘Information and Education’ chapter of this plan to help enlighten future interpretative theme development.</p>	<p>No change to the master plan.</p>	<p>Interpretive material will be developed in consultation with other DNR divisions and relevant organizations. These comments will remain part of the project file for future reference.</p>

Comment	DNR Response	DNR Explanation
General proofreading edits were received as part of the review period. These edits included local naming conventions and additions to natural and cultural resources in the plan.	Edits and suggestions have been incorporated into the master plan.	Terminology, figures and typology edits were corrected when finalizing the master plan document.
Support for the Mississippi Blufflands State Trail and trail development.	No change to the master plan.	N/A

APPENDIX C: SPECIAL CONCERN, THREATENED OR ENDANGERED SPECIES, AND NATURAL FEATURES

The following list is drawn from the database of the Natural Heritage Information System, maintained by the DNR, Ecological and Water Resources Division. This information is not based on a comprehensive inventory; additional species and features could be located in future surveys or through project implementation. All species and features within the proposed trail search corridor are included below. Species are classified as follows:

- SPC Special Concern
- THR Threatened
- END Endangered
- NON A species with no legal status, but about which the Ecological and Water Resources Division is gathering data for possible future listing.

Animal assemblages, terrestrial communities, and other ecological features are listed because they represent high-quality habitats or important natural features, but have no legal status.

Vertebrate Animal

Common Name	Scientific Name	State Status	Federal Status
Acadian Flycatcher	<i>Empidonax virescens</i>	SPC	
Bald Eagle	<i>Haliaeetus leucocephalus</i>	NON	
Bell's Vireo	<i>Vireo bellii</i>	SPC	
Blue Sucker	<i>Cycleptus elongatus</i>	SPC	
Cerulean Warbler	<i>Setophaga cerulea</i>	SPC	
Eastern Hognose Snake	<i>Heterodon platirhinos</i>	N	
Gophersnake	<i>Pituophis catenifer</i>	SPC	
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	
Milksnake	<i>Lampropeltis triangulum</i>	NON	
North American Racer	<i>Coluber constrictor</i>	SPC	
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	SPC	THR
Paddlefish	<i>Polyodon spathula</i>	THR	
Peregrine Falcon	<i>Falco peregrinus</i>	SPC	
Red-shouldered Hawk	<i>Buteo lineatus</i>	SPC	
Skipjack Herring	<i>Alosa chrysochloris</i>	END	
Timber Rattlesnake	<i>Crotalus horridus</i>	THR	
Tricolored Bat	<i>Perimyotis subflavus</i>	SPC	
Western Foxsnake	<i>Pantherophis ramspotti</i>	NON	

Invertebrate Animal

Common Name	Scientific Name	State Status
Washboard	Megaloniaias nervosa	END

Vascular Plant

Common Name	Scientific Name	State Status
American Ginseng	Panax quinquefolius	SPC
Bladder Pod	Physaria ludoviciana	END
Goldie's Fern	Dryopteris goldiana	SPC
Hair-like Beak-rush	Rhynchospora capillacea	THR
Hill's Thistle	Cirsium pumilum var. hillii	SPC
Muskingum Sedge	Carex muskingumensis	SPC
Ovate-leaved Skullcap	Scutellaria ovata var. versicolor	THR
Raven's Foot Sedge	Carex crus-corvi	NON
Squirrel-corn	Dicentra Canadensis	SPC
Sterile Sedge	Carex sterilis	THR
Valerian	Valeriana edulis var. ciliate	THR
Virginia Water Horehound	Lycopus virginicus	NON

Terrestrial Community - Other Classification

Native Plant Community	Native Plant Community Code
Calcareous Fen (Southeastern)	OPp93c
Dry Bedrock Bluff Prairie (Southern)	UPs13c
Dry Sand - Gravel Prairie (Southern)	UPs13b
Dry Sandstone Cliff (Southern)	CTs12a
Oak - Shagbark Hickory Woodland	FDs38a
Red Oak - Sugar Maple - Basswood - (Bitternut Hickory) Forest	MHs38c
Red Oak - White Oak Forest	MHs37a
Seepage Meadow/Carr, Tussock Sedge Subtype	WMs83a1
Silver Maple - (Virginia Creeper) Floodplain Forest	FFs68a
Silver Maple - Green Ash - Cottonwood Terrace Forest	FFs59a
Sugar Maple - Basswood - (Bitternut Hickory) Forest	MHs39a
Sugar Maple - Basswood - Red Oak - (Blue Beech) Forest	MHs39b

Animal Assemblage

Common Name

Bat Concentration

Other Ecological or Geological Feature

Common Name

Fault (Paleozoic)

Fossil Invertebrate (Cambrian)

Lake and Wetland Process (Holocene)

Proglacial River Composite (Quaternary)
