Ogemaw County's

Iron-Belle Trail Master Plan

2019

Michigan's Iron Belle Trail™

ACKNOWLEDGEMENTS

CONSULTANTS

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LAPHAM ASSOCIATES
Clare - West Branch

FUNDED BY

Michigan's Iron Belle Trail Funding

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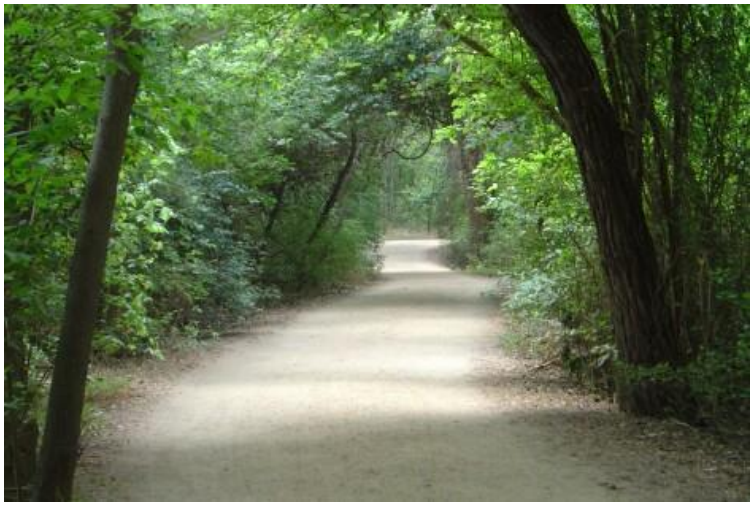
Engagement Plan

Ogemaw County engaged the residents and all those interested in the planning process in order to have maximum community input and so that there ultimately will be maximum benefit to community members and visitors using the Iron Belle Trail (IBT). The county advertised the project through various means: the county's website, the Economic Development Corporation (EDC) website, newsletters, the local school districts, and others as identified in the process. The county has called upon appropriate stakeholders and others who may be interested in, or benefit by, the IBT project.



- *A 2000 Michigan State University Survey about the Pere Marquette Rail-Trail found that 62% of trail users cited exercise as the primary reason for using the trail and 73% said they reported improvement in their health due to use of the trail.*

Once the above steps have been taken, a project commencement meeting was held to discuss the project with the following agenda:

Explanation and Overview of the Trail Master Plan

Goals

- Raise awareness of the project and purpose for trails
- Discuss benefits of non-motorized trails
- Propose potential trails systems
- Discover hubs, linkages and connections for downtowns, residential areas, the countryside, parks, cultural locations, educational facilities, and natural settings
- Establish priorities and objectives for the project and future trails
- Develop a marketing plan and promotional program
- Establish a signage plan

- Consider all season usage
- Provide future connections – ally with connecting communities.
- Form a trail advisory committee (e.g., Friends of the Trails group)

After preliminary draft plans were completed, the stakeholders reconvened to review and critique the proposed Trail Master Plan. The final plan was then completed and a presentation to the whole community was held to portray the master plan and to discuss the efforts for implementation of the plan. The plan was promoted through the same media as the original project commencement announcements and any other ways that were discovered by the committee during the process.

➢ *In 2002 and 2004 surveys of recent home buyers sponsored by the National Association of Home Builders and the National Association of Realtors, trails were ranked as the second most important community amenity on a list of 18 choices – bettering even Golf courses and playgrounds.*

The County will then continue the project to fruition using all its outreach capabilities to keep everyone informed of the project's progress and to attract participants to help construct and use the IBT.

On April 18th of 2017 the North East Michigan Council of Governments (NEMCOG) together with the Michigan Department of Natural Resources (MDNR) held the Ogemaw County Iron Belle Trail Kick-off Meeting. At this meeting numerous interested community members and governmental agencies attended and learned about the Governor's Iron Belle Trail initiative and trails in general. The conceptual route was presented to the participants and a discussion of the benefits and concerns with the proposed route and various corridors that traverse the county. Consumers Energy's existing high-power transmission lines and the highways seem to present easy routes, but also come with costs and other problems such as traffic or stipulations that may be present with a lease from Consumers.

Also at this meeting, points of interest and other destinations were discussed and this initial route was determined to have these destinations as a priority. The Rifle River Recreation Area and the City of Rose City and the City of West Branch are significant destinations and the route must make these connections. Potential routes here explored and ideas to utilize lower traffic volume roads such as Fairview Road seemed to be a consensus of the group.

Concerns with topography and wetlands were discussed and further exploration into working around these types of obstacles would have to be addressed. An overall IBT route preference was a goal of this meeting and the Rose City Road to Fairview Road to City of West Branch was determined to be a starting point for this route. The route from the City of West Branch to St Helen was left as an undecided segment but the use of the rail road corridor was used as a default. The initial thought on the connection to St Helen was to continue along Rose City Road, but concerns with the Kirtland Warbler was thought to be an issue with that route.

A second stakeholders meeting was held on May 24th of 2017 and a quick recap of the previous meeting started the discussion. A further exploration into possible alternatives to the previously discussed route was presented by NEMCOG and a more detailed evaluation of the preferred route was presented. Aerial photos of the route were presented which provided a better visual of these routes and the obstacles they present. A discussion of financing and how to proceed from that point ensued and the stakeholders determined that the townships and cities would most likely be the driving force in obtaining grants to fund any sort of construction for segments. Other options for funding such as crowdfunding were discussed and the groups final determination was that spreading the word of the IBT and keeping everyone informed on the progress of planning would be necessary to drive the local support that would be needed.

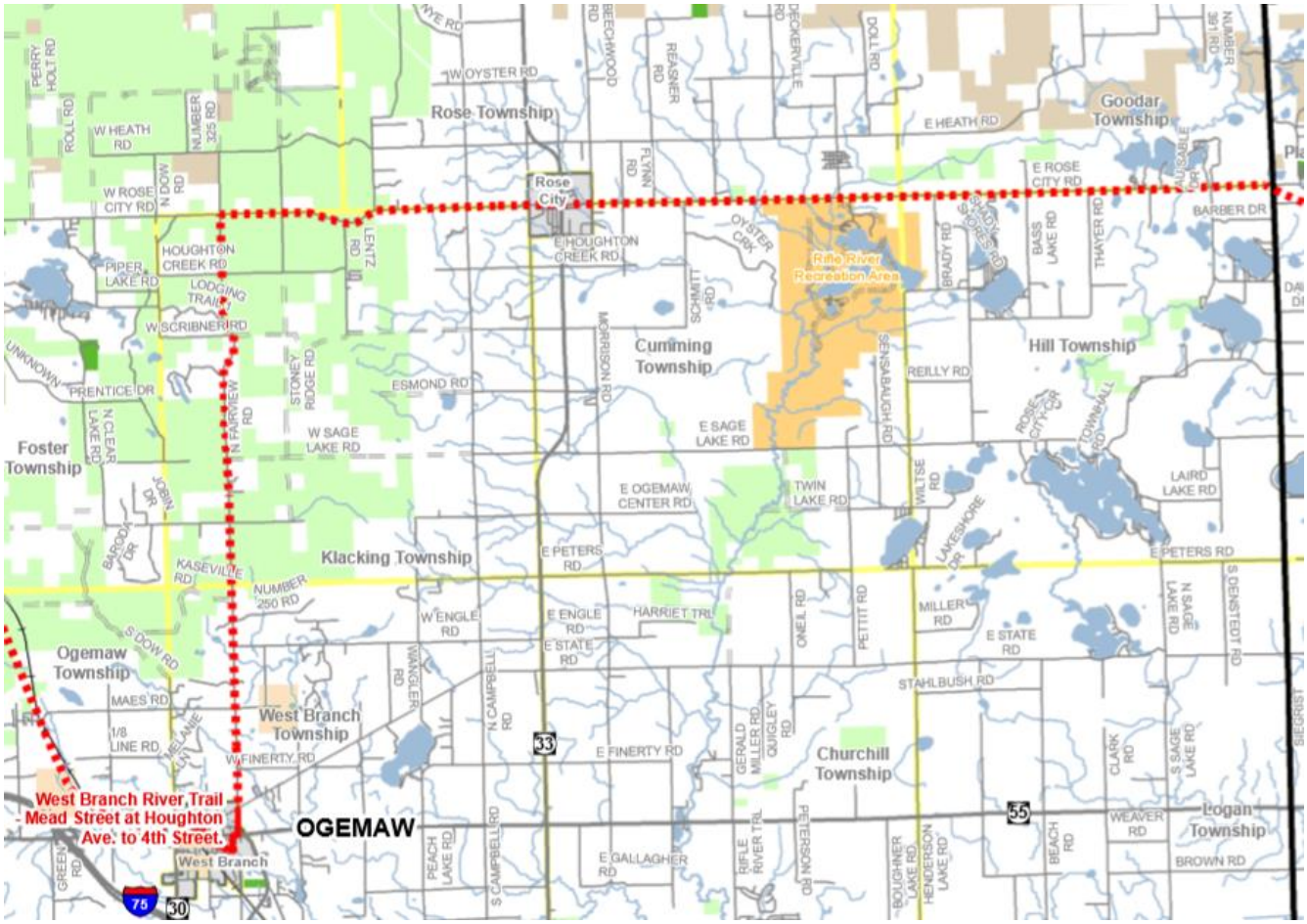
After the second meeting the stakeholder's meetings failed to continue to attract local attendance. The MDNR provided some input on various environmental concerns and areas that may be best avoided. These maps included State owned lands that may have been acquired by funding sources that would limit their ability to be utilized and areas of archeological concerns or critical habitat that would pose problems with construction. Also concerns with the Kirtland Warbler Habitat that is protected in the northwestern part of the county would need to be considered if a route was to pass through that area.

In early 2018 NEMCOG initiated a series of meetings intended to rekindle the stakeholder's interest in the IBT planning process in Ogemaw County. It was decided to apply for a grant to help fund the preparation of this plan and with the assistance of the local participants and NEMCOG the grant was awarded.

From that point forward the process of reorganizing the initial stakeholders and engaging additional stakeholders in the planning process begun. The initial trail route was a starting point for discussions and was further explored to determine if alternative routes may be more feasible.

At that point Ogemaw County had applied for a grant to develop a trail masterplan for the county which they were awarded in the spring of 2018. The county then retained Lapham Associates to develop a trail plan for Ogemaw County and started with the plan that was developed from these initial meetings. Utilizing engineering staff field reconnaissance of the route was performed to determine the feasibility from a cost and permitting

perspective and potential alternatives were investigated. Further exploration of land ownership, rights-of-way, and existing corridors were explored to determine if more feasible available routes were possible. A final more detailed route was then defined and further investigations were performed in order to develop reasonable opinion of costs for the potential route construction.



Preliminary IBT Route Map for Ogemaw County

Once a route was clearly defined and opinions of costs were developed Lapham Associates and the EDC began public outreach to seek input and suggestions on the route and project. Public hearings at municipalities along the route were held as well as discussions at other public meetings such as Planning Commission meetings and Parks & Recreation Commission meetings. A list of the hearings and meetings are listed below.

- October 2, 2018 City of Rose City regular meeting of the City Council
- October 10, 2018 Ogemaw Township Board regular meeting
- October 11, 2018 Ogemaw County Parks & Recreation Commission meeting
- October 15, 2018 City of West Branch regular meeting of the City Council
- October 24, 2018 Ogemaw County Planning Commission
- November 13, 2018 West Branch Township Planning Commission meeting

After gathering public comments and suggestions Lapham Associates evaluated the input and made adjustments to the routes as needed and began to finalize the plan. An additional discussion with local MDNR officials about possible use of forest trails to develop a route that would take the users off the local roads and through some the county's wonderful state forests and wilderness. This would offer a better potential for viewing wildlife and natural resources as well as removing the potential for conflicts with traffic on the public roadways. An alternative route was developed and is included in the final route plan to allow an option for the developers of the route to further explore.

A roll-out of the final draft of the plan was scheduled to take place at a public hearing to provide one last opportunity for the general public to offer suggestions and gather support. A public hearing was advertised and planned by the Ogemaw County Parks and Recreation Commission to be held at the Ogemaw County Building in West Branch to present the route and plan. … {to be completed after public hearing and input}

Community Description

History

Ogemaw County is in the mid-section of the lower peninsula of Michigan. The County is bordered on the north by Oscoda County, on the west by Roscommon County, on the south by Gladwin and Arenac County, and on the east by Iosco County. The County covers an area of 367,749 acres or about 574 square miles. Using the 2010 US Census population figures, the population density of the county is roughly 38.5 people per square mile. The County consists of 14 townships, one village, and two cities. The county seat is located in the City of West Branch.

Ogemaw County Historic Timetable

1790 – part of Knox County
1803 – part of Wayne County, Indiana Territory
1810 – part of Michigan Territory
1818 – part of Michimackinac Territory
1819 – part of Oakland County
1852 – part of Mackinac County
1856 – part of Cheboygan County
1860 – part of Midland County
1867 – part of Iosco County
1875 – Ogemaw County established
1885 – Village of West Branch established

Ogemaw County was set off in 1840 as a county, but it did not become an organized county until 1875. It had 16 townships in 1889. Starting in the northeast corner going from east to west they were; Goodar, Rose, Damon, Foster, Hill, Cumming, Klacking, Beaver Lake, Logan, Churchill, West Branch, Ogemaw, Richland, Mills, Horton, and Edwards. Presently, the townships are: Goodar, Rose, Foster, Hill, Cumming, Klacking, Logan, Churchill, West Branch, Ogemaw, Richland, Mills, Horton, and Edwards.

Most of the early development and commercial activities of the county serviced the lumbering industry. There were lumber mills in West Branch, Rose City, Prescott, and elsewhere. General stores, hotels, and taverns opened and expanded with lumbering activities. As farming took over from lumbering, slaughter houses, elevators, pickling stations, and other businesses were established to process or market wool, meats, and livestock produced in the area. Other businesses to service local residents also grew including shoe repair shops, dairies, a garment factory, automobile garages, coroners, ice houses, and even the Graceland Ballroom in Lupton. Industrial activities also began as lumbering grew.

Oil was discovered in Ogemaw County in 1933, and by 1936 one-hundred and twenty-eight wells were producing 2,300 barrels a day from county oil fields. West Branch Refining Company built a refinery in West Branch in 1936, which operated until 1953, and then by various other refinery companies until the early 1980's. As the economy of the country and Michigan grew and transportation to the Ogemaw County area was improved, many manufacturing businesses were begun and flourished.

Today's economy is now much more tourist oriented. As state and federal highways were built they connected Ogemaw County to downstate Michigan and the rest of the country. This opened the area to manufacturing businesses and others supporting those businesses. In addition the county was opened up to tourists and people wishing to resettle to the beauty and bounties of the area. As soon as these visitors began coming to the area, homes, subdivisions and other developments were created around the county's lakes and along its rivers and within the growing cities and villages.

Historical Sites within Ogemaw County

Cleveland Park Pavilion, located in Rose City, is a rustic wood structure dating from 1931. It continues to serve as an open air kitchen and dining hall. Its marker was erected June 18, 2001.

Rose City received commemorative designation in 2002 as the site of "The Big Fire" of April 3, 1910. It took less than an hour for the entire business district to burn.

The Rose Township Fractional District No. 5 School, commonly known as the Lupton Schoolhouse, was designated a historic site in 1995. It was built during the 1903-1904 school year by Alexander Hamilton Reid. The school served 85 students when it opened for the 1904-1905 school year and continued to serve the population of Lupton until 1964 when it was closed and students were transferred to a Rose City school. After 30 years of adaptive reuse, it has been returned to the Lupton Community for use as a school.

The Frank Sebastian Smith House, listed in 1989, is a rambling Queen Anne-style house significant as the residence of Frank S. Smith (1862-1941) a long-time West Branch business person. Frank Smith was a blacksmith and later established a farm implement and harness business before partnering with his son, George, in the sale of automobiles. He served two terms as an Ogemaw County supervisor.

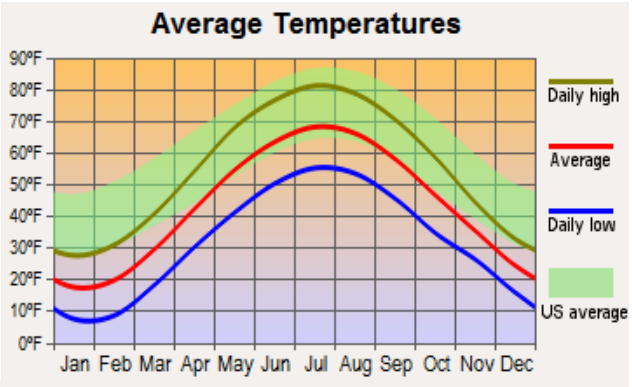
Climate and Weather

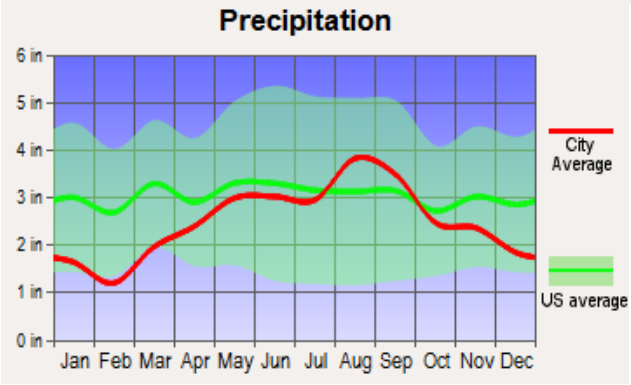
The temperature in West Branch ranges from a daily maximum of 28ºF in January to 81.5ºF in July. The lowest daily minimum temperature of the year is usually recorded in January and is 8ºF. The average annual temperature for the area is 55.6ºF.

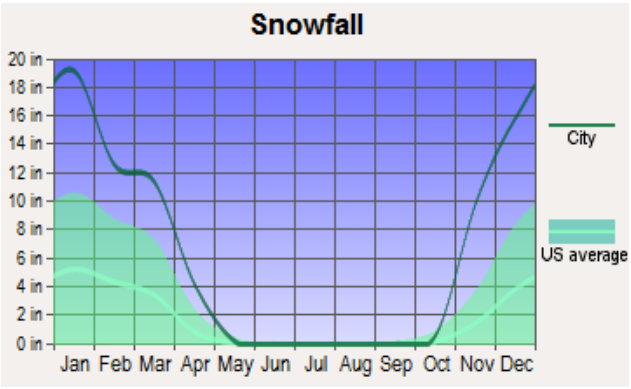
Total annual rainfall is just over 30 inches. August tends to have the highest amount of rainfall with an average of almost 4 inches. However, May, June, July and September have mean rainfall amounts of approximately 3 inches or more each month.

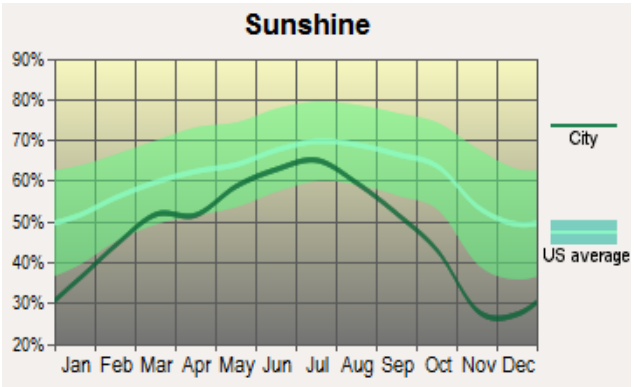
The variation in climate and four distinct seasons makes West Branch and the region desirable for water, biking and other summer sports as well as snowmobiling, cross country skiing, and snowshoeing in the winter. These activities draw tourists and visitors to the area, accounting for much of the seasonal fluctuations in population in the County and the increase in the number of workers associated with the Accommodations and Service industries.

Normally, January has the most amount of snowfall with an average of 13.2 inches. The next highest snowfall month is December with 11 inches. Both January and February have the highest amount of snow cover with average depths of 7 and 8 inches, respectively. Total annual snowfall is almost 50 inches.



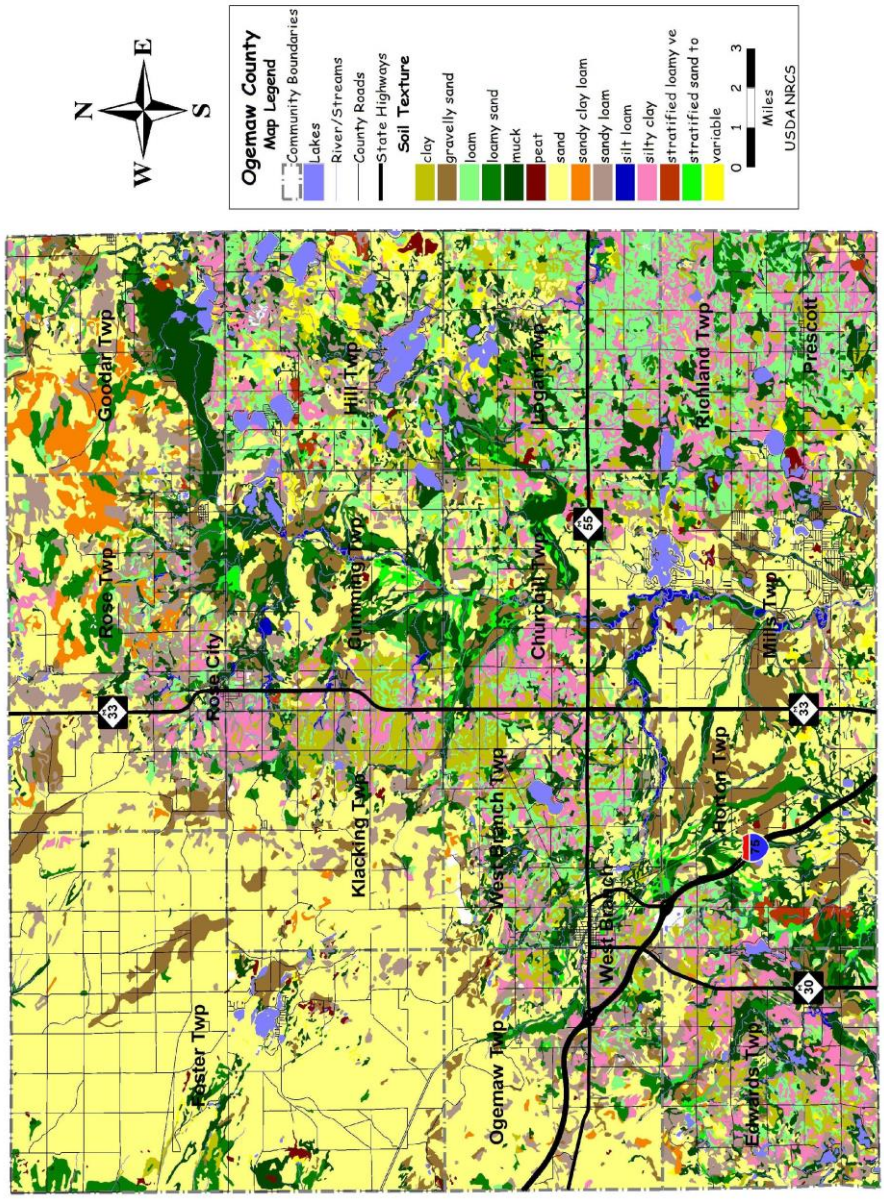




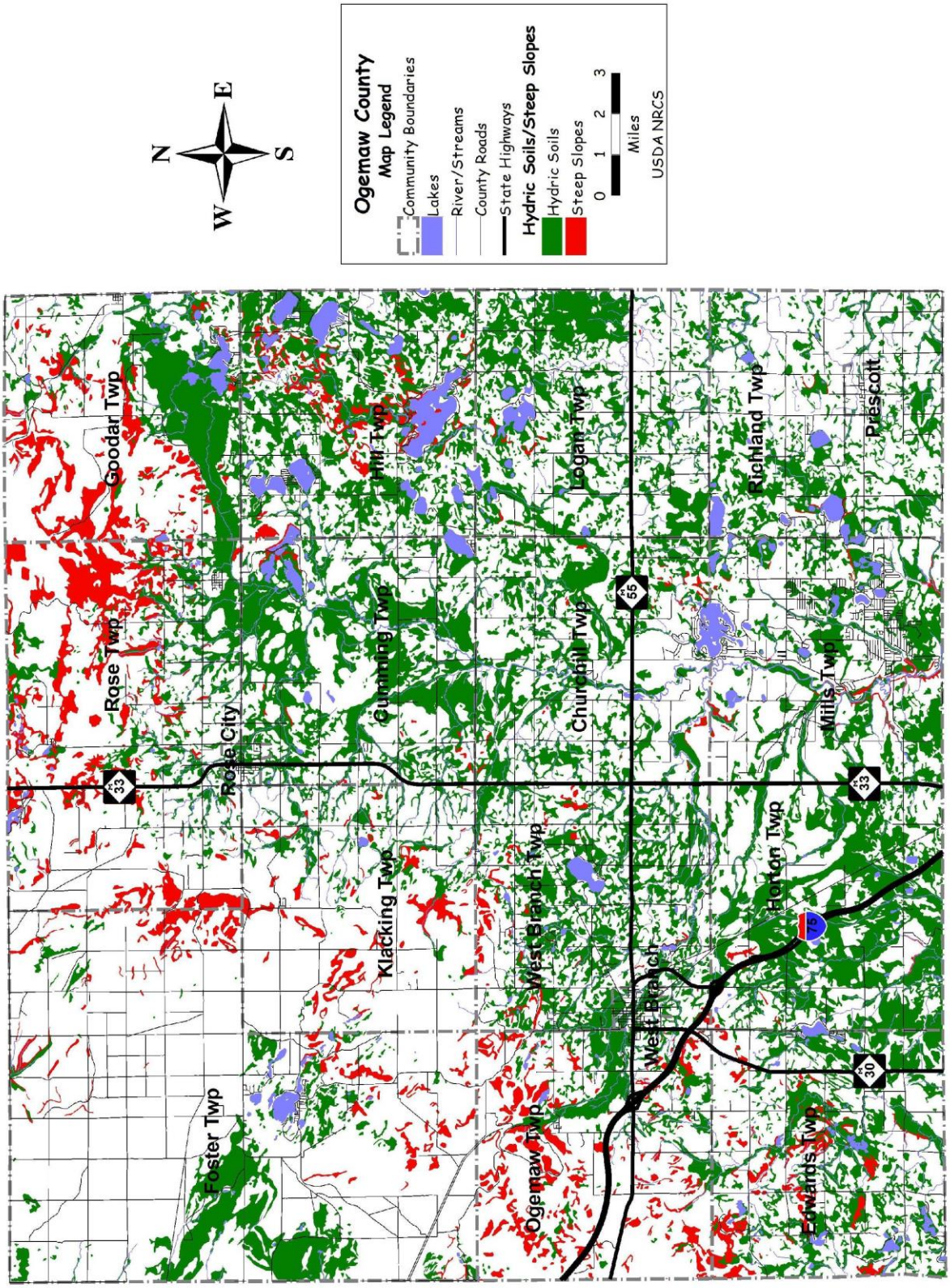


Physical Setting

Approximately 56% of the soils in the County are considered to be some type of sand and therefore percolate well and have low runoff potential. Sandy loam comprises 34% which gives these areas a moderate run-off potential. The southwest corner of the County has a very high run-off potential in the areas where the soils are mostly loam. Run-off classifications by the Natural Resources Conservation Service (NRCS) are based on assessments of soils, slope, climate and vegetation cover. See the Ogemaw County Soil Service for further details.



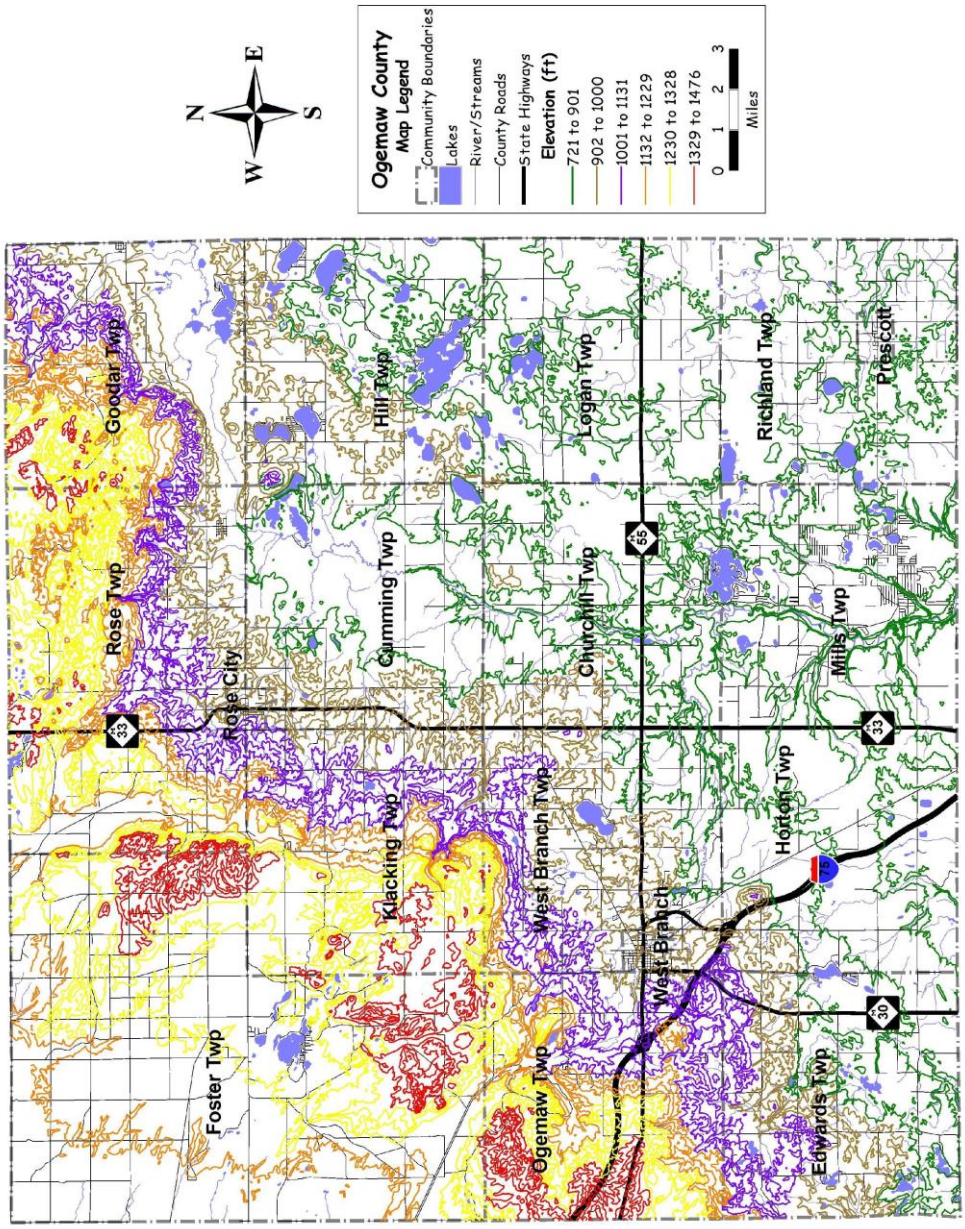
USDA – NRCS Soils Map



Ogemaw County Hydric Soils & Steep Slopes Map

Topography

Ogemaw County's topography has a total relief of about 755 feet with the lower points being at the southeast corner with an elevation of 721 ft. Elevations increase moving in towards the northwestern area of the county with an area of steeper slopes and an elevation of 1476 feet. Generally speaking, the terrain in the county varies from flat areas to gently rolling or hilly areas. The most significant relief and topographic features can be seen in the northwest area of the county towards the center of the county.



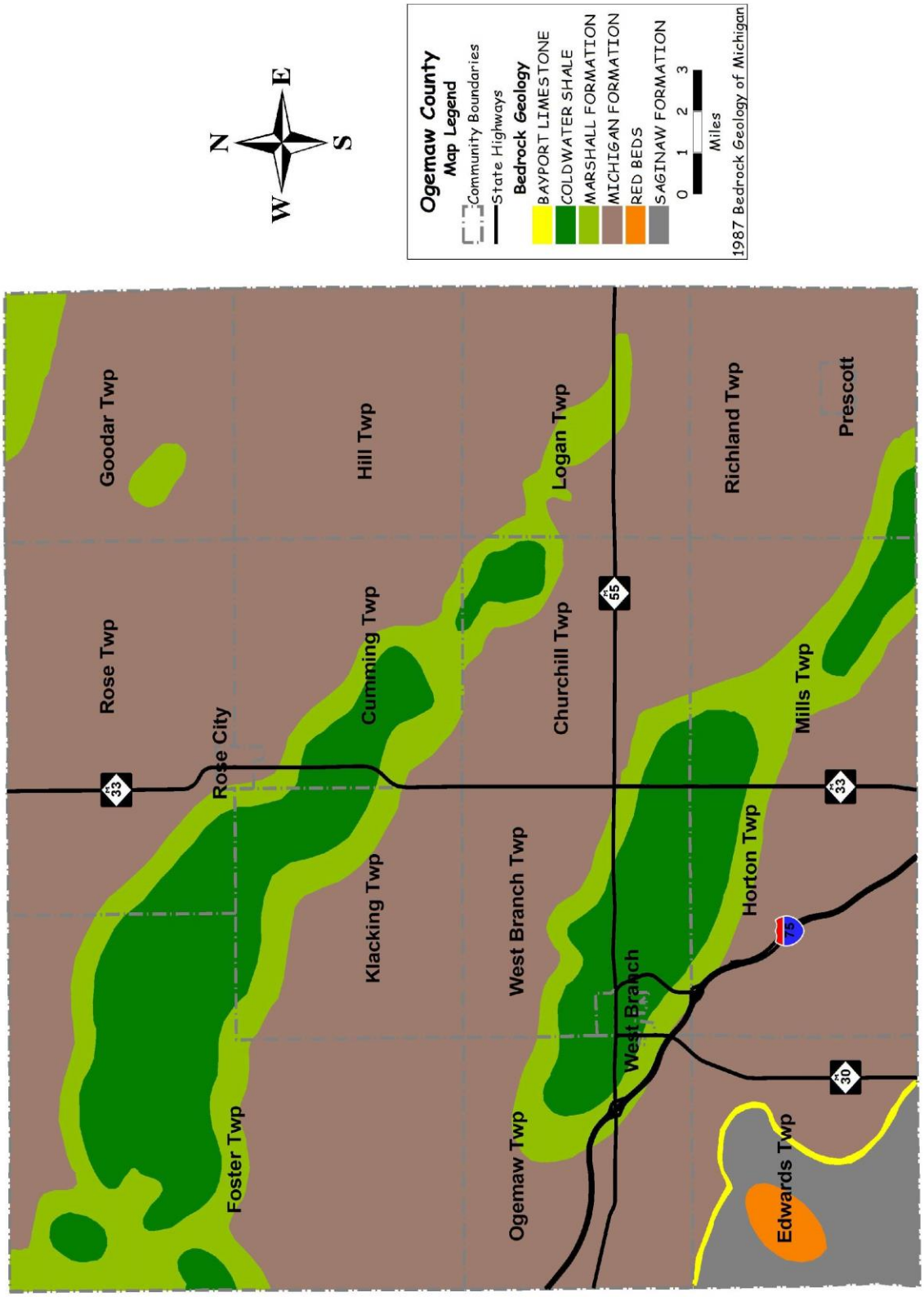
Ogemaw County Elevation Map

Geology

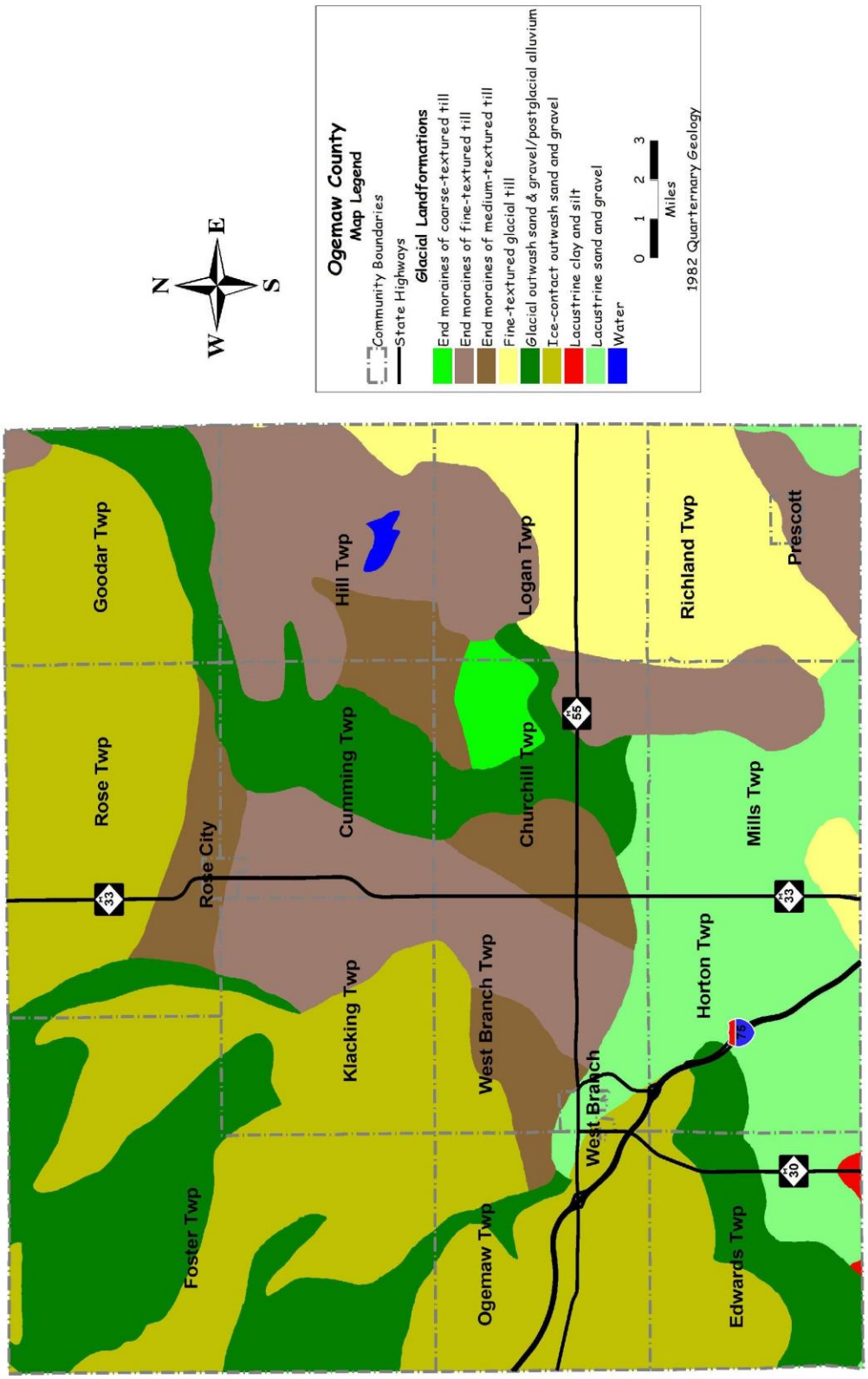
The rolling hills, river valleys, swamps and lakes were created by the retreating continental glacier some 12,000 years ago. Beneath this thick mantle of the glacial deposits lays a foundation of layered sedimentary bedrock.

Starting approximately 2 million years ago, during the Pleistocene era, continental glaciers formed in the Hudson Bay area. Several times, over this two million year period, the massive sheets of ice built up and moved south across what is today Michigan. Massive ice sheets, more than one mile thick, advanced in a southerly direction bulldozing their way across the landscape. The glaciers pushed material in front of it, incorporating rocks and soil into the debris laden ice, and scraped the ground and broke apart the sedimentary bedrock of the Michigan Basin.

Each advance and retreat of the continental glaciers took tens of thousands of years. This reoccurring process shaped and reshaped the land, obliterating and then creating hills, valleys, rivers and lakes, swamps and marshes. The last glacial period, called the Wisconsin Era, created the landscape we know today. The glacier left behind boulders, rocks, cobble, sand, gravel, silt, clay and loam. In some areas the material was deposited in unsorted masses called till plains, ground moraines and end moraines. Water flowing from the melting glaciers also sorted materials, creating outwash channels, sand deltas, kames and eskers. Fine materials, captured in the fast moving glacial meltwaters, settled to the bottom of expansive glacial lakes creating lacustrine clay and silt plains.



Ogemaw County Bedrock Geology Map



Ogemaw County Glacial Land Formations Map

Hydrology

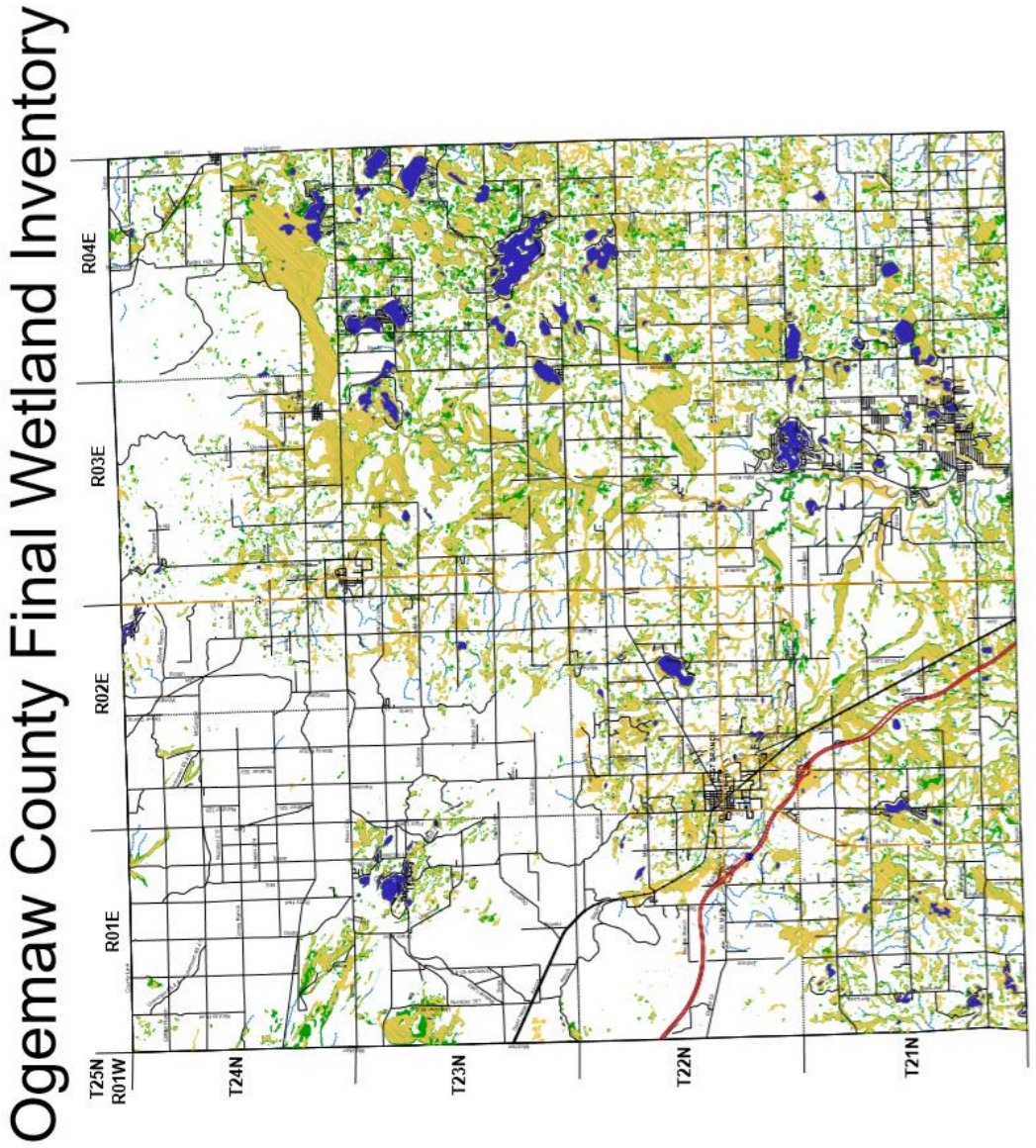
Ogemaw County has a variety of water bodies such as rivers, streams, lakes and wetlands. The County has about 6,637 acres of lake surface. Together they account for about 6% of the County's total acreage.

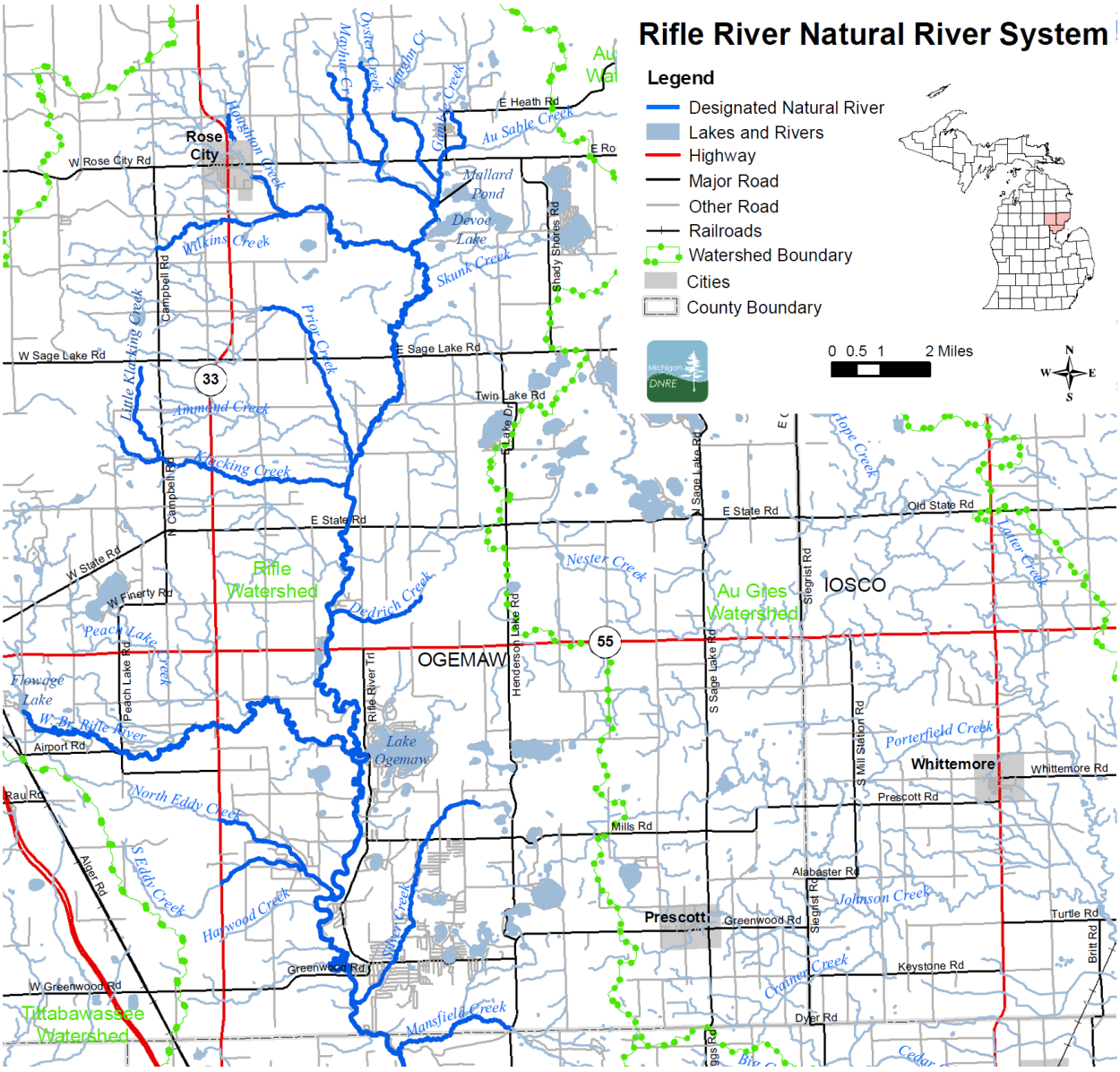
Watersheds within the county are the Rifle, Au Gres, and Tittabawassee. The Rifle, Au Gres, and Tittabawassee watersheds all eventually drain into Lake Huron.

Wetlands are defined by the existence of water, either on or near the surface for a portion of the year and by the type of vegetation that is present. Wetlands may have many names and are often referred to as bogs, marshes, and swamps. Wetlands are an important resource to the people of Ogemaw County. They improve the water quality of lakes and streams by filtering polluting nutrients and chemicals. More importantly, wetlands recharge aquifers, support wildlife and vegetation, and protect shorelines from erosion. The eastern side of the county has a significant amount of wetlands that cover large continuous areas along the Au Gres River. Hill Township has a considerable amount of wetlands.

Ogemaw County does not participate in the FEMA National Flood Insurance Program and therefore no flood zones maps have been created.

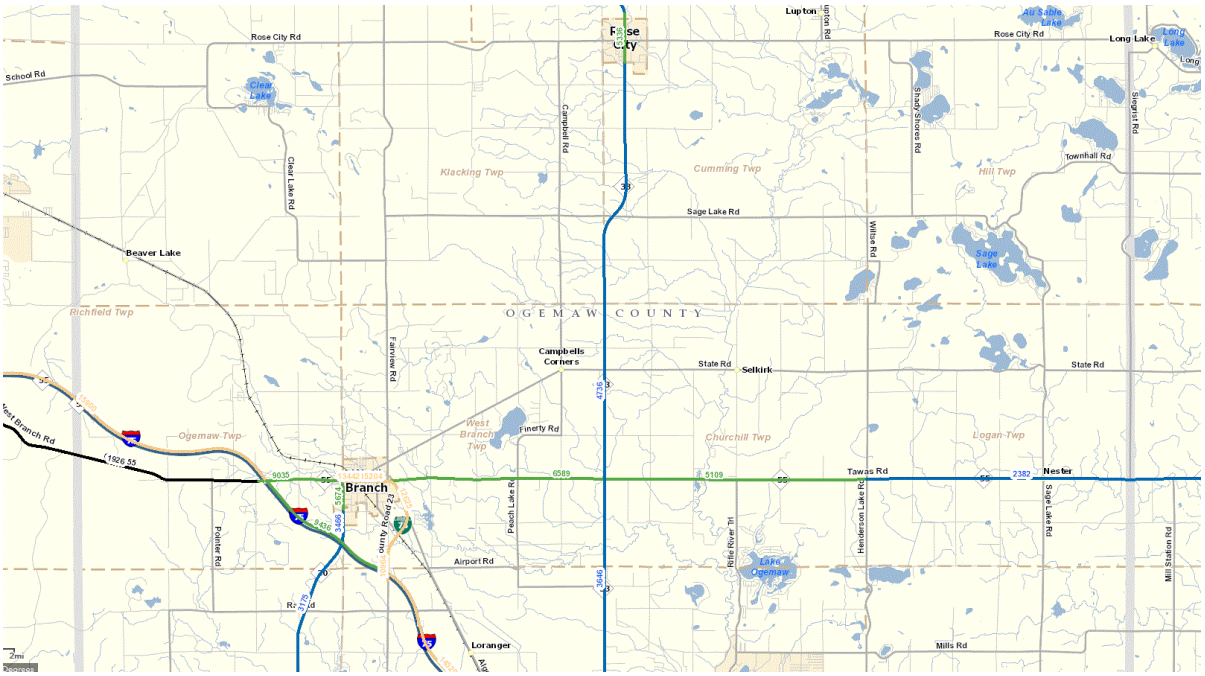

Ogemaw County
Final Wetland Inventory
Legend
Interstate Highways
US Highways
State Highways
Railways
Open Water
Rivers
Drains
Wetlands as identified on NWI and MIRIS maps
Soil areas which include wetland soils
Wetlands as identified on NWI and MIRIS maps and soil areas which include wetland soils
County Boundary
0 0.5 1 2 3 4
Miles
N
E
S
W


Ogemaw County Final Wetland Inventory
R04E
R03E
R02E
R01E
T25N
R01W
T24N
T23N
T22N
T21N

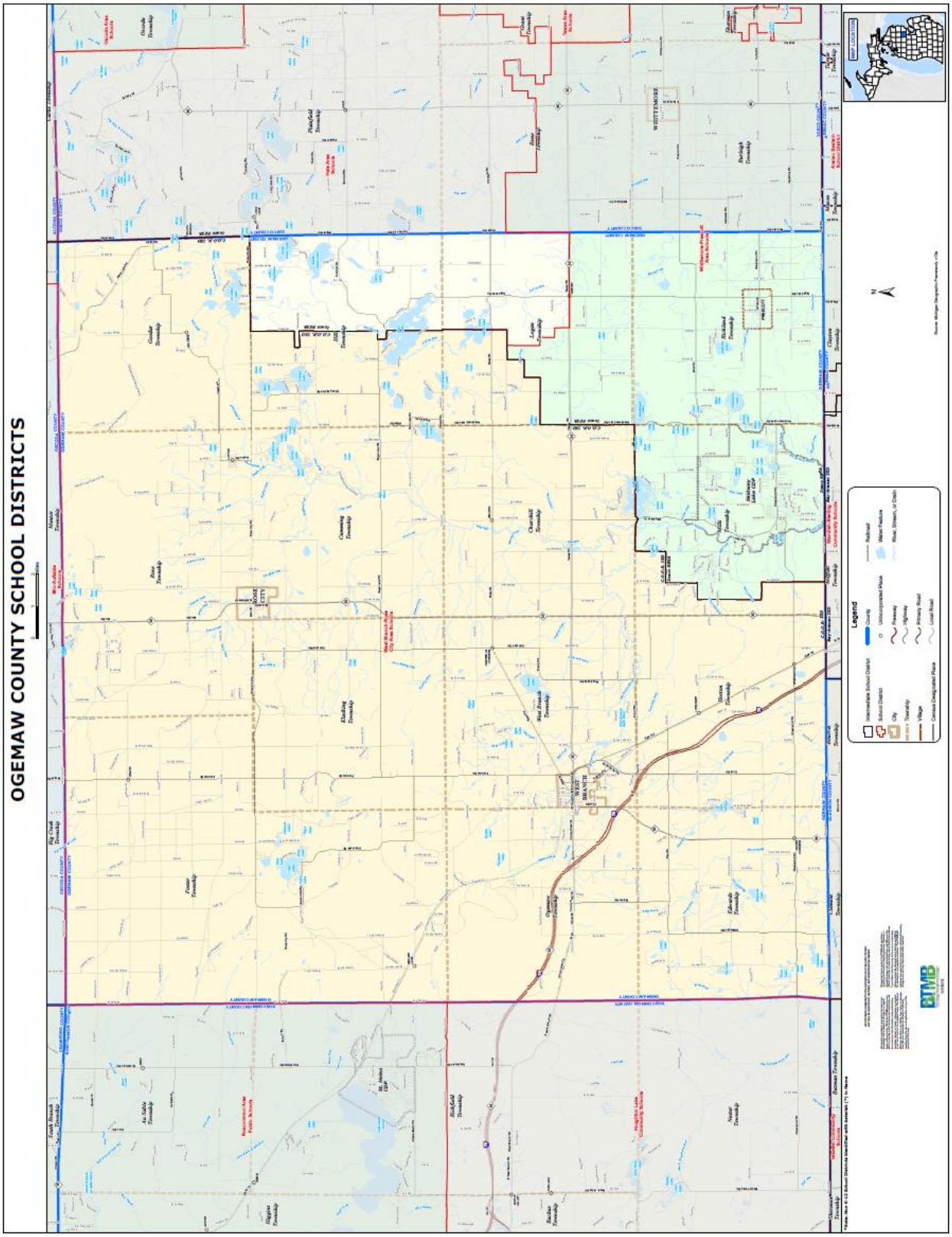

Rifle River Natural River System
Legend
Designated Natural River
Lakes and Rivers
Highway
Major Road
Other Road
Railroads
Watershed Boundary
Cities
County Boundary
0 0.5 1 2 Miles
N
W
E
S
Rose City
W Rose City Rd
E Heath Rd
Au Sable Creek
Mallard Pond
Devoe Lake
Skunk Creek
Wilkins Creek
Houghton Creek
Oyster Creek
Mayhew Cr
Vaughn Cr
Grimble Creek
Campbell Rd
Shady Shores Rd
Prior Creek
Little Klacking Creek
W Sage Lake Rd
E Sage Lake Rd
33
Twin Lake Rd
Ammond Creek
Klacking Creek
N Campbell Rd
E State Rd
W State Rd
W Finerty Rd
Rifle Watershed
Dedrich Creek
Peach Lake Creek
Peach Lake Rd
Flowage Lake
W Br Rifle River
Airport Rd
Rau Rd
North Eddy Creek
S Eddy Creek
Ainer Rd
Haywood Creek
Rifle River Trl
OGEMAW
Henderson Lake Rd
55
Lake Ogemaw
Nester Creek
Hope Creek
Old State Rd
Ladder Creek
N Sage Lake Rd
S Sage Lake Rd
Au Gres Watershed
Siegrist Rd
IOSCO
Porterfield Creek
S Mill Station Rd
Whittemore
Whittemore Rd
Prescott Rd
Mills Rd
Alabaster Rd
Johnson Creek
Prescott
Greenwood Rd
Turtle Rd
Britt Rd
Keystone Rd
Cramer Creek
Dyer Rd
Silver Creek
Mansfield Creek
W Greenwood Rd
Tittabawassee Watershed

Transportation

The Michigan Department of Transportation's (MDOT)current Annual Average 24 Hour Traffic Volumes map indicates that on M-33 in Rose City, there is an average of 4,736 vehicles/day. M-55 east of West Branch has 6,589 vehicles/day. The City of West Branch has 15,204 vehicles/day on the east and 13,442 vehicles/day on the west side of the city. Lastly, I-75 Exit 215 has approximately 9,035 vehicles/day and Exit 212 has an average of 10,964 vehicles/day.



Current MDOT Average Daily Traffic Map


OGEMAW COUNTY SCHOOL DISTRICTS
Legend

Demographics

Ogemaw County's population decreased by 2.7 percent from 2010 to 2016 going from 21,699 to 21,103. Over this six-year period, the state decreased 3.9%, while the United States population increased 4.8%.

Ogemaw County residents, similar to most of the region, are almost all white (96.8%) and are almost equally divided between the sexes, (10,562 male, 10,541 female). More than three-quarters of residents are homeowners (82.5%) where the average household size is 2.14 persons. The median age in the county is 49.5 years, with 24.2% of the population aged over 65 years of age.

The average commuting time for county residents is 22.8 minutes as compared to 25 minutes for the average commuter time for all U.S. residents.

Population Change
Ogemaw County
2000, 2010, 2016

Governmental Unit	2000	2010	2016	Change 2010 - 2016	Percent Change
Churchill Township	1,603	1,713	1,495	-218	-12.7%
Cumming Township	796	698	689	-9	-1.3%
Edwards Township	1,390	1,413	1,443	+30	+2.1%
Foster Township	821	843	790	-53	-6.3%
Goodar Township	493	398	393	-5	-1.3%
Hill Township	1,584	1,361	1,364	+3	+0.2%
Horton Township	997	927	1,022	+95	+10.2%
Klacking Township	617	614	588	-26	-4.2%
Logan Township	581	661	532	-129	-19.5%
Mills Township	4,005	4,291	4,172	-119	-2.8%
Ogemaw Township	1,118	1,223	1,080	-143	-11.7%
Richland Township	956	914	1,021	+107	+11.7%
Rose Township	1,409	1,368	1,206	-162	-11.8%
West Branch Township	2,628	2,593	2,427	-166	-6.4%
Village of Prescot	286	266	272	+6	+2.3%
City of Rose City	721	653	619	-34	-5.2%
City of West Branch	1,926	2,139	2,269	+130	+6.1%
Ogemaw County Total	21,645	21,699	21,103	-596	-2.7%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Age Distribution

Ogemaw County

2000, 2010, and 2016

Age	2000	2010	2016	Percent of Total
0 - 24 years	6463	6045	5,448	25.8%
25 - 44 years	5278	4358	4,022	19.1%
45 - 65 years	5840	6923	6,530	30.9%
65 and over	4064	4536	5,103	24.2%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Native vs. Foreign Born Citizens

Ogemaw County

2000, 2010, and 2016

Age	2000	2010	2016	Change 2010-2016	Percent Change
Native Born	21,372	21,668	20,789	-879	-4.1%
Foreign Born	273	194	314	+120	+61.9%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Male / Female Ratio

Ogemaw County

2000, 2010, and 2016

Sex	2000	2010	2016	Change 2010-2016	Percent Change
Male	10,736	10,898	10,562	-336	-3.1%
Female	10,909	10,964	10,541	-423	-3.9%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Race Characteristics

Ogemaw County
2000, 2010, and 2016

Category	2000	2010	2016	Change 2010-2016	Percent Change
White	21,100	21,076	20,439	-637	-3.0%
Black or African American	29	39	64	+25	+64.1%
Other	516	554	785	+231	+41.7%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

Housing Occupancy Characteristics

Ogemaw County
2000, 2010, and 2016

Age	2000	2010	2016	Change 2010-2016	Percent Change
Occupied	8,842	8,255	9,318	+1,063	+12.9%
Vacant	6,562	7,801	6,702	-1,099	-14.1%
Seasonal	5,829	5,589	5,583	-6	-0.1%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates

County Socioeconomic Characteristics

In 1990 – 1992 Ogemaw County and State of Michigan jobless rates increased. Ogemaw County rate leveled off from 1992 until 1993 while the State of Michigan declined. In 1993 Ogemaw County's jobless rate began to decline consistently until 2001. In 2001 both Ogemaw County and the State of Michigan jobless rates began to increase where they again leveled off until 2008. In 2008 both the county and state jobless rates increased. In 2009 the county jobless rates began to drop continually while the State of Michigan jobless rates leveled off until 2011 before beginning to drop.

The highest percentage of employment by industry is educational and health and social services at 22.9%. This is related to the fact that the largest employer in Ogemaw County is the West Branch Regional Medical Center and the West Branch and Rose City Schools have the third highest number of employees. Retail accounts for 14.5% of the workforce which indicates the high number of retail stores within the county including the outlet mall in West Branch. Construction and manufacturing account for 21.6% of the workforce.

Ogemaw County Employment by Industry

Industry	Total	Percentage
Agriculture, forestry, fishing and hunting, and mining	361	4.4%
Construction	656	8.0%
Manufacturing	1,115	13.6%
Wholesale trade	364	4.4%
Retail trade	1,195	14.5%
Transportation and warehousing, and utilities	367	4.5%
Information	148	1.8%
Finance, insurance, real estate, and rental and leasing	280	3.4%
Professional, scientific, management, administrative, and waste management services	297	3.6%
Educational, health and social services	1,882	22.9%
Arts, entertainment, recreation, accommodation and food services	692	8.4%
Other services (except public administration)	466	5.7%
Public administration	398	4.8%

Source: Michigan Department of Technology, Management & Budget

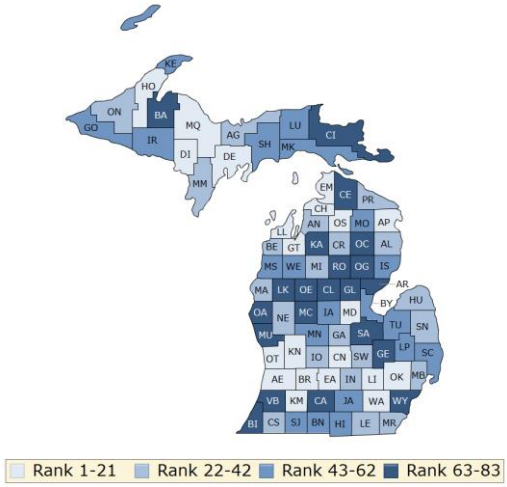
Ogemaw County Largest Employers	
	Employees
West Branch Regional Medical Center	358
Walmart Supercenter	280
West Branch Rose City Schools	252
Outlets at West Branch	250
Forward Corporation	141
Au Sable Valley Community Mental Health	120
Sandvik Hard Materials	120
The Villa of Rose City	112
Consumers Energy	110
Home Depot	108
The Villa of West Branch	96
UPS Customer Center	85
American Plastic Toys	60
Compassionate Care Home Health	55
Heartland Home Care & Hospice	54
Taylor Entrance Systems	50
Big Boy	50
Specialized Pharmacy Service	48
KFC/Taco Bell	40
Brian's Fruit & Meat Market	34
Ponderosa Steakhouse	34
Family Fare (West Branch)	32
Family Fare (Rose City)	20
Community Rehabilitation Services, PC	20

Source: Michigan Department of Technology, Management & Budget

Needs Assessment

There are several driving factors to justify the development of a trail system. Usually the primary elements are based on the health benefits and economic benefits that are derived from the implementation of a trail system. Obviously, the health benefits are derived from the accessibility of the population to the opportunity for outdoor exercise. And the economic benefits can be attributed to the increased traffic of users, special events centered around the trail system and the increased home values near the trail system. All of these factors are further discussed and explained within this section and are the driving force promoting the IBT within Ogemaw County.

Despite the county's outstanding natural opportunities for outdoor activities and exercise, Ogemaw County residents fall into the lower ranks of health statistics within the state (76th of 83). The information which follows demonstrates the factors in the county regarding the status of county citizens' health.



Source University of Wisconsin's Population Health Institute. 2018 County Health Rankings.

Major leading national causes of death

Injuries	16%
Cancer	14%
Heart Disease	23%

Source NCHS Vital Stats. Reporting Sys 1991-2005

Risk Factors for Premature Death

Diabetes	9% of adults
No Exercise (Sample size fewer than 50)	No Report
Few Fruits/Vegetables (Sample size fewer than 50)	No Report
Obesity (Sample size fewer than 50)	No Report
High Blood Pressure (Sample size fewer than 50)	No Report
Smoker (Sample size fewer than 50)	No Report

Source CDC Behavioral Risk Factor Surveillance System, 2000-2006

Physical Inactivity and Overweight Trends among Youth

- 1 in 3 high school youth do not engage in vigorous physical activity
- Less than 30% attend daily physical education
- 1 in 7 youth ages 6-19 is overweight
- Children spend more time watching television in a year than they do attending school

Source: Community Active Living and Public Health Presentation

The Disappearing Walk to School

- *1 in 4 trips made by 5-15 years old are for the journey to and from school*
- *Only 10% of these trips are made by walking or bicycling*
- *Of school trips one mile or less, about 28% are walk-based and less 1% are bike-based.*

Source: Community Active Living and Public Health Presentation

Nationally, rates of obesity and overweight have been increasing dramatically. The U.S Department of Health and Human Services reports that approximately 300,000 US deaths a year are associated with obesity and overweight (compared to 400,000 deaths a year associated with smoking). In Michigan the 200 Behavioral Risk Factor Surveillance System indicated that 62% of adults in Michigan are overweight and the number of overweight children has tripled over the past twenty years. Physical inactivity is a primary factor causing these conditions.

Hiking and biking trails have become an important means to fight against obesity and inactivity. The National Center for Chronic Disease Preventive and Health Promotion (Centers for Disease Control) has stated that there is now scientific evidence that providing access to places for physical activity increases the level of physical activity in a community and has a large impact on the overall health of their users. The Task Force on Community Preventive Services strongly recommends enhancing access to trails and other places for physical activities.

Benefits of having trails in a community are numerous. Besides providing a linkage between destinations and an alternate method of transportation that can both benefit our health and environment, trails have impacts on the surrounding area's economy as well as recreational benefits. In recent years there have been numerous studies into all these aspects of local trail systems and these studies have been consistent in proving that trails provide a diversity of benefits and provide a valuable asset for communities.

Trails provide a family-friendly recreational opportunity allowing for adults and children to enjoy the trails together and help build a stronger sense of family and community. Studies by Michigan State University researchers have been widely publicized showing the effects of trails on communities. Surveys of users of both the Pere Marquette Rail Trail in Midland and Isabella Counties and the Traverse Area Regional Trails (TART) have indicated that over 20% of users are children. In Midland County two in three households use the Pere Marquette Rail Trail one or more times annually.

Trails can become an asset to a community by providing a linkage to retailer and other businesses helping to boost local economy. Special events and festivals centered on the trail system can bring visitors that will not only provide direct economic benefit, but also provide an exposure that can help market a community and help build a long-term sustainable economy. In 1999 the Midwest Tandem Rally was held in Midland County and

generated $260,000 of local spending. These visitors spent on average $566 per travel party and were exposed to many of the trail related businesses in Midland County.

Trail visitors have an impact on the local economy and most will become returning guests. Eighty percent of individuals requested rail-trail information from the Midland area convention and visitors bureau and of those that visited Thirty percent used the rail-trail. Seventy percent of nonresident rail-trail users are repeat users and Eighty percent of them visit local restaurants along the trail.

Health Benefits of Using Trails

- Regular physical activity is a key component of any weight loss effort. Greater access to trails can directly impact our nation's obesity epidemic by improving access to places for physical activity and opportunities.
- Participating in aerobic training significantly reduces systolic and diastolic blood pressure. Trails provide the opportunity for individuals to help control their hypertension (high blood pressure)
- Moderate physical activity such as walking and cycling on trails can protect against developing non-insulin dependent diabetes.
- Through aerobic exercise training, walking and cycling on trails can improve symptoms of mild-to-moderate depression and anxiety of a magnitude comparable to that obtained with some pharmacological agents.
- Studies have reported that walking two or more miles a day reduces the chance of premature death by 50%

Source: National Center for Disease Prevention and Health Promotion

Local communities also have benefitted from these trails. The Pere Marquette Rail Trail has drawn several new businesses as a result of the rail-trail. Also existing businesses have found a new market for trail related products and services. The MSU Studies have found that almost all business within a quarter-mile of the Pere Marquette Rail Trail reported that Ninety Six percent of their employees use the trail. Also this study shows that employees use the trail throughout the entire day. Employers also have found that the workforce has reported improved health conditions and take less time off work. Additionally trails are a key benefit to help in drawing a business to a community and attracting employees. Quality-of-life, transportation and health are key factors in relocation.

A recent study by University of Cincinnati researchers suggest that location near trails could hold a financial benefit for homeowners and neighboring communities. The study concluded that homeowners were willing to pay a $9,000 premium to be located 1,000 feet closer to the trail. "Homes sales were examined in the seven Massachusetts towns through which the Minuteman Bikeway and Nashua River Rail Trail run. Statistics on list and selling prices and on days on the market were analyzed. The analysis shows that homes near these rail trails sold at 99.3% of the list price as compared to 98.1% of the list price for other homes sold in these towns. The most significant feature of home sales near rail trails is that these homes sold in an average of 29.3 days as compared to 50.4 days for other homes." "A 1998 study of property values along the Mountain Bay Trail in Brown County, Wisconsin shows that lots adjacent to the rail sold faster and for an average of 9 percent more than

similar property not located next to the trail." "A study of property values near greenbelts in Boulder, Colorado, noted that…other variables being equal, the average value of property adjacent to the greenbelt would be 32 percent higher than those 3,200 feet away." "In a survey of adjacent landowners along the Luce Line rail-trail in Minnesota, 61 percent of the suburban residential owners noted an increase in their property value as a result of the trail. New owners felt the trail had a more positive effect on adjacent property values than did continuing owners. Appraisers and real estate agents claimed that trails were a positive selling point for suburban residential property."

Spending by both local trail users and visitors provides revenue to the tourist services including business such as hotels, motels, campgrounds, restaurants and bars, gas stations and retailers of trail related items. A study prepared for the University of Minnesota Tourism Center on the economic impact of recreational trail use showed these are the direct impacts of recreation spending on specific sectors of the local economy. In turn, these local businesses and public agencies purchase production inputs and services from their local suppliers, such as manufacturers, brokers, wholesalers, transporters, banking and finance, and business services. These purchases of production inputs and services create the indirect or "spin-off" effect of consumer spending on the rest of the business sectors. The third effect— income-induced effect, arises when income earned by employees in all affected sectors results in another round of consumer spending. Results of the analysis showed spending by users who are residents within 30 minutes of the trail would spend an average of $4.86 per trip and those from more than 30 minutes would spend $39.08 per trip; and users who are residents within 30 minutes of the trail would spend an average of $9.60 per trip and those from more than 30 minutes would spend $43.87 per trip. Some 13,622 jobs were supported by the direct spending of users, plus 5,473 jobs from indirect and induced impacts. IMPLAN counted the total number of jobs in all sectors, without adjusting for part-time and full-time status. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $526.2 million, and state and local revenues reached $125.0 million.

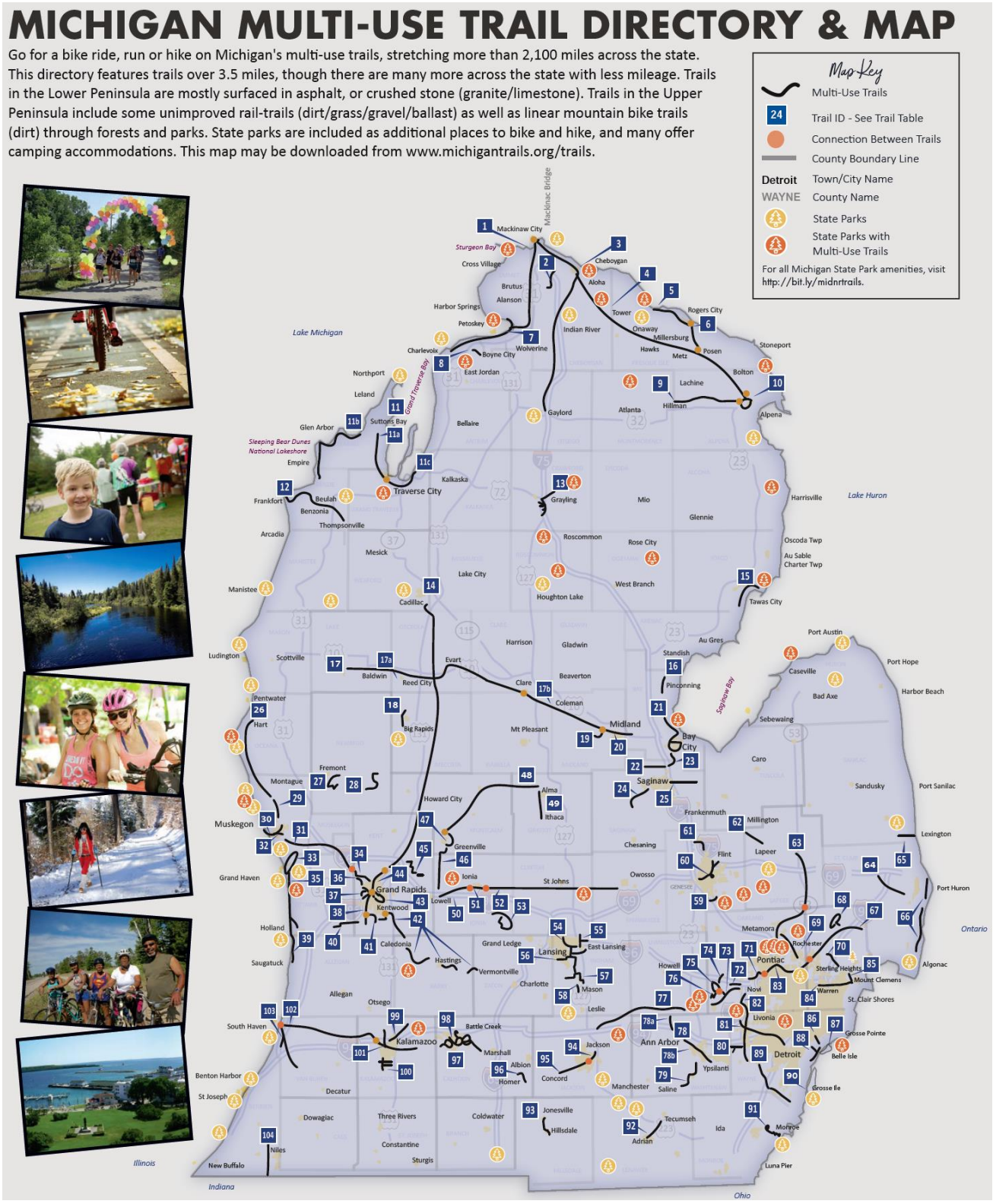
A 1995 nationwide Personal Transportation Survey by the US Department of Transportation found that nearly 25% of all trips are less than one mile, but more than 75% of these short trips are made by automobile. Although bicycling and walking will not work for all short trips, these non-motorized modes may be practical for many of them. Leading to an increase in activity and possible improvement in health.

The statewide IMPLAN model estimated that total bicycle riders' expenditure of $427.5 million produced $298.3 million in output of directly affected businesses. Excluded from this output were some $129.2 million in imported consumer goods such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect impacts or 'spinoff' effects on local suppliers and induced impacts from re-spending of employee incomes produced another $200.6 million in industry output. This raised total output by all businesses above the initial spending.

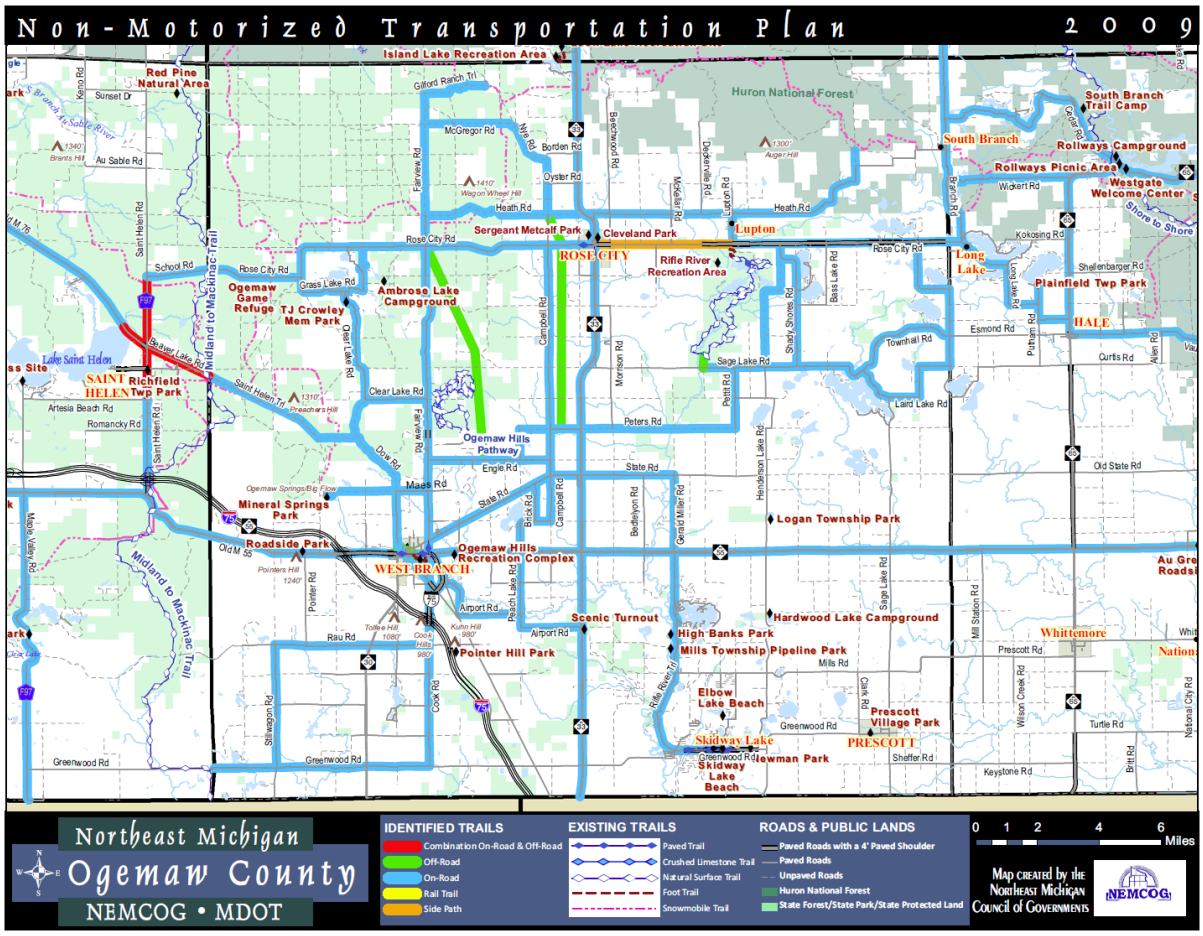
When the total value of inputs (producer goods and services) was deducted from this output, the gross state product amounted to $261.2 million. This represents the value of all goods and services produced in the state that can be attributed to bicycle riders' spending. It does not include imports of consumer goods or producer items, and avoids double counting of sales between producers and their suppliers.

Some 3,736 jobs were supported by the direct spending, plus 1,528 jobs from indirect and induced impacts. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $145.1 million, and state and local revenues reached $35.8 million.

The State with the Michigan Trails and Greenway Alliance and many others have developed and continue to develop a statewide system of trailways.



The Northeast Michigan Council of Governments with funding from the Michigan Department of Transportation has prepared the Northeast Michigan Region Non-motorized Transportation Plan which includes numerous proposed trails. This plan contains many of the segments that are being included in the IBT route.



Northeast Michigan Region Non-Motorized Map for Ogemaw County

Conclusion

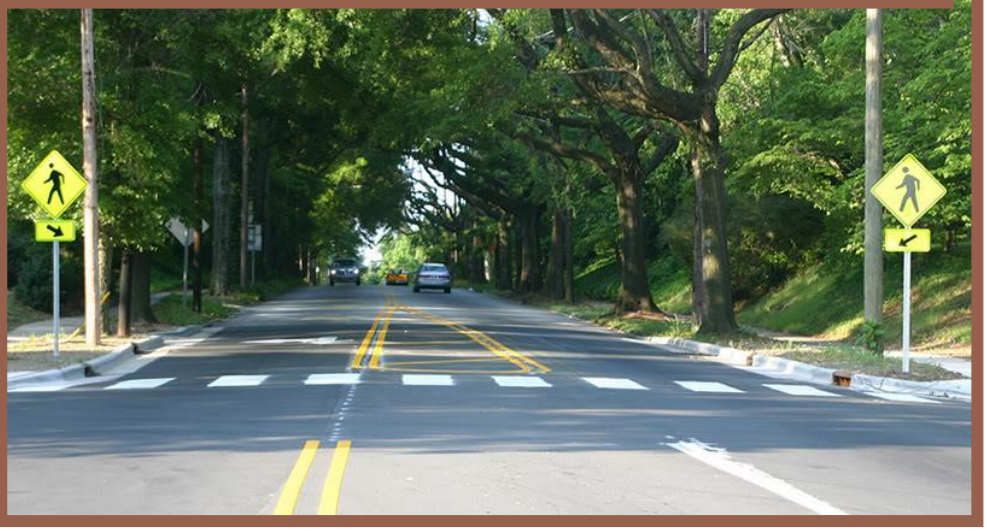
The residents of Ogemaw County, although not the least healthy in Michigan, can certainly be aided by the development of recreational and transportation facilities that offer and encourage increased physical activity. Exercise, along with proper nutrition, can help decrease weight and decrease heart disease and diabetes as well as many other health problems. This master plan will also put forth suggestions for programming among the region's providers of recreation and transportation that will permit healthy activities for all ages and increased hiking and bicycling for transportation and pleasure.

Richard Jackson, MD, Director of the Center for Disease Control, National Center for Environmental Health, states in the 2001 report, "Creating a Healthy Environment: The Impact of the Built Environment on Public Health," It is dishonest to tell our citizens to walk, jog, or bicycle when there is no safe or welcoming places to pursue these life-saving activities."

Furthermore, Ogemaw County is in a prime situation for improving economic conditions and increasing our tourism and position in the tourist market. The development of this trail will create yet another market segment for the local service industries to capture. Bicyclists, hikers and other trail users do travel to nearby locations that have quality facilities. These visitors will contribute to the local economy, and if provided with a memorable experience will return to spend more money and potentially share their experience with others who will also visit.

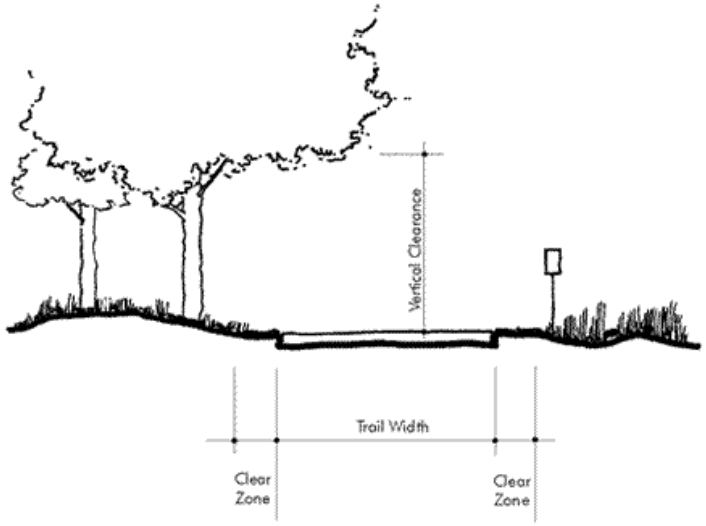
Additionally, the economic benefits from this trail system will increase tourism, and the increased traffic from users will increase local spending. Over time home values and demand for housing near the trail system will increase which will increase tax revenue for local communities. The Increases in exercise will help reduce medical costs as well as increase productivity from workers at local employers. And perhaps most importantly the trail system will help to bring Ogemaw County put of the bottom 10% ranking of health statistics in the State of Michigan.

Design Considerations



Introduction

The key to successfully accommodating multiple modes of non-motorized transportation is to involve all users early in the planning and design phase. This will ensure that the variety of needs, based on user type, are fully understood, and where feasible, incorporated into the final design and construction. With the expectation of on-road bike lanes and already designated special purpose trails, the vast majority of routes in the area are likely to be multi-purpose. This could include a variety of users such as pedestrians, bicyclists, in-line skaters, equestrians, and those with strollers, wheel chairs, etc.



Regulatory Approvals Often Required For Greenway/Trail Implementation

Regulatory Approval	Reviewing Agency
Section 106 clearance	State Historic Preservation Office
NEPA	MDOT/Federal Highway
Floodplain Impacts	FEMA/MDEQ
Inland Lakes & Streams	MDEQ
Construction Permits	Local Jurisdiction Ogemaw County Road Commission
Erosion & Sediment Control	Ogemaw County
Section 404	Army Corps of Engineers

Designing and constructing trails and non-motorized systems is often as complicated as building roads. There are undoubtedly a number of agencies and groups that need to be involved in the planning and design process and multiple issues must be considered and resolved. The following pages provide guidance and example cross-sections for typical non-motorized sections and situations. While planning designing and constructing a connected non-motorized system will require some continuity and coordination between communities to ensure quality and connectivity, there remains a strong desire for each community to have its own character within the system. These are intended as guidelines only, although they are based on standards established by the American Association of State Highway and Transportation Officials (AASHTO), state agencies, and non-motorized organizations.

Regardless of where a non-motorized system is built or who builds it, users should expect a safe, user-friendly, and accessible system. Nearly every accepted design guideline has exceptions necessitated by local conditions, community desires, changing trends, intensity of use, and many other factors. However, design guidelines offer an easy-to-use summary of extensive design expertise that allows for flexibility in dealing with site-specific issues without the rigid process associated with mandated standards. These design guidelines are not all inclusive.

Trail / Pathway Element	Recommended Dimensions	Comments
RECREATION TRAILS		
Paved Pedestrian-Only Trail Width	5 ft minimum 6 ft desirable	These trails are for exclusive use by pedestrians
Unpaved Pedestrian-Only Trail Width	2 ft minimum 4-6 ft desirable	Best as limited purpose facility in rural or semi-primitive areas; can provide interim solution; minimum width should only be used in constrained areas.
Unpaved Shared-Use Trail Width	6 ft minimum 8-10 desirable	Only suggested as an interim solution and not appropriate for high use trails; best in rural or semi-primitive areas.
Vertical Clearance	8 ft minimum 10 ft desirable	Additional clearance improves visibility. Ten feet is a minimum when equestrian use is expected.
SHARED USE PATHS / NON-MOTORIZED SYSTEM		
Shared Use Path Width	10 ft minimum 12 ft desirable 14 ft optimum	Minimum width should be used only where volumes are low and sight distances are good; width should be based on relative speed of users; higher speed users require greater widths
Roadway Separation	5 ft minimum	Minimum separation for parallel, adjacent path; a physical barrier should be installed where minimum separation cannot be met.
Shoulders	1 ft minimum 2 ft minimum	Shoulders should provide pull-off/ resting and passing space; should be graded to the same slope as the path; minimum shoulder width of 1 ft should only be used in constrained areas.
Clear Zones	1 ft minimum 2 ft desirable	Clear zones are additional lateral clearance on each side of the path beyond the shoulders. All obstructions should lie outside of the clear zones.
Vertical Clearance	8 ft minimum 10 ft desirable	Additional clearance improves visibility

Bicycle Trails

During design of road improvements, shared roadways require improvements that promote bicycle-safe design practices as described in the *Guide for the Development of Bicycle Facilities* (AASHTO), so that costly retrofits can be avoided. Several design features of roadways can be made more compatible to bicycle travel including bicycle-safe drainage grates, bridge expansion joints, rail crossing treatments, pavement textures, sight distances and signal timing and detector systems. All of those elements should be considered for safety and efficiency. However, the most critical feature affecting the capability of a roadway to accommodate the bicycle is road width. Two means to providing adequate road and width for both vehicular and bicycle travel are paved shoulders and bike lane restriping. Often roads are designed with a wide shoulder to enhance the service life of the road, facilitate drainage, and maintain adequate sight distances. Paving of these shoulders is an effective means to prevent edge deterioration of the road surface as well as to accommodate bicycle travel.

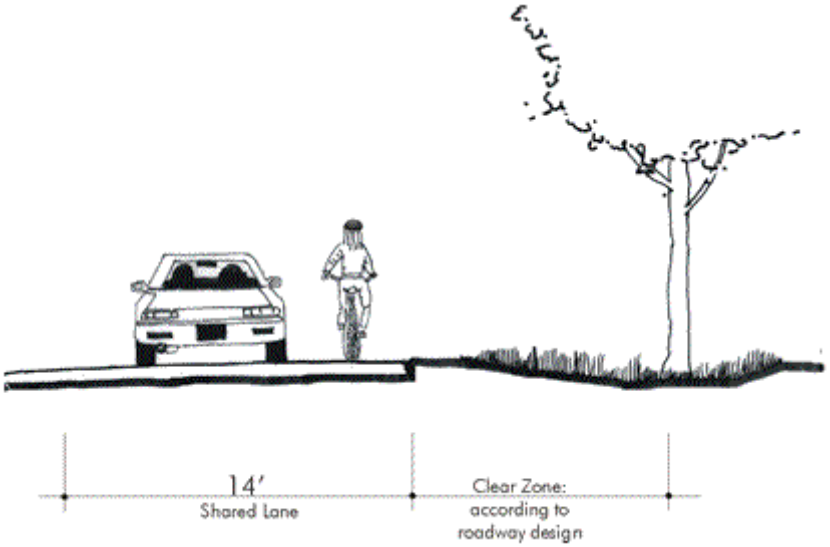
Side paths are two-way shared paths located adjacent to a roadway, such as an extra wide sidewalk. This facility type is not recommended in some urban environments due to space limitations, operational problems, and safety hazards at intersections. Side paths can be useful facilities along waterways, linear parks or in a roadway corridor with limited adjacent development. Some of the design criteria which should be evaluated when considering the development to side paths include:

- Available Right-of-Way: to accommodate a 10' wide path, there should be 15-20' of available right-of-way. This is necessary to provide for a 3' clear zone from obstructions, a 10' wide trail and a 5' buffer space to separate the path from the road (per AASHTO standard, if there is less than a 5' buffer width, a 4.5' high physical barrier should be constructed).

- Number of Street and Driveway Intersections: as the number of interactions between the bicyclist and traffic increases, the chances of a collision and serious injuries also increase. For this reason, side paths should not be considered when there are more than 12 residential driveways, 6 commercial driveways/minor streets, or 3 major street intersections per mile. Should more bicycle/vehicle interactions occur a cyclist would face more than 1 interaction every 30 seconds. As a result the safety and utility of the path deteriorates dramatically.

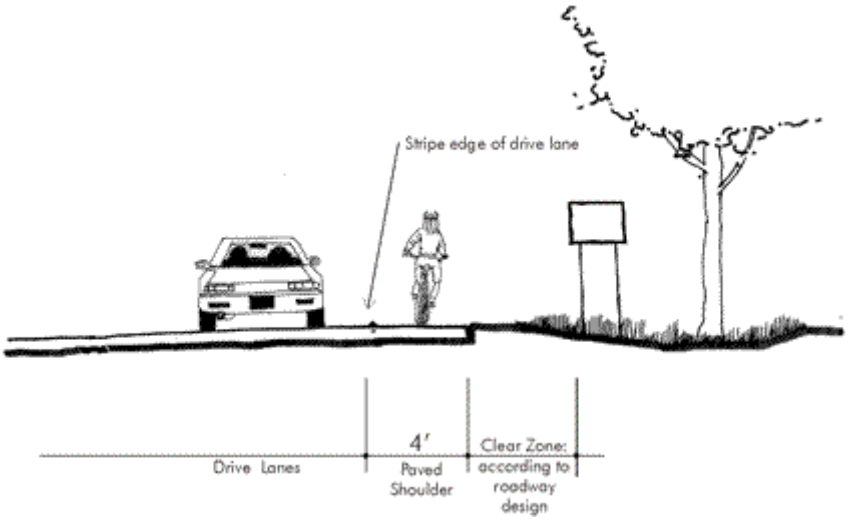
- Final Design Consideration: the above criteria are very important to assess feasibility during the planning stages of this project. However, when the trailway moves into the design and construction stage, additional problems will need to be resolved. These problems consist of providing access to destinations located on the opposite side of the street from the side path, modifying signal timing to permit non-motorized users to move through an intersection without being hit by turning traffic,

removing obstructions from the sight triangle, locating crosswalks the proper distance from the parallel roadway, and providing appropriate curb cuts and transition areas so that bicyclists may access the path from both the parallel and intersecting streets.



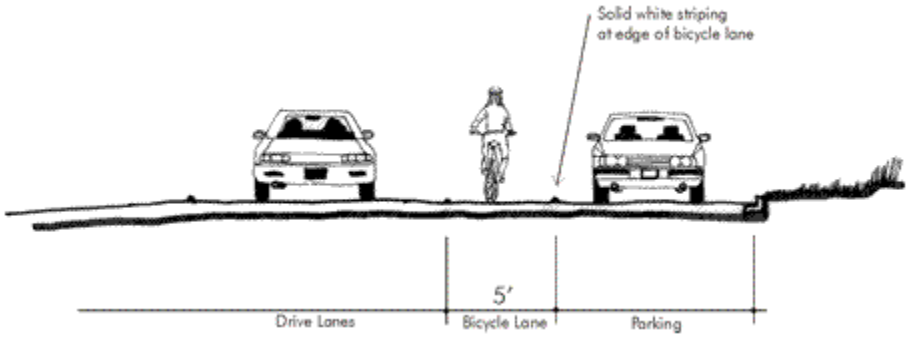
Low speed/low volume streets and roadways are the best choice for bicycle routes. Under such circumstances, cars and bicycles can effectively share a 12' or 14' wide travel lane, with no special accommodations for bicycle travel needed, such as wide curb lanes or striped bicycle lanes.

The bicycle space is not striped, and generally the total width is less than a road with paved shoulder or bike lane treatment. Streets with wide curb lanes may be signed as a bicycle routes when traffic volumes and speeds are moderate to low.



Bicycle lanes are a portion of the roadway, generally not less than 4' wide, that have been designated by striping, signs, and pavement markings, for the preferential or exclusive use of bicyclists. Bicycle lanes are generally implemented as one-way facilities located on either

side of the street, with arrows and pavement markings indicating the proper direction of travel.



When on-street parking is present, the bicycle lane must always be placed between the parking lane and the travel lane, not next to the curb. Since bicycle lanes are highly visible they are often referred to as "host facilities." And as such invite people to consider riding their bikes as an alternative to driving.

Bicycle lanes are most appropriate on streets with moderate to high volumes of traffic, where most cyclists would not feel comfortable sharing a lane of traffic without the additional operating space. When implementing these, it is important to pay attention to the lane striping treatment at intersections to help ensure that vehicles and bicycles are aware of each other when turning and merging.

Traditionally, shoulders are designed to provide structural support for a roadway and offer a breakdown and recovery area for motor vehicles. When paved, maintained, and of sufficient width, shoulders provide space for bicycle and pedestrian travel lanes by striping, and may be designated as a bike lane through the addition of signing and pavement markings, preferably when speeds are posted 45 mph or lower.

In urban areas, a wide curb lane is a cost-effective means to safely provide a designated section of the road for bicycles. The designation of a bike lane in pavement striping tends to deter motorists from swerving to the left to avoid bicyclists that may be traveling along the curb lane. Bike lanes should be one-way facilities and carry bike traffic in the same direction as adjacent motor vehicles. A bike lane width of five feet is recommended and should only occur on the right-hand side of the travel lane. A wide lane of six to eight feet is recommended when larger vehicle traffic is numerous and higher vehicle speeds are permitted. A smooth riding surface is necessary as well as drainage and utility grates that are bicycle-friendly and flush with the surface.

Bike lane pavement marking can be designated at the edge of the travel lane with a four-inch solid white line. Raised pavement markings and barriers can cause steering difficulties and, therefore, should be avoided. Bike lane pavement marking should never extend through the intersection and never cross pedestrian crosswalks.

Grate covers are potential obstructions to bicyclists and, therefore may result in serious damage to the bicycle wheel and frame and/or injury to the bicyclists. Drainage inlet grates with slots parallel to the roadway or gaps between the grate and frame can trap the front wheel of a bicycle causing a loss of control. Several models of bicycle-safe and hydraulically-efficient grates are available in the marketplace and retrofitting is easily accomplished and relatively inexpensive.

Shared Use Paths

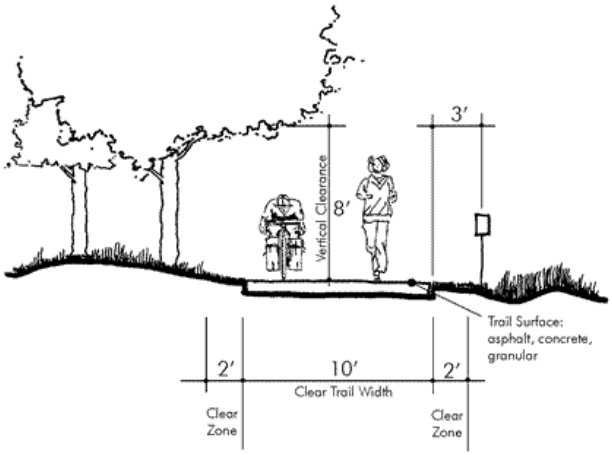
Trails separated from motor vehicles can provide for differing levels of accessibility. The level of accessibility depends to a great extent on the setting. In urban areas, full accessibility is typically expected. Therefore, easy access, smooth hard pavement, and easy gradient are the norm.

In more rural areas and primitively developed recreation areas, full accessibility is not expected. Trails tend to serve a varying level of accessibility and may have segments that use granular surfacing, steeper gradient and sometimes unpaved surfaces. Individuals are free to choose a trail that provides the recreation experience and degree of challenge desired.

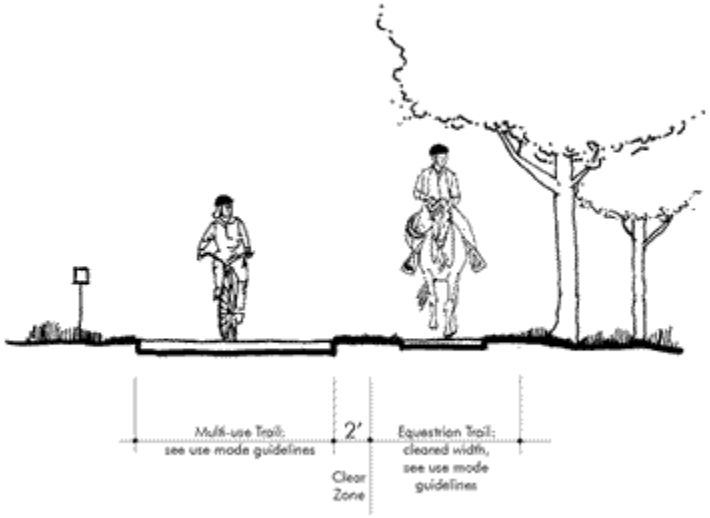
The mix of pedestrian and bicycles on multi-purpose trails is not without problems and can result in conflicts between different trail users. However, when design treatments are employed to address these potential conflicts, the majority of user problems can generally be avoided.

Paths shared by pedestrians and bicyclists should be designed in accordance with AASHTO design requirements. In particular, the following design considerations should be used in planning for a shared-use facility.

- Horizontal and vertical alignment to ensure clear sight lines
- Wide shoulders, two feet minimum on each side, to provide stopping and resting areas and allow for passing and widening at curves.
- Avoid view obstructions at edges of the trail by placing signs, poles, utility boxes, waste receptacles, trenches and other elements away from the edge of the path and using low-growing shrubs and groundcovers or high-branching trees.
- Use bicycle speed limits
- Use delineation and separation treatments such as colored paving, textured paving, pavement markings, and signing.
- Use directional signing,
- It is recommended to sign and mark a four-inch wide solid line at the center of the path as well as edge lines when curves with restricted sight distances are experienced.



The minimum width of a shared path is 10 feet and possibly a 12-foot minimum in more heavily-used sections. A separate, soft-surfaced jogging or equestrian path may be constructed using wood chips, compacted crushed gravel, or other resilient material, parallel to, but separated from, the paved shared-use path.



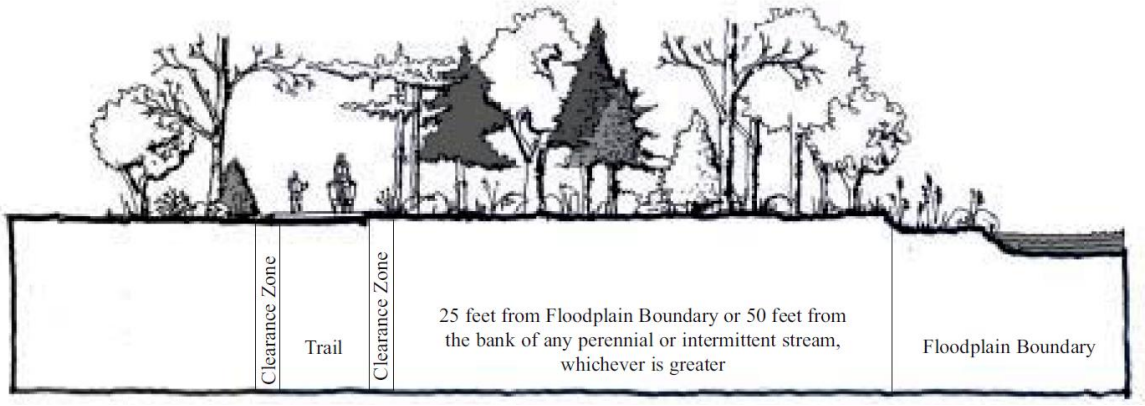
The compelling rationale for placing a non-motorized system within an existing right-of-way is single, continuous ownership as well as access to various destinations. However, conflicts at intersections and driveways are a major concern on paths located adjacent to roadways. Motorists will often not see bicyclists or pedestrians coming toward them on the right, since they do not expect to see them going against the flow of traffic. AASHTO has documented numerous concerns related to this type of environment and several conditions could exist during planning and design:

- A minimum of five feet horizontal separation or a physical barrier from motor vehicle traffic.
- Development of bike lanes and sidewalks as an alternative to the shared path if not feasible or permitted.

- There are no reasonable alternative alignment for bikeways and sidewalks on nearby parallel routes.
- The path can be terminated onto streets with good bicycle and pedestrian facilities at each end.
- There are popular origins and destinations throughout the corridor.
- The path can be constructed wide enough to accommodate all type users, with delineation and separation techniques to minimize conflicts between users.

Riparian Corridors

Riparian corridors and greenways are one of the preferred locations for the provision of non-motorized facilities and connections. However, consideration and potential impacts of the project to the natural environment must be considered for a project to successfully balance recreational, transportation and interpretive opportunities with protection of the greenway's environmental assets. If constructing a trail within a riparian corridor, permits will likely be necessary prior to construction. Consultation with appropriate professionals and specialists to evaluate the most ecologically appropriate alignment of the trail project is essential.



Except during flood events, riparian corridors are accessible for a variety of recreational pursuits and are a good choice for trail development. However, there are a few restrictions that need to be considered during project planning:

- Limit trails to one side of the river or stream, especially in damage-susceptible areas.
- Route trails through areas of least habitat value. i.e., disturbed areas and stands of invasive vegetation.
- Avoid long stretches of path immediately adjacent to riverbanks.
- Avoid nesting areas of wildlife
- Avoid wetlands if possible.
- Filling of floodplain and wetlands requires permitting.
- Avoid loss of mature trees and native vegetation

- Route locations may need to be diverted away from the natural resource due to unresolved private property issues.

A primary design issue associated with trails in riparian corridors is trail surface treatments. In natural areas, such as floodplain forest basins, natural surface materials such as aggregates and crushed stone may be appropriate. They will need yearly maintenance after flood waters recede but will have minimal impacts on the environment and adverse effects from flooding. Care should be taken to grade and compact the natural surface to a firm and stable state that is accessible to all users.

In urban areas, hard surfaced trails can provide important links in a non-motorized network and will experience heavier use. Trails should be surfaced with concrete or asphalt due to the frequency and velocity of flood waters typical to the urban floodway. Aggregate surfaces should not be used. In areas that are periodically inundated or cross wetlands, boardwalks constructed on piles or piers that limit disturbance to the existing system are preferred. In all cases, erosion and sediment control measures are required during construction.

When trailways are to be constructed adjacent to waterways special design treatments should be considered due to the susceptible natural environment, poor soils, and potential for flooding. A buffer of existing vegetation must be preserved to stabilize the riverbanks and minimize soil erosion into the river system. For views of the waterway, it is recommended overlook points be provided rather than removing vegetation and constructing trails to the water's edge. Where vegetation clearing is needed within the trail corridor, hand clearing is often recommended to minimize erosion and disruption of areas beyond the corridor. Water edge trails must be designed with maintenance considerations in mind. The path surface is often constructed of concrete to resist root damage and to withstand flooding. Often traversing areas with poor soil characteristics, these trails need to be provided with a supportive sub base. The use of geotextile fabric is typically required for additional stability and increased load bearing capacity. Maintaining cross drainage is important both across the trail's surface, as well as under the trail. Trails along waterways are very popular with users who enjoy the opportunity to have access to natural environments, and thus provide an excellent opportunity to educate trail users about natural habitats.

Rail Trails

This trail type is a shared use path that utilizes the right-of-way of an abandoned railroad corridor. Once the tracks and ties are removed, there is usually approximately 15'-20' width of ballast (the rocky substructure that supports the trains) remaining on which to construct the multi-use path. The remaining width of the right-of-way accommodates changes in grade for cut or fill sections, which allowed the railroad to follow a maximum five percent grade. With this wide right-of-way and the existing sub base, it is usually very

straightforward and relatively inexpensive to construct trails within abandoned rail corridors.

It is recommended that the existing railroad grades be converted to hard surface trails in the form of asphalt paving. Crushed slag or limestone screening may be used on rural sections that will experience lower levels of use, especially by pedestrians, wheelchair users, and in-line skaters, users requiring a smoother and harder surface.

A rail-with-trail multi-use path is built within the right-of-way of an existing and active railroad. When such trails are located adjacent to branch lines or industrial spurs, the separation between trails and tracks is typically more than 30 feet, with some as close as 8 feet. Frequently, minimal barriers are constructed between the trail and the tracks in the form of either vegetation or a change in grade elevation.

Water Trails

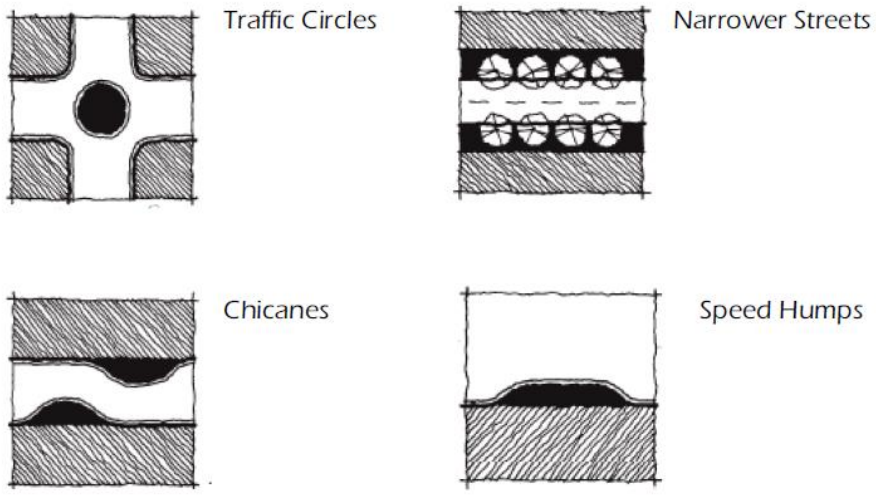
Water trails are specifically designed for a small, non-motorized boats to have access to the local waterway, features and stopping points along the way, public parks and the area's natural landscape. Users may experience the ecosystem in the region and acquire a respect, understanding, and stewardship of the natural resources. Water trails can also provide links to local culture and provide interpretive information about the environment and history of the area.

A map is the key element to a water trail. Including paddling routes, difficulty levels, public lands, warnings of hazards, and rules and regulations. Water trail guides can educate the visitor about conservation concerns and entice paddlers to learn about natural and historic features. It should also provide information regarding low-impact use and regulations to protect and enhance natural and heritage resources.

Traffic Calming

Wherever trails and roadways intersect, there is a potential safety hazard. Slower speeds produce better reaction times and a safer environment. The practice of traffic calming utilizes innovative design methods to slow traffic in certain areas. The Institute of Traffic Engineers has defined traffic calming as, "the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users."

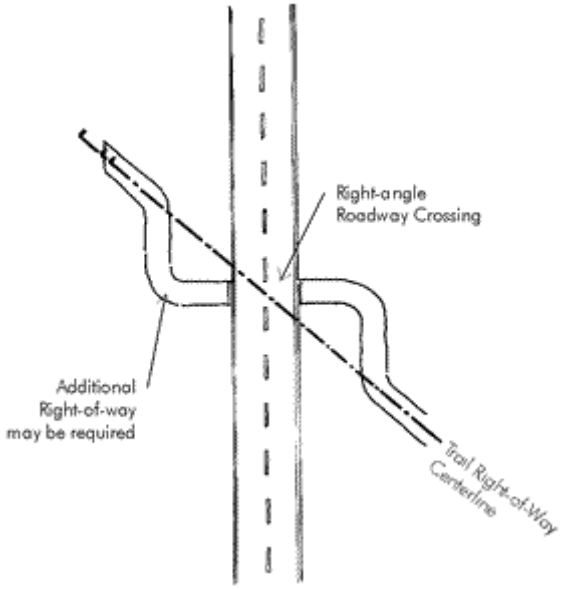
Traffic circles, chicanes, narrowed streets, and speed humps are only a few of the common methods used to calm traffic, and provide a safer more enjoyable experience for non-motorized travelers.



Source: Georgia DOT Pedestrian and Streetscape Guide

Intersections

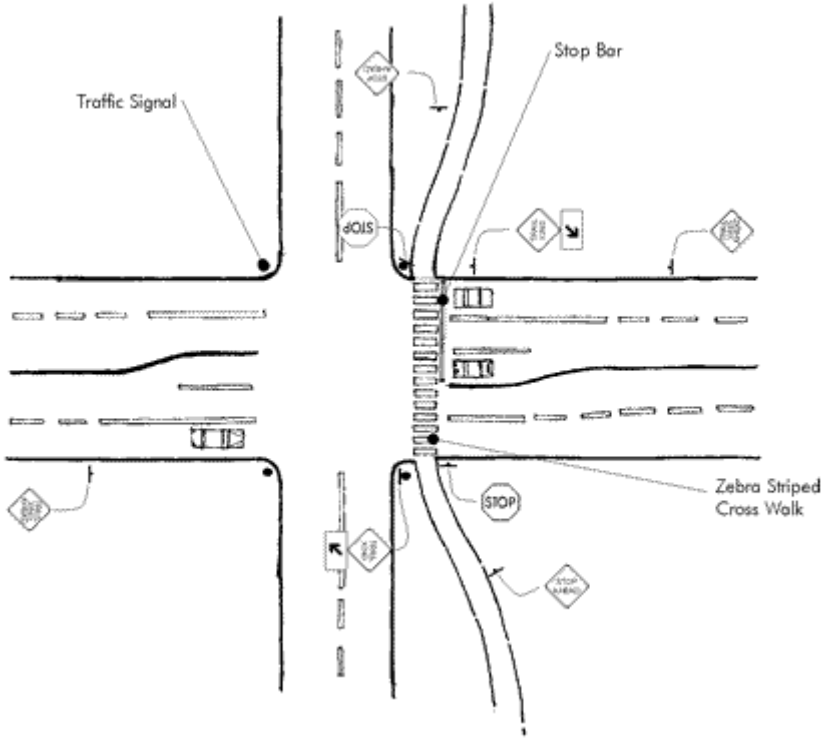
Careful placement of signage and pavement markings is needed on both the roadway and trail to alert motorists and trail users to the presence of the intersection. Advance warning signs and pavement markings should be placed at an adequate distance from the intersection given the speed of the traffic. Trail identification signage, set back outside the road right-of-way, also acts as a warning of approaching intersection.



Regardless of the surfacing material of the trail, a stable pavement free of loose aggregate should be used for the portion of the trail that approaches the road intersection. Pavement increases traction for bicycle users where it is needed most and allows for pavement markings. This also minimizes the accumulation of loose aggregate from the trail on the crosswalk. The change in materials can also help to notify users of the upcoming intersection.

The stable pavement should be used along the portion of the trail that leaves the trail bed and curves in approach of the intersection, therefore the amount used at each intersection varies. Care should be taken to make the transition between materials as seamless as possible. At rural intersections, gravel shoulders should also be paved adjacent to the trail to minimize debris in the stopping zone.

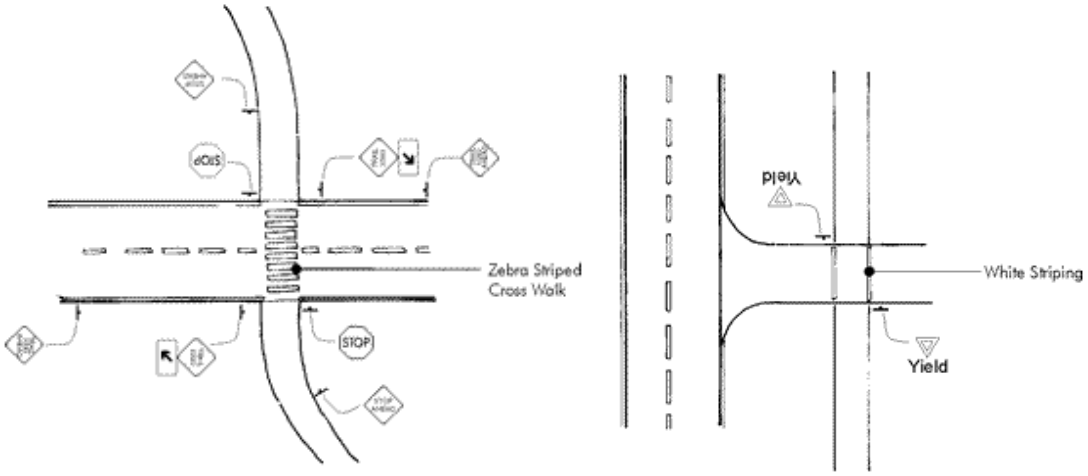
Provide Clear Guidance on the Rules-of-the-Road. Clear guidance through signage and pavement markings as to the rules-of-the-road and rights-of-way needs to be provided for both motorists and trail users. Marking a crosswalk clarifies that a legal crosswalk exists at that location and it indicates to trail users the best place to cross the road. The typical yellow diamond shaped crosswalk signs that are frequently used to indicate the presence of the crosswalk to motorists are not recommended because research has shown that they poorly identify the exact location of the crosswalk and do not explicitly indicate that the motorist is required to yield.



As an alternative, the "Yield to Pedestrians Here" sign, R1-5 of the "Manual of Uniform Traffic Control Devices" is recommended in conjunction with a yield bar. This combination clearly indicates to motorists the need to yield to pedestrians and bicyclists in the crosswalk and the optimum location at which to stop to maximize visibility between crosswalk and roadway users.

Trailway signs at major access points along the trail, including intersections, should indicate the rules of the trail. Pavement markings at the beginning of the trail should notify users of direction of travel and right-of-way regulations. However, pavement markings further along the trail should be minimized to avoid visual clutter.

Allow Clear Visibility between Motorists and Trail Users. The ability of pedestrians to see motorists is equally as important as their own visibility in the roadway. The trail should meet the roadway at as close to a 90-degree angle as possible for maximum visibility. Wide white ladder crosswalk markings are recommended instead of the standard marking of two parallel lines because the ladder crosswalks are more visible and resistant to tire wear.



Yield bars placed ten to twenty feet in advance of the crosswalk on multi-lane roads increase the visibility of pedestrians in the crosswalk from all lanes of traffic. Also, signage placed at the yield bars is less likely to obscure pedestrians than when placed at the crosswalk. Lighting in the area of the crosswalk also helps improve the visibility of trail users to motorists.

Minimize Crossing Distances. Minimizing the distance that pedestrians need to cross the street is a critical safety issue. As crossing distances increase, the comfort and safety of a pedestrian decreases. Refuge islands are an effective method for both increasing visibility and reducing pedestrian crossing distances. Refuge islands are raised areas that separate lanes of opposing traffic and eliminate the need for pedestrians to cross more than one direction of traffic at a time.

Refuge islands allow the pedestrian to undertake the crossing in two separate stages. This increases their comfort level and opens up many more opportunities to safely cross the road. Refuge islands also have the benefit of reducing vehicle delay because more users can cross at gaps. Refuge islands should be added to two lane roadways with heavy traffic and all roadways that have four or more lanes.

Provide Accessible Solutions. Providing accessible options for all users crossing the street is the law. Crosswalk locations that are only identifiable by sight, have blocked sight lines, have short signal timings or signals without accessible information act as barriers to movement for people with visual or mobility impairments. Several treatments of the crosswalk can increase accessibility for impaired users:

- The use of directional curb ramps can guide people with visual impairments to the crosswalk.
- The use of detectable warning strips at the ends of the crosswalks can warn people with visual impairments when they are leaving the sidewalk and entering the roadway.
- Median refuge islands should also include detectable warning strips, curb ramps with a level landing or full cut-trough's at road grade for accessibility.
- Traffic control signals at mid-block locations can be triggered by pedestrians who cannot judge the gaps in traffic or pedestrians with mobility impairments who cannot cross the road in the available gaps.
- Inclusion of audible pedestrian signals that indicate when the pedestrian signal has changed and the traffic has come to a stop prevents a person with a visual impairment from having to discern traffic flow solely through the traffic sounds, which can be difficult at busy intersections and not always reliable.

Including the options listed above in the new crosswalk design makes the pedestrian environment safer for all users. Consistent design treatment of all trail/ road intersections will help users of all abilities feel more comfortable and more able to navigate road crossings. Continuity in design will not only allow pedestrians to feel more at ease, but motorists will also know what to expect and where to be looking.

When railroad crossings are required, the trail should cross at a right angle to the tracks as much as possible. If this is not possible, consideration should be given to the following options:

1. Widening the approaching roadway, bike lane or shoulder will allow the user to cross at approximately 90 degrees.
2. On low-speed, lightly-traveled railroad tracks, commercially available flange way fillers can eliminate the gap next to the rail.
3. In some cases, abandoned tracks can be removed.
4. If no other solution is possible, warning signs and pavement markings should be installed.

Surfacing

General design guidelines and cross-sections for typical situations to be considered during the design and implementation of a non-motorized system are set out below.

Crushed fines:

- 3" to 4" of limestone or slag fines material is placed on a 5" to 6" aggregate base.
- Low initial cost but requires frequent maintenance to control erosion and vegetation encroachment
- Coarser aggregate base may be exposed on the surface with erosion and unusual wear requiring rehabilitation every 10 to 15 years
- Works well with walkers, runners and horses
- Slower speeds for bikes
- Makes approaching bicycles more audible to walkers
- Dust from fines can be a maintenance problem for bicycles
- Limestone fines are dustier and take longer to set-up than slag fines.

Asphalt:

- About 3" to 4" of asphalt is placed in two lifts over a 5" to 6" aggregate base
- Moderately long life – can be expanded with surface and crack sealants
- Faster speeds for bikers can be problematic for other users.
- Dark colors leads to pavement heat retention-snow is more likely to melt on asphalt making it a less suitable surface for cross-county skiing
- Asphalt can be plowed in the winter
- Familiar construction techniques
- Issues with run-off pollution especially when first applied.

Resin Pave Bound Material:

- 2" to 4" of fine aggregate bound by a plant based emulsion on a 5" to 6" aggregate
- Does not affect the color of the aggregate – light colored aggregate reduces the heat retaining properties of pavement
- The plant-based resin binder has a similar strength and performance to asphalt.
- Considered a "green" building material – very low run-off problems
- Approximately twice the cost of asphalt

Another option for trail surfacing is the use of plant-based aggregate binder. Resin or powder-based binders are increasingly being used for trail construction. Although the surface of the plant-based fines is smoother than loose fines, it is not an appropriate surface for inline skating.

Stabilized Crushed stone surface:

- Non-toxic organic, colorless and odorless plant-based powder serves as a binding agent.
- For best results aggregate fines and powder are mechanically mixed off-site, placed dry, then hydrated in place
- Surface takes 2-7 days to set, depending on weather
- Prolonged saturation will result in a pliable surface prone to rutting
- Very easy to repair without specialized equipment – mixing on spot for patch jobs
- Considered a "green" building material
- Approximately same cost as asphalt

Hard, all-weather pavement surfaces are usually preferred over those crushed aggregate, sand, clay or stabilized earth. These materials provide a lower level of service and require higher maintenance. However, operating agencies that have chosen crushed aggregate as their surface material have found that they can achieve a completed path in less time and at less cost than with asphalt or concrete.

Asphalt

Concrete

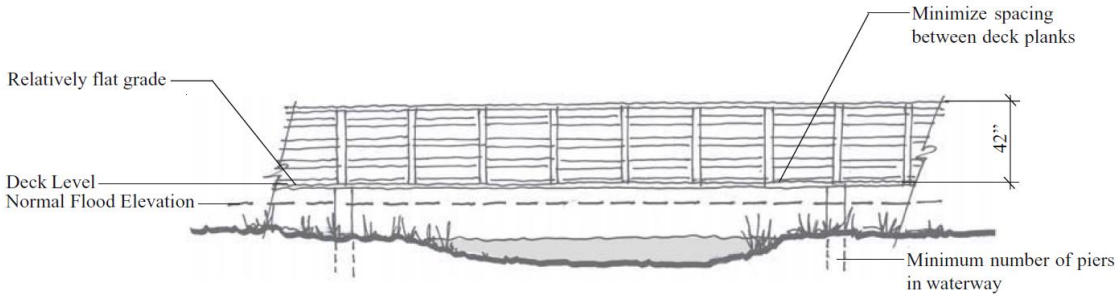
Stone Dust

Designing and selecting pavement sections for shared-use paths is in many ways similar to designing and selecting highway pavement sections. A soils investigation should be conducted to determine the load-carrying capabilities of the native soil, unimproved, shoulder or former railroad bed. Paths should be designed to sustain, without damage, wheel loads of occasional emergency, patrol, maintenance and other motor vehicles expected to use or cross the path. Pavements should be machine laid.

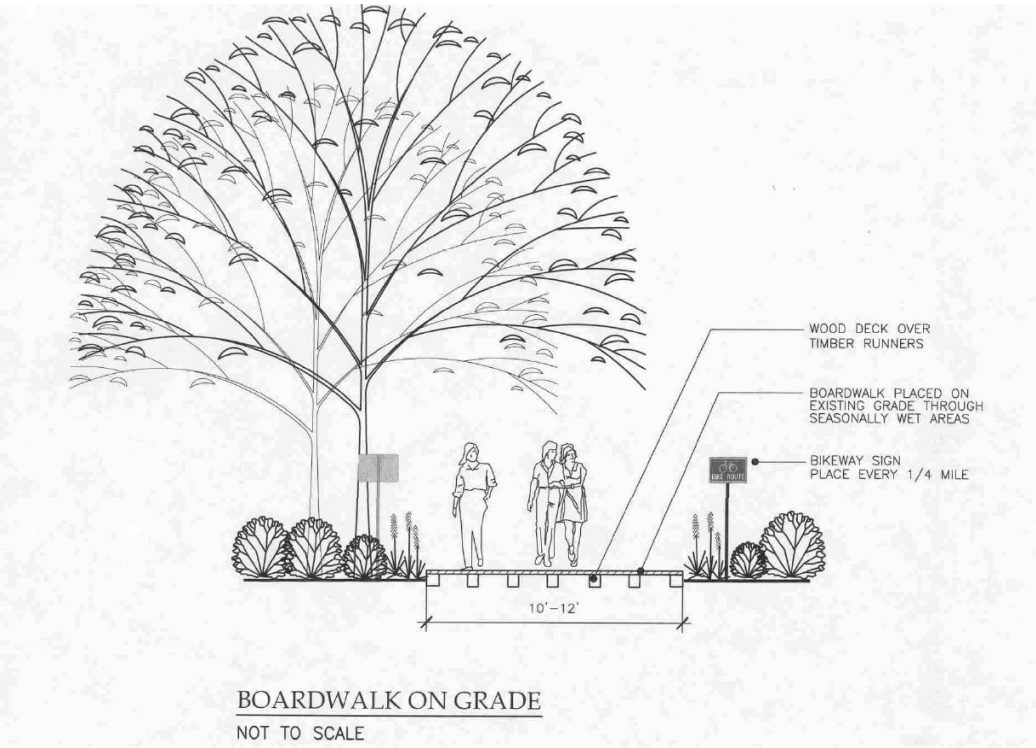
Structures

Structures include special trail surfaces that are needed to cross natural barriers such as wetlands and waterways. Structures often become focal points along the trailway route where users may stop and rest or take in the natural beauty of the area.

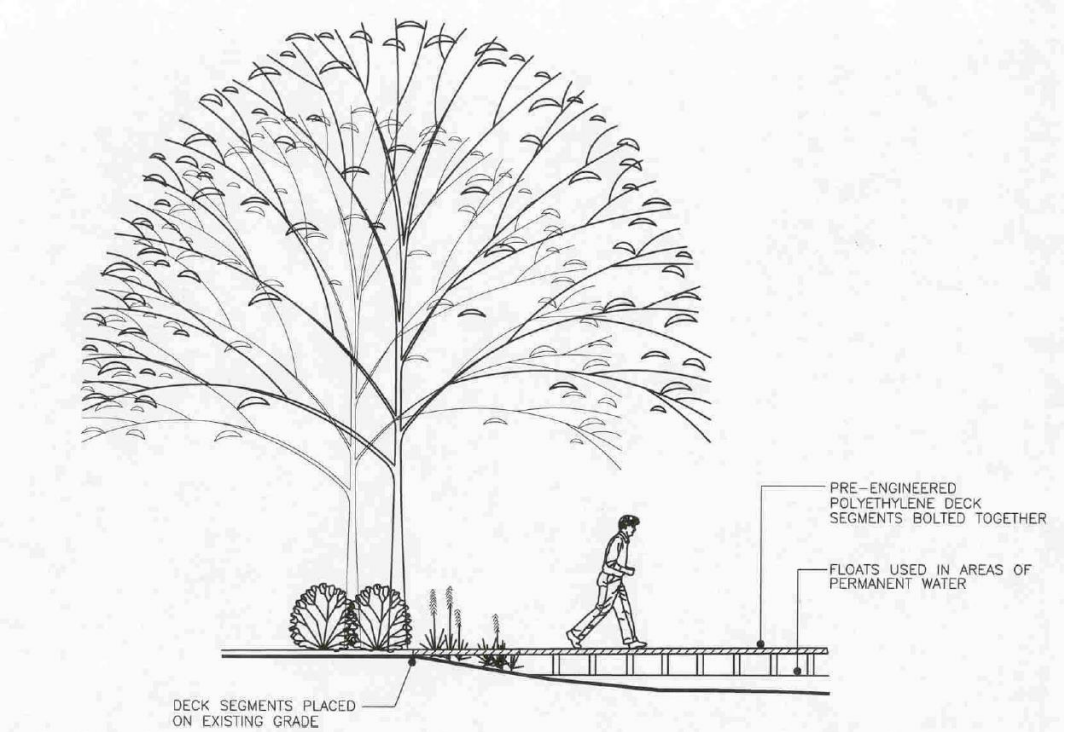
Structures are traditionally the most expensive element of trail construction, thus their use should be limited to keep down the overall cost of trail development. On new structures, the minimum clear width should be the same as the approach trail width. The desirable clear width should include an additional 2-foot wide area on either side, but this may not be possible due to cost considerations.



Elevated Deck - a combination of wooden decking and wooden piles or support piers with a wooden decking trail surface and railings. Railings should meet AASHTO and supports over 3'-6' rubbed smooth. Decking should be laid out at a 45 degree angle to reduce vibrations for wheeled uses. All local and state building codes should be followed.



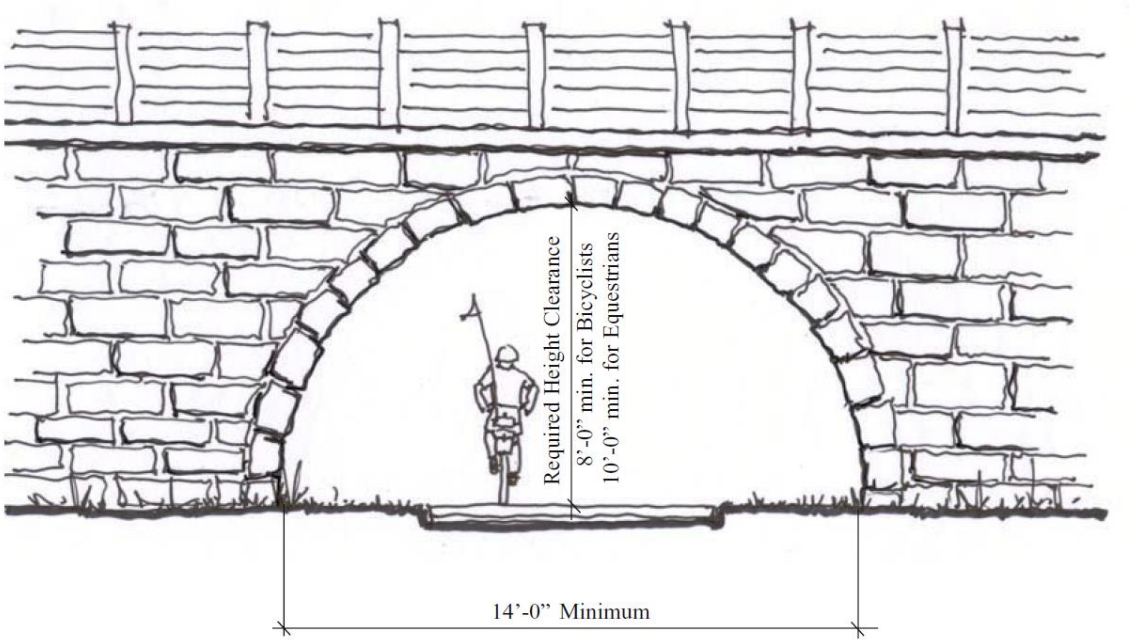
Boardwalk on Grade - in marginally wet areas where boardwalks can be constructed on grade, railings are not required. Such boardwalks are most often recommended for pedestrian-only applications. Decking should be laid out at a 45 degree angle to reduce vibrations for wheeled uses. Additional width is recommended for bicycle use.



MANUFACTURED FLOATING BOARDWALK
NOT TO SCALE

Pre-Manufactured Floating Boardwalk - pre-fabricated units that come assembled from the manufacturer may be connected together to form a "floating" boardwalk in areas of permanent water. Recommended without rails only when traversing shallow water and in areas designed for pedestrian use only.

Bridges - for larger bodies of water, ravines or other areas where fill is not permitted, a bridge will be a solution. All bridges will need to be structurally and hydrologically engineered to permit appropriate water flows, withstand major floods, and uphold loading requirements for passage of emergency and trailway maintenance vehicles. The type and design of the bridge used to traverse bodies of water varies based upon the size and the velocity of the water.

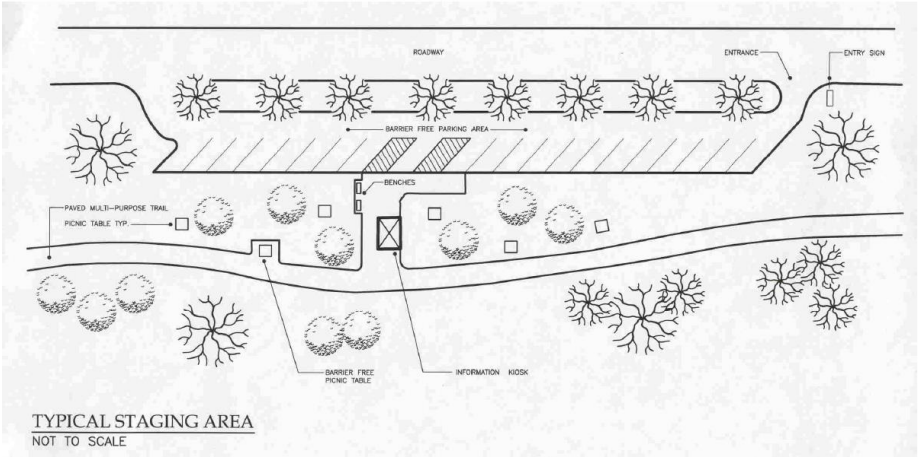


An overpass, underpass, bridge, or facility on a highway bridge may be necessary to provide connectivity and continuity to the developing non-motorized system. For the new structures, the minimum clear width should be the same as the approach paved shared use trail, plus the minimum 2-foot wide clear areas. As an example, a 10-foot wide paved path would require a 14-foot wide bridge to provide the required clearance areas. Access for emergencies should also be considered.

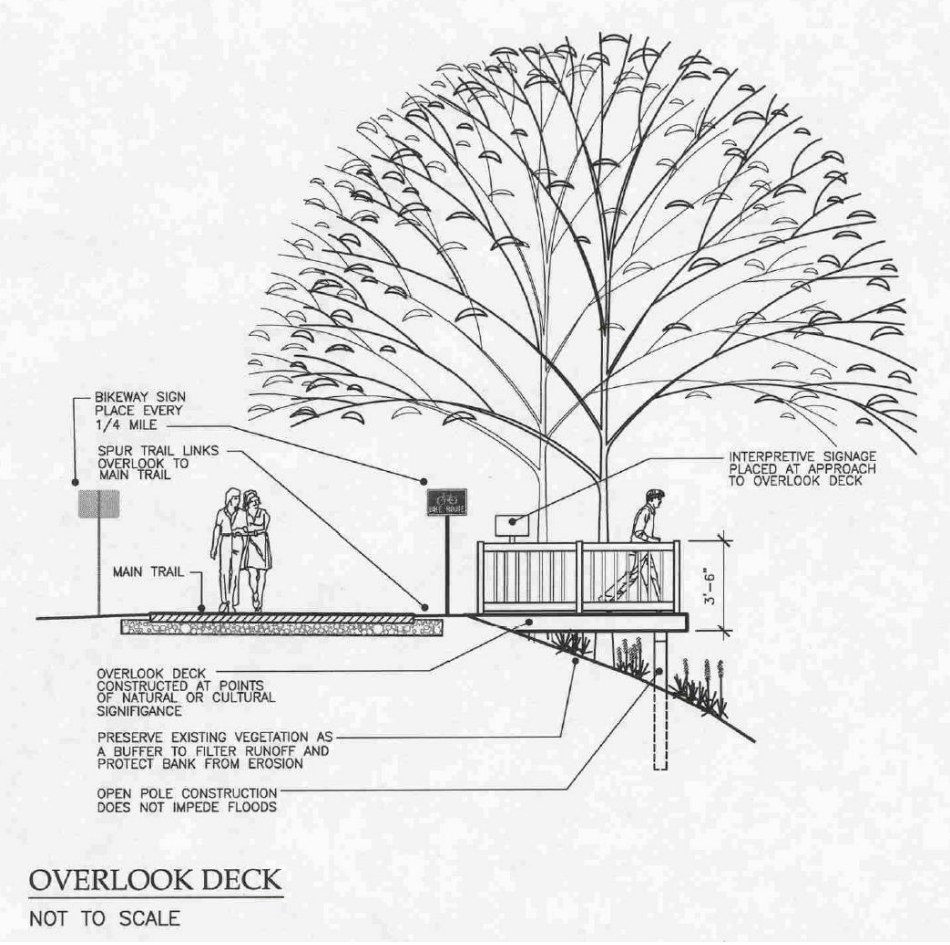
Amenities

The creation of a Trails Master Plan requires more than just locating and constructing linear pathways throughout the community. To make a trails system useable and enjoyable a variety of amenities should be included. The trail segments illustrated on the trails maps do not identify the general location of amenities such as seating areas with benches & trash receptacles, a variety of required and interpretive educational signage and information kiosks, but these things should be kept in mind during the design of each trail segment.

The selection of the style, color and placement of all amenities is part of the detailed work which will be involved in preparation of construction documents, which will be required for each segment of the trail as it moves into the implementation phase of the project.



A staging area is commonly referred to as a trailhead. Elements commonly found in staging areas include parking lot for vehicles, trail information kiosks, picnic area, restrooms and drinking fountains. Staging areas are often located where there are existing facilities to be built upon, such as within a park adjacent to the trailway or other already established areas.



Major Overlooks - Similar to the boardwalks, these decks are proposed to be built in key locations that offer extraordinary views of the countryside, rivers, wetlands, or other natural habitats. The major overlooks can include interpretative signage and benches.

Minor Overlooks - minor overlooks can include interpretative signage, fencing and trail furniture. The location of the minor overlooks should occur in areas where only minor vegetative clearing is required.

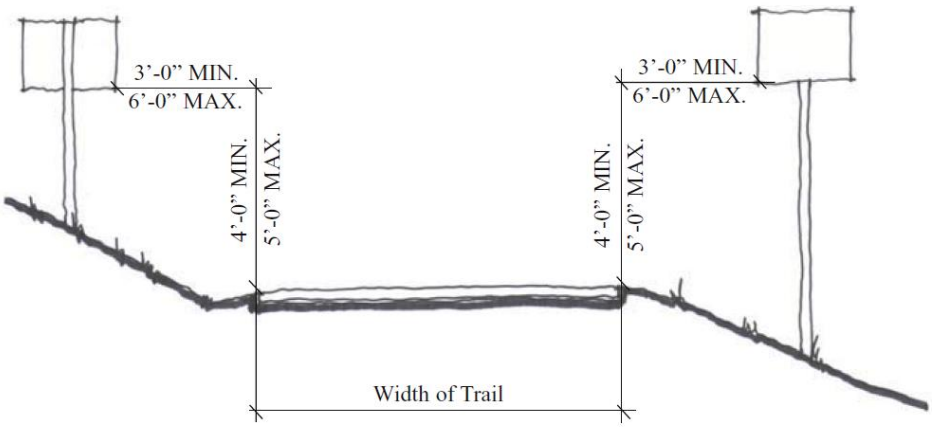
Signage

Signage is an essential element for a successful non-motorized system. While it is assumed that, in most cases, each local entity will design and implement signage for a system segment within its jurisdiction, coordination and some consistency in signage and way-finding will be of utmost importance.

It is suggested that the trails system would promote a trail and bike path wayfinding system that is consistent throughout the region and is customizable to individual trails. Each sign should incorporate the three D's:

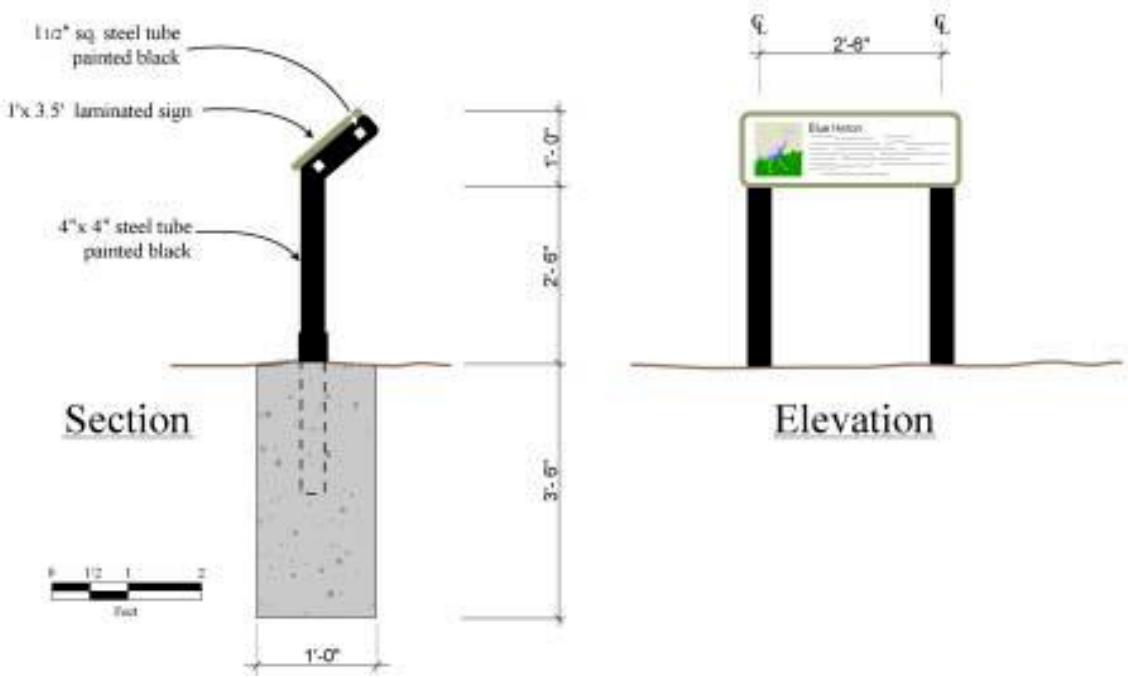
- Distance
- Direction
- Destination

This system fits in with the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) standards. This signage system is upgradeable and expandable because as a new destination is needed you can simply add it to the sign without printing an entire new sign. It can be used on streets as well as non-motorized trails. Logos for trail or organization can be added above the route marker. This helps with branding the trail and gives recognition to ownership of the trail. Trail names, logos and organizations should be separated from the route and destination signs but on the same post.



There are locations throughout area where bike lanes and trails do not exist and the road is used for bicycle travel. Bicyclists will tell you that motorists need to be reminded that cyclists are legitimate users of the road. Being alerted to their presence at high conflict locations can save lives. One easy, quick, and inexpensive way to improve traffic conditions for bicyclists and motorists is a "Share the Road" sign. These are well suited for the beginning and ending points of bike lanes or trails, popular bike routes, or any place where there is conflict between bicyclists and motor vehicles. "Sharing the road" means that motorists and bicyclists work together to improve on-the-road behavior in terms of courtesy, cooperation and safety.

Interpretive signage can increase people's knowledge and appreciation of the history of the area. There are many different opportunities for interpretation along the trail. This could include providing interpretation of significant points along the trail such historic sites or ecological and geological phenomena such as native prairie remnants, local animal habitats, or evidence of the glacial history of the area.



Whatever features are chosen for interpretation along the trail, careful and thoughtful use of signage can greatly enhance a user's experience of the trail. Several important considerations for the design and use of interpretive signage are:

- Keep signage consistent in design along the length of the trail to establish a sense of continuity and character. Repetition of a sign design, color scheme or logo along the trail reinforces the image of a common trail identity through different jurisdictions.

- Signs should be clearly legible, understandable, and be made of fade-proof and weather-proof surface materials and inks.
- Signs should be durable and require minimal maintenance.
- Signs should be placed to prevent obstruction or collision along the trail. Place signs in clear areas at least 4' off the side of the path so groups of pedestrians, wheelchair users or people on bicycles can be completely out of the travel lane while reading signs.
- Self-guided interpretive systems with simple numbered posts may be used along the trail. Trail heads may be used for large interpretive signs that introduce the tour and as a place to distribute self-guided tour pamphlets.

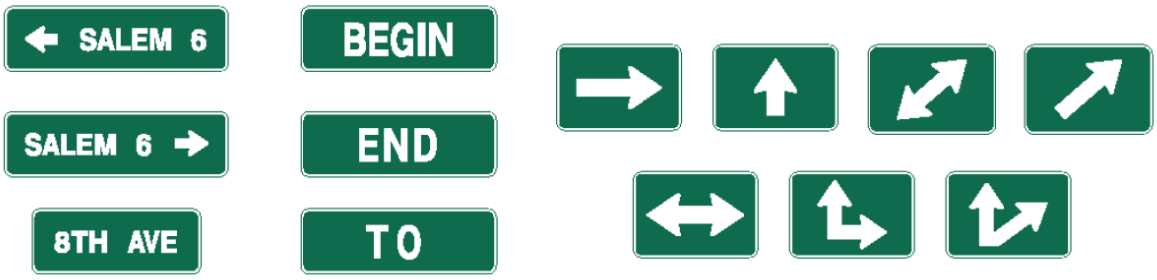
Types of signs

Informational signs:

Informational signs are used to direct and guide users along trails in the most simple and direct manner possible. Signs include, but are not limited to, the following:

- Identification of trailheads and access points
- Identification of cross streets
- Trail maps
- Descriptions of surface type, grade, cross-slope and other trail features

Directional signs:



Directional signs are used to inform trail users where they are along the trail and the distance to destinations and points of interest. They incluse, but are not limited to, the following:

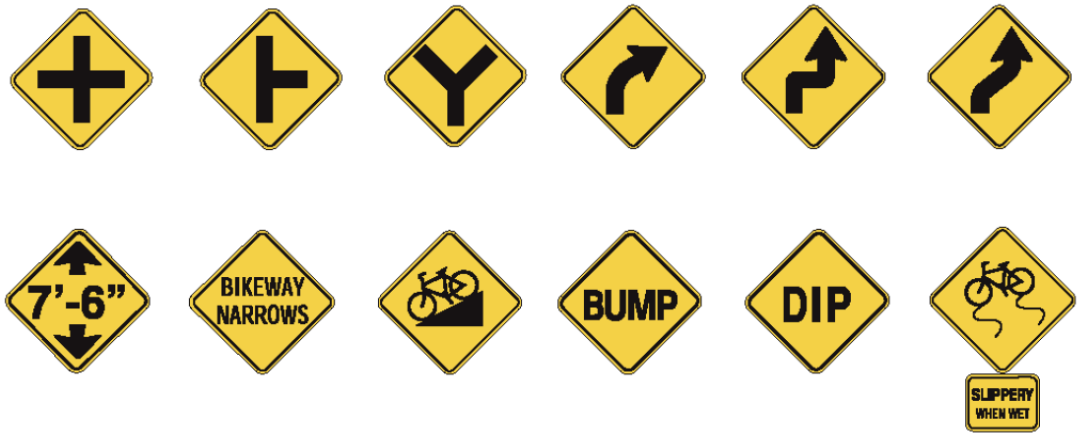
- Street names
- Trail names
- Direction arrows
- Mile markers to be posted every mile
- Mileage to points of interest

Interpretive signs:

Interpretive signs are used to offer educational information on the trail environment. They include, but are not limited to, the following:

- Natural resources
- Cultural resources
- Historic resources
- Other educational resources

Warning signs:



Warning signs are used to alert trail users to potentially hazardous or unexpected conditions. These signs should be used in advance of the condition. They include, but are not limited to, the following:

- Upcoming roadway, railroad, or trail intersections
- Blind curves
- Steep grade
- Height and width constraints

Regulatory signs:

Regulatory signs are used to inform trail users of the "rules of the trail", as well as selected traffic laws and regulations. They include, but are not limited to, the following:

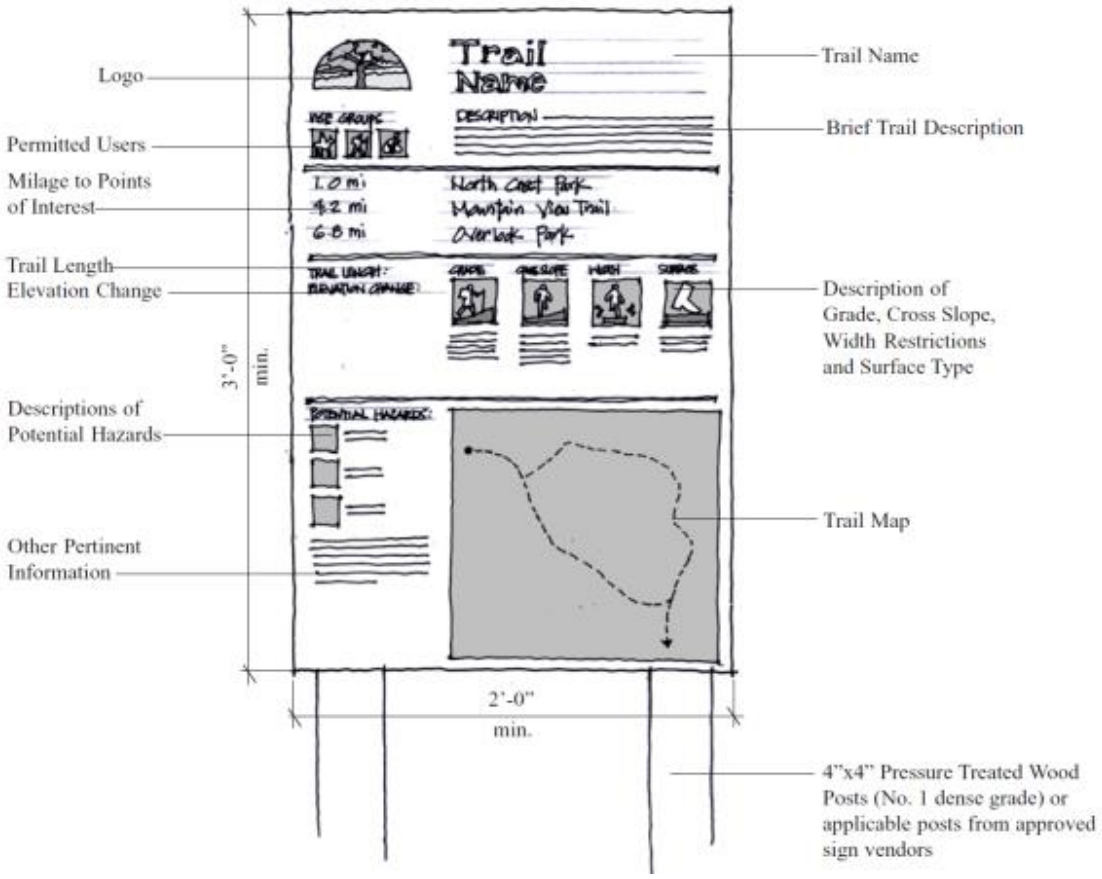
- Appropriate user modes for each trail
- Yield signs for multi-use trails
- Bike speeds
- Controlling direction of travel
- Stop and yield signs

STOP signs shall be installed on shared-use paths at points where bicyclists and other users are required to stop.

YIELD signs shall be installed on shared-use paths at points where bicyclists and other users have an adequate view of conflicting traffic as they approach the sign, and where trail users are required to yield the right-of-way to the conflicting traffic.

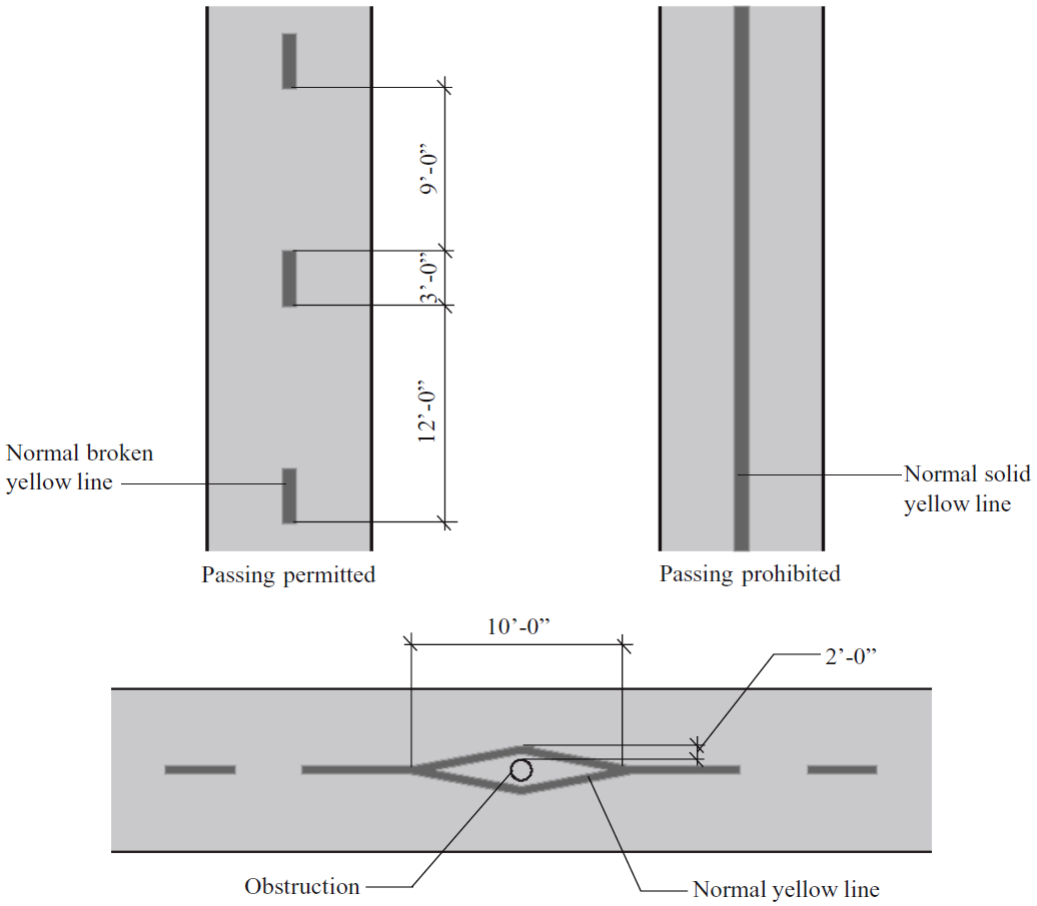
The placement of signs along with each trail will vary greatly, depending on the intended use of the trail, and should comply with the following standards:

- Lateral sign clearance shall be minimum of 3 feet and a maximum of 6 feet from the near edge of the sign to the near edge of the path.
- Mounting height for ground mounted signs shall be a minimum of 4 feet and a maximum of 5 feet measured from the bottom edge of the sign to the near edge of the path surface.
- When overhead signs are used, the clearance from the bottom edge of the sign to the path surface directly under the sign shall be a minimum of 8 feet.
- Placement of signs to be reviewed during trail design review phase.



Informational signs should be provided at each trailhead and major point to convey accurate and detailed information about existing trail conditions and available facilities. This type of sign allows users to accurately assess whether or not a trail meets their personal level of safety, comfort and access. The following information should be conveyed on the sign:

- Trail name
- Brief description of trial
- Permitted users
- Trail map
- Mileage to points of interest
- Trail length
- Elevation change
- Average running grade and maximum grades that will be encountered
- Cross slopes
- Type of surface
- Size, location and frequency of obstacles



Marking and striping indicate the separation of lanes on multi-use trails:

- A solid white line is recommended for separation of pedestrian traffic and bicycle/in-line skating traffic and a dashed yellow line is recommended when adequate sight distance exists
- Solid white lines along the edge of trails are recommended where nighttime riding is expected
- A solid yellow center line is recommended where trails are busy
- Markings should be retroreflective.
- Consideration should be given to selecting pavement marking materials that will minimize loss of traction for bicycles in wet conditions.

Marking and Signs at Intersections (taken directly from MUTCD 2000, Section 9C.01):

- Pavement marking and signs at intersections should tell trail users to cross at clearly defined locations and indicate that crossing traffic is to be expected.
- Similar devices to those used on roadways (stop and yield sign, stop bars, etc.) should be used on trails as appropriate.

- The AASHTO Guide notes that in addition to traditional warning signs in advance of intersections, motorists can be alerted to the presence of a trail crossing through flashing warning lights and striped or colored pavement crosswalks.

Maintenance

Developing maintenance guidelines and standards will be essential in assuring the safety and continued life of the non-motorized system. Repairs may be as minor as fixing a pothole in an asphalt trail or as major as the complete renovation of an entire trail section. Low areas that held or channeled water in the past may begin to deteriorate due to increased runoff from nearby development. If not addressed immediately, these areas can spread and damage large sections of trails.

Routine maintenance tasks are all directed to extending the life expectancy of trails, providing a high quality product to trail users, and ensuring the safety of trail users. Routine maintenance and inspection of the trail system enhances the enjoyment of trail users. Routine maintenance and inspection of the trail system also minimizes repair and renovation costs.

Bikeway and trail maintenance keeps trails at, or near, constructed or intended conditions. Regular maintenance protects the investment of funds, while enhancing user safety, protecting resources and providing continued access to the public. Poorly maintained trails and facilities become unusable and a legal liability.

A maintenance program should be established and adopted by the operating agencies responsible for trail maintenance in order to preserve the trails and facilities, to insure the safety and comfort of trail users, and to maintain a harmonious relationship with adjacent property owners. This would include numerous efforts ranging from mowing and snow removal to replacement of damaged benches and signs to surface repair and reconstruction of the trail.

Every trail should be inspected and evaluated on a regular schedule in order to identify the need for minor or major maintenance repairs. Different types of trails will differ greatly in their maintenance requirements. However, all trails will require a variety of preventative and corrective activities throughout their lives to insure that they remain safe, accessible, and in good condition.

The following recommended maintenance schedule outlines some general guidelines for maintenance activities and the frequency at which they should be performed. The outline provides a general approach to maintaining all types of trails. However, the agency responsible for each trail's operation and maintenance (municipalities, developers, home owners associations, volunteers, etc.) should know best when certain maintenance activities should be performed.

RECOMMENDED MAINTENANCE SCHEDULE

Frequency	Maintenance Activity
As Needed	• Sign replacement • Map or signage updates • Sweeping and brush removal • Trash removal and litter clean-up • Repair or replace trail support amenities such as parking lots, benches, restrooms, etc. • Clearing of vegetation for adequate sight distances • Repair flood damage, such as silt clean-up, culvert clean out, etc. • Patching and minor re-grading • Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary
Seasonal	• Mowing • Leaf blowing • Snow plowing or grooming • Planting, pruning and beautification • Culvert clean-out • Installation or removal of seasonal signage
Yearly	• Surface evaluation to determine needed patching, re-grading or installation of waterbars • Evaluate structural integrity of human-built trail features, such as bridges, retaining walls, steps, railings, etc. • Evaluate support services to determine need for repair or replacement • Repaint or repair trash receptacles, benches, signs, and other trail amenities
5-Year	• Sealcoat asphalt trails
10-Year	• Resurface, re-grade and re-stripe trail
20-Year	• Replace or reconstruct trail

Trail users are often the first to experience trail deficiencies and identify needed repairs. Therefore, trail operators are strongly encouraged to establish a spot-improvement program. This program enables trail users to bring deficiencies and problems to the attention of the operating agency in a quick and efficient manner by having pre-addressed, postage-paid postcards available to the public, as well as appropriate telephone numbers

posted along the trail. A timely response from the agency will help to insure safe and accessible trail conditions.

All tree branches extending into the trail clearing should be cut flush with the parent branch or stem, leaving no stubs. This is safer, lasts longer, and also allows for the wound to heal naturally.

Small trees and shrubs within the trailway should be grubbed out to prevent tripping. Holes should be filled and compacted.

Trees and brush outside the trailway (but inside the trail clearing) should be cut as close to the ground as possible, leaving no sharp pointed stumps or stems. Consideration may be given (especially on exotic species) to treating these cut stumps with herbicide.

Fallen branches and trees should be removed except for a few large trees/logs near access points. On larger logs, remove a section only the width of the trailway to further restrict unwanted use.

In high use sections of the trail or near camping areas, dead or dying trees that have a possibility of falling across the trail or camping area should be removed. In primitive areas, only those trees that may be a serious hazard to users should be removed.

When trailway repair is needed, it should be restored to the original design condition, free of loose stones, rock points, stumps, and roots. Attention should be given to dips and outsloping so that water does not collect on the trail.

Proper drainage protects the trail from erosion damage. Trails should be routinely inspected to ensure that all culverts, dips, waterbars, drainage ditches, etc. are free of debris and ready to function properly at all times—especially during the rainy season or spring runoff. Routine maintenance is not only necessary, but valuable in terms of labor, material, and money saved on emergency repairs, and in the number of days the trail is useable. If repairs are necessary, they should meet or exceed the original construction specifications.

Trail and Support Structure Maintenance: The major consideration in structure maintenance is safety. Bridges, stiles, boardwalks and all support structures should be routinely inspected in order to ensure safe conditions for intended function. Deficiencies requiring major efforts should be planned as a separate project. Unsafe structures must not remain unattended. If work must be temporarily deferred, an alternate trail route should provide a bypass of the hazard.

Experience and knowledge of the trail will help determine what tools to take and how many persons to recruit. The most efficient way to manage trail crews goes by various names—the "overseer" system, the "trail sponsor" system, the "adopt-a-trail" system. The key is that one person is responsible for a particular segment of trail on a permanent basis, if

possible. It is his or her responsibility to see that the trail segment is maintained, either working by himself or by recruiting helpers. The advantage of this system is that the adopter becomes well acquainted with the segment, can deal efficiently with problem areas and can judge how much and how often work is needed to keep the segment maintained. A disadvantage of this system is that a segment can become so familiar that problems are overlooked or it becomes boring for the adopter. One way to overcome this problem is to rotate adopters between segments every few years.

The annual trail evaluation or a pre-workday trip by the overseer can serve as an assessment of the work to be done and will facilitate crew organization. Two to four persons can usually maintain 3 to 5 miles of trail per day—depending on the individuals, terrain, vegetation, and the number of maintenance problems.

The exact kind and number of tools for a crew varies from one part of the country to another. In general, tools which are capable of cutting weeds, pruning branches, removing logs, digging and leveling trail, and cleaning waterbars are desirable.

The trail must be cleared of all debris following clearing or heavy maintenance. Maintenance results should appear neat and hardly noticeable to a hiker. Inadequate clean-up can spoil even the most thorough clearing job. One person on the crew should be assigned responsibility for this job. All cut growth should be carried off the trail and scattered—not piled. If eroding gullies are nearby, the cut material can be placed in the gully to slow the flow of water and catch sediment.

All flagging, construction stakes and debris, litter, etc., should be removed.

Work should be organized so every section of trail is left as complete and finished as possible.

Use should be found for as much disturbed material as possible. On every trail there are points where excess material must be removed and sections where material will be needed. Rock and soil removed from a cut on one section can be used as fill on another nearby section. A trail does not have to be worked progressively from beginning to end. Priority should be given to sections needing the most attention. The cut sections may be worked first, followed by the fill areas. Water diversions should be installed prior to trail surfacing work to allow for natural drying and easier working conditions. If two crews are working along the same trail, work assignments and locations should be scheduled to allow for exchange of equipment and materials.

As construction and maintenance is finished in a segment, clean-up should also be completed. Postponing trailside cleanup until later is poor procedure—it seldom gets done. Time should be taken to do the job correctly the first time around to avoid having to repeat the task.

Flagging should be carried for temporary trail marking or to identify work to be done.

A stout but flexible forked sapling (about an inch in diameter at the base) that has been cut about 4 ½ to 5 feet in length (with about a 10" fork at the end) is a very useful tool for flinging small limbs out and away from the trail. When following someone who is using a power brush saw, it is also an excellent tool for flinging the cut brush out of the trail. Used like a pitch fork, it scatters the brush so that it is not visibly concentrated, and is much more efficient than bending to pick up and discard each piece by hand.

All main stems or trunks should be cut as close to the ground as possible—or grubbed out. It is very important to avoid leaving short stubs (trippers) as they are a safety hazard. Cut hardwood stems resprout easily, therefore, grubbing is the preferred method as it is a one-time treatment.

Larger logs should be carried to the downhill side of the trail and placed perpendicular to the face of the hill to prevent them from rolling and creating a safety hazard.

If a branch needs to be pruned, it should be cut next to the trunk. If not cut next to the trunk, these safety hazards tend to develop suckers or side branches which will have to be cut again and look unnatural. Large limbs should be undercut first to prevent peeling the bark from the main stem when the branch falls.

Conifer branches and weak trees, such as alder, are easily broken by heavy snow or rain and may require extra clearing.

Permitting

Permits are necessary for trail and greenway projects. The specific permits that may be required vary greatly depending on the circumstances and location of the project.

Non-Motorized Design Resources
Guide for the Development of Bicycle Facilities, American Association of State Highway and Transportation Officials (AASHTO), 1999
Manual on Uniform Traffic Control Devices
A Policy on Geometric Design of Highways and Streets "Green Books", AASHTO.
Recommendations for Accessibility Guidelines: Outdoor Developed Areas, US Architectural and Transportation Barriers Compliance Board (US Access Board), 1999.
Designing Sidewalks and Trails for Access: Part II of II: Best Practices Design Guide, Federal Highway Administration (FHWA), 2000.
Selecting Roadway Design Treatments to Accommodate Bicycles, Federal Highway Administration, 1994
Michigan Non-Motorized Transportation Facilities Best Practices CD, MDOT Intermodal Policy Division, 2002.
Designing Sidewalks and Trails for Access: Part II Best Practices Design Guide, FHWA.
Universal Access to Outdoor Recreation: A Design Guide, USDA Forest Service.

Implementation

Plan Implementation

This Plan is a long term vision for the Iron Belle trail within Ogemaw County that can provide the backbone of a trail network that may connect with adjoining trails and regional facilities. Implementation of this Master Plan will require extensive effort on behalf of many agencies, departments, organizations, and individuals. Trails of this type cannot be implemented overnight and in many cases portions of the full extent of this plan may not ever be implemented. This Plan is intended to provide an overall vision for the citizens of Ogemaw County to use as a foundation to reference as they continue to develop plans for road projects, land acquisitions, economic development strategies, resource protection, and other actions. The county should utilize this Plan as a tool, and refer to it for the resources and information needed to make decisions on its future needs.

The following actions will assist in furthering implementation efforts for a connected non-motorized system within Ogemaw County and all of Michigan.

- Local communities and the County should amend Land Use, Transportation, and Recreation Plans to include this Master Plan. Proposed developments should be designed in a manner that is consistent with the adopted plans for the area or community.

- Raise the level of awareness of the Plan both internally with County staff as well as with local units of government, regional, state and national agencies. Eventual design and construction of the non-motorized corridors will require involvement, cooperation and support of many departments and agencies.

- Develop a coordinated signage and wayfinding plan for the non-motorized system that allows for local flare while providing visual consistency for the user on the entire trail.

- As segments of the system are proposed for construction, it will be necessary to develop a continued and dedicated maintenance program and associated funds. This is imperative to ensure the long-term success of the network. This is often a roll taken on by a non-profit group that has interest in the trail system.

- A map of the proposed non-motorized system should be updated and published on an annual basis to ensure accurate information is available and to celebrate progress. This plan is intended to be fluid and dynamic. Over time, it is fully anticipated that the map and plan will be outdated as communities are continuously working to build non-motorized trail segments or alter their local plans based on technical issues, land acquisitions, political agenda, etc.

- Awareness of grant opportunities should remain high. The county should pursue funding and grant prospects on a regular basis to advance those segments of the system that are within their jurisdiction and/or boundaries.

- Incorporate and coordinate non-motorized goals and plans with the Ogemaw County Road Commission, Michigan Department of Transportation and East Michigan Council of Governments.

Several segments of the planned trail system are within road rights-of-way, or cross over, or under, road rights-of-way. Significant coordination with Michigan Department of Transportation and the Ogemaw County Road Commission will need to occur on a continual basis to discuss the potential for providing space for non-motorized facilities or accommodating non-motorized facilities within planned design and construction projects. This includes rehabilitation and/or replacement of bridges. The county agencies must stay aware of road rehabilitation, widening and design projects and compare them to proposed non-motorized connections.

There are a number of techniques and methods that communities and agencies across the country have utilized to assist in implementation of a connected, non-motorized system. When public spaces and connections are implemented in a system wide approach, they can provide a central focus for new development, serve as a catalyst for private investment, and contribute to the creation of a coherent framework of open space amenities. As has been described, it is hoped that the county and its municipalities will amend their local plans, ordinances, site plan standards, and policies to incorporate this vision. Coordinating both public and private sector planning of green space and non-motorized systems will ensure a connected system with a multitude of destinations and amenities. Nonmotorized systems and connections should be incorporated at all levels of planning including conceptual planning, site plan review, planned unit developments, cluster development projects, etc. Below are a few strategies to consider:

- Work with developers to encourage the inclusion of pedestrian or non-motorized connections as part of their developments. Ensure the smaller system is connected, or can be linked in the future, to the larger emerging local and regional systems.

  Open space systems can be designed to meet multiple needs including storm water drainage and treatment, wildlife habitat, as well as active and passive recreation. The site's topography, drainage flows, corridors and channels should be used to give structure and form to the overall site plan.

- Work with developers and property owners to discuss the non-motorized vision and associated benefits. Meet with property owners and developers early to

discuss voluntary trail easements or dedications of land so that planned segments of the system can be incorporated.

- Develop ordinance language that addresses non-motorized system connectivity and provides guidance and regulations for including and building upon the vision. This can include language for developer provision of easements and development of critical non-motorized segments.

- Non-motorized systems typically have the support of numerous nonprofit organizations that have a demonstrated ability to maintain and construct trails. These groups not only can provide tools, equipment, and labor to supplement government efforts, but can also help by organizing community events, conducting fundraising activities, participating in grant application preparation, and soliciting donations of money, land, or easements from property owners.

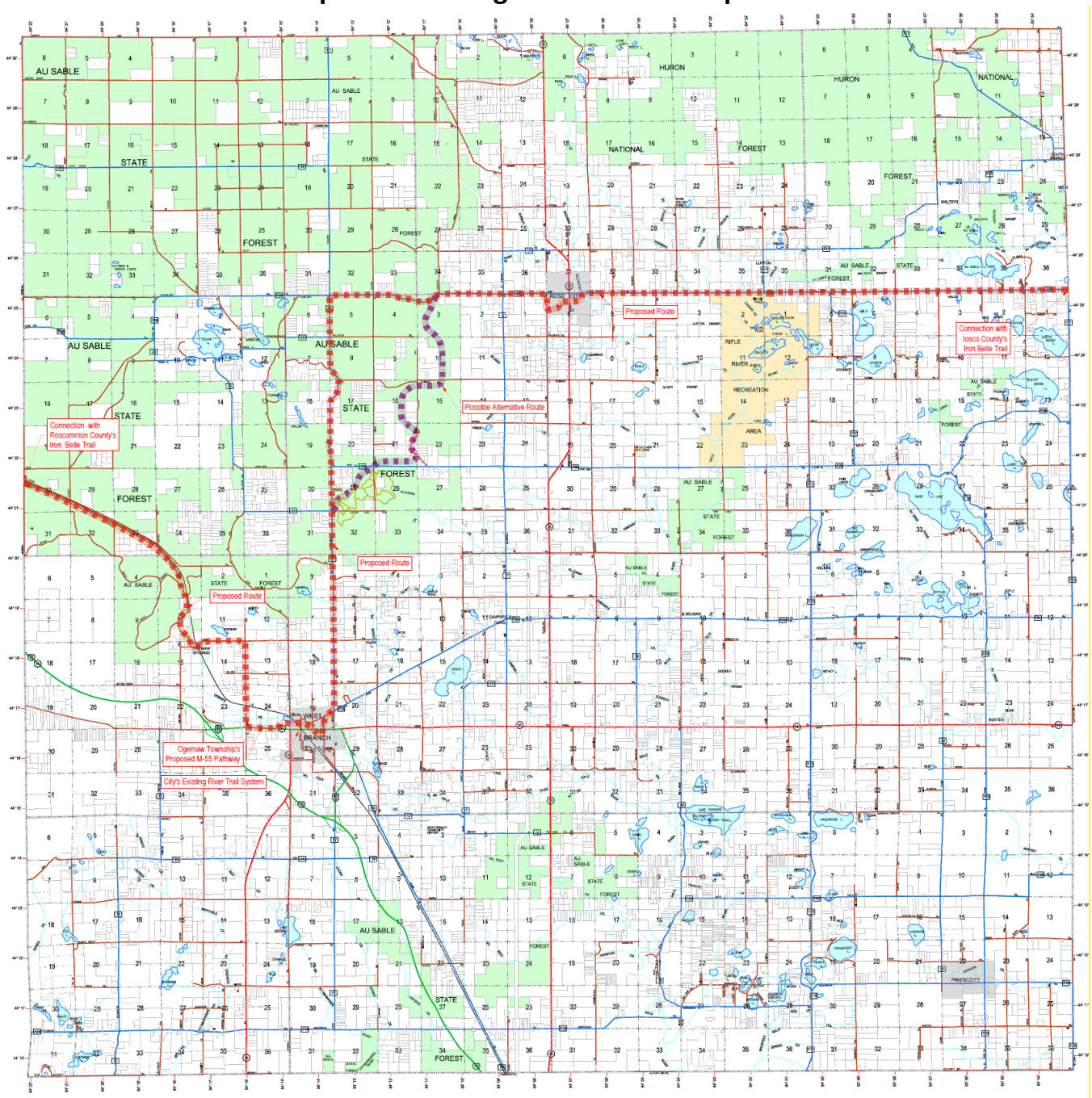
Trail Facts

- Once the Clinton River Trail in Oakland County, Michigan was acquired, the Friends of the Clinton River Trail decided to take a long-term view by identifying opportunities all along the corridor for open space and environmental preservation. They formed a Clinton River Land Vision Task Force in 2003, inviting citizens and environmental leaders in the area to draft a guiding vision for the future. In 2006, a land preservation millage was passed to help fund land preservation according to the established vision. The trail sparked citizens to be involved in an additional project for the good of the community.
- A study documented in the September 5, 2006 issue of Science, found that plant diversity in natural areas connected by corridors compared to natural areas that were unconnected had 20 percent more species of plants.
- In trail way studies conducted by Michigan State University on the Pere Marquette, TART, Leelanau, Lansing River Trail, and Paint Creek Trail, at least half of all trail users accessed the trail by means other than driving to it. This reinforces the theory that trails are used most often by those who find it easiest to get there. As such, regional trail networks and on-road connections to non-motorized facilities would be beneficial.
- An April, 2003 study for the Surface Transportation Policy Project, using a national telephone survey of 800 randomly sampled adults 18 and older, found that 55% of adults would like to walk more throughout the day either for exercise or to get to specific places.

As was previously mentioned, this Master Plan represents a long-term vision that may well not be fully implement for 20 to 30 years because of a variety of factors including funding, feasibility, public involvement, and political and community priorities. Therefore, a hierarchy of trails segments should be developed so that implementation of priority segments are first to be developed and lower priority segments are placed on the back burner. Implementation of any segment of this Master Plan is a step towards the goals of the plan and should be considered favorably if the opportunity presents itself. Primary routes where higher density populations are present should be considered high priorities.

The planning of the network is an ongoing effort both at the local and county level of government. A major consideration during the planning for the implementation phase of the Master Plan is cost. Cost will influence the type of materials, the construction and the phasing of the improvements and the potential funding sources. This section of the Master Plan provides probable costs for implementation. The costs are derived from a variety of sources and are intended to illustrate the magnitude of costs and estimates for the purpose of capital expenditure planning by local communities and interest groups. The costs indicated are a starting point in planning for the cost of implementation. More detailed engineering design, analyses and site-specific design will be needed prior to funding requests being submitted.

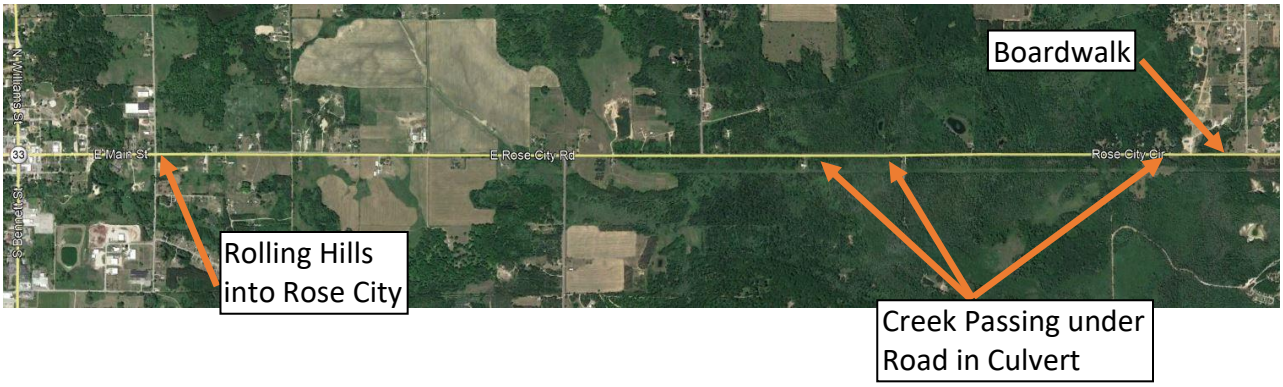
Proposed Trail Segments and Descriptions



The Ogemaw County route traverses the county for over 38.5 miles beginning on the east at the Iosco County border on Rose City Road and connecting both the City of Rose City and the City of West Branch before terminating on the west at the Roscommon County line by Meridian Road and the Lake State Railroad. The route utilizes existing public roadways, forest trails, utility corridors and community's existing and proposed trail routes. The following will described sections of the route and costs associated with those segments and then prioritization and phasing for development.

County Line to Rose City - Rose City Road

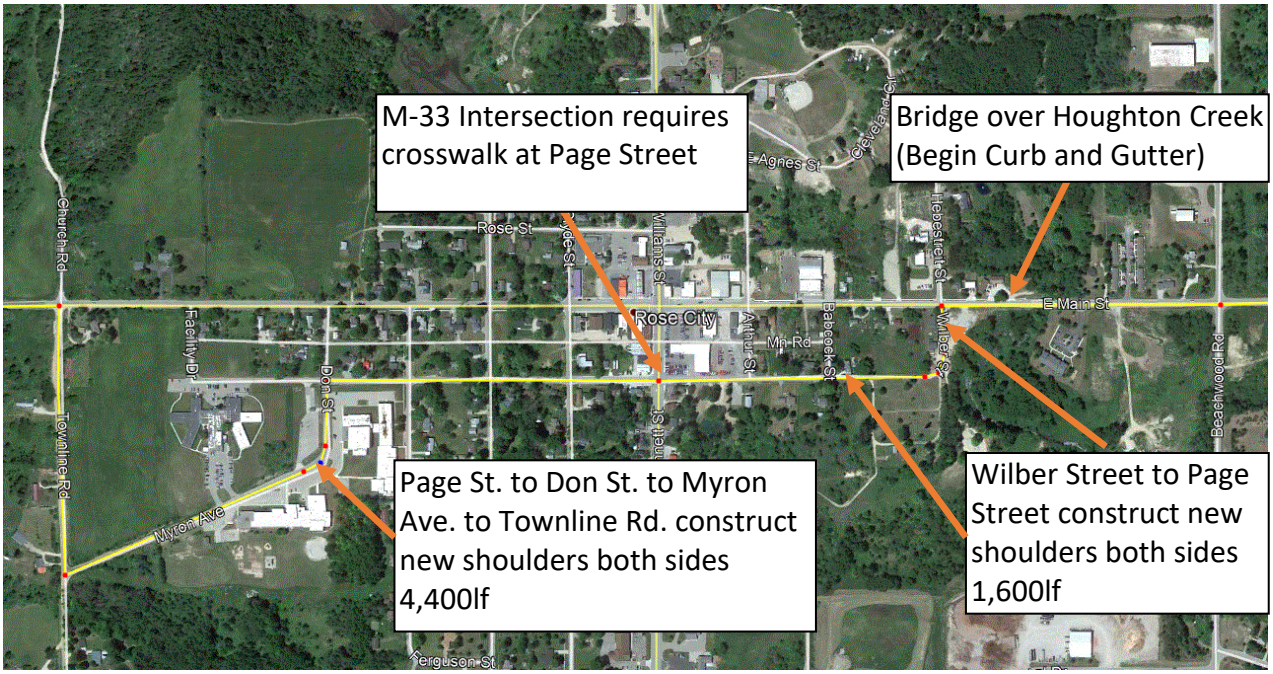
The Eastern part of the Ogemaw County route begins at the county line and will follow Rose City Road going west from the county line approximately 11.0 miles to the city limits of Rose City. This trail segment is proposed to be constructed as widened HMA paved shoulders on the side of the roadway within the existing county road right-of-way. Proposed bike path will be a designated 5' wide paved shoulder with striping running along either side of the road. This segment will require some consideration of existing features such as utilities, mailboxes, ditches and culverts, but should be able to fit within the existing road right of way. Due to the proximity of marsh areas, one of two options will need to be incorporated for approximately one mile of the trail for safety. Either guard rail can be installed or the shoulder widened into the wet and marsh-like areas, which may also include some culvert extensions. Also, Gamble Creek runs under the roadway just west of Lupton which will require a boardwalk bridge running over it and behind the existing guardrail, or an extension of the culvert and fill above to accommodate the widening of the shoulder. Three other creeks pass under the road via large culverts, all west of Lupton, however none of the other creeks are significantly lower than road and can be crossed be extending the culverts and adding fill as needed. Shoulder widening is proposed to only include an additional 4' and will remain within the right-of-way of the road. The proposed route will also cross multiple county roads and several private roads during this portion, regardless of which side of the road the path is on. Signage, pavement markings and crosswalks will be required throughout this entire segment. NOTE: There is an additional 0.45 mile stretch from the county line to reach Long Lake. This section is a part of the Iosco County's Trail Plan.



HMA Widened Shoulders (58,080 lf)	$1,275,000
Signage, Pavement Markings & Crosswalks	$35,000
Culvert Extension and Fill Area or Guard Rails (+/- 1.0 Mile)	$100,000
Boardwalk Bridge or Culvert Extension and Fill	$110,000
Engineering	$150,000
Contingency	$150,000
Total Trail Costs	**$1,820,000**

Rose City Area - Rose City Road

The portion of the route that runs through the City of Rose City will divert around the Rose City Road Corridor and meet up at Rose City Road back on the west end of town at Townline Road. This portion will require new paved shoulders and striping for the majority of the route. Some areas have curb and gutter and will require some reconstruction in order to make them meet minimum AASHTO bicycle path requirements. Additionally a crossing M-33 will be required which is proposed to be located 2 blocks south of the existing traffic signal.



New Paved Shoulders (6,000 LF)	$50,000
Crosswalk @ M-33	$50,000
Signage & Pavement Markings	$20,000
Engineering	$15,000
Contingency	$15,000
Total Trail Costs	**$145,000**

Rose City to Fairview Road - Rose City Road

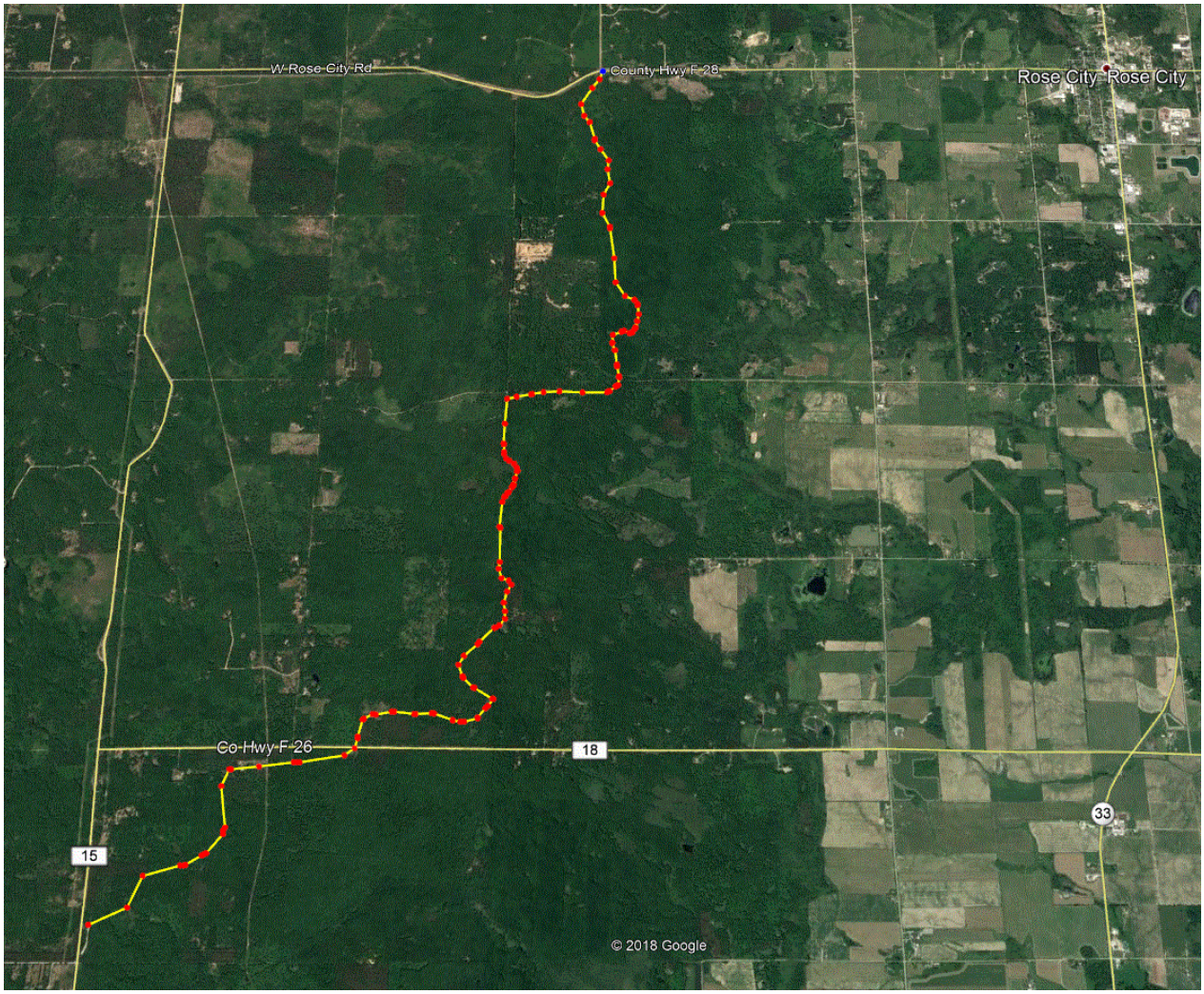
The portion of the trail that runs through from the city limits of Rose City continuing along Rose City Road to the west to where the route will turn south on Fairview Road. This trail segment will consist of widened HMA paved shoulders on the sides of the roadway within the county road right-of-way, as well as utilizing existing trail corridors and powerline corridors. The first 3.5 miles west of Rose City will be where the widened shoulders will be utilized. This area is wide enough and without obstructions that an 8' path can be installed along the road, but would require moving the centerline of the road and utilize half of the total open space between the road and ditches on each side. There is an approximately 800 lf section that the path would not be able to run with the road due to grade, and will need to go through a lower, dry, pasture area. The next 1.7 mile section will parallel the existing ORV trail corridor and then utilize the existing powerline corridor through a portion of the Au Sable State Forest, State of Michigan property. There will be four county roads that will be crossed in this section. Signage, pavement markings and crosswalks will be required throughout this segment.

4' HMA Widened Shoulders (18,000 lf)	$395,000
8' HMA Path Paved over existing dirt paths (9,500 lf)	$240,000
Signage, Pavement Markings & Crosswalks	$15,000
Additional Fill (800 lf)	$10,000
Legal Fees & Acquisitions	$25,000
Engineering	$65,000
Contingency	$65,000
Total Trail Costs	**$815,000**

Forest Service Road Alternate Route

As most of the proposed Iron Belle Trail route follows public roads it was believed that attempting to find a route using the existing forest trails through the state lands as a potential trail route would both eliminate the potential conflicts with vehicular traffic on the public roads and provide exposure to the wilderness and natural resources found in Northern Michigan. Lapham Associates contacted the Michigan DNR, Forest Resource Division, Roscommon Unit Manager, Mr. Steve Anderson, to see if he could assist in identifying a potential route. After a meeting and discussion an alternative route suggestion was provided and incorporated into this plan. The route would be 7.4 miles through the AuSable State Forest in northern Ogemaw County. The route will depart Rose City Road just west of Rose City and proceed to the south on an existing forest trail at the Wangler Road intersection. The route will then follow existing trails for approximately 12,000 lf to the south to the intersection with Scribner Road. After crossing Scribner Road the route heads west 3,300 lf to Lentz Road. The route will then parallel Lentz Road to the south for 10,100 lf to where another forest trail intersects the road and heads to the west about ¼ mile north of Sage Lake Road. The route will then traverse trails and open areas on state land for approximately 5,000 lf to an intersection with Sage Lake Road about ¼ miles east of Stoney Ridge Road. From the intersection with Sage Lake Road the route will go south and then west to an intersection with Stoney Ridge Road approximately 1,900 lf. Then continuing to the west and south approximately 6,800 lf across state land and around the Ogemaw Hill Pathways back to the parking lot at Fairview Road where it will pick back up with the original proposed route to the south. This parking lot would make an excellent trailhead for the trail with a shared benefit to cross country skiers.

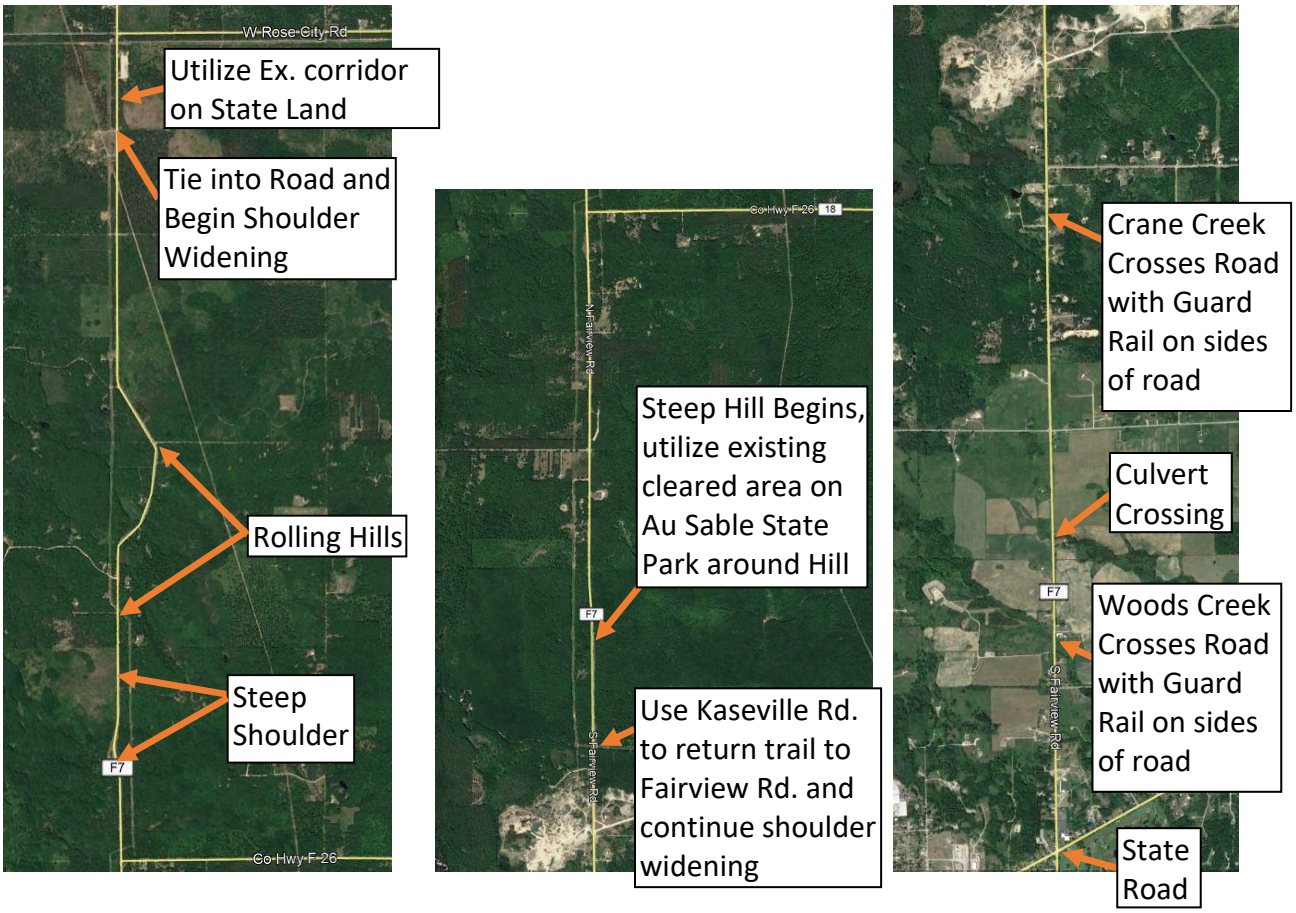
This alternate route could potentially eliminate a portion of the original proposed route. The Rose City Road portion of the route would be reduced by over 2.5 miles, and would reduce the cost for that portion by approximately $400,000. The Fairview Road portion of the route would be reduced by over 4.7 miles and would reduce the costs of that portion by approximately $600,000.



8' HMA Path Paved (39,100 lf)	$2,000,000
Signage, Pavement Markings & Crosswalks	$75,000
Legal Fees & Acquisitions	$25,000
Engineering	$300,000
Contingency	$300,000
Total Trail Costs	**$2,700,000**

Fairview Road Portion - Rose City Road to West Branch (State Street)

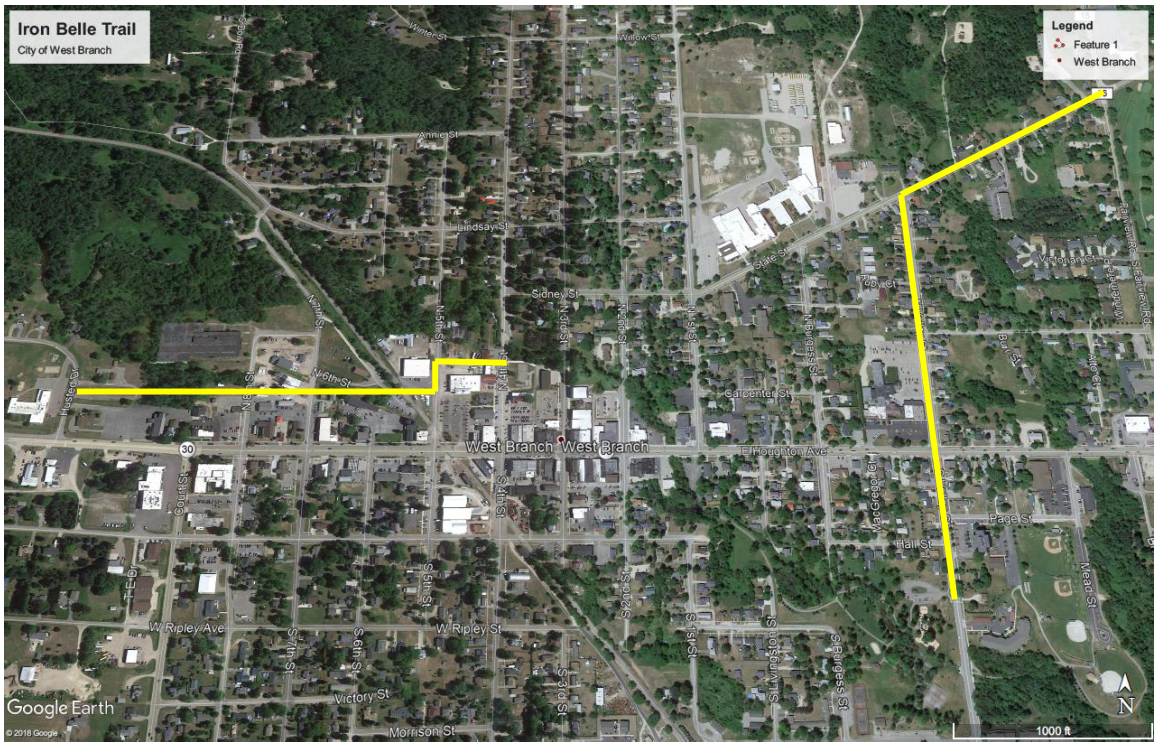
The portion of the route that runs between Rose City Road to the City of West Branch will consist of areas of widened paved shoulders and HMA paved trails through the Au Sable State Forest which will utilize the existing utility corridor on State of Michigan property. State owned lands in the Au Sable State Forest abut portions of the road on both sides of the street, but several private properties are also along the road, which will require moving the proposed trail back to abut the roadway on the majority of this stretch. From Rose City Road, where the existing trail will be utilized, the trail will cross Fairview Road and continue to utilize the existing cleared area and pave the existing dirt trail. This section will continue for approximately one-half (0.50) mile when the first private land is encountered. The next five miles of the trail will be 6' wide widened paved shoulders abutting the existing road. At this point, there is a large hill that runs along the next three-quarters (3/4) mile. The roadway in this area has either paved ditches for shoulders or curb and gutter, which does not provide the space to widen the road to install the trail. The power line corridor is currently located on the west side of the road in this area, which will need to be utilized. At the end of the hill, Kaseville Road intersects the easement, which will be widened to accommodate the trail and bring the trail back to abutting Fairview Road. The last 3.05 miles of this area will consist of widened HMA shoulders. There will be three streams that will need to be crossed on the roadway, which will require the installation of wooden bridges or extending culverts and filling above to place the trail. Beyond the driveways in the area, four county roads will be crossed as well as several private roads for subdivisions. Signage, pavement markings and crosswalks will be required throughout this segment. Temporary grading easements will be required for the widening along this portion



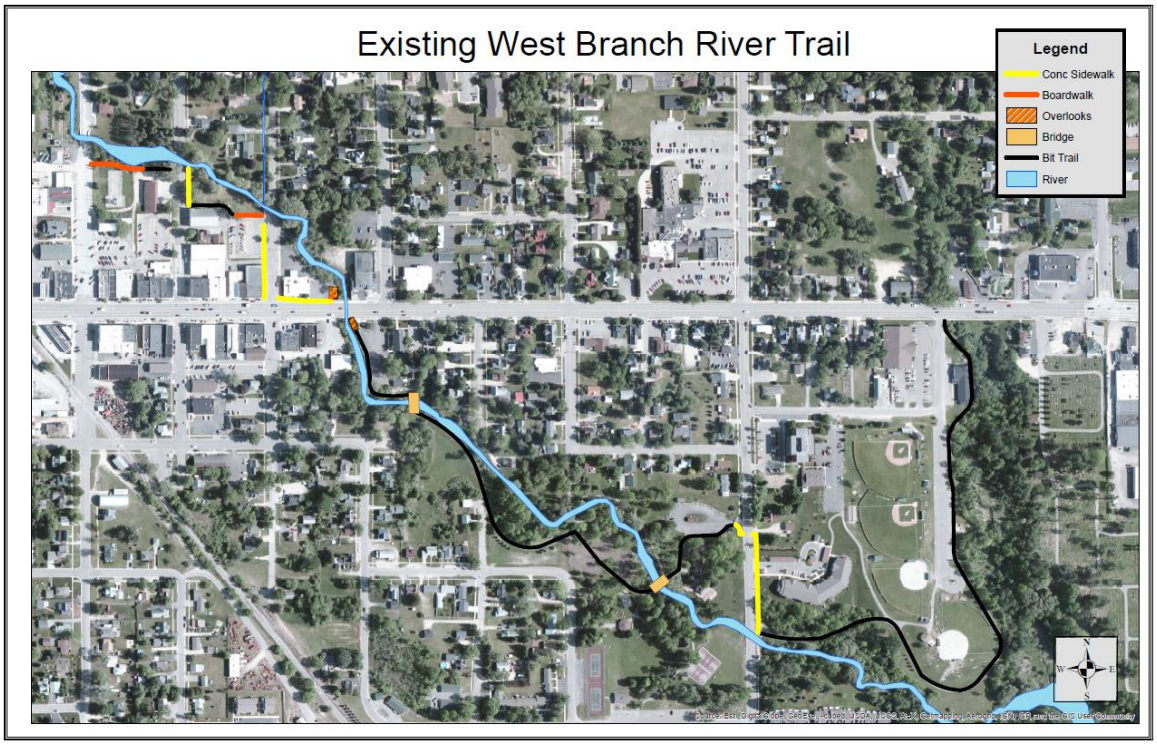
HMA Widened Shoulders (45,750 lf)	$1,000,000
Paving existing dirt paths (6,600 lf)	$165,000
Stream Crossings (2 total) and Additional Fill Work	$100,000
Signage, Pavement Markings & Crosswalks	$45,000
Legal Fees & Acquisitions	$30,000
Engineering	$130,000
Contingency	$130,000
Total Trail Costs	**$1,600,000**

State Street to M-55 - City of West Branch

The portion of the trail running through the City of West Branch will be comprised of several types of trails. Beginning at the corner of Fairview Road and State Street the route will follow State Street to the west and Valley Street to the south along the existing widened shoulders. Currently there is no parking allowed and there is ample room to stripe a designated path on either side of the road together with signage to direct cyclist. A crossing at Houghton Avenue (B.L. I-75) a state route will be required at the intersection. Then the route will continue to the south along the widened shoulders of Valley Street to the City's existing River Trail at Irons Park. The route will then follow the Existing River Trail to the end of the existing boardwalk section at the intersection with N. 4th Street. The City's plans are to continue westerly to the rail road and follow the rail road to the northwest. Our route would continue westerly along the alleyway and continue to the rail road to where a new crossing is required. The route will continue westerly to Husted Street which is where Ogemaw Township's proposed M-55 Trail will begin.

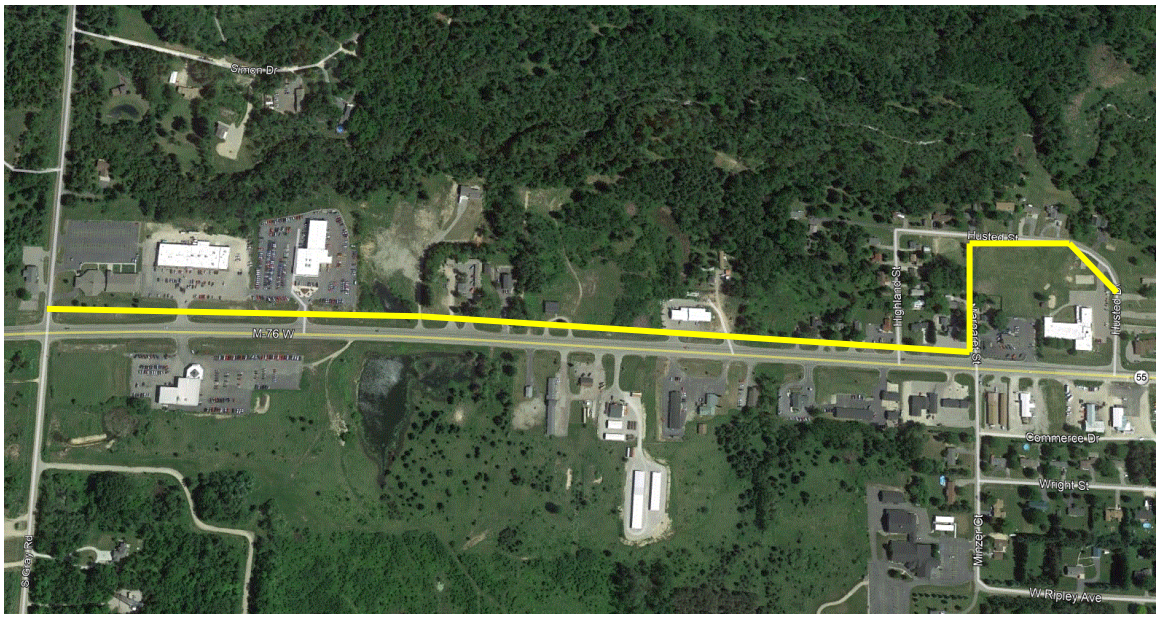


State Street & Valley Street Signage & Pavement Markings (3,800lf) $10,000
Crosswalk B.L. I-75 ..... $20,000
Alley & 5th Street Signage & Pavement Markings (600lf) $2,000
New Trail Construction & Signage (2,100lf) $200,000
Railroad Crossing $20,000
Miscellaneous Street Crosswalks $10,000
Legal Fees & Acquisitions $25,000
Engineering $40,000
Contingency $40,000
Total Trail Costs $367,000



Ogemaw Township M-55 Path

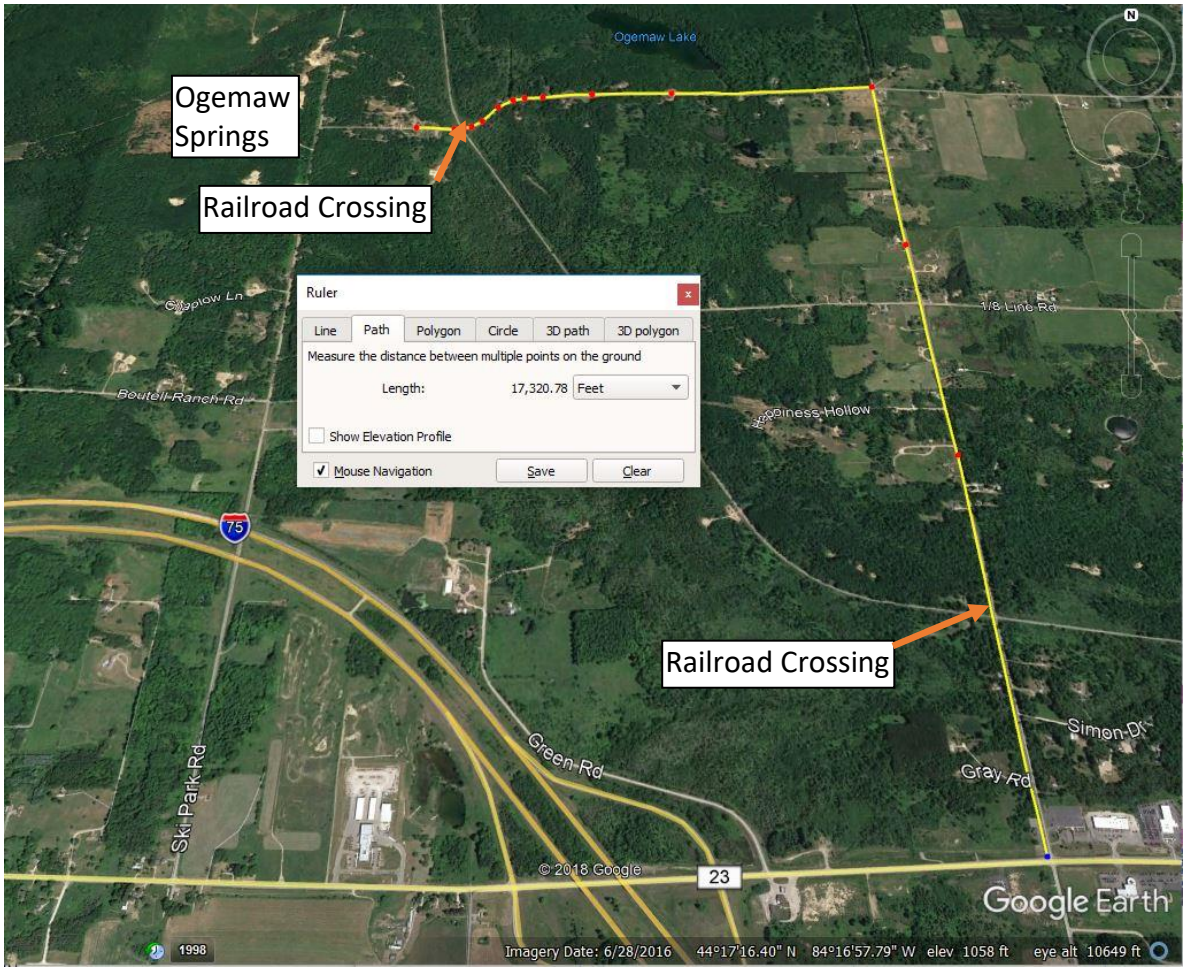
The Ogemaw Township DDA has developed plans for an 8-1/2 feet wide HMA paved pathway that runs from by St. Joseph Catholic School to the Township Hall on Grey Road. This project has been broken up into phases which will be built as funding becomes available. The first phase which is anticipated to be built in 2019 will run from Margaret Street 2,250 feet west to just past the Welcome Hotel. The second phase will extend the remaining distance to Grey Road approximately 1,700 feet. There will need to be an additional trail segment from Husted Street to connect to Margaret Street which is being explored. For purposes of this plan we have estimated approximately 1,300 feet of pathway along Husted Street and across the extension of Margaret Street to M-55.



Paving pathway (5,250 lf)	$300,000
Signage, Pavement Markings & Crosswalks	$25,000
Engineering	$40,000
Contingency	$40,000
Total Trail Costs	**$405,000**

M-55 to Ogemaw Springs Area

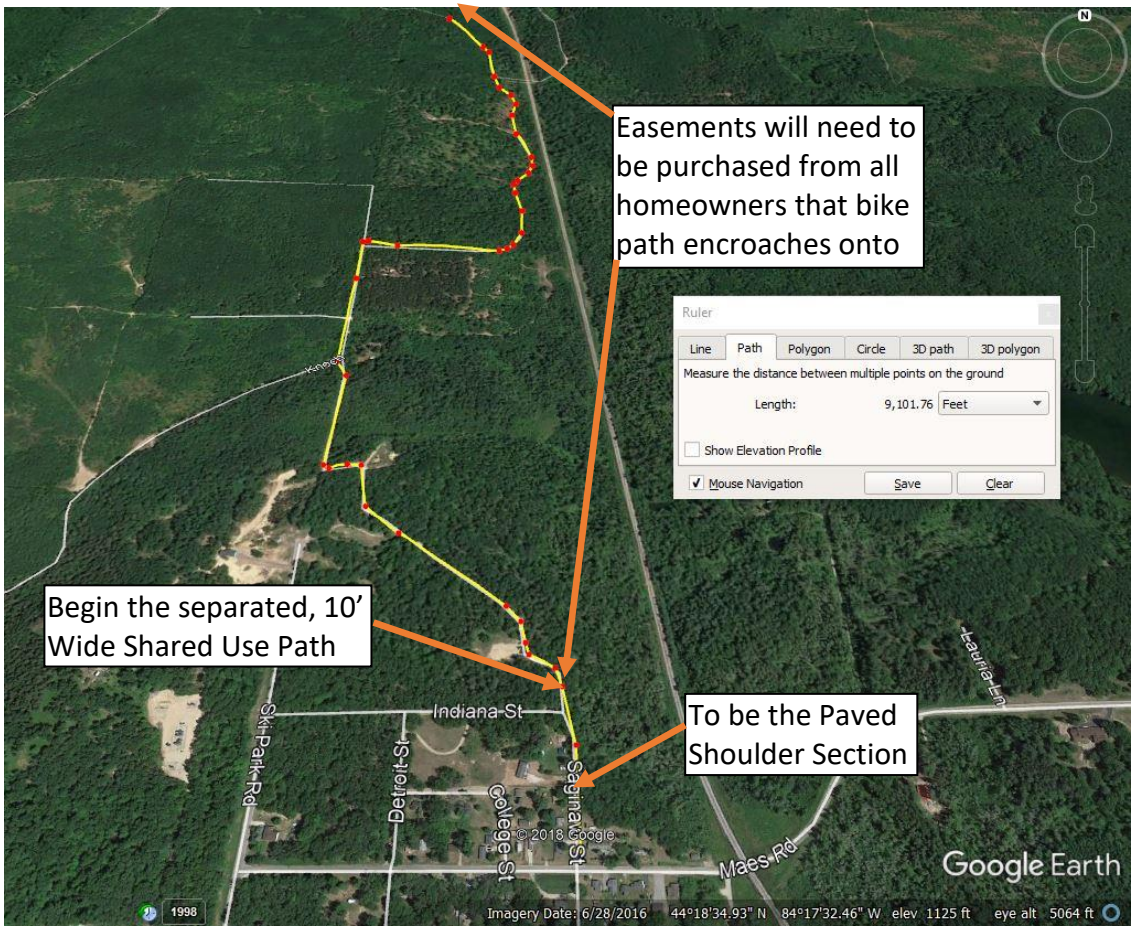
This portion of the route will connect from M-55 on the west side of West Branch and run to Ogemaw Springs. The route will run along Gray Road from M-55 north 2 miles, and then west on Maes Road approx. 1.3 Miles to Saginaw Road. Both roads are two lane asphalt paved roads without curbs. The Bike paths will be constructed by widening the shoulders to accommodate for the bike path on either side of the road and moving the gravel shoulders and ditches on either side of the road. Each road crosses the Lake State Railway once and will require railroad crossings to be constructed.



4' HMA Widened Shoulder (17,325 lf each side)	$775,000
Signage, Pavement Markings & Crosswalks	$15,000
Railroad crossing Upgrades	$210,000
Engineering	$100,000
Contingency	$100,000
Total Trail Costs	**$1,200,000**

Ogemaw Springs Area – Along Saginaw Street

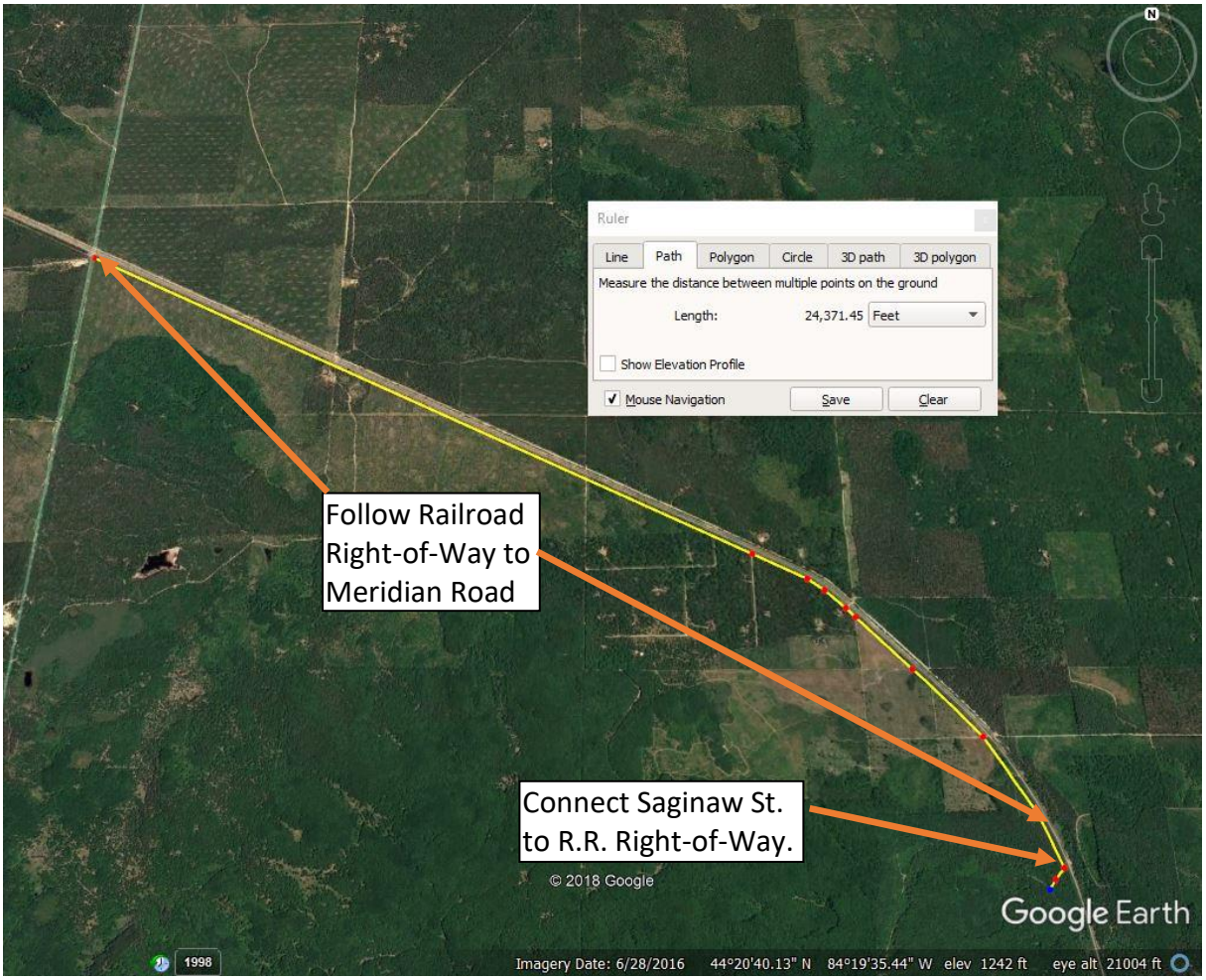
This portion of the proposed route begins at the corner of Saginaw Street and Maes Road in Ogemaw Springs. The trail will run north on Saginaw Street to Indiana Street. The roadway for this section will be widened with a 4' trail on each side of the road up to Indiana Street. The path will combine to form a single 10' wide path that parallels Saginaw Street as it winds around up to and past No. 33 Street. Easements will need to be acquired from adjacent property owners to clear and grade the land that will be turned into the bike path.



4' HMA Widened Shoulder (675 lf each side)	$35,000
10' HMA Path (9,102 lf)	$600,000
Clearing, Grading, and Earthwork	$80,000
Signage, Pavement Markings & Crosswalks	$20,000
Legal Fees & Acquisitions	$45,000
Engineering	$100,000
Contingency	$100,000
Total Trail Costs	**$980,000**

Railroad Right-of-Way: Saginaw Street to Meridian Road

The last portion of the route will run along the Lake State Railway right-of-way. In order to connect the trail to the railroad R.O.W., a path will need to be cleared going northeast between Saginaw Street and Lake State Railway. From this point, the path will continue as a 10' wide path and parallel the railroad tracks approximately 4.5 miles to Meridian Road. The major obstacles of this portion, as with the Ogemaw Springs portion is acquiring easement to cut through to, and then to utilize, the Lake State Railway right-of-way. Minimal grading and clearing should be required once on railroad property.



10' HMA Path (24,400 lf)	$1,600,000
Clearing, Grading and Earthwork	$215,000
Signage, Pavement Markings & Crosswalks	$15,000
Engineering	$100,000
Contingency	$220,000
Total Trail Costs	**$2,150,000**

Trail Prioritization

The Iron Belle Trail in Ogemaw County covers nearly 40 miles of trails which traverse across the county from Iosco County to Roscommon County. Because of the length of the trail this plan has broken the route down into several segments to help make the implementation easier and more likely to be brought to fruition. The segments have been broken up with estimates for costs to help plan for development as opportunities present themselves and help with obtaining financing for development. Being prepared to capitalize on opportunities that may present themselves in order to further complete the overall trail is a priority that must always on the forefront of planning processes. Having a team approach with all the townships, cities and county agencies seeking the same goals and working together is the first and foremost priority.

Working together to find opportunities must be a constant undertaking. Working with the Ogemaw County Road Commission to coordinate future road construction projects with the route and helping fund the widening of existing roadways will be a primary method of implementation of this plan. Using MDOT TAP grants or Safe Routes to School grants are various methods to help fund trail segments that follow roadways or help make connections to the schools should be explored where reasonable. Potential road millages and using PA 25 monies that are specifically required for non-motorized projects can be other sources that help bring the trail to a reality.

Finding portions of the project that can be funded with various grants programs such as the Michigan Natural Resources Trust Fund or the Michigan DNR's Recreation Passport grant program will be difficult because so much of Ogemaw County's proposed route is along roadways and typically not funded by these programs. Portions of the route that are not along roadways will be more likely funded through the DNR's grant programs. Trailheads, overlooks, boardwalks and other trail type accessory facilities are also likely to be funded with those programs. Where these elements can fit into a community development plan or project they should be explored and planned to help build the trail.

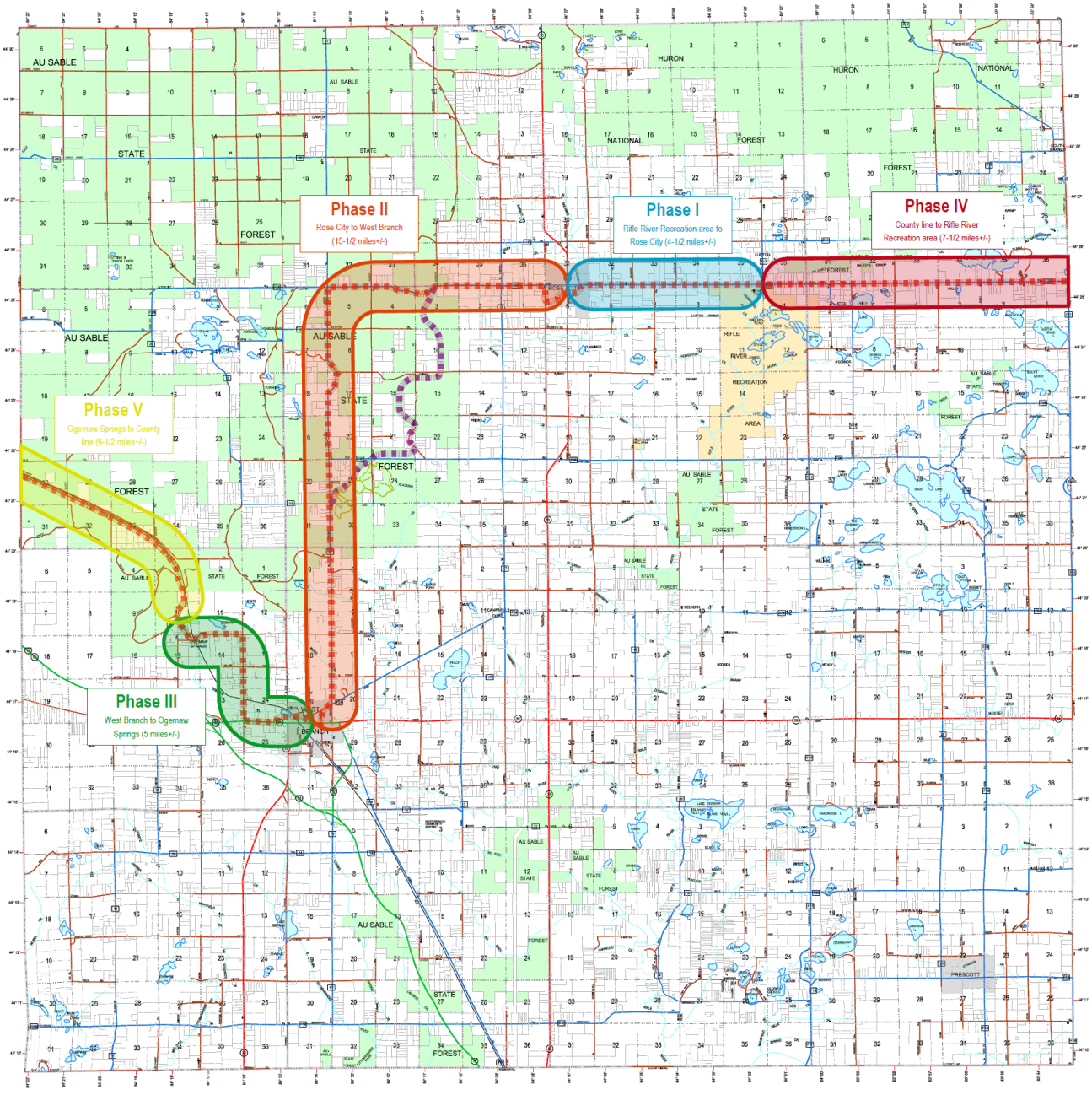
Building support amongst the municipal agencies along the trail route, and helping those agencies either create or develop plans that include the Iron Bell Trail route is important. Doing this will build stronger collaboration amongst neighboring communities and help increase chances of being awarded grant funding. Sharing various masterplans; goals and objectives; and utilizing existing plans and maps can help save money by not duplicating work and expanding on existing work. One method to build support will be to develop a community logo for the Ogemaw County trial and using that for both marketing and for branding on a wayfinding system along the trail. A logo is a tool to tie the community together and to help further build a market for trail amenities and local businesses that cater to trail users. Also, sponsoring trail related events can both garner support for the trail system and be utilized as a fund raiser for further development.

Finding a champion for driving the efforts to develop this trail system will be paramount in the prioritization. The Ogemaw County Parks and Recreation Commission (OCPRC) has taken the lead in this role. Being the in the position to seek funding through the MDNR grant programs and responsible for recreation throughout the entire county makes this agency a perfect fit. The OCPRC has helped in completing this plan and carried the plan through the public outreach and review of the final plan. The full support of the County Commissioners has helped pull this plan together and helped made the OCPRC's roll much easier.

It is recommended that the first priority for this plan is to develop the logo / brand for the Ogemaw County Iron Belle Trail and develop a wayfinding plan to help identify the route on the ground. Currently there are cyclists that are traveling the route that the State has on its webpage and this wayfinding would help them.

The following plan shows the prioritization for the implementation of the trail. The initial phase should be the area between the Rifle River Recreation Area and Rose City. This is a relatively small portion of the route and will help direct users of the Recreation area to the businesses and services of Rose City. The second phase would be to connect Rose City to West Branch which although a very long stretch of trail is an important section that will open a non-motorized route between the two cities within Ogemaw County. The third phase will be the connection between West Branch and Ogemaw Springs. This phase will connect several historic locations and provide a connection for numerous residents to downtown West Branch. The last two phases will be the connections to the county lines. Phase 4 will run from the Rifle River Recreation Area to the Iosco county line and the last phase will run from Ogemaw Springs to the Roscommon County line.

Ogemaw County Phasing Plan



The following action plan should be implemented as an effort to get this trail project started. It is intended to build support and is broken down into small tasks that can be easily completed.

1. *Local communities and the County should amend Land Use, Transportation, and Recreation Plans to include this Master Plan. Proposed developments should be*

designed in a manner that is consistent with the adopted plans for the area or community.

Distribution of this plan and recommending language that can easily be included in the goals and objectives of the plan should be one of the first objectives of the implementation of this plan. Items such as requiring developments that may be proposed along the route to include elements of the plan or provide that the trail be incorporated into their site plans. Recreation plans should include this plan as a reference which could assist in obtaining grants for projects that may be related to this plan. And of course transportation plans should include the trail as a priority in order to capitalize on road projects and possible road funding.

Sample Goal / Objective language:

> "Work together with Ogemaw County and other agencies to help develop the Iron Belle Trail route through Ogemaw County and bring their plan to fruition."
>
> "Support the efforts of the Iron Belle Trail development and include the plans for the implementation of the trail within the limits of this plan."

2. *Raise the level of awareness of the Plan both internally with County staff as well as with local units of government, regional, state and national agencies. Eventual design and construction of the non-motorized corridors will require involvement, cooperation and support of many departments and agencies.*

   This plan should be published and provided to all local units of government within Ogemaw County. The county as the primary driver for this project should be sure that commissioners include the status of the trail's development in reports when visiting their various jurisdictions and boards and committees that they sit on. Utilizing the county's webpage as an origin for this document, maps and updates is a necessity to provide the open dissemination of information. Furthermore, distribution of this plan to adjacent communities and the Council of Governments will be instrumental to opening communication and potential opportunities to collaborate on projects.

3. *Develop a coordinated signage and wayfinding plan for the non-motorized system that allows for local flare while providing visual consistency for the user on the entire trail.*

A professional marketing plan should be implemented as soon as possible to develop a theme or logo for the local portion of the Iron Belle Trail in order to give the community a sense of pride and accomplishment for the trail within the county. This will both provide tourists with something that they will retain and make them want to return to Ogemaw County and make Ogemaw County standout as a unique destination. This logo can be used for both signage and marketing materials and will provide both a local economical asset and help further support the trail and it's development and improvement.

4. *As segments of the system are proposed for construction, it will be necessary to develop a continued and dedicated maintenance program and associated funds. This is imperative to ensure the long-term success of the network. This is often a roll taken on by a non-profit group that has interest in the trail system.*

   Build support and include local residence that have an interest in the trail as users or merchants that will further build their market share from trail users. These are the people that will be the supporters of the trail and will insure its sustainability long into the future. Forming a group of interested parties early on and helping with the development of a non-profit that can take donations and perform fundraising as well as promote and sponsor work bees and other maintenance type tasks will be a priority.

5. *A map of the proposed non-motorized system should be updated and published on an annual basis to ensure accurate information is available and to celebrate progress. This plan is intended to be fluid and dynamic. Overtime, it is fully anticipated that the map and plan will be outdated as communities are continuously working to build non-motorized trail segments or alter their local plans based on technical issues, land acquisitions, political agenda, etc.*

   The Ogemaw County Parks and Recreation Commission will be the responsible organization for this plan and the maps. The Iron Bell Trail has been added as a continual agenda item for their meetings and will be treated as one of the county's parks. Therefore, this task will be something that the commission will have to routinely handle and address. It is anticipated that as the trail reaches completion there may be other entities that may share in this responsibility, but until then the commission has been charged with this task. An annual report should be prepared and distributed to keep everyone informed on the status of the plan and development.

6. *Awareness of grant opportunities should remain high. The county should pursue funding and grant prospects on a regular basis to advance those segments of the system that are within their jurisdiction and/or boundaries.*

Making the local units of government aware of this plan and encouraging them to include this plan as part of their goals and objectives will help further the likelihood of seeking grants for the development of the trail. The county together with others must keep on top of current grant programs and their priorities to take advantage of these opportunities when they arise. Other agencies help keep the county apprised of grant opportunities and these agencies should be kept informed on the plan and its development to allow them to be most beneficial. The annual report that was described before should be utilized to keep these agencies current on the progress and potential needs.

7. *Incorporate and coordinate non-motorized goals and plans with the Ogemaw County Road Commission, Michigan Department of Transportation and East Michigan Council of Governments.*

   Article IX, Section 9, of the Michigan Constitution of 1963, as amended, states that "All specific taxes . . . imposed directly or indirectly on fuels sold or used to propel motor vehicles upon highways. . . or on registered motor vehicles . . . shall, after payment of necessary collection expenses, be used exclusively for transportation purposes. . ." Public Act 51 of 1951, as amended ("Act 51") governs the distribution of this revenue. Act 51 creates a fund into which specific transportation taxes are deposited, and prescribes how these revenues are to be distributed and the purposes for which they can be spent. Act 51 establishes jurisdictional road networks, sets priorities for the use of transportation revenues, and allows bonded indebtedness for transportation improvements and guarantees repayment of debt. A minimum of one per cent (based on a ten-year average) of Michigan Transportation Fund monies distributed to the state, counties and cities **must be** used for non-motorized transportation facilities. Such facilities can be in conjunction with or separate from a road. [Sec. 10k]

   Based on this information it is a high priority that this plan be included in the Ogemaw County Road Commission's 5-year plan and that mutual goals and objectives should be derived to help direct these funds to the Iron Belle Trail project. MDOT and the East Michigan Council of Governments are also significant players in this funding source and other federal funds that may be utilized and therefore a coordinated effort to develop mutual goals with these agencies should be strived for. Funding will be the largest hurdle in implementing this plan and every possible resource must be actively pursued.

Potential Funding Sources

This Bicycle and Pedestrian Trails Master Plan is a long-term vision for a connected non-motorized network within the county to connect to the larger, emerging regional and state-wide systems. Implementation of this vision will require extensive effort on the part of multiple agencies, departments, and organizations. The Master Plan, however, is intended to provide a foundation and vision for communities to reference as they continue to develop and contemplate future development strategies, resource protection, and community health and education opportunities. The cornerstones for successful implementation of this Master Plan are cooperation, coordination, and relentless focus on the overall goal of connectivity. The implementation strategies contained on the following pages are actions that will serve to move the creation of a connected, non-motorized system closer to reality. This portion of the Master Plan in particular should be reviewed on a regular basis as priorities shift, recommended actions are completed, and costs and funding opportunities change.

Potential funding sources for non-motorized planning, design and construction change and evolve on a regular basis. The requirements and deadlines for current sources are detailed here as a reference and resource. The next few pages are by no means all inclusive.

As was stated earlier, this master plan represents a long-term vision that may not be fully implemented for 20 plus years due to a variety of reasons including funding, politics, feasibility, public involvement and overall community priorities.

Pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act, and the rules promulgated thereunder by the Securities and Exchange Commission, the content of this communication is not intended to be advice or recommendations regarding municipal financial products or the issuance of municipal securities. You should consult an independent municipal advisor registered with the Securities and Exchange Commission for any such advice or recommendations. Any information provided by engineer is solely provided for the purpose of providing engineering advice and is not to be considered advice concerning municipal financial products or the issuance of municipal securities.

Michigan Natural Resources Trust Fund (MNRTF)

The MNRTF provides funding for both the purchase of land for recreation or protection of land because of its environmental importance or scenic beauty and the appropriate development of land for public outdoor recreation use. Goals of the program are to: 1) protect Michigan's natural resources and provide for their access, public use and enjoyment; 2) provide public access to Michigan's water bodies, particularly the Great Lakes, and facilitate their recreation use; 3) meet regional, county and community needs for outdoor recreation opportunities; 4) improve the opportunities for outdoor recreation in Michigan's urban areas; and, 5) stimulate Michigan's economy through recreation-related tourism and community revitalization.

Any individual, group, organization, or unit of government may submit a land acquisition proposal. However, only state and local units of government can submit development proposals. All proposals for grants must include a local match of at least 25% of the total project cost. There is no minimum or maximum for acquisition projects. For development projects, the minimum funding request is $15,000 and the maximum is $300,000. Applications are usually due by April 1st for development projects and by August for acquisition projects.

Trail Facts

- Businesses along the Hart-Montague Trail, a 22-mile trail in West Michigan, found that their sales revenue has increased 25-30-percent within the first six months of the trail's existence.
- A 2000 Michigan State University study of the Pere Marquette Trail found that 8 of 10 trail users also visited a business along the trail. Also, businesses located within one-quarter of a mile of the Pere Marquette Trail reported that 96% of the employees use the trail.

The Land and Water Conservation Funds (LWCF)

The Land and Water Conservation Fund (LWCF) is a federal appropriation to the National Park Service that distributes funds to the Michigan Department of Natural Resources for land acquisition and development of outdoor recreation facilities. Due to limited funds within this program, the MDNR has focused funding on outdoor development projects.

Transportation Enhancement Funds

MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), was signed into law on July 6, 2012. Funding surface transportation programs at over $105 billion for fiscal years (FY) 2013 and 2014. MAP-21 defines a bicycle transportation facility as "a new or improved lane, path, or shoulder for use by bicyclists and a traffic control device, shelter, or parking facility for bicycles."

To be eligible for MAP-21 funds, projects must either be associated with a roadway or consist of:

- Paved shoulders 4 or more feet wide
- Curb lane width greater than 12 feet
- Bike lanes; and/or
- Pedestrian facilities.

Or be separate from roadways and consist of:

- Multi-use paths at least 10 feet wide;
- Path/trail user amenities;
- Facility grade separations; and/or
- Bicycle parking facilities.

A minimum 20% local match is required for proposed projects and applications are accepted on an on-going basis with awards made twice a year. Eligible Transportation Enhancement work items include:

- Property acquisition
- Grade separation structures
- Grade preparation and surfacing
- Pavement marking and signage
- Trail heads.

National Recreational Trails Funding Program

The Recreational Trails Program provides funds for both motorized and non-motorized trail development. The Act provides for the transfer from the Highway Trust Fund of federal gasoline taxes paid on non-highway recreation fuel for off-road vehicles and camping equipment.

States can grant these funds to private individuals, organizations, city and county governments, and other government entities. Grant recipient are required to provide 20% of the total project cost. In Michigan, the Department of Natural Resources (MDNR) administers the program. There is no open application process and most of the money is used on DNR projects, a DNR Division can sponsor local projects.

Recreation Improvement Fund

This program, administered by the Forest Management Division of the Michigan Department of Natural Resources, makes funds available for the operation, maintenance and development of recreation trails, restoration of lands damaged by off-road vehicles, and inland lake cleanup.

American Greenways DuPont Awards Program

Administered by the Conservation Fund, in partnership with DuPont, and the National Geographic Society, this program provides grants of $500 to $2,500 to local greenways projects.

DALMAC Fund

Established in 1975 to promote bicycling in Michigan, the DALMAC Fund is administered by the Tri-County Bicycle Association and supported by proceeds from DALMAC. The DALMAC Fund supports safety and education programs, bicycle trail development, state-wide bicycle organizations, and route mapping projects. Applications must be submitted between January 1st and March 15th. They are reviewed by the DALMAC

Fund Committee and approved by the Board. Grants are made between June and August of the year they are submitted. Applications can be found at www.biketcba.org.

Recreational Equipment Incorporated (REI) Environmental Grants

The outdoor store and company, REI, Inc., dedicates a portion of its operating profits to help protect and restore the environment, increase access to outdoor activities, and encourage involvement in muscle-powered recreation. REI employees nominate organizations, projects, and programs in which they are personally involved to receive funding or gear donations. REI does not accept unsolicited grant requests and proposals. The company calls on their employees to nominate non-profit organizations for REI grants. Recent grants range from $2,000 to $25,000.

Michigander / Rails-to-Trails Conservancy Fund

The Michigan Field Office of Rails-to-Trails Conservancy has initiated a small grants program based on revenue from the Detroit Free Press MICHIGANDER Fat-Tire-Tour. The purpose of this new program is to aid the development of a connected trail initiative throughout the State of Michigan.

The Trust for Public Land

Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well-being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies and community groups to:

- Create urban parks, gardens, greenways, and riverways
- Build livable communities by setting aside open space in the path of growth
- Conserve land for watershed protection, scenic beauty, and close-to-home recreation
- Safeguard the character of communities by preserving historic landmarks and landscapes.

In the past few years, the TPL has assisted several projects in Michigan.

Kodak Grants Program

Kodak, The Conservation Fund, and the National Geographic Society, provide small grants to stimulate the planning and design of greenways in communities throughout America. The annual grants program was instituted in response to the President's Commission on Americans Outdoors recommendation to establish a national network of greenways. Made possible by a grant from Eastman Kodak, the program also honors groups and individuals whose ingenuity and creativity foster the creation of greenways.

The application period typically runs from March 1st through June 1st. Grants may be used for activities such as: mapping, ecological assessments, surveying, conferences, design activities, developing brochures, interpretive displays, planning, hiring consultants, etc. Maximum grant is $2,500, however, most grants range from $500 to $1,500. For more information go to www.conservationfund.org.

Cool Cities Grant Pilot Program

Michigan's Cool Cities Initiative is about reinventing Michigan's cities to be attractive places to live for an increasingly diverse group of residents. The pilot program promotes investment in neighborhoods that have, or are moving to create, higher density, a mix of residential and commercial uses, mixed income housing, and a pedestrian-friendly environment. The program combines more than 100 of the state's community improvement grants, tax credits, loans and assistance programs into a single resource toolbox that can be used by cities and communities for revitalization projects. For more information go to www.coolcities.com.

Land Trusts

National, state, regional, county, and local private land trusts (or conservancies) can purchase land for resale to public agencies, buy options to protect land temporarily, receive land donations, put together land deals, and provide technical assistance. As private entities, land trusts can often act more quickly than public agencies.

Businesses & Corporations

Most towns have public-spirited companies. These firms have a history of helping worthy projects by providing a meeting room in a company building, giving small grants, donating copying or printing services on company equipment, or giving free or reduced fee use of the company's special services. For example, a law firm might provide "pro bono" legal advice or an accounting firm might donate staff time to assist in developing a simple bookkeeping system.

Friends Groups

We all need friends and this holds true for greenway and non-motorized projects as well. In fact, the long-term success of a project can well depend on the formation of an ongoing, private "Friends of the Trail" organization. Friends groups can provide a number of services including: physical labor as through "Adopt-a-Trail" maintenance or construction activities, fundraising, user education, promotion, and actual surveillance of the facility. These groups are important in all project phases: planning, acquisition, development, and operation.

Other Organizations

Civic groups and school groups can play an important role in support of a greenway project. They might help with trail development and maintenance, funding, promotion, and through the hosting of events. These activities can be separate from, or in conjunction with a friends type group or other interested non-profit.

Individuals

Willing individuals can donate money, land, easements and services. In numerous cases across the country, the financial contribution of a single individual has meant the success of many trails and greenway projects.

Foundations

Private Foundations are non-governmental, nonprofit organizations that have a principal to provide funds of their own managed by its own trustees and directors, and established to maintain or aid charitable, educational, religious, or other activities serving the public good, primarily by making grants to other nonprofit organizations. The overwhelming majority of foundation grants are awarded to nonprofit organizations that qualify for "public charity" status under Section 501(c)(3) of the Internal Revenue Code.

Often, the success in securing funding for projects depends just as much on how a potential funder is approached as the type of project to be funded. Foundations, corporations, nonprofit groups, and individual and family donors are owed, and expect, professionalism and courtesy from those seeking financial assistance. In all cases:

- Address all letters individually. Be short and clear. Send pictures or graphics. Include a return envelope.
- Thank you is a must.
- Extend invitations to events celebrating ground breaking, final construction, and special programs. These are important ways of expressing public appreciation and urging increased use of facilities.
- Include a donor's name and/or logo in all press releases and printed materials.

Many foundations, large and small, may be interested in supporting non-motorized projects.

Approaching funders should always be done carefully. Steps to consider:

- Research the actual Foundation giving patterns. A preliminary, well-prepared phone call to the contact person will provide an indication of whether the foundation will consider this plan or aspects of it within their mission and giving

pattern. Contacts will also indicate how they want to be approached, application format and grant cycle.

- A well-designed initial letter and single page description of the goals, benefits, costs, budget, and partners of the plan may be submitted.
- Linking the funding request to larger community, neighborhood, economic, environmental, beautification and youth and healthcare benefits is important.
- A full grant application may be requested.
- Interviews or meetings to discuss the project face-to-face are important when requested by the funder.
- Large foundations may have more complicated procedures than the smaller foundations. Know the foundation.
- Follow-up calls and thank you letters are welcomed and appropriate.
- Most foundations want to see that other foundations, businesses and individuals are contributing. Be prepared with a list of other contributor donations towards the total project expenses.

Identify which enterprises may be interested in non-motorized projects in this area. Some will be interested in community improvement, or economic benefits, or neighborhood revitalization. Use the same approach as for foundations, but incorporate ways the plan improvements will contribute to their businesses. Be prepared with a match or to identify contributions from others.

Many nonprofits have a genuine interest in non-motorized transportation. Larger nonprofits, like hospitals and government units, will often contribute if they see direct benefits to healthcare, community improvement or bringing people to their facilities. Emphasize these important aspects.

Research those individual/family donors who are community contributors. Approach them through someone who knows them and can speak with you about the Plan and funding need.

Develop clarity about the size and purpose of each individual/family request before any approach is taken. Individual/family approaches can be taken through:

- Personal phone calls and meetings.
- Fund Raising letters to the public and/or through a targeted list developed for fund raising for this project.

Grant Writing

Compiling and writing a successful grant application is not an easy task, particularly when funds for non-motorized projects in Michigan are highly competitive. There are several things that should be kept in mind when deciding whether or not to apply for funding assistance, and when developing a grant application.

Do your homework up front and fully understand the goals and purpose of the funding agency. This is essential in determining whether or not your project has a high likelihood of being considered for funding. Understanding the funding source will require work up front, but it could save you the time of completing an entire application for nothing if your project scope is not appropriate. This upfront work could also change your project scope and can definitely make your application stronger.

When at all possible, talk with a representative of the funding agency either via phone, or better yet, in person to discuss your project before investing time and resources in completing a grant application. Be prepared to show photos and a map of your proposed project. This meeting or discussion will help you make a final decision as to whether or not you should submit an application. This will also make the funding agency aware of your project and will give them some context and understanding when reviewing your application.

It is essential, particularly in non-motorized planning, design and construction projects, to collaborate with multiple agencies, organizations and departments. Meet early on with adjacent communities, with adjacent property owners, and other interested parties. Gather their input and incorporate it into the grant application and design. Include letters of support from the various partners you have developed. Funders are looking for projects with collaboration and broad support that will improve a community and provide benefits to an expansive cross-section of the population.

The time it takes to assemble a high-quality grant application is often underestimated. Meeting with potential partners, gathering letters of support, generating solid cost estimates, developing graphics, taking photographs, holding public hearings, getting resolutions of support from governing bodies and discussing your project with potential funders takes a considerable amount of time. Deciding to submit a grant application three weeks before it is due will likely not yield a strong submittal and chances for success are lessened. Be aware of funding opportunity due dates and make decisions to assemble an application package at least two to three months prior to the due date.

Assume the readers and evaluators of your grant application has never been to your community and that they know very little about your project or your efforts to date. In your grant application, describe your project scope and benefits, and include photographs and graphics that clearly and concisely illustrate your project. If it's part of a bigger project, describe the bigger project, but make it very clear the exact scope and

elements that you are requesting funding for. Set the stage and paint the picture for the application reviewer. What is clear to you may not be clear to someone who has never been to your community or never walked the proposed trail route.

Enlist help and assistance from someone who has experience in designing and constructing non-motorized systems to develop a cost estimate to include in your grant application. This is a difficult task because often you will be attempting to generate a cost estimate based on a loose concept plan. You may not have completed soil investigations, you may not have preliminary engineering completed, you may not know the exact route or location of the trail, or fully understand the extent of necessary permits, length of boardwalk necessary, or cost of construction design drawings. If awarded a grant, your community will be held to the funding amount requested in your application. Any cost overruns are typically the responsibility of the grantee, not the grantor. It is essential to ensure you have developed conservative cost estimates and are capable of providing the local match. You don't want to be in the situation of having to return grant funds because you underestimated the cost of the project and now don't have sufficient local funds to complete it.

Fully investigate and understand how the funding source and its requirements and stipulations will affect the timing of your project. It can take many months to hear whether or not your project has been selected to receive funds and then several more to execute an agreement with the funding agency. Typically, no work can be done on your project (that you expect to be reimbursed for) prior to an agreement being executed. Your public and governing bodies need to be aware of the potential delays in beginning the project versus the potential benefits of funding assistance.

Implementation Highlights

- Annual operation and maintenance costs for the Green County, Ohio trail way system are $3,200 per mile. Occupation fees are a source of funding for operations and maintenance on trails with public utilities, communications or other corridor users.
- An endowment for the Pere Marquette Rail-Trail supports annual trail way operations and maintenance costs of approximately $75,000, or approximately $3,800 per mile. It is managed by the Midland Area Community Foundation.
- Conservation ballot measures pass 77% of the time, with voter support a consistent 60% across all jurisdictions. Since 1998, Michigan voters have approved 24 out of 37 local government measures (a 64% passage rate) authorizing $258 million in conservation funding. All except one of these involved property tax increases.
- Trails and greenways are not ranked by voters as strong purposes by themselves and frequently, did well where included in broader based funding packages.
- Private funding sources interested in trail ways tend to be regionally focused, rather than statewide. Endowments for state trail maintenance are not likely.
- The more evidence that the impact is regional, rather than local, the more compelling and attractive the issue becomes.

Source: Connecting Michigan, 2007, Michigan Trails and Greenways Association.

Local governing documents, such as master plans, parks and recreation plans, and land use and transportation plans should be amended to include content consistent with this plan.

Communities should encourage local developers to incorporate non-motorized connections into their site designs. Try to ensure that these smaller trail systems are linked with the larger regional system, or at least have the potential to connect. Connectivity within the development, as well as with adjacent land uses, should be recommended. The inclusion of these trailways in local developments throughout the County will generate a more connected trail system.

Collaboration is vital to the success of a regional trail system. Every effort should be made to cooperate and coordinate non-motorized goals with neighboring communities, the County Road Commission, and the Michigan Department of Transportation. A map of potential trail connections and proposed corridors should be created and updated on a regular basis and made available to all trail planning bodies. Some of proposed trailways identified in this plan are over, under, in, or along road rights-of-way. Collaboration with Michigan Department of Transportation and the County Road Commission should frequently occur to discuss the possibility of utilizing these areas for trail development. These two organizations oversee the construction and maintenance of almost all of the roadways in the county.

All transportation projects receiving federal funding in the county are identified in the Transportation Improvement Program (TIP). This document represents transportation projects receiving federal funding for the identified fiscal years. Non-motorized facilities should be incorporated into TIP road projects. Coordination with road projects will make trail development more efficient and feasible.

Gaining grant funding for local trails should remain upon the top of the to-do list. Lack of funding is often the largest barrier to trail development. Trail planners should be actively seeking grant funding from those programs listed in this document and also searching for additional sources.