

Goodhue Pioneer State Trail Master Plan

Master Plan prepared by:
Minnesota Department of Natural Resources
Division of Trails & Waterways
500 Lafayette Road Box 52
St. Paul, MN 55155

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Section One

Introduction

Executive Summary

Trail Alignment

The Goodhue Pioneer State Trail is a legislatively authorized state trail which when complete, will connect Red Wing, Goodhue, Zumbrota, Mazeppa, Bellechester, and Pine Island for a distance of approximately 37 miles. The Goodhue Pioneer State Trail will be part of a trail system, connecting two popular and well-used existing trails, the Cannon Valley Trail in Red Wing, and the Douglas State Trail in Pine Island.

For purposes of planning and development, the trail has been divided into six segments: Red Wing to Hay Creek; Hay Creek to Goodhue; Goodhue to Bellechester; Goodhue to Zumbrota; Zumbrota to Mazeppa; Mazeppa to Pine Island/Zumbrota to Pine Island.

The first phase of trail development will be from Red Wing to Hay Creek, a distance of 4 miles. The development of two treadways are proposed for this segment, one paved for bicyclists, the other, a natural surface, for horseback riders and snowmobilers.

A trail alignment has not been determined for the other segments of the Goodhue Pioneer State Trail at this time, except for a portion of state owned railroad grade between Zumbrota and Goodhue totaling seven miles. Preliminary planning efforts by the Goodhue Pioneer Trail Association have determined feasible routes, that is, routes that would be feasible to construct and would provide a good trail experience, but in order for them to be realized, a trail right of way must be acquired from willing sellers.

For each of the five sections where an alignment has not yet been determined, a list of criteria to guide location of the trail and alternative corridors for consideration have been developed.

Recommended Trail Uses

The Goodhue Pioneer State Trail is a multi-use trail, but the limitations of width, dictate that not all uses can be accommodated at all times on the entire length of the trail. Following are the recommended trail uses. Bicycling, hiking and walking, dog walking, running/jogging, in-line skating/skate skiing, horseback riding where a parallel trail can be accommodated, snowmobiling, where a parallel trail can be accommodated, hunting, except where discharge of firearms is regulated by community ordinance, environmental education/interpretation. Trail development will be accessible to people with disabilities wherever possible. Certain segments of the trail parallel trout fishing streams. The trail can be used to access the streams for fishing.

Trail Management

The plan contains recommendations for maintenance, enforcement, and interpretation of natural and cultural resources. The use of sculpture along the trail can be an effective way to provide interpretive information about the resources and history of the trail and the plan contains a section on trailside art. The plan recommends that an adequate level of enforcement be provided 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 interpreting the natural and cultural features along the trail is also recommended.

Natural and Cultural Resources

The ecological value of the trail corridor will be enhanced through intensive resource management or by offering technical assistance to adjoining landowners who wish to restore or preserve native vegetation. The resources within the trail right-of-way will be managed to provide a healthy diversity of native woodland, wetland, and prairie communities for wildlife habitat and for the appreciation of trail users and adjoining landowners. Native grasses, wildflowers, trees, and shrubs will be planted and managed.

Planning Process: Purpose and Scope

Planning Process Goals

Master planning for the Goodhue Pioneer State Trail was conducted in response to the need to:

- Provide a unifying vision for trail advocates who are working to secure a trail alignment and funds for development and maintenance of the trail. The Goodhue Pioneer State Trail Association is a driving force behind the establishment, acquisition and development of this trail.
- Guide the development, management, maintenance, and operation of the Goodhue Pioneer State Trail so that quality recreation experiences are provided.
- Provide a forum for open public discussion and debate concerning trail use and trail development options, trail maintenance and management issues, and trail operations and enforcement needs.
- Set in motion partnerships and processes that will help carry out the plan and contribute to providing quality trail experiences.
- Inform the decision-making process by assessing the projected impacts of trail development, on natural, cultural, and historic resources, and on local communities.

The table on page 3 outlines the planning process used in developing this master plan.

Goodhue Pioneer State Trail Master Planning Process

STEPS IN THE PROCESS	WHO'S INVOLVED?
Information Gathering and Issue Identification	<ul style="list-style-type: none"> • Trail Association Meetings • Trail User Group Meetings <ul style="list-style-type: none"> -Horseback riders -Snowmobilers • Resource Managers Field Review • Blufflands Landscape Team • Resource Managers • First Public Workshop
Vision, Goals, and Design Concepts Formulated	<ul style="list-style-type: none"> • Resource Managers • Trail Association Meetings • Community Meetings • Trail Users • Trail User Group Meetings • First Public Workshop
Trail Development and Management Recommendations Formulated	<ul style="list-style-type: none"> • Trail Association Meetings • Community Meetings • Trail Users • Trail User Group Meetings • Resource Managers
Draft Plan and Internal DNR Review	<ul style="list-style-type: none"> • DNR Interdisciplinary Review Team
Final Plan Written and Public Review	<ul style="list-style-type: none"> • Trail Association • Communities • Trail User Groups • Trail Users • Second Public Workshop
Trail Plan Adopted - Implementation Begins	<ul style="list-style-type: none"> • Trail Association • Communities • Trail User Groups • Trail Users • Resource Managers
Public Workshops For Each Segment Once Alignment Is Determined	<ul style="list-style-type: none"> • Trail Association • Communities • Trail User Groups • Trail Users • Resource Managers
Evaluation and Adjustment	<ul style="list-style-type: none"> • Feedback from trail users, trail groups, landowners, communities, elected officials, other agencies

Trail Authorization

The Goodhue Pioneer State Trail was legislatively authorized in 1994 (Minnesota Statutes 85.015, Subdivision 4), as an addition to the authorization for the Douglas State Trail.

“(a) The trail shall originate at Rochester in Olmsted county and shall follow the route of the Chicago Great Western Railroad to Pine Island in Goodhue county and there terminate.

(b) Additional trails may be established that extend the Douglas trail system to include Pine Island, Mazeppa, in Wabasha county to Zumbrota, Goodhue, and Red Wing in Goodhue county. In addition to the criteria in section 86A.05, subdivision 4, these trails must utilize abandoned railroad rights-of-way where possible.”

In 1999, Bellechester was added to the list of communities above.

“(c) The trail shall be developed primarily for riding and hiking.”

The Goodhue Pioneer State Trail is one of the legislatively authorized state trails in the State Trail System. (See the map of Minnesota’s State Trail System on facing page.) State trails are one unit of the state's outdoor recreation system established by the Legislature. In 1975, the Minnesota Legislature enacted the Outdoor Recreation Act (ORA) (Minnesota Statutes Section 86A.05, Subdivision 4 and Section 85.015). This act established an outdoor recreation system comprised of eleven components or "units" classifying all state-managed recreation lands. The ORA requires that the managing agency prepare a master plan for the establishment and development of each unit. This plan fulfills this mandate.

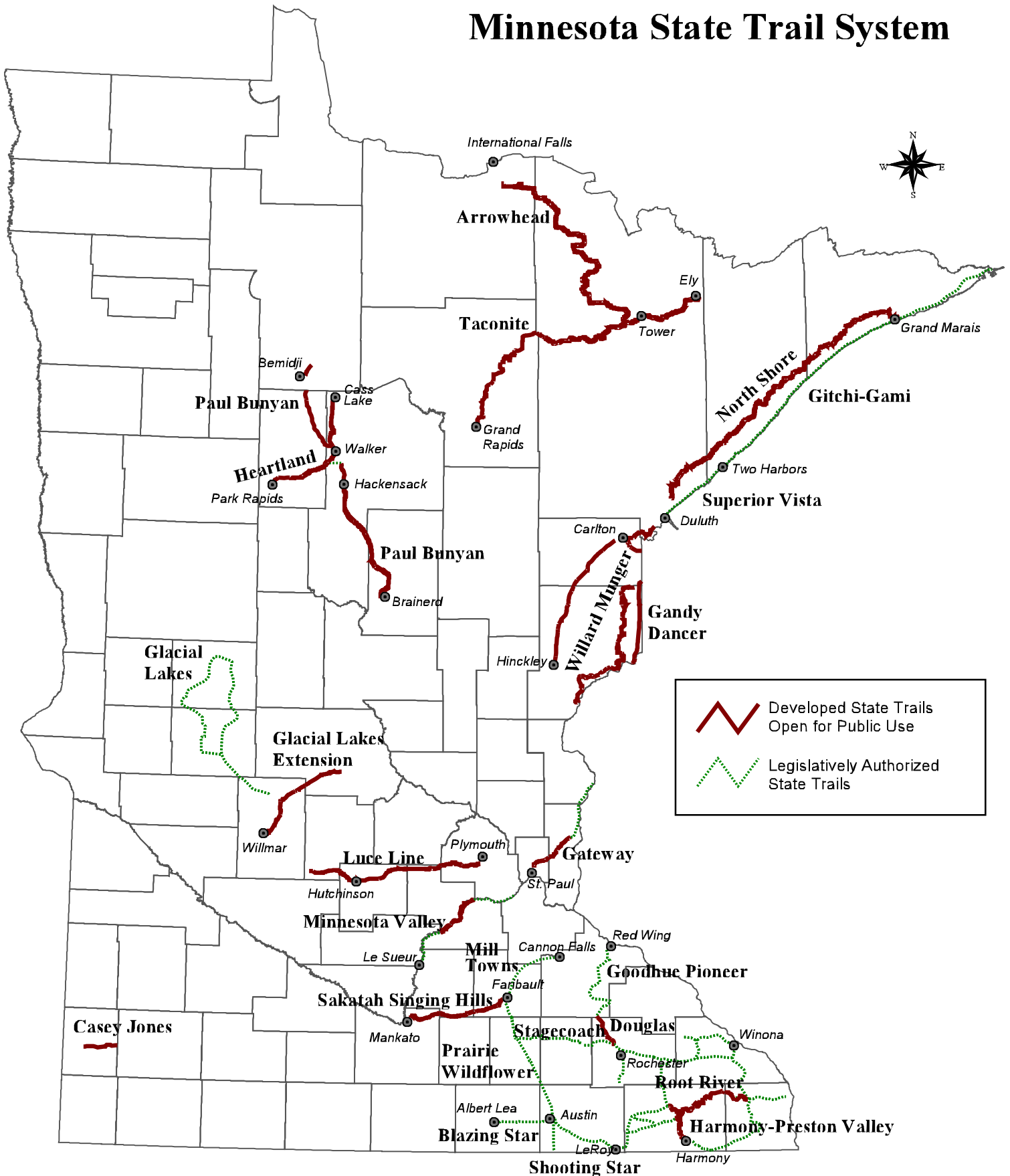
The Goodhue Pioneer State Trail meets the following criteria established for state trails in the Outdoor Recreation Act, Minnesota Statutes 86A.05, Subdivision 4, State Trail; purpose; resource and site qualifications; administration; designation.

a. "A state trail shall be established to provide a recreational travel route which connects units of the outdoor recreation system or the national trail system; provides access or passage through other areas which have significant scenic, historic, scientific, or recreational qualities; or establishes or permits travel along a 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:

Minnesota State Trail System



(i) Travel along a route which connects areas or points of natural, scientific, cultural and historic interest."

The Goodhue Pioneer State Trail connects several points of natural interest. Significant natural features connected by the trail are the Mississippi River, the Hay Creek Unit of the Richard J. Dorer Memorial Hardwood State Forest, Hay Creek, and the Zumbro River. A number of historic sites will be connected to the trail, such as the Zumbrota Covered Bridge and Claybank, a site of historic clay mining.

(ii) "Travel through an area which possesses outstanding scenic beauty."

The Goodhue Pioneer State Trail provides views of woods, wetlands, and pastoral rolling rural landscapes. The segment of trail through the Richard J. Dorer Memorial Hardwood State Forest provides a remote experience through a wooded valley. Segments that parallel the Zumbro River are very scenic.

(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 rural, natural character of the trail will be appreciated through walking, bicycling, jogging, in-line skating, horseback riding, and snowmobiling, modes of travel that foster the opportunity to recreate in a natural setting.

(iv) "Travel along a route which is historically significant as a route of migration commerce or communication."

Portions of the Goodhue Pioneer State Trail are located on a historically significant railroad line. This railroad line was instrumental in the establishment of many of the communities along the trail and the agricultural development of the area.

(v) "Travel between units of the outdoor recreation system or national trails system."

The Goodhue Pioneer State Trail will form a vital link in the emerging southeastern Minnesota trail system. It will connect to the Douglas State Trail, linking Red Wing to Rochester. The Goodhue Pioneer State Trail will also link to the Cannon Valley Trail, a significant regional trail connecting Red Wing to Cannon Falls. At Cannon Falls, the Cannon Valley Trail will link to another state trail, the Mill Towns State Trail. The trail will connect to and pass through a portion of the Hay Creek Unit of the Richard J. Dorer Memorial Hardwood State Forest.

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

A significant portion of the trail alignment will be located on existing state-owned land. The trail segment from Red Wing to Hay Creek will be located on an old railroad grade currently owned by the Division of Forestry. DNR also owns 6 miles and has an easement for another mile of railroad grade, out of Zumbrota.

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."*

Overlooks, waysides, and interpretive facilities are proposed to increase trail users' appreciation and understanding of the natural and cultural resources of the area. There is great potential for use of the trail for environmental education. Plant community restoration projects, wildlife habitat improvement projects, and development of learning stations are projects that would benefit students and trail users.

The trail corridor has the potential to be part of a network of greenway corridors for habitat and recreation across landscapes developed by agriculture, commercial and residential use. The ecological value of the corridor could be enhanced by working to restore healthy native plant communities.

4. *"Takes into consideration predicted public demand and future use."*

The plan evaluates and uses the current research and trends on existing use of trails, and demand for trail opportunities, and demographic data. Information gathered at public workshops is also considered.

Vision for the Goodhue Pioneer State Trail

The following vision statement was developed by the Goodhue Pioneer Trail Association with input from participants at two public workshops.

The Goodhue Pioneer State Trail will be special because...

Of the landscape of Goodhue County

The bridges along the trail

Hay Creek Recreation Area with its valleys and trout streams

Hills, valleys, high plains and rivers

The trail will be more challenging than straight line rail corridor trails. It will have curves and slopes.

The Goodhue Pioneer State Trail will be...

A multi-use trail

Diverse - five trails in one; differing character between each town and five trail segments

Ever-changing, ever improving

A long-range improvement, a legacy for the future

A strong connector between towns

A strong connector between trails

A part of a growing interconnected system of trails in Southeast MN

An economic bloodline. Once the railroad brought the outside world into the towns, providing the basis for commerce, and transportation. Now the trail can do the same.

An alternative for transportation - to school, to work

A safe place for kids and families

A fun place to visit - both for visitors and local residents

A place to showcase the environment, and natural resources of the area

Anchored by unique communities on either end - Rochester and Red Wing - each with its own personality

The Goodhue Pioneer State Trail offers exciting possibilities to:

Share the history of the area

Show how nature and culture have shaped the landscape

Help trail users to really see the area

Produce and display public art that highlights the diversity, defines the space, and promotes the identity of the trail and the towns.

Interpret railroad history.

Goals for the Goodhue Pioneer State Trail

The following goals were developed cooperatively by the Department of Natural Resources and the Goodhue Pioneer Trail Association with input from participants at two public workshops.

Environmental

- Preserve and enhance the natural and cultural features of the trail corridor
- Interpret the natural and cultural features of the trail and the Blufflands and Rochester Plateau landscapes
- Design, construct, and maintain the trail in a way that protects and enhances the natural environment and minimizes the trail users' impact
- Protect, restore, and manage plant communities, wildlife, soil, and water resources in a way that is appropriate to the Blufflands and Rochester Plateau landscapes.

Adjacent Landowner Relationships

- Develop and maintain the trail so that impacts to adjacent landowners are avoided or minimized.

Trail Integrity/Connectivity

- Provide a continuous, off-road, multi-use trail which serves as a component in the emerging southeastern Minnesota trail system
- Connect regional tourist travel destinations and population centers
- Connect state and local outdoor recreation lands and facilities

Meeting Trail User Needs

- Provide access for a wide range of people with varying degrees of capabilities
- Promote the safety and security of trail users
- Work with local communities in developing, managing, and maintaining the trail right-of-way to mutually benefit both trail users and the community
- Complement the character and economic vitality of the communities through which the trail passes
- Involve local units of government, user groups, adjacent landowners, and other concerned citizens in the planning, design, and operation of the trail so that their needs are identified and addressed
- Work cooperatively with other units of the DNR and public agencies to fulfill mutual objectives

Section Two

Trail Uses

Summary of Recommended Trail Uses

This page summarizes the recommended allowable uses for the trail. The Goodhue Pioneer State Trail is a multi-use trail, but the physical limitations of the width of the corridor dictate that not all uses can be accommodated at all times on the entire length of the trail. Each use will be discussed individually in more detail on the following pages.



Bicycling



Hiking and Walking



Dog walking



Running/Jogging



In-Line Skating/Skate skiing



Horseback Riding where a parallel trail can be accommodated



Snowmobiling, where a parallel trail can be accommodated



Hunting, except where discharge of firearms is regulated by community ordinance



Environmental Education/Interpretation



Trail development will be accessible to people with disabilities wherever possible



Access for trout fishing. Certain segments of the trail parallel trout fishing streams. The trail can be used to access the streams for fishing

Bicycling

Bicycling is a popular activity in Minnesota. According to the Executive Director of the Minnesota Coalition of Bicyclists, 175,000 bicycles are sold annually in Minnesota. Currently, there are at least 765 miles of public bike trails, with more being added every year. There are approximately 350 miles in the DNR state trail system that are paved and there are over 500 miles of mountain biking opportunities. Bicycling is recommended as a use on the entire length of the trail.

Hiking and Walking

On state trails, hiking or walking is second only to biking in numbers of summer users. Pushing strollers or walking for low-impact cardiovascular fitness is popular on state trails. The Goodhue Pioneer State Trail, which mainly follows an abandoned railroad grade, has a lengthwise gradient of about 2% and is easy for most people to walk and hike. Hiking and walking are recommended as a use on the entire length of the trail.

Dog Walking

Dog walking will be allowed on the trail as 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 not more than 6 feet in length but do not specifically address owners' responsibility to remove and dispose of pet feces properly. Dog walking is a recommended use on the entire length of the trail.

Running/Jogging

Many people use the state trails for running or jogging. Besides the individuals who regularly use the trails for exercise, nearby school track and cross-country running teams sometimes use the trails for training. Running and jogging are recommended uses on the entire length of the trail.

In-Line Skating

According to 1997 Rollerblade, Inc. statistics, in-line skating is still a popular sport. There has been a steady increase in total participant numbers since 1989. As of 1997, there were 29.1 million in-line skaters in the U.S. However, the *percentage* increase has seen a decline which means the sport is not increasing in total participant numbers as fast as it did in the past.

The participation rate in Minnesota is still strong, according to 1998 American Sports Data. Based on a 3 year average, Minnesota was in the top ten list of states in participation rates. Minnesota ranked eighth in total number of participants in the sport and ranked fourth in participants per 100 people.

In-line skaters need a smooth, wide surface, such as asphalt, and prefer trails with no surface debris, twigs or stones. In-line skating is recommended as a use on the entire length of the trail.

Horseback Riding

There are over 1200 miles of public horseback riding trails in the state. The average length of these trails is 14.5 miles. Most of this mileage is within state parks and forests. Southeast Minnesota has a significant amount of horse owners. Horseback riding is recommended as a use wherever it is feasible to develop a treadway parallel to the asphalt treadway. Existing horseback riding opportunities will be maintained (such as in the Hay Creek Unit). Additional opportunities will be provided if possible.

Snowmobiling

Minnesota has over 18,000 miles of public snowmobile trails. In 2000, 277,290 snowmobiles were registered in Minnesota. Besides the extensive 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 boundaries of urban and suburban development expand, existing grant-in-aid trail routes that connect to trail systems in rural communities may no longer be available, or snowmobiling may be curtailed by local ordinance. Snowmobiling opportunities will be maintained wherever they currently exist, such as in the Hay Creek Unit. Snowmobiling is recommended as a use wherever it is feasible to develop a treadway parallel to the asphalt treadway.

Hunting

During legal hunting season only - Currently, state trail rules allow hunting within the trail right-of-way, except where restricted by local ordinance. 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.*”

Communities may restrict firearms or bow and arrow discharge, or trapping, by ordinance. These ordinances take precedence over state trail rules.

Environmental Education/Interpretation

Use of the Goodhue Pioneer State Trail for environmental education, both for individual trail users and formal groups is encouraged. Schools or organizations that wish to use the trail can work with DNR staff on specific projects. The railroad spurs from Clay Bank to the Clay Pits and Bellechester Junction to Bellechester were used to access clay deposits and transport them to Red Wing. Plans are to have interpretive displays at the sites of these former clay deposits.

Interpretation and education opportunities will also be available at various city trail centers. The city of Goodhue is planning an agricultural museum along the trail. Pine Island is planning to restore a local creamery as a trail center. Covered Bridge Park within the city of Zumbrota will also be an educational and interpretive opportunity. Interpretation of the environment and history, railroad history in particular, can add rich dimensions to the trail experience.

Accessibility

Since the majority of the Goodhue Pioneer State Trail is on a former railroad grade, the nearly level slopes are ideal for accessible use along with the fact that the trail will be paved. In new facility construction, such as adjoining parking areas or rest areas, the DNR designs barrier-free facilities.

Trout Fishing

Some anglers use state trails to get to public waters, for ice fishing or for fishing from trail bridges. There will be opportunities to reach various streams for trout fishing.

Section Three

Trail Alignment

Trail Alignment

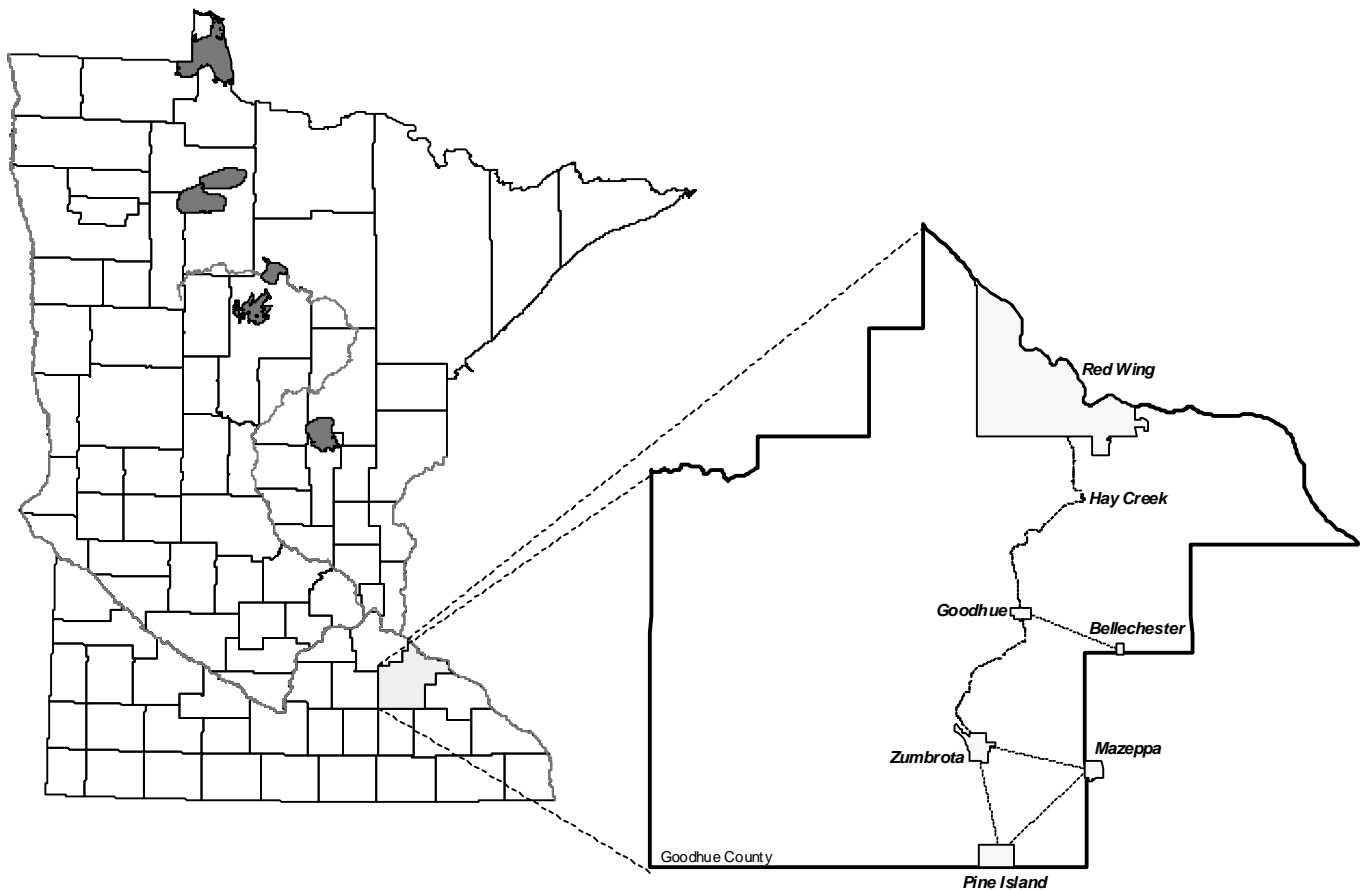
General Overview of the Trail Alignment

The Goodhue Pioneer State Trail is a legislatively authorized state trail which when complete, will connect Red Wing, Goodhue, Zumbrota, Mazeppa, Bellechester, and Pine Island.

The Goodhue Pioneer State Trail will be part of a trail system, connecting two popular and well-used existing trails, the Cannon Valley Trail in Red Wing, and the Douglas State Trail in Pine Island.

For purposes of planning and development, the trail has been divided into six segments:

- Red Wing to Hay Creek
- Hay Creek to Goodhue
- Goodhue to Bellechester
- Goodhue to Zumbrota
- Zumbrota to Mazeppa
- Mazeppa to Pine Island/Zumbrota to Pine Island



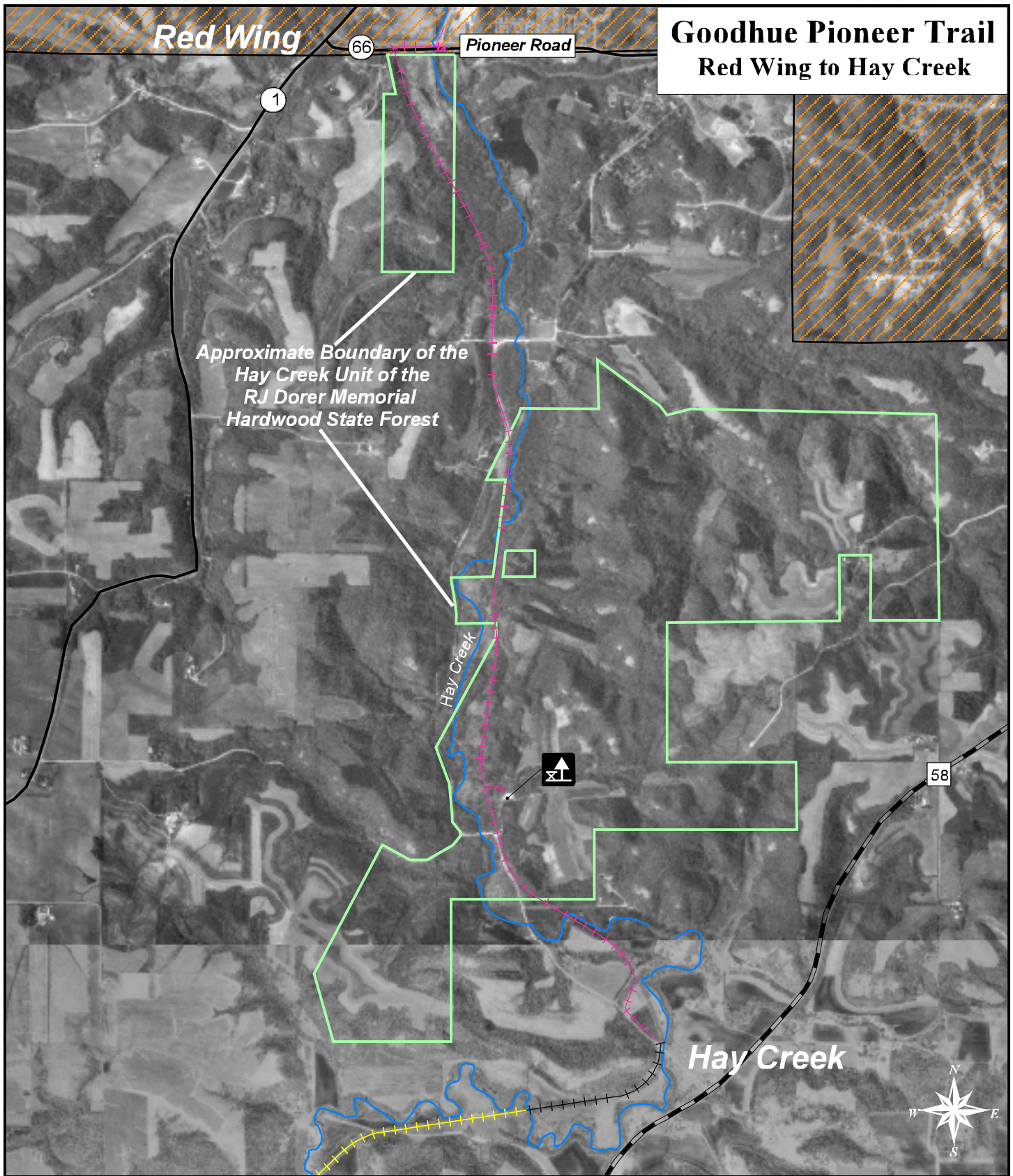
The first phase of trail development will be from Red Wing to Hay Creek, a distance of 4 miles. The development of two treadways are proposed for this segment, one paved for bicyclists, the other, a natural surface, for horseback riders and snowmobilers. Development of this segment is described in more detail on the next page.

A trail alignment has not been determined for the other segments of the Goodhue Pioneer State Trail at this time. Preliminary planning efforts by the Goodhue Pioneer Trail Association have determined feasible routes, that is, routes that would be feasible to construct and would provide a good trail experience, but in order for them to be realized, a trail right of way must be acquired from willing sellers.

For each of the five sections where an alignment has not yet been determined, a list of criteria to guide location of the trail and alternative corridors for consideration have been developed. They are included in this chapter.

Recommendation: Because of the undetermined status of the alignment at this point, it is recommended that a public workshop be held at the point in the process where an alignment for a segment of trail has been determined, and preliminary engineering design plans have been completed. The purpose of these workshops would be to provide information on the specific trail location and proposed trail development and obtain feedback on the development and management of the trail segment.

The first part of this section addresses the trail alignment between communities and the second part addresses the trail alignment within the communities.



Goodhue Pioneer Trail **Red Wing to Hay Creek**

*Approximate Boundary of the
 Hay Creek Unit of the
 RJ Dorner Memorial
 Hardwood State Forest*

Hay Creek

Hay Creek

0.25 0 0.25 0.5 0.75 1 Miles

Division of Trails & Waterways

Proposed Goodhue Pioneer State Trail Alignment - State Owned	U.S. Route
Abandoned Railroad Grade in State Ownership	State Highway
Abandoned Railroad Grade in Private Ownership	County Highway
Incorporated Cities	County Boulevard
Rest Area	



Red Wing to Hay Creek

Description of the Trail Environment

The northern-most segment of the Goodhue Pioneer State Trail begins in Red Wing at the intersection of Pioneer Road and Hay Creek. At this point, the Goodhue Pioneer State Trail connects to the city of Red Wing's trail system to the north. The Goodhue Pioneer State Trail will cross under Pioneer Road from this point, and run parallel to the road on the north side for a distance of 800 feet until it connects to the abandoned railroad grade. The trail corridor will follow the abandoned railroad grade, located within the Hay Creek Unit of the Richard J. Dorer Memorial Hardwood State Forest throughout this segment.

Located in a transition zone between wooded bluff and a wet meadow, trail users will have an open view to the west of wet meadow and wooded bluff to the east. Plants that can be observed in the wet meadow include reed canary grass, cattails, sedges, joe pyeweed, boneset, arrowhead, water plantain, jewelweed, various sunflowers, sneezeweed, monkey flower, and a variety of species of the mint family. The trail leaves the wet meadow and enters a floodplain forest. Elm, boxelder, willows, silver maple, and cottonwood comprise the canopy, and wood nettle, American bellflower, cup plant, and hog peanut can be seen in the understory. As the trail rises in elevation, oaks, walnut and basswood are present in the forest. Chokecherry, tall coneflower, and Canada rye grass can be observed along the right-of-way opening.

This trail segment ends just north of TH 58. The trail will be rerouted around a private campground for a short distance in this last section of the segment.

Trail Uses

Two parallel treadways will be developed in this segment. Bicycling, in-line skating, and walking are recommended for the railroad grade. A parallel treadway will be developed for snowmobiling and horseback riding. The distance between the treadway developed on the railroad grade and the parallel treadway will range between 15' - 200'. Initially, horseback riding, will not be allowed on the northernmost one mile section of the segment. Horseback riding may be allowed on this segment in the future as trail development in the Hay Creek Unit of the Richard J. Dorer Memorial Hardwood State Forest evolves.

Parking

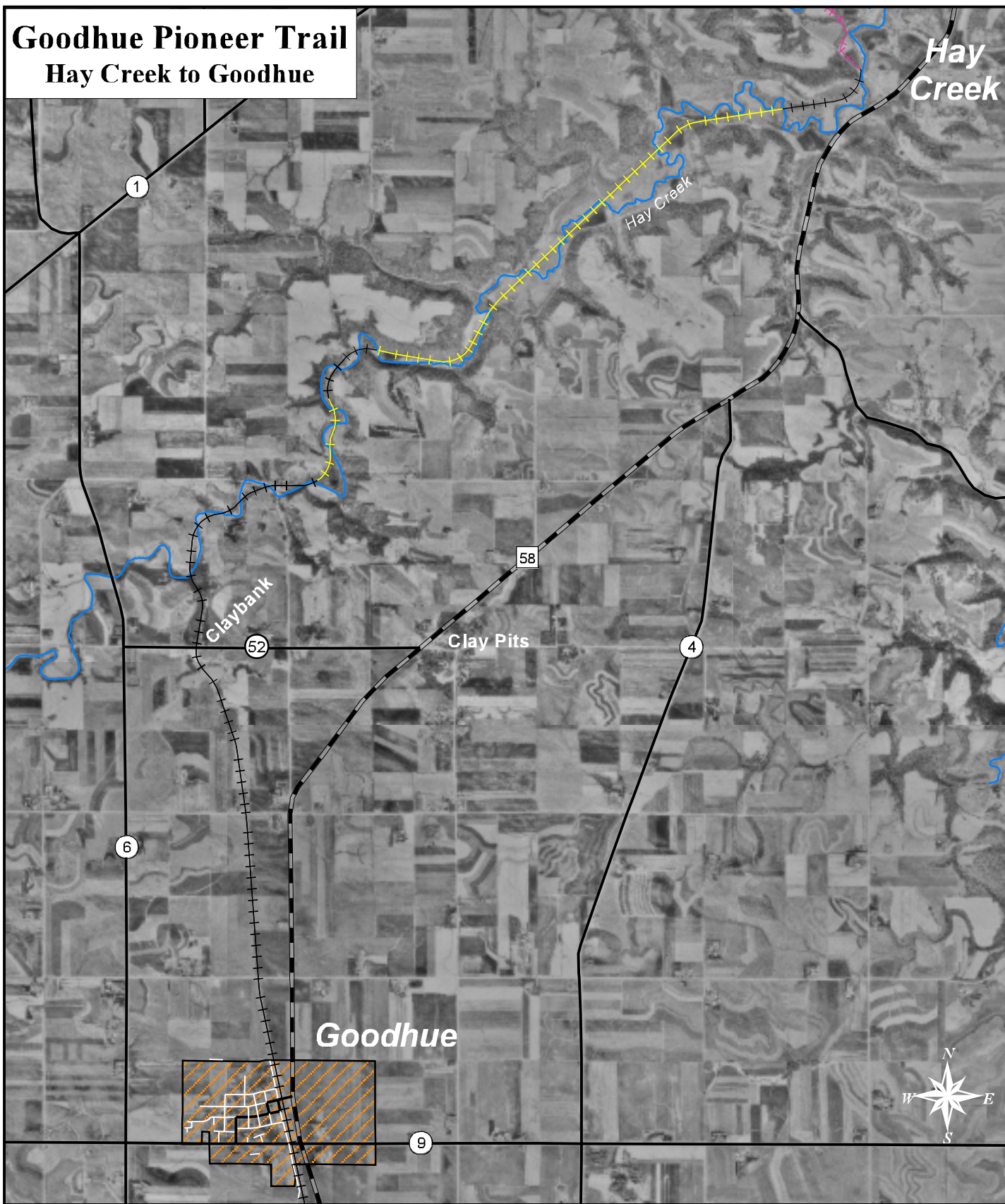
There will be no designated trail parking in this segment. Trail users will be able to park at a number of locations at city parks in Red Wing, and use the city trails to access the Goodhue Pioneer State Trail. Parking is available at the day use area within the Hay Creek Unit. However, this location will not be promoted as a major parking/access point to the trail.

Rest Areas

The existing Hay Creek day use area can serve as a trail rest area. It currently serves as a parking, picnic area and trail head for recreationists using the Hay Creek Unit of the Richard J. Dorer Memorial Hardwood State Forest. It is predominately used by horseback riders using the 16 mile horse trail system, although hikers, hunters, anglers as well as others use the site. The current development of the site which includes a picnic area, shelter, pump, and toilets would meet the needs of trail users. The development of a kiosk with orientation and interpretative information would be a valuable addition. Also, some improvements to the existing facilities, such as making the toilets handicapped accessible should be done.

Goodhue Pioneer Trail

Hay Creek to Goodhue



0.25 0 0.25 0.5 0.75 1 Miles

Division of Trails & Waterways

- Proposed Goodhue Pioneer State Trail Alignment - State Owned
- Abandoned Railroad Grade in State Ownership
- Abandoned Railroad Grade in Private Ownership
- Incorporated Cities

- U.S. Route
- State Highway
- County Highway
- County Boulevard



Hay Creek to Goodhue

Description of the trail environment

The northernmost section of this segment will continue in the Hay Creek Valley. Sections of the trail may parallel Hay Creek for a distance. The trail will climb out of the valley in this section to the upland, which is gently rolling farmland. Depending on the trail user's direction of travel, the descent into the valley or the ascent to the upland will be a significant experience in this section of trail.

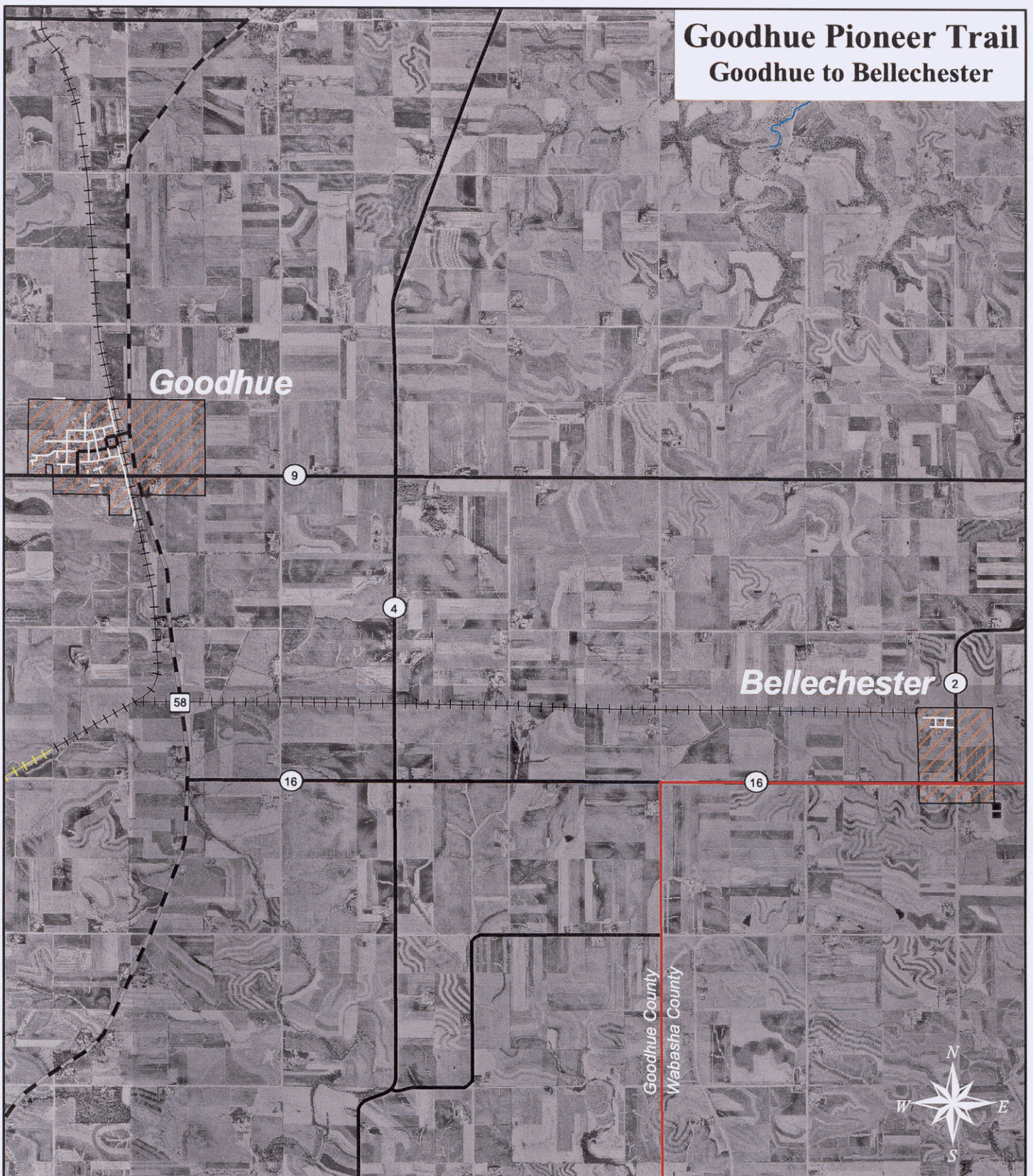
Criteria for location of the trail

1. Identify and pursue alternatives to using the abandoned railroad grade through the upper Hay Creek Valley in order to preserve the remote solitary trout fishing experience.
2. Minimize the trail impact on the trout stream resource and remote, solitary trout fishing experience that currently exists in the upper two miles of the Hay Creek Valley.
3. Avoid acquisition of high quality agricultural land.
4. Use existing public right-of-way where necessary (for connections).
5. Minimize impact on wetlands.
6. Work with willing landowners to acquire right-of-way that showcases features of the landscape (wooded views of rivers, vistas, cultural features, historic sites).
7. Minimize trail user exposure to vehicular traffic.
8. Connect to Claybank if possible.
9. Avoid negative impacts on rare and endangered species, and minimize fragmentation or disturbance of significant native plant communities identified by the Minnesota County Biological survey.

Alternative corridors for future trail alignment

1. CSAH 6
2. TH 58
3. Old railroad grade
4. CSAH 52
5. Township roads
6. Powerline
7. Section lines/property lines
8. A combination of the above.

Goodhue Pioneer Trail Goodhue to Bellechester



Division of Trails & Waterways

	Abandoned Railroad Grade in State Ownership		U.S. Route
	Abandoned Railroad Grade in Private Ownership		State Highway
	Incorporated Cities		County Highway
			County Boulevard



Goodhue to Bellechester

Not only is this link an integral part of the Goodhue Pioneer State Trail, the communities of Goodhue and Bellechester view this connection as a vital off-road transportation corridor necessitated by the merging of the Goodhue and Bellechester school districts and the need for safe transportation between the two communities.

Description of the trail environment

Trail users will experience the rural landscape along this segment of trail. Both pasture land and cropland provide interesting scenery for the trail user.

Criteria for location of the trail

1. Avoid acquisition of high quality agricultural land.
2. Use existing public right-of-way where necessary (for connections).
3. Minimize impact on wetlands.
4. Work with willing landowners to acquire right-of-way that showcases features of the landscape (wooded views of rivers, vistas, cultural features, historic sites).
5. Minimize trail user exposure to vehicular traffic.
6. Connect to the two historic clay pits, if possible.
7. Avoid negative impacts on rare and endangered species, and minimize fragmentation or disturbance of significant native plant communities identified by the Minnesota County Biological survey.

Alternative corridors for future trail alignment

1. CSAH 16, 9, and 4 right-of-way
2. TH 58 right-of-way
3. Township road rights-of-way
4. Abandoned railroad grade
5. Edges and boundary lines
6. A combination of the above.

Goodhue Pioneer Trail

Goodhue to Zumbrota



Division of Trails & Waterways

- Proposed Goodhue Pioneer State Trail Alignment (Easement)
- Abandoned Railroad Grade in State Ownership
- Abandoned Railroad Grade in Private Ownership
- Incorporated Cities

- U.S. Route
- State Highway
- County Highway
- County Boulevard



Goodhue to Zumbrota

Description of the trail environment

There are three segments of railroad grade that are in state ownership that could serve as trail alignment. The first is a four mile section heading north out of Covered Bridge Park in Zumbrota. There are two other small sections of abandoned railroad grade in state ownership, one mile or less in length. The abandoned railroad grade on either side of each section is in private ownership.

The first three miles out of Zumbrota are wooded. The remaining 1 - 1½ miles pass through agricultural land. The bridge two miles north of Covered Bridge Park will be designed as a covered bridge to emphasize the covered bridge theme in Zumbrota.

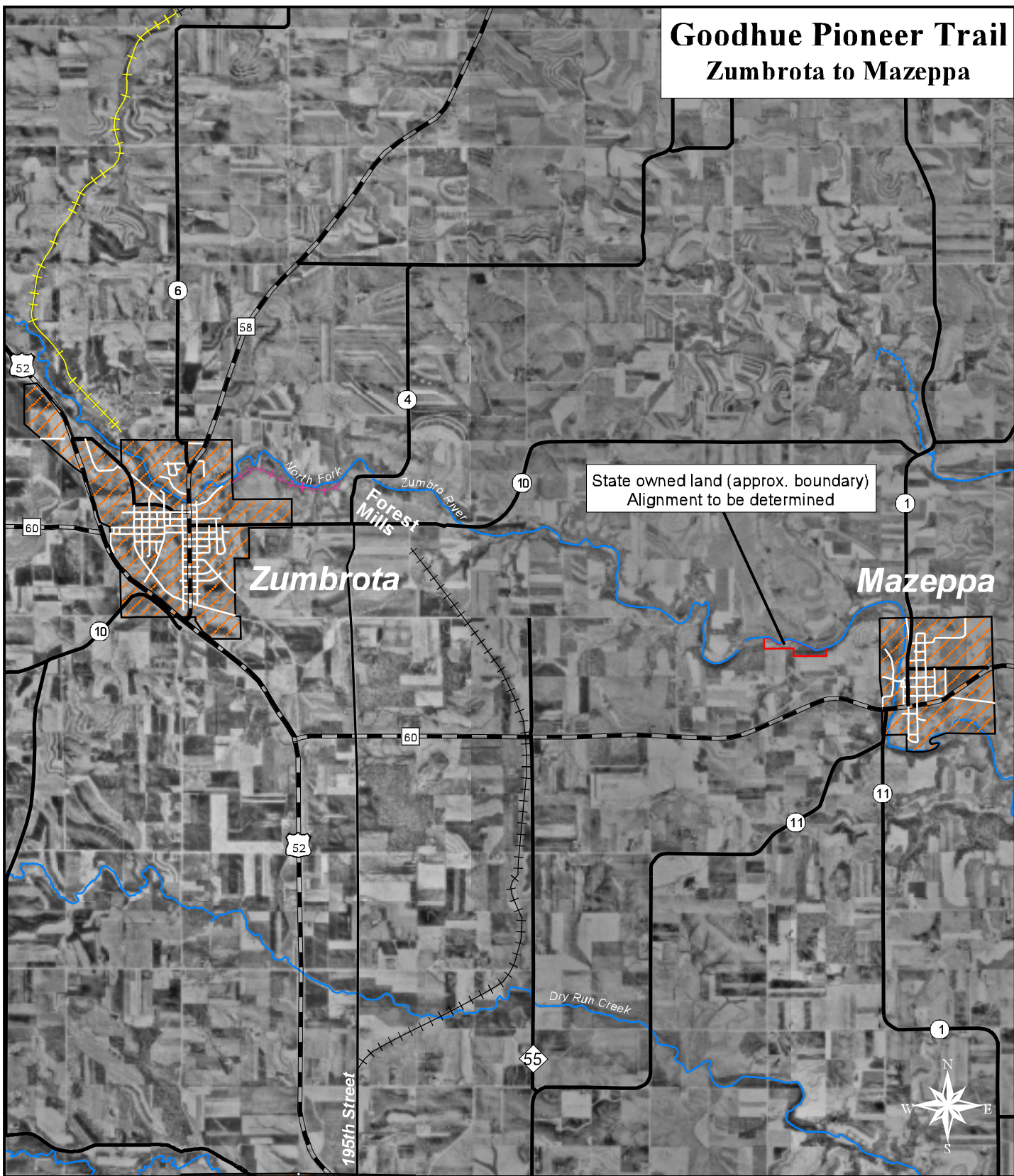
Criteria for location of the trail

1. Avoid acquisition of high quality agricultural land.
2. Use existing public right-of-way where necessary (for connections).
3. Minimize impact on wetlands.
4. Work with willing landowners to acquire right-of-way that showcases features of the landscape (wooded views of rivers, vistas, cultural features, historic sites).
5. Minimize trail user exposure to vehicular traffic.
6. Avoid negative impacts on rare and endangered species, and minimize fragmentation or disturbance of significant native plant communities identified by the Minnesota County Biological survey.

Alternatives for future trail alignment

1. The four miles of state-owned abandoned railroad grade that run north out of Zumbrota will be used for the trail.
2. Abandoned railroad grade
3. TH 58
4. CSAH 6
5. Township road rights-of-way
6. Section lines/property lines
7. A combination of the above.

Goodhue Pioneer Trail Zumbrota to Mazeppa



Division of Trails & Waterways

Proposed Goodhue Pioneer State Trail Alignment (Easement)	U.S. Route
Abandoned Railroad Grade in State Ownership	State Highway
Abandoned Railroad Grade in Private Ownership	County Highway
Incorporated Cities	County Boulevard



Zumbrota to Mazeppa

Description of the trail environment

Not only is this link an integral part of the Goodhue Pioneer State Trail, the communities of Zumbrota and Mazeppa view this connection as a vital off-road transportation corridor necessitated by the merging of the Zumbrota and Mazeppa school districts and the need for safe transportation between the two communities. Heading east out of Zumbrota to just west of Forest Mills, DNR has acquired an easement from the Isaac Walton League to use 1 ½ miles of the abandoned railroad grade. The railroad grade parallels the Zumbro River in this segment. The north facing slope of the railroad grade is carpeted with ferns and wildflowers.

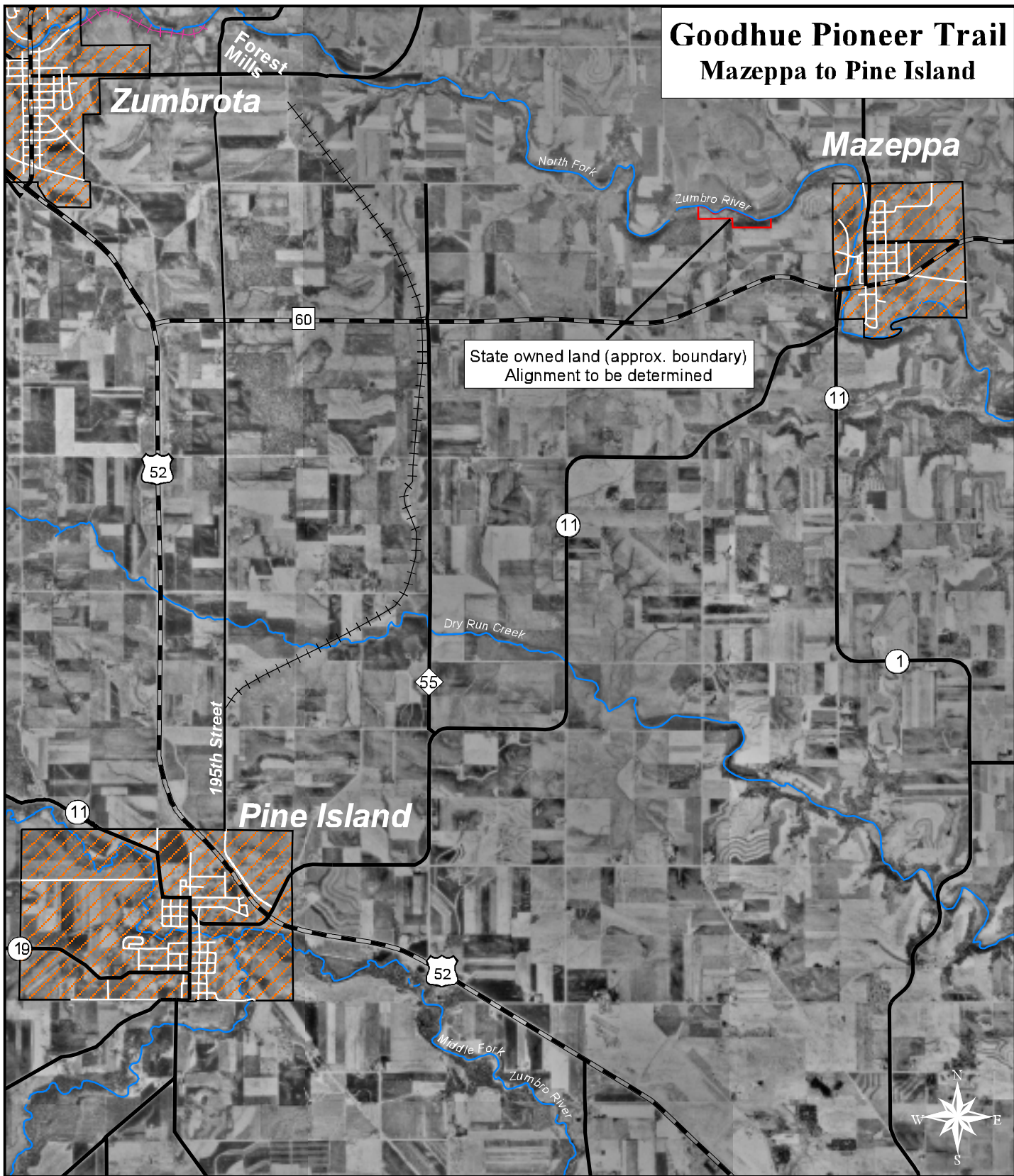
Criteria for location of the trail

1. Avoid acquisition of high quality agricultural land.
2. Use existing public right-of-way where necessary (for connections).
3. Minimize impact on wetlands.
4. Work with willing landowners to acquire right-of-way that showcases features of the landscape (wooded views of rivers, vistas, cultural features, historic sites).
5. Minimize trail user exposure to vehicular traffic.
6. Avoid negative impacts on rare and endangered species, and minimize fragmentation or disturbance of significant native plant communities identified by the Minnesota County Biological survey.

Alternative corridors for future trail alignment

1. Corridor along the North Fork of the Zumbro River
2. Right-of-way along County State Aid Highway (CSAH) 11 and 10
3. Township roads
4. TH 60 right-of-way
5. Abandoned railroad corridor
6. A combination of the above

Goodhue Pioneer Trail Mazeppa to Pine Island



Division of Trails & Waterways

Proposed Goodhue Pioneer State Trail Alignment (Easement)	U.S. Route
Abandoned Railroad Grade in State Ownership	State Highway
Abandoned Railroad Grade in Private Ownership	County Highway
Incorporated Cities	County Boulevard



Mazeppa to Pine Island/Zumbrota to Pine Island

Description of the trail environment

A specific trail alignment for this section has not yet been determined. The following criteria should guide decisions about the future location of the trail. Several conceptual corridors have been discussed as possible linkages between Pine Island and Zumbrota. They are listed below to provide a basis for continuing discussions about trail alignment as stakeholders (landowners, the Goodhue Pioneer Trail Association, local units of government, trail users, and DNR) strive to reach consensus.

The surrounding landscape is predominately agricultural with cropland and pastures dominating the landscape.

Criteria for location of the trail

1. Avoid acquisition of high quality agricultural land.
2. Use existing public right-of-way where necessary (for connections).
3. Minimize impact on wetlands.
4. Work with willing landowners to acquire right-of-way that showcases features of the landscape (wooded views of rivers, vistas, cultural features, historic sites).
5. Minimize trail user exposure to vehicular traffic.
6. Avoid negative impacts on rare and endangered species, and minimize fragmentation or disturbance of significant native plant communities identified by the Minnesota County Biological survey.

Alternative corridors for future trail alignment

1. 195th Street corridor
2. TH 52 corridor
3. Township road on the west side of Pine Island
4. County Road 11
5. County Road 55
6. Abandoned railroad grade
7. Township roads
8. Edges and boundary lines
9. TH 60
10. A combination of the above

Interrelationship of the Goodhue Pioneer State Trail and Communities

Red Wing

History

The Dakota Sioux were inhabitants of the Red Wing area at one time and had named it “Remnicha” meaning “the place of hill, wood and water.” While the exact dates differ as to when the first European settlers came to the area, records indicate it was between 1847 and 1850. The city of Red Wing was incorporated in 1857 and was named in honor of Chief Red Wing. The title, *Red Wing*, was used by a succession of chiefs in the Dakota Sioux tribe. They used a scarlet dyed swan’s wing as the tribe’s symbol and were called, “Koo-poo-hoo-sha” [Khupahu = wing, sha = red].

Red Wing’s location on the Mississippi River provided the early settlers with many opportunities for development. They relied on the river for transportation and the city became a prominent shipping port as well as the county seat. By 1873, Red Wing was the largest wheat shipping center in the world. By 1900, the clay industry was the largest employer in town. In 1905, the Red Wing Shoe Company opened and its international headquarters are still in Red Wing.

As the railroads were built across the prairie, the wheat market eventually declined. However, Red Wing still prospered. Industries such as pottery, lumber, leather tanning, malting and brewing flourished because of the area’s abundance of natural resources and access to the river. In 1945, Paul Riedell opened Riedell Shoes, Inc., which still manufactures high quality ice skates today.

The pottery industry can be traced as far back as 1861 when a German immigrant settled in Goodhue County. He settled in an area which is now known as the Clay Pits and began making pottery after an unsuccessful attempt at farming. His cottage industry lasted only a short time. In 1866, Francis Philleo and his son, William, opened the first pottery factory. The factory burned down in 1870 but was rebuilt and named Philleo & Williams. In 1877, Red Wing Stoneware Company opened and was, by most accounts, the first large enterprise in the pottery industry. In 1883, the Minnesota Stoneware Company opened for business. In 1891, the Red Wing Sewer Pipe Company and the J.H. Rich Sewer Pipe Works started using the clay that wasn’t suitable for use in the pottery industry and began making sewer pipes. By 1892, a third stoneware company opened named the North Star Stoneware Company. Red Wing could not support that many companies in the same industry so by 1894, the three companies consolidated efforts to form the Union Stoneware Company. By 1896, the North Star Stoneware division of the Union Stoneware Company collapsed. The final two companies merged in 1906 under the new name, Red Wing Union Stoneware Company. Due to the changes in living and the modernization of food preservation, the company began producing wares that were appropriate for the times. The company changed it’s name to Red Wing Potteries, Inc. in 1936. Crocks, jars and churns were phased out while vases, pitchers and dinnerware became the preferred product. In 1967, Red Wing Potteries, Inc. ceased operations after a strike could not be resolved and many jobs were lost. The pottery industry had long been one of the largest employers in town.

The Community Today

Red Wing, approximate population of 15,000, is still a bustling community. The natural beauty of the area continues to attract visitors. Many businesses, ranging from technology to manufacturing, are thriving and are expected to continue that trend. A testament to that trend is the Red Wing Shoe Company which is currently the town's largest manufacturer.

Trail Alignment

The Goodhue Pioneer State Trail will follow the abandoned Chicago Great Western Railroad grade south at the intersection of Pioneer Road and Hay Creek. The state trail will connect to the existing Red Wing city trail system at this intersection. Visitors can also access the Cannon Valley Trail, on the northwest end of town, through the city's trail system.

The Role of the Community

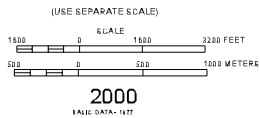
The community has designs to expand their current citywide trail system to connect the Cannon Valley Trail, the Goodhue Pioneer State Trail, and neighborhoods. They are also interested in finding safer routes to allow access to the downtown district. Parking for the trail heads remain a concern and alternatives are being considered. Informational kiosks throughout the city trail system are being considered so that trail users can easily access maps, information about the Cannon Valley Trail and routes to downtown attractions.

RED WING TRAIL SYSTEM PLAN

KEY

- EXISTING
- 1999/2000 ISTE A ENHANCEMENT
- 2001/2002 ENHANCEMENT PROJECTS
- FUTURE

INSET



MATCHLINE

COLVILL PARK
BRIDGE & ACCESS

WISCONSIN
MINNESOTA

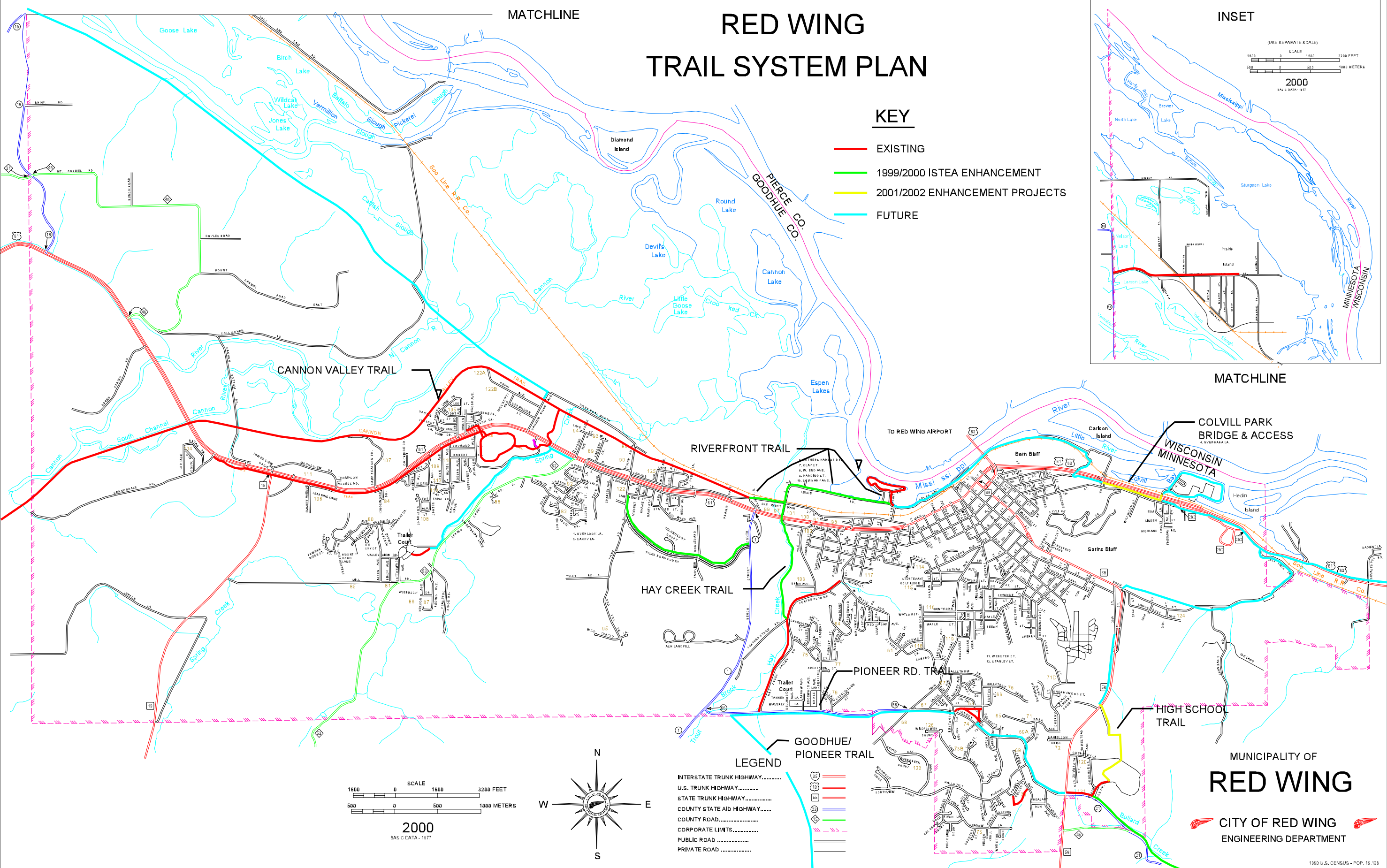
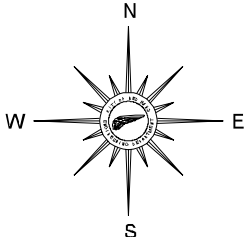
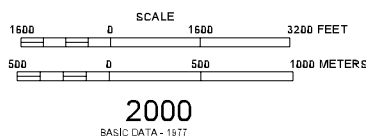
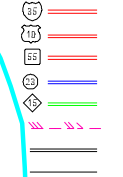
MUNICIPALITY OF

RED WING

CITY OF RED WING
ENGINEERING DEPARTMENT

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD.....
- PRIVATE ROAD.....



Goodhue

History

Located in central Goodhue County, the community of Goodhue was incorporated in 1897. Both county and community are named in honor of James Madison Goodhue, the first printer and editor in Minnesota. In 1849, he founded, published and edited the first newspaper in the Minnesota Territory, the *Minnesota Pioneer* published in St. Paul.

Construction of the railroad between Red Wing and Zumbrota in 1889 spurred the growth and development of this community. The railroad built a siding here to serve farmers from the surrounding area - a location from which farmers could ship their products to markets. The siding also served as a nucleus for the growth of a community. A train depot was the first building constructed, soon followed by a grain elevator, creamery, houses, newspaper, church, hardware store, bank, fire department and jail. Four trains stopped every day in Goodhue. The depot still exists today, and plans are to move it to a future city park, where it could be used as a trail center and historical museum.

The Community Today

Goodhue, population 700, has an agricultural focus today. Although the railroad has been abandoned, businesses still serve the agricultural community.

The community has recently developed a .9 mile trail within the city. This trail will connect to the Goodhue Pioneer State Trail. The story of how this trail came to be demonstrates the community's creativity, hard work, cooperative spirit, and commitment to education. Goodhue received a Phase 2 Planning grant from the Center for School Change housed at the Hubert Humphrey Institute of Public Affairs, University of Minnesota in 1997. Under the umbrella of the Goodhue Forever Coalition, funds for the trail were obtained and K-12 students were involved in all phases of trail development from determining the alignment to final landscaping.

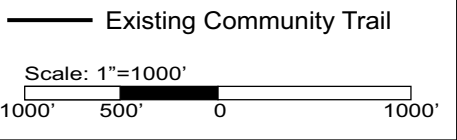
Trail Alignment

The specific alignment for the Goodhue Pioneer State Trail in and out of town has not been determined. However, the trail will connect to the .9 mile city trail which will serve as the in town link.

Role of the Community

The community plans to include a trail head as part of a city park development in the northeastern part of the community that will include an agricultural history museum and the depot. Parking for trail users is envisioned for this site. Directions to downtown and information about services that are available there will be provided in this location.

City of Goodhue



Bellechester

History

Bellechester was established as a railway station for supply of pottery clay, that was used by RedWing companies to make stoneware and sewer pipe. The clay pits were abandoned in 1928. The railroad also served the agricultural needs of the surrounding farmers.

The Community Today

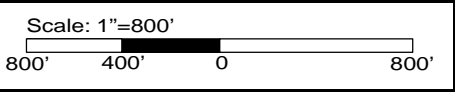
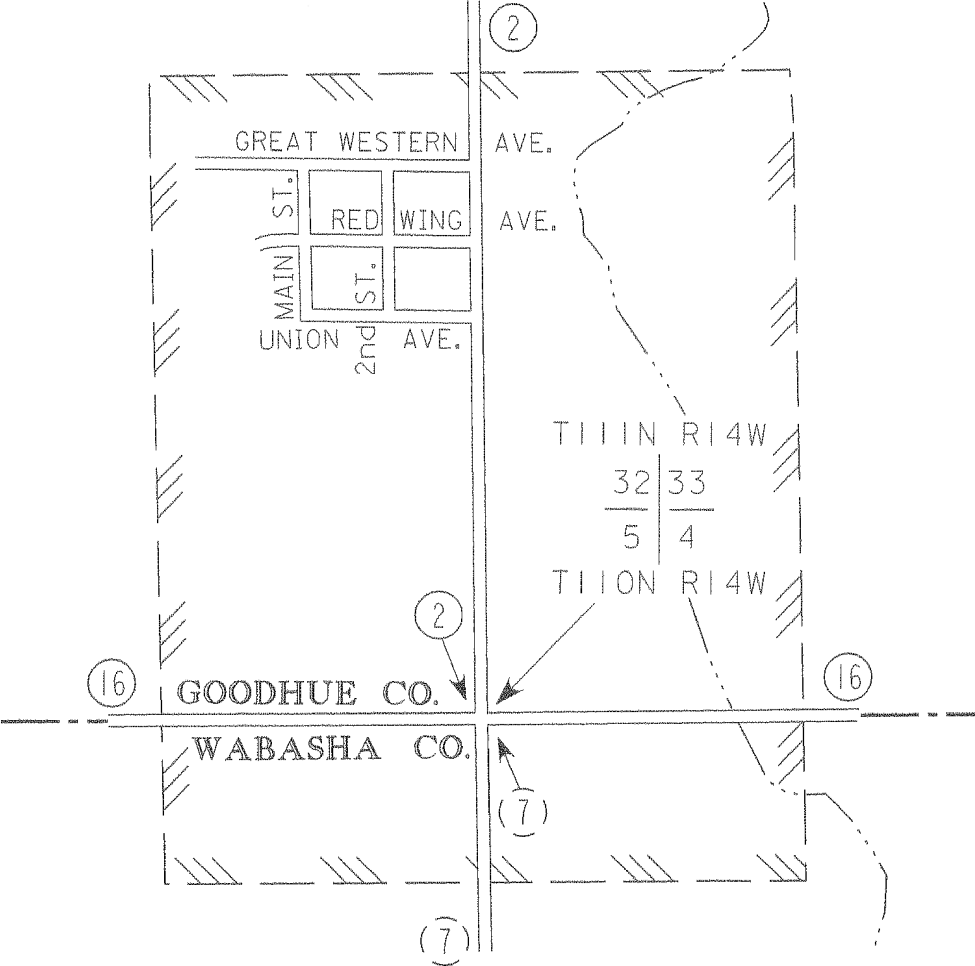
Bellechester is the smallest community on the Goodhue Pioneer State Trail with a population of 110.

Trail Alignment

No alignment in and out of the community has been determined yet.

The Role of the Community

Trail users can take advantage of the opportunity to purchase food and beverages at the convenience store. A trail head located in Bellechester is envisioned for the community including parking, toilets and interpretive facilities.



Mazeppa

History

Mazeppa is the one community located along the Goodhue Pioneer State Trail that is located in Wabasha County. Mazeppa was named for Ivan Mazeppa, a Cossack chief commemorated in a poem by Byron. The community was platted in 1855 and incorporated in 1877. Milling was responsible for the origin of Mazeppa. One of the interesting historical stories to tell is the history of the lake that formed behind the dam which was 50' deep.

The Community Today

Mazeppa can be described as a small quaint village with a lot of charm. The North Fork of the Zumbro River flows through a deep gorge flanked by limestone walls. Downtown is picturesque and has a historic museum. A community park is located on the west side of the river. A historic bridge, known as the walking bridge connects the park to downtown.

Trail Alignment

No specific alignment for the Goodhue Pioneer State Trail in and out of town has been determined.

Role of the Community

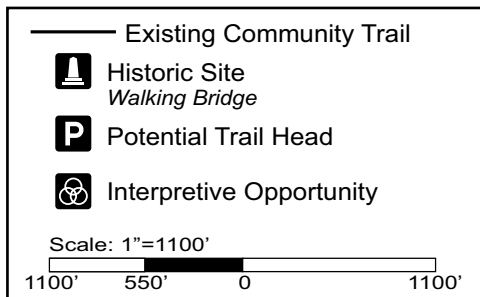
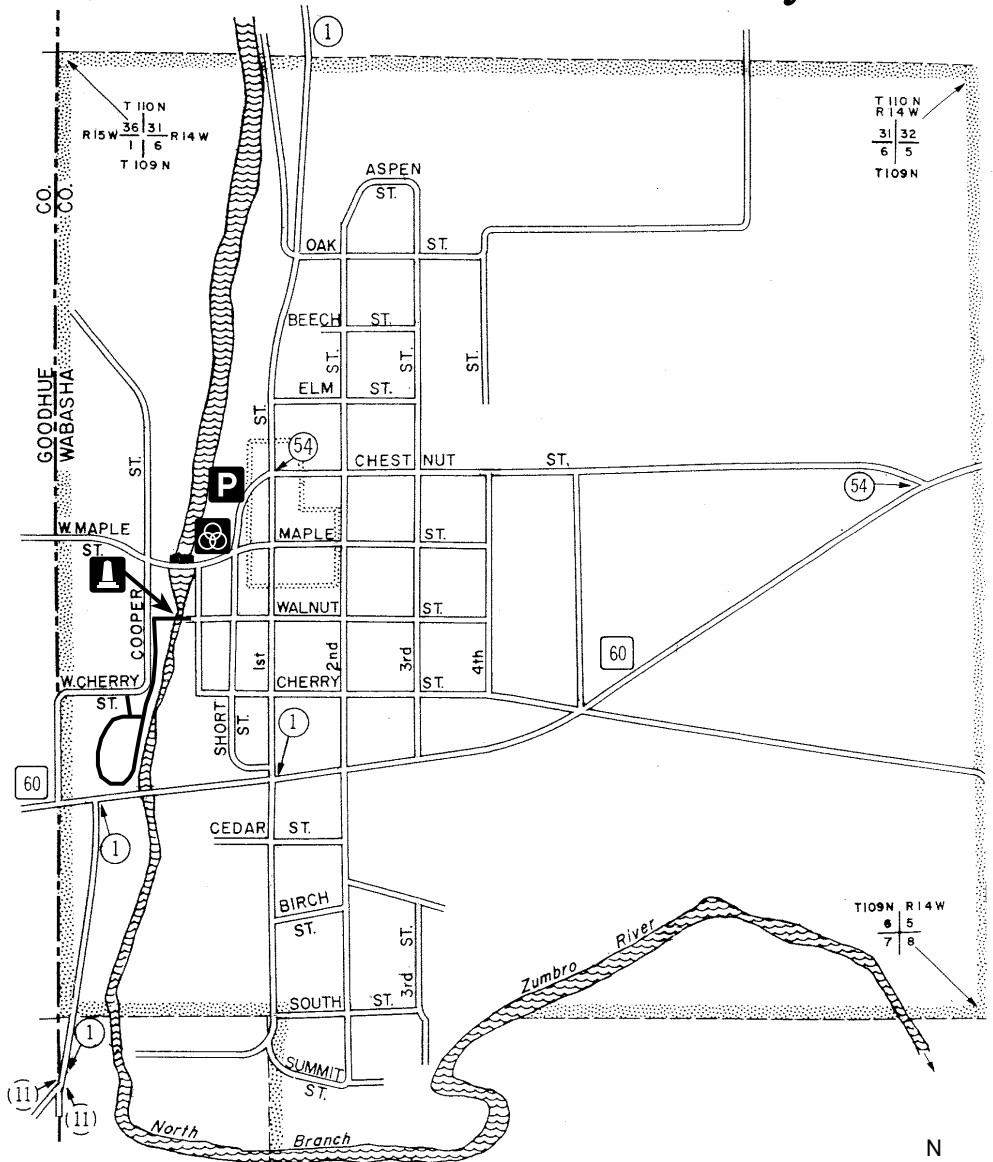
Currently the community has a restaurant, picnic area and gas station, which would provide trail users with services. The community would like to develop a trail head facility in the community to provide parking, trail orientation information and identify the services and recreational opportunities the community provides.

A dam on the river has recently been removed. This will improve the fishery of the North Fork of the Zumbro River. The community would like to promote fishing, bicycling, and canoeing as recreational opportunities in the future.

The following quote is from the poem by Lord Byron, referencing the Cossack Chief, Mazeppa.

.”Of all our band,
. Though firm of heart and strong of hand,
. In skirmish, march or forage, none
. Can less have said or more have done
. Than thee, Mazeppa! On the earth
. So fit a pair had never birth,
. Since Alexander’s days till now,
. As thy Bucephalus and thou:”

City of Mazeppa



Zumbrota

History

Zumbrota means “town on the Zumbro”. The name Zumbrota is a compound word, the origin of each word from very different sources, one, the French language; the other the Dakota language. The root of the word, Zumbro, can be traced to the French name of the river that flows through town, the Riviere d’Embarras, so named because of the logjam present near its mouth at the time of exploration. The English translation transformed the word to Zumbro. The Dakota word “ta” meaning at, to, or on was added to the word.

First settled in 1854, the town was incorporated in 1856. The railroad’s significance to this town is the historic arrival of two railroads literally racing to be the first to lay tracks to Zumbrota’s main street. A line from Wabasha from the east and a rival from Rochester to the South arrived on the same day in May of 1878. Disputes needed to be resolved for a winner to be declared. Years later, rails were extended north and west to make Zumbrota a hub not only for roads, but rails also. A historic walking tour provides insight into the town’s history - business and social institutions. Of particular interest is the Zumbrota Covered Bridge, built in 1869. It is the only authentic covered bridge in Minnesota today. Originally it spanned the Zumbro River. It was removed in 1932 and replaced by a steel bridge. The bridge sat on land until 1997, when it was returned to a location over the Zumbro River connecting the trail system in Covered Bridge Park to the city hall and downtown.

Covered Bridge Park is also home to other historic structures, including a school and Milwaukee Road depot.

The Community Today

Zumbrota, population 2,700, is well situated as a gateway to the Goodhue Pioneer State Trail. Zumbrota is located approximately 50 miles south from the Twin Cities and 23 miles north from Rochester. Zumbrota is the first access to the Goodhue Pioneer State Trail off TH 52 as you travel south on 52. A variety of businesses serve the community and surrounding agricultural area. Main Street is vital and hospitable.

The city is committed to trails. Approximately 2½ miles of trail has been developed by the city, and the system is well used by community residents. The community envisions a loop that circumnavigates the city with connections to the Goodhue Pioneer State Trail on both the east and northwest ends. The railroad grade heading north out of Zumbrota was originally purchased by the city for trail purposes and donated to DNR to manage as a recreation corridor.

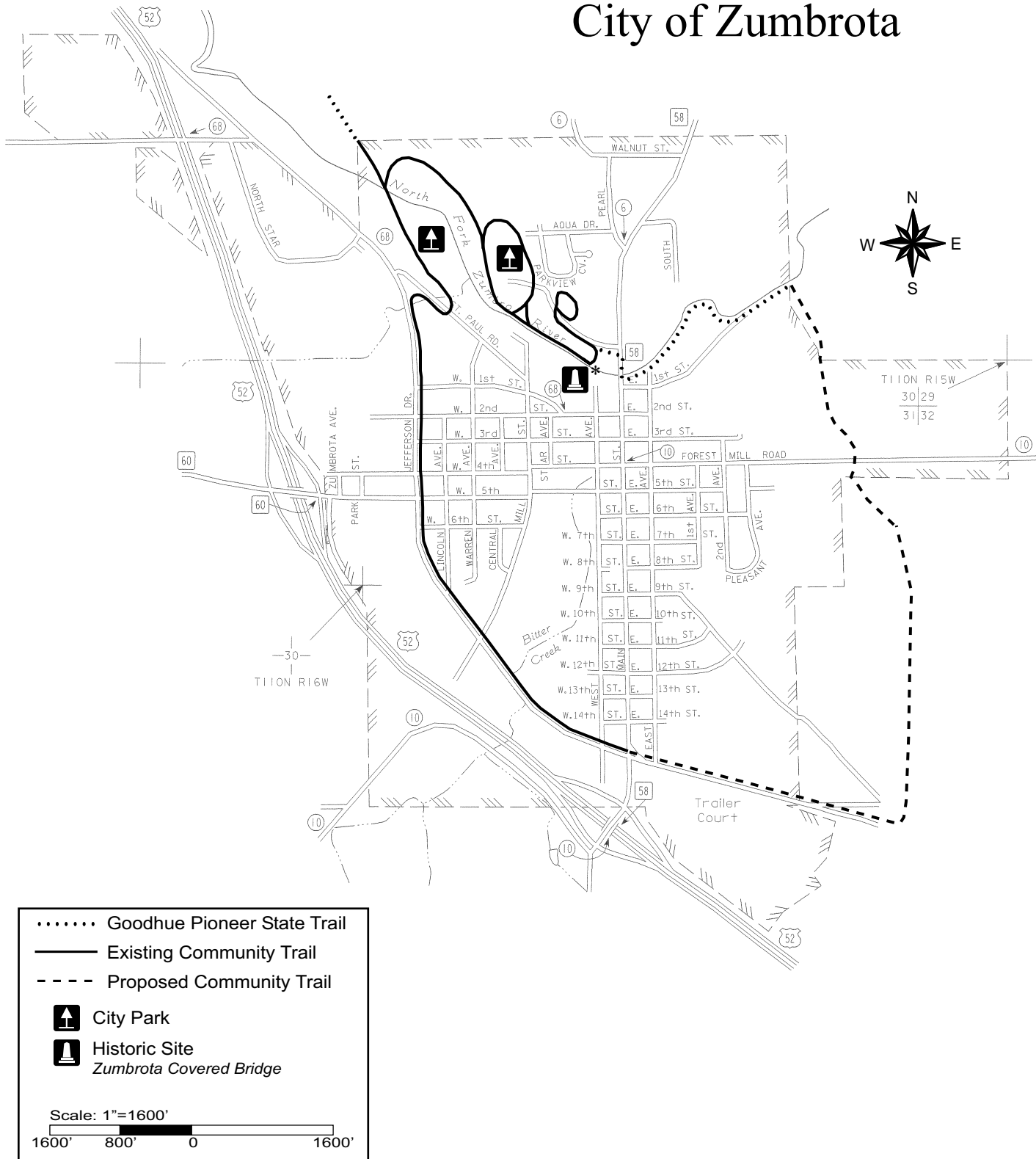
Trail Alignment

The Goodhue Pioneer State Trail will enter the City of Zumbrota from the northwest on the abandoned Chicago Northwestern railroad grade. The community supports a multi use trail. The Goodhue Pioneer State Trail will join the existing community trail which follows the Zumbro River, in Covered Bridge Park. Plans are for the trail to cross under TH 58, traverse south, along TH 58, then cross the Zumbro on a future bridge reconstruction on TH 58, targeted for 2004. The trail will join the Goodhue Pioneer State Trail at the junction of TH 58 and the Zumbro River, following the river, to the abandoned railroad grade near the Izaak Walton League building, and going east out of the community.

Role of the Community

Zumbrota offers many services to trail users. A campground, restaurants, lodging facilities, a beautiful park, the river, and retail opportunities will provide trail users with needed services and additional recreational opportunities. The community plans to develop a trail head somewhere in Covered Bridge Park, close to downtown. This facility would provide parking, toilet facilities and trail orientation information as well as information about the services and opportunities available within the community.

City of Zumbrota



Pine Island

History

An island formed by the middle branch of the Zumbro River, covered with pines was inspiration for the town's name. This island served as the location for a winter camp of the Dakota, and they called it WaZuWee Ta, which means Isles of Pine. Early explorers used this name as well to denote this area on the Zumbro River. The pines no longer exist today, but the descriptive feature is memorialized by the town's name.

Settlement began in 1855 and agriculture was the first industry. Pine Island became famous for its cheese production. Forty cheese factories sprang up around Pine Island. Today, one factory remains, but it's history has bestowed the slogan of "Cheese Capital of the World" due to the fact that Pine Island produced a 6,000 pound block of cheese for the State Fair and 1911 Chicago's World Fair. The one cheese factory that still remains (the creamery) stands at the end of the Douglas State Trail.

The Community Today

Pine Island, population 2,450, still serves the surrounding agricultural community. A grain elevator and dairy processing industry are located in town. Other manufacturing companies contribute to a diverse economic base. The community is growing rapidly and experiencing many new housing starts, the quality of life in Pine Island attracting new residents.

The community has purchased the historic creamery and plans to include a trail center as part of its redevelopment.

A picturesque main street that has retained many original facades will provide sightseeing and shopping opportunities for trail users. Pine Island Golf Course is a challenging 18-hole golf course along the Douglas State Trail.

Trail Alignment

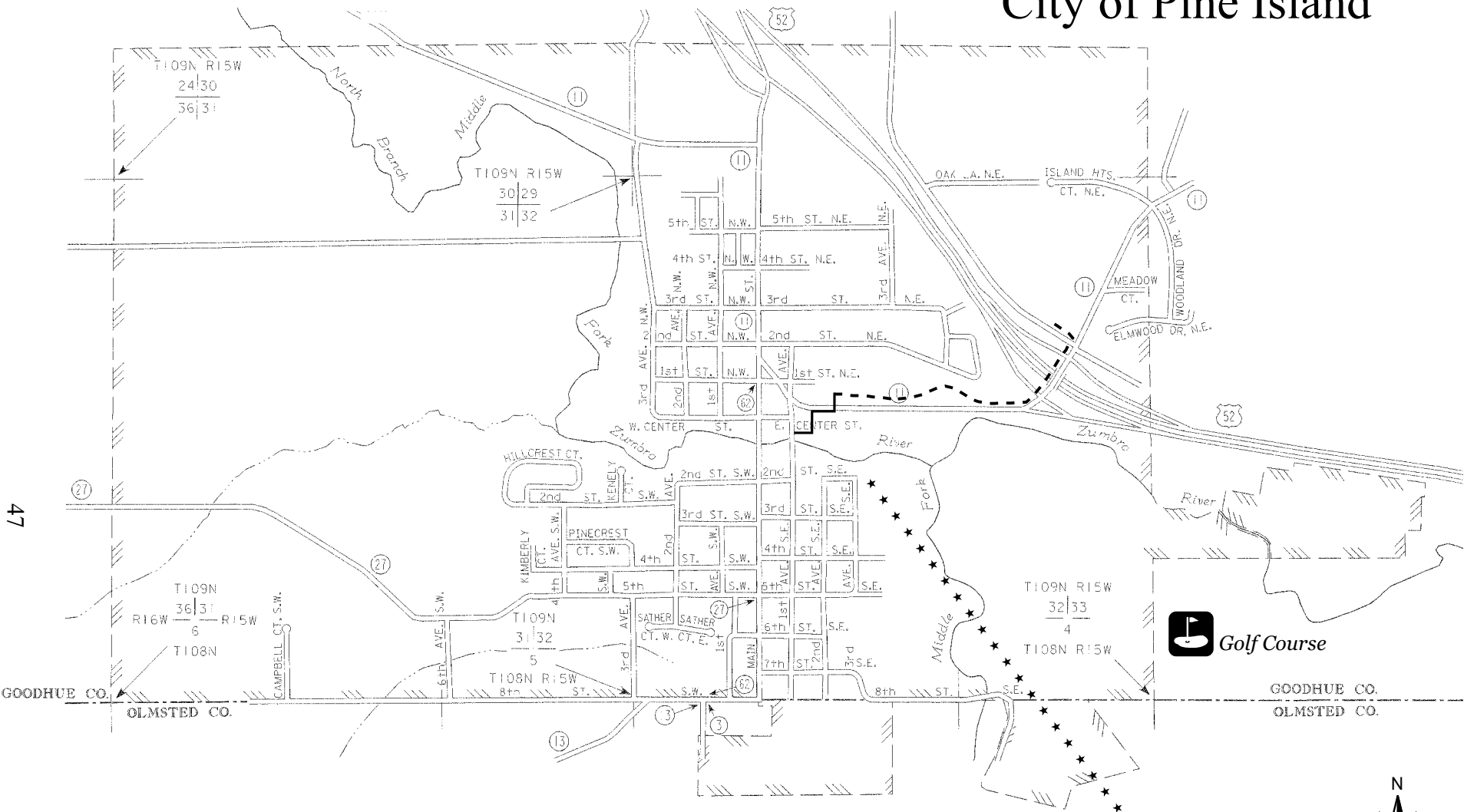
The community has plans for an internal trail system that will link to the Goodhue Pioneer and Douglas state trails. Soon, the neighborhood in the northeast corner of the city will be connected to the Douglas State Trail and city park with the construction of a trail adjacent to CSAH 11, over TH 52 to the neighborhood. A new trail link connects the Douglas State Trail to Downtown Park/Main Street.

Role of the Community

Pine Island is at the junction of two state trails, the Douglas and Goodhue Pioneer. Pine Island will serve as a gateway to the Goodhue Pioneer State Trail from Rochester, just 13 miles away.

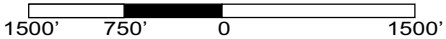
Pine Island offers many services to trail users - restaurants, lodging facilities, a beautiful park, the river, and retail opportunities, along with a well preserved Main Street and City Hall clock tower, which is on the National Registry of Historic Places.

City of Pine Island



- ★ ★ ★ Douglas State Trail
- Existing Community Trail
- - - Community Trail in Progress

Scale: 1"=1500'



Interrelationship of the Goodhue Pioneer State Trail and Nearby Recreational Facilities

Interrelationship of the Goodhue Pioneer State Trail and the Cannon Valley Trail

The Goodhue Pioneer State Trail will connect to the 19.7 mile Cannon Valley Trail via the city of Red Wing trails. The Goodhue Pioneer State Trail and the Cannon Valley Trail are each managed by a different government entity. The Goodhue Pioneer State Trail will be owned and managed by the Department of Natural Resources. The Cannon Valley Trail is not a state trail. It is managed by a joint powers board made up of representatives from Goodhue County and the communities of Red Wing and Cannon Falls.

This connection of the Goodhue Pioneer State Trail to the Cannon Valley Trail will create some benefits from the standpoint of trail users and trail administrators and also some concerns for trail users and trail administrators.

Benefits

1. The addition of the Goodhue Pioneer State Trail in the Red Wing area creates an additional opportunity thereby lengthening and diversifying the trail experience for trail users.
2. The addition of the Goodhue Pioneer State Trail will provide an additional trail experience option, attracting additional people to the area.
3. The addition of the Goodhue Pioneer State Trail has the potential to increase the length of stay of visitors in the Red Wing area because visitors could ride one trail one day and the other the next day.

Concerns

1. The set of rules that relate to each trail are somewhat different. This has the potential to confuse the trail user and make enforcement of each trail more difficult. For example, dogs are allowed on the Goodhue Pioneer State Trail, however, they are not allowed on the Cannon Valley Trail. Snowmobiles will be allowed on parts of the Goodhue Pioneer State Trail whereas they are not allowed on the Cannon Valley Trail. It should be noted that the two trails are separated by Red Wing city trails, which serve to separate the two trails.
2. A trail user fee is required on the Cannon Valley Trail but will not be required on the state trail. It will be important to communicate to trail users that a fee is required to use the Cannon Valley Trail.
3. The Cannon Valley Trail is dependent on the user fee for the maintenance and operation of the trail. Concern was expressed that some users may choose the trail where a fee is not required, cutting into the revenue necessary to operate the trail.
4. Over crowding of the parking lot for the Cannon Valley Trail is a concern. There is already limited parking for the Cannon Valley Trail. If Goodhue Pioneer State Trail users park at the Cannon Valley Trail lot, there would not be sufficient parking.

5. The joint powers board want to see the Cannon Valley Trail retain its unique identity.

Recommendation 1: DNR will make trail users aware of the differences relating to the rules and fee required by including this information on maps of the Goodhue Pioneer State Trail and on kiosks located on the Goodhue Pioneer State Trail.

Recommendation 2: Both trails could consider using techniques to clearly convey to the trail user they are entering a new trail. The development of archways, entranceways and signage are techniques that could be considered.

Recommendation 3: Ensure adequate parking is provided for Goodhue Pioneer State Trail users and communicate the location clearly to trail users.

Interrelationship of the Goodhue Pioneer State Trail and the Hay Creek Unit of the Richard J. Dorer Memorial Hardwood State Forest

The state owns 45,000 acres within the statutory boundary of the Richard J. Dorer Memorial Hardwood State Forest. The Hay Creek Unit, approximately 1,500 acres in size, is one of the tracts of state owned forest land. State forests were established for timber production, watershed protection, to conserve habitat for plants and animals, and to provide recreation.

Oaks, elm, birch, basswood and black cherry grow on the forested slopes. A floodplain forest of cottonwood, willow, ash and elm grow in the valley. Plantations of pines and black walnut grow in the forest. Characterized by steep forested slopes and wooded valley, the Hay Creek Unit provides horseback riding, hiking, cross country skiing, and snowmobile trail opportunities. Trout angling and hunting are additional recreational opportunities available. A day use area serves as a trail head and rest area. Parking, a picnic area and toilet facilities are located here.

This day use area will serve trail users as a rest area. Parking is available, however, this location will not be promoted as a major parking/access point to the trail. It is recommended that some additions be made to the site including the development of a kiosk with orientation and interpretive information and some improvements to the existing facilities, such as making the toilets handicapped accessible.

Portions of the proposed paved trail will be located on sections of the railroad grade that are currently being used by horseback riders and snowmobilers. New sections of adjacent trail will be developed for these uses so that no existing uses will be displaced. The new trail will provide better crossings and enhance the existing trail system.

Section Four

Trail Management

Projected Trail Use

State Trail Use as an Indicator of Future Use

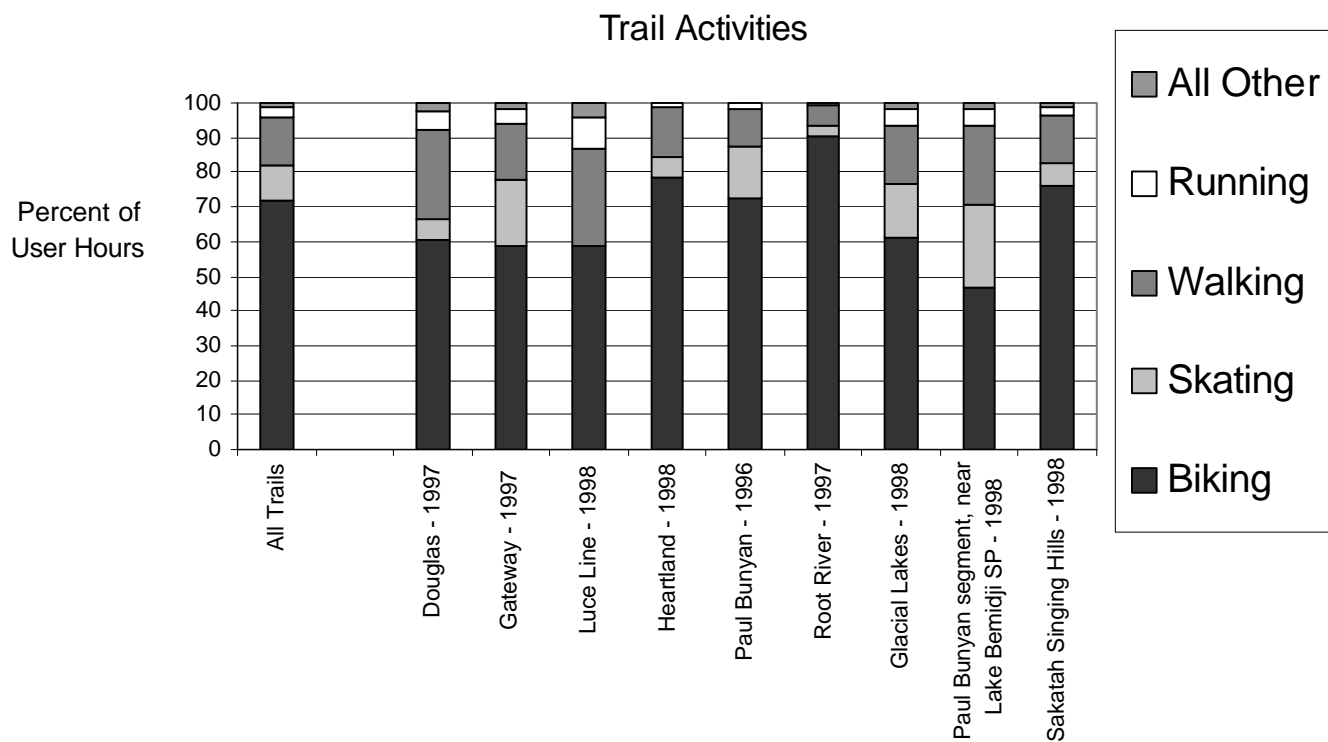
It is anticipated that the number of trail users and pattern of use will be similar to what is occurring on other state trails. The following table summarizes the summer use (Memorial Day to Labor Day) for the other asphalt trails in the state system. Use is measured in user hours. (A trail user spending one hour on the trail is a user hour).

Trail User Hours

	<u>Total Seasonal User Hours</u>	<u>Miles of Trail in Survey</u>	<u>User Hours per Trail Mile</u>
<u>High Local Use</u>			
Douglas - Summer 1997	42,910	12.5	3,433
Gateway - Summer 1997	181,952	18.5	9,835
Luce Line - Summer 1998	65,120	29.0	2,246
<u>High Tourist Use</u>			
Heartland - Summer 1998	125,381	27.0	4,644
Paul Bunyan - Summer 1996	155,268	46.4	3,346
Root River - Summer 1997	178,761	40.8	4,381
<u>Mix Local/Tourist Use</u>			
Glacial Lakes - Summer 1998	33,858	18.0	1,881
Paul Bunyan segment, near Lake Bemidji State Park - Summer 1998	17,488	5.3	3,300
Sakatah Singing Hills - Summer 1998	95,634	38.0	2,517
<i>All Trails</i>	<i>896,373</i>	<i>236</i>	<i>3,806</i>

Because of the proximity of the Goodhue Pioneer State Trail to the metro area and Rochester, it is anticipated that the use will be similar to the Root River, with use approaching 180,000 user hours.

The use pattern observed on other state trails can also provide insight into the mix of trail activities that can be expected. As the table on the next page illustrates, bicycling will most likely be the predominant activity, followed by walking and then in-line skating.



Cannon Valley Trail Use as an Indicator of Future Use

Visitations are estimated using counter numbers, sales records, and assumptions based on survey results. A visitor use day is one person on the trail for up to one day.

Cannon Valley Trail Visitor Use Days

ACTIVITY	1996	1997	1998	1999
Bicycling	87,381	85,437	87,758	80,858
In-Line Skating	6,554	5,980	5,601	5,405
Pedestrian	8,738	8,544	8,776	8,348
Skiing	600	500	100	500
TOTAL	103,273	100,461	102,235	95,111

Trail Maintenance

Adequate maintenance of the Goodhue Pioneer State Trail is critical to provide and sustain the experience trail users appreciate. Maintenance activities are numerous and diverse, as the following list illustrates.

Specifically, maintaining the Goodhue Pioneer State Trail will include:

- Monitoring trail conditions, which includes scheduling and documentation of inspections; monitoring the condition of railings, bridges, trail surfaces, and signage; hazard tree inspection; and removal of debris such as downed trees
- Scheduling of maintenance tasks
- Mowing of vegetation: shoulders, rest areas, parking lots, and parallel treadways
- Winter grooming and plowing
- Tree and shrub pruning
- Trash removal
- Trail repair - fixing washouts and controlling erosion are examples
- Maintaining bridge decking and railings
- Trail drainage control
- Trail surface maintenance
- Repair of animal damage to trail or facilities
- Checking and repairing fence lines, gates, and cattle crossings
- Mowing and brushing farm crossings
- Cleaning out ditches and culverts, replacing failing culverts
- Controlling noxious weeds
- Maintaining equipment
- Painting posts and picnic tables
- Graffiti control and vandalism repair, especially to signs
- Maintaining boundary signs, and working to resolve encroachment issues
- Coordination of volunteer efforts
- Training and supervision of employees, Minnesota Conservation Corps, or Sentence-to-Service crews maintenance work
- Any future sections of the trail developed with asphalt will require sweeping.

Recommendation: Additional maintenance funds will be required to maintain the trail after it is developed.

Information and Education

Identification of Services

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

Trail User Orientation

Trail users must have good 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, 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 trail junctions. It should be available in maps, and on the DNR Website (<http://www.dnr.state.mn.us>). It should include distances between communities, options for other trail connections, and locations of services.

If any significant deviation from the typical trail design occurs resulting in a change in user experience it should be noted on the informational kiosks to assist trail users in understanding what the trail experience will be. For example, if there is a change when the trail enters a community.

Trail Rules and Regulations and Trail Courtesies

Trail courtesy and safety display boards aimed at educating trail users about appropriate behavior, promoting safe trail use, and protecting the quality of the trail environment should be developed. These user-friendly versions of the rules applying to state trails should be posted at information kiosks along the trail, and included in trail maps.

Volunteer patrols could be used to distribute information on appropriate trail behavior and etiquette relative to specific problems such as unleashed dogs, or all trail users keeping to the right and warning others when passing.

Interpretation of Natural and Cultural Resources

There are many natural and cultural resources of significance and interest along the trail. These include creeks, rivers, wetlands, vegetation and wildlife of the Blufflands and Rochester Plateau landscapes. In addition, there are several places that tell the history of this region. Providing information about these resources can add enjoyment to the trail experience.

An interpretive theme is identified for state trails during the planning process. The interpretive theme helps tie together spatially separated interpretive sites and provides a continuity in the messages. Recommended interpretive themes for the Goodhue Pioneer State Trail are:

- The pioneer history of the county and communities along the trail, including the railroad history

- The importance of ecological greenway corridors to the rural landscape and how their significance can be enhanced
- The importance of protecting biological diversity.

There is an opportunity to demonstrate and provide information about locating, developing, and managing a trail in an environmentally sensitive manner in order to avoid negative impacts.

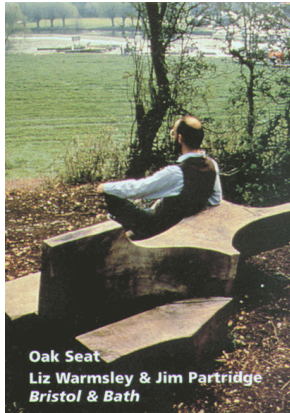
There is an opportunity to enhance the ecological function of the corridor by effectively widening it, through cooperative projects to plant native vegetation and control of exotics on adjoining lands. Demonstrating how adjacent landowners could do this and then providing interpretation of such projects should be done within the trail corridor.

Interpretive signs will be developed in consultation with other DNR divisions, and the Minnesota Historical Society (MHS). Some initial ideas are listed in the development summary. Additional sites will be interpreted over time.

Environmental Education

The trail has great potential for environmental education. Learning stations with curriculum and hands on projects can be done by students.

Trailside Art



The use of sculpture along the trail can be an effective way to provide interpretive information about the resources and history of the trail. Practical and functional objects such as benches, gates, water fountains, and tables, can be designed in a way so that they are attractive aesthetically and provide information about the area through design and use of materials. Sculpture or earth works for purely aesthetic purposes can also fulfill this purpose. The following illustrations provide examples of ways art can be integrated into trail development. The illustrations are from a brochure entitled *Art and The Travelling Landscape, Millennium Sculpture and the National Cycle Network*, Sustrans, Bristol, England.

Benches can be works of art and interpretive displays as well as functional amenities.



Art can be used to define access points, entryways and gateways to the trail and/or communities.



Recommendation 1: Develop a kiosk design that reflects the interpretive theme for the trail that can be used in the communities along the trail. Design elements that could be included in the kiosk design are a barn-style roof and cupola and/or weather vane.

Recommendation 2: Community services information, trail orientation, and trail rule and trail courtesy information should be developed and installed on a kiosk at the same time the trail is developed.

Recommendation 3: Trails and Waterways should work cooperatively with a community arts group to develop trailside art in the right-of-way within the community.

Recommendation 4: Trails and Waterways should serve as a catalyst to find schools to use the trail for environmental education purposes.

Recommendation 5: Interpret the natural and cultural features along the trail.

- Include information on the fishing aspects of the trail. The Division of Fisheries local offices and MinnAqua staff should be consulted as resources.

Enforcement

Enforcement activities are a vital aspect of maintaining a safe and secure trail environment. Enforcement of state trail 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. DNR has the primary responsibility for law enforcement on DNR owned and operated recreation areas.

Adequate enforcement was cited by participants of the planning process as a way of resolving potential problems and addressing concerns. User conflicts, unauthorized uses of the trail, trail users leaving the treadway designated for their use, were among the concerns identified during the planning process as likely areas where enforcement attention would be needed.

Funding for law enforcement on state trails has not kept pace with the need created by new trail development. When miles are added to the system, funds for the additional law enforcement needed have not been appropriated. A negative impact on public safety and natural resources can result due to the lack of sufficient law enforcement. A solution promoting law enforcement coverage with trail development must be found.

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, specific to uses of a particular segment and problems and conflicts occurring there.

Recommendation 3: Use increased visibility of Trails and Waterways staff during peak use times for an enforcement effect.

Recommendation 4: Additional enforcement officers are required to address the enforcement needs of the expanding trail system in southeastern Minnesota.

Recommendation 5: Trails and Waterways will include the cost of enforcement when providing information about the cost of the trail when communicating with legislators, trail advocates and local government officials.

Section Five

Natural and Cultural Resources Inventory

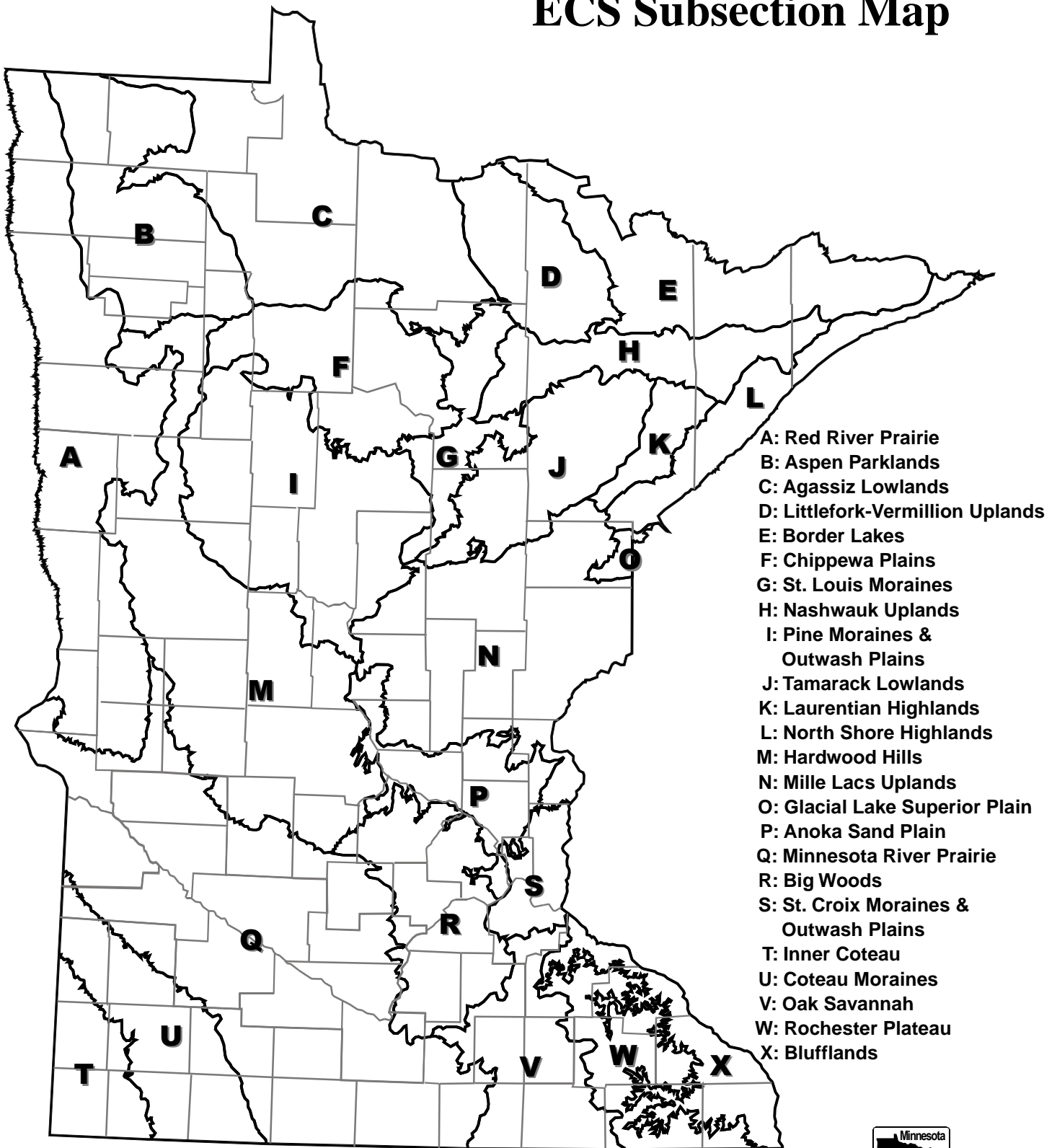
Climate

Southeastern Minnesota is subject to the state's strong continental weather patterns, which are influenced by cold Arctic air masses in winter and hot Gulf of Mexico air masses in summer. Prevailing winds are from the north or northwest from November to April, and from the south or southwest May through October. Typically, January is the coldest month of the year and July is the warmest.

Although there are minor local variations, the annual precipitation along the Goodhue Pioneer State Trail averages 31 inches.

Snowfall in the Goodhue Pioneer State Trail area varies from north to south. Red Wing sees an annual average of 48.3 inches while Zumbrota averages 39.7 inches annually. This is an average figure over thirty years, so any given year may vary considerably. Depth at any given point on the trail depends on several factors including topography, vegetation, and buildings. Shelterbelts may trap snow and increase drifting and deeper accumulations, while exposed areas may be blown clear of snow. Sun intensity also affects snow depth. At 40 °F air temperature in full sun, snow will melt 1 inch in a day, but in a shaded area only ½ inch will melt in one day.

ECS Subsection Map



Geology

The Goodhue Pioneer State Trail winds through two subsections of the state's ecological classification system (two of the distinct landscapes of Minnesota defined by vegetation, geology and other resource criteria). The northern portion of the trail is located in the Blufflands subsection. The southern portion of the trail is located in the Rochester Plateau subsection. (See map, p. 62)

The source of the following description of the geology of the subsections is found on the DNR website at the following:

http://www.dnr.state.mn.us/ebm/ecs/ecs_w.html

http://www.dnr.state.mn.us/ebm/ecs/ecs_x.html

Blufflands subsection

The blufflands region consists of a plateau, deeply dissected by river valleys and covered with a thin coating of loess (wind blown soil). The greatest amount of relief occurs along the Mississippi River, where the change in elevation can be up to 600 ft. In the eastern part of the region, loess lies directly on bedrock. In the southeast, loess overlies a layer of red clayey soil that was formed directly from limestone and/or sandstone. Outcrops of sedimentary rocks formed during the Paleozoic can be seen in valley walls, but are generally covered with colluvium or loess. The topography is shaped by the glacial till along the western edge of the subsection, where loess is several feet thick. As glacial drift thins to the east, topography is largely bedrock controlled (Dept. of Soil Science, Univ. of Minnesota 1973). Sinkholes are commonly seen in the southwestern portion of the subsection, although none are located along the Goodhue Pioneer State Trail. The sinkhole studded landscape of the blufflands is referred to as karst topography.

The depth of the glacial drift that lies over the bedrock varies from 0 to 50 feet. Bedrock is exposed in river and stream valleys. Large exposures of bedrock exist in steep ravines throughout the region. These exposures are mostly dolomite, limestone, and sandstone formed during the Ordovician. Cambrian sandstone, shale, and dolomite are exposed along the valley walls of the Mississippi River (Morey 1981, Sims et al. 1966). Devonian dolomite and limestone are more locally exposed along the western edge of the subsection.

Rochester Plateau subsection

This subsection consists of level to gently rolling older till plains. Topography is controlled by underlying glacial till along the western edge of the subsection, where loess is several feet thick. As glacial drift thins to the east, topography is largely bedrock controlled (Dept. of Soil Science, Univ. of Minnesota 1973).

Depth of drift over bedrock varies from 100 to 200 feet in the west to 10-100 feet in the east. Bedrock exposures are common. In general, sediment thickness varies by landscape position. Large exposures of bedrock occur in the steep ravines. These exposures are primarily Ordovician dolomite, limestone, and sandstone with Cambrian sandstone, shale, and dolomite exposed along the valley walls of the Mississippi River (Morey 1981, Sims et al. 1966). Devonian dolomite and limestone are more locally exposed along the western edge of the subsection.

Water Resources

The Goodhue Pioneer State Trail lies within two major watersheds. The northern half of the trail is located in the Mississippi River & Lake Pepin Watershed (Major Watershed No. 38) while the southern half of the trail is located in the Zumbro River Watershed (Major Watershed No. 41). The Zumbro River watershed contains few lakes, but several impoundments, most notable, Shady Lake near Oronoco, Lake Zumbro north of Rochester, and Silver Lake in Rochester.

The major tributaries to the Zumbro River are three forks - the South Fork, Middle Fork, and North Fork, each about fifty miles long. The three forks originate in the western part of watershed, which is predominately agricultural. The South Fork and Middle Fork join east of Oronoco at Lake Zumbro. The North Fork joins the main stem between Mazeppa and Zumbro Falls. The main stem flows through a deep gorge another 50 miles and empties into the Mississippi River near Kellogg. In this stretch there are small rapids and the river is flanked by bluffs and wooded river banks.

The Zumbro River is a designated canoe route. The most intensely used segment by canoeists is from the dam at Lake Zumbro to Zumbro Falls and from Zumbro Falls to Hammond or Millville. There is some tubing around Zumbro Falls.

One segment of the Goodhue Pioneer State Trail has the potential to be located near the North Fork of the Zumbro River between Mazeppa and Zumbrota. A potential trail corridor has been identified along this corridor, although no specific alignment has been determined. The trail will parallel the North Fork of the Zumbro River as it leaves Zumbrota to the east.

The other significant water resources in Goodhue County are the designated trout streams. These include the Little Cannon River located in the western part of the county, Spring Creek and Hay Creek located in the northern part of the county near Red Wing, and Bullard Creek located in the north part of the county near Lake Pepin. Hay Creek is the only one of these trout streams located near potential trail corridors.

Wetland Impact

There will be 8 acres of wetlands impacted along the first 6 miles of the Goodhue Pioneer State Trail (Red Wing to Hay Creek), the majority of those wetlands classified as Type 1. Various alternatives to using the abandoned railroad grade have been considered. However, the alternative routes would have caused greater environmental impact to a larger area of wetland, residential areas, or a high quality oak woodland. The abandoned railroad grade has already been disturbed and historically served as a transportation corridor.

Efforts will be made to minimize wetland impacts by closely following the abandoned railroad grade, thus reducing the amount of new impacts. Culverts will be installed in most areas to maintain water movement between separated wetlands. Due to the length of the site, bridging is impractical and not feasible. Filter fabric will be used to stabilize the subgrade, thereby allowing steeper side slopes and less fill.

The alignment past Hay Creek for the Goodhue Pioneer State Trail has not yet been determined. Wetland impacts will be avoided whenever possible in the future configuration of the trail.

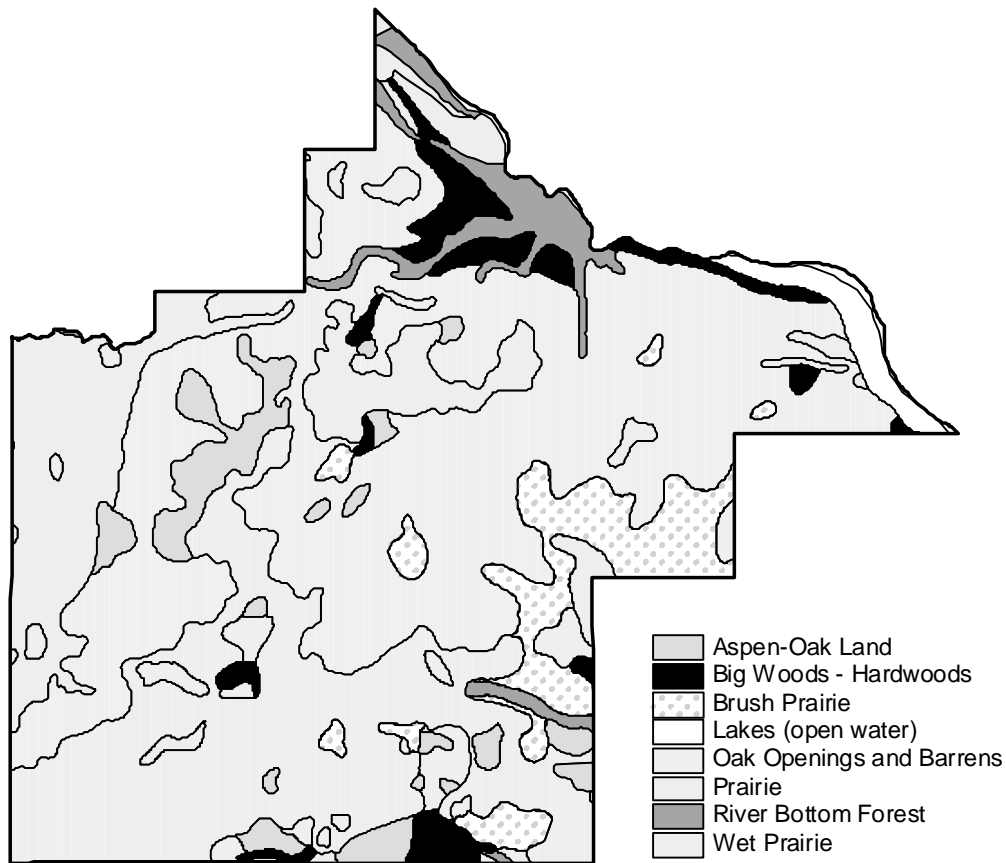
Recommendation 1: Minimize trail development and maintenance impacts to water resources through the use of mulching, geo-textiles, silt screens, and seeding to establish vegetation. Appropriate erosion control measures should be taken to minimize potential impacts on adjacent water resources.

Recommendation 2: Wetland mitigation will be required and accomplished by purchasing credits from the Minnesota Board of Water and Soil Resources (BWSR) wetland bank. The impacted wetland will be replaced at a rate of either 2:1 or 2.25:1. This rate will depend on various circumstances such as whether or not the credits can be purchased within the same watershed, county, adjoining county, wetland type, etc.

Recommendation 3: Develop stream crossings and trail improvements within the floodplain that does not increase flood elevations or flood damage potential.

Vegetation

Vegetation of Goodhue County at the Time of European Settlement



Seven vegetation types existed in Goodhue County at the time of European settlement, as interpreted by Francis Marschner using the Public Land Survey Records from 1853 - 1856. These vegetation types were prairie, wet prairie, brush prairie, aspen-oak land, oak openings and barrens, river bottom forest and Big Woods. The majority of landscape the trail will pass through was river bottom forest, aspen oak land, oak openings and barrens, and brush prairie.

Most of Goodhue County was covered by oak openings and barrens. Scattered trees and groves of oaks of scrubby form with brush and thickets define this type. Dominant trees were bur oak and pin oak.

The second most extensive vegetation type was prairie, located predominately in the western and southern part of the county. Big bluestem, Indian grass, needle grass and grama grasses were the dominant species of the prairie. A few scattered areas of wet prairie existed. Wet prairie included bluejoint grass, cordgrass, cattails, rushes and sedges.

River bottom forest characterizes the valleys of the Mississippi, Zumbro and other area streams. These lowland sites are subject to periodic flooding and drought. Frequent spring flooding enriches the soil by depositing silt over the forest floor. Dominant trees include silver maple, American elm, green ash, black willow and cottonwood. Poison ivy and stinging nettle are among the most common understory plants.

A few scattered patches of Big Woods existed in the county. Dominant species included bur oak, white oak, red oak, northern pin oak, elm, basswood, ash, maple, hornbeam, aspen and birch.

Also scattered throughout the county were patches of aspen-oak land, defined by dense aspen groves comprised of small trees with scattered oaks and a few elm, ash, and basswood. Brush prairie comprised of grass, oak and aspen brush were also present.

Existing Vegetation

The vegetation pattern that existed at the time of European settlement has been drastically altered by farming, logging, draining and development. In 1992, 7% of the county remained covered by natural communities. These communities are located mostly on steep and wet sites.

The Minnesota County Biological Survey conducted an inventory between 1990 and 1992 of native plant communities, rare plants and rare animals in the county.

Rare plant species

Thirty rare plant species were documented in Goodhue County by the Minnesota County Biological Survey. Appendix A lists endangered, threatened or special concern plant species found in Goodhue County. A search of the Minnesota Natural Heritage data base indicated the endangered, threatened or special concern species that have been documented within one mile of the trail. *Napaea dioica* (glade mallow), a threatened species, has been documented within one mile of the trail corridor located between Red Wing and Hay Creek. The habitat of the glade mallow is alluvial meadows, moist sunny sites. It may also occur in partial shade near the forest border. *Jeffersonia diphylla* (twinleaf) is at the northwestern limit of its range in southeastern Minnesota. The preferred habitat of this species is north and east facing slopes in mesic, deciduous forests. *Panax quinquefolius* (American ginseng), a species of special concern, has been documented within a mile of the trail. Ginseng is found in hardwood forests. One occurrence of *Trillium nivale* (snow trillium), a species of special concern has been documented. This species is found in moist hardwood forests, on bottomlands, slopes and terraces. *Plantanthera flava* var. *herbiola* (tubercled rein-orchid), an endangered species, reaches its western limits in Minnesota. Its preferred habitat is wet, acidic prairies and meadows. It is also found in sandy or peaty swales.

Lesquerella ludoviciana (bladder pod), an endangered species, has been documented in Goodhue County on dry south facing goat prairies. *Sanicula trifoliata* (beaked snakeroot), a species of special concern, is found in deciduous forests in southeastern Minnesota. Native plant community tracts of maple-basswood forest, dry prairie and floodplain forest are noted. Interpretation of native plant communities can create appreciation and understanding of their importance. The DNR County Biological Survey should be consulted for additional information to guide resource management plans. The first section of trail will be developed on an abandoned railroad grade. No adverse impacts are anticipated at this time by trail development and use. Trails and Waterways will work with DNR Natural Heritage Program on future segments as they are acquired and work to resolve any issues that may occur over time.

Vegetation Management Recommendations

Recommendation 1: Use native plant species, consistent with the native plant communities of the Blufflands and Rochester Plateau subsections to vegetate areas disturbed by erosion, overuse, and construction, in windbreak plantings, and in the landscaping of parking areas and waysides.

Recommendation 2: Avoid planting and try to eradicate any of the plants listed below with specific attention to those that have an asterisk (*); all of these plants are aggressive introduced species which will crowd out native species.

Aggressive Introduced Species (exotics)

<i>Carduus nutans</i> * (Musk Thistle)	<i>Elaeagnus angustifolia</i> (Russian Olive)
<i>Centaurea maculosa</i> * (Spotted Knapweed)	<i>Elaeagnus umbellata</i> (Autumn Olive)
<i>Cirsium arvense</i> * (Canada Thistle)	<i>Glechoma hederacea</i> (Creeping Charlie)
<i>Cirsium vulgare</i> * (Bull Thistle)	<i>Hieracium aurantiacum</i> (Orange Hawkweed)
<i>Euphorbia esula</i> * (Leafy Spurge)	<i>Lonicera tatarica</i> (Tartarian Honeysuckle)
<i>Lythrum salarica</i> * (Purple Loosestrife)	<i>Lotus corniculatus</i> * (Birdsfoot Trefoil)
<i>Rhamnus cathartica</i> * (Common Buckthorn)	<i>Melilotus alba</i> (White Sweet Clover)
<i>Robinia pseudoacacia</i> * (Black Locust)	<i>Melilotus officinalis</i> (Yellow Sweet Clover)
<i>Sonchus arvensis</i> * (Sow Thistle)	<i>Morus alba</i> (Mulberry)
<i>Acer ginnala</i> (Amur Maple)	<i>Phalaris arundinacea</i> (Reed Canary Grass)
<i>Acer platanoides</i> (Norway Maple)	<i>Plantago major</i> (Common Plantain)
<i>Berberis thunbergii</i> (Japanese Barberry)	<i>Poa compressa</i> (Canada Bluegrass)
<i>Bromus inermis</i> (Smooth Brome)	<i>Poa pratensis</i> (Kentucky Bluegrass)
<i>Cannabis sativa</i> (Hemp or Marijuana)	<i>Rose multiflora</i> (Multiflora Rose)
<i>Chrysanthemum leucanthemum</i> (Ox-eye Daisy)	<i>Tanacetum vulgare</i> (Common Tansy)
<i>Cichorium intybus</i> (Chicory)	<i>Taraxacum officinale</i> (Dandelion)
<i>Convolvulus arvensis</i> (Field Bindweed)	<i>Ulmus pumila</i> (Siberian Elm)
<i>Coronilla varia</i> * (Crownvetch)	<i>Verbascum thapsus</i> (Common Mullein)
<i>Daucus carota</i> (Queen Anne's Lace)	<i>Vinca minor</i> (Common Periwinkle)

Recommendation 3: Use new plantings of native species to screen unsightly areas, deter encroachment by adjoining landowners, deter trespassing by trail users, and help retain snow cover along the trail treadway as well as improve the quality of the trail corridor.

Recommendation 4: Restore, or if necessary recreate native grassland, woodland, or wetland communities along the trail to minimize maintenance, minimize the use of pesticides, control noxious weeds, and enhance natural species abundance and biodiversity for enhanced user experience.

Recommendation 5: A wetland mitigation plan will be prepared to address any identified impacted wetlands.

Recommendation 6: Continue efforts to manage the full width of the DNR-owned corridor for appropriate native vegetation in agricultural areas.

Recommendation 7: Develop a detailed resource management plan with mile-by-mile description of desired future conditions, outlines of vegetation management practices to attain these conditions, and opportunities for cooperative projects. A more detailed inventory of native plant communities and species found within the right-of-way will be needed.

Recommendation 8: Minimize disturbance to soils and native plant communities during construction of the trail. Protection of native plant communities is a key component of efforts to protect Minnesota's natural biodiversity.

Partnerships and Cooperative Projects on the Trail and Beyond DNR Boundaries

The DNR cannot hope to undertake these ambitious projects single-handed. DNR can work with interested groups and landowners to increase the ecological function of the corridor. In addition, the ecological benefits of the narrow strip of DNR ownership could be magnified by cooperative projects beyond DNR boundaries.

- An Adopt-A-Trail program could be initiated that includes projects that can improve the trail corridor, such as exotics control, or native species restoration. Volunteer efforts such as these need to be encouraged, supported, recognized, and rewarded.
- DNR can work with nearby schools on enhancement projects.

Wildlife

In addition to the many species that are commonly seen throughout Minnesota, there are some uncommon or even unique creatures in this part of the state. Observant visitors may catch sight of wild turkeys and turkey vultures. Occasionally timber rattlesnakes, a threatened species, are seen on rock outcrops and in the river bottoms. Blanding's turtles and wood turtles are present in Goodhue County. Although usually associated with their northern nesting areas, bald eagles are frequently spotted near the Mississippi during seasons of migration. Some 50 - 75 eagles winter in the vicinity of Wabasha, near the open water maintained by the inflowing Chippewa River.

Mammals

As you move north in Minnesota, the species of mammals change in diversity. For example, there are some mammals whose range includes only northern Minnesota and neighboring Canada. By the same token, species found in southeastern Minnesota are included in a range that extends further south and to some extent east and west. While some species range throughout the state, others are at their northern limits in southeastern Minnesota.

The state of Minnesota recognizes 58 nongame mammals in the state. These species include those that generally are not hunted, are protected by law or may be killed throughout the year. Of these 58 species, 34 have been documented in southeastern Minnesota. Another six may be present, but no documentation exists. Ten species (Virginia opossum, least shrew, eastern mole, eastern pipistrelle, spotted skunk, southern flying squirrel, plains pocket gopher, plains pocket mouse, western harvest mouse and the pine vole) are at their northern limits in southeastern Minnesota.

Abundant or common nongame mammals likely to be seen by trail users include woodchucks, thirteen-lined ground squirrels, eastern chipmunks, northern pocket gophers and striped skunks.

Of the 20 species for which the DNR has set hunting or trapping seasons, most are found in southeastern Minnesota. White tailed deer, red and gray fox, coyote, racoon, muskrat, river otter, beaver, fox and gray squirrels, mink, and eastern cottontail rabbits are common.

Birds

Commonly seen birds include sparrows, grackles, starlings, crows, robins, meadowlarks, red-winged blackbirds, mourning doves, house wrens, bobolinks, cardinals, and swallows. Waterfowl, including mallards, blue-winged teals and wood ducks are common during the summer months and seasons of migration. The Mississippi is heavily used by migrating waterfowl, including such nongame species as whistling swans, great blue herons, and white common egrets. While the ring-necked pheasant will occasionally be seen, the ruffed grouse is the most plentiful upland game bird. Frequently observed raptors include the great horned owl, American kestrel, and the red-tailed hawk. Red-shouldered hawks, ospreys, and marsh hawks have been spotted on occasion. As noted earlier, wild turkeys are a special feature of this area of the state.

Of 197 breeding species counted statewide, 104 are found in southeastern Minnesota. While not all are abundant or common, turkey vultures, red-tailed hawks, belted kingfishers, red-bellied woodpeckers, rough-winged swallows, white breasted nuthatches, house wrens, cardinals, indigo buntings, and field sparrows reach their highest relative abundance in this area of the state. The blue-winged warbler, Bell's vireo, and blue-gray gnatcatcher are only found in southeastern Minnesota. The loggerhead shrike, a threatened species once common and widely distributed across the United States, has recently seen drastic declines in its range. It inhabits dry upland territory, nesting in shelterbelts, hedgerows or farmstead trees. As a predator bird, with the unusual behavior of impaling prey such as mice or frogs on thorns or barbed wire, its decline may be due to environmental contamination.

Reptiles and Amphibians

While the diversity of mammal species changes or even increases when moving into northern Minnesota, the diversity of reptiles and amphibians increases in the state's southeastern region. Of 45 species that occur statewide, 37 species are found here. Warmer temperatures and higher annual precipitation contribute to this increase, as does the unique habitat requirements found in this region of the state.

Turtles include the common snapping turtle, western painted turtle, and eastern spiny softshell turtle, (a species that occurs only in southeastern Minnesota). The Blanding's turtle and the wood turtle are present, but only occasionally seen. Both species are classified as threatened. Additional species, not usually seen, include the smooth softshell, map turtle, and false map turtle.

Snakes and lizards are especially compatible with the environment of southeastern Minnesota. Two species of lizards are common (northern prairie skink and six-lined racerunner). The region boasts the greatest number of snake species in Minnesota. The eastern plains garter snake, eastern garter snake, and eastern hognose snake are commonly seen. Of thirteen other species found in this region, three are not found in any other part of the state. These three species are the timber rattlesnake and eastern massasauga, Minnesota's only venomous snakes, and the black rat snake. Timber rattlesnakes are classified as a threatened species in Minnesota, the massasauga is endangered and the rat snake is special concern.

Rare Animal Species

A search of the Minnesota Natural Heritage data base indicated the endangered, threatened or special concern species that have been documented within one mile of the trail corridor area.

An occurrence of *Lanius ludovicianus* (loggerhead shrike) has been documented near the community of Goodhue. An occurrence of a red shouldered hawk has also been documented within a one mile corridor of the trail. A bald eagle nesting area has been documented in the Hay Creek Unit.

Pipistrellus subflavus (eastern pipistrelle) and *Myotis septentrionalis* (northern myotis) were observed in hibernation at a site within one mile of the trail corridor.

A survey of the mussels in the Zumbro River watershed documented the presence of *Venustaconcha ellipsiformis* (ellipse mussel), a threatened species and *Lasmigona compressa* (creek heelsplitter mussel), a species of special concern. *Lampera appendix* (American brook lamprey) was documented in the Middle Fork of Zumbro River near Pine Island.

Recommendations

Recommendation 1: Work with citizens and sporting groups for habitat improvement within the trail right of way.

Recommendation 2: Implementing the recommendations for vegetation management will have a positive impact on wildlife as habitat will be created.

Recommendation 3: Trail construction at water crossings should be timed so that it does not coincide with spawning or migration of fish species. Silt plumes that may result can negatively affect fish and habitat, or native mussel species.

Recommendation 4: For timber rattlesnakes, protecting rocky outcroppings from disturbance is important. They use both woodland and grassland for habitat at various time of year, but use limestone cracks and crevices for hibernation and sunning. Not all rock outcroppings are den sites, however, these are areas with higher potential. Of the region through which the trail is proposed, the Hay Creek area in Goodhue County has historical records of rattlesnake sightings, so this would be the area to keep in mind management/construction considerations for the trail.

For south or west facing rocky areas, it is important to try to maintain 70%-75% open canopy. Snakes, especially gravid (pregnant) females, need open areas for sunning as this helps them thermoregulate and, for gravid females, incubate young. While it isn't known for sure if this strategy works, maintaining open sunning habitat off the trail with a shrub or vegetative buffer between open areas and the trail to minimize snake usage of trails and potential human-snake encounters is being tried. Since many of the rocky areas occur on bluff prairies, it is important to maintain the integrity of these prairies using various management techniques.

Keeping these areas from getting totally encroached by sumac, cedar and other vegetation is important. However, total removal of all woody vegetation isn't necessary for timber rattlesnakes as they use cedars and other trees for cover during excessive heat.

The timing of management/construction activities can be critical to areas with known rattlesnake populations. Burning should not be conducted after snakes have emerged or before they ingress. Rule of thumb for burning is to burn before April 15th and after October 1st. As for other management activity such as brush removal, it is recommended during the early spring and late fall and winter, again considering the above mentioned dates. A caution regarding use of herbicide in stumps - stumps are commonly a refuge for timber rattlesnakes for short periods of time when they are actively hunting for food. To specifically treat stumps might force snakes to not use them which could reduce their success in hunting or their escaping from predators.

Recommendation 5: Both bat species (pipistrelle and myotis) are predominantly solitary species. The eastern pipistrelle is rarely observed in man-made structures whereas the northern myotis will roost in buildings, bridges, culverts and other structures on occasion. Both species use tree foliage, hollow trees and loose bark for roosting. In wooded areas with either species, it is important to keep large or older trees whose bark usually gets shaggy with age – example is silver maple. Also, to keep snags and hollow trees for potential roosting areas.

Both species use caves for roosting and overwintering. Any cave openings should be protected from human disturbance particularly during the winter. Bats are easily aroused during the winter months which is very physically detrimental on their fat reserves.

Recommendation 6: Red-shouldered hawks are predominantly found in mature hardwood or mixed hardwood and conifer stands. They require a mature canopy structure with large low-branching hardwoods for nesting and water of some sort in the near vicinity. There doesn't seem to be a tree species preference for red-shouldered hawks, however, it is important to maintain large trees with low branches for crotch nesting. Canopy cover is critical to retaining nesting birds. As the canopy becomes more open, red-shouldered hawks are often out-competed by red-tailed hawks. Canopy cover should not be reduced below 70%.

Recommendation 7: In areas with active bald eagle nests, human activity should be restricted from mid February through June 1st within 350' of a nest. This is the most critical time for egg laying, incubation and rearing of the young. If there is a high level of human disturbance, eagles have a greater probability of abandoning a nest. In areas with known nests, resting spots, overlooks and interpretive kiosks where walkers and bikers might pause on the trail should not be located on this stretch of the trail.

Recommendation 8: The following management actions are of benefit to loggerhead shrikes and should be used to foster habitat for the birds. Leave fences standing for shrikes to use for perching and impaling food. Keep brush from encroaching upon grasslands. Maintain existing pastures and grasslands. Minimize use of pesticides.

Fish

Regional Overview

The fisheries resources in southeastern Minnesota include a variety of warmwater fishes indigenous to the Mississippi and the Zumbro, Cannon, and Root River watersheds. In addition, there are over 600 miles of coldwater trout streams in the region.

Warmwater fish are those that have adapted to water temperatures above 70 degrees F. There are over 150 species in the Mississippi River, our largest warmwater stream. The most abundant include gizzard shad, carp, emerald shiner, and bluegill. Other common gamefish include northern pike, largemouth bass, walleye, sauger, and crappies. Game fish found in the Zumbro, Cannon and Root River include northern pike, smallmouth bass, crappie, catfish, walleye and sauger.

As one of only two major trout stream areas in the state, southeastern Minnesota is well known for its many miles of coldwater streams. In contrast to trout streams along the North Shore of Lake Superior, most southeast streams rise from coldwater springs and remain cool through the entire summer. In addition to being dependent upon cool water (less than 70 degrees F), trout require well oxygenated water which is free of pollutants and has a healthy invertebrate population.

Trout species present include brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout. Brook trout are the only native trout to southeast Minnesota. Brown trout were introduced to North America from Europe. Brook trout require clear, very cold streams with excellent water quality. They have historically declined in southeast Minnesota as a result of habitat degradation and competition from brown trout. Brown trout tolerate warmer, more turbid waters than brook trout and have successfully established wild populations throughout the area. Brook trout are presently limited to the headwater areas of many streams and small spring tributaries. Rainbow trout are stocked in heavily fished waters, but do not reproduce.

Trout Habitat and Stream Improvement

Post European agriculture and urban development have degraded southeastern streams. Deforestation and conversion of lands to agricultural use led to less stable stream flow patterns, increased sedimentation, deterioration in water quality, and severe bank erosion. By the early part of the twentieth century, deteriorated fish habitat was common. Largely through the efforts of Thaddeus Surber, a biologist with the Minnesota Game and Fish Department, the situation began to improve. Beginning in 1920, Surber made extensive field investigations of stream conditions in relation to fish requirements and recommended fish management procedures. He suggested greatly improved management of stream valleys to counteract the effects of erosion and advised restocking of trout where conditions were suitable.

Fish habitat has been improved since 1920 and continues to be an important fisheries management tool to the present. Trout stream habitat improvement began in the 1970s and focused on “instream” improvements to narrow and deepen channels, restore riffle-pool complexes, and add adult fish cover. Fisheries managers are expanding stream habitat management to include land use management within watersheds for longer term solutions to habitat degradation.

Fisheries Resources Along the Trail

Hay Creek: A Designated Trout Stream

Hay Creek, a designated trout stream, is approximately 15 miles long. According to the DNR, Division of Fisheries, “Hay Creek is considered one of the best trout streams in close proximity to the Twin Cities Metropolitan area,...” (Department of Natural Resources, Stream Management Plan). At one time, native brook trout were present in the stream. Currently brown trout are the only species of trout present.

Anglers have good access to Hay Creek for two reasons. One, there is publicly owned land adjacent to the creek in the lower stretch which is located in the Hay Creek Unit of the Richard J. Dorner Memorial Hardwood State Forest. Secondly, easements for angler access have been purchased in the upper section. Anglers appreciate the quiet and remote experience available in some sections where easements are located. Currently 4.8 miles of stream have easements for fishing access. See the map on page 76.

Adjacent Land Use

Land adjacent to Hay Creek in the lower three miles of the valley is marshy. Adjacent vegetation along the next three miles is floodplain forest and willow. Agriculture is the predominant land use along the upper six miles. The watershed is predominately agriculture, but the stream corridor is wooded.

Past Management Efforts

Hay Creek has been managed since the 1950s. Management techniques used in the past include habitat improvement projects, experimental regulations, acquisition, and stocking. Several habitat improvement projects have occurred over the years affecting seven miles of stream. See the map on page 76. Habitat improvement projects include erosion control, fencing, planting, fencing the spring which is the source of Hay Creek, and instream improvements. Evaluation of these effort proved they were successful, resulting in an increase in trout abundance and biomass.

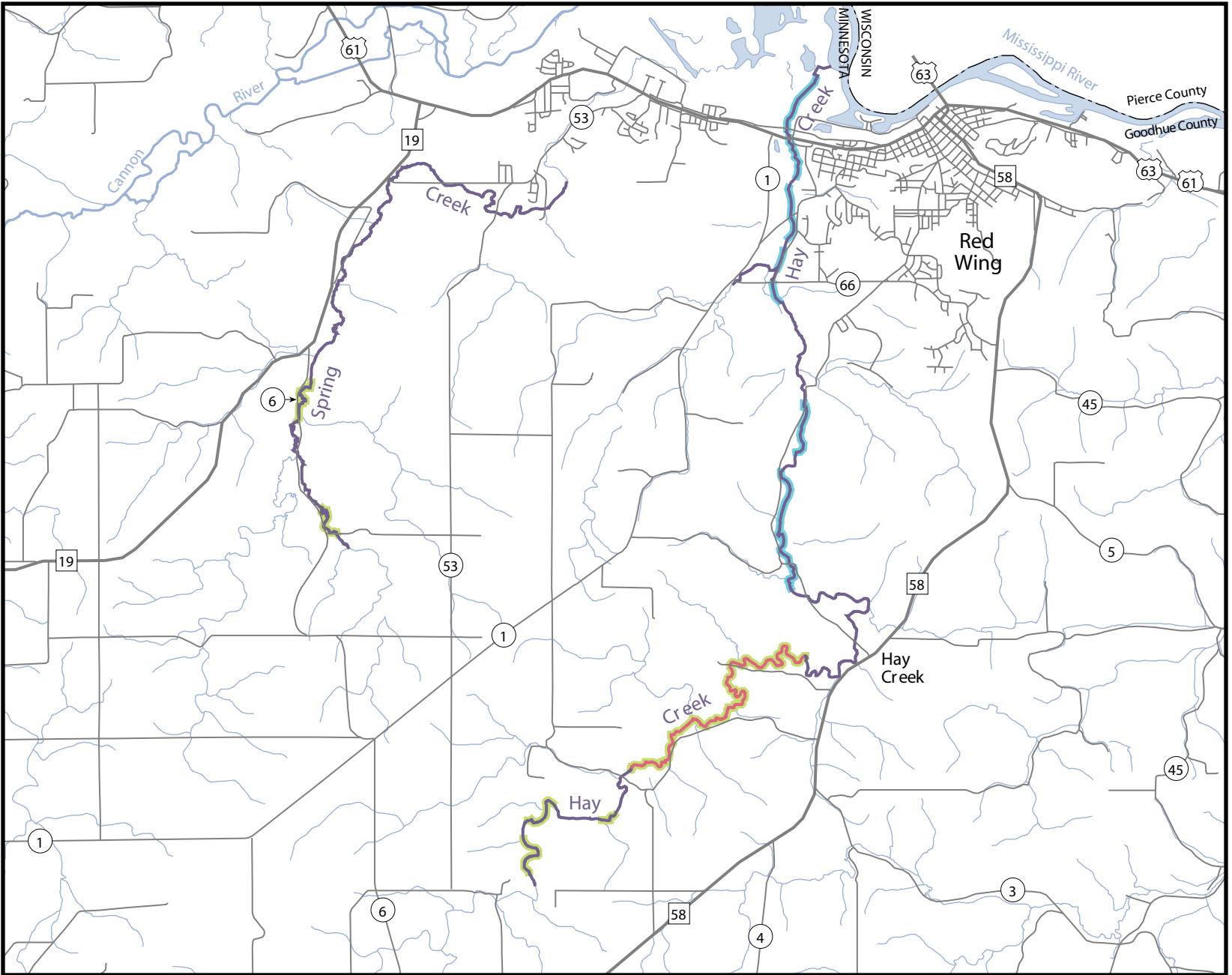
Historically, Hay Creek has been stocked with brown trout, rainbow trout and brook trout. Trout have not been stocked since 1989 since natural reproduction is excellent.

Experimental catch and release regulations were implemented where the habitat improvement projects occurred. The regulations proved successful, increasing the abundance of trout and decreasing fishing pressure. Experimental regulations changed to special regulations beginning in the 2000 angling season. Catch and release and use of barbless hooks are required on the section of stream identified as “habitat improvement” on the map on page 76.

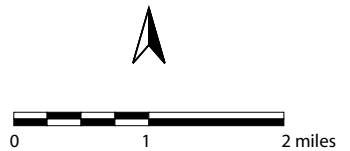
Interrelationship of Hay Creek and the Goodhue Pioneer State Trail

The first segment of Goodhue Pioneer State Trail (Red Wing to Hay Creek) will parallel Hay Creek and cross it two times. The recommendations in the Resource Management Section address how impact of trail development to this section of Hay Creek can be minimized.

One of the alternatives for future trail alignment in the next segment (Hay Creek to Goodhue) is to



- Designated trout stream
- Habitat improvement
- Streamside easement
- Streamside public land



Hay Creek: A Designated Trout Stream

Minnesota DNR Trout Fishing Access in Southeastern Minnesota

use the two pieces of state owned abandoned railroad grade. In order to maintain the solitary remote fishing experience that exists along this segment of Hay Creek, it is recommended that an alternative trail route around this segment be identified and secured. If no route is feasible and the grade is used, techniques to minimize the impact on the trout fishing experience should be identified and implemented.

Opportunities and Concerns

The location of the trail near fishing opportunities creates opportunities and management concerns. The following list of benefits and concerns should be considered in the future development and management of the Goodhue Pioneer State Trail.

Potential Benefits:

1. The trail will provide improved access to the creek and allow greater freedom of movement for anglers with disabilities. Development of angler “fishing pads” (level areas for shorefishing) could offer an additional angling opportunity not present on most southeast streams.
2. The trail may generate increased fishing pressure within these areas resulting in increased number of angler trips and associated benefits (aesthetic and economic).
3. Water quality may improve in areas where the trail corridor lies adjacent to the stream, since the trail will provide an additional vegetative buffer between the stream and agricultural fields.
4. The trail development offers the opportunity for the development of an interpretive display on southeast fishery resources, stream habitat improvement and watershed management.

Potential Concerns:

1. Development of the trail may result in loss of aesthetic value to trout anglers. Many trout anglers prefer a solitary fishing experience and the presence of trail traffic may detract from angling quality. The area presently provides a relatively isolated fishing experience and perception of this may change with the trail development.
2. Increased fishing pressure associated with ease of access may put additional stress on trout populations requiring more intensive fisheries management.
3. Bike trail location and design may hinder access to the easement corridor by fishery maintenance vehicles and heavy equipment.
4. Landowners in the valley may restrict public access in private stream reaches as a result of trail development.

North Fork of the Zumbro River

The North Fork of the Zumbro River begins in southeastern Rice County and flows generally eastward through Goodhue County and the communities of Kenyon, Wanamingo, Zumbrota and Mazeppa, joining the Zumbro River between Zumbrota and Zumbro Falls.

Stream surveys conducted by the DNR Fisheries Division have identified the fish habitat as marginal in the upper reaches of the North Fork of the Zumbro between Kenyon and Zumbrota. The streambank along this stretch is eroded. Adjacent land use is predominately cropland and pasture land. The stream bottom consists of sand, gravel and mud. The North Fork had a history of pollution. The sources of pollution are now controlled, but gamefish are not found above the dam at Mazeppa.

The DNR Division of Fisheries sampled six locations of the North Fork of the Zumbro in 1993. Species present in the upper stretch as indicated by the sampling effort at two locations were: stoneroller sp., redbelly dace, hornyhead chub, common shiner, blacknose shiner, southern redbelly dace, bluntnose fathead minnow, blacknose dace, creek chub, white sucker, and mud darter.

Species present during the sampling effort at four locations between the mouth of the North Fork and Wanamingo revealed the following species present: brown trout, stoneroller sp., hornyhead chub, emerald shiner, river shiner, common shiner, bigmouth shiner, fathead minnow, blacknose dace, longnose dace, creek chub, white sucker, northern hog sucker, silver redhorse, golden redhorse, shorthead redhorse, stonecat, fantail darter, and Johnny darter.

Good smallmouth bass habitat has been identified downstream from Zumbrota and near Forest Mills.

Gamefish, including smallmouth bass, walleye, sauger and white bass, tend to be found below Mazeppa. Small mouth bass and channel catfish were reintroduced above the dam in 1982. This effort was not successful.

The Mazeppa dam has been identified as a limiting factor to the fishery of the North Fork of the Zumbro. Removal of the dam is scheduled for 2001. This action should greatly improve the fishery as it would provide access to the North Fork for fish from the Zumbro and Mississippi rivers.

The community of Mazeppa would like to promote fishing as a recreation activity in the community when the dam comes out.

Recommendations

Recommendation 1: Identify and pursue alternative alignments to using the abandoned railroad grade through the upper Hay Creek Valley.

Recommendation 2: The trail should be designed to minimize angler and trail user contact by using available vegetation and land features as visual buffers. Plantings to create screening could also be used. Careful consideration should be given to the impact of interpretive displays which tend to stop traffic and concentrate trail users. Displays may serve to educate trail users. Their location should be considered carefully. Increasing the number of people seen by anglers desiring a solitary experience has a negative impact on aesthetic quality for anglers. The location of the interpretive displays and their development should be a cooperative effort by Fisheries and Trails and Waterways in order to ensure that mutual objectives are fulfilled.

Recommendation 3: Continued monitoring of the fishery should document trends in fish population.

Recommendation 4: Recreational surveys should be conducted of anglers to determine their attitudes. A survey of anglers using Camp Creek adjacent to the Harmony Preston Valley Trail may provide useful information.

Recommendation 5: Trails and Waterways will work cooperatively with the Division of Fisheries in the design of the trail to ensure both Fisheries needs and trail user needs are met.

Recommendation 6: Trail construction at water crossings should be timed so that it does not coincide with spawning or migration of fish species. Silt plumes that may result can negatively affect fish and habitat, or native mussel species.

Recommendation 7: Restoration of native aquatic vegetation should be considered and planned with the Division of Fisheries for any stream crossing or shore disturbance.

Recommendation 8: Trails and Waterways will contact the Division of Fisheries and coordinate any major trail maintenance projects that cross streams or run along the streams with Division of Fisheries habitat improvement projects in order to help minimize damage to the site and disruption to users.

Historical Resources

Prehistory

Human habitation of southeastern Minnesota is thousands of years old. Many centuries before the arrival of the first Europeans, the Mississippi Valley served as a gateway to Minnesota for a variety of American Indian cultures. Beginning about 8000 B.C., these early people entered this area of the state in search of game. Very little is known about these first inhabitants other than they were nomadic hunters and lived in small groups. While later cultures (beginning about 5000 B.C.) continued to hunt for game, they also depended on the gathering of such food sources as acorns, wild plums and cherries. Fish was an additional important food source. Group populations remained small. However, they were semi-nomadic and shifted their camps seasonally to use available resources.

About 1000 B.C. the Woodland Culture appeared in southeastern Minnesota. This cultural tradition was marked by the use of pottery and the burial of the dead in earth mounds. People continued to live in small groups until the use of wild rice became common, thought to be around 800 A.D. This new food source caused a surge in population and the establishment of permanent villages.

The northward spread of the Mississippian Culture around 1000 A.D. brought a new way of life to southern Minnesota. Although still dependent on hunting and fishing, agriculture dominated this culture. A major center for this new culture was the lower Illinois Valley and to the east of present day St. Louis.

These 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. Refined pottery and the continued use of burial mounds also characterized this culture.

While a major concentration of villages was located near Red Wing, around the confluence of the Mississippi and the Cannon rivers, this important culture spread into other river valleys as well. Earthworks and habitation sites have been found in the Root River Valley notably near Yucatan in western Houston County.

Numerous prehistoric sites have been recorded. It is likely that these sites represent only a small percentage of the sites in this area. Since a portion of the trail system will be located in an area used by prehistoric people, an archaeological component of the interpretive program would be appropriate. Further survey work and a method of safeguarding sites are needed.

Historic American Indian Culture

American Indian culture was continuously present in southeastern Minnesota from prehistoric times until well into the nineteenth century. Today, members of a small band still live at Prairie Island, one of four Dakota communities in the state.

Tradition relates that a wandering band of Hurons and Ottawas stayed on Prairie Island for a short time. They had been driven out of eastern Ontario by the Iroquois in the 1640s. A quarrel with the Dakota, who were living around Lake Mille Lacs and along the Mississippi above St. Anthony Falls at that time, forced them to move eastward into Wisconsin.

Forced from their original northern homeland by the Ojibwe, the Dakota were well established in southeastern Minnesota by the 1770s. A large band made its headquarters near the present city of Winona. This band - together with other bands in the areas of St. Paul, Red Wing, and the lower Chippewa River in Wisconsin - comprised a major tribal division called the Mdewakanton. Bands of the small Wahpekute division occupied the upper reaches of the Cannon and Zumbro rivers and parts of the Root River Valley.

The Woodland Dakota had customs and habits common to both forest and prairie. They cultivated crops, but were also skilled hunters. While their arrows were similar to those used on the Plains, their bow were patterned after those used in the East.

While there were several outstanding leaders among the Dakota in Southeastern Minnesota, Wabasha was the most well known. Born around 1725, Wabasha was a strong supporter of British trading interest during the American Revolution. He used his influence to oppose American colonists, whom he perceived as being interested in only taking more land. His descendants adopted his name and maintained his tradition of strong leadership for three generations.

Some areas of southeastern Minnesota were frequented by such other tribes as the Fox, Sauk, and Winnebago.

In 1837, the Dakota relinquished their claims to the lands east of the Mississippi. The 1851 Treaties of Mendota and Traverse de Sioux took all of southeastern Minnesota away from them. Two years later, the Dakota reluctantly left their homes along the Mississippi and other area rivers and moved to a narrow reservation of land along the Minnesota River Valley. Additional pressure and abuse by the government and some of its officials led to war with the white settlers in 1862. At the end of the war, they were banished to the Dakota Plains.

Settlement

Settlement of the area by Europeans began in earnest in the 1850s. The search for farmland was the motivating factor. Wheat was the primary crop initially. Flour mills and gristmills were erected along the Zumbro River. Settlement began along the rivers, and branched out as a transportation system of roads and railroads were developed.

Roads were built to facilitate travel by the territorial government. An early example is the Dubuque Trail, which connected Dubuque, Iowa to St. Paul. This road was used by the M.O. Walker Stage line and settlers to transport goods and people.

Railroad History

The Duluth Red Wing & Southern Railroad Company laid tracks from Red Wing to Zumbrota in 1889. They added a spur from Claybank to Clay Pits in 1893. Both of these properties were acquired by the Chicago Great Western Railway Company (CGW) in 1901 but were operated under the Wisconsin Minnesota & Pacific Railway Company (WM&P), of which CGW had acquired stock in 1899. During the period of 1902-1903, CGW built a line from Rochester to Zumbrota and in 1911, built a spur from Bellechester Junction to Bellechester. The spurs were built to gain access to the rich clay deposits that were found in the area. The clay was then hauled back to Red Wing and used in the manufacturing of stoneware. Eventually, the railroads declined and tracks were abandoned. The Claybank to Clay Pits spur was removed in 1936 and the Bellechester Junction to Bellechester spur was removed in 1952. Between 1964 and 1965, the tracks between Red Wing and Pine Island were phased out due to the enormous cost of repairing the tracks. March 5, 1965 was the last time a train rumbled over those tracks.

Frequent and severe flooding are a part of the history of the region and the Zumbro valley. Historic land use practices intensified the flooding problem. Marginal land was plowed and slopes used for cropland and pastures. Forested land was cut for timber and to create additional pasture land. Loss of the vegetation resulted in severe erosion and siltation. Eroded gullies were created and streams water filled with sediment.

Richard J. Dorer, who worked for the Department of Conservation from 1938 - 1958, is credited with restoring and conserving the resources of this region. He worked to restore vegetation through planting programs the implementation of appropriate land use practices. He worked to establish a state forest in southeastern Minnesota, the purpose of which is to protect woodland, valleys and streams of the region. The Memorial Hardwood State Forest was legislatively authorized in 1961 and renamed the Richard J. Dorer Memorial Forest in 1976. The first section of trail at the Red Wing end lies within the Dorer Memorial Hardwood Forest.

Recommendation 1: Interpret the historical and cultural features along the trail. (See Information and Education Section).

Recommendation 2: Locate and design the trail to minimize impact to cultural sites.

Socioeconomic Resources

Population Growth

Minnesota's population grew by 406,599 people between the years of 1990 and 1998. This population expansion made Minnesota the fastest growing state in the Midwest. Although Goodhue County did experience growth during the same time period, it wasn't at the same rate as the state average. The state average was 9.3% while Goodhue County increased by 6.3%.

Goodhue, MN	1994	1995	1996	1997	1998
Population	41,937	42,146	42,320	42,728	43,130

Source: Bureau of Economic Analysis, June 2000

However, it does reflect the overall change in the growth rate of the rural areas of Minnesota. Differing from the 1980's, where there was a loss in population in rural areas, the 1990's saw an increase in rural population by 0.97%. Goodhue County also experienced a 9.2% increase in household growth during the eight year time period.

Population Density

According to the 1990 census, the population density of Goodhue County is 53.65 persons per square mile. Red Wing, at the northern end of the trail, is the largest population center along the trail with an approximate population of 15,500. The rest of the towns along the trail range in population from 100 to 2500. Pine Island, at the southern end of the trail, is experiencing a growth in population.

Population Age and Diversity

<i>1990 Census Data</i>	Total Population	Under 5 years old	5-18 years	18-65 years	over 65 years
Goodhue County	40,690	3,003 7.4%	8,511 20.9%	22,711 55.8%	6,465 15.9%

Source: US Census Bureau 1990

Regional Economic Activity

The towns along the Goodhue Pioneer State Trail still support agriculture related businesses, stemming from their rural heritage, as well as many other industries. According to the Minnesota Department of Economic Security, the trade industry is the largest employer in Goodhue County with retail trade employing significantly more than the wholesale trade industry. The service industry, which includes lodging, auto repair, business services and social services to name a few, comes in as the second largest employer in the county. The construction industry is the third largest employer in the county followed in order by the following industries: finance, insurance & real estate, manufacturing, transportation & public utilities and agriculture.

Economic Impact of Tourism

In 1997, there were approximately 177,100 tourism-related jobs in Minnesota, which was up 8.7% from 1996. Also, for every 100 jobs created directly by the tourism industry, there are an additional 60 jobs created indirectly elsewhere in the state's economy. Tourism, according to 1997 data sources, generated \$4 billion in wages and salaries and \$1.2 billion in tax receipts. The annual economic impact of domestic and international travel and tourism totaled \$10 billion. This information indicates that the tourism and travel industry is a large component of Minnesota's employment sector and overall economy.

Appendices

Appendix 1: Rare Plant Species in Goodhue County

The following list of species is from a report compiled by the Minnesota County Biological Survey, that summarizes the inventory of natural communities and rare species in Goodhue County along with previously known recorded information on rare biological resources.

Rare Plant Species

Bladder pod (*Lesquerella ludoviciana*)
 Black snakeroot (*Sanicula trifoliata*)
 Canadian black snakeroot (*Sanicula canadensis*)
 Club-spur orchid (*Platanthera clavellata*)*
 Dwarf trout lily (*Erythronium propullans*)
 False asphodel (*Tofieldia glutinosa*)*
 Ginseng (*Panax quinquefolium*)
 Glade mallow (*Napaea dioica*)
 Hill's thistle (*Cirsium hillii*)
 Illinois tick-trefoil (*Desmodium illinoense*)
 Kitten-tails (*Besseyia bullii*)
 Maidenhair spleenwort (*Asplenium trichomanes*)*
 Moschatel (*Adoxa moschatellina*)
 Ovate-leaved skullcap (*Scutellaria ovata* var. *versicola*)*
 Prairie bush clover (*Lespedeza leptostachya*)
 Purple rocket (*Iodanthus pinnatifidus*)*
 Rattlesnake-master (*Eryngium yuccifolium*)
 Raven's foot sedge (*Carex crus corvi*)*
 Rock sandwort (*Arenaria dawsonensis*)
 Rough-seeded fameflower (*Talinum rugospermum*)*
 Sessile-flowered cress (*Rorippa sessiliflora*)*
 Small white lady's-slipper (*Cypripedium candidum*)
 Snow trillium (*Trillium nivale*)
 Snowy campion (*Silene nivea*)*
 Squirrel corn (*Dicentra canadensis*)
 Sterile sedge (*Carex sterilis*)
 Tubercled rein-orchid (*Platanthera flava* var. *herbiola*)*
 Tuberous Indian-plantain (*Cacalia plantaginea*)*
 Twinleaf (*Jeffersonia diphylla*)
 Valerian (*Valeriana edulis* ssp. *ciliata*)
 Virginia bartonia (*Bartonia virginica*)*
 Western prairie fringed orchid (*Platanthera praeclara*)*
 Wild indigo (*Baptisia bracteata* var. *glabrescens*)

Minnesota Legal Status

endangered
 special concern
 special concern
 special concern
 endangered
 special concern
 special concern
 endangered
 special concern
 threatened
 endangered
 threatened
 special concern
 special concern
 endangered
 proposed special concern
 special concern
 proposed endangered
 special concern
 endangered
 proposed special concern
 special concern
 special concern
 proposed threatened
 special concern
 threatened
 endangered
 special concern
 threatened
 threatened
 proposed endangered
 endangered
 special concern

*Last recorded observation in Goodhue County occurred before 1970.

Appendix 2: Rare Animal Species in Goodhue County

The following list of species is from a report compiled by the Minnesota County Biological Survey, that summarizes the inventory of natural communities and rare species in Goodhue County along with previously known recorded information on rare biological resources.

Rare Animal Species

American brook lamprey (*Lampetra appendix*)
 Bald eagle (*Haliaeetus leucocephalus*)
 Black redhorse (*Moxostoma duquesnei*)
 Blanding's turtle (*Emydoidea blandingii*)
 Blue sucker (*Cycleptus elongatus*)
 Crystal darter (*Ammocrypta asprella*)
 Eastern hognose snake (*Heterodon platyrhinos*)
 Eastern pipistrelle (*Pipistrellus subflavus*)
 Fox snake (*Elaphe vulpina*)
 Gopher snake (*Pituophis melanocleucus*)
 Lake sturgeon (*Acipenser fulvescens*)
 Loggerhead shrike (*Lanius ludovicianus*)
 Milk snake (*Lampropeltis triangulum*)
 Northern myotis (*Myotis septentrionalis*)
 Paddlefish (*Polyodon spathula*)
 Pallid shiner (*Notropis amnis*)*
 Peregrine falcon (*Falco peregrinus*)*
 Prairie vole (*Microtus ochrogaster*)
 Racer (*Coluber constricta*)
 Red-shouldered hawk (*Buteo lineatus*)
 Timber rattlesnake (*Crotalus horridus*)
 Upland sandpiper (*Bartramia longicauda*)
 Wood turtle (*Clemmys insculpta*)

Minnesota Legal Status

special concern
 threatened
 special concern
 threatened
 special concern
 special concern
 special concern
 special concern
 special concern
 special concern
 special concern
 threatened
 special concern
 special concern
 special concern
 endangered
 special concern
 special concern
 special concern
 threatened
 special concern
 threatened

*Last recorded observation in Goodhue County occurred before 1970.