4 Community Systems

As suggested in chapter one, this plan is organized around the three physical layers of a community: community systems, settlement patterns and design character. The subject of this chapter, community systems, can be described as sets of infrastructure that are critical to community health and function. We can think of community systems as multiple networks of infrastructure. Just like individual streets are networked to form one system, other sets of infrastructure form networks to make up the full range of community systems.

Even though infrastructure is usually thought of as something built or what this plan calls "grey infrastructure", the word can also describe unbuilt landscapes and ecological functions called "green infrastructure". Green infrastructure, like grey infrastructure, has limited value and diminished health unless it is networked to form a system. A street that doesn't connect to any others would be ridiculous for the car-owner living on that street. The same is true of an unconnected patch of open space. Eventually both places would be abandoned for more functional environments.

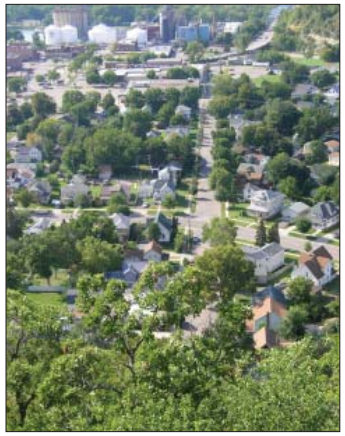
What does all this have to do with Red Wing's comprehensive plan? This plan suggests that Red Wing should critically evaluate its community systems for 1) their presence, 2) their health, and 3) their sustainability. The plan also suggests that Red Wing continually innovate and strengthen these community systems through normal capital investment cycles, agency partnerships and the process of development. The community systems specifically addressed by this chapter are:

Green Infrastructure

- *Surface Water*
- *Ground Water*
- *Greenway Corridors & Patches*
- *Parkland*
- *Urban Forest*
- *Green Roofs*
- *Archaeological Sites and Villages*

Grey Infrastructure

- *Recreation*
- *Transportation*
- *Education*
- *Emergency Services*
- *Drinking Water*
- *Communications*
- *Energy*
- *Waste Management*
- *Stormwater Management*



Community systems play a vital role in supporting life in Red Wing.

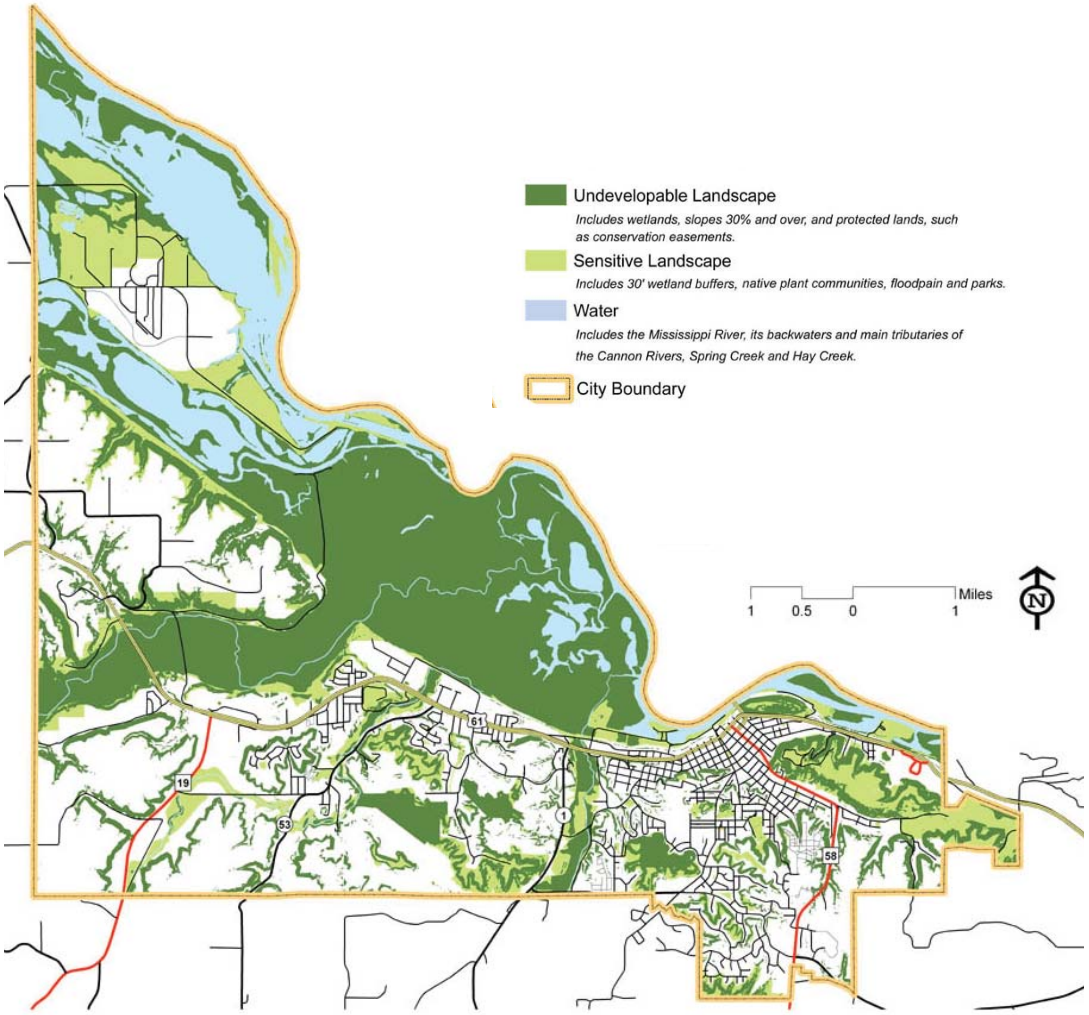


Figure 4-1. Sensitive Landscapes
Defining the City's sensitive landscapes provided a starting point to identify the green infrastructure already present and areas to conserve in the future that contribute a broader green network.

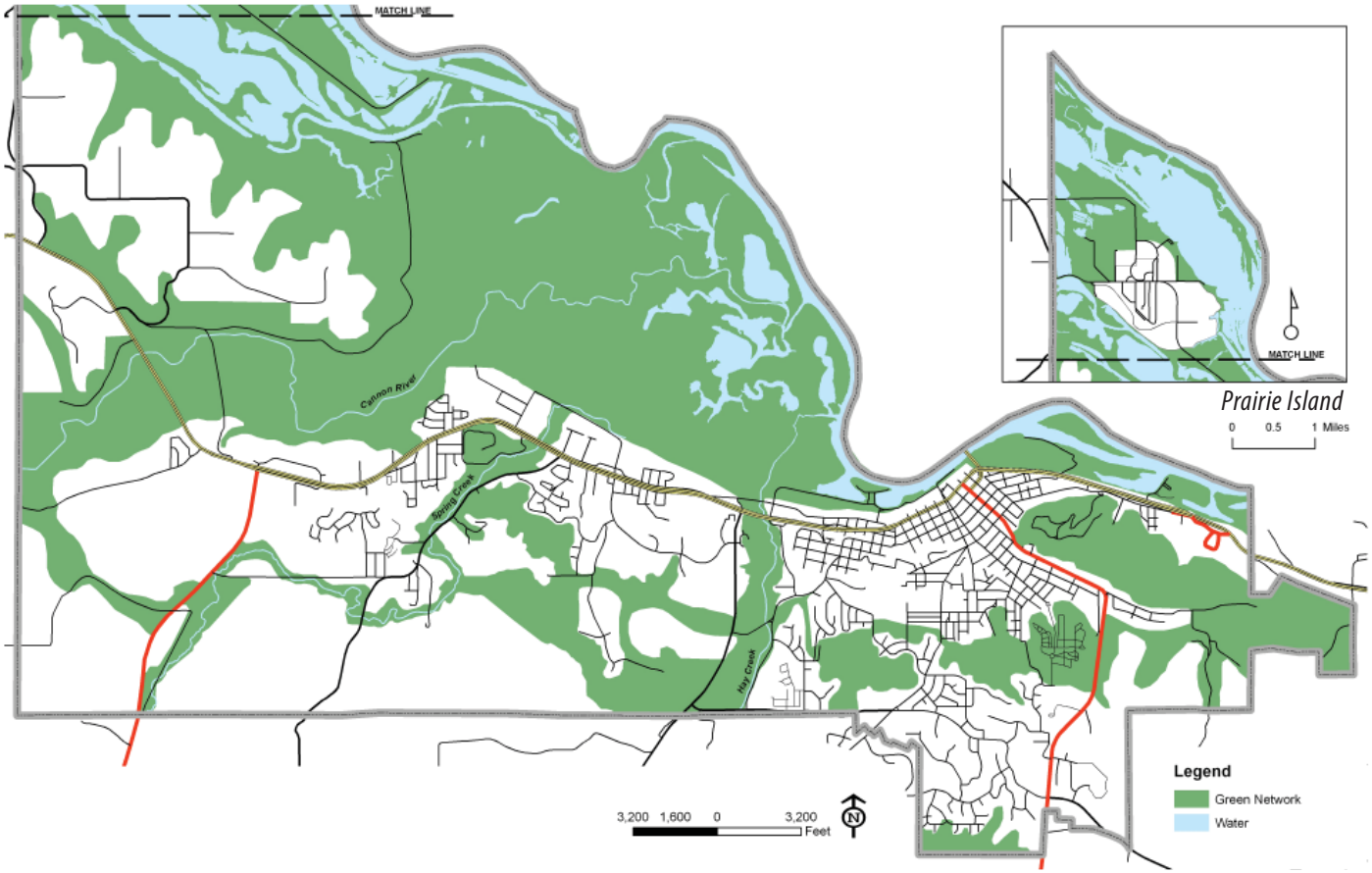
Green Infrastructure

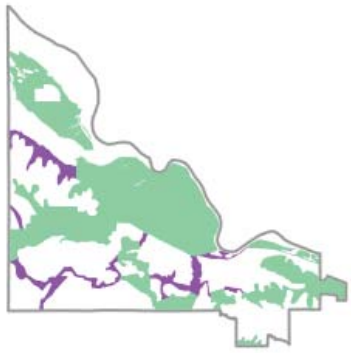
Society's recognition of green infrastructure's importance continually evolves. Until the establishment of Central Park in New York City 150 years ago, there was little appreciation for the impact of parkland on our social and emotional well-being. Until the environmental movement of the last century, our primary interest in surface water was transportation and waste disposal.

Preserving a network of green infrastructure figures prominently in this comprehensive plan because Red Wing cannot realize their vision or claim their identity without its strong presence. Success in regard to green infrastructure means the community must strengthen existing methods and find new approaches to protecting, managing and enjoying open spaces and public waters. This plan envisions Red Wing's green infrastructure as a linked system that maintains ecological integrity, provides public access and preserves scenic character and important views. Figure 4-1 illustrates the natural systems and sensitive landscapes in Red Wing. Preservation of these lands will contribute to the overall health and livability of the city.

Green Network of Corridors & Patches

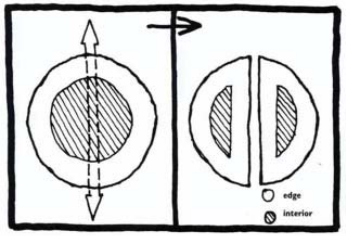
As illustrated in Figure 4-2, a green network is identified, taking advantage of existing natural systems, open



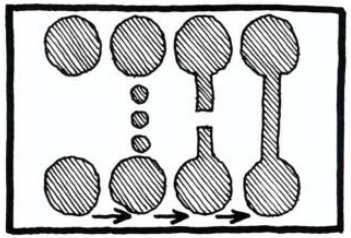


The green network in Red Wing can be defined by a series of patches (turquoise) and corridors (purple) functioning together to enhance the overall ecology of the city.

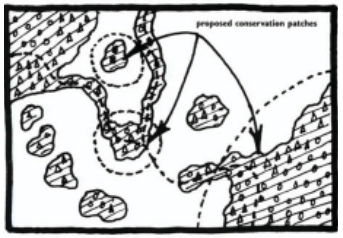
Figure 4-2. The Green Network
The resulting system of green infrastructure identified for Red Wing consists of wetlands, floodways, native plant communities, parks, steep slopes and legally protected lands under conservation easements or land trusts. Greenways linking the various patches of green infrastructure work to enhance the ecologically function of the system.



Larger patches increase the amount of interior, high-quality habitat and associated species.



Creating connectivity between patches provides for movement of interior species.



The green network should include patches and connective greenways that contribute to the overall ecological function of the system.

Diagrams from Landscape Ecology Principles in Landscape Architecture and Land-Use Planning by Dramstad, Olson and Forman (1996).

space, parks and conservation areas. The intent of the green network is to enhance the ecology of Red Wing and establish it as a healthier, more livable and more sustainable place.

Green corridors or greenways are linear park or open spaces that preserve natural resources and/or scenic areas. They can also accommodate movement. This system approach envisions greenways as movement corridors where many types of movement are accommodated, including walkers, bicyclists and animals.

Greenways can also accommodate vehicle movement. In cases where greenways follow right-of-way, roads should be of a "parkway" character with broad rights-of-way, deep structure setbacks, and expansive open space features. In some locations, housing is already built up adjacent to the road that may function as part of the greenway. Here, streetscapes should emphasize narrow pavement widths, eco-friendly stormwater management practices and extensive boulevard tree plantings. Wildlife "underpasses" should also be developed in appropriate places to mitigate the barrier roads present to species movement. Ultimately, these parkways will create pleasant driving and recreational experiences while preserving ecology and enhancing views, thus adding to Red Wing's quality of life.

Like any well-functioning system, a fundamental component of a healthy green infrastructure system is connection. Greenways serve as essential links between larger areas of open space and high-quality habitat, referred to here as "green patches". Providing for greenway corridors that are at least 150 feet in width is appropriate for species movement between patches and contributes to a higher functioning ecological system in the city.

Surface Water

Red Wing's surface water is primarily in the form of streams and rivers. The Vermillion River, Cannon River, Spring Creek and Hay Creek are four tributaries that reach Red Wing's primary waterway, the Mississippi River. These streams and rivers contribute mightily to Red Wing's identity as a river town, and they are remnants of historic flows that carved Red Wing's dramatic topography.

Minnesota communities, industry and regulatory agencies have become very sophisticated at protecting the water quality of wetlands and lakes. Protection of streams and rivers, on the other hand, is more challenging and not as far along. How does Red Wing address surface water knowing that their actions are only a part of a broader solution? This Comprehensive Plan suggests a community focus on:

Public access and use: Public access of the waterfront can take on many forms including active or passive parkland, trails, overlooks, marinas, harbors and quasi-

public facilities (like the Environmental Learning Center). In every instance, public use of the waterfront should be balanced with ecological integrity and function. One example of this approach is to place trails at the outside edge of a habitat corridor along a stream and only periodically provide direct waterfront access that is sensitively designed to minimize habitat impact. This will keep the habitat area intact and reduce disturbance.

In all but select instances, river and stream frontage in Red Wing should be public space or preserved through conservation easements. This notion is similar to the Minneapolis chain of lakes where adjacent development looks over the public zone toward the water rather than development backing up to privatized waterfront. Exceptions to this rule would be where existing river-dependent industry occupies river frontage or where existing development precludes (at least for now) a public waterfront.

With the Cannon Valley Trail and the downtown riverfront planning effort, Red Wing is already well on its way to upholding the public access goal. While approaches and levels of access will differ, the same focus on public access should be placed along the full reach of the Mississippi River, Vermillion River, Cannon River, Spring Creek and Hay Creek within Red Wing.

Clean runoff: A primary way communities can affect surface water quality is by treating stormwater runoff before it enters natural water bodies. Like many established communities, much of the stormwater runoff from older parts of Red Wing enters storm sewers and is piped directly to the Mississippi River and its tributaries. Newer portions of Red Wing have been developed to include stormwater treatment ponds that treat runoff before it enters the storm sewer system and reaches natural waters. Through comprehensive stormwater management that concentrates on infiltration and treatment, Red Wing can protect its surface waters from the pollutants that are carried by stormwater.

High-quality wastewater treatment: Red Wing collects and treats all wastewater from residential, commercial and industrial uses in the city at the Municipal Wastewater Treatment Plant, which has been in continuous operation since 1960. Three million gallons of wastewater a day are initially filtered and treated using biological treatment and mechanical solids handling. Solids extracted from the treatment process are heat-treated to create biosolids used for farmland fertilizer. Liquid effluent is discharged into the Mississippi River, meeting standards set by the Minnesota Pollution Control and Federal Environmental Protection Agencies.

Some industrial wastewater in Red Wing benefits from being pre-treated by the Industrial Wastewater Pre-Treatment Plant. This plant treats wastewater from the S.B. Foot Tanning Company, Solid Waste Boiler Facility and other local industrial businesses in Red Wing. The

Green Infrastructure (bluff tops, valleys, ravines, river flats) serves as a key identity feature of the City of Red Wing and should be celebrated.

plant treats about 350,000 gallons of wastewater a day, discharging its flow to the city sewer system to undergo final treatment at the Municipal Wastewater Treatment Plant.

Pre-treatment of industrial wastewater is a beneficial step in treating overall municipal wastewater. However, with the age of the municipal treatment plant nearing 50 years, updates to treatment technology should be considered for the city. The wastewater treatment plan for the city will be updated upon completion of this Comprehensive Plan. With this, special attention should focus on improving the quality and reducing the volume of effluent discharged into the Mississippi River.

Ecologically-healthy shorelines and floodplains: Streams and rivers need ecologically robust shorelines and ample floodplains to remain healthy. The shoreline zone includes the stream or riverbank itself as well as several hundred feet on either side of the waterway plus floodplains that may reach beyond the immediate corridor. Healthy shorelines provide fish and wildlife habitat, buffer flooding and cleanse stormwater runoff. Attention to shorelines and floodplains in combination with sustainable land management practices farther "up-slope" in watersheds would significantly reduce the damage and impacts of flooding and improve the health of our surface waters.

Native shoreline habitat and topography should be preserved or restored in Red Wing's stream and river corridors. These corridors can become the primary open space greenways of the community and can be designed to link with other community greenways that are preserved along bluff corridors, steep draws and other sensitive landscapes. In places like the downtown riverfront where it is not feasible to restore broad habitat corridors along the shoreline, helpful design strategies can be implemented like bioengineering of the riverbank, native landscape plantings and minimal use of paving and turf grass. Native stream and river corridors can become a primary conduit for Red Wing's trail system, provide stormwater treatment, preserve views, provide environmental education and celebrate community identity.

Water-quality partnerships: A great example of the influence of public/private partnerships can be seen along the Vermillion River corridor in Dakota County. There, many partner organizations have cooperated to infuse money and expertise in an effort to protect a sensitive trout stream through water quality monitoring, shoreline restoration, acquisition of conservation easements and watershed conservation practices.

Because Red Wing's streams and rivers extend well beyond community boundaries, partnerships with surrounding communities, regulatory agencies and non-profit organizations are critical. Like many other topics,

Red Wing has a history of leadership on this issue; an example being current coordination of the riverfront redevelopment planning efforts with the National Park Service. Partnerships like this one can impact all facets of water quality and broaden the influence of Red Wing's surface water quality goals.

Ground Water

There are two primary underground aquifers within Red Wing's borders, the Jordan and the Franconia. These are far-reaching aquifers that serve the potable water needs of people, farms and industries across much of the upper Midwest. Red Wing has five municipal wells that are supplied by these aquifers. Like all communities that rely on underground aquifers, Red Wing has a vested interest in conserving the water drawn from them and cleansing surface water before it recharges them.

Red Wing can promote groundwater conservation practices through numerous methods. As an example, many of the oldest homesteads in Red Wing have underground cisterns that were used to store rainwater captured by roof gutters. The stored rainwater was used to water gardens, wash cloths and fill other household water needs. This is still a common practice in Australia for instance where groundwater is not prevalent. Capture of rainwater for safe usage of household needs such as irrigation and toilet flushing is once again gaining favor in the United States as a water conservation practice. Promotion of this practice of the use of cisterns and rain barrels in Red Wing could have a significant impact on reducing the use of groundwater. Another way to lessen the usage of groundwater is through the promotion of Leadership in Energy and Environmental Design (LEED) water-conserving building practices such as low-flow toilets, automatic faucets and as just discussed, rainwater capture.

The second major way Red Wing can impact groundwater is by ensuring that stormwater runoff is clean and that a majority of the ground surface can infiltrate it. It wasn't long ago that our primary approach to stormwater was to pipe it underground as fast as possible to the nearest lake or river. Then we realized that it was causing floods and carrying pollutants so we began constructing intermediary ponds where stormwater was held for a time to mediate flooding and remove pollutants. Now we understand that both of these approaches are negatively impacting groundwater tables because stormwater doesn't have a chance to soak into the ground before it is carried away. So the contemporary approach is to build our infrastructure in a way that allows greater areas of ground surface to infiltrate and cleanse stormwater. Techniques such as pervious roadway and parking lot pavement, rainwater gardens and underground infiltration trenches are becoming common practices that infiltrate stormwater across broader areas and reduce the need for pipes and ponds.

What is LEED?

The LEED Green Building Rating System™ is the nationally-accepted benchmark for the design, construction, and operation of high performance green buildings. LEED promotes sustainability in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

The LEED for Neighborhood Development Rating System is currently a pilot program and integrates principles of smart growth, urbanism, and green building into the first national standard for neighborhood design. LEED certification provides independent, third-party verification that a development's location and design meet accepted high standards for environmentally responsible, sustainable, development.

— U.S. Green Building Council

Archaeological Resources

Red Wing's location at the confluence of two rivers in conjunction with its dramatic topographical relief presents the conditions for significant archaeological resource information. The city has conducted studies to identify the likely locations of these resources in attempt to protect their integrity and ensure adequate abilities to continue learning about the historical significance of the Red Wing area. By including these resource locations as part of the greenway infrastructure, the Comprehensive Plan establishes a priority for preserving that ability to understand more about our culture and settlement history.

Public access to rivers and streams is essential.

Scenic Views

The high points of Red Wing offer tremendous opportunities to view the landscape of the Cannon and Mississippi River Valleys. These points also offer great opportunities to observe the early design patterns of the City from a "birds eye" view without having to fly. Scenic views are also part of the rural landscape of Red Wing. Preservation of key corridors and open space areas helps preserve some of the rural character that makes Goodhue County and Red Wing what it is today. The greenway infrastructure system should include preservation of the actual scenic view as well as the points that offer the ability to take in the view

Existing parkland and open space continue to be valuable amenities for Red Wing residents.

Parkland

Parks, trails and natural resources are defining elements in the quality of life of a community. Red Wing's unique setting heightens the importance of preserving natural resources, recreation and connections. This plan draws a distinction between parkland as green infrastructure, which is discussed here, and the recreational facilities that are built on parkland as grey infrastructure, which is discussed later in this chapter. Much of Red Wing's parkland like Colvill Park and Barn Bluff provide important cultural links to Red Wing's past. The way parkland landscapes are managed can have a profound effect on our ability to recognize and celebrate their history and create new legacies in their future.

Connection with the greenway corridors

A primary goal is to integrate parks, trails and open space into the fabric of Red Wing. The vision is for a system of parks, open spaces and places connected with trails, pathways and green corridors. This will take different forms and actions depending upon the situation, but the over-arching goal is to integrate recreation and nature making both more accessible.

Location criteria

Efforts for new parks should focus on the Upper Harbor, downtown and historic neighborhoods, new future development areas and key natural resource amenities.

The adopted Riverfront Redevelopment Plan establishes major new objectives to convert a significant portion of the 230-acre Upper Harbor area from brownfield (former landfill) to park and open space uses, including stormwater management. This open space and recreational area is proposed to be connected to the string of riverfront parks (Bay Point, Levee, Barn Bluff and Colvill Parks) with a riverfront trail connection.

The addition of small "pocket" parks and gardens within downtown and historic neighborhoods can enhance the area. These parks can be public or private spaces. It may be as simple as conversion of an unused space into a leafy garden space with benches or transforming an alley into restaurant seating with attractive usable hardscape.

As housing development occurs, new parks, trails and green space will be needed to provide recreation opportunities for new residents. New development should pay for these new parks through park dedication. Due to challenging terrain or other reasons, new parks are not needed in every subdivision. A better approach is to have parks at key locations and make sure that new subdivisions are connected to parks using green corridors and trails within the subdivision.

The pattern of new development should also be based on natural and scenic resources. New development should emphasize preserving key resources, creating green corridors and providing open play space for a concentration of population. This may mean that the housing is more concentrated than in typical suburban subdivisions in order to allow the economics of green space preservation to work. Setting aside green space within a residential neighborhood or nearby new housing makes good sense for the developers as studies have shown that lots near public parks and green space sell for 10% or more than lots without green space. A key design direction should encourage public right-of-way adjacent to public open space and park areas rather than relegating open space and parks to private back yards. Allowing the public realm to front on open space and parkland helps spread the increased values across an entire development rather than isolate it to a limited number of lots that abut the resource. Natural resources such as Hay Creek, Spring Creek, bluffs, Cannon River, Mississippi River as well a scenic resources such as the rural character of Highway 19 should be preserved.

Parkland Management

Parks serve to offer residents of Red Wing a place for recreation and enjoyment of natural resources. Management of the parkland is therefore important to preserving the benefits of the parks for generations to come. Management techniques should include attention to tree preservation and reduce the occurrence of invasive species. Incorporating areas for stormwater infiltration will reduce needs for irrigation and can also serve as natural amenities for scenery or wildlife. The

Greenway corridors can double as corridors for recreational trails.

health of Red Wing's parkland will also benefit from increasing native plants and reducing the use of chemical pesticides and herbicides.

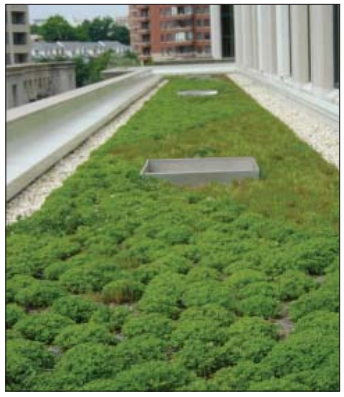
Urban Forest

If you have ever looked down from an airplane at cities in other parts of the country, you realize that Minnesota communities have an enviable urban forest of street trees and trees on private lands. This urban forest has a highly positive impact on wildlife, the urban heat island effect and human comfort. Maintaining our urban forest requires continual diligence and unfortunately, climate changes that are underway are having impacts on tree diseases and hardiness around the world. The forestry and nursery industries as well as university researchers are working feverishly on the urban forest problems that are occurring. Red Wing should stay attuned to new research and work with other communities to prepare an urban forestry strategy that mitigates the disease and hardiness problems rapidly moving our way from other parts of the country.

Red Wing's urban forest provides beauty and comfort and needs to be protected from disease and hardiness problems.

Green Roofs

Green roofs (living vegetation planted on rooftops) have been in existence for hundreds of years – especially in agricultural buildings in various parts of the world. But in the last two decades, they have been gaining acceptance as a viable roofing technique for commercial and residential buildings. Green roofs positively impact numerous environmental concerns such as heat-island effect, stormwater runoff, heating and cooling, energy consumption and loss of habitat. In many parts of Europe, green roofs on commercial buildings are becoming the norm. Here in the United States, green roofs are still the exception although high-profile examples like the Chicago City Hall have started a green roof movement that is rapidly spreading across the Country. Many believe it is only a matter of time before improved technology and the demand for greater environmental performance compels most new urban downtown, industrial and big-box retail structures to include green roofs.



Green roofs are becoming more popular as a technique to reduce stormwater runoff and the urban heat-island effect.

In Red Wing's future, green roofs can become a legitimate component of green infrastructure. Through environmental performance-based provisions in stormwater and subdivision ordinances, Red Wing can lead new development toward innovative solutions including green roofs. Red Wing can also set an example by constructing green roofs on new and retrofitted civic buildings as well as private development using City or Port Authority assistance. Red Wing's commitment to green roofs could also lead to design assistance and construction grants from energy providers and non-profit organizations.

Grey Infrastructure

While green infrastructure places attention on a new set of community systems, grey infrastructure is something we are much more adept at addressing. We can think of grey infrastructure as the community systems, such as utilities and social services, that are created or built. What this plan intends is a heightened synergy between green and grey infrastructure and the basis for smarter investments that leverage the needs and values of the full range of community systems. You will see, for instance, that stormwater management is discussed under this section even while aspects of it were discussed under green infrastructure. In so doing, the plan recognizes the investment needs in infrastructure but suggests that the investment should be made in unique and thoughtful ways that uphold the value of a healthy green infrastructure.

Recreation

Parks and recreation provide physical, social and mental health benefits to individuals, families and groups, while a park and open space system helps create a healthy, sustainable and active community. This plan envisions Red Wing's future parks, trails and open space as an integrated system of green and grey infrastructure that allows easy access to recreation and open spaces and preserves natural resources and scenic character.

Trails

Trails are the most popular recreation facility. They can be used by all ages and abilities. They are multi-use: walk, run, bike, skate, ski, stroller, etc. They promote and encourage a healthy lifestyle and provide an important transportation function for non-motorized travel, contributing to the notion of sustainability.

A trail by the water (lake, pond, creek, river) is a prime recreation and scenic experience. A planned riverfront recreational trail from Baypoint Park to Colvill Park would be a huge step toward improving connectivity and opening up more of the river for recreation and scenic views. A pedestrian-oriented "river walk" on the Mississippi River along the upper and lower harbors on each side of Bay Point Park is another project that would be very well used by both residents and visitors. Taking advantage of this resource is a prime opportunity to create a grand promenade that will be a showcase to visitors and a place of peace and tranquility to the existing community.

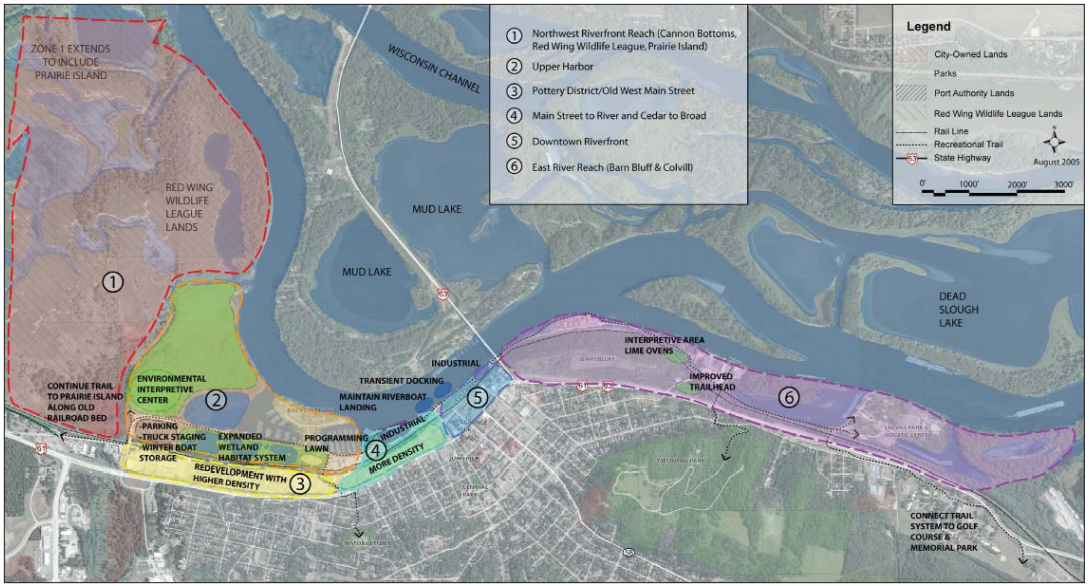
When key streets are rebuilt, sidewalks, off-street bike trails or bike lanes should be added. Reclaiming excess right-of-way for non-motorized use can create a multi-function street and help connect the community by more then just a road.

Riverfront

Parks and trails provide needed recreational opportunities for the community.

The Mississippi riverfront is the gem of the city's park system. The riverfront is the prime attraction and plays an important role in tourism and economic development. The riverfront should be a continued focus of city efforts.

In November 2005, the City Council adopted the Red Wing Riverfront Redevelopment Plan as an element of the City's Comprehensive Plan (a full copy of the adopted Riverfront Redevelopment Plan is contained in Volume 2, Appendix E.1). This plan considered Red Wing's entire eight miles of Mississippi River shoreline, a lower river terrace that floods with the River, railroad tracks parallel to the River; and a steep bluff up to an upper terrace. The planning area extended from the Prairie Island Tribal Lands to Colvill Park; and from the River inland to Highway 61 and created six planning areas. Guiding Principles were established through the use of community forums and after a great deal of debate, surveys, and discussion a consensus program was established to provide broad direction for the redevelopment in the six redevelopment zones. The Plan Highlights include:



The Red Wing Riverfront Redevelopment Plan was adopted in 2005. Parks along the riverfront experience a high level of use. Connecting these parks together with a riverfront trail will increase their versatility, access and user-friendliness. Image provided by JJR, LLC.

- ***Pedestrian and Trail Linkages:*** Connecting Bay Point, Levee, Barn Bluff and Colvill Parks with a trail is a key step and can be further developed to connect the riverfront to adjoining neighborhoods and business districts. The Prairie Island Indian Community also expressed interest in a connection between Prairie Island and the Cannon Valley Trail.

- ***Zone 2 (Upper Harbor Zone):*** The Riverfront Redevelopment Plan calls for a change in direction for the Upper Harbor area of Red Wing (generally located north of the Canadian Pacific Railroad to the Mississippi River and between Jackson Street and Hay Creek). The consensus plan for the Upper Harbor called for the development of more programmable open space for active recreation and seasonal events with an opportunity to create publicly owned concessions and incorporate an outdoor amphitheater. Citizens opposed the development of

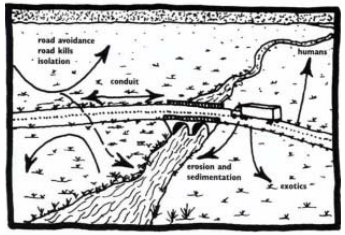
housing and office uses in the Upper Harbor. A key component of the plan implementation encouraged the city to proceed with more detailed site planning for the Upper Harbor area.

- ***Zones 3 and 4 (Old West Main Street/Pottery Zone and Cedar to Broad Street Zone):***
  There was clear public support to capitalize on economic development opportunities that are available by focusing efforts on redevelopment of the upper terrace that lays above Red Wing's riverfront i.e. the Old West Main/Pottery District; Main Street District between Cedar Street and Broad; and the Downtown Business District. Opportunities exist to improve the connections of these areas to the riverfront and there appear to be a number of underutilized properties that represent opportunities for redevelopment. Included in Chapter 5 are some ideas and initiatives that can be used to guide redevelopment of these areas that would enhance recreation and trail connections, open up views of the river and act as an amenity for future revitalization. Another key issue is the need to better link the downtown and core of the city to the Cannon Valley Trail.

- ***Environmental Interpretive Center:***
  The location of the current city storage yard in the Upper Harbor area and adjacent to the Red Wing Wildlife conservation area is ideal for consideration of an environmental center with trailhead; access to nature walks; and environmental learning, interpretation and programming. This development could be further evaluated in the process of completing a more detailed site plan for the Upper Harbor area.

Transportation

Mobility within and outside of the community is a key component to successful community development. A subsequent transportation plan, included in Volume 2, Appendix D.1, will provide more detailed analysis of the existing transportation system and potential improvements based on the directions established in the Comprehensive Plan. Key directives of the comprehensive plan include the notion that movement corridors should accommodate a variety of travel modes such as bike, walk, transit and vehicles and that such corridors should function both as a movement corridor and an amenity/ identity feature for the community. Emphasis of the transportation plan will be on design of roadways that incorporate more green infrastructure technology, more efficient use of pavement, and designs that foster safe movement while calming traffic. The plan will also need to address transit service with the understanding of the land use plan's emphasis on concentrating development intensities at key activity centers. A long term objective



Roads and trails often pose a continuous barrier, dividing patches and imposing disturbance such as erosion, exotic species and other human effects. Providing underpasses or crossings can reduce impacts of these barriers.

Diagram from Landscape Ecology Principles in Landscape Architecture and Land-Use Planning by Dramstad, Olson and Forman (1996).

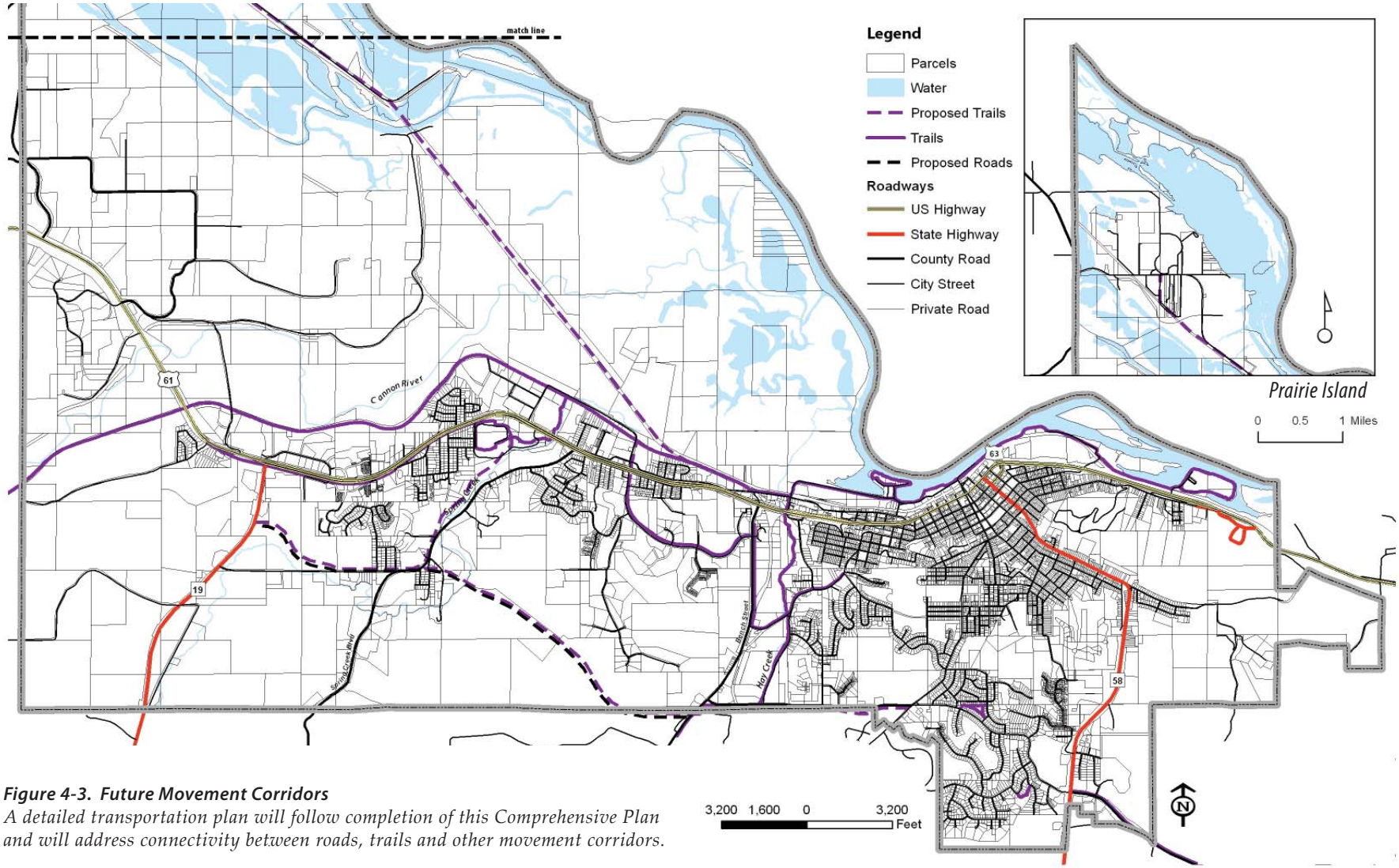


Figure 4-3. Future Movement Corridors
A detailed transportation plan will follow completion of this Comprehensive Plan and will address connectivity between roads, trails and other movement corridors.

of the plan should include support for the regional efforts for commuter rail, connecting the Twin Cities to the city of Red Wing via the Red Rock Corridor.

Red Wing currently has a dial-a-ride service in place to accommodate in-town transit. This service primarily accommodates the elderly and special needs populations of the community and is of vital importance to their quality of life. Even though Red Wing will hopefully build walkable, mixed-use districts over time, there will continue to be a need for the dial-a-ride service and that need will likely grow as the population ages.

The proposed Red Rock Commuter Rail corridor offers tremendous future opportunity for Red Wing to make a transit link to the Twin Cities. Today, the line is proposed to link downtown St. Paul to Hastings although there is discussion of extending the line as far as Red Wing. Red Wing should continue to be involved in the Red Rock planning effort and advocate for extension of the line.

The Development Pattern Chapter of this plan discusses proposed redevelopment of Old West Main Street into a mixed-use district. Part of the redevelopment concept includes an idea for a streetcar line from Pottery Place to the downtown depot. Although streetcar lines are not inexpensive, the notion is that a streetcar would not only serve the short-trip transit needs of the community, it would contribute significantly to the festival, destination retail atmosphere desired for downtown Red Wing. In addition to the short line from Pottery Place to downtown, the streetcar could extend to the Anderson Center and on to the Treasure Island Casino via an abandoned rail corridor.

Education

The trend for schools has been to move toward a more efficient campus environment with lots of space and room to grow. Schools located within neighborhoods are becoming a thing of the past. However, the value of schools serving neighborhoods is unparalleled to many other livability factors. Schools serve as neighborhood identity features, gathering places and learning environments for more than just children growing up. Red Wing has recently replaced its centrally-located High School and three neighborhood elementary schools with a new High School and a large elementary school on the south and west edges of the City. The former school sites are all actively reused. This plan encourages efforts to improve the pedestrian connections to the schools with neighborhoods.

Drinking Water

Red Wing's public water systems are comprised of three parts: wells (five current wells), storage (nine current reservoirs) and a distribution system consisting of pressurized pipes that deliver water to homes and businesses for consumption and fire protection. Delivery

of public water should coincide with sanitary sewer and other public infrastructure systems. The City has a master plan for its public water supply. This plan should be updated to incorporate key policies from the Comprehensive Plan process. Key directives that might influence the water supply and distribution plan include the emphasis of the Comprehensive Plan on green infrastructure and sustainability. Creating landscapes that require less watering and encouraging more environmentally sensitive lifestyles will put less pressure on the public water supply system. Land use regulations will also need to be established or modified to ensure locations of well fields are protected from inconsistent land use patterns.

Communications

Communications infrastructure is an important aspect of community livability. It is becoming more and more a necessity for the ability to compete in a global economic environment. Such infrastructure systems including Wi-Fi, fiber optic, and other high speed data communication systems should continue to be explored by the City. Currently, a system serves key public institutions and some limited activity centers. Ultimately, the entire city should have access to such technology. Accessibility to telecommunication technology is a measurement of livability. A subsequent technology plan will be completed that provides more detailed analysis and establishes an action plan for providing improved communication infrastructure.

Energy

Energy will be a growing issue faced by our society as fossil fuels become evermore scarce and global warming becomes a rapidly increasing concern. Red Wing, as a community, can have a significant impact on energy through the promotion of conservation and renewable source generation. This plan suggests that Red Wing measure community-wide energy use and establish benchmarks for increasing the fraction of renewable energy as a percentage of overall energy consumption.

Red Wing derives electrical energy from Xcel Energy. Through Xcel's Windsource program, customers are encouraged to purchase wind energy by authorizing a minor surcharge on their energy bill. The Windsource program also encourages and pays customers to produce wind energy through the installation and operation of wind turbines that feed energy to the power grid through standard utility lines. This plan encourages Red Wing to work with Xcel Energy and private property owners to study the viability of establishing wind turbines in and around Red Wing.

Red Wing can have a significant impact on energy conservation by encouraging LEED and Energy Star construction techniques for new buildings. There is also a tremendous impact that can be made with new

street and outdoor lighting technologies that consume a fraction of the energy of normal light fixtures. Red Wing can also convert its municipal fleet vehicles to alternative source fuels such as electricity and natural gas.

Another opportunity lies with the City's waste incinerator that has excess capacity to provide steam to industrial clients in addition to the S.B. Foot Tannery. Continued effort should focus on attracting a new client that can take advantage of the facilities excess steam production.

Waste Management

Sanitary sewer systems comprise a central wastewater treatment plant connected to a series of collection pipes that flow via gravity or pumping to the treatment plant. In Red Wing, the Municipal Wastewater Treatment Plant provides central treatment for the city, with an additional plant to pre-treat industrial wastewater from the S.B. Foot Tanning Company and other local industrial businesses. The city has a sewer plan that identifies plant capacity and system constraints. This plan will be updated upon completion of the Comprehensive Plan. Key directives to be incorporated in the update will be to use the extension of sanitary sewer systems as a means to direct growth in the community to locations that are most suitable for new growth and to areas where infrastructure improvements are necessary to achieve the community vision. Municipal sanitary sewer systems should be considered a necessity for urban growth and should be required in locations where density is to exceed a threshold of 0.5 to 0.33 units per acre or where there are commercial, institutional or industrial uses.

Red Wing has a plan for collecting solid wastes produced by residential, industrial and commercial land use activities. Solid waste management in Red Wing is about much more than the proper handling and disposal of solid wastes. It is also about encouraging lifestyles that promote the efficient use of resources in a way that minimizes the generation of waste. Design of buildings that are sustainable, longer lasting and durable is one means of contributing less to solid waste production. Use of recycled materials for construction purposes also reduces the need to throw away resources that can be re-used in a different manner. The City has adopted goals for recycling 50% of the solid waste stream and an ultimate goal of recycling 90% of construction debris. More specific goals are stated in the Solid Waste Organized Collection Plan dated November of 2005.

Stormwater Management

Stormwater Management is one of the most important infrastructure improvements that Red Wing can address. It is one that will contribute to Red Wing and continue contributing right on down the Mississippi River. Policy directions suggest a more sustainable development pattern that seeks to minimize runoff through more thoughtful community design and development and more education. Through the process it was noted that many older Red Wing homes have cisterns that once

were used to capture rainwater for reuse. This is a good example of a technique called "resource recycling" that is supported by the Comprehensive Plan. An implementation initiative is to create a guide that will provide examples of how smaller development projects and existing properties can better manage storm water runoff for the betterment of water quality in the region and ultimately everyone downstream.

The City was required to create a Storm Water Pollution Protection Plan (SWPPP) that establishes a number of educational, operational and regulatory improvements aimed at improving surface water quality. This is a new program in which the City will need to invest resources in order to implement.

Community System Policies

Green Infrastructure

1. Work in public/private partnerships to accomplish green infrastructure policies

Green Network & Natural Resource Preservation

2. Preserve a community-wide network of contiguous public open space identified as the green network in Figure 4-2.
3. Prevent new development from encroaching into the green network.
4. Conduct on-going habitat restoration and management within the green network.
5. Identify key streets that may be developed or redeveloped as parkways that contribute to the establishment of the green network.
6. Protect bluffs (topographic and vegetative change) from the toe of slope to top of bluff.
7. Prevent new development from occurring on the steep slopes and avoid leaving open cuts on the bluff sides.

Water Quality

8. Maximize water quality of municipal sewage effluent reaching public waters.
9. Implement practices to conserve, to the fullest extent possible, water derived from underground aquifers.
10. Implement stormwater management practices that work to treat stormwater runoff as close to the source as possible in order to limit runoff reaching tributaries and the Mississippi River.

Parkland

11. Locate new parks in areas connected to the green network.
12. Focus efforts for new parks in downtown, upper harbor, historic neighborhoods, new neighborhoods and recreational areas.
13. Support development of trails or greenways that connect parks to each other as a system.
14. Encourage needed infrastructure features, such as stormwater ponds and infiltration beds, to be designed as natural open space amenities for the surrounding neighborhoods.

Archaeology

15. Continue to improve internal mapping of archaeological sites and villages and direct infrastructure and development away from these locations.

Policy Terms:

Encourage = *The city will prefer to see these actions taken and will provide guidance to implement them. However, such actions may not be required or financed by the city.*

Support = *These are desirable actions the city prefers to see happen and will provide guidance, and may help facilitate implementation by providing technical or financial assistance.*

Require = *These actions are most desirable by the city and will be supported by guidance, technical direction and/or financial assistance. Such actions are likely to also involve changes to other city ordinances and policies to further support their implementation.*

Prevent = *The city will prohibit such actions to occur through changes in city ordinances and similar policies.*

16. Preserve significant village sites through public/ private partnerships.

Grey Infrastructure Policies

17. Continually identify innovations that can improve efficiency and lessen environmental impact of grey infrastructure.

Parks, Trails & Recreation

18. Provide a wide range of recreation opportunities for the full community.

19. Support development of an interconnected local trail system that largely follows open space systems and supports facilities with multiple looping options and links to regional trails.

20. Increase the number of households walkable to neighborhood parks by ensuring parks are located within a half-mile walking distance of all residents and connected by off-street trails or sidewalks that safely cross or avoid pedestrian barriers.

21. In most instances, encourage public access to parks by locating new parks with at least one side fronting to a public street.

22. Complete implementation of a riverfront trail between Bay Point and Colvill Parks.

23. Improve bicycle trail connections between Cannon Valley Trail, riverfront trail and existing north/ south trail along Hay Creek.

24. Construct new east/west bicycle trail in southern portion of city.

25. Provide improved trail connections to Red Wing High School and Twin Bluff Middle School

26. Develop new Cannon Valley Trailhead as part of the Upper Harbor Redevelopment.

27. Work to add trails to Frontenac Park and Prairie Island and integrate city trails with Goodhue County trails.

28. Expand local trail access to parks and within parks including handicapped accessibility enhancements.

29. Continue to support and enhance active sports facilities and programming related to mountain biking, cross-country skiing, rock climbing, canoeing, hiking, kayaking, snow shoeing and other activities that particularly attract youth and young adults.

30. Consider public maintenance and operational costs in developing street and sidewalk standards.

Transportation & Movement

31. Build streets and roadways to meet broad community values of traffic as well as pedestrian accommodation, traffic calming, on-street parking, beautification and minimal environmental impact.

32. Build a community-wide sidewalk network that interlinks households, schools, parks, trails and activity centers.

33. When reconstructing sidewalks, use wider widths (5′ to 6′) to encourage use and increase comfort for pedestrians.

34. Include construction of dedicated off-street bike trails within excess right-of-way when new roads are developed.

35. Require developers in new subdivisions to build trails and sidewalks.

36. New streets should be designed using the minimum width allowable in order to provide for streetscaping, sidewalks, trails and other public amenities within the public right of way and enhancing open space connections.

37. Off-street trails should be constructed within public rights-of-way along the following arterial streets: Highway 19, Bench Street (County Road 1), and Highway 58.

38. Street parking should be accommodated on all collector streets where street width allows for it; new collector streets should be designed with at least one side of street parking.

39. The city should continue to work with MnDOT to coordinate street improvements on Highway 61, including new and/or limited access, sidewalk and trail connections, and streetscape along the entire length within city limits.

40. Major intersections along Highway 61 and within identified Activity Centers should accommodate safe pedestrian crossings with signalized intersections and highly-visible crosswalks and sidewalks.

41. Consider reconstruction of system of vertical stairways that historically connected College Hill and Fairgrounds neighborhoods to Main Street and the riverfront.

Stormwater Management

42. Maximize stormwater infiltration and surface filtration to minimize need for underground stormwater infrastructure.

Utilities, Emergency Services & Communications

43. To the extent possible, provide the latest communications infrastructure to the full community.
44. Expand municipal utilities (sewer, water, energy) in an orderly manner that discourages leap-frog development and bluff impacts.
45. Work with utility providers to increase renewable energy sources and promote energy conservation with 30% of overall energy use from renewable sources.
46. Appropriately manage and locate emergency service facilities to ensure quality response.
47. Conduct waste management (recycling & disposal) in the most efficient and environmentally sensitive manners possible.
48. Pedestrian bridges and/or underpasses should be constructed in appropriate locations over/under Highway 61 to facilitate safer connections between residential neighborhoods and parks, trails and the riverfront.
49. Construct a new local-level east/west connector road in the southern portion of the city to reduce volumes of local traffic on Highway 61.
50. Encourage new residential streets to be designed as connected networks rather than dead-ends and cul-de-sacs.
51. Support the development of sidewalks and off-street trails for existing neighborhoods that currently lack these amenities.
52. Allow for space within existing and future ROW to accommodate communication infrastructure.
53. Support stormwater management practices that maintain runoff volumes of greenfield development and reduces runoff volumes on redevelopment sites.