



FLYWAY TRAIL FEASIBILITY STUDY

BUFFALO COUNTY, WI | JANUARY 2016

CLIENTS

Buffalo County Land & Trails Trust

Dave Schams - Chair

Nettie Rosenow - Director

Ric Ahern - Volunteer Executive Director

Jim Wilkie - Treasurer

Carson Lentz - Secretary

CONSULTANT TEAM

Alta Planning + Design

Josh Sikich, AICP, LEED AP - Project Manager

Steve Durrant, FASLA - Principal

Colin Harris, PE, LEED AP

Kevin Neill, AICP

Katie O'Lone

Kristen Maddox

Sam Piper

Chris Carlson

Table of Contents

Chapter One: Existing Conditions 7

Introduction	9
Study Area Context	9
Environment.....	11
Transportation.....	12
Recreation.....	13
Economy.....	14
Nature and Culture.....	14
Opportunities	18
Constraints	20

Chapter Two: Public Engagement ..23

Introduction	25
Design Workshop Summary	25
Additional Outreach	30

Chapter Three: Recommended Trail Alignments..... 31

Introduction	33
Trail Typologies.....	34
Corridor Overview.....	36
Segment 1: Chippewa River to Nelson	38
Segment 2: Nelson to Spring Creek Road.....	40
Segment 3: Spring Creek Road to Iron Creek Road.....	42
Segment 4: Iron Creek Road to Alma	44

Segment 5: Alma.....	46
Segment 6: Alma to County Road OO.....	48
Segment 7: Buffalo City and Cochrane	50
Segment 8: Access to the Whitman Dam Wildlife Area and Lock and Dam 5	52
Segment 9: Cochrane to Czechville	54
Segment 10: Czechville to Fountain City	56
Segment 11: Fountain City	58
Segment 12: Fountain City to Bluff Siding.....	60
Segment 13: Connections to Winona and the Great River State Trail.....	62
Scenic Recreational Routes.....	64

Chapter Four: Implementation.....67

Introduction	69
Early Action Steps	69
General Phasing Strategy.....	73
Opinion of Probable Cost.....	74
Funding Sources	75
Administrative Structure and Responsibilities.....	79

Chapter Five: Operations and Maintenance..... 81

Introduction	83
Guiding Principles for Effective Operations and Maintenance.....	83

This page intentionally left blank.

ABOUT THE FLYWAY TRAIL

VISION

This scenic trail will be built on one of the most beautiful stretches of the Mississippi River Trail (MRT). The trail will ultimately serve local transportation needs and attract longer distance riders to enjoy the landscape and historic features they may be bypassing right now.

MISSION

The mission is to create a low-stress trail experience, provide interpretive opportunities and connect the small towns on this unique stretch of the Mississippi.

This page intentionally left blank.

Chapter One: Existing Conditions



*The Flyway Trail Feasibility Study formalizes
a vision for a world-class trail along the
Mississippi River in Buffalo County.*



Existing Conditions

Introduction

Buffalo County's historic river towns and abundant natural resources have long been a draw for visitors seeking an escape from the monotony of daily life. The small-town character and charm combine with breathtaking panoramic views of the Mississippi River and up-close encounters with the area's diverse flora and fauna, creating a unique experience for residents and visitors. While the Highway 35 corridor through Buffalo County has already been designated a part of the national Mississippi River Trail (MRT) and the Wisconsin Great River Road, the lack of an off-road trail separated from motor vehicle traffic limits usage to experienced touring and road cyclists who are comfortable bicycling in most traffic conditions.

Creating a world-class trail in Buffalo County requires a firm commitment from local residents and government agencies, a thorough understanding of its physical and social context,

and a creative approach that incorporates and enhances the environmental, cultural, and economic assets within the county. This section of the study documents existing conditions in the study area and identifies opportunities and constraints that will guide development of trail alignment alternatives and inform the selection of a preferred alignment for future trail development.

Study Area Context

Local

The study area is situated on the eastern banks of the Mississippi River in the Driftless Area of Buffalo County, Wisconsin. The area stretches for roughly 40 miles along the Mississippi from Pepin County to Trempealeau County, enveloping Highway 35 and numerous communities at the base of the bluff line along the

river. The county's upland farms and prairies, forested hillsides, and towering bluffs overlooking the Mississippi provide an idyllic landscape for bicycling, hiking, and other recreation activities.

State

Highway 35 is part of the Wisconsin Great River Road, a 250-mile corridor extending the length of the Mississippi River along the border of western Wisconsin. This National Scenic Byway, the only designated scenic byway in Wisconsin, links more than thirty communities along the Mississippi and serves as a regional asset for tourism and economic development. The Great River Road is a popular corridor for bicycle tourism, attracting thousands of visitors to the area. Numerous spurs and alternate bicycle routes connect visitors to the area's cultural and natural resources.

National

Highway 35 also serves bicyclists as a segment of the Mississippi River Trail (MRT), a 3,000-mile national bicycling route consisting of on-road bikeways and off-road trails that extend from the river's headwaters in Minnesota to the Gulf of Mexico. The trail provides visitors an intimate connection to the cultural, historic, and natural assets that line the great river. While the MRT travels along off-street trails in many areas, including Trempealeau County, it is located entirely on-street in Buffalo County. Wide shoulders and low to moderate traffic offer adequate conditions for many touring bicyclists, but the lack of an off-street corridor restricts recreation opportunities for area residents and potential bicyclists and limits potential economic development and recreation-oriented tourism in the area.



The Great River Road and Mississippi River Trail attract thousands of touring cyclists to communities along the river.

Environment

The study area sits at the intersection of the wide gorge of the Mississippi River and the rolling hills of Wisconsin's Driftless Area. The area's pristine waters, forested hills and valleys, and rich biodiversity are a significant asset in the county. Thousands of acres protected as natural areas, state parks, and fish and wildlife refuges are a testament to the area's value to local and national ecosystems.

Topography

The dichotomous landscape of the study area consists of Mississippi River bottomlands and tributary wetlands converging with rolling hills and bluffs. Eagle Bluffs near Fountain City, Twelve Mile Bluff overlooking Alma, and Twin Bluffs in Nelson offer scenic viewsheds to experience the area's natural beauty from above, while views from Merrick State Park and other bottomlands let visitors view the towering bluffs from below.

Hydrology

The Mississippi River dominates the landscape through the entire study area, meandering through its ancient gorge between steep bluffs, rolling hills and scattered settlements. Numerous tributaries enter the Mississippi from Buffalo County, including the Chippewa River, the Buffalo River, Waumandee Creek, and the Trempealeau River. Two lock and dams support barge and boat transportation on the Mississippi River. They also provide parking areas and observation decks, both of which can be supported and enhanced by non-motorized trail access.

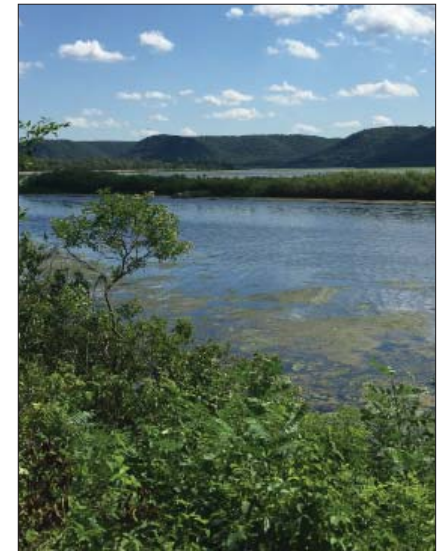


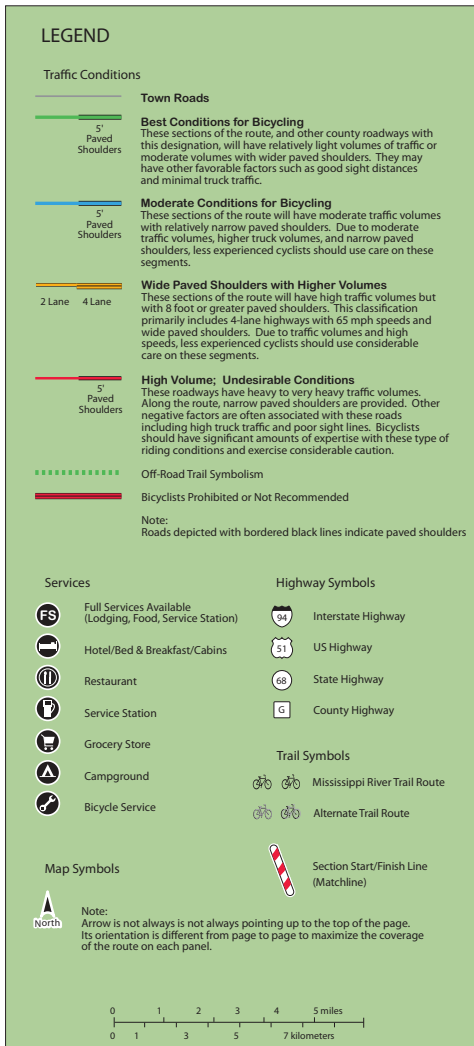
From towering bluffs to meandering channels and sloughs of the Mississippi, a rich diversity of flora and fauna contribute to the area's natural splendor.

Protected Areas

Thousands of acres of state and federal lands in Buffalo County support the conservation of the area's natural resources and habitats. The following sites are located within the study area:

- Upper Mississippi National Fish and Wildlife Refuge
- Five Mile Bluff Prairie State Natural Area
- Lower Chippewa River State Natural Area
- Nelson-Trevino State Natural Area
- Tiffany Bottoms State Natural Area
- Whitman Dam Wildlife Area
- Whitman Bottoms Floodplain Forest State Natural Area
- Merrick State Park
- Trempealeau National Wildlife Refuge





The Great River Road/ Mississippi River Trail Bicycle Map provides vital information to help visitors plan their bicycle tour. Excerpts from the series of area maps shown above and to the right highlight local attractions and services and provide a detailed assessment of roadway conditions for bicycling.

Transportation

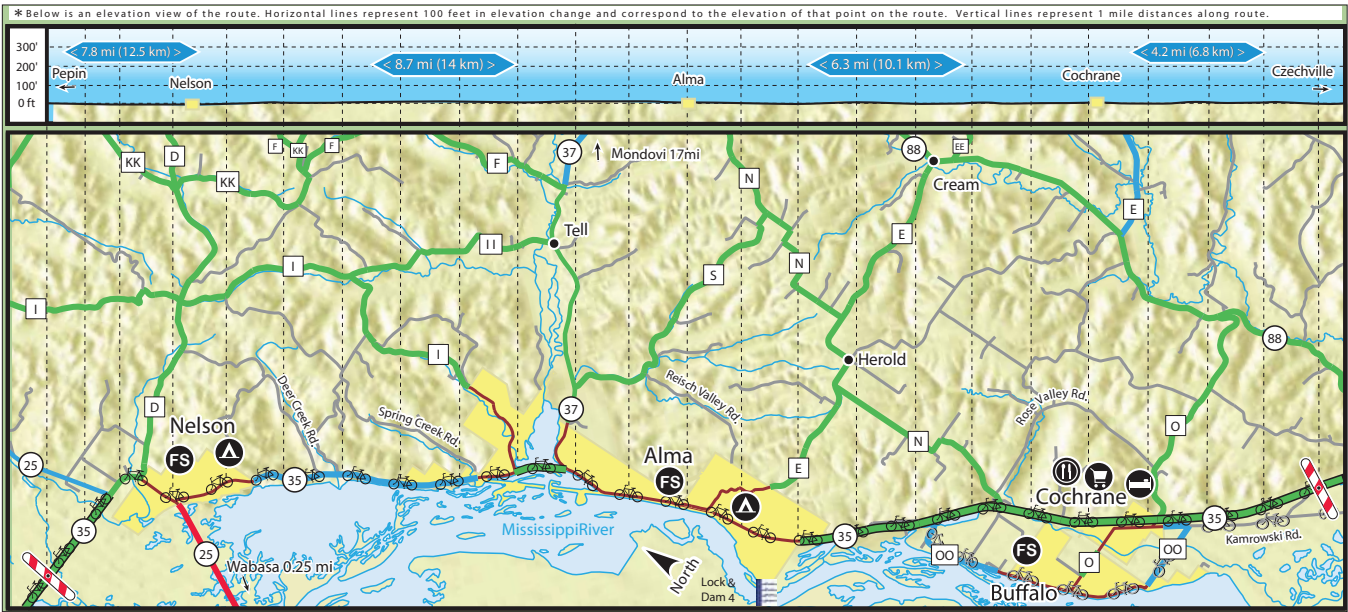
Road Network

Highway 35 parallels the Mississippi River through Buffalo County, connecting numerous communities situated along the river's eastern banks and terraces. State and local highways radiate inland from Highway 35, while local roads support residential access in towns and rural hamlets along the Mississippi. There are two Mississippi River crossings in the study area. Highway 25 connects Nelson to Wabasha in the north, and Highway 54 links Bluff Siding to Winona in the south.

Conditions for bicycling on Highway 35 are generally favorable for touring bicyclists, with wide, paved shoulders and relatively light traffic volumes. According to 2006 data, average annual

daily traffic volumes on Highway 35 ranged from 1,700 to 6,900, with higher volumes generally found south of Highway 95 in Fountain City. Although this data may be out-of-date, anecdotal observations support these findings, yet note an increase in heavy truck traffic resulting from increased mining and extraction activity in the county.

The Wisconsin Department of Transportation has produced multiple bicycle maps to support non-motorized transportation throughout the state, including county-wide maps that detail road conditions for bicycling and a route-specific pamphlet for the Great River Road Mississippi River Trail. Sections 3 and 4 (Alma and Fountain City) of the guide cover all of Buffalo County and depict varying conditions for bicycling along Highway 35. Alternate routes along roads with optimal conditions for bicycling are provided for each section as well.



Railroads

The railroads that traverse the study area are integrally linked with Buffalo County's economy, both past and present. The Burlington Northern Santa Fe Railway (BNSF) runs between the Mississippi River and Highway 35. When first built, the BNSF and other railroads transported locally-produced timber, wheat, and other products to nearby markets. These same railroad tracks now haul freight and commodities for distribution in the Midwest and the west coast. In some areas of the corridor, the railroad functions as a barrier to river access in the absence of railroad crossings. Southeast of the study area in Trempealeau County, the Great River Road State Park Trail utilizes the abandoned railroad corridor to provide a comfortable and bucolic bicycle and walking trail experience for area residents and visitors.

Recreation

While Buffalo County does not own or maintain any county parks or trails, recreation opportunities are abundant. Local municipalities and state and federal agencies provide a diverse offering of facilities, including hiking trails, campsites, mountain biking trails, playgrounds, pavilions, and ball fields. Hunting, fishing, and boating are popular activities throughout the county.

Local Parks

Numerous local parks provide recreational opportunities for area residents while also encouraging visitors to stop and enjoy scenic views of the river. Local parks include Buena Vista and Riecks Lake Parks in Alma; Foelsch Riverside Park, Buffalo City Park, and Veteran's Memorial Park in Buffalo City; Goose Lake Memorial Park in Cochrane; and Fountain City Park in Fountain City.



State Parks

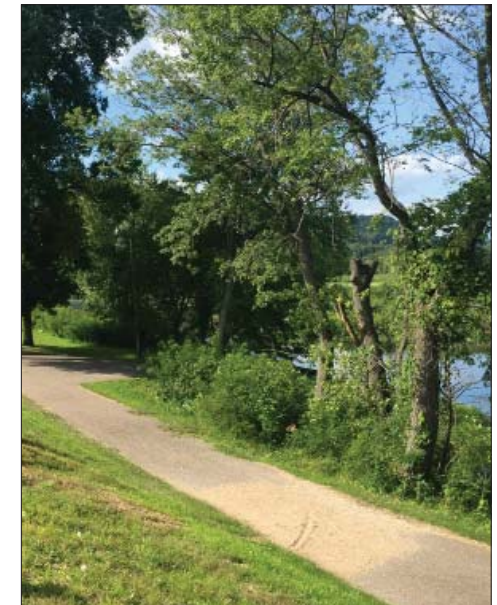
Merrick State Park is the only state park in Buffalo County. The 322-acre park is a popular destination for fishing, boating, and canoeing. A short loop trail system connects various uses within the park. While hiking is permitted in most of the State Nature Areas in the study area, there are no established trails provided for hiking, walking or mountain biking.

Trail Facilities

Trail related activities such as walking, hiking, and bicycling are popular in the region, but the county's lack of trail facilities lead many visitors and tourists to nearby counties where established trail systems connect them to cultural, recreational, and environmental opportunities. Shorter trails like the Mossy Hollow Trail and the Buena Vista Trail, in Alma, are popular with walkers, hikers, and bird watchers. Efforts are underway to connect the Great River State Trail in Trempealeau County to Winona, Minnesota, with a 3.9-mile crushed limestone trail. While this trail would improve connectivity and access to surrounding recreational opportunities, it would do little to support communities further north.

Above: The BNSF Railway is positioned between Highway 35 and the Mississippi River, creating challenges for river access.

Below: Residents commonly hike and bike along the multi-use trail at Riecks Lake Park.





Smokestacks at the Alma and John P. Madgett Generating Stations tower over the Mississippi.

ATV and Snowmobile Trails

Using all-terrain vehicles (ATVs) and snowmobiling are popular outdoor recreation activities in Buffalo County. Numerous snowmobile clubs maintain a network of snowmobile trails that connect cities across the county. These trails are located primarily on privately owned land with easements to support their use and maintenance. These trails may provide opportunities for trail alignments, as property owners have historically been amenable to public use of their lands for recreation.

Economy

Agriculture, manufacturing, education, and health sectors largely shape the economic character of Buffalo County, and growing industries like transportation and non-metallic mining are providing new opportunities for employment.

While growth in the mining industry is increasing employment opportunities and revenue for local governments, there may be adverse effects on trail development. The increase in heavy truck traffic associated with mining operations along Highway 35 degrades the quality of on-road bicycling for cyclists traveling the on the Mississippi River Trail. In addition, extraction practices may also detract from scenic viewsheds.

While not currently a significant economic factor, trail-oriented tourism and supporting industries can benefit greatly from a county-wide trail along the Mississippi. Such a trail would

strengthen existing amenities while supporting new economic development that caters to tourist-related activities, such as lodging, restaurants, and retail.

Nature and Culture

The Flyway Trail study area is located in Buffalo County in the Driftless Area of west central Wisconsin. The region is unique in the Upper Midwest for having escaped ancient glaciation and is nationally significant for its Paleozoic-age geology, rare flora, fauna, and biodiversity. The Driftless Area consists of dramatically sculpted karst topography born from eroding limestone. Forested bluff sides slope steeply into deep cold-water trout stream valleys cut from bedrock. Lush deciduous woodlands and oak savannahs, rock outcroppings, remnants of ridge top prairies, wetlands, and grassland river bottomlands provide habitat for diverse wildlife and vegetation.

The Mississippi River Valley furnishes some of the most rugged topography and picturesque scenery to be found in the Driftless Area along the “coast” of western Wisconsin. Steep slopes and bluffs (some as high as 650 feet) enclose bottomland forests, wetlands, and sloughs. These floodplain backwaters (1 to 6-1/2 miles wide) serve as an internationally recognized breeding, migration, and wintering habitat for hundreds of migratory birds and a highly productive refuge for fish, wildlife, and plants.

Potential Natural History Themes

1. The Driftless Area is an ecologically rare landscape.

The County possesses some of the best examples of the Driftless Area's unique natural and cultural features—goat prairies, the tallest bluff lands along the Mississippi, rare and endangered plant species, and steep valley Native American and pioneer tracks, called “dugways.” The area is internationally significant for its unusual geology and unique habitats. The area offers great opportunities for fishing, bird watching, wildlife viewing, and interpretation in the bottomlands, open water, upper wooded bluffs, and sand prairies. Area farmers and residents actively participate in goat prairie and trout stream restoration projects, other conservation activities, and environmental education. The County is also popular for whitetail deer, turkey, and grouse hunting. Unbroken ridgelines, dramatic and wooded bluffs, and steep river and stream valleys provide intimate scenes of the Driftless Area's most notable features. Overlook vistas from bluff tops or views from the open water of the river back toward uplands and river towns, provide panoramic views of the region's beauty and scale. Quiet roads through farmland and valleys offer serene and scenic experiences of the places that make this area so important to an understanding of the region's ecology and culture.

2. The Mississippi River is an ecological and economic artery for the region.

The Mississippi River, the 850-mile waterway extending from the Gulf of Mexico north into upper Minnesota, is the major flyway for migratory waterfowl and other bird species in the US. Tributary river basins draining into the river through Buffalo

County (Chippewa and Buffalo Rivers, Waumandee Creek, etc.) provide extensive additional habitat (e.g., sloughs, marshes, old channels, open water, and “stump fields”) for fish and wildlife. The river system's ecology and its vulnerability to pollution and development were recognized as early as 1924 with designation of the Upper Mississippi River National Wildlife and Fish Refuge (UMRNWR). In 1986, Congress again recognized the need for continuous protection of the river's ecosystem resources through establishment of the Environmental Management Program. The program requires the Army Corps of Engineers (USACOE) to protect, rehabilitate, enhance, and monitor the river's wetland and associated upland habitat areas. Millions of tons of commerce move annually up and down the River via towboats and barges. The historic river towns benefit from the recreation opportunities created by the navigation projects but are also dominated day and night by fast-moving coal and oil trains headed to regional and out-of-state ports.

Alma's historic buildings shape the community's character and values.



Cultural History

Buffalo County possesses a long and rich history of Native American and European settlement, some of which is still visible today at historic and park sites and in extant river towns, historic houses, and museum collections. Dairy farms, corn and soybean cropland cover rolling uplands, creating a scenic working landscape developed by German, Norwegian, Swiss, and other European settlers beginning in the mid 1800s.

Cultural History Themes

1. Buffalo County is a rich historic landscape, one of the oldest in Wisconsin.

The Buffalo County landscape and its Mississippi River corridor possess features that reflect ancient processes and historic times. Old geology, unaltered landscape types, Native American, agricultural, river, and industrial history are still visible. Dugways—steep narrow valley roads unique to the county—still operate for daily commuting. Heritage farms, historic cemeteries, historic site markers; farm, village, and upland place names (e.g. Urne, Czechville, Praag, Garden Valley, Town of Cream) dot the landscape, as do historic buildings in upland areas, river town neighborhoods and along the River. Old rip rap, historic wing dams and dredge piles along the River's banks testify to the continuous engineering required since the 1860's to mold and maintain its navigable channels.

2. The County possesses excellent examples of 19th century river and rail towns.

Developing along the river as early as 1839, towns such as Alma and Fountain City served as the river's front door and as the civic center for those in the agricultural uplands.

Basic linear organization defined a river town. Terraced towns developed on the ancient glacial melt terraces (called 'second bottoms') below the bluffs and along the Mississippi River. A typical grid layout focused on an upper and a lower main street (Main or Front) with housing and store blocks; overlook parks, a town square, a courthouse, churches, and mansions and cemeteries on the bluffs. The nature of each town's culture, its ethnic makeup and how it engaged with the river defined this 'civic landscape.'

Other towns, such as Buffalo City and Cochrane developed on wider flat lands, hoping to capitalize on railroad development. A similar gridded layout characterized each town site.

The Union House hotel in Alma. Photo courtesy of Buffalo County Historical Society.



3. Buffalo County is an active working landscape.

The Mississippi River and the Driftless Area's features provide an unequalled framework for the county's economic infrastructure—agriculture, industry, rail and community commerce, tourism, conservation. The River's current pools and dams, visible old rip rap, wing dams and dredge piles, testify to the continuous engineering required since the 1860s to mold and maintain its navigable channels. Coal-fired power plants, grain silos, barge terminals, and city marinas line the River's banks and roads. National, state and local parks, wildlife, and natural areas are found throughout the County and within the River corridor. River towns supply local foods, artist shops, hotels and restaurants, and points of historic or local interest. Recreation along the river (boating, fishing, water access, beaches) and in the uplands (hiking, road and mountain biking, camping and picnicking) abound. Nature, navigation, new ideas and a strong commitment to protecting and nourishing the county's unique natural and cultural legacy are the key forces that continue to shape its story.



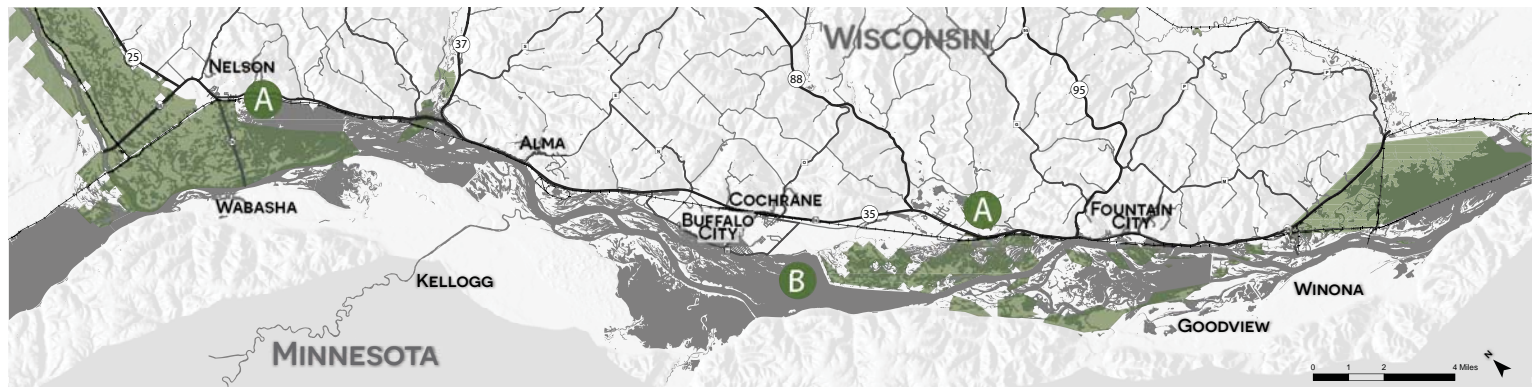
The Flyway Trail area is known for its scenic vistas and unique geographic and cultural features.

Opportunities

Many natural resources, scenic overlooks, cultural resources and recreational attractions act as opportunities to affect the alignment of the trail and support its development. Existing infrastructure along the Highway 35 corridor provides opportunities to route the trail, including areas with wide right-of-way and sections of Old Highway 35 (currently inactive) parallel to the existing highway. The cities along the highway corridor provide numerous alternate routes on side streets.

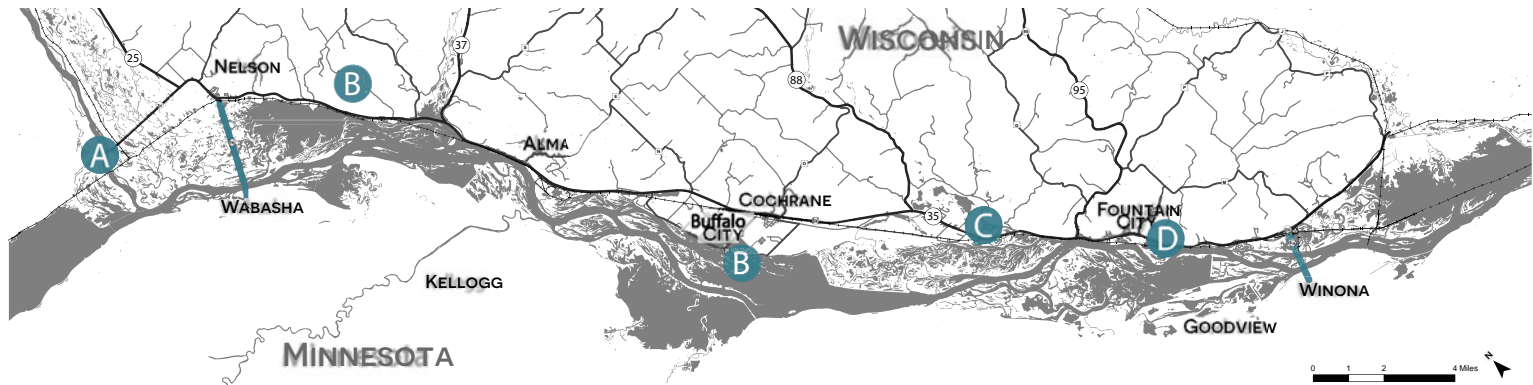
OPPORTUNITIES - NATURAL RESOURCES

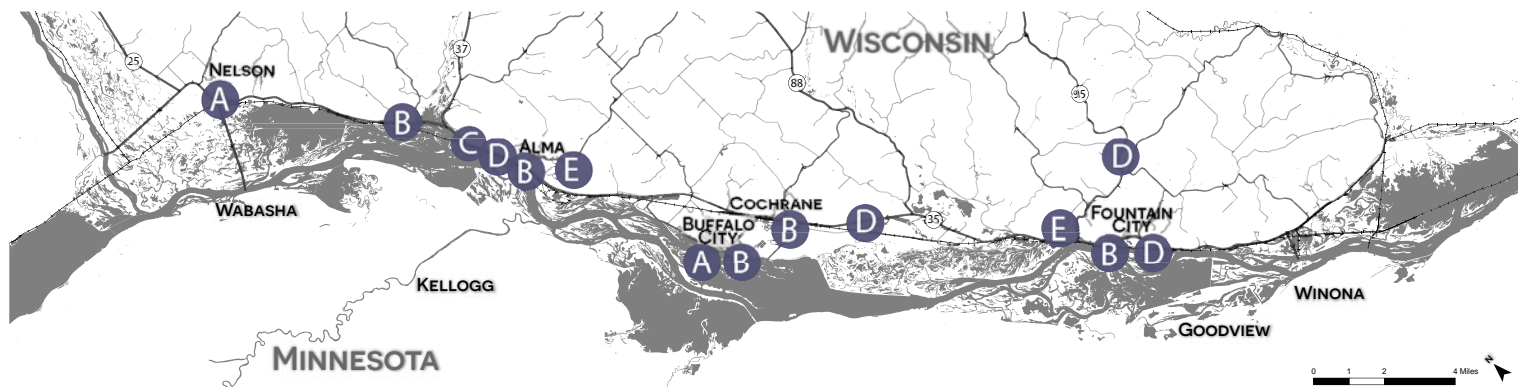
- Designated Natural Area/Wildlife Refuge
- A Goat Prairie
- B Spring Lake Island Restoration Projects



OPPORTUNITIES - TRANSPORTATION

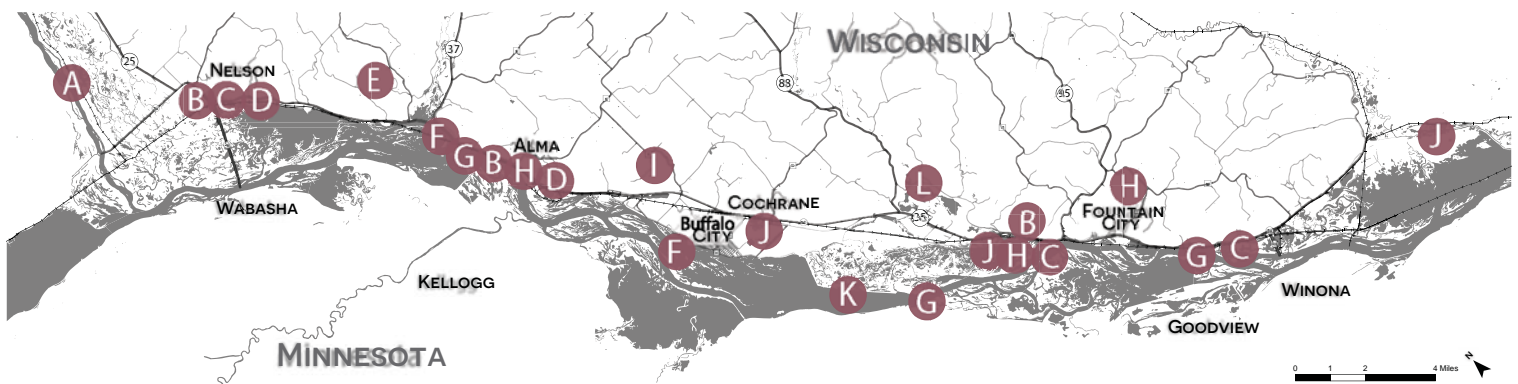
- Connection to Minnesota
- A Wide Shoulders on River Crossing
- B Scenic Local Roads
- C Lovers Lane
- D Sections of Old Hwy 35





OPPORTUNITIES - CULTURAL & ECONOMIC ASSETS

- A** Local Destination(s)
- B** Historic Marker/District
- C** Visitors Center
- D** Museum
- E** Vineyard



OPPORTUNITIES - RECREATION

- A** Future Trail Connection
- B** Scenic View
- C** Canoe/Kayak Launch
- D** Hiking/Birding Trails
- E** Future Mountain Bike Trails
- F** Marina/Boat Slips
- G** Lock & Dam
- H** Campground
- I** Snowmobile Trails
- J** City/State Park
- K** Dike Access
- L** Waumandee Creek Road Bike Loop

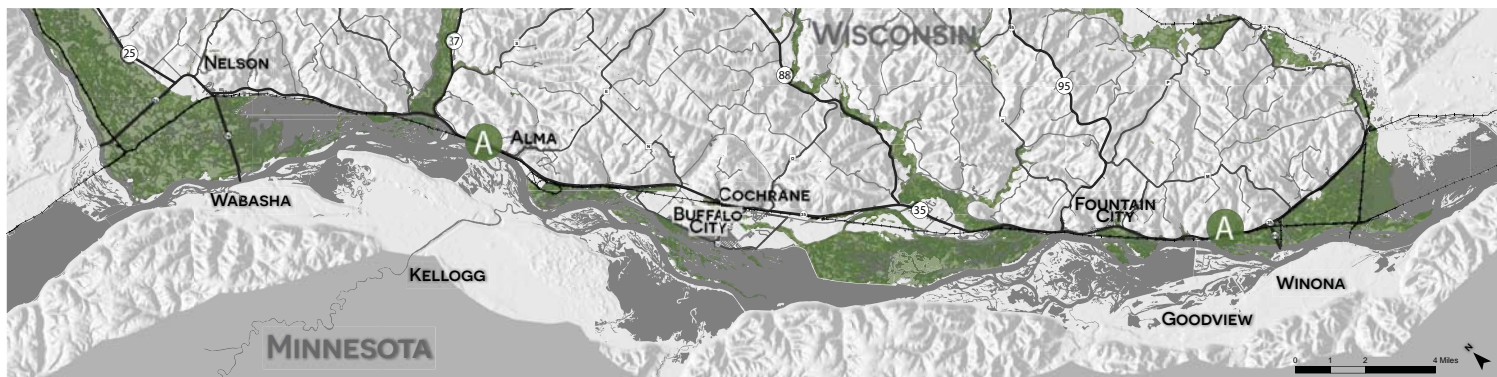


Constraints

Constraints within the study area may hinder, restrict or impede the development of the trail. The natural topography physically limits where within the study area the trail may be aligned. The bluffs and the Mississippi River restrict available width; other tributaries that feed the Mississippi River require bridge crossings. Wetlands and other sensitive environmental areas will require context sensitive design solutions.

The existing built environment provides additional constraints. Many areas have limited right-of-way available for trail development. Existing bridges over rivers and other tributaries lack adequate width for separated bicycle facilities. The active rail line within the corridor restricts available right-of-way for trail development and restricts safe crossing. Increased truck traffic makes biking along the roadway less comfortable and inviting.

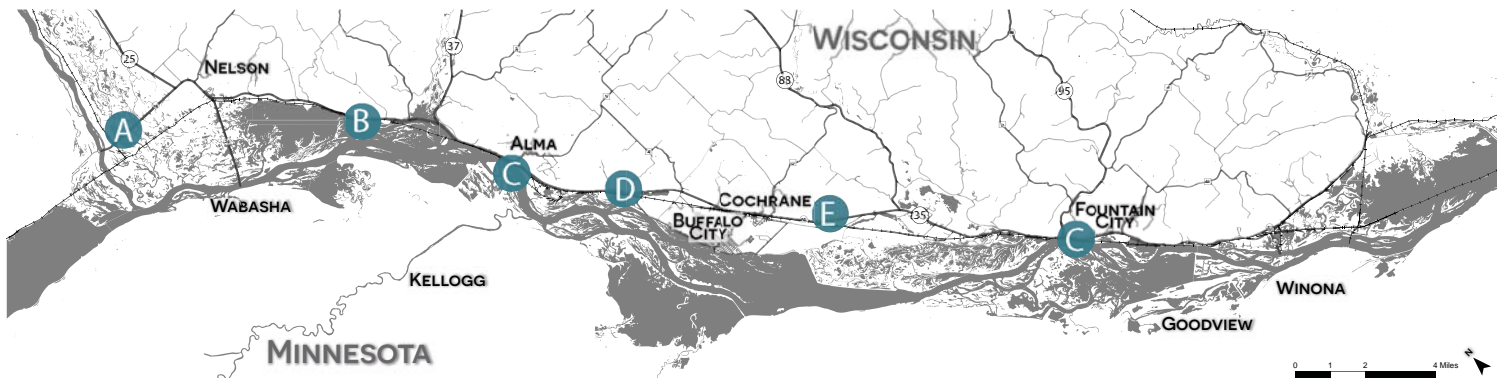




CONSTRAINTS - ENVIRONMENTAL


 Wetlands/Floodplains


 Steep Hills Restrict Right-Of-Way





CONSTRAINTS - TRANSPORTATION

 Narrow Widths at some River Crossings

 Limited Right-of-Way next to Railroad

 Constrained Right-of-Way

 Heavy Truck Traffic

 Limited Railroad Crossings

This page intentionally left blank.