



# Five Year Parks and Recreation Plan 2019-2023

City of Beaverton



Prepared by:  
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## Table of Contents

INTRODUCTION .....	1
COMMUNITY DESCRIPTION .....	3
Physical Characteristics.....	3
Soils.....	3
Transportation.....	3
Water Resources .....	4
Environment.....	4
Climate.....	4
Existing Land Use .....	5
Zoning .....	5
Socioeconomic Characteristics.....	5
Population.....	5
Population Age .....	6
Employment and Income.....	6
Disabled Populations.....	6
ADMINISTRATIVE STRUCTURE .....	7
Partnerships and Volunteers .....	7
RECREATION INVENTORY .....	10
Public Opportunities .....	10
Private Opportunities .....	10
Regional Facilities.....	10
Local Public Facilities .....	15
Status of Grant Assisted Facilities .....	15
Private and Semi-private Facilities .....	19
Barrier Free Accessibility .....	20
GOALS AND OBJECTIVES .....	24
Goal 1: Complete improvements to Ross Lake .....	24
Goal 2: Complete improvements to park facilities .....	24
Goal 3: Revive recreation programs and partnerships .....	24
Goal 4: Increase walkability within the community .....	25
ACTION PLAN .....	26
Ross Lake Park.....	26
Leo Ross Memorial Park.....	26
Bike and Pedestrian Connections .....	27
Calhoun Campground .....	27
Calhoun Park Athletic Fields.....	28
Dam Portage .....	28
City-wide improvements .....	28
Partnering, Promotion and Policies.....	28

FUNDING INITIATIVES.....	29
General Fund.....	29
User Fee .....	29
Bonds .....	29
Special Millage .....	29
Michigan Department of Natural Resources Grants .....	29
Michigan Department of Transportation.....	31
Michigan Department of Environmental Quality (MDEQ) Grants.....	31
Community Development Block Grants (CDBG) .....	31
MEDC Patroncity Crowd Funding.....	31
Donations .....	31
Michigan Natural Resources Tree Planting Grants.....	32
Conservation Easements .....	32
Public-Private or Public-Public Partnerships.....	32
Foundations .....	32

## List of Tables

Table 1: Population Growth, 1970 - 2000.....	5
Table 2: Cultural Statistics .....	6
Table 3: Parks and Campground Operation 2018-2019 Budget .....	7
Table 4: Recreational Fees Effective 2018 .....	8
Table 5: Regional Recreation .....	11
Table 6: Beaverton Area — Recreation Inventory.....	20

## List of Figures

Figure 1: Location Map.....	2
Figure 2: Administrative Structure.....	9
Figure 3: Parks Location Map.....	22

## Appendix

- A - Documentation
- B - Ross Lake Study
- C - Regional Recreation Information
- D- City of Beaverton Bicycle and Pedestrian Trails Master Plan

## INTRODUCTION

This Five-Year Parks and Recreation Plan for the City of Beaverton has been undertaken at this time to facilitate orderly planning for land acquisition and facility and program development to meet present and future recreational needs of the entire community and the ever-increasing number of tourists who visit the community. The plan outlines the five-year recreational goals of the community which were established after soliciting information from the community at large. The plan incorporates current community needs and potential with associated activity needs. It is intended to integrate the recreational system with other community components and to generate community interest and identity.

The planning area encompasses the City of Beaverton. Further, this plan takes into consideration overall objectives for regional recreation providers. This plan is a new Five-Year plan for the city; drawing information from the previous 2013 recreation plan.

This document will be recognized by the Michigan Department of Natural Resources for grant purposes for five years from the date of formal approval and adoption by the city.

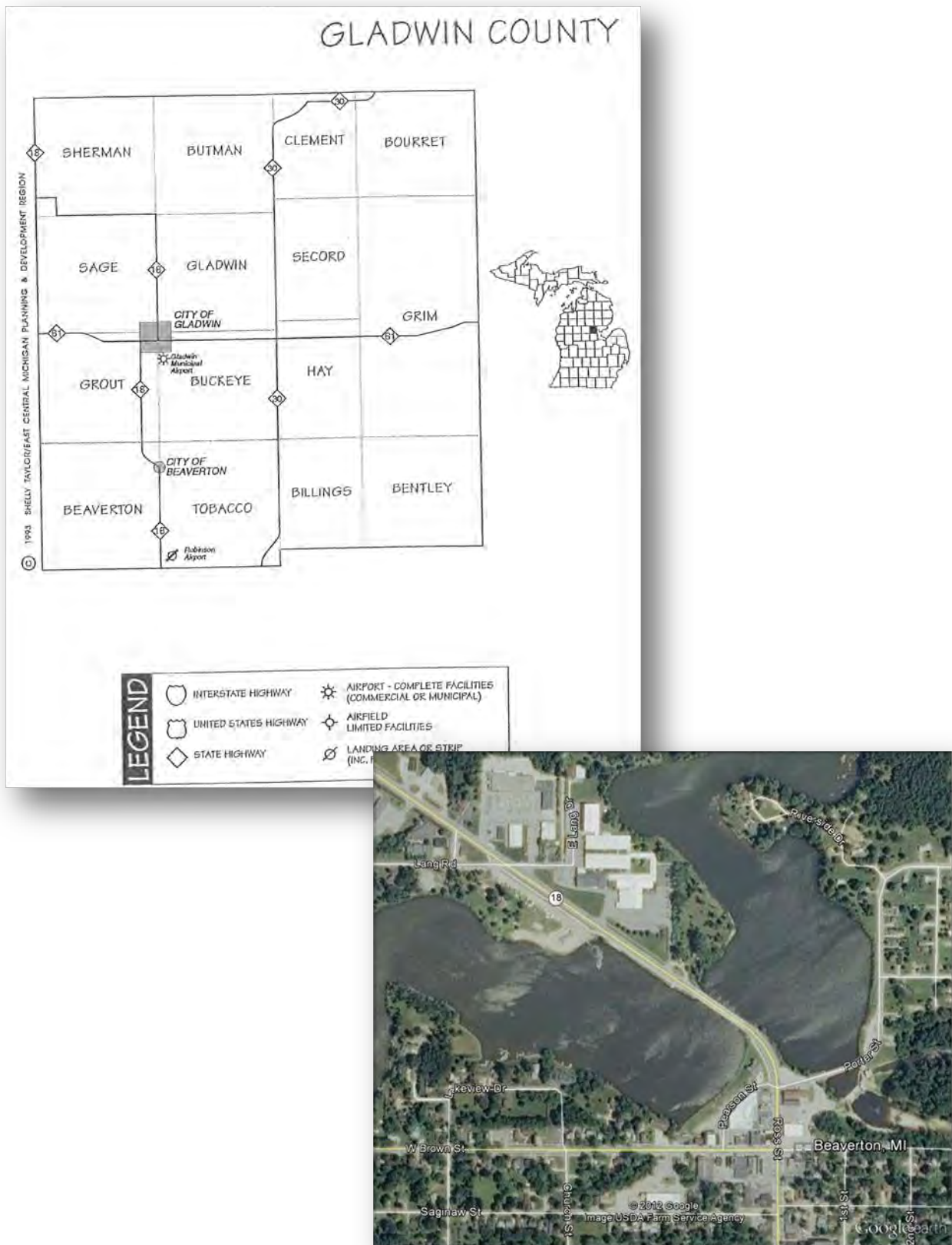
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Figure 1: Location Map



## COMMUNITY DESCRIPTION

### Physical Characteristics

The City of Beaverton is in the southwestern quadrant of Gladwin County. The City is approximately 2.8 square miles in area and is located along Beaverton and Tobacco Townships.

#### *Soils*

The most recent generalized soil survey was completed for Gladwin County, Michigan by the U.S. Department of Agriculture's Soil Conservation Service in 1994. The soils in Beaverton are categorized into two broad soil associations (see attached map). The most prevalent are sandy and loamy soils on lake plains including the losco-Brevort, Allendale-Pickford-Pinconning, losco-Brevort-Kawkawlin, losco-Au Gres-Ingalls, and Rubicon-Ocqueoc-Ingalls groups, which occupy a majority of the city land area.

The second most prevalent soil association found in Beaverton Township is the Nester-Kawkawlin-Sims and Sims soil association, which is found along areas to the south and east of the city. These soils are loamy found on lake and fill plains. 20% of the county is an losoco-Brevort soil that drains somewhat poor to poor with slopes ranging from 0-25%. That is what is found in Beaverton; the development potential is greatly impacted by the surrounding lakes and streams and associated banks and flood plains.

The Soil Survey also indicates that these soil types generally present severe wetness and/or ponding when developing structures, trails, picnic or playground areas. This is due mainly to the poorly drained soils that are found in this area. These wetness factors also limit the development of dwellings and structures within these soil types.

The Soil Survey of Gladwin County is designed and can be used to evaluate the potential of the soil and management needs to understand, protect and enhance each of the recreational sites referenced in this plan.

#### *Transportation*

Highway M-18 is a major arterial road serving as a major north-south thoroughfare system through the area. It bridges Ross Lake, which bisects the city. Highway M-30 also serves as a major north-south thoroughfare system to the east of the city. Highway M-61 is a major east-west thoroughfare system which runs through Gladwin, 8 miles north of Beaverton. US-10 connects the area to major population centers 10 miles to the south.

The Gladwin Zettel Memorial Airport, a public use airport, southeast of the central business district of Gladwin serve the people, businesses and recreational interest of the Gladwin County. While the airport is not physically within Beaverton, it services the residents of the community.

### *Water Resources*

Ross Lake is a 294-acre impoundment of the Cedar and Tobacco Rivers located within the center of Beaverton, bridged by M-18. It is within the Cedar River watershed. Three branches of the Tobacco River inlet to the lake, out-letting to Saginaw Bay via the Tobacco, Tittabawassee and Saginaw Rivers.

The maximum depth of the lake is approximately 10-12', nearest a dam structure at the southern end of the lake. Development along the lake includes Ross Lake Park and launch and docks along Calhoun Campground that provide public access west of M-18. An unimproved launch is located east of M-18 near the dam. There is not an improved portage route for the dam. Most boaters accomplish this at their own risk along a grassy slope on either side of the dam. Forty five percent of the shoreline has residences along it, half have docks. Bottom conditions range from sand to pulpy peat. Moderate boating, canoeing, kayaking, paddleboard and jet skiing occurs in summer months; the lake is fished heavily throughout the year.

Ross Lake has a well-balanced fish population, with most species in good condition. It is one of few lakes in the region with white crappie. Both black and white crappie are numerous and there are many large sized fish for sport anglers to catch. Additional species include rock, largemouth and smallmouth bass, walleye, bluegill, sunfish, yellow perch, northern pike, muskellunge and others. A professional bass fishing tournament recently added Ross Lake to their annual circuit. A professional bass fishing tournament is hosted at Ross Lake annually. A detailed fisheries study for the lake was completed by the DNR and is included in the appendix.

Water testing at the public access beach at Ross Lake Park has identified E. coli levels that peak during summer months. Resolution of this would allow for uninterrupted use of the lake for swimming during the summer. The Michigan Department of Environmental Quality (MDEQ) is monitoring 1 of the 4 tributaries.

### *Environment*

Information gathered in 2000 indicates the following environmental conditions which are located primarily along US-61, outside Beaverton city limits.

#### *Toxics*

There are no facilities in Gladwin County that have or have had toxic releases.

#### *Waste*

Gladwin County has submitted an updated Solid Waste Plan for approval. There are no licensed, operating landfills in Gladwin County. There are 44 facilities that have reported hazardous waste activities, one of which is a large quantity generator and two are small quantity generators. There are no existing potentially hazardous waste sites that are part of Superfund. There are two facilities that have been issued permits to discharge to waters of the United States.

### *Climate*

Gladwin County has a continental type climate characterized by larger temperature ranges than in areas of the same latitude closer to the Great Lakes

which have moderated temperatures. The most noticeable lake effect occurs when the prevailing westerly winds bring increased cloudiness during the fall and winter months. Gladwin County averages 45 inches of snow per year. Gladwin County has an average growing season of 126 days with 10 days above 90°F and 17 days below 0°F.

### *Existing Land Use*

The Master Plan for the City of Beaverton is currently being revised. Using the existing Master Plan adopted by the city in 1993, the following existing land use patterns have been categorized. There is a relatively large amount of land used for single family residential (50%). The proportion of undeveloped land (8%), and the acreage dedicated to open water (5%) and recreation (10%) suggests great potential for the development of appropriate recreational facilities.

The city also has an industrial park of approximately 30 acres, with room for additional growth.

Residential and industrial growth will continue to grow due to the water and sewer infrastructure available at the city compared to most other areas of the county.

### *Zoning*

The current Zoning Ordinance for the city was adopted in 2008. Recreational facilities are permitted by right in the Conservation/Greenbelt: Floodplain or Wetland (CG-1), Agricultural: Dispersed Residential (A-2), Residential: Transitional (R-1A), Residential: Single Family (R-1), Residential: One & Two Family and Multi-Family (R-2), and Commercial: Local Business (B-1) districts. They are permitted by special use in the Agricultural: Farmland Preservation (A-1) and the Commercial: Intensive (B-2) districts.

## **Socioeconomic Characteristics**

### *Population*

The City of Beaverton population decreased by 3.2 percent from 2000 to 2010 from 1,106 to 1,071. Over this ten-year period, the county population has decreased 1.3%; the state has decreased 10%, while the United States population has increased 10% according to the US Census. An estimate conducted for the city shows a population of 1,138 residents (11.7% growth) from the previous census.

Table 1: Population Change

Location	Year		Change
	2000	2010	
City of Beaverton	1,106	1,071	-3.2%
Gladwin County	26,023	25,692	-1.3%

Source: U.S. Bureau of the Census.



**Population Age**

The city has comparable population age distribution to Gladwin County and to the State of Michigan. The city does have a higher percentage of youth 0-24-year-old, almost 15% higher, which should be considered while identifying recreation opportunities as well as overall continued population growth and demand. This was a reversal from trends prior to 2000 where the city had a higher senior age population compared to the county.

**Employment and Income**

Median household income in 2016 was roughly \$27,500, which shows a 3.62% growth from the previous 2015 analysis of 26,538. However, the city's median household income is less than the county average of \$39,629 (\$12,129 deduction).

**Disabled Populations**

Table 8 shows the city has a significantly higher proportion of individuals with special needs compared to the state. These figures will continue to increase in the future as the age of the population increases. The recreation needs of people with mobility disabilities relates to their access and quality of use of recreational facilities. This is generally a function of facility design. With Michigan's barrier free elements in the building code and requirements in the Federal Americans with Disabilities Act, site development must now provide reasonable access for all members of the public, including the disabled.

Table 2: Cultural Statistics

	City of Beaverton		Gladwin County		State of Michigan	
	#	%	#	%	#	%
Number of Households	402		10,753		3,872,508	
Senior Citizens 60+	277	24.39	8,371	33.0	2,160,293	21.8
Persons with a disability	256	27.5	5,390	21.4	1,394,263	14.2
Persons below the poverty line	341	30.2	5,099	20.3	1,575,066	16.3

Source: 2012-2016 American Community Survey

## ADMINISTRATIVE STRUCTURE

The Beaverton Parks Committee is comprised of representatives from the community, appointed by mayor and Downtown Development Authority (DDA) and confirmed by city council. The Committee meets on an as-needed basis to address recreation needs. The city is a facility only provider. Recreation programs are addressed mainly by the school district and ad-hock athletic leagues that utilize city facilities.

The Committee is funded solely by the City of Beaverton. Maintenance is provided through 2 full time public works staff and seasonal help. The largest revenue and expense generator are Calhoun Campground. Park facilities are free to the public other than camp fees, and rental for athletic fields and picnic pavilions.

### Partnerships and Volunteers

A citizens group was formed under the name of Friends of Calhoun Campground that volunteered their time to operate and coordinate maintenance functions for the park during summer season. This has allowed the campground to re-open and be sustainable. Maintenance contracts and materials for the campground are requested for payment by the city. This is an example of innovative partnerships that allow key resources to continue to benefit the Beaverton community. The city would like to use the Friends of Calhoun as a model for developing other community volunteerism projects.

The Gladwin County Chamber of Commerce (One County, One Community) has been a participant in the life of Gladwin County since the 1960s; and continues to be a partner with the business leaders and residents of the county.

The following is a breakdown of the Parks and Recreation budget:

Table 3: Parks and Campground Operation 2018-2019 Budget

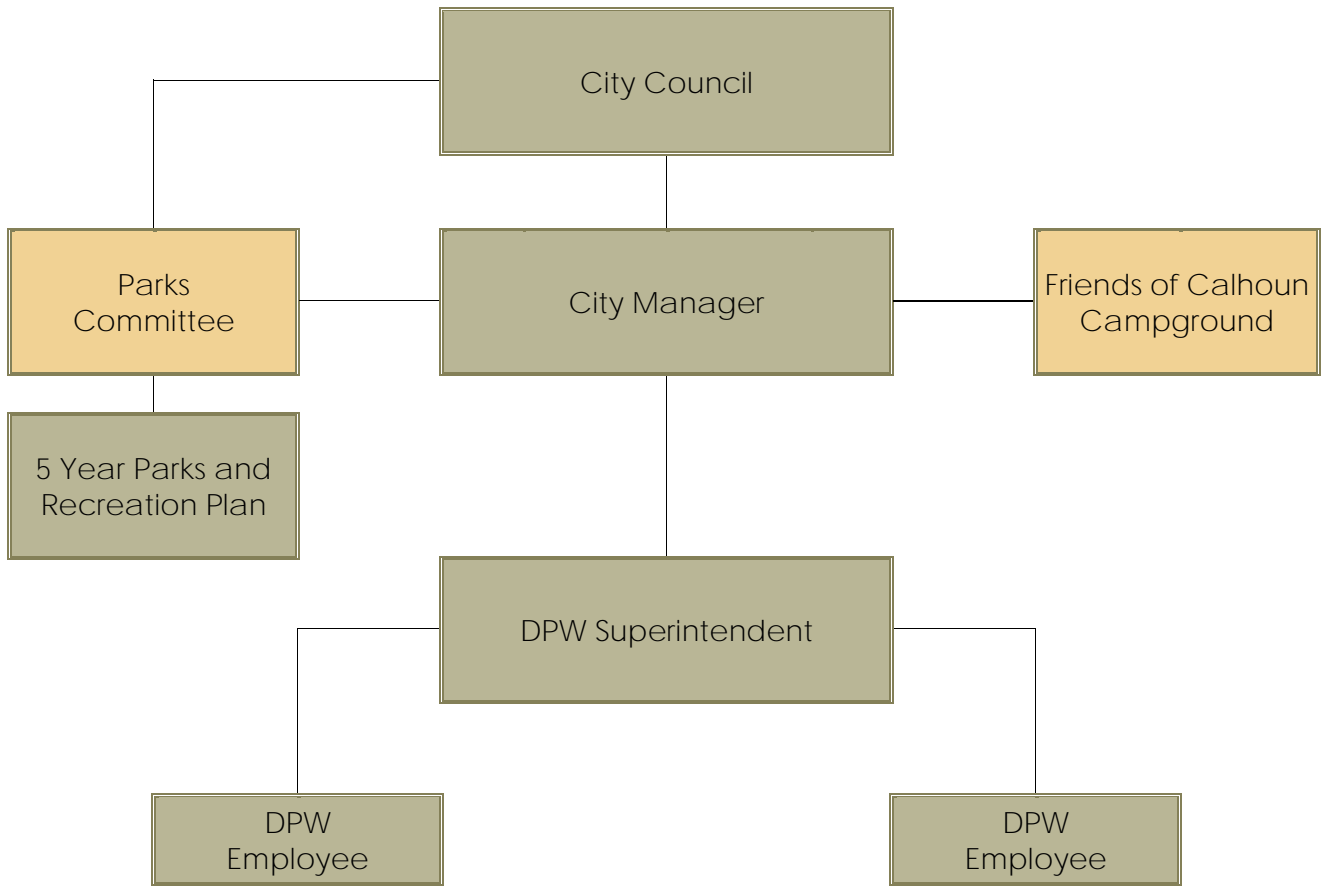
Description	2018 Projected
<b>Parks and Recreation</b>	
Salary and Wages	\$22,400
Payroll Taxes	\$482
Employee Benefits	
Contracted Services	\$315
Insurance	
Utilities	\$3,150
Repair and Maintenance	\$1,050
Equipment Rental	\$4,200
Miscellaneous	\$831
<i>Subtotal Parks and Recreation</i>	\$32,428
<b>Other Recreation / Park Calhoun</b>	

Description	2018 Projected
Salary and Wages	
Payroll Taxes	
Employee Benefits	
Supplies	
Contracted Services	\$41
Insurance	\$3,288
Telephone and Communications	\$123
Utilities	\$4,389
Repair and Maintenance	\$120
Equipment Rental	
Miscellaneous	
<i>Subtotal Other Recreation / Park Calhoun</i>	\$7,961
<b>Parks – Ball Fields</b>	
Salaries and Wages	
Payroll Taxes	\$161
Contracted Services	\$420
Miscellaneous	\$2,620
<i>Subtotal Parks – Ball Fields</i>	\$3,201
<b>TOTAL BUDGET</b>	

Table 4: Recreational Fees Effective 2018

Item	Fee
<b>Calhoun Camp Grounds</b>	
Seasonal w/Electric and Sewer	\$1,300
Seasonal w/Electric	\$1,150
Seasonal-Rustic	\$600
Monthly w/Electric and Sewer	\$525
Monthly w/Electric	\$400
Monthly-Rustic	\$270
Weekly w/Electric	\$150
Weekly-Rustic	\$90
Daily w/Electric	\$25
Daily-Rustic	\$15
Group Camping	\$115
Pavilion-Deposit Made to Ranger (non-refundable)	\$55
<b>Ross Lake Park</b>	
Pavilion C (non-refundable)	\$55
Pavilion A & B (non-refundable)	\$45

Figure 2: Administrative Structure



## RECREATION INVENTORY

Recreational opportunities are provided by both the public and private sectors in the county and surrounding area. Both sources are necessary provide a balanced program and resource base. Inventory was provided from previous county planning documents and revisions based on site visits and comments from the committee.

### Public Opportunities

Public opportunities include county and local parks, state-owned lands, boat launches, campgrounds, playgrounds, sport fields, airports, public access sites, historic sites and wildlife refuges. Responsibilities for public recreation normally fall on the state, county, municipalities, chambers of commerce and special interest groups.

### Private Opportunities

Private opportunities include historic sites, access sites, campgrounds, meeting halls, motels, restaurants, shops, etc.

### Regional Facilities

A well-rounded recreation program that serves the needs of the broad spectrum of citizens and their varied interests can best be served by a combination of state, regional and local facilities combined with those offered by private entrepreneurs.

On a regional level, the Beaverton Area is located within approximately a 50-mile radius of several state recreation areas and game areas, as well as a number of private recreational facilities.

Gladwin County has 160 acres of parkland including trails and open space within 10 miles northwest of the city. Wilson and Bay City State Parks are to the west and east respectively, providing facilities such as swimming, picnicking, boating and developed camp facilities with a combined total of 350 sites. North and South Higgins Lake State Parks are located within 50 miles to the north, also providing additional similar facilities. The following table in this section provides additional regional recreation facilities as well as the keyed location map.

Another regional asset is the Pere' Marquette Rail Trail that connects Midland to Reed City, located generally along the US-10 corridor. This route provides connection to the White Pine Trail and offers linkage all the way to Grand Rapids. Local routes, such as proposed trails in nearby Gladwin can be potential trail partners that can add to local efforts within the City of Beaverton and create yet another regional recreation resource that the community can benefit from. An extensive Bicycle and Pedestrian Trails Master Plan was completed for the City of Beaverton in 2014 and is included in the appendix. It provides a trail plan for the city as well as connections to a county / regional trail system.

A list of programs and recreation organizations is listed in the appendix as an additional resource for partnering on facilities and services.



Table 5: Regional Recreation

Name & General Location	Description	Owner
Holster Lake Campground Sherman Township	Swimming, beach fishing, no facilities for boating/canoeing, boating is allowed. Operated day use area located on an inland lake in the NW corner of the county within the AuSable State Forest. Picnicking, day use.	State of Michigan
House Lake Campground Sherman Township	State-owned and operated campground. Located 2.5 miles NE of Meredith on an inland lake in the NW corner of the county within the AuSable State Forest. Swimming, beach, fishing, no facilities for boating/canoeing, although boating is allowed. Open all year. Cost \$6 (\$3 for seniors). No reservations. Campground offers 41 sites, swimming with sand beach and bottom and warm water fishing. House Lake offers a 2.7-mile pathway	State of Michigan
Trout Lake Campground Sherman Township	State-owned and operated campground located 3 miles NE of Meredith via Meredith Grade on an inland lake in the NW corner of the county within the Ogemaw State Forest. The campground offers 35 sites for boating. Swimmers will find a rocky bottom and no beach. Good cold-water fishing (trout), a pathway and a Code 2 gravel boat ramp.	State of Michigan
State Roadside Park Clement Township	Facility is located at the intersection of Highway 30 and the west branch of the Tittabawassee River. Has picnic tables, scenic outlooks, a parking lot and is used by tourists, picnickers and fisherman who utilize the river.	State of Michigan
Wildwood Campground Bourrett Township (PRESENTLY CLOSED)	Campground is located 12 miles south of West Branch via M-30 and Wildwood Shores Road in the NE part of the county within the AuSable State Forest on the banks of the East Branch of the Tittabawassee River. Swimming, boating, fishing and hiking. Open from May 1. Cost \$5. Possible beach and boat launch development in conjunction with the campground. Campground offers 18 sites, but swimming is not recommended. Warm water fishing opportunities exist on the backwaters of the Tittabawassee River.	State of Michigan
Tittabawassee State Forest; parts of several townships; Billings, Bentley, Bourrett, Clement, Grim, Hay and Secord	The Tittabawassee State Forest covers nearly half of Gladwin County; primarily the eastern half. There is another small portion of the state forest located in the NW portion of the county. This state forest is managed fairly intensively for wildlife, forest products and dispersed recreational activities, such as ORV trail riding and camping. Open all year.	State of Michigan

Name & General Location	Description	Owner
Gladwin Little League Area	The Gladwin Little League is now part of the Gladwin county Sports Complex. This is a 55-acre project that was recently completed and will be opened May 2004. There are 14 ball fields (8 baseball, 2 girls' softball and 4 adult softball). Also included in the complex are 9 soccer fields and 2 ½ Pee Wee football fields (5th to 8th graders). There is a 24 x 80 concession stand/storage building that includes storage for each of the above programs. The complex is located on the east edge of town behind Flynn Lumber.	Joint Gladwin City/County
Public Fishing Sites/Boat Launch Butman, Sage, Tobacco, Secord and Clement Townships	Four (4) sites in Gladwin County operated by Michigan Department of Natural Resources. They are located at: Pratt Lake, Wiggins Lake, Lake Four and Wixom Lake, Secord, North Tittabawassee River	State of Michigan
Gladwin County Fairgrounds Gladwin City	Occupies 43 acres in the SE corner of the City of Gladwin. Includes racetrack, grandstand, three merchant buildings at the north end of the property, and animal barns to the south. Also includes a pavilion and picnic area in a small grove of trees. Use has increased with the complex now used as a site of many events throughout the seasons. Buildings are also used for storage on a fee-basis in the winter. The Fair also has 100 water & electric sites for organized group use at the new campgrounds.	Gladwin County Fair Association
Gladwin Community Schools Gladwin City	Well-developed public-school complex which includes an elementary school, intermediate and high school on a large, nicely developed site. Outdoor recreation facilities include fields for baseball, softball, track and football along with spectator facilities and upgraded playgrounds. Indoor facilities include gyms and a multi-purpose cafeteria.	Gladwin School District
Gladwin School Nature Area Buckeye Township	200-acre parcel located approximately five (5) miles SE of the City of Gladwin. Maintained by Gladwin School District for the same purposes as the nature areas associated with the Beaverton Schools	Gladwin Schools
Gladwin County Recreation Area Sage Township	Area consists of 160 acres of gently rolling land, 1/4-mile-wide by 1 mile in length with the Cedar River crossing the western end. Has a 40' x 80' log-type lodge with a 24' x 24' wing for kitchen and bath facilities. Archery range, handicapped accessible, paved hiking trail and other walking trails	Gladwin County Parks and Recreation Commission (in transition)

Name & General Location	Description	Owner
Gladwin City Park	Electricity, fire rings, showers and bath, sanitation station, picnic area, beach, children's play field, foot trails, tennis and horseshoe courts, canoeing and tubing areas. Two pavilions (reservations recommended, \$35 per day). Open May 1-Nov. 30. Cost: \$12 (F-Sa.), \$9 (Sun.-Thurs.). Reservations recommended.	City of Gladwin
The Springs Secord Township	Non-denominational private youth camp, open to church groups with restrictions (non-church groups can rent but have to go by the restrictions). Two rivers, 312 acres, dining for 150, dorms for 100, winterized. Weekend retreat for all age groups. Open year-round. Family camping for one week. Youth camping from mid-June to mid-August. Programs include archery, rifle, canoeing, arts and crafts, miniature golf, horseshoes, volleyball, water slides, tether ball, sledding.	Private-owned Baptist Church Camp
Good News Camp (Gladwin) Butman Township	Privately-owned 174-acre summer youth camp and year-round retreat center. Overnight accommodations for 145 in dorms and cabins; 16 campsites and dining facilities for 120. Camping area with trailer hookups. Canoeing, horseback riding, hayrides, swimming, archery range. Religious affiliation.	Privately-owned
Sugar Hills Butman Township	Fees: \$3/Day \$18/week \$45/month (2 people) \$60/month (4 people) \$200/season (2 people; 6 months); \$250/season (4 people; 6 months)	Privately-owned
Lakeside Golf Course (Hockaday Road) Butman Township	Private but open to public.	Privately-owned
Curry's Landing Tobacco Township	Primitive camping, boat rentals, trailer park, electrical hookup. Live bait and tackle, dockage, storage. Open April 15-October 15	Privately-owned
Gladwin Golf Course Grout Township	18-hole golf course located immediately west of the City of Gladwin. Although privately owned, it is available for public use.	Privately-owned
Beaverton Rural Schools Beaverton City	High school and elementary site encompass approximately 20 acres and is located within the city limits of Beaverton. Fulfills a recreational need for elementary children who use the playground equipment (which was substantially expanded over the past few years) and young adults using the baseball fields. School buildings are also available for appropriate types of public meetings.	Beaverton School District
Leo Ross Park Beaverton City	Small park located in a residential area east of M-18 and south of the Tobacco River. Only an acre or so but has some playground equipment and a picnic pavilion.	City of Beaverton

Name & General Location	Description	Owner
Beaverton Churches (5) Beaverton City	No grounds devoted to recreational activity, however, some social functions are offered and one (1) area church	Privately Owned
Ross Lake Park Beaverton City	Approximately 6-acre park located on the north shore of Ross Lake Within the City of Beaverton. Contains a boat launch, swimming area, picnic facilities. Offers pavilion rentals. A major park for city residents and serves many residents of the southern portion of the county. Needs drainage work to stop erosion of beach and boat launch area, better restroom facilities and improvements of the beach area. Park also host "professionally-run" fishing tournaments. Westerly portion of the park is undeveloped. Facility is presently used to capacity and should be expanded.	City of Beaverton
Beaverton School Nature Areas #1 and #2 Beaverton/ Tobacco Townships	Nature area is rural parcel of land, controlled by the Beaverton School District. Some pine trees have been planted and conservation clubs use the site for hiking, snowmobiling and animal study. Used by school science classes.	Beaverton School District
Calhoun Campground Beaverton Township	Located on Ross Lake outside the city limits south of town on Roehrs Road. Electricity, showers and bath, water close by, sanitation station, boat and fishing dock, playground, softball diamonds, pavilion (reservations recommended,). Open May 1 – October 15; \$30 per day (Electric and Sewer), \$25 (Electric), and \$15 (Rustic).	City of Beaverton
Sacred Heart Activity Center Gladwin City	Church-sponsored facility offering indoor basketball, two (2) racquetball courts, volleyball, kitchen and food serving facilities and a large open field area.	Sacred Heart Church Gladwin
Lake Lancer Access Butman Township	Boat launch/public access to Lake Lancer (830 acres). Operated/maintained by Butman Township	State of Michigan
GAWA Rearing Pond Butman Township	Five-acre fish rearing pond to support state game fish planting efforts for walleye and other species. Sponsored by Gladwin Area Walleye Association (GAWA).	GAWA
Sugar Springs Butman Township	Privately-owned waterfront development featuring 18-hole championship golf course, Olympic sized pool (used by residents from surrounding townships), modern campground, horseback riding stables/trails.	Privately-owned

Name & General Location	Description	Owner
Roller Rink (Marti's)	Privately-owned roller ring - open skating Friday and Saturday 7:00 p.m. - 100:00 p.m. Facility is available during open skate for birthday parties for a fee, also can be rented for a private birthday party. Available by appointment to church organizations, after school activities and programs. Big events every year include New Year's Even lock-in, Walk for Warmth and occasional fundraisers.	Privately-owned
Sage Township Park Sage Township	Small (5 acres) local park with water access, soccer, etc. Minimal facilities. New township hall is available for rental. Adjoins the park.	Sage Township
Gladwin North City Park Gladwin City	Parking, access development and a riverfront pathway along the Cedar River which connects to Gladwin City Park.	Gladwin City
Ralph Bearss Memorial Park Clement Township	Softball, soccer fields and sand volleyball court under construction	Clement Township
Lost Arrow Resort on the Water Gladwin County	A four-season family resort, offering log cabins, suites and motel guest rooms; banquet facilities; dining rooms, trophy deer hunting and upland game bird hunting on the Midwest's largest high0fenced range; river cruises, boat docks, indoor pool, exercise room, gift shop, water's edge boardwalk, sporting clays and hay rides	Privately-owned
Gladwin Community Arena	Indoor ice rink, fitness center and gymnasium. January 17, 2004 frozen affair raffle and dinner. Second floor facilities include massage and exercise equipment, tennis, etc.	County facility

The impact of the various recreation opportunities in the area is the creation of a regional theme, a draw for both residents and visitors. The City of Beaverton can draw from the people using nearby facilities, while also providing unique aspect within its own recreation assets such as more intimate camping sites, less crowded fishing areas with a niche for various fish species and a general local atmosphere that may be more inviting than other areas.

### Local Public Facilities

The following Recreational Inventory is a comprehensive list of public and private recreation areas and facilities in the City of Beaverton. The inventory will be used as a basis of determining the need for specific recreational facilities in the area. Also refer to the park location map.

### Status of Grant Assisted Facilities

Project No. 26-00398

Project Title: Calhoun Memorial Park (Formerly Beaverton Recreation Park)



Grant Amount: \$25,000

Project Description: Acquire 78 acres for outdoor recreation.

Project No. 26-00841

Project Title: Calhoun Memorial Park

Grant Amount: \$9,600

Project Description: Develop a portion of Calhoun Memorial Park to include site improvements, 1 ball field, entrance road and LWCF sign.



Project No. BF89-357

Project Title: Calhoun Park Improvements

Grant Amount: \$206,250

Project Description: Complete a park development project that will consist of providing 39 camp sites with a service building, playground and access to Ross Lake.



Project No. TF05-068

Project Title: Beaverton Fishing Piers

Grant Amount: \$59,000

Project Description: Development of two lighted fishing piers on Ross Lake.

Project No. TF16-0068

Project Title: Trailhead for Gladwin to Beaverton Trail

Grant Amount: \$50,000

Project Description: Development of a paved pathway and improved parking area for a trailhead along the Gladwin to Beaverton Trail in the city of Beaverton.



Ross Lake Park is approximately 6 acres located on the north shore of Ross Lake, accessed from M-18 north of the downtown area. It includes a boat launch, swimming area and picnic facilities. An outdoor amphitheater also provides a location for local performances during the summer season. New modular play equipment and surfacing was recently added to the park. The boat launch parking lot was paved in 2010 providing efficient parking delineation, decreased maintenance and improved accessibility. A gazebo (funded and erected by the Lions Club) was included, and new sidewalks were added to a pavilion for accessibility, including a picnic table pad. The gazebo is converted into "Santa's House" during Christmas. The park contains a recently restored World War II memorial that was completed in 2018. This is the major park for the community as well as the surrounding county residents. The park is used to its

capacity and requires improvement to maintain, let alone increase its recreation function.

The current beach area is not large enough for the demand that is placed on it. This park is the primary public outdoor swimming access within a 10-mile radius. Continued erosion control along the shoreline is needed to preserve the edge of the parkland. Drainage improvements are needed to minimize ponding at areas in the park. The restrooms require updating for better accessibility and general appearance and maintainability. Extending sidewalk to the play equipment surface and other areas of the park will provide increased accessibility. Additional play equipment for toddlers and at additional locations will disperse the crowding due to multiple family and special events that occur in the park concurrently. Lighting and electric service would assist with use at this park that extends in to late evening use as well as for vendors that use the park for special events.

**Beaverton also houses the Lakeside Farmer's Market here at Ross Lake. The Farmer's Market is held from late May until October every Wednesday.**

In 2005, an overlook deck/ fishing platform was installed (TF05-068) with a MNRTF grant of \$59,000 in conjunction with a transportation enhancement grant to complete a bike lane along M-18. Both facilities are operating and providing safe access to recreation destinations in the city.



Leo Ross Memorial Park is a neighborhood park, located within a residential area east of downtown. It is approximately 1 acre. It includes modular play equipment and surfacing, a small paved area and basketball net and a pump house. A pavilion was recently added to the park; funded and erected by the Lions Club. The park is otherwise open greenspace. Supplemental play equipment, landscaping and accessible sidewalk is needed at the park as well as improved signage, sheltered picnic spots and designated parking areas.



Calhoun Park and Campground is a rustic public camp facility operated by the city. It is located at the west side of the city along the southern end of Ross Lake. There are approximately 58 sites, with a limited number of modern sites. It also has a single restroom facility and a group camping area. Newer docks have been installed adjacent

to the campground that are accessed by a 28-year-old wood ramp that is closed. This structure needs to be replaced, per the city's responsibility for maintaining the access, as well as the existing asphalt path that leads to it. Barrier-Free access around the site needs to be revised per the current requirements. There is some outdated play equipment and a covered pavilion. Potential for swimming areas near the campground in Ross Lake is minimized by steep slopes and mucky bottom conditions along the shore.



Some improvements are needed for the campground to continue to attract users. The water is very hard and needs a softener to ease long-term wear on equipment and for the benefit of campers. Interior improvements to the toilet / shower building are needed as well as dedicated cold storage area for use by volunteers. Campsite improvements include replacing worn fire rings, spigots and the addition of 2 pull through spots. The playground equipment is outdated and leaves little activities for children that are camping. The grandparent / grandchild camping trips are trending up as our population ages; new equipment will support this demographic.

To the south are 2 ball fenced ball diamonds and a practice soccer field. Both areas have gravel parking, the athletic fields require a more organized layout and defined space. The fields require improvement and expanded size to allow for tournament use.



Improvements to the play equipment will be needed. Expansion of additional campsites is possible along the shoreline. The athletic fields are used by local leagues as well as campers. The fencing, dugouts and general field conditions need replacement and improvement. The soccer field is not large enough for competitive play.

The east Ross Lake boat launch is a site of approximately .5 acres is located east of the M-18 bridge over Ross Lake. It is immediately adjacent to the existing dam. It is an unimproved boat launch with a gravel area along the roadside. It is used for small fishing boats to launch as well as a portage site for users attempting to bypass the dam and continue down the Tobacco River.



The site provides a convenient alternate access to Ross Lake, the only public access on the east side of the low M-18 bridge that restricts most boats. The site needs organized parking to maximize its use and provide a safe defined

area since it is along a curve in the road. Improvements are needed both at the launch and to designate a safe route to portage the dam. There are no improvements downstream of the dam for a portage site. A portage would provide greater use of the water recreation potential in the city.

The Beaverton Cemetery is located west of town along the south shore of Ross Lake within a 5-acre peninsula. It is operated by the city and is open from dawn to dusk, providing a quiet open space for the community.

The Beaverton Community Center/Lions Club is located within the downtown. It provides meeting space and is owned by the Lions Club. The interior has been remodeled to be more inviting for events and family gatherings.

The Beaverton Public School campus is located along M-18, south of downtown and it includes the high school/junior high school and elementary school buildings. The campus is approximately 20 acres with little open green space other than dedicated athletic fields. There have been substantial upgrades conducted on the playground equipment, along with a pavilion located behind the school. There is some availability for large public meetings.

The Beaverton Activity Center is in a refurbished 2-story school building (the former Beaverton Elementary School building), at the corner of Ross and Tonkin Rd. The Beaverton Branch of the Gladwin County district Library is housed at this site. Mid-Michigan Health has a physical therapy office, a pre-school is also housed in the center. There are also (5) meeting rooms, fitness center, full-court gym and a coffee shop off the library. Recently raised building on north end of school property has created a new opened green space.



### **Private and Semi-private Facilities**

Private and semi-public recreational facilities are important because they can relieve the demand and use pressures on public facilities. These facilities can address a wide range of interests. Private and semi-public facilities currently within the City of Beaverton include:

- United Methodist Church
- Church of the Nazarene
- Community of Christ
- First Presbyterian
- Beaverton Bowl and Lounge
- Gem Theater



None of these facilities provide any significant outdoor recreation opportunities.

### Barrier Free Accessibility

The following summaries address the accessibility of city parks and recreation facilities in compliance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG). In general, all construction since 1991 was required to comply with these guidelines. Recent improvements in parks have greatly increased accessibility, especially at Ross Park.

A general ranking for each park was determined through site visits as follows.

- 1 = none of the facilities/park areas meet accessibility guidelines
- 2 = some of the facilities/park areas meet accessibility guidelines
- 3 = most of the facilities/park areas meet accessibility guidelines
- 4 = the entire park meets accessibility guidelines
- 5 = the entire park was developed/renovated using the principals of universal design

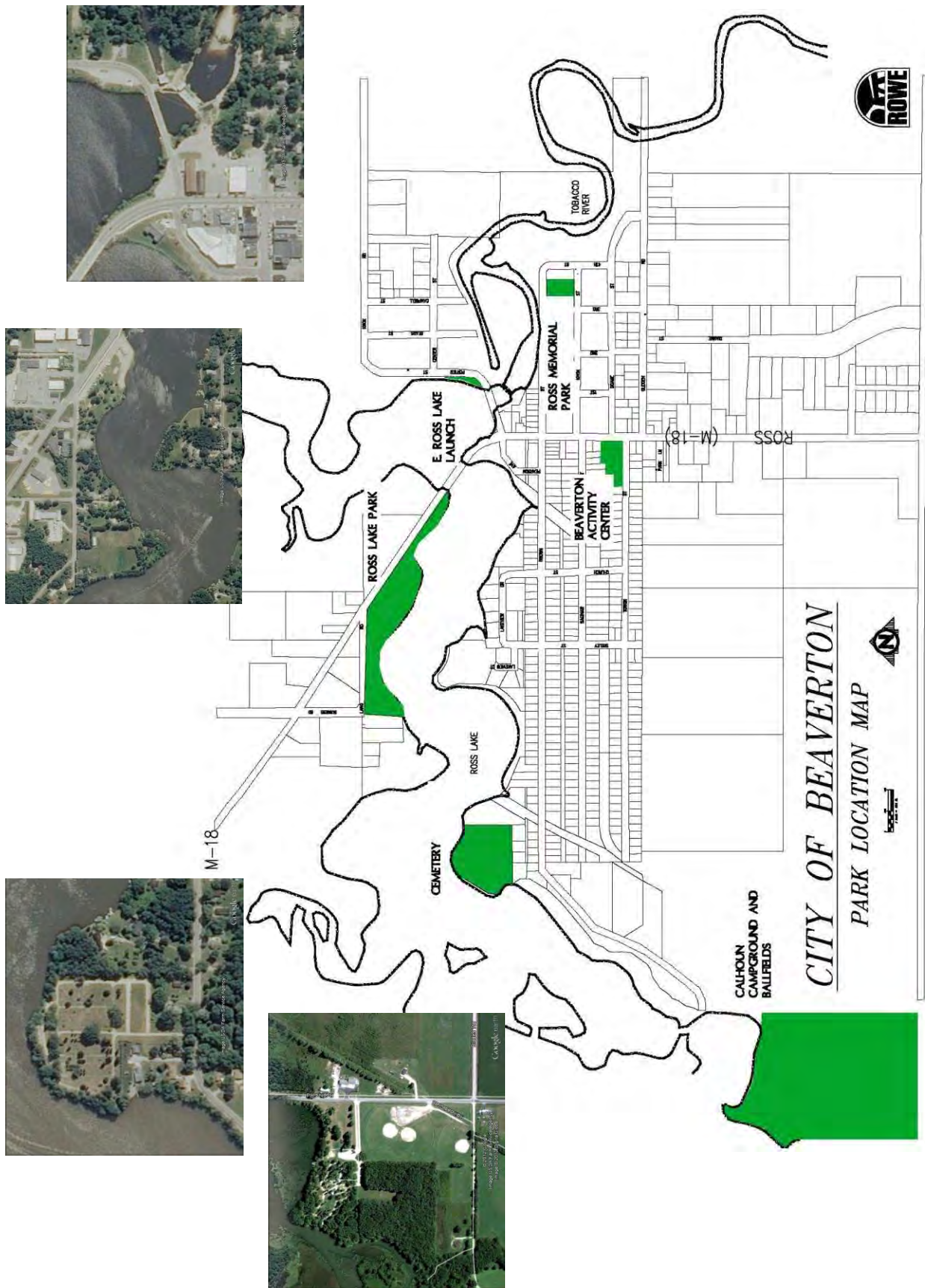
Table 6: Beaverton Area — Recreation Inventory

Name of Park/ Location	Size (Acres)	Facilities Available
<b>PUBLIC FACILITIES</b>		
Ross Lake Park	6	Gazebo Picnic shelters (3), grills, drinking fountain Restrooms (1), beach area, horseshoe court Playground equipment, volleyball court Concrete boat launch and paved parking War memorial Accessibility rating, 3
East Ross Lake Boat Launch	0.5	Unimproved launch and gravel parking Accessibility rating, 1
Leo Ross Memorial Park	1	Basketball net, Pavilion Play equipment Accessibility rating, 2
Calhoun Campground	6	58 campsites Pavilion, gravel parking lot Restroom / showers, dump station Play equipment 6 boat slips and wood ADA ramp Accessibility rating, 2
Athletic Fields	5	(2) fenced softball fields (1) practice soccer field Accessibility rating, 2
Beaverton Activity Center	U/A	Gymnasium Fitness Center Gladwin District Library



		Accessibility Rating, 3
<b>PUBLIC SCHOOL FACILITIES</b>		
Beaverton High School and Junior High School	U/A	Lighted Track and Football Field Softball Field (4) Lighted Tennis Court (4) Outdoor Basketball nets (12) Fenced Baseball Field Gymnasium Weight Room Fitness Center Accessibility rating, 3
Beaverton Elementary	U/A	Playground Equipment Basketball Backboards (4) Ball Field Gymnasium Pavilion Play equipment Accessibility rating, 3

Figure 3: Parks Location Map



## DESCRIPTION OF PLANNING PROCESS

The Parks and Recreation Committee is a standing committee of the City of Beaverton. The Committee began the process of developing a new Five-Year Parks and Recreation Plan in February 2018. The City of Beaverton hired Rowe Professional Services Company to assist in the planning effort. The Committee met regularly throughout the process. All meetings of the Beaverton Parks were open to the public.

In April 2018 the Committee worked with the school superintendent to solicit 150 surveys from 9<sup>th</sup> and 10<sup>th</sup> grade students regarding recreation in the community. A copy of the survey is included in the appendix. The consensus from this input identified a need for clean water, volleyball and basketball facilities. The committee also attended a local Lions club meeting, spoke with various downtown business owners as well as the Friends of Calhoun Park. Results of the Public Input Session were considered by the Committee when developing the Action Plan. The Committee met in May 2018 to determine the priorities for projects and the potential funding sources and provide comment on the preliminary draft document.

Based on comments from the recreation committee, the plan was revised and posted for a 30-day public review at the front counter of the city offices from November 5<sup>th</sup> to December 14<sup>th</sup>, 2018. A copy of the advertisement is included in the appendix. Public comment was included in the plan as directed by the recreation committee.

The draft plan was presented in a public hearing on December 17, 2018 and recommended for adoption by city council following the hearing. The plan was approved by city council on January 30, 2019. Copies of the public hearing notice, meeting minutes and resolution have been included in the appendix. A final copy of the plan was provided to MDNR with a transmittal letter noting that a copy has been sent to the local planning agency for acceptance.

It should be noted that area trails such as the Pere' Marquette continue to be well used. The State of Michigan has also made trailway development a recreational priority. For these reasons it appears that the standard for trails (1/5,000) is also low, and there is a need for more than just one mile of pedestrian trails. The City of Beaverton has identified the need to become a more walkable community and wishes to provide a trail system at each of its parks that will connect to the existing sidewalk system.

## GOALS AND OBJECTIVES

An overall guide for the recreation goals could be to leverage development and maintenance effort by pursuing partnerships, grant funding and volunteer efforts when appropriate. Priorities include:

- Development of park facilities as a vital investment in the economic, social and physical health of the community
- Be mindful of the legacy costs of maintenance that goes with new development
- Work together in partnerships to be able to achieve goals for the community, especially in challenging times with limited resources

The overall theme for improving recreation will be to maximize on current facilities first, prior to developing new elements. The following goals support this (not listed in any order of priority).

### Goal 1: Complete improvements to Ross Lake

Re-invest in Ross Lake as a key community asset. Protect the environmental quality of Ross Lake, develop and maintain its recreation capacity and capitalize on its aesthetic and quality of life benefit to the community and economic value to the region.

- Dredge in key areas to improve water quality; develop an implementation plan.
- Document natural resource attributes of Ross Lake.
- Document the economic impact of Ross Lake within the community.
- Develop a regional water-trail / access points within Ross Lake.
- Program additional recreation and tourism events associated with Ross Lake.

### Goal 2: Complete improvements to park facilities

Continue to maintain and improve other city parks within the community for both residents and tourism.

- Improve recreational and restroom facilities for community use.
- Identify improvements to Calhoun Campground to keep it as a valued destination.
- Develop leveraging through multiple grants; coordinate applications so that commitments for local match are not in conflict or over-extended.
- Use sponsorship opportunities with local businesses, service clubs or volunteers for local cash match, etc.
- Ensure ADA-accessibility and compliance with all park equipment
- Continue to improve landscaping at all parks.

### Goal 3: Revive recreation programs and partnerships

Continue to seek partnerships with other recreational providers and agencies and with neighboring communities to share ideas and provide non-competing programs and facilities. Examples include but are not limited to civic groups, community groups, church, schools, etc.).

- Explore cost sharing with the DDA to promote tourism and business growth along with 'quality of life' assets in the community.

- Establish written partnering agreements between the city, school and volunteer groups
- Build on existing programs and private funding sources
- Define maintenance / operation schedules for mowing, campground schedule, beach cleanup, etc. to help with appearance and efficient use of resources
- Develop forecasting, cost recovery tracking and budgeting will help keep the doors open
- Set stewardship practices (energy saving improvements, maintenance practices)
- New partnerships and volunteer organizations

#### **Goal 4: Increase walkability within the community**

Create a comprehensive system that connects destinations within the community for use by residents and to expand tourism.

- Complete pedestrian connections to park facilities and downtown
- Maintain existing public non-motorized routes
- Include "complete streets" model for future road improvements (consideration of including sidewalks, bike lanes, traffic calming / street trees / site furnishings)

## **ACTION PLAN**

The following is a list of recommended parks and recreation improvements for the Beaverton Area, along with justification for each. It is possible that some of the development plans may vary with conditions and timing to take advantage of funding opportunities.

### **Ross Lake Park**

Ross Lake Park is the major public recreation asset for the community. Various improvements are proposed that will allow the park to provide better recreation facilities and access to Ross Lake. Sediment build up in areas of the lake are limiting the recreation use and water quality of the lake. Further study of the lake should document water depth and water quality issues and provide an implementation plan for improvements. Using the MDEQ Gladwin Laboratory to determine the source of E. coli contamination is recommended. The study may also document local economic impact of the lake, including the potential for a regional water trail, developing docking stages areas for kayaks, canoes and paddleboards and access points within the watershed. Funding should be pursued to act on the recommendations from this study. Additional rip rap is needed along the shoreline to stabilize the eroding bank and provide better access along the lake. A splash pad would provide an accessible water recreation feature that would complement other activities at the park. The park is steadily losing shoreline due to wake action from the recreational traffic. This asset needs to be maintained. Some areas of the park have poor drainage and standing water that should be addressed.

New port-a-johns will provide temporary accommodations until a replacement of the restroom building is completed. With improving the restrooms, the intent also should be to improve the handicap facilities at the park. A new structure will provide increased capacity to meet demands and expectations for families and other users. It will allow for better maintenance through design and selection of materials. Electrical upgrades will provide adequate power for various vendors that are in the park. Site lighting and additional accessible paths within the park will provide universal accessibility to more areas of the park. Repairing and replacing water fountains and charcoal-grills in the park help to provide additional resources for people to use. The city will continue to encourage this public / private partnership. **The Lakeside Farmer's Market has taken up space at the park; future should include upgrading the pavilion that is used for the Farmers Market.** The addition of an electronic message board as part of a new park sign would provide a method to announce city and park events. Additional play equipment will be needed as use of the park continues to grow. There is consideration of adding a spray park element. Implementing programs and tourism events through a revived committee / entity should be explored. Finally, maintenance and landscaping around the WWI Monument should be evaluated annually.

### **Leo Ross Memorial Park**

Leo Ross Park is the single neighborhood park for the city. Additional and upgraded play equipment is needed to accommodate a range of ages using the park along with the installation of park benches, tables and improved landscaping. There is no



designated parking. The addition of paved spaces and sidewalk will be provided required accessible facilities. Bathroom facilities are needed for use by residents as well as well as appropriate signage along the roadway. Future plans for programming and activities should be to develop activities to bring attention to the park for people to use it.

### **Bike and Pedestrian Connections**

Various projects are identified in the Bicycle and Pedestrian Trails Master Plan. Within this plan, priorities that should be pursued include:

- Beaverton -Coleman Regional Rail Trail, including completion of the Tonkin Road Trail segment.
- Connecting to Gladwin via the River Road Trail, including construction of the Porter / Knox Road Trail. This also provides a pedestrian connection to Calhoun Campground will create a loop of recreational facilities around Ross Lake. Camp visitors are currently isolated from town and the other park facilities of the area. One allowance the city has made was to allow ATV use on city street to. Campers tend to be more apt to take advantage of non-motorized opportunities for quick trips to town for groceries or to explore.
- Completion of the M-18 and West Brown Street Trails are lesser priorities that can be completed as part of other projects or as funding allows.
- Other support for non-motorized improvements include implementation of a 'complete streets' ordinance or policy within the city to provide traffic calming and non-motorized improvements as part of road projects and routine maintenance.

### **Calhoun Campground**

The campground operates at 50% capacity throughout the season on average. Upgrades are needed to keep up with the use of the site. The current sites are not barrier free. The campground allows for water access along Ross Lake; improving fishing and boating access would allow for more usage from the Calhoun Campground. Repairing and replacing the deck access is critical as a feature for the campground. Paving the parking area at the pavilion is needed. Adding 2 pull through sites will provide accessibility as well as providing for the increasing use of larger camper units. Deteriorating fire pits and drippy water spigots need replacement. Pedestal grills would accommodate day users in the park as well as campers. The shower / bathhouse requires interior renovations and an addition to provide storage for maintenance equipment. Installing a water softener would be an asset for campers and reduce maintenance. Repairs are also needed along portions of pathway leading to the docks. The playground equipment and surfacing also needs replacement, equal to that of other parks, as the current equipment is outdated does not meet the needs of the current camp visitors.

There was discussion of providing a spray park element in one of the parks as a missing feature in the area. Having a small spray feature at the campground would provide a unique draw to the site since it does not have a swimming area. The addition of horseshoe pits and a volleyball or basketball court would also provide an active

element for campers as well as residents. The addition of some mini-cabin units is a popular trend that could be added to the campground.

Also working with volunteer groups in the area (such as the Friends of Calhoun Park) or others that may be able to support minor maintenance and operational programming at Calhoun Campground.

### **Calhoun Park Athletic Fields**

The current condition of the ball diamonds, fencing and dugouts are not adequate for play. Many of the fence outfielders are supported by temporary braces. The parking lot is haphazard and does not provide accessibility to the site. The soccer field requires expansion and re-grading to support competitive play. The fields currently draw 2000 people per year. To use the fields for tournaments and leverage the location next to the campground, new fence would be needed to expand the outfield. As the city continues to grow, more demand will be placed on the need for improved recreation sport fields, improved landscaping and support facilities for community use. Also, improving restroom facilities in the park would also allow for more programming and activities to take place.

### **Dam Portage**

Providing a designated canoe portage will increase the safety of those navigating the existing dam down the Tobacco River. This feature will encourage an additional type of recreation user the Beaverton area. The location near town will encourage more tourism in local stores as well. A function of this portage will also provide barrier free access and an excellent fishing opportunity and viewing of the unique aspects of the dam structure. The portage would use a ramped boardwalk to navigate a steep bank along the south side of the dam. This project would complement the East Ross lake Boat Launch area.

### **City-wide improvements**

Signage throughout the existing and proposed park facilities should be replaced with a consistent theme or design that identifies the locations as a city facility. The signage will promote the parks and inform visitors of park amenities and rules. The improved signage will have the effect of increasing park use and improving the quality of experience for visitors. Landscape areas as part of the signs will strengthen this feature.

### **Partnering, Promotion and Policies**

As the parks become more of an attraction, efforts should be taken to promote and program for various activities and quality of life within the community. Input from the public meeting and park committee discussed a future chamber of commerce / Downtown Development Authority role involving park and recreation duties. One idea that should be pursued is renting a mobile stage for key events or using portable bleachers for events such as during the 4<sup>th</sup> of July fireworks to accommodate larger crowds.

The valuable coordination with the Friends of Calhoun Campground should be continued. A memo of understanding should exist between the city, schools and volunteer organizations that clarifies roles and duties that encourages collaboration.

## FUNDING INITIATIVES

It is clear from the list of project needs and associated costs that leveraging available dollars are needed to accomplish the goals identified within this recreation plan. This section identifies potential sources to assist with this effort.

In addition to the city providing resources to parks from the general fund, there are other sources of funding for parks and recreation. These include user fees, bonds, grants, donations and foundations. The following is a brief description of these funding sources and options to increase revenue

- Increase in user fees as appropriate based on demand
- Promote expanded facilities for increased tournament use
- Continue grants or foundation support
- Continue and expand advertising opportunities at facilities
- Qualify adopt-a-park or friends of the park programs

### General Fund

Continue to allow for re-investment in facilities to avoid future increased maintenance costs and ensure revenue streams when possible.

### User Fee

Continue to charge reasonable fees to participants of recreation programs and key facilities. Evaluate the fees annually to ensure they are providing the appropriate amount of funding to allow the programs to continue.

### Bonds

Several bond programs can be used to finance construction of parks and recreation facilities. General Obligation Bonds are issued for specific community projects and may not be used for other purposes. These bonds are usually paid for with property tax revenues. Revenue bonds are issued for construction of public projects that generate revenues. The bonds are then retired using income generated by the project.

### Special Millage

A property tax millage can be used to finance specific park and recreation projects such as parkland improvements and facility upgrades. A millage is an effective method to divide costs over time among all the taxpayers in the community to provide matching grant funds or finance projects out-right. A millage allows more flexibility in how the money is used than a bond.

### Michigan Department of Natural Resources Grants

The Michigan Department of Natural Resources Trust Fund (MNRTF) Grant provides funding assistance for state and local outdoor recreation needs, including land acquisition and development of recreation facilities. This assistance is directed at creating and improving outdoor recreational opportunities and providing protection to valuable natural resources. These are grants between \$15,000 and \$500,000 with a

required minimum local match of 25 percent. Final engineering and construction services are covered at a maximum of 15%.

The Land and Water Conservation Fund (LWCF) provide grants to local units of government to acquire and develop land for outdoor recreation. At least 50 percent match on either acquisition or development projects is required from local government applicants. The Michigan Department of Natural Resources (DNR) makes recommendations to the National Park Service (NPS), which grants final approval. The Michigan Recreation Passport Grant program is funded by sales of 'passport' opt in participation for those wishing to access or support Michigan parks as part of their license renewal. Eligible projects are targeted for renovation and improvement to existing parks. Grants range from \$7,500 to \$75,000 with a minimum 25% local match, with the anticipation that the maximum grant amount will increase as revenue from sales of the Recreation Passport also increases.

The Michigan Invasive Species Grant program is funding that deals with the issues of prevention, detention, eradication and control for both terrestrial and aquatic invasive species in Michigan. The scope of the grant must prevent new invasive species from being introduced, strengthen state-wide invasive species early detection and response network, limit the dispersal of recently confined invasive species and manage and control widespread, long-established invasive species. These grants are between \$25,000 with a maximum grant amount between \$60,000 and \$400,000.

Clean Vessel Act are provided for funding upgrades to marine sewage disposal facilities or new pump outs and dump stations. These grants are available to public and private facilities; pending that they are open to the public. Funding that is made available for this grant are approximately \$200,000.

Waterways Program Grant is available for communities to provide both financial and technical assistance for design and construction of public recreational boating facilities (including state-sponsored harbors and mooring facilities). Information that is collected deals with traffic for the harbor and the last three financial summaries for the harbor. The amount depends on the base amount for the project; the grant normally provides 50% of the estimated project cost.

Boating Infrastructure Grant is also offered from the MDNR providing federal assistance for the design and construction of public recreational harbor facilities. Grant funds are used to cover 75% of the total approved project costs for construction of infrastructure improvements.

State Water Trail Designation Program is a new program that is under the direction of the MDNR that will classify certain water trails in communities as state water trails. Partnering groups and organizations would be vital in surrounding the community in pursuing the grant. Funding sources are still being reviewed and analyzed; but funding is expected to be finalized in 2019.

Other DNR grants include specialized opportunities such as the Urban and Community Forestry (UCF) program, funded through the USDA Forest Service's state and Private

Forestry program and the Water Trail Designation Program. Local units of government, nonprofit organizations and schools are eligible to apply. Projects include: street and park tree management and planning activities; urban forestry training and education events; tree plantings; and Arbor Day celebrations.

### **Michigan Department of Transportation**

The Transportation Alternatives Program (TAP) provides funding for numerous types of projects that support the enhancement of transportation facilities and promote safe and efficient multi-modal transportation methods. This is a reimbursement program that originally comes from the federal level and is administered by the Michigan Department of Transportation (MDOT). A minimum of 20% local match is required for proposed projects.

### **Michigan Department of Environmental Quality (MDEQ) Grants**

Funding sources in the MDEQ are available through the Clean Michigan Initiative (CMI) program. Funding is used to secure and provide protections for water and coastline areas to prevent contamination and erosion control. Some of the grants available include the Waterfront Redevelopment Grant, which deals with increasing public access to the waterfront and supporting economic development in areas. Another grant through the MDEQ are Coastal and Estuarine Land Conservation Programs (CELCP) Grant which deals with coastal areas, protecting rare and threatened species and natural communities. Maximum grants are capped at \$1,500,000 with no minimum grant requirement. The Coastal Zone Management (CZM) Grant is available to those communities with direct Great Lakes access. The total grant funds available are not to exceed \$100,000; with an equal match from the community.

### **Community Development Block Grants (CDBG)**

Projects eligible for CDBG funding must be in a low-moderate income service area and/or provide access to the disabled to qualify. Investments using CDBG funds must provide a documented benefit to low-moderate income households. Projects eligible for funding include public infrastructure improvements and those that provide ADA accessibility.

### **MEDC Patroncity Crowd Funding**

The Michigan Economic Development Corporation (MEDC) has developed an additional way of securing funding for community development projects by using crowd-funding to support developments. Communities, non-profits, and municipalities can submit projects by applying to the Patroncity campaign. The projects that meet the programs parameters and successfully crowd-fund their goal will receive a matching grant from the MEDC of up to \$50,000.

### **Donations**

Businesses, corporations, private clubs, community organizations and individuals will often contribute to recreation and other improvement programs to benefit the communities in which they are located. Private sector contributions may be in the form of monetary contributions, the donation of land, the provision of volunteer services or the contribution of equipment or facilities.

### **Michigan Natural Resources Tree Planting Grants**

Through the Michigan Department of Natural Resources, there are three tree planting, grant programs that will assist in funding landscape enhancements at the park and reforestation projects. Applicants must provide at least 50% of the total project cost.

### **Conservation Easements**

A conservation easement is a method of preserving open space that is guaranteed through formal documentation. Rather than obtaining fee simple or complete ownership, an organization or community can purchase or acquire by gift an 'easement' to the property.

### **Public-Private or Public-Public Partnerships**

Reduced funding at the public and private sector has created a need for various partnerships between public and private entities, as well as between two or more public entities to accommodate specialized large-scale recreation demands.

### **Foundations**

A foundation is a special non-profit legal entity established as a mechanism through which land, cash and securities can be donated for the benefit of parks and recreation services. The assets are disbursed by the foundation Board of Directors according to a predetermined plan.

These grant funding opportunities can be accessed through the *Michigan Foundation Directory*.



## APPENDIX A Documentation

Public Input Meeting Agenda and meeting notes

Advertisements

Resolution

Meeting Minutes

Transmittal Letter

Plan Certification Checklist

Post-Completion Form

City of Beaverton  
City Council Agenda for the Regular Meeting of  
Monday, December 17, 2018  
6:00 pm

COUNCIL

Mayor – Ray Nau  
Member – Terry McCartney  
Member – Kevin Neville  
Member – Tim Danielak  
Member – Nellie List  
Member – Nila Frei  
Member –

1. Roll Call 6:00 pm
2. Pledge of Allegiance
3. Approval of Agenda
4. Public Comment *This is an opportunity for persons to address the Council on issues relevant to City business but not on the meeting agenda. Please state your name and address.*
5. Adoption of Meeting Minutes: Regular Meeting November 5, 2018
6. Public Hearing: Parks & Rec Plan
7. Agenda Items:
  - A. Janelle Keen, City Clerk: Oath of Office for council members
  - B. Adoption of Bond Authorizing Ordinance (Hydro Dam)
  - C. Consideration of letters of interest for open City Council seat
  - D. Consideration of 2019 City Council Meeting Schedule
  - E. Consideration of appointing Kevin Neville as Mayor Pro Tem
  - F. Consideration of quotes for power washer
  - G. Consideration of quotes for spill gate chain replacement
  - H. Appointment of election inspectors/inspector chair/compensation
  - I. Consideration of City Manager's retro pay
  - J. Consideration of opting out of the Michigan Regulation and Taxation of Marijuana Act
  - K. Consideration of zoning issues on M-18
  - L. Consideration of amendment to Section 5.195.04 of the zoning ordinance
  - M. Consideration of IT Plan for bidding documents for New City Hall
  - N. Resolution 2018-26: Purchase Agreement for new police vehicle; proposal on installment purchase
  - O. Consideration of snow plow equipment option
  - P. Consideration of feral cat policy
  - Q. Resolution 2018-27: Authorization for Mayor Nau to execute documents pertaining to purchase of property at 418 Ross Street
  - R. Ilene Meehan: Master Gardner's
8. Reports:
  - A. County Commissioner's Report
  - B. DPW Report/Robert Sabisch-PFAS Report, Northern Pump & Well quote, Ferguson proposal
  - C. Police Report/Chief Brad Davis-Life Saving Award for Officer Doyle
  - D. Mayor's Report/Ray Nau
  - E. City Manager's Report/Heath Kaplan-Annual Audit Report(s)
  - F. Engineer's Report/Mike Faeth
  - G. Library Use Data Report
10. Ways & Means: Payment of Bills for November 2018: \$ 132,276.33

11. Committee Reports

- A. Fire Board
- B. Fair Board
- C. Parks and Recreation
- D. Police Committee
- E. Personnel Committee
- F. Downtown Development Authority

12. Communications

-Rising Tide meeting will be December 21, 2018, 6:00pm at Riverwalk Place. Dinner served at 7:00pm

12. Adjournment

# AFFIDAVIT OF PUBLICATION

*Notice 5 Year Parks and Rec Program  
In The Matter of Beaverton City*

**NOTICE FOR PUBLIC HEARING  
ON 5 YEAR PARKS AND  
RECREATION PLAN  
CITY OF BEAVERTON**

The City of Beaverton City Council will conduct a Public Hearing on Monday, December 17, 2018, beginning at 6:00 p.m., at the Beaverton Activity Center, 106 Tonkin Street, Beaverton, Michigan 48612.

The purpose of the hearing is to gain feedback from all persons interested in or wishing to comment on the 5 year Parks and Recreation Plan (2019-2023) for the City of Beaverton.

A copy of the proposed 5 year Parks and Recreation Plan is available for public inspection from Monday, November 5, 2018 through Friday, December 14, 2018 at the City Offices (124 W. Brown Street) Monday through Friday from 8:00 a.m. until 4:30 pm or the Beaverton Library (106 Tonkin Street) during normal business hours.

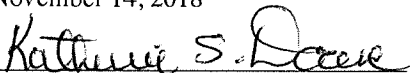
Written comments will be considered and may be forwarded to City Hall until 4:30 p.m. the day of the hearing. Please call (989) 435-3511 for further information.

Ray Nau, Mayor  
City of Beaverton

**STATE OF MICHIGAN ss  
COUNTY OF GLADWIN**

Katherine S. Doane being duly sworn, says that she is the Publisher of The Gladwin County Record, Inc., a newspaper published in the English language for the dissemination of local or transmitted news and intelligence of a general character and legal news, which is a duly qualified newspaper, and that annexed hereto is a copy of a certain order taken from said newspaper, in which the order was published on the following dates, to wit:

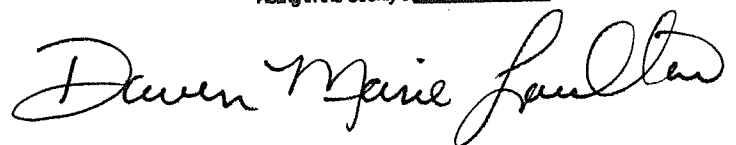
November 14, 2018



Katherine S. Doane, Publisher

Subscribed and sworn before me this  
14<sup>th</sup> day of November 2018

**DAWN MARIE LAIDLAW**  
Notary Public, State of Michigan  
County of Gladwin  
My Commission Expires Aug. 13, 2019  
Acting in the County of Gladwin



**RESOLUTION 2019-4  
ADOPTION OF FIVE YEAR PARKS  
AND RECREATION  
PLAN (2019-2023)  
FOR THE CITY OF BEAVERTON**

WHEREAS, the City Council has made investigations of the existing recreation resources and probable future need for recreation lands, facilities, and services; and

WHEREAS, the plan provides detailed recommendations for park and recreation facilities, and recreation programming with a prioritized list of capital improvements for the next five year; and

WHEREAS, the foundation of the plan is established with the Action Program consisting of overall goals and supporting objectives and specific action programs for the next five years; and

WHEREAS, said plan is represented to meet the requirements of the Michigan Department of Natural Resources, thereby making Beaverton eligible for State and Federal grants administered by the Michigan Department of Natural resources; and

WHEREAS, said council held a public meeting on the Five-Year Parks and Recreation Plan to provide an opportunity for citizen comments and subsequently adopted said Recreation Plan;

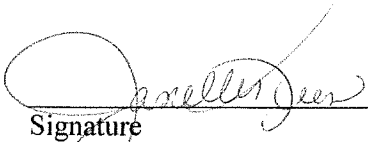
THEREFORE, BE IT RESOLVED, that the Beaverton City Council does hereby adopt the Five-Year Parks and Recreation Plan for the City of Beaverton.

AYES: Terry McCartney, Kevin Neville, Nellie List, Nita Frei, David Shears

NAYS: NONE

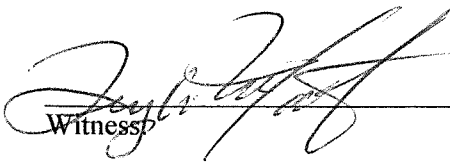
ABSENT: TIM Danielak

Adopted: January 30, 2019

 City Clerk  
Signature Title

1-30-19  
Date

ATTESTED

  
Witness

MINUTES OF REGULAR BEAVERTON CITY COUNCIL MEETING

December 17, 2018

Meeting was called to order by Mayor Pro Tem Kevin Neville at 6:00 pm

Present: Council members, Nellie List, Terry McCartney, Nila Frei, Tim Danielak, Kevin Neville

Absent: Mayor Ray Nau

Also Present: City Manager Heath Kaplan, Officer Robert Doyle, and Officer Steve Cingano, City Clerk Janelle Keen, DPW supervisor Robert Sabisch, City Attorney Tara Hovey and members of the community

Pledge of Allegiance was recited by all present

Approval of Agenda with Amendment: Move Master Gardener Speakers to the top of Agenda. Motion by Danielak, second by McCartney. All voting aye, motion approved

Public Comment: Questions as to repairs of building on Brown St., Nila Frei thanked officers and 1<sup>st</sup> responders for the Shop with a Hero program, Reverend Blatt inquired about the status of the Parks & Rec Plan and if the Layne Mercer project was completed

Approval of Meeting Minutes: Motion by Frei, second by McCartney. All voting aye, motion approved

Public Hearing: Motion by Danielak to open up public hearing for Parks & Recs Plan, second by McCartney. Public Hearing opened at 6:07pm. Doug Schultz from Rowe Engineering presented 5 Year Rec Plan draft. Motion by Danielak, second by McCartney to close public meeting. All voting aye, motion approved. Public Meeting closed at 6:12pm.

Business Agenda Items:

- R. (Item R moved to top of agenda) Master Gardener Ilene Meehan presented request for City to water flowers for the Master Gardeners 2/week and the possibility of City providing mulch for the 2019 growing season. City and Master Gardeners will visit request again in the spring of 2019. Motion by Danielak, second by McCartney to present Master Gardeners 4 gift certificates from Beaverton Tavern for their hard work beautifying the City of Beaverton with their flower beds. All voting aye, motion approved
- A. Returning council members Neville and List were sworn in by City Clerk Janelle Keen
- B. Adoption of Bond Authorizing Ordinance (Hydro Dam): Motion by Danielak, second by McCartney to table until a later date. All voting aye, motion approve
- C. Motion by Danielak, second by McCartney to appoint Davis Shears to the City Council. Roll call vote, McCartney aye, Neville aye, Danielak aye, List aye, Frei aye. All voting aye, motion approved. Shears was sworn in by City Clerk Janelle Keen.
- D. Motion by Frei, second by McCartney to approve 2019 City Council meeting schedule. All voting aye, motion approved
- E. Motion by McCartney, second by Frei, to appoint Kevin Neville as Mayor Pro Tem. All voting aye, motion approved
- F. Motion by McCartney, second by Frei to purchase a power washer for the DPW. All voting aye, motion approved
- G. Motion by Danielak, second by Shears to accept the bid from Able Diving Company to replace the spill gate chains. All voting aye, motion approved
- H. Motion by Frei, second by McCartney to appoint Tina Andrist, Janelle Keen and Ed Rachwitz to election commission, Colleen Allen as the Election Chair and Colleen Allen, Nellie List, Helen Murray, MaryAnn Scott and Marlene Dean-Doran as the election committee, election chair compensation at \$12/hr and election inspectors at \$10/hr. All voting aye with the exception of List who abstained, motion approved
- I. Motion by McCartney, second by Frei to raise City Manager's salary to \$65,000/yr and retro pay back to September 18, 2018. All voting aye, motion approved
- J. Motion by List, second by McCartney to obtain an ordinance prepared by Tara Hovey to opt out of the Michigan Regulation and Taxation of Marijuana Act. Ordinance will be presented at the January 28, 2019 Council Meeting. All voting aye, motion approved



- K. Motion by Danielak, second by McCartney to go into closed session at 7:01pm to discuss zoning issues. All voting aye, motion approved. Motion by McCartney, second by Frei to end closed session at 7:20pm. All voting aye, motion approved.
- L. Motion by McCartney, second by Danielak for Planning Commission to draw up an amendment to Section 5.195.04 of the zoning ordinance to accommodate building a wedding barn. All voting aye, motion approved
- M. Motion by Danielak, second by Shears to accept bid in the amount of \$ 2,400 from Heiden Tech. Solutions for IT plan at new City Hall building. All voting aye, motion approved
- N. Resolution 2018-26: Motion by McCartney, second by Frei to obtain purchase agreement for new police vehicle to be financed with Chemical Bank with installment loan. Roll call vote; McCartney aye, Neville aye, Danielak aye, List aye, Frei aye, Shears aye. All voting aye, resolution approved.
- O. Motion by Shears, second by McCartney to purchase equipment for snow plow. All voting aye, motion approved.
- P. The City will set live traps to catch feral cats. Cats will be taken to the Gladwin County Animal shelter to be spayed and neutered and put up for adoption
- Q. Resolution 2018-27: Motion by Danielak, second by McCartney to authorize Mayor Ray Nau to execute documents pertaining to purchase of property at 418 Ross Street. Roll call vote: McCartney aye, Neville aye, Danielak aye, List aye, Frei aye, Shears aye. All voting aye, resolution approved
- R. Item R moved to top of agenda
- S. Motion by Danielak, second by Frei to re-appoint Madalin Steyer to Library Board. All voting aye, motion approved

Reports:

- A. -County Commissioner Rick Grove: No report
- B. -DPW Supervisor Robert Sabisch: PFAS Report; non-detect, Motion by Frei, second by McCartney to approve annual maintenance program from Northern Pump & Well for a total of \$400/yr. All voting aye, motion approved. Motion by Frei, second by Danielak to accept proposal from Ferguson for Neptune AMR system. All voting aye, motion approved
- C. -Police Report: Written report provided, Life Saving Award was presented by Officer Davis to Officer Doyle
- D. -Mayor's Report: Mayor Pro Tem Kevin Neville gave update on Mayor Nau
- E. -City Manager's Report: City Manager Kaplan introduced Rising Tide Fellow Joe Frey, 2016 and 2017 audits have been completed
- F. -Engineer's Report, Mike Faeth: EDA grant applied for, invited for full application
- G. -Library Use Data Report: Searching for library director, interviews are being conducted

Ways & Means: Motion by McCartney, second by Shears to approve bills paid for November 2018 in the amount of \$ 132,276.33. All voting aye, motion approved

Committee Reports:

- A. -Fire Board: No report
- B. -Fair Board: No report
- C. -Park & Recreation: Meeting schedule will be set, 1<sup>st</sup> meeting will be January 7, 2019 at 10:30 at BAC
- D. -Police Committee: No report
- E. -Personnel Committee: City Manager's salary discussed in item I of agenda
- F. -Downtown Development Authority: Information meeting only in December due to no quorum, purchase of Comerica building completed

Communications: Questions on lowering the flag at Ross Lake Park, City Manager receives emails when flags should be lowered, Annual BABA wine & cheese gathering is January 17 from 5pm-7pm at the Community Center.

Motion by Danielak, second by McCartney to adjourn meeting at 8:28pm. All voting aye, motion carried.

Respectfully submitted,

Janelle Keen  
City Clerk



# ROWE PROFESSIONAL SERVICES COMPANY

*Large Firm Resources. Personal Attention.™*

January 7, 2019

Mr. Bill Ernat, Regional Planner  
East Michigan Council of Governments  
3144 Davenport Avenue  
Suite 200  
Saginaw, MI 48602

RE: Five-Year Parks and Recreation Plan 2019-2023  
City of Beaverton

Dear Mr. Ernat:

On behalf of the City of Beaverton, please find attached for your use a copy of the recently adopted Recreation Master Plan for the city. The plan will be adopted by the City Council.

The city is submitting a final document to the Michigan Department of Natural Resources (MDNR) for acceptance. The plan was developed with our assistance and under the direction of both municipalities and community input.

Please contact Mr. Heath Kaplan at (989) 435-9343 or me at (810) 341-7500 with any questions.

Sincerely,  
ROWE Professional Services Company

Blake D. Strozier  
Graduate Landscape Architect

Attachment

R:\Projects\18M0014\Appendix\EMCOG Transmittal Letter 12-10-18.doc

Engineering | Surveying | Aerial Photography/Mapping | Landscape Architecture | Planning  
Mt. Pleasant: 127 S. Main Street • Mt. Pleasant, MI 48858 • O (989) 772-2138 • F (989) 773-7757

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[www.rowepsc.com](http://www.rowepsc.com)



# ROWE PROFESSIONAL SERVICES COMPANY

*Large Firm Resources. Personal Attention.™*

January 7, 2019

Gladwin County Economic Development Corporation  
110 Buckeye Street  
Gladwin, MI 48624

RE: Five-Year Parks and Recreation Plan 2019-2023  
City of Beaverton

To Whom It May Concern:

On behalf of the City of Beaverton, please find attached for your use a copy of the recently adopted Recreation Master Plan for the city. The plan will be adopted by the City Council.

The city is submitting a final document to the Michigan Department of Natural Resources (MDNR) for acceptance. The plan was developed with our assistance and under the direction of both municipalities and community input.

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Sincerely,  
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Blake D. Strozier  
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Attachment

R:\Projects\18M0014\Appendix\Gladwin County EDC Transmittal Letter 12-10-18.doc

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# COMMUNITY PARK AND RECREATION PLAN

## CERTIFICATION CHECKLIST

By Authority of Parts 19, 703 and 716 of Act 451, P.A. 1994, as amended, submission of this information is required for eligibility to apply for grants

**INSTRUCTIONS:** Complete, obtain certification signatures and submit this checklist with a locally adopted recreation plan.

All recreation plans are required to meet the content and local approval standards listed in this checklist and as outlined in the *Guidelines for the Development of Community Park and Recreation Plans* provided by the Michigan Department of Natural Resources (DNR). Plans must be submitted to the DNR through MiRecGrants **with** a completed checklist that has been signed by an authorized official(s) of the local unit of government(s) submitting the plan. Plans may be submitted at any time of the year, but no later than February 1 of the year the local unit of government is applying for grants.

### PLAN INFORMATION

Name of Plan: City of Beaverton Five Year Parks and Recreation Plan		
List the community names (including school districts) that are covered under the plan and have passed a resolution adopting the plan.	County	Month and year plan adopted by the community's governing body

### PLAN CONTENT

**INSTRUCTIONS:** Please check each box to certify that the listed information is included in the final plan.

**1. COMMUNITY DESCRIPTION**

**2. ADMINISTRATIVE STRUCTURE**

- Roles of Commission(s) or Advisory Board(s)
- Department, Authority and/or Staff Description and Organizational Chart
- Annual and Projected Budgets for Operations, Maintenance, Capital Improvements and Recreation Programming
- Current Funding Sources
- Role of Volunteers
- Relationship(s) with School Districts, Other Public Agencies or Private Organizations

**Recreation Authorities or Trailway Commissions Only:**

- Description of the Relationship between the Authority or Commission and the Recreation Departments of Participating Communities
- Articles of Incorporation

**3. RECREATION INVENTORY**

- Description of Methods Used to Conduct the Inventory
- Inventory of all Community Owned Parks and Recreation Facilities
- Location Maps (site development plans recommended but not required)
- Accessibility Assessment
- Status Report for all Grant-Assisted Parks and Recreation Facilities
- Waterways Inventory (if applicable)

**4. RESOURCE INVENTORY (OPTIONAL)**

**5. DESCRIPTION OF THE PLANNING PROCESS**

**6. DESCRIPTION OF THE PUBLIC INPUT PROCESS**

Description of the Method(s) Used to Solicit Public Input Before or During Preparation of the Plan, including a Copy of the Survey or Meeting Agenda and a Summary of the Responses Received

Copy of the Notice of the Availability of the Draft Plan for Public Review and Comment

Date of the Notice November 14, 2018

Type of Notice Newspaper Article

Plan Location Beaverton City Offices and Beaverton Library

Duration of Draft Plan Public Review Period (Must be at Least 30 Days) Nov. 5 - Dec. 14, 2018

Copy of the Notice for the Public Meeting Held after the One Month Public Review Period and Before the Plan's Adoption by the Governing Body(ies)

Date of Notice November 14, 2018

Name of Newspaper Gladwin County Record

Date of Meeting December 17, 2018

Copy of the Minutes from the Public Meeting

**7. GOALS AND OBJECTIVES**

**8. ACTION PROGRAM**

**9. POST-COMPLETION SELF-CERTIFICATION REPORT(S)**

**PLAN ADOPTION DOCUMENTATION**

**APPROVAL DOCUMENTATION:** For multi-jurisdictional plans, each local unit of government must pass a resolution adopting the plan. Prepare and attach a separate page for each unit of government included in the plan.

1. Official resolution of adoption by the governing body dated: January 28, 2019

2. Official resolution of the \_\_\_\_\_ Commission or Board, recommending adoption of the plan by the governing body, dated: \_\_\_\_\_

3. Copy of letter transmitting adopted plan to County Planning Agency dated: January 7, 2019

4. Copy of letter transmitting adopted plan to Regional Planning Agency dated: January 7, 2019

**OVERALL CERTIFICATION**

**NOTE:** For multi-jurisdictional plans, Overall Certification must include the signature of each local unit of government. Prepare and attach a separate signature page for each unit of government included in the plan.

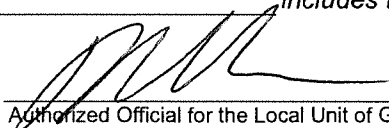
*I hereby certify that the recreation plan for*

City of Beaverton

(Local Unit of Government)

above and as set forth by the DNR.

*includes the required content, as indicated*

  
Authorized Official for the Local Unit of Government

1/28/19  
Date

**This completed checklist must be uploaded in MiRecGrants.**

# APPENDIX B

## Ross Lake Study





## Ross Lake, Gladwin County

### Introduction

Ross Lake is a 294 acre impoundment of the Cedar and Tobacco Rivers about 6 miles south of Gladwin in the Village of Beaverton. The Impoundment has a Township Park with a gravel launch, parking, beach and picnic area located off M-18. About 45% of the shoreline has houses on it, and about half of those have docks. Moderate boating and jet skiing activity occurs during the summer months.

The topography surrounding Ross Lake is generally flat. Soils are mostly sand and clay, with the dominant vegetation being shrubs, birch and poplar. The lake is within the Cedar River watershed. The Cedar River, North Br. Tobacco, Middle Br. Tobacco, South Br. Tobacco, and several small drains are the inlets to Ross Lake. The outlet is the Tobacco River which drains into the Tittabawassee River to the Saginaw River, and eventually to Saginaw Bay.

### Shoreline features

Ross Lake is an impoundment, with several submerged stream channels. There are several embayments, and the impoundment has a long, irregular shape. The lake is 294 acres in size with a maximum depth of 19 ft., the head height at the dam. Much of the lake is less than 15-ft. deep. Submergent vegetation is not a problem due to the impoundment's high turbidity. The drop-offs are gradual except in the old river channels. The bottom of the shoals is sand, clay and pulpy peat. The bottom in the deeper areas is pulpy peat.

### Limnological Parameters

The maximum depth is roughly 19 feet. Limnological parameters measured on 8/19/03. Temperature gradually changes from a surface temperature of 77F and a bottom temperature of 72F. There was no strong thermocline. Dissolved oxygen concentrations appear fish limiting (<4ppm) below the 12 foot depth. PH appeared normal for the area and ranged from 7.6 at the bottom to 8.4 at the surface. Specific conductivity measurements ranged from 453 to 478 micro mho, table 1.

DateTime M/D/Y	Temp F	SpCond uS/cm	DO % %	DO Conc mg/L	DO Charge	Depth ft	pH	pHmV mV
08/19/2003 11:18	77.21	464	157.8	13	44	0.752	8.43	-121
08/19/2003 11:18	76.7	465	129.3	10.7	43	3.131	8.43	-120.6
08/19/2003 11:19	75.28	450	112.6	9.46	41	6.179	8.25	-110
08/19/2003 11:20	73.27	479	65.1	5.58	36	9.058	7.82	-84.1
08/19/2003 11:20	72.67	453	55.2	4.76	35	12.133	7.9	-88.8
08/19/2003 11:21	72.25	478	35.7	3.09	32	14.018	7.69	-76.6

Ross Lake had an ammonia reading of .018 mg/l, and a nitrate/nitrite nitrogen reading of 0.019 mg/l. It had total nitrogen Kjeldahl reading of 0.906 mg/l. The total phosphorus for Ross Lake was 0.034 mg/l. The lake's total alkalinity was 193mg/l. Pratt Lake had a chlorophyll reading of 5.4 micro grams per liter. This was on the higher end of the lakes tested in 2004

### Habitat

Submerged logs or downed trees are sparse, but submerged stumps are fairly common in Ross Lake. The dominant type of fish habitat is gradual drop-offs, the river channel, docks from cottages, and aquatic vegetation. Vegetation present includes milfoil, patches of lily pads, and emergent bulrushes, reeds and cattails. Turbidity limits the submergent vegetation.

### Past Fisheries Management

County	Water	Species	Date	Number	Avg. Length	Operation	Fin Clips, Marks,
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Ross Lake, Gladwin County

	Site (Town Range Section)	Strain			(in.)		Tags
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Muskellunge <i>Northern</i>	7/10/1984	835	4.32	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Muskellunge <i>Northern</i>	7/23/1987	2,724	5.76	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 01W 07)	Muskellunge <i>Northern</i>	9/12/1997	600	11.64	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Muskellunge <i>Northern</i>	9/28/2000	800	10.76	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Muskellunge <i>Northern</i>	11/18/2003 11:11:00 AM	1,453	10.16	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 01W 07)	Walleye	5/21/1979	300,000	0.36	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye	5/21/1979	200,000	0.32	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye	5/27/1981	500,000	0.32	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye	5/16/1983	900,000	0.36	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye	4/25/1984	2,000,000	0.04	State Plant	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Bay De Noc</i>	6/23/1992	9,561	2	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Muskegon</i>	10/30/1989	6,382	4.16	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Muskegon</i>	6/21/1989	6,630	1.84	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Muskegon</i>	6/16/1989	3,570	1.72	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Muskegon</i>	6/18/1990	15,901	1.84	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 01W 07)	Walleye <i>Muskegon</i>	6/17/1995	16,128	1.84	Marsh & Rearing Pond Release	none





## Ross Lake, Gladwin County

Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Ohio</i>	6/13/1991	7,776	1.8	Marsh & Rearing Pond Release	none
Gladwin	Ross Lake ROSS LAKE (17N 01W 07)	Walleye <i>Tittabawassee</i>	5/31/2000	28,545	1.28	Marsh & Rearing Pond Release	oxytetracycline
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	Walleye <i>Tittabawassee</i>	6/19/2002	27,582	1.36	Marsh & Rearing Pond Release	oxytetracycline
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	White bass	5/8/1986	25	12.48	Transplant of Wild Fish	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	White bass	6/11/1986	95	8.64	Transplant of Wild Fish	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	White bass	5/15/1987	55	11.16	Transplant of Wild Fish	none
Gladwin	Ross Lake ROSS LAKE (17N 02W 12)	White bass	5/15/1988	55	11.16	Transplant of Wild Fish	none

### History of Beaverton Dam

Ross Impoundment dam was built in 1919 by the Ross brothers. They sold the dam to Consumers Power who operated the dam for hydropower until the mid 1960's. In 1967, Consumers sold the dam to the City of Beaverton. From 1967 to 1984 the city used the dam only as a flood control structure. Ross Impoundment was drawn down a number of times during this time-frame for various reasons. In 1984, the present turbine was installed. Catalyst Energy Development Corporation operated the dam for hydroelectric power under a lease agreement from the City of Beaverton. During this time there were problems with the water released through the dam, and residents noticed intermittent down stream flows from 1985 to 1986, but these events were infrequent and of short duration. In 1987, dry weather and low in stream conditions decreased the stream discharge even further, and the frequency of water stoppages increased. More complaints arose. In 1988, record droughts decreased the discharges even more. The turbine operation was computer controlled, and major fluctuations of the river discharge occurred frequently on some days. The computer adjustments were under the control of Alward Electric, Plumbing and heating, Inc. of Gladwin. This was in violation with the Federal Energy Regulatory Control (FERC) license. A FERC inspection in 1989 revealed a number of violations and outlined corrections. Data thereafter is sketchy, and complaints appear to have stopped. The inspection also pointed out a need to improve recreational access to the tailwater area of the facility. Most of these problems didn't have direct impact to the impoundment except in the establishment of a set range of water levels.

Although management records are scant, records do indicate that bluegills, bass, perch, and some walleye fry were stocked from 1937- 1944. The first survey on record was in 1951. Game fish present in the survey catch included: northern pike, largemouth bass, smallmouth bass, bluegill, pumpkinseed sunfish, yellow perch, rock bass, and black crappie. Forage fish included bluntnose minnow, mimic shiners, blackchin shiners, spotfin shiners, rosey face shiners, banded killifish, and lohny darters. Rough fish included white suckers, redhorse, northern hogsuckers, and carp.

The lake was treated with rotenone in 1967 to remove rough fish, but re-establishment occurred in a short time. Another survey was conducted in 1971. This survey deployed only gill nets. Species noted in this survey in addition to 1951 included walleye, bullheads, and golden shiners. Rough fish abundance appeared to be high. In 1976 a more thorough treatment was carried out which included the South Branch Tobacco River downstream of Clare and the Cedar River downstream from Gladwin. An excellent, if not total kill, was realized in the treated





## Ross Lake, Gladwin County

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waters. However, the size and complexity of the watershed made it impractical to treat the entire watershed. Catfish, steelhead, largemouth bass, crappies, brown trout and bluegill were subsequently stocked. An electrofishing survey in 1977 revealed that numerous young of the year carp were still present. Recommendations were made for a follow-up antimycin partial treatment for 1978, but no documentation exists for whether that was ever done.

A netting survey was conducted in 1981 to assess the fish population following the 1976 treatment. The analysis mentions that the carp and bullhead levels had returned to pre-treatment levels. Crappies, catfish, and northern pike were fairly abundant and of decent sizes. The panfish and rest of the gamefish populations appeared poor. In 1987, a prescription was written to address the problem of low populations of predator species, and over abundance of rough fish. The actions to be implemented included initiating the stocking of 2000 northern muskellunge fingerlings annually and the stocking of 300 adult white bass for three consecutive years. Muskellunge were actually stocked as early as 1984. Another prescription in 1989 added walleyes to the stocking request. Walleye fingerling rearing and stocking was becoming more feasible. The first walleye fingerlings were stocked 1989. The lake has been managed with walleye and muskellunge ever since. A netting survey was also conducted in 1987. The survey revealed a similar species complex. Four white bass and one walleye were netted. Rough fish numbers were still high. Golden shiners, common shiners, and creek chub were the forage species noted. Sizes and numbers of panfish appeared improved. Eighty one percent of the bluegills were of catchable size. Predator numbers were still low. Growth of panfish was only slightly below state average. A subsequent night electrofishing showed largemouth bass to be growing +1.9 inches above state average. Two walleyes, one pike, and 6 smallmouths were also captured.

In 1991, a boomshocking survey was conducted to assess the walleye stocking program. No young of the year were observed, and not enough of the other species were collected to perform a growth analysis.

In 1995 a netting survey was conducted to again evaluate the status of the fish community and the walleye and muskellunge stocking programs. Only 2 walleyes, and 10 northern muskellunge were captured during the survey. Management recommendations indicated a continuation of the program, and possibly increasing walleye stocking rates.

In 2000, we conducted another electrofishing survey to assess the stocking programs. Ten young of year walleyes and five young of year northern muskellunge were captured. The survey also noted one adult walleye, and 2 adult muskellunge being seen. This is the best documentation of walleye survival to date, but this is still considered a poor year class according to the Serns Index.

### Survey objective

The objective of the 2003 survey was to update Fisheries Division files on the present status of the fishery. Ross Lake was selected as a medium size-deep lake to test sampling procedures and fish dynamics for statewide comparison as part of the Resource Inventory Program – Status and Trends monitoring.

### Methods

Combinations of gears were used to collect fish samples representative of Ross Lake. Efforts followed recommendations of the Resource Inventory Program committee. Each gear type is subject to certain biases which must be considered when reviewing catch data. Trap and fyke nets were used to sample fish moving through the littoral zone. Experimental gill nets were used to sample the deep water zones. Seines are made to sample forage fish, and night time electrofishing typically samples a variety of small as well as large fish. Collectively, the catch from each gear type allows for reasonable interpretation of the overall fish community.

### Results

A total of 1679 fish representing 22 species were collected in this assessment. Trap nets accounted for 44% of the total catch, fyke nets accounted for 27%, electrofishing accounted for 29%, experimental gill nets accounted for 1.1%, and seining accounted for 0.8%. All fish caught in this survey were collected in previous surveys, except for johnny darters, bluntnose minnows, and sand shiners. These were not noted in previous surveys, and are minnow species that were picked up while night electrofishing and seining.





## Ross Lake, Gladwin County

Black crappie were most common in the survey catch. The 1097 captured represented 65.3% of the survey catch. Black crappie ranged from 2 to 12 inches, and averaged 7.3 inches. Sixty-seven percent of the crappie collected were of desirable angling size ( $\geq 7$  inches). This seems much improved from past years. Six year classes of black crappie were aged, and they are now growing below state average at -0.7 inches.

Ross Lake is also one of the few lakes with white crappie. Thirty-seven white crappie were netted ranging from 6-13 inches. They averaged 9.1 inches. Black and white crappie do hybridize, so it is possible that we see crappies with intermediate characteristics between the two.

Bluegills were the second most numerous species caught in survey. The 141 caught represented 8.4% of the survey catch by number. Combining all gear types, bluegills ranged from 1-9 inches, and averaging 5.4 inches. Bluegills captured in the trap nets averaged 5.4 inches. Twenty-nine percent of the bluegills surveyed in this assessment were of desirable angling size ( $\geq 6$  inches). Bluegills are growing +0.5 above state average. Four year classes were aged. Another way to look at bluegill size structure is to use the Schneider index (Schneider, 1990).

Table 2. Schneider Index for classifying bluegill lakes using trap net gear.

Sample date	5/5/2003	
Sample size	83	
Water temp.	55	
Ave. length (in.)	5.4	2
% $\geq 6$ inches	26.5	3
% $\geq 7$ inches	2.4	2
% $\geq 8$ inches	2.4	5
Index score	3	
Rank	acceptable	

Ross Lake has a Schneider index of 3 on the scale of 0 to 7 where 7 is the very best. This bluegill population rates as acceptable, but the population has fewer larger fish. Growth is excellent.

Largemouth bass and smallmouth bass were both present in the survey catch. Twenty-five largemouth and thirty-two smallmouth were captured. They represented 2.4% of the overall survey catch. Smallmouth bass ranged from 6-18 inches and averaged 13.2 inches. Fifty percent of the smallmouth were legal sized, equal to or greater than 14 inches. Smallmouth were represented by 8 year classes, and were growing at -0.5 below state average. Largemouth bass ranged from 8 to 19 inches, and averaged 14.5 inches. They were represented by 7 year classes and were growing at +1.1 above state average. Sixty-four percent of the largemouth bass sampled were legal size ( $\geq 14$  inches). Anglers have great opportunity to fish for bass in Ross Lake. These bass should also provide excellent predatory control on the panfish population. By weight, bass made up over 10% of the biomass of this survey.

Eighteen walleyes were captured during this survey. They ranged from 6-18 inches, and averaged 10.6 inches. Twenty-two percent were legal size ( $\geq 15$  inches). Many of the walleyes collected were yearlings, indicating survival from the 2002 stocking or natural year class. All 14 of these were collected by the electrofishing. The others were age III, V, VIII, and IX. Age III matches up with the 2000 planting and the age VIII matches up with the 1995 record. Besides 2000 and 1995, walleye were stocked in 1990, 1991 and 1992. There may be limited natural reproduction occurring. All walleye were represented by 5 year classes. Walleye mean growth index could not be calculated.

Eighteen northern pike were taken in the survey. They ranged from 20-36 inches, and averaged 26.7 inches. Sixty-one percent of the northern pike handled during the survey were legal sized ( $\geq 24$  inches). Four year classes of northern pike were present in the survey catch. Northern pike appear very robust and healthy. They are growing +1.4 above state average.





## Ross Lake, Gladwin County

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Four muskellunge were captured during this survey. They ranged from 27-39 inches and averaged 34.8 inches. Typically, muskellunge catches are low in late spring survey catches. The size limit for muskellunge is 42 inches. The ones sampled were ages III, V, and VII. Muskellunge were stocked in 1984, 1987, 1997, 2000, and 2003. It appears that the years don't entirely match up, possibly indicating limited natural reproduction or errors in aging.

Twenty-one channel catfish were also surveyed. They ranged from 15-33 inches and averaged 27.3 inches. These provide excellent angling opportunity and add to the diversity of predators which help to control the panfish populations.

Rock bass were present in the survey catch, but not in large numbers. The 11 captured, represented 0.7% of the survey catch. Rock bass ranged from 4 to 8 inches, and averaged 6.6 inches. Sixty-four percent of the rock bass collected were of desirable angling size ( $\geq 7$  inches).

Pumpkinseed sunfish were also present in the survey catch. The 38 collected represented 2.3% of the survey catch. They ranged from 1-6 inches and averaged 4.6 inches. Only 11 percent of the pumpkinseeds caught were of desirable angling size ( $\geq 6$  inches).

Only 16 yellow perch were collected in the survey ranging from 8-13 inches. They averaged 7.2 inches. There were not enough caught to provide an age and growth analysis.

Redhorse were quite numerous in the survey catch. The 138 caught represented 8.2 % of the catch by number. They ranged from 4-18 inches and averaged 9.1 inches. These provide an excellent forage source for the muskellunge and other predators.

Rough fish, such as bullheads, and white suckers species represented .7 % of the total survey catch. They are growing to large sizes and are not a problem at the present time.

Also collected during the survey, but in low numbers were golden shiners, northern hog suckers, carp, common shiners, green sunfish, bluntnose minnows, and an Iowa darter.

### Discussion

Ross Lake appears to have a well balanced fish population. Most species are doing well. The highlight of Ross Lake appears to be the crappie population. Both black and white crappie are numerous, and there are many large sized fish for sport anglers to catch. The predator population appears diverse, and growth is great for largemouth bass and northern pike. Walleye recruitment or survival of young of the year appears to be fair. The bluegill population is acceptable for Ross Lake, but they are on the small side even though they are growing +.5 above state average. The predator population appears to be controlling the panfish population. The walleye year class of 2002 appears to be surviving well as evidenced by the electrofishing. Muskellunge survival was also documented by the 4 muskellunge in the catch.

### Management

Continue to manage for species complex present and continue the walleye and muskellunge stocking program. Walleye are very popular locally, and are raised in the Gladwin Area pond cooperatively by the DNR and the local walleye group. Continue to stock 18,000 fingerling walleye biennially. Continue to stock 1200 fall fingerling (level 2) biennially.

Perform fall electrofishing indices when able following the walleye stocking to assess year class strength.

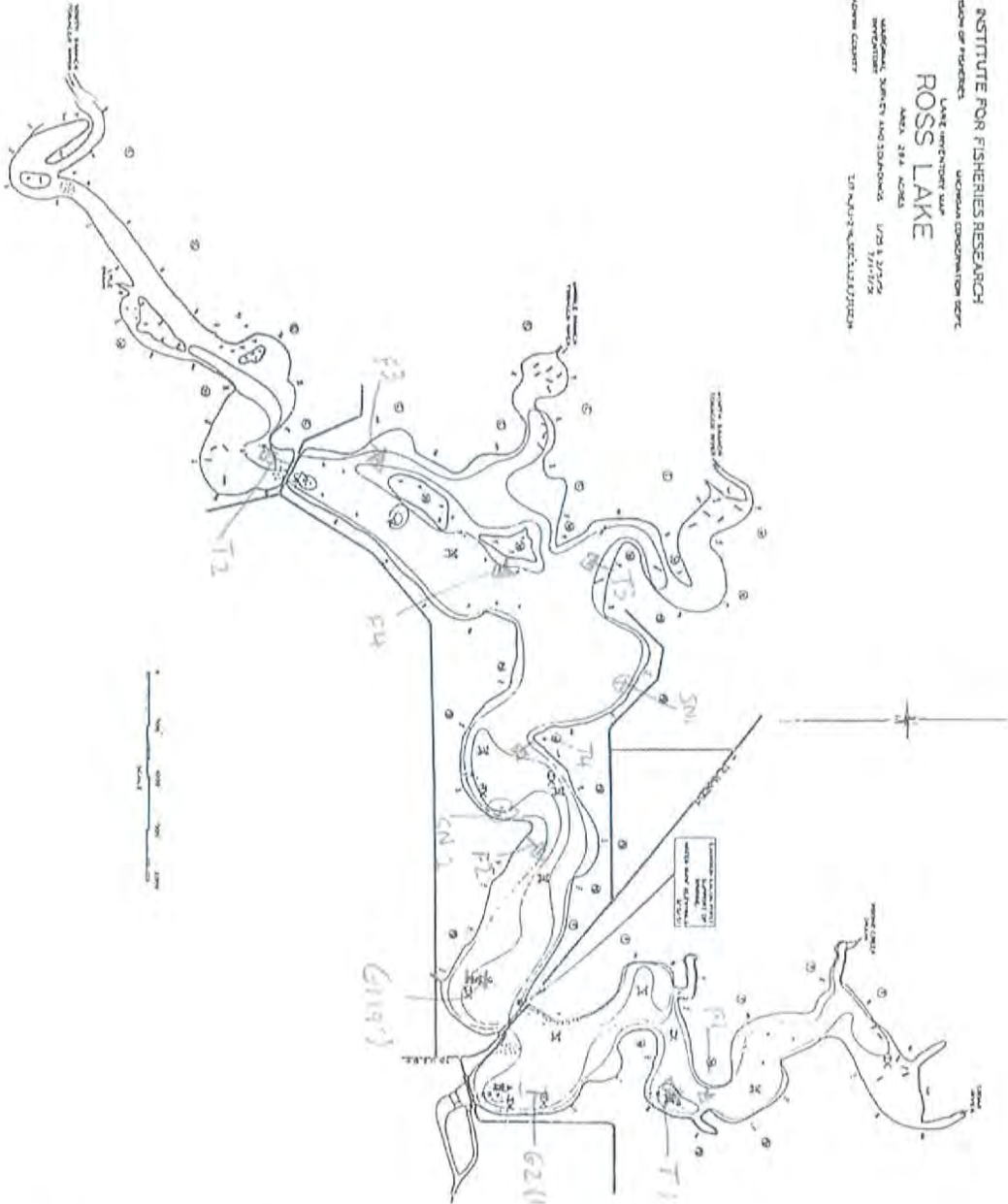
Re-survey as the status and trends schedule allows or if problems appear to arise.





# Ross Lake, Gladwin County

INSTITUTE FOR FISHERIES RESEARCH  
 DIVISION OF FISH AND WILDLIFE  
 MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
 LANE HENDERSON, DNR  
**ROSS LAKE**  
 AREA 298, ACRES  
 UNIFORM, SURVEY AND BOUNDARIES: 1/23 & 2/23/78  
 REVISIONS: 7/21/78  
 GLADWIN COUNTY 1/7/83-12/21/83



TO ORDER CONTACT  
 MICHIGAN UNITED CONSERVATION CLUBS  
 P.O. Box 228  
 Lansing, Michigan 48911  
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- LEGEND**
- SECTION**
- Sand
  - Filled peat
  - Gravel - Stones
  - Detritus
- OUTLINE AND CONTOURS**
- Shoreline
  - Contours
- SLOPE FEATURES**
- Road
  - Slope
  - Elevation
  - Marsh
  - Shrub
  - Wooded
  - Pines
  - Cultivated
  - Inlet
  - Outlet
- VEGETATION**
- Emergent
  - Forest
- STATICS**
- Foundation
  - Foundation
  - Foundation

## References



## Ross Lake, Gladwin County

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Schneider, J.C. 1990. Classifying bluegill populations from lake survey data. Michigan Department of Natural Resources, Fisheries Technical Report No. 90-10. Ann Arbor.

Water	ROSS LAKE, Dis. Gladwin County T17N R02W S02 294.00 acres.							
Survey	05/12/2003-08/25/2003						Coll. site:	ALL
Gear	ALL GEAR SUMMARY						Index site:	ALL
Effort meas.	Various						Meas. total:	
Species	Black crappie		Bluegill		Bluntnose minnow		Channel catfish	
Legal size (in)	>=7.00		>=6.00		>=		>=12.00	
Avg. length (in)	7.3		5.4		2.9		27.3	
Avg. weight (lb)	0.22		0.12		0.01		7.35	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	1097	238.24	141	16.48	25	0.26	21	154.39
No. legal	730		41		0		21	
% Legal size	66.55%		29.08%				100.00%	
% Total catch	65.34%		8.40%		1.49%		1.25%	
CPE	29.95%		2.07%		0.03%		19.41%	
Inch group								
0								
1			2					
2	1	0.01	2	0.02	15	0.08		
3			6	0.17	10	0.18		
4	3	0.13	41	2.41				
5	164	13.68	49	5.43				
6	199	28.26	39	7.38				
7	479	107.26						
8	228	76.01	1	0.44				
9	17	8.06	1	0.63				
10	3	1.95						
11	2	1.74						
12	1	1.14						
13								
14								
15							1	1.08
16							1	1.33
17								
18								
19								
20								
21								
22								
23								
24								
25								
26							3	18.78
27							6	42.42
28							4	31.79
29							4	35.58
30							1	9.92
31								
32								
33							1	13.49
34								
35								
36								
37								
38								
Sample total:	1097	238.24	141	16.48	25	0.26	21	154.39
Effort date(s):	Various							
All species total:	Number: 1,679		Pounds: 795.34					
	See Map	See Map	See Map	4 084.48470	43.88033 08	43.88528 08	43.88398 08	43.88398 08

Water	ROSS LAKE, Dis. Gladwin County T17N R02W S02 294.00 acres.							
Survey	05/12/2003-08/25/2003							
Gear	ALL GEAR SUMMARY							
Effort meas.	Various							
Species	Common carp		Common shiner		Golden shiner		Green sunfish	
Legal size (in)	>=		>=		>=		>=6.00	
Avg. length (in)	25.8		4.9		6.2		5.0	
Avg. weight (lb)	7.96		0.05		0.09		0.12	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	6	47.74	5	0.27	30	2.80	2	0.23
No. legal	0		0		0		1	
% Legal size							50.00%	
% Total catch	0.36%	6.00%	0.30%	0.03%	1.79%	0.35%	0.12%	0.03%
CPE								
Inch group								
0								
1								
2					2	0.01		
3			1	0.02	3	0.04	1	0.03
4			1	0.04	1	0.03		
5			3	0.21	5	0.25		
6					9	0.78	1	0.2
7					5	0.66		
8					4	0.76		
9					1	0.27		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23	1	6.02						
24	1	6.78						
25	1	7.59						
26	2	16.94						
27								
28	1	10.41						
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
Sample total:	6	47.74	5	0.27	30	2.80	2	0.23
Effort date(s):								
All species total:	43.88033 08; 43.88528 08; 43.88934 08; 43.88528 08; 43.88934 08; 43.88033 08; and more...							



Water	ROSS LAKE, Dis. Gladwin County T17N R02W S02 294.00 acres.							
Survey	05/12/2003-08/25/2003							
Gear	ALL GEAR SUMMARY							
Effort meas.	Various							
Species	Iowa darter		Largemouth bass		Muskellunge		Northern hog sucker	
Legal size (in)	>=		>=14.00		>=		>=	
Avg. length (in)	2.5		14.5		34.8		10.5	
Avg. weight (lb)	0.00		1.72		11.96		0.46	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	1	0.00	25	43.00	4	47.85	1	0.46
No. legal	0		16		0		0	
% Legal size			64.00%					
% Total catch	0.06%	0.00%	1.49%	5.41%	0.24%	6.02%	0.06%	0.06%
CPE								
Inch group								
0								
1								
2	1							
3								
4								
5								
6								
7								
8			1	0.3				
9			1	0.42				
10			1	0.58			1	0.46
11								
12			2	1.99				
13			4	5.08				
14			5	7.94				
15			5	9.76				
16			4	9.52				
17								
18			1	3.4				
19			1	4.01				
20								
21								
22								
23								
24								
25								
26								
27					1	5.02		
28								
29								
30								
31								
32								
33								
34								
35					1	12.08		
36					1	13.3		
37								
38								
Sample total:	1	0.00	25	43.00	4	47.85	1	0.46
Effort date(s):								
All species total:								

Water	ROSS LAKE, Dis. Gladwin County T17N R02W S02 294.00 acres.							
Survey	05/12/2003-08/25/2003							
Gear	ALL GEAR SUMMARY							
Effort meas.	Various							
Species	Northern pike		Pumpkinseed		Redhorse (nonspecific)		Rock bass	
Legal size (in)	>=24.00		>=6.00		>=		>=6.00	
Avg. length (in)	26.7		4.6		9.1		6.6	
Avg. weight (lb)	4.70		0.09		0.40		0.23	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	18	84.52	38	3.40	138	55.33	11	2.54
No. legal	11		4		0		7	
% Legal size	61.11%		10.53%				63.64%	
% Total catch	1.07%	10.63%	2.26%	0.43%	8.22%	6.96%	0.66%	0.32%
CPE								
Inch group								
0								
1			1					
2			2	0.02				
3			11	0.34				
4			8	0.56	3	0.11	1	0.07
5			12	1.56	29	1.88	3	0.36
6			4	0.92	23	2.43	2	0.4
7					5	0.8	4	1.25
8					7	1.61	1	0.46
9					29	9.21		
10					18	7.66		
11								
12					1	0.71		
13					6	5.3		
14					6	6.52		
15					3	3.96		
16					3	4.75		
17					2	3.76		
18					3	6.63		
19								
20	2	3.7						
21								
22	1	2.48						
23	4	11.4						
24								
25	1	3.68						
26	4	16.6						
27	1	4.66						
28	1	5.22						
29								
30								
31	1	7.15						
32	1	7.88						
33								
34								
35	1	10.4						
36	1	11.35						
37								
38								
Sample total:	18	84.52	38	3.40	138	55.33	11	2.54
Effort date(s):								
All species total:								



Water								
ROSS LAKE, Dis. Gladwin County T17N R02W S02 294.00 acres.								
Survey								
05/12/2003-08/25/2003								
Gear								
ALL GEAR SUMMARY								
Effort meas.								
Various								
Species	Smallmouth bass		Walleye		White crappie		White sucker	
Legal size (in)	>=14.00		>=15.00		>=7.00		>=	
Avg. length (in)	13.2		10.6		9.1		11.5	
Avg. weight (lb)	1.47		1.26		0.36		0.89	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	32	46.88	18	22.63	37	13.36	9	8.00
No. legal	16		4		33		0	
% Legal size	50.00%		22.22%		89.19%		0	
% Total catch	1.91%		1.07%		2.20%		0.54%	
CPE	5.89%		2.85%		1.68%		1.01%	
Inch group								
0								
1								
2								
3								
4								
5			4	0.2			2	0.08
6	3	0.42	6	0.52	4	0.44		
7	2	0.42	3	0.4	4	0.68		
8	2	0.62	1	0.19	7	1.82	2	0.48
9	1	0.44			16	6.08		
10	2	1.18			4	2.13		
11	1	0.78						
12	3	3			1	0.96		
13	2	2.52			1	1.25	1	0.96
14	3	4.71					1	1.2
15	4	7.68						
16	3	6.96						
17	3	8.31	1	1.74			3	5.28
18	3	9.84						
19								
20								
21								
22								
23			1	4.26				
24								
25								
26								
27								
28			2	15.32				
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
Sample total:	32	46.88	18	22.63	37	13.36	9	8.00
Effort date(s):								
All species total:								

Water	ROSS LAKE, Dis. Gladwin County T17N R02W S02 294.00 acres.							
Survey	05/12/2003-08/25/2003							
Gear	ALL GEAR SUMMARY							
Effort meas.	Various							
Species	Yellow bullhead		Yellow Perch					
Legal size (in)	>=7.00		>=7.00		>=		>=	
Avg. length (in)	11.8		7.2		0.0		0.0	
Avg. weight (lb)	0.81		0.23		0.00		0.00	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	4	3.23	16	3.73	0	0.00	0	0.00
No. legal	4		5		0		0	
% Legal size	100.00%		31.25%					
% Total catch	0.24%	0.41%	0.95%	0.47%	0.00%	0.00%	0.00%	0.00%
CPE								
Inch group								
0								
1								
2								
3								
4			1	0.03				
5			4	0.27				
6			6	0.66				
7			3	0.51				
8	1	0.3						
9								
10								
11								
12	2	1.8						
13	1	1.13	2	2.26				
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
Sample total:	4	3.23	16	3.73	0	0.00	0	0.00
Effort date(s):								
All species total:								



Site Name	Species	Strain	Date	Number	Avg. Length	Operation	Fin Clips
ROSS LAKE	Walleye		05/21/1979 0:00	300000	0.35	State Plant	none
ROSS LAKE	Walleye		05/21/1979 0:00	200000	0.31	State Plant	none
ROSS LAKE	Walleye		05/27/1981 0:00	500000	0.31	State Plant	none
ROSS LAKE	Walleye		05/16/1983 0:00	900000	0.35	State Plant	none
ROSS LAKE	Walleye		04/25/1984 0:00	2000000	0.04	State Plant	none
ROSS LAKE	Muskellunge	Northern	07/10/1984 0:00	835	4.25	Marsh & R	none
ROSS LAKE	White bass		05/08/1986 0:00	25	12.28	Transplant	none
ROSS LAKE	White bass		06/11/1986 0:00	95	8.5	Transplant	none
ROSS LAKE	White bass		05/15/1987 0:00	55	10.98	Transplant	none
ROSS LAKE	Muskellunge	Northern	07/23/1987 0:00	2724	5.67	State Plant	none
ROSS LAKE	White bass		05/15/1988 0:00	55	10.98	Transplant	none
ROSS LAKE	Walleye	Muskegon	06/16/1989 0:00	3570	1.69	Marsh & R	none
ROSS LAKE	Walleye	Muskegon	06/21/1989 0:00	6630	1.81	Marsh & R	none
ROSS LAKE	Walleye	Muskegon	10/30/1989 0:00	6382	4.09	Marsh & R	none
ROSS LAKE	Walleye	Muskegon	06/18/1990 0:00	15901	1.81	Marsh & R	none
ROSS LAKE	Walleye	Ohio	06/13/1991 0:00	7776	1.77	Marsh & R	none
ROSS LAKE	Walleye	Bay De Nor	06/23/1992 0:00	9561	1.97	Marsh & R	none
ROSS LAKE	Walleye	Muskegon	06/17/1995 0:00	16128	1.81	Marsh & R	none
ROSS LAKE	Muskellunge	Northern	09/12/1997 0:00	600	11.46	State Plant	none
ROSS LAKE	Walleye	Tittabawas	05/31/2000 0:00	28545	1.26	Marsh & R	oxytetracycline
ROSS LAKE	Muskellunge	Northern	09/28/2000 0:00	800	10.59	State Plant	none
ROSS LAKE	Walleye	Tittabawas	06/19/2002 0:00	27582	1.34	Marsh & R	oxytetracycline
ROSS LAKE	Muskellunge	Iowa	11/18/2003 0:00	1453	10	State Plant	none
ROSS LAKE	Walleye	Tittabawas	06/16/2004 0:00	26154	1.43	Marsh & R	oxytetracycline
ROSS LAKE	Muskellunge	Northern	09/28/2005 0:00	2975	10.79	State Plant	none
ROSS LAKE	Walleye	Tittabawas	06/08/2006 0:00	21500	1.8	Marsh & R	oxytetracycline
ROSS LAKE	Muskellunge	Northern	11/06/2008 0:00	1180	10.87	State Plant	none
ROSS LAKE	Walleye	Muskegon	06/16/2011 0:00	20059	1.8	Marsh & R	none
ROSS LAKE	Walleye	Muskegon	06/21/2011 0:00	30000	2.01	Marsh & R	oxytetracycline
ROSS LAKE	Muskellunge	Great Lake	11/14/2011 0:00	393	7.4	State Plant	none
ROSS LAKE	Muskellunge	Great Lake	11/14/2011 0:00	135	7.4	State Plant	PIT tag
ROSS LAKE	Walleye	Muskegon	06/12/2013 0:00	15039	1.49	Marsh & R	none
ROSS LAKE	Muskellunge	Great Lake	11/13/2013 0:00	441	7.87	State Plant	none
ROSS LAKE	Walleye	Muskegon	06/18/2015 0:00	17701	1.53	Marsh & R	none
ROSS LAKE	Muskellunge	Great Lake	11/09/2016 0:00	441	8.62	State Plant	none
ROSS LAKE	Walleye	Muskegon	06/20/2017 0:00	29107	1.65	Marsh & R	none

# APPENDIX C

## Regional Recreation Information

## Inventory of Major Events

There are a variety of events in Gladwin County with shared participation by government and the private sector. The following list indicates the events and the month in which the event is held annual (e.g. the 300 Pro Enduro Snowmobile Race) and others. The events are scheduled throughout the year but primarily during the summer months at the height of the tourist season. However, other events provide activities in other seasons helping to attract people to Gladwin County on the off-season vacation periods.

### January

Arctic Blast for Snowmobile weekend  
 Legislative Breakfast 2nd Friday  
 Las Vegas Night Super Bowl Saturday  
 Beaverton Area Business Association Annual Meeting

### February

Boys of Summer Winter Party 1st Saturday  
 Legislative Breakfast 2nd Friday  
 Gladwin County Wide Ice Fishing Derby  
 Gladwin Business & Professional Annual Meeting  
 Paczki Day 2nd Thursday

### March

Farmer Appreciation Day 1st Friday  
 Souper Challenge 1st Saturday  
 Builder's Show 1st weekend (Sat.-Sun.)  
 Art Council Dinner Theater (Thurs.-Sat.) 1st weekend  
 Legislative Breakfast 2nd Friday  
 Bowling Challenge 2nd Friday  
 Gladwin Area Friends of the Theater (GAFT)  
 Winter Comedy  
 Michigan Farm & Garden Show

### April

Gladwin County Chamber of Commerce Annual Meeting  
 Legislative Breakfast 2nd Friday  
 Earth Day

### May

Softball Tournaments Memorial Weekend (Sat.-Mon.)  
 Family Free Fishing Day 3rd Saturday  
 Little League Parade Memorial Day weekend  
 Memorial Day Parade Memorial Day weekend

Beaverton Farmers Market Mid-May til October

Championship Rodeo Memorial Day weekend (Sat.-Sun.)  
 Chamber Annual Golf Outing 3rd Friday  
 Community Date - Beaverton 3rd Saturday  
 Beaverton Track Classic  
 Thunder on Strip

### June

Miss Beaverton Pageant 4th Saturday  
 Moonlight Madness - Gladwin Strawberry Festival  
 BABA Golf Outing

### July

Fireworks - Ross Lake July 4th  
 Parade/Downtown Activities  
 Annual Craft Show - Sugar Springs  
 G.P.B.A. Arts & Crafts Weekend after July 4th  
 Rotary Golf Day 2nd Thursday  
 Summer Theater 2nd Weekend (Thurs.-Sat.)  
 Art Fair 2nd weekend (Sat.-Sun.)  
 Gladwin Airport Fly-in Show 2nd Saturday  
 Sidewalk Sales - Gladwin last weekend (Fri.-Sat.)  
 Gladwin County Fair 3rd week of July

### August

Gladwin County Chamber Taj MaHog Blues & R&B Festival  
 Doe Day Golf Outing

### September

Walleye Dinner Labor Day Weekend  
 Softball Tournaments Labor Day Weekend  
 Eagles #3292 Pig Roast Labor Day Weekend  
 Figure Eight Derby 3rd Saturday  
 Gladwin County ORV Fest  
 Gladwin/Sugar Spring Airport Fly-In

October		Hunter's Dinner-Grass Lake Holiday Open House	Opening Day
IGA Beef Round-Up	1st two weeks	Lutheran Church Hunter's Dinner	Opening Day
Grouse Bird Dog Trails	Each weekend	Christmas Open House	
Kiwanis Craft Show	Each weekend		Weekend before Thanksgiving (Sat.-Sun.)
Flu Immunization Clinics	Each weekend	Sacred Heart Christmas Bazaar	
Jeep Creep in City of Glad			Weekend before Thanksgiving

November		December	
Church of the Brethren Bazaar & Pancake Supper		Decorating Ross Park	First Sunday
1st Saturday		BABA Tree Lighting Ceremony	1st Friday
St. Anne Bazaar	1st Saturday	Legislative Breakfast	2nd Friday
Episcopal Church Bazaar	1st Saturday	Festival of Lights Parade	
Holiday Hunt (Beaverton Businesses)			

Gladwin County Organizations

Alcoholics Anonymous	Big Boys Club	Crimestoppers of Gladwin County, Inc.
American Cancer Society	Billings Senior Center	Daughters of the American Revolution (DAR)
American Heart Association	Billings Township Business Association	Disabled American Veterans
American Legion Post #171 Ladies Auxiliary	Blue Star Mothers of America, Inc.—Gladwin County Chapter #174	Ducks Unlimited
American Legion Post #171	Boy Scouts of America	Eastern Star, Order #84
American Youth Soccer Association	Butman Township Neighborhood Watch	Fraternal Order of Eagles, Fraternal Order #3292
Beaverton Area Business Association	Cedar River Riding Club	Fraternal Order of Eagles, Fraternal Order #3655
Beaverton Activity Center Volunteers	Cedar River Watershed Council	Fraternal Order of Eagles, Fraternal Order #4121
Beaverton Co-Ed Softball League	Central Michigan District Health Department	Fraternal Order of Eagles, #3292 Ladies Auxiliary
Beaverton Community Center	Child Abuse and Neglect Prevention Council	Fraternal Order of Eagles, #3655 Ladies Auxiliary
Beaverton Cooperative Nursery	Clare-Gladwin Council on Aging	Fraternal Order of Eagles, #4121 Ladies Auxiliary
Beaverton Historical Society	Clare-Gladwin Literacy Council	Friends of the Library
Beaverton Manor Senior Center	Clare-Gladwin RESD	Friends of the Theater
Beaverton Masonic Lodge	Clement Fire Association	Frontier Shrine Club
Beaverton Men's Softball League	Clement Ladies Fire Auxiliary	Gilman Springs Baptist Camp
Beaverton Ministerial Association	Clement Township Senior Citizens Club	Girl Scouts of Mitten Bay
Beaverton Youth Recreation Program	Community Mental Health Services for Central Mich	Gladwin Area Artists Guild
	Christmas Kindness	Gladwin Area Friends of the Theater

Gladwin Area Hockey Association	Gladwin Independent Riders Motorcycle Club	Ministry with Aging Volunteer Program
Gladwin Area Hospice	Gladwin Junior Girls Softball League	Model Airplane Club
Gladwin Area Jaycees	Gladwin Little League	Moose Lodge/Moose Estey Lodge #456
Gladwin Area Ministerial Association	Gladwin Ministerial Association	MSU Extension-Gladwin County
Gladwin Area Radio Control Club	Gladwin Slowpitch League	Northern Tittabawassee River Task Force
Gladwin Athletic Association	Gladwin Walleye Association	Oddfellows
Gladwin Business and Professional Association	<b>Gladwin Women's Bowling Association</b>	Order of Eastern Star #84
Gladwin Business Professional Association	Gladwin-Beaverton Bowling Association	Pheasants Forever
Gladwin Council of the Arts	Gladwin-Beaverton <b>Woman's Bowling Association</b>	PRIDE of Clare/Gladwin Counties
Gladwin County Abstinence Coalition	Gladwin-Beaverton Youth American Bowling	Reading is Fundamental
Gladwin County DARE Program	GladYAC – Gladwin County Youth Action Council	Ross Lake Rods & Relics Car Club
Gladwin County Democratic Party	Goodfellows	Rotary Club of Gladwin
Gladwin County Fair Association	Grass Lake Community Civic Association, Inc.	Sacred Heart Mission
Gladwin County Farm Bureau	Grass Lake Ladies Group	Salvation Army
Gladwin County Historical Society	Helping Hands Mission - Beaverton	Scouting USA
Gladwin County Industries	Human Aid, Inc.	Secord Community Aid
Gladwin District Library - Beaverton Branch	Independent Order of Rebekahs	Secord Lake Association
Gladwin District Library - Headquarters	Kiwanis Club of Gladwin	Senior Citizens Community Center
Gladwin County Master Gardeners	Knights of Columbus	Shelterhouse Gladwin Outreach
Gladwin County React Team	Leo Club	Smallwood Lake Association
Gladwin County Republican Party	Lions Club-Beaverton	Sugar Springs Property Owners Assoc.
Gladwin County Sheriff Posse	Lions Club-Gladwin	Tobacco River Muzzle Loaders Club
Gladwin County Smoking & Tobacco Prev. Coal.	Lions Club-Tittabawassee Valley	TOPS (Senior Citizen Memorial. Hall)
<b>Gladwin County Women's Club</b>	Mason Free & Accepted	Twin Council for Older Americans
Gladwin Community Foundation	Mid-Michigan Big Brothers/Big Sisters of Clare—Gladwin	United Way of Gladwin County
Gladwin Historical Society	Mid-Michigan Medical, Center-Gladwin Auxiliary	VFW Post #11256
	Mid-Michigan Visiting Nurse Support Service	VFW Post #11256 Ladies Auxiliary
	Mid-Michigan Visiting Nurses Association	VFW Post #7303
		VFW Post #7303 Ladies Auxiliary
		Volunteers in Gladwin/Outreach VIGOR)



Weight Watchers	Wixom Lake Association,
Wiggins Lake POA	Inc.
Willing Workers	Wolverine Hunting Club
Local Churches	
Albright Shores Living Hope Fellowship	Grace Baptist Church
Assembly of God	<b>Jehovah's Witnesses</b>
Beaverton Baptist Church	Living Waters Christian Church of Gladwin
Beaverton Church of the Brethren	New Hope Free Methodist Church
Beaverton Church of God	Oak Grove Log Church
Beaverton Church of the Nazarene	Our Savior Lutheran Church
Beaverton United Methodist Church	Sacred Heart Catholic
Billings Missionary Church	Secord Baptist Church
Cedar River Chapel	<b>St. Anne's Catholic Church</b>
Christ Centered Church	<b>St. Paul's Episcopal Church</b>
Christ the King Lutheran Church (ELCA)	Wagarville United Methodist Church
Christ the Light Community Church	Wooden Shoe Methodist Church
Church of Daniels Band	Round Lake Baptist Church
Community of Christ	Skeels Baptist Church
Emanuel Baptist Church	Trinity Southern Baptist
Estey Seventh Day Adventist	Christian Word Center
First Presbyterian Church of Beaverton	Church of Christ
Gladwin Baptist Church	St. John Evangelical Lutheran Church
Gladwin Church of the Nazarene	Church of the Nazarene
Gladwin Free Methodist Church	Billings Missionary Church
Glad Tidings Baptist Church	Reorganized Church of Jesus Christ of
Gladwin Seventh Day Adventist	Latter Day Saints (Beaverton)
Good Shepherd Evangelical Lutheran	Reorganized Church of Jesus Christ of
Church	Latter Day Saints (Gladwin)
Hockaday Community Church	Sacred Heart Catholic Church
Hope Lutheran Church	

## APPENDIX D

# City of Beaverton Bicycle and Pedestrian Trails Master Plan

A photograph of a paved path leading to a road under a cloudy sky, with a tall black lamppost in the foreground. The path is light-colored concrete and curves to the right. To the left of the path is a grassy area and a road with utility poles. To the right is a grassy area with a small tree and a building in the distance. The sky is overcast with grey clouds.

# **City of Beaverton**

## **BICYCLE AND PEDESTRIAN TRAILS MASTER PLAN**

**2014**

---

**ACKNOWLEDGEMENTS**

**CITY OF BEAVERTON COUNCIL**

Ray Nau	Mayor
Kerry Posey	City Manager
Barbara Williams	Treasurer
Ed Shearer	Member
John Andrist	Member
Cari Jefferson	Member
Dorren Ullom	Member
Kevin Neville	Member
Matthew Lang	Member

**CITY OF BEAVERTON PARKS & RECREATION COMMITTEE**

Max Holmes	Chairman
Barb Williams	Secretary
Coleen Allen	Member
Doreen Ullom	Member
John Andrist	Member
Matt Lang	Member
Ray Nau	Member

**CONSULTANTS**

Don Hamilton, A.I.C.P.

Scott Bell, Assistant Planner & GIS Specialist



**FUNDED BY**

Central Michigan District Health Department's Together We Can Program



Made possible with funding from the Centers for Disease Control and Prevention

## Table of Contents

<b>Engagement Plan .....</b>	<b>4</b>
Explanation and Overview .....	5
Preliminary Points of Interest & Route Map .....	7
<b>Community Description .....</b>	<b>8</b>
Demographics.....	13
County Socioeconomic Characteristics.....	17
<b>Needs Assessment .....</b>	<b>20</b>
Conclusion.....	26
<b>Design Considerations.....</b>	<b>27</b>
Introduction .....	28
Bicycle Trails.....	30
Shared Use Paths.....	33
Riparian Corridors.....	35
Rail Trails .....	36
Water Trails.....	37
Traffic Calming.....	37
Intersections.....	38
Surfacing .....	41
Structures.....	43
Amenities .....	46
Signage.....	48
Maintenance .....	55
Permitting .....	59
<b>Implementation.....</b>	<b>61</b>
Proposed Trail Segments and Descriptions.....	66
Trail Prioritization .....	73
Potential Funding Sources .....	74
Grant Writing.....	80



# Engagement Plan



The City of Beaverton will engage its citizens and all those interested in the Pedestrian & Bicycle Trails Master Plan process in order to have maximum community input and so that there ultimately will be maximum benefit to community members and visitors using existing and the new proposed trails. The City will advertise the project through various means: its website, newsletters, schools, bicycle shops, riding and hiking groups, and others as identified in the process. The City will call upon appropriate stakeholders and others who may be interested in, or benefit by, the Pedestrian & Bicycle Trails Master Plan 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 will be held to discuss the project with the following agenda:

### **Explanation and Overview of the Pedestrian & Bicycle Trails 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



- Future connections – ally with connecting communities.
- Form a trail advisory committee (e.g., Friends of the Trails group)

After preliminary draft plans are completed, the trail committee will reconvene to review and critique the proposed Pedestrian & Bicycle Trails Master Plan. The final plan will then be completed and a presentation to the whole community will be held to portray the master plan and to discuss the efforts for implementation of the plan. The plan will be promoted through the same media as the original project commencement announcements and any other ways discovered by the committee during the process.



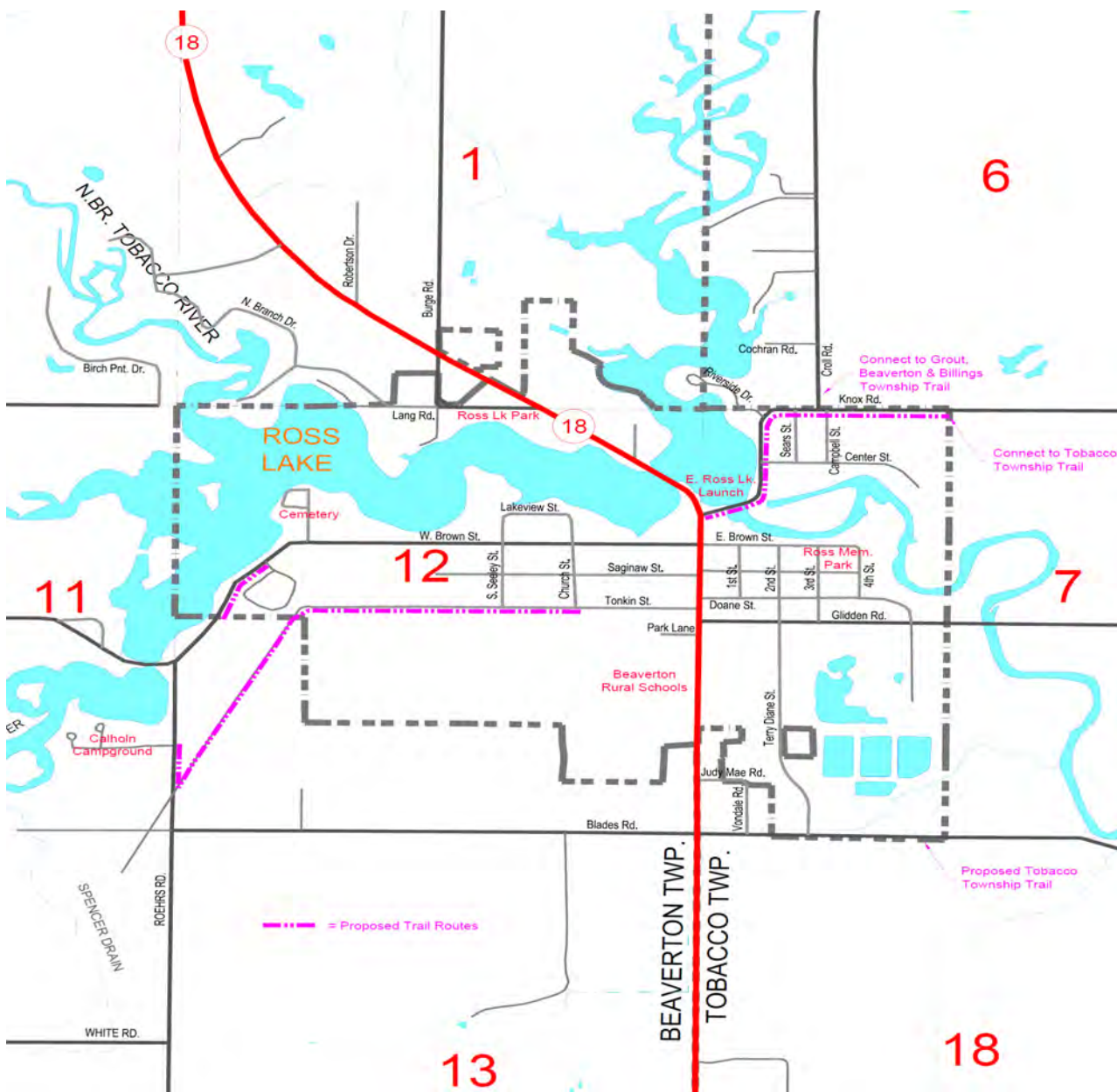
➤ *In 2002 and 2004 surveys of recent home buyers sponsored by the National Association of Home Builders and the National Association of Realtors, trails were ranked as the second most important community amenity on a list of 18 choices – bettering even golf courses and playgrounds.*

The City of Beaverton 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 complete and use the proposed trails.

The City of Beaverton representatives met with its consultant to discuss this plan and to determine primary stakeholders for this project. An informational meeting with the City of Beaverton, other city representatives, and various stakeholders was held on July 17, 2013. At this meeting the project was described and the stakeholders' roles were explained. The Engagement Plan was reviewed at this meeting and additional input gathered. Also, a preliminary Points of Interest map was reviewed and proposed routes for trails examined. Meetings were held monthly to review the proposed trails and the plan as it was developed.

On the 30th of July representatives of Gladwin County, the City of Gladwin, Grout Township, Buckeye Township, Tobacco Township, and the Gladwin County Road Commission met at the Gladwin County Building for a presentation of the Pedestrian and Bicycle Plans of their communities plus the plans of the City of Beaverton and Beaverton Township. Priorities for a county Pedestrian and Bicycle Trail System were discussed and the group concurred that the first priority should be the River Road Trail from Gladwin to Beaverton. The second priority should be a trail on the Consumers Energy right-of-way in Beaverton Township. The

goals are to have a widely-used trail in the most populated area of the county and ultimately a connection with the Pere Marquette Rail Trail in Midland County. Dave Pettersch, Manager of the Gladwin County Road Commission, expressed the keen interest of the Road Commission to help build the trails where possible and to be actively involved in the project. The group agreed that creating an "intergovernmental authority" among all the municipalities that would begin to find funding for the Pedestrian and Bicycle system and that would be responsible for operations and maintenance of the trails would be the most expeditious means of making the plans a reality. A meeting was set up at the City of Gladwin in August to initiate these actions.



**City of Beaverton Preliminary Points of Interest & Trail Map**

# Community Description







**Aerial Photo of City of Beaverton and surrounding areas.**

The City of Beaverton is a home rule, incorporated city located in the southwestern quadrant of Gladwin County. The city is about 2.8 square miles in area, and it is bounded by Tobacco and Beaverton townships. Michigan highway M-18 bisects the city. The Cedar River and Tobacco River meet, and are impounded in Beaverton, creating Ross Lake, a prominent feature of Beaverton.

Gladwin County is located in a rural forested area near the center of Michigan's Lower Peninsula on the southern edge of what is commonly thought of as the state's northern recreational area. It is bounded by Arenac, Bay, Clare, Midland, Ogemaw and Roscommon Counties.

Approximately 51 percent of the County is forested. The Tittabawassee State Forest makes up the largest portion of this forested area. Less than 8.7 percent of the county is wetland or water, but water-based recreation and recreational developments are an important economic and



developmental force in the county. The Tittabawassee River and its impoundments on the east side of the county (Smallwood Lake and Wixom Lake) as well as those on the west side of the county (Pratt Lake, Wiggins Lake, Lake Lancer, Lake Lancelot, and the Molasses and Cedar Rivers) are only part of the water resources in the county.

Gladwin County has a continental type climate characterized by larger temperature ranges than in areas of the same latitude closer to the Great Lakes which have moderated temperatures. The most noticeable lake effect occurs when the prevailing westerly winds bring increased cloudiness during the fall and winter months. Gladwin County averages 45 inches of snow per year and has an average growing season of 126 days.

The soils in Beaverton are characterized by two broad soil associations. The most prevalent are sandy and loamy soils on lake plains including the Iosco-Brevort, Allendale-Pickford-Pinconning, Iosco-Brevort-Kawkawlin, Iosco-Au Gres-Ingalls, and Rubicon-Ocqueoc-Ingalls groups, which occupy a majority of the city land area. The second most prevalent soil association found in Beaverton Township is the Nester-Kawkawlin-Sims and Sims soil association, which is found along areas to the south and east of the city. These soils are loamy found on lake and fill plains. Twenty percent of the county is an Iosco-Brevort soil that drains somewhat poor to poor with slopes ranging from 0-25%. Development potential is greatly impacted by the surrounding lakes and streams and associated banks and flood plains. The Soil Survey also indicates that these particular soil types generally present severe wetness and/or ponding when developing structures, trails, and picnic or playground areas. This is due mainly to the poorly drained soils that are found in the area.

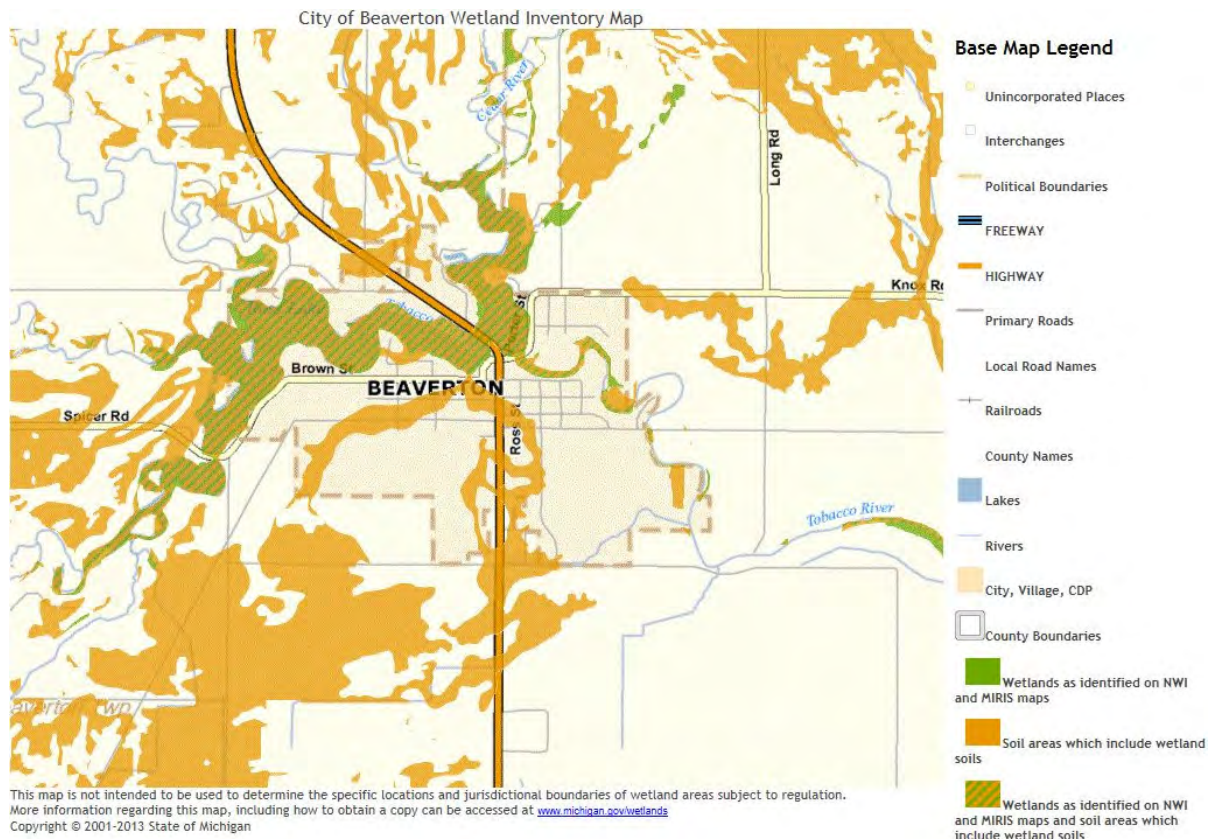


Ross Lake is 294 acres in size and the depth of the lake is approximately 10-12 feet at its maximum. Development along the lake includes Ross Lake Park and launch docks along the Calhoun Campground that provide public access west of M-18. Forty-five percent of the shoreline has residences along it. Bottom conditions range from sand to pulpy peat. Moderate boating and jet skiing occurs in summer months; the lake is fished heavily throughout the year. Ross Lake has a well-balanced fish population, with most species in good condition. It is one of the few lakes in the region with white crappie. Both black and white



crappie are numerous and there are many large fish for sport anglers to catch. Additional species include rock, largemouth and smallmouth bass, walleye, bluegill, sunfish, yellow perch, northern pike, muskellunge and others.

Major highways that serve the area are Highway M-18, which travels through Beaverton from US-10 in the south to Gladwin in the north. Highway M-30, a major north-south, all season road is east of the city; Highway M-61 is an east-west thoroughfare system which runs through the City of Gladwin eight miles north of Beaverton. US-10, which connects the area to major population centers throughout Michigan, is located 10 miles to the south of Beaverton.



Gladwin County has no licensed, operating landfills. There are 44 facilities in the county that have reported hazardous waste activities, one of which is a large quantity generator and two are small quantity generators. There are no existing potential hazardous waste sites that are part of Superfund. There are two facilities that have been issued permits to discharge into waters of the State of Michigan.

The existing Master Plan, adopted by the City of Beaverton in 1993, shows the following existing land use patterns: There is a relatively large amount of land used for single family residential (50%). The proportion of undeveloped land (8%) and the acreage dedicated to open water (5%) and recreation (10%) suggests great potential for the development of appropriate recreational facilities. The city also has an industrial park of approximately 30



**Demographics**

The City of Beaverton population decreased by 3.2 percent from 2000 to 2010 from 1,106 to 1,071. Over this ten-year period, the county population has decreased 1.3%; the state has decreased 10%, while the United States population has increased 10%.

City of Beaverton residents, similar to most of the region, are almost all white (97.7%). More than three fourths of residents are homeowners (86.0%). The average household size is 2.69 persons. The median age of city residents is 36.2 years with 16.3% of the population over 65 years of age.

The Gladwin County population contains similar portions of pre-school age children (under 5 years old) and greater percentages of senior citizens than statewide averages. A review of the age data by political subdivision shows the greatest numbers of pre-school children living Gladwin , Sage and Grout Townships and in the cities of Beaverton and Gladwin.

In terms of median age, the Gladwin County average of 42.3 exceeds the 2000 state figure of 35.5. In the townships and cities, however, the median age ranges from about 31.4 to 54 years. The youngest ages are found in the townships of Gladwin, Bentley and Beaverton.

The average commuting time for city residents is about 20 minutes compared to 25 minutes for the average commuter time for all U.S. residents. Residents travel to local cities such as Gladwin, Standish, Clare, and as far away as Bay City and Midland for work and shopping.

**Population Change**

City of Beaverton and Gladwin County  
2000 - 2010

<b>Governmental Unit</b>	<b>2000</b>	<b>2010</b>	<b>Change</b>	<b>Percent</b>
City of Beaverton	1,106	1,071	-35	-3.2%
Gladwin County	26,023	25,692	-331	-1.3%

Source: U.S. Census Bureau, Census

### Age Distribution

City of Beaverton and Gladwin County  
2000 and 2010

City of Beaverton

Age	2000	2010	Percent of Total
0 - 24 yrs.	332	412	41.8%
25 - 44 yrs.	360	199	20.2%
45 - 64 yrs.	179	201	20.3%
65 and over	202	175	17.7%

Gladwin County

Age	2000	2010	Percent of Total
0 - 24 years	7,737	6,921	26.9%
25 - 44 years	6,287	5,025	19.6%
45 - 65 years	7,231	7,893	30.7%
65 and over	4,768	5,853	22.8%

Source: U.S. Census Bureau, Census

### Native vs. Foreign Born Citizens

City of Beaverton and Gladwin County  
2000 - 2010

City of Beaverton

Nativity	2000	2010	Change	Percent
Native Born	1,050	983	-67	-6.4%
Foreign Born	5	0	-5	-100.0%

Gladwin County

Age	2000	2010	Change	Percent
Native Born	25,693	25,679	-14	-0.1%
Foreign Born	330	397	67	20.3%

Source: U.S. Census Bureau, Census

### Male / Female Ratio

City of Beaverton and Gladwin County  
2000 - 2010

#### City of Beaverton

Sex	2000	2010	Change (2000-2010)	Percent Change
Male	515	508	-7	-1.4%
Female	591	563	-28	-4.7%

#### Gladwin County

Sex	2000	2010	Change (2000-2010)	Percent Change
Male	12,916	12,839	-77	-0.6%
Female	13,107	12,853	-254	-1.9%

Source: U.S. Census Bureau, Census

### Race Characteristics

City of Beaverton  
2010 – 2000

Category	2000	2010	Change from 2000 to 2010	Percent Change
White	1,073	1,046	-27	-2.5%
Black or African American	11	4	-7	-63.6%
Other	2	12	10	200.0%

### Race Characteristics

Gladwin County  
2000 - 2010

Category	2000	2010	Change from 2000 to 2010	Percent Change
White	23,791	25,111	1,320	5.5%
Black or African American	91	60	-31	-34.1%
Other	567	521	-46	-8.1%

Source: U.S. Census Bureau



### Persons Per Household

City of Beaverton and Gladwin County  
2000 - 2010

Governmental Unit	2000	2010	Change (Persons)
City of Beaverton	2.96	2.32	-0.64
Gladwin County	2.43	2.19	-0.24

Source: U.S. Census Bureau, Census

### Occupancy Characteristics

City of Beaverton and Gladwin County  
2000 - 2010

City of Beaverton

Category	2000	2010	Change	Percent
Occupied	496	462	-34	-6.9%
Vacant	50	75	25	50.0%
Seasonal	10	12	2	20.0%

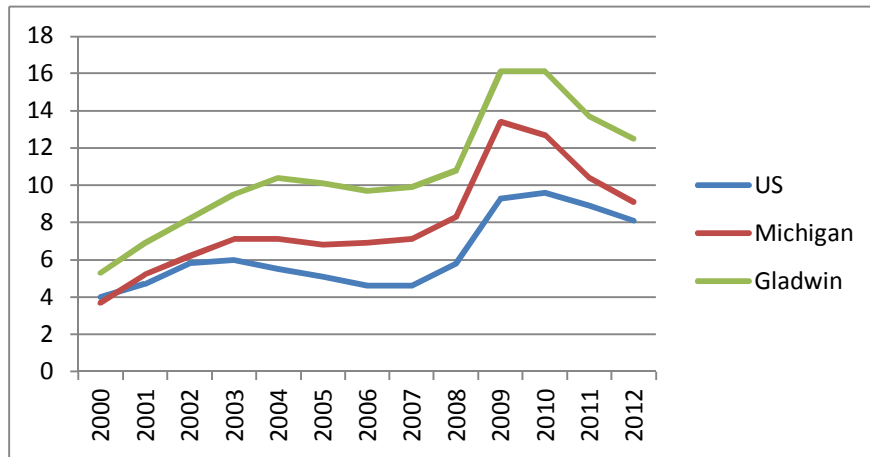
Gladwin County

Category	2000	2010	Change	Percent
Occupied	10,561	10,753	192	1.8%
Vacant	6,267	6,919	652	10.4%
Seasonal	5,588	5,759	171	3.1%

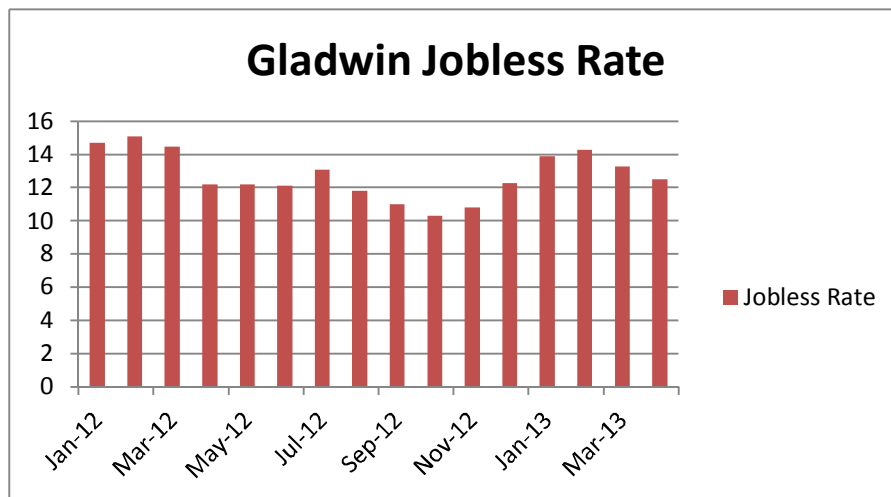
Source: U.S. Census Bureau, Census

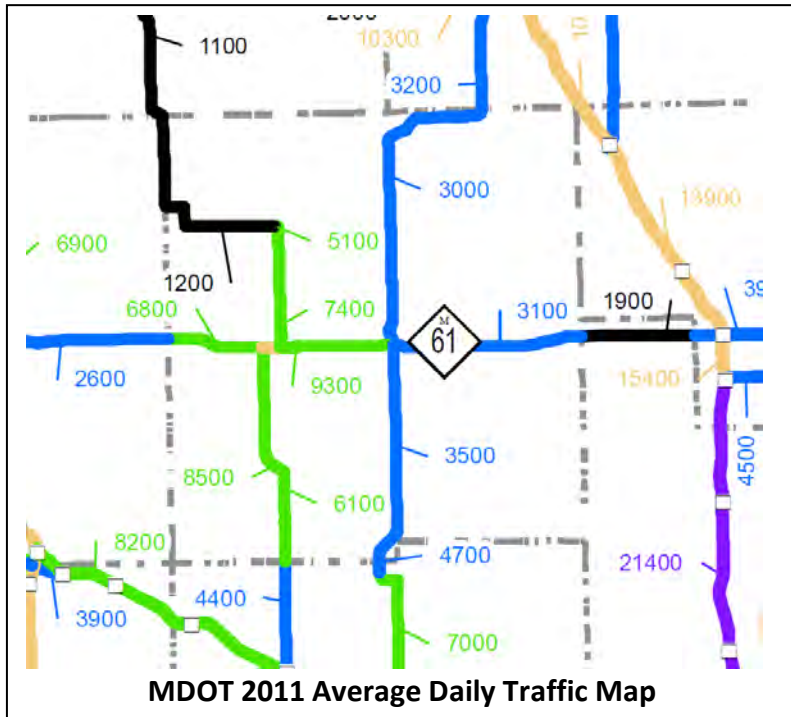
### County Socioeconomic Characteristics

The main economic sectors of the county are Retail Trade (19.5%), Government (19.2%), Health Care and Social Assistance (12.0%), Manufacturing (10.9%), and Accommodations and Food Service (10.5%). Most workers are employed in sales and office occupations (25%) or management, business, science or arts occupations (24%). Agriculture, both cash crops and pasture, account for approximately 73 percent of the county’s area while 85,415 acres are held as public lands. About 6.6% of workers are self-employed. Eighty (82%) percent of workers drive alone when traveling to and from their workplace and the mean commute time is 27.4 minutes. Median household income, as reported in 2011, was \$38,160 (per capita dollars \$20,677). The 2011 American Community Survey indicated 15.2 percent of families were below the poverty level. Gladwin is close to the cities of Midland, Bay City, Saginaw and Mt. Pleasant and its economy is affected by these areas. According to the State of Michigan Office of Labor Market Information, the unemployment rate for the city in 2012 was 12.5 percent.



Jobless Rate





The Michigan State Highway M-61 runs east-west through the county connecting to I-75 to the east and US-127 to the west. State Highway M-18 and M-30 run north and south through Gladwin connecting to US-10 in the south to I-75 north. The county is positioned almost at the center of the Lower Peninsula of the state, within a two- and- a-half-hour drive of most metropolitan areas of the state.

Sixty-four percent of housing units in the county are occupied with less than fifteen percent of those rented. The majority of housing units (80.5%) are one-unit detached structures. About half of

the homes within the county were built before 1970. Nearly thirty-three percent of the total housing units in the county are seasonal or vacation homes.

Of the population 25 years old and over, forty-one percent have acquired a high school diploma or the equivalent and 7.1 percent have obtained a bachelor’s degree or higher.

There are several choices in the surrounding area for continuing education. Two-year colleges include: Mid Michigan Community College with its newly built Michigan Technical Education Center (one of only 18 in the state) located in Harrison; Kirtland Community College in Roscommon; Delta College located at University Center/Michigan; and Davenport University and Northwood University, private schools, in Midland. Four-year degrees are offered through Saginaw Valley State University located at University Center/Michigan, Ferris State University in Big Rapids, and Central Michigan University, offering doctorate degrees in addition to master’s and bachelor’s degrees, in Mt. Pleasant.

Today, Gladwin County’s economy includes automotive parts manufacturing, thermoforming, RV manufacturing, wood products, construction and agriculture. Tourism plays a special role in Gladwin County’s economy, especially due to its waterways, with several dams on the Tittabawassee, Sugar, Tobacco and Cedar rivers creating opportunities for boating, fishing, canoeing and sightseeing.

The Tittabawassee State Forest to the east, almost a fourth of the entire county, offers plenty of opportunity for hiking, hunting, snowmobiling, and other outdoor sports.

## Gladwin County Economic Statistics

### Income:

Median household income - \$37,921 (2009-2011) US Census Bureau  
 Per capita income- \$19,529 (2009-2011) US Census Bureau

### Retail Sales:

Total retail sales – (\$1,000) = \$62,792 (2010) US Census Bureau  
 Number of Establishments - 1,591

### Employment:

Total labor force – 10,106  
 Employed – 8,584  
 Unemployed – 1,522  
 Percent unemployed – 7.2% in 2012

### Employment by Industry:

Services	22.4%
Retail/Wholesale	14.6%
Government	23.6%
Manufacturing	19.0%
Construction	9.4%
Agriculture	3.0%
Finance, Insurance, Real Estate	4.0%
Transportation	4.0%

### Property Taxes & Equalized Value:

State Equalized Value	\$1,082,568,834
Personal Property	\$35,593,738
Property Tax Base:	
Agriculture	6.9%
Commercial	4.4%
Industrial	0.008%
Residential	87.8%
Other	0.892%

# Needs Assessment





Despite the county’s outstanding natural opportunities for outdoor activities and exercise, Gladwin County residents fall into the lower ranks of health statistics within the state. The information which follows demonstrates the factors in the county regarding the county citizens’ health.

<b>Central Michigan counties and their ranking (out of 82 Michigan counties evaluated) on health outcomes and health factors, as listed in the 2011 County Health Rankings.</b>						
<b>County</b>	<b>Health Outcomes</b>		<b>Health Factors</b>			
	<b>Mortality</b>	<b>Morbidity</b>	<b>Health Behaviors</b>	<b>Clinical Care</b>	<b>Social and Economic Factors</b>	<b>Physical Environmental</b>
Arenac	61	53	31	77	67	16
Clare	81	80	67	72	78	6
Gladwin	69	76	77	79	73	25
Isabella	43	32	16	78	13	40
Osceola	52	40	34	45	57	34
Roscommon	79	49	68	21	76	1

Source: University of Wisconsin’s Population Health Institute and the Robert Wood Johnson Foundation. (2011) County Rankings.

**Vulnerable Populations** (Possible health risks, barriers to care, etc.)

County residents who:	
Have no high school diploma	4,080
Are unemployed	1,176
Severely work disabled	1,695
Have major depression	1,070
Are recent drug users	1,953

Source: Together We Can Initiative, CMDHD, Gladwin County Community Health Status Report (2009)

**Access to Care**

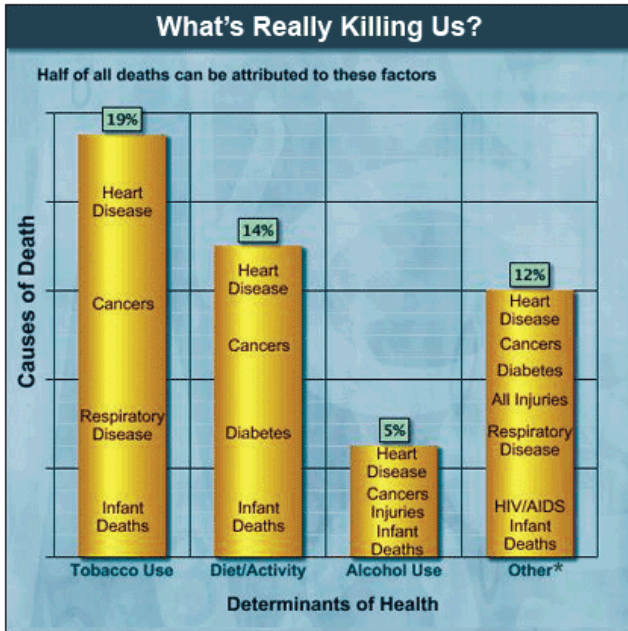
Uninsured individuals (under age 65)	2,836
Medicare beneficiaries	
Elderly (age 65+)	5,524
Disabled	1,209
Medicaid beneficiaries	5,754
Primary care physicians per 100,000 pop	27.0
Dentists per 100,000 pop	23.1

Source: Together We Can Initiative, CMDHD, Gladwin County Community Health Status Report (2009)

**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*



**Risk Factors for Premature Death**

Diabetes	9% of adults
No Exercise	No Report (sample size fewer than 50)
Few Fruits/Vegetables	No Report (sample size fewer than 50)
Obesity	No Report (sample size fewer than 50)
High Blood Pressure	29%
Smoker	No Report (sample size fewer than 50)

Source: CDC Behavioral Risk Factor Surveillance System, 2000-2006

**Gladwin County's Unfavorable Health Factors compared to U.S Rates**

- Very Low Birth Wt. (<1500 g)
- Births to Women age 40-54
- Births to unmarried woman
- No care in first trimester
- Infant Mortality
- White non-Hispanic Infant Mortality
- Neonatal Infant Mortality
- Post-neonatal Infant Mortality
- Breast Cancer (Female)
- Coronary Heart Disease
- Lung Cancer

Source: NCHS Vital Stats. Reporting Sys, 1991-2005

**Infectious Diseases**

Although rates of HIV and tuberculosis are not available, the only common diseases that respond to public health efforts that indicate closer attention in Gladwin County are Pertussis and Hepatitis B.

**National Air Quality Standards**

Gladwin County meets or exceeds all national air quality standards.

**Recreation Plans**

Gladwin County has a current five-year recreation plan as do the following communities within the county:

City of Gladwin and the City of Beaverton.

In February of 2012, after two-years of research, meetings and much work by the Central Michigan District Health Department, the district published its "Community Health Assessment and Improvement Plan." The major findings of the report for its service area,

including Gladwin County, put forth health priority areas that are directly affected by increased recreational and physical activities such as those set out in this trail master plan.

The strategic health priorities of concern for this plan include (our emphasis):

### **Nutrition, weight status and physical activity**

- Lack of nutritious food, especially in restaurants, daycares and schools
- Comparatively higher costs of nutritious foods
- ***Lack of education/knowledge about nutrition, including availability of nutritious foods, nutritional educational opportunities, and importance of physical activity.***

### **Environmental Health**

- ***Lack of recreational facilities and organized physical activities***
- Harmful effects of chemicals in local environments, water quality, and lack of recycling opportunities.

### **Transportation**

- Lack of inter-county transportation services, especially for medical services
- ***Lack of convenient bike/walking paths.***

### **The Disappearing Walk to School**

- *1 in 4 trips made by 5-15 year olds 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

The plan also included the formation of the Together We Can Health Improvement Council and Gladwin and Clare County's Health Improvement Workshop group. The Workshop Group was formed, met, and surveyed the residents of the county. The survey identified Gladwin and Clare County's primary health concerns from the priority areas developed by the council. High on the list of concerns are *Nutrition & Weight Status* and *Transportation*. Goals and Objectives applicable for our plan are:

### **Nutrition & Weight Status**

- During the 2011-2012 school year S.P.A.R.K.S. afterschool programs in Harrison, Farwell, Beaverton and Gladwin School Districts will implement specific activities for 80% of K-8 participants that will increase student understanding and participation in healthy choices for healthy bodies. Annual reports will be shared at the HIP meetings.

### **Transportation**

- Establish a local coalition for development of non-motorized transportation in Clare and Gladwin counties by September 2012. This includes working on initiatives such

as pedestrian/bicycle master plans, safe walking and biking trails and increasing the connectivity of non-auto paths and trails. This coalition will also advocate for bicycle helmet safety and safe bicycle riding practices.

### 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*

A preliminary analysis of bicycle and pedestrian pathways and other facilities in Gladwin County shows some planning and pathways installed in the cities of Beaverton and Gladwin, but there are no programs instituted to encourage walking or biking.

The national rates of obesity and overweight have been increasing dramatically. The U.S. dept. 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 (CDC) 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.

Some of the many trails and greenways benefits include:

- Making communities better places to live by preserving and creating open spaces
- Encouraging physical fitness and healthy lifestyles
- Creating new opportunities for outdoor recreation and non-motorized transportation
- Strengthening local economies
- Protecting the environment
- Preserving culturally and historic valuable areas.





*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."*

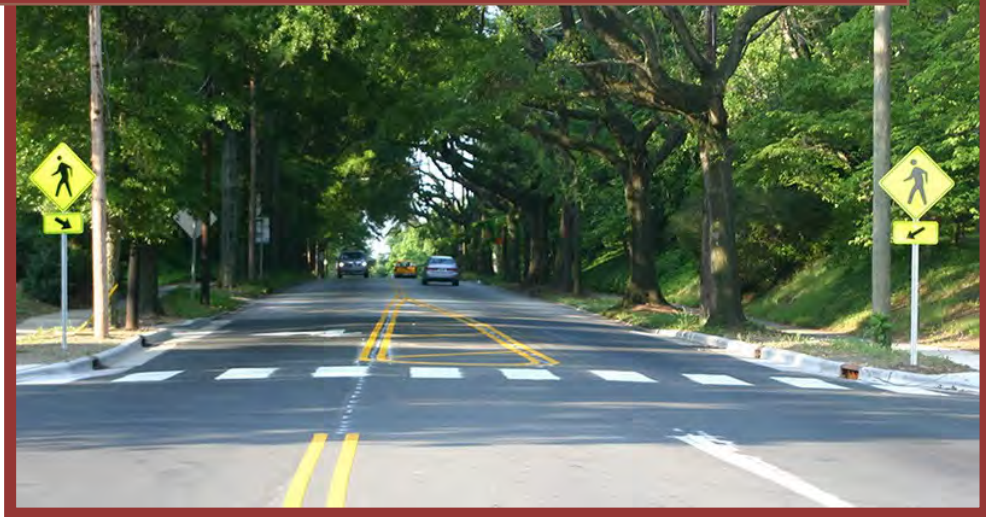
The City of Beaverton and the City of Gladwin have been developing pedestrian and bicycle trails within their boundaries over the past years and include these efforts and their future goals for trails in their master plans and recreation plans. Neither the county nor the townships around Beaverton have pedestrian or bicycle plans. Our plan will connect the City of Beaverton's trails to a system of trails in Gladwin County that can provide physical exercise and access to many of the county's other recreation assets.

### Conclusion

The residents of the City of Beaverton and Gladwin 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 put forth a system of convenient and safe county pedestrian and bicycle pathways for the city that can ultimately interconnect with other local, county and state trailways. The plan will also provide 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.

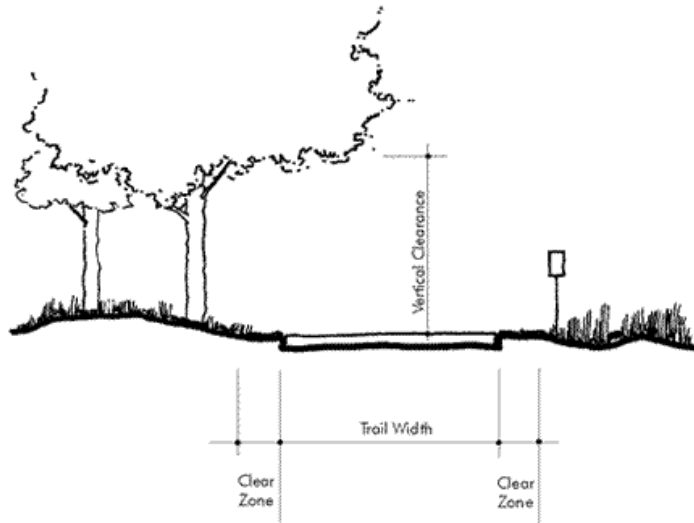


# Design Considerations



**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 Gladwin County Road Commission
Erosion & Sediment Control	Drain Commission
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. Typical guidelines that are most likely to apply to situations have been highlighted as a reference and starting point for communities and agencies to further their implementation efforts.

<b>Trail / Pathway Element</b>	<b>Recommended Dimensions</b>	<b>Comments</b>
<b>RECREATION TRAILS</b>		
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.
<b>SHARED USE PATHS / NON MOTORIZED SYSTEM</b>		
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



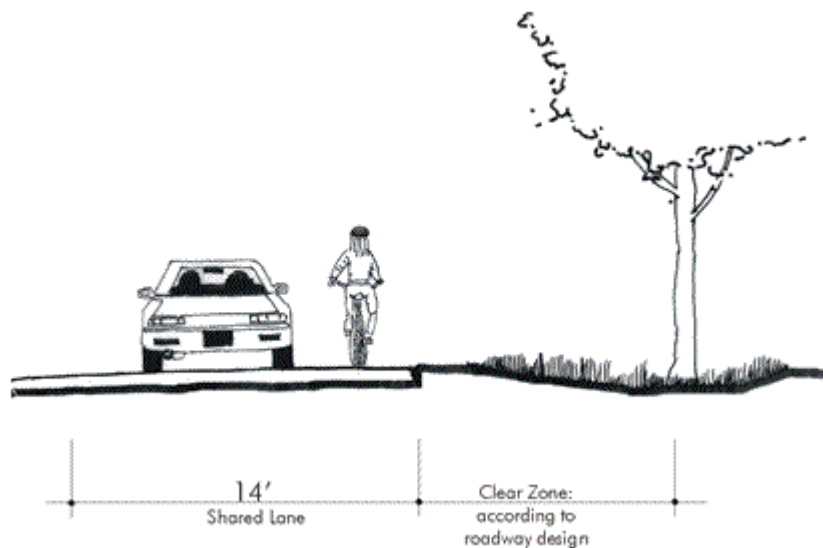
### Bicycle Trails

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:

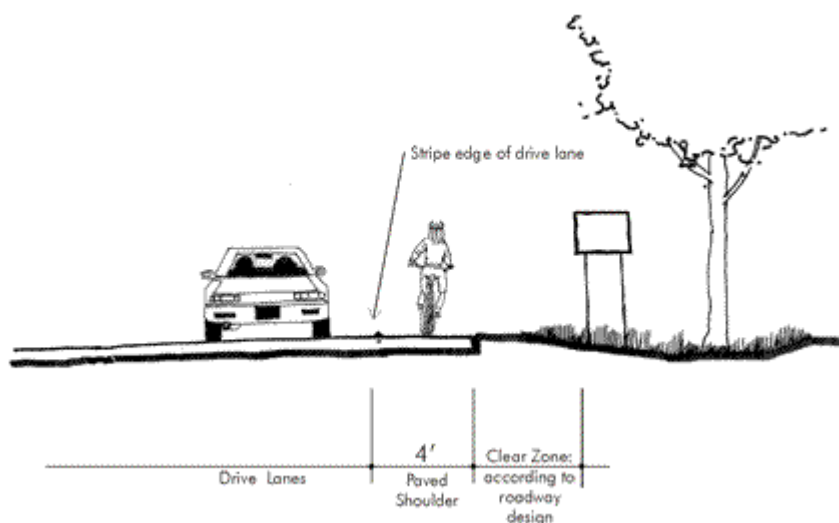
- **Available Right-of-Way:** to accommodate a 10' wide path, there should be 15-20' of available right-of-way. This is necessary to provide for a 3' clear zone from obstructions, a 10' wide trail and a 5' buffer space to separate the path from the road (per AASHTO standard, if there is less than a 5'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



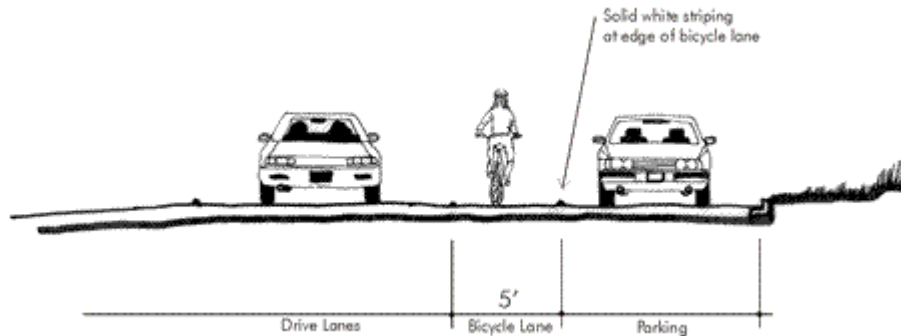
Low speed/low volume streets and roadways are the best choice for bicycle routes. Under such circumstances, cars and bicycles can effectively share a 12' or 14' wide travel lane, with no special accommodations for bicycle travel needed, such as wide curb lanes or striped bicycle lanes.

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 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

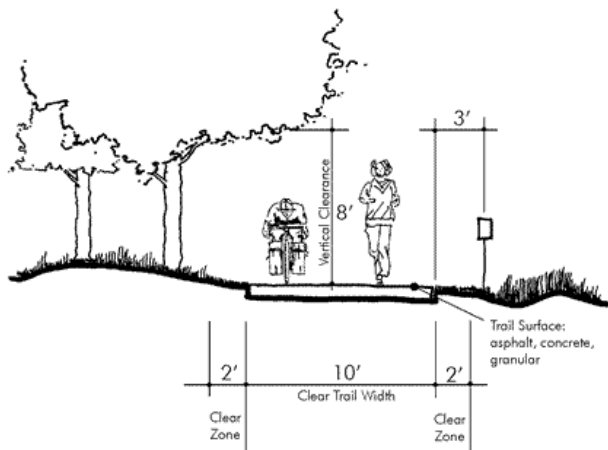
Trails separated from motor vehicles can provide for differing levels of accessibility. The level of accessibility depends to a great extent on the setting. In urban areas, full accessibility is typically expected. Therefore, easy access, smooth hard pavement, and easy gradient are the norm.

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.

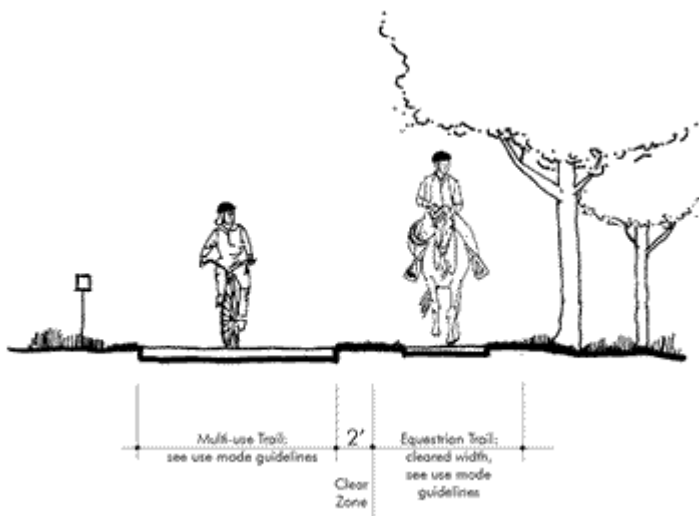
The mix of pedestrian and bicycles on multi-purpose trails is not without problems and can result in conflicts between different trail users. However, when design treatments are employed to address these potential conflicts, the majority of user problems can generally be avoided.

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:

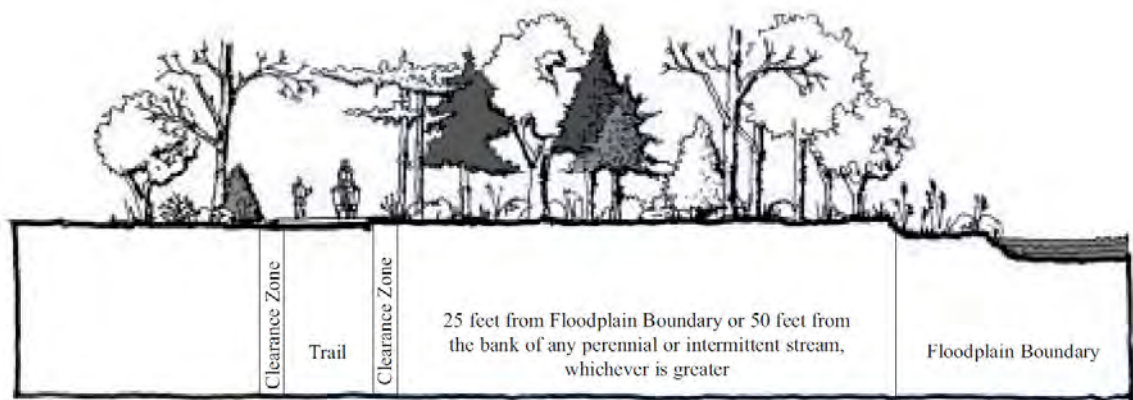
- A minimum of five feet horizontal separation or a physical barrier from motor vehicle traffic.
- Development of bike lanes and sidewalks as an alternative to the shared path is not feasible or permitted.



- 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**

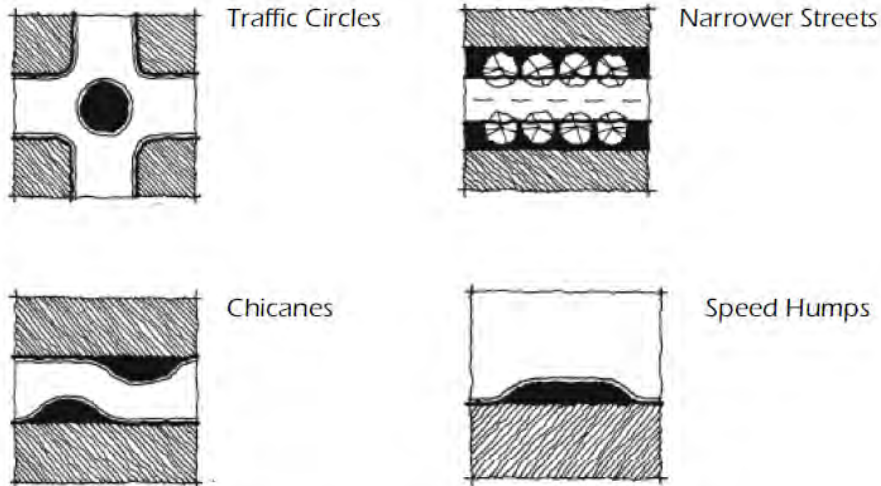
Water trails, are specifically designed for a small, non-motorized boats to have access to the local waterway, features and stopping points along the way, public parks and the area's natural landscape. Users may experience the ecosystem in the region and acquire a respect, understanding, and stewardship 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."

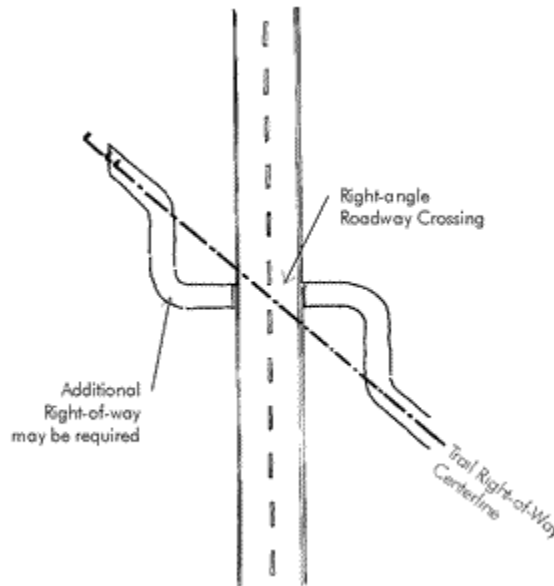
Traffic circles, chicanes, narrowed streets, and speed humps are only a few of the common methods used to calm traffic, and provide a safer more enjoyable experience for non-motorized travelers.



Source: Georgia DOT Pedestrian and Streetscape Guide

### Intersections

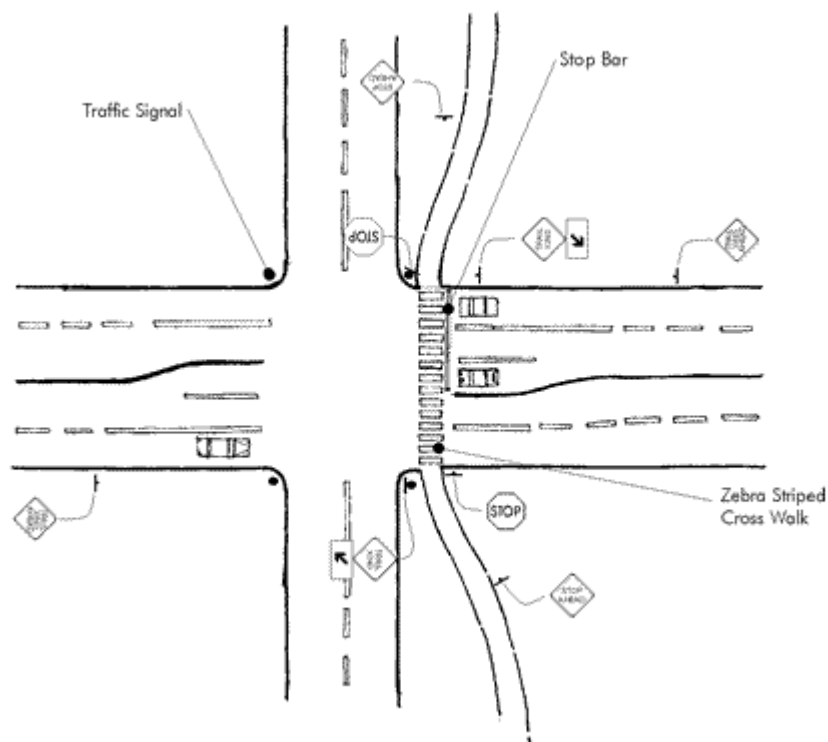
Careful placement of signage and pavement markings is needed on both the roadway and trail to alert motorists and trail users to the presence of the intersection. Advance warning signs and pavement markings should be placed at an adequate distance from the intersection given the speed of the traffic. 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.

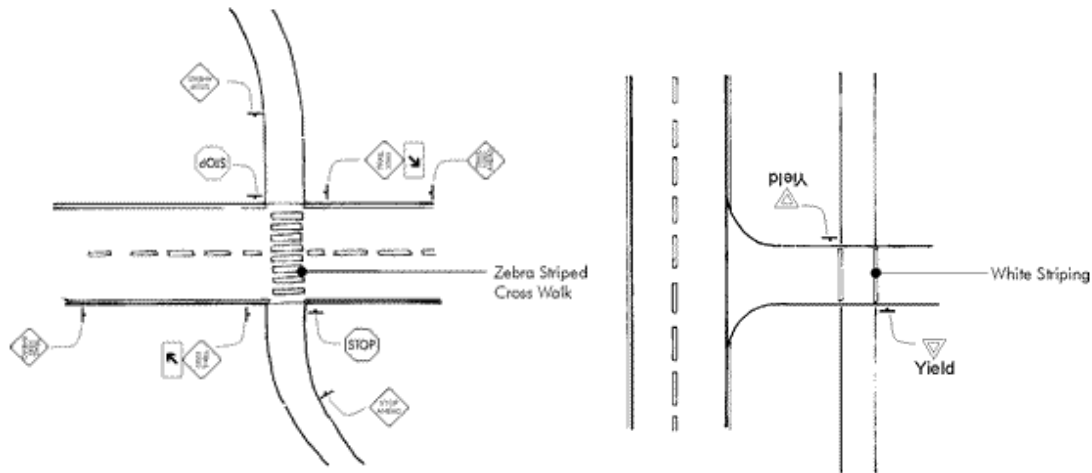


As an alternative, the “Yield to Pedestrians Here” sign, R1-5 of the “Manual of Uniform Traffic Control Devices” is recommended in conjunction with a yield bar. This combination clearly indicates to motorists the need to yield to pedestrians in the crosswalk and the optimum location at which to stop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

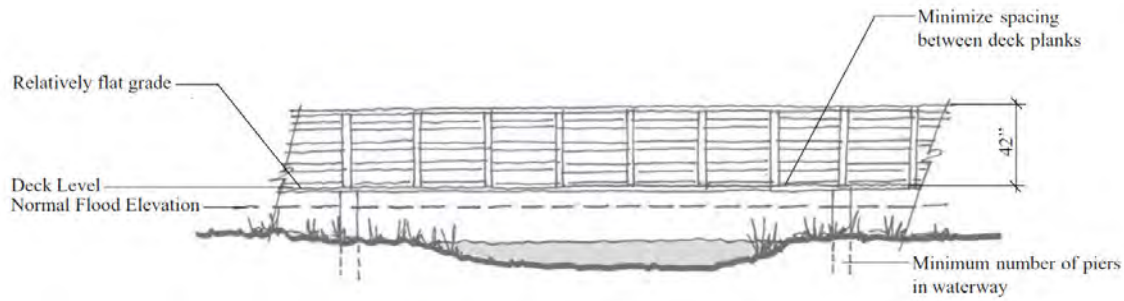


Designing and selecting pavement sections for shared-use paths is in many ways similar to designing and selecting highway pavement sections. A soils investigation should be conducted to determine the load-carrying capabilities of the native soil, unimproved, shoulder or former railroad bed. Paths should 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.

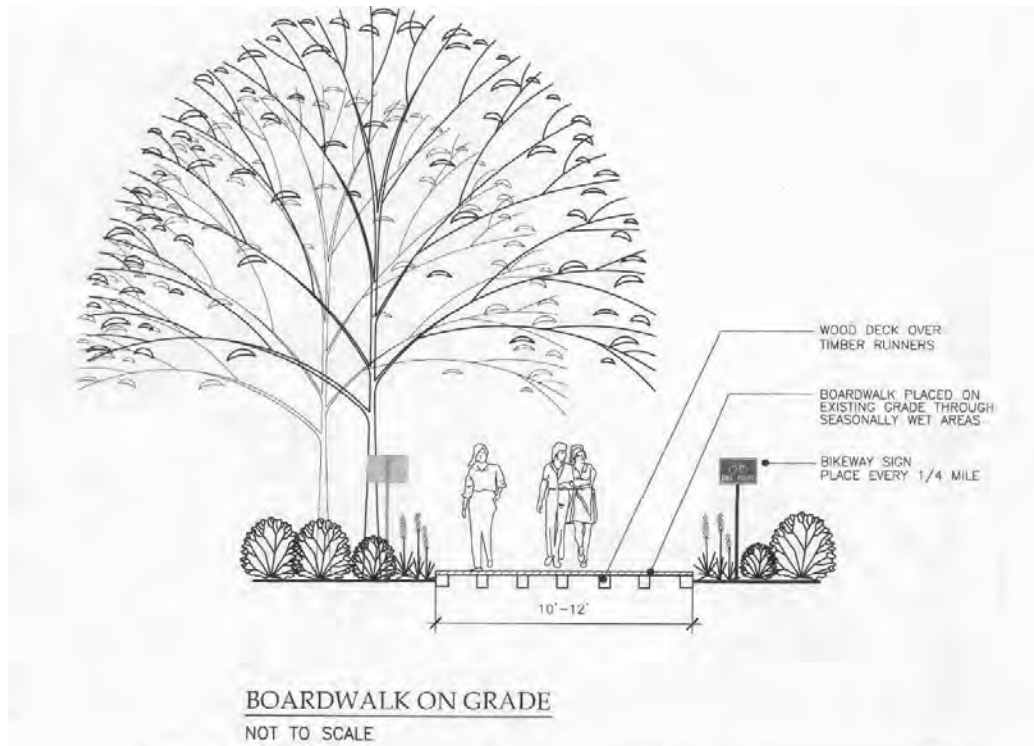
### Structures

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.

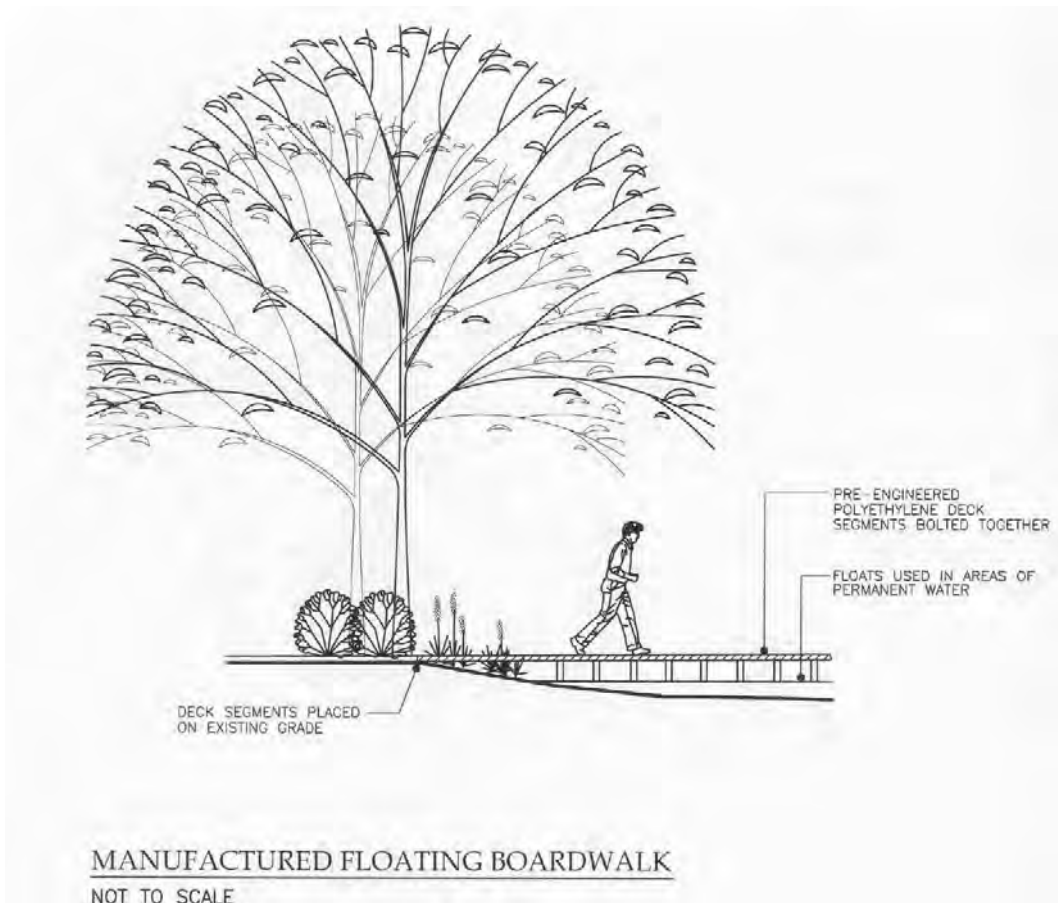


*Elevated Deck* - a combination of wooden decking and wooden piles or support piers with a wooden decking trail surface and railings. Railings should meet AASHTO and supports over 3'-6' rubbed smooth. Decking should be laid out at a 45 degree angle to reduce vibrations for wheeled uses. All local and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



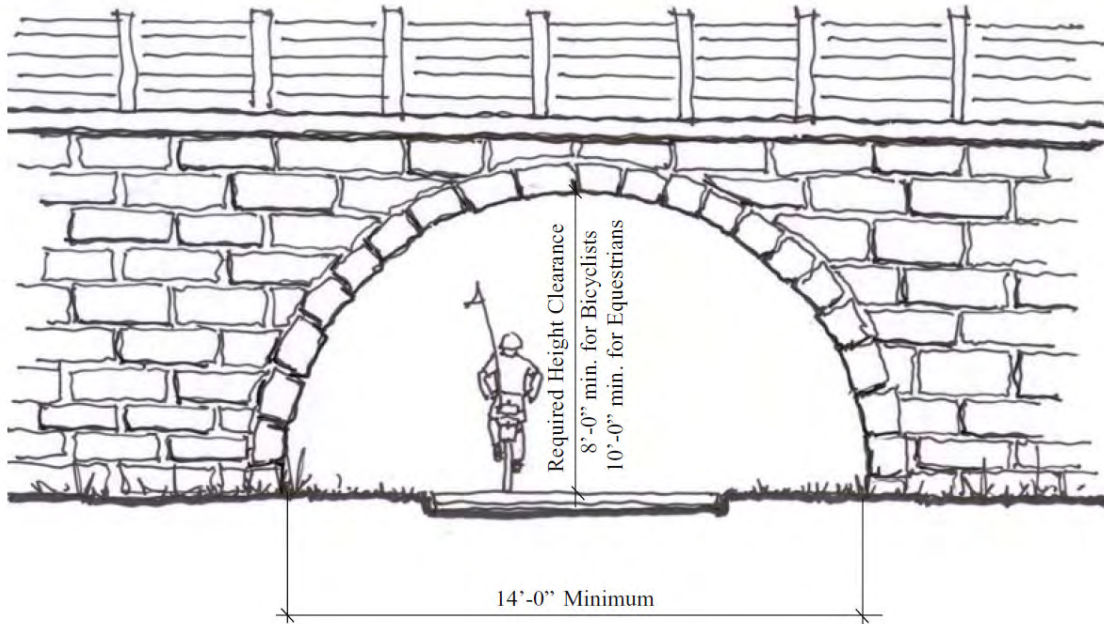
*Boardwalk on Grade* - in marginally wet areas where boardwalks can be constructed on grade, railings are not required. Such boardwalks are most often recommended for pedestrian-only applications. Decking should be laid out at a 45 degree angle to reduce vibrations for wheeled uses. Additional width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





*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 railway 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.

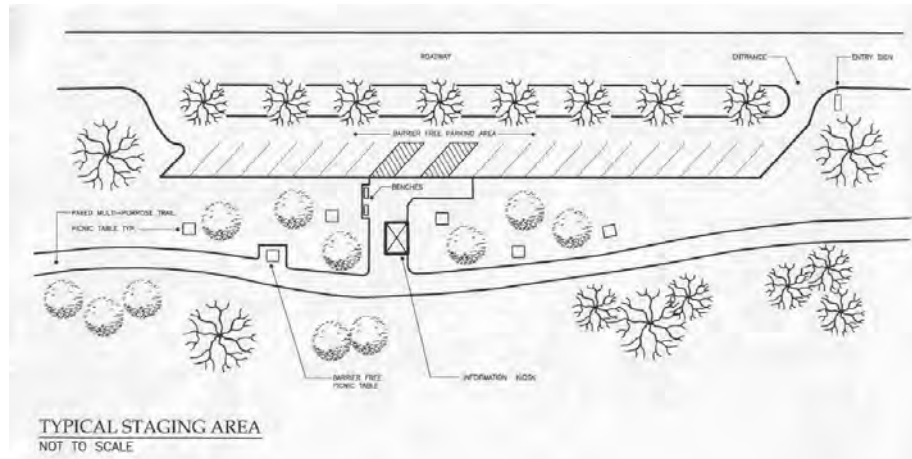


An overpass, underpass, bridge, or facility on a highway bridge may be necessary to provide connectivity and continuity to the developing non-motorized system. For the new structures, the minimum clear width should be the same as the approach paved shared use trail, plus the minimum 2-foot wide clear areas. As an example, a 1-foot wide paved path would require a 14-foot wide bridge to provide the required clearance areas. Access for emergencies should also be considered.

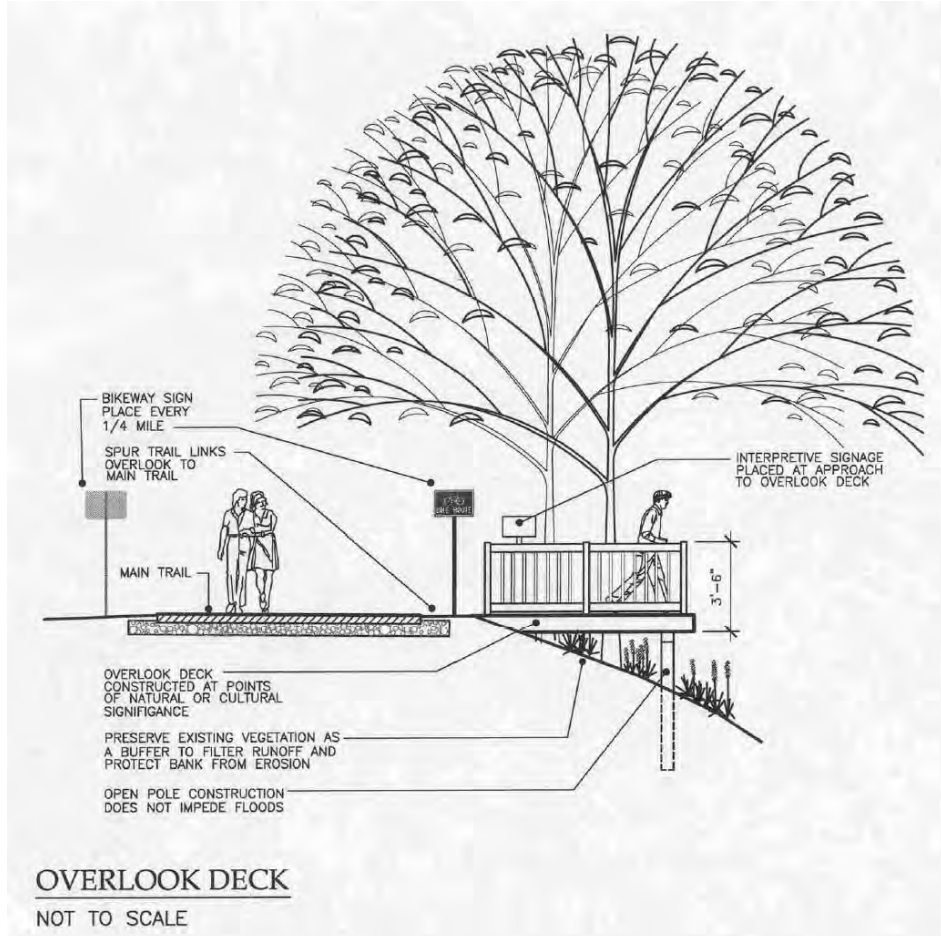
### Amenities

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 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.

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 county side, 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.

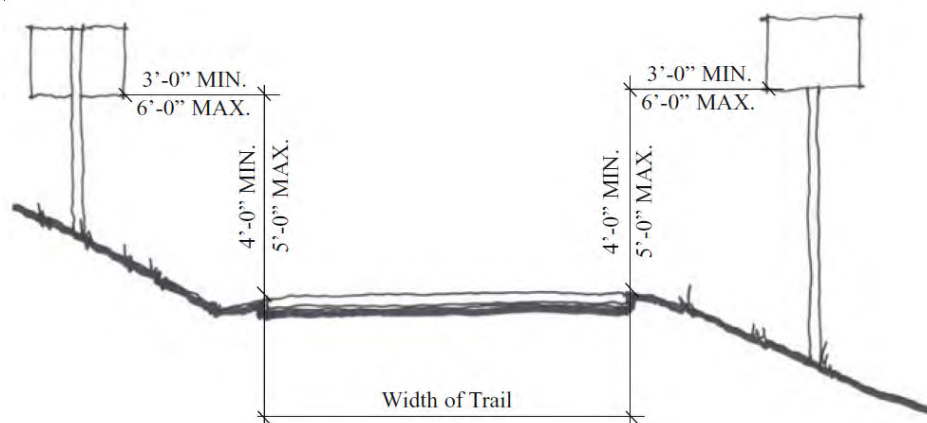
### Signage

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:

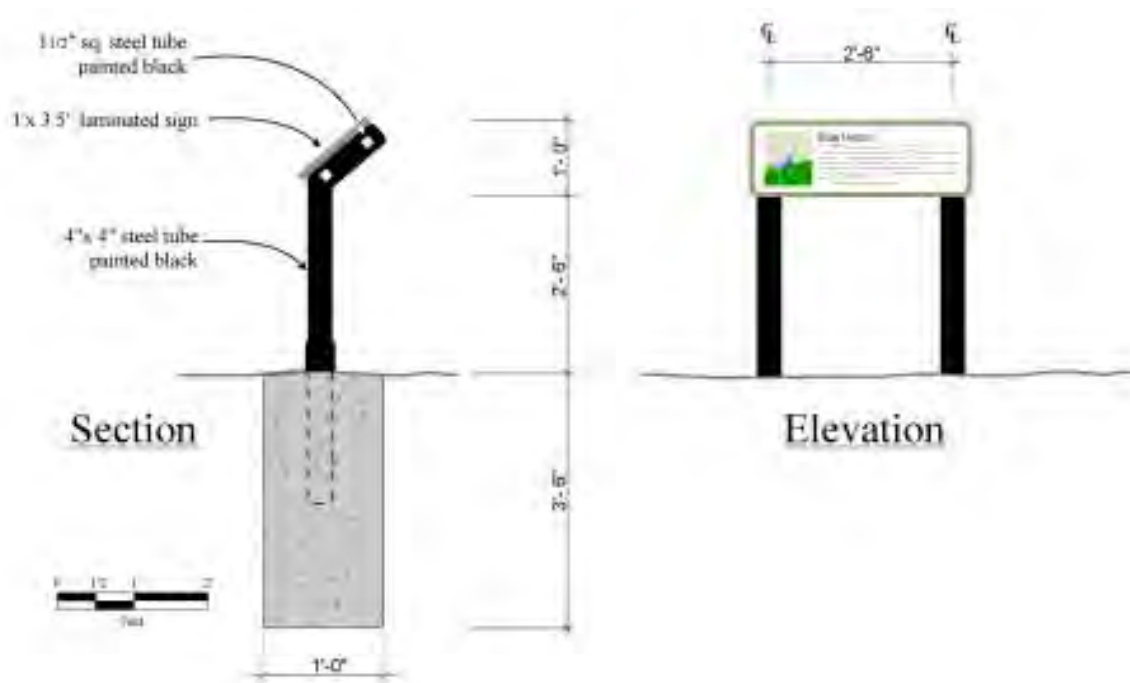
- Distance
- Direction
- Destination

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.

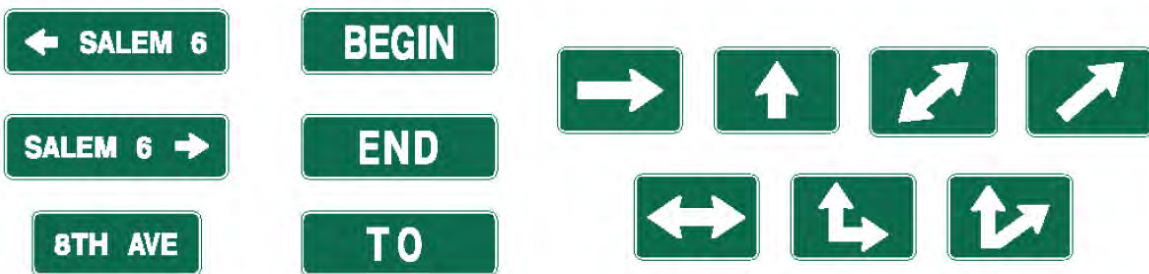
### Types of signs

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 include, 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:

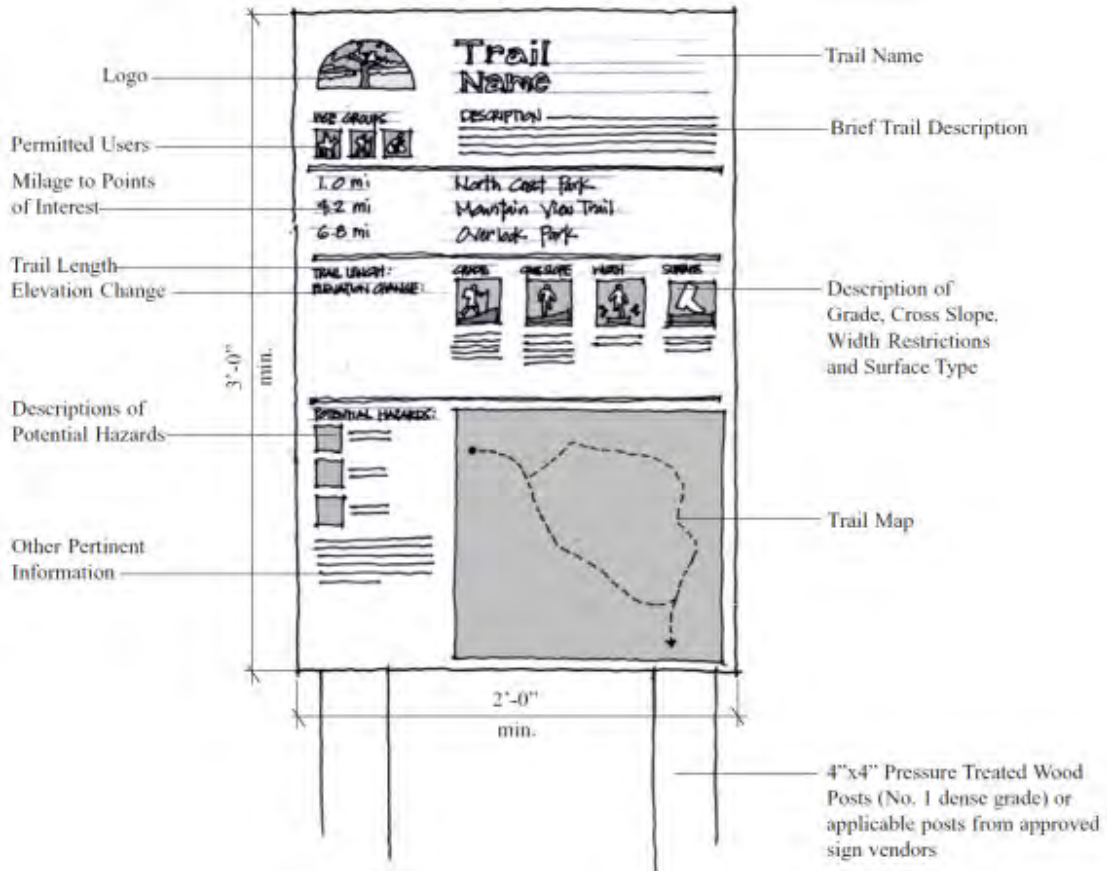
- Appropriate user modes for each trail
- Yield signs for multi-use trails
- Bike speeds
- Controlling direction of travel
- Stop and yield signs

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.

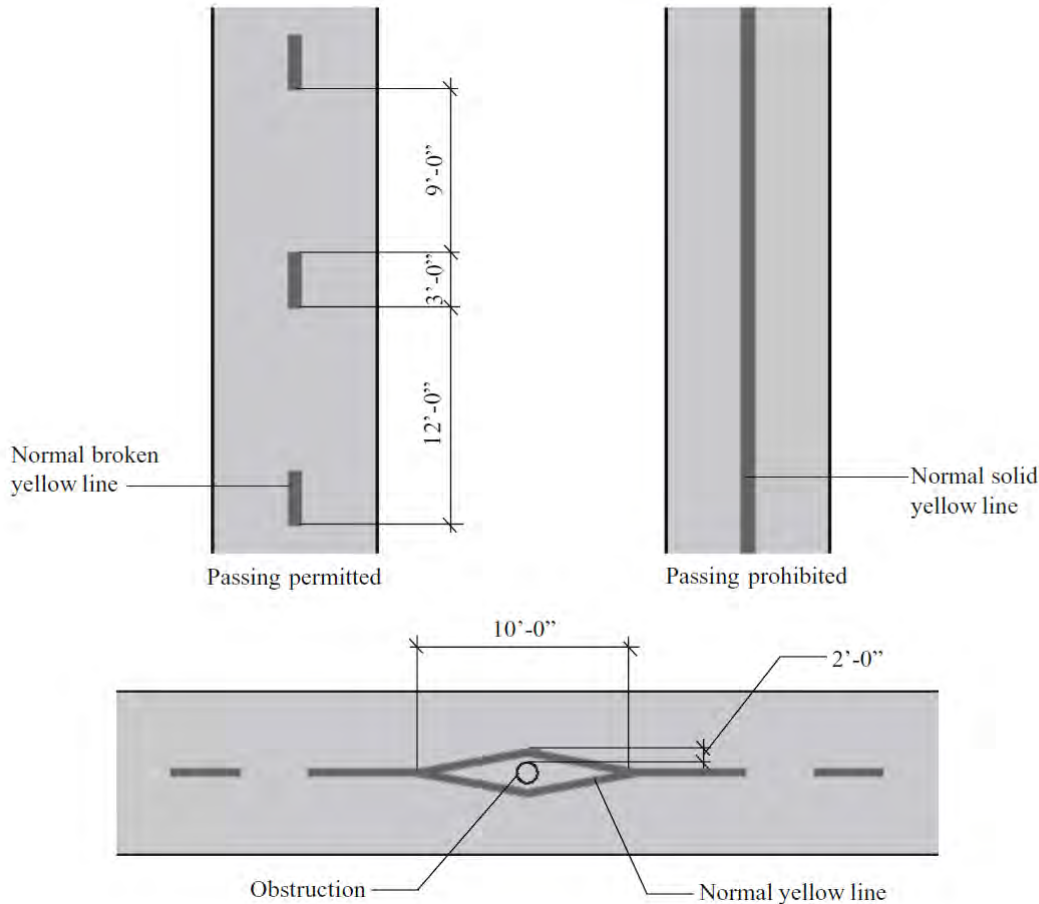
The placement of signs along with each trail will vary greatly, depending on the intended use of the trail, and should comply with the following standards:

- 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 trail
- 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 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	<ul style="list-style-type: none"> <li>• Sign replacement</li> <li>• Map or signage updates</li> <li>• Sweeping and brush removal</li> <li>• Trash removal and litter clean-up</li> <li>• Repair or replace trail support amenities such as parking lots, benches, restrooms, etc.</li> <li>• Clearing of vegetation for adequate sight distances</li> <li>• Repair flood damage, such as silt clean-up, culvert clean out, etc.</li> <li>• Patching and minor re-grading</li> <li>• Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary</li> </ul>
Seasonal	<ul style="list-style-type: none"> <li>• Mowing</li> <li>• Leaf blowing</li> <li>• Snow plowing or grooming</li> <li>• Planting, pruning and beautification</li> <li>• Culvert clean-out</li> <li>• Installation or removal of seasonal signage</li> </ul>
Yearly	<ul style="list-style-type: none"> <li>• Surface evaluation to determine needed patching, re-grading or installation of waterbars</li> <li>• Evaluate structural integrity of human-built trail features, such as bridges, retaining walls, steps, railings, etc.</li> <li>• Evaluate support services to determine need for repair or replacement</li> <li>• Repaint or repair trash receptacles, benches, signs, and other trail amenities</li> </ul>
5-Year	<ul style="list-style-type: none"> <li>• Sealcoat asphalt trails</li> </ul>
10-Year	<ul style="list-style-type: none"> <li>• Resurface, re-grade and re-stripe trail</li> </ul>
20-Year	<ul style="list-style-type: none"> <li>• Replace or reconstruct trail</li> </ul>

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 outcroppings 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 and 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. 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.

**Logical Lasting Launches: Design Guidance For Canoe and Kayak Launches**. National Parks Service, Spring 2004.

**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 Master Plan is a long term vision for connecting a non-motorized network within the City of Beaverton and connecting with adjoining county 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 are not implemented overnight and in many cases portions of this plan may not ever be implemented. This Master Plan is intended to provide an overall vision for the city to use as a foundation to reference as they continue to develop future development plans for road projects, land acquisitions, economic development strategies, resource protection, and other opportunities. The city should utilize this Master Plan as a tool, and refer to it for resources and information in making decisions on their future needs.

The following actions will assist in furthering implementation efforts for a connected non-motorized system within the City of Beaverton, Gladwin County and Mid-Michigan.

- Local communities and the County should amend Land Use, Transportation, and Recreation Master Plans to include the City of Beaverton Bicycle and Pedestrian Trails 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 city staff as well as with other local units of government, Gladwin County, 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 some visual consistency for the user.
- 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.
- 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. The Master 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.
- Awareness of grant opportunities should remain high. The city 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 Gladwin County Road Commission, Michigan Department of Transportation and the East Michigan Council of Governments.

Several segments of the planned non-motorized system are within road rights-of-way, or cross over or under road rights-of-way. Coordination with Michigan Department of Transportation and the Gladwin County Road Commission will need to occur on a continual basis to discuss potential for providing space for non-motorized facilities or accommodating non-motorized facilities within a planned design and construction project. This includes rehabilitation and/or replacement of bridges. The city 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 city will amend its 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 development. 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.

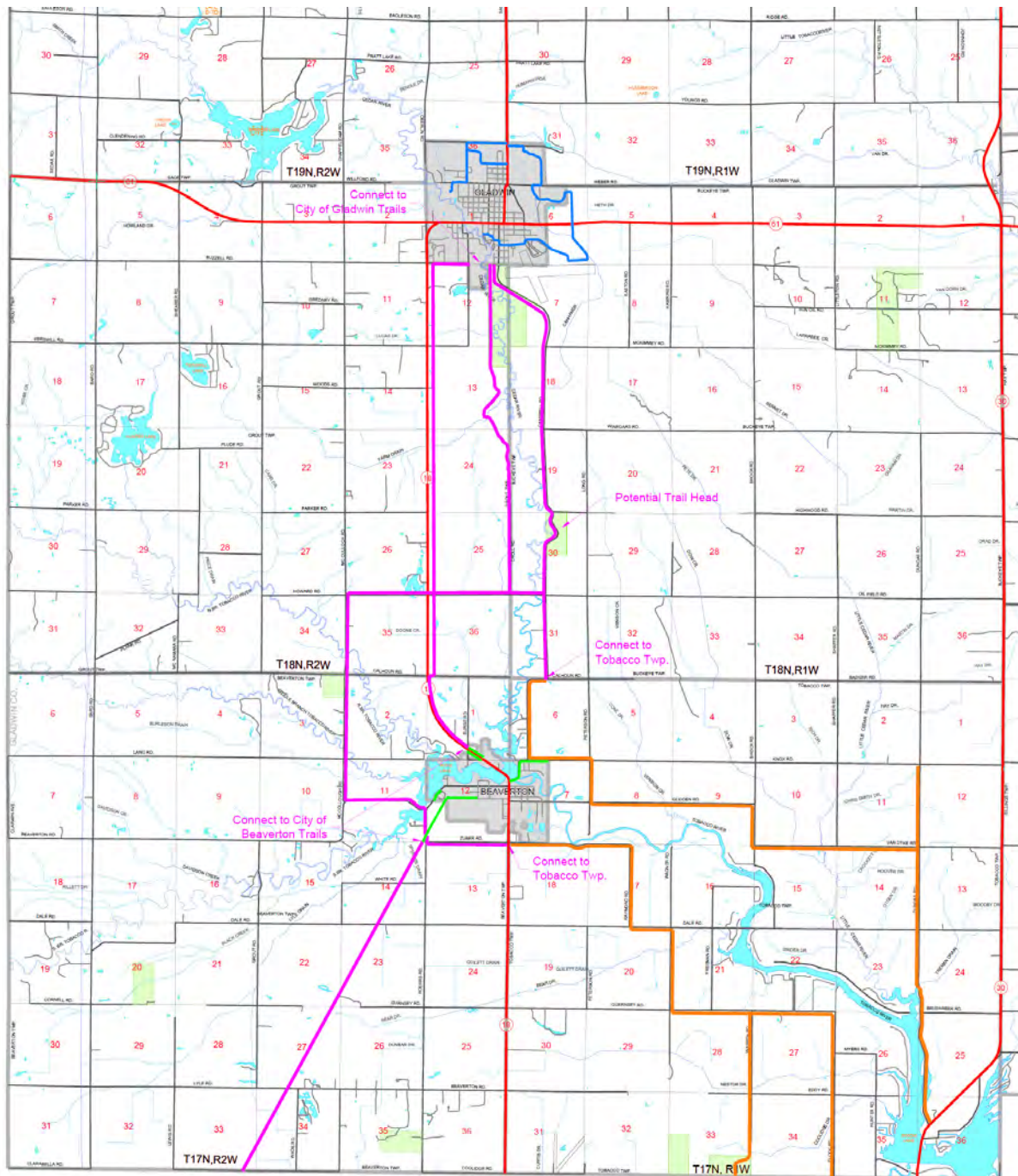
- Work with developers and property owners to discuss the non-motorized vision and associated benefits. Meet with property owners and developers early to discuss voluntary trail easements or dedications of land so that planned segments of the system can be incorporated.
- Develop ordinance language that 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 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.

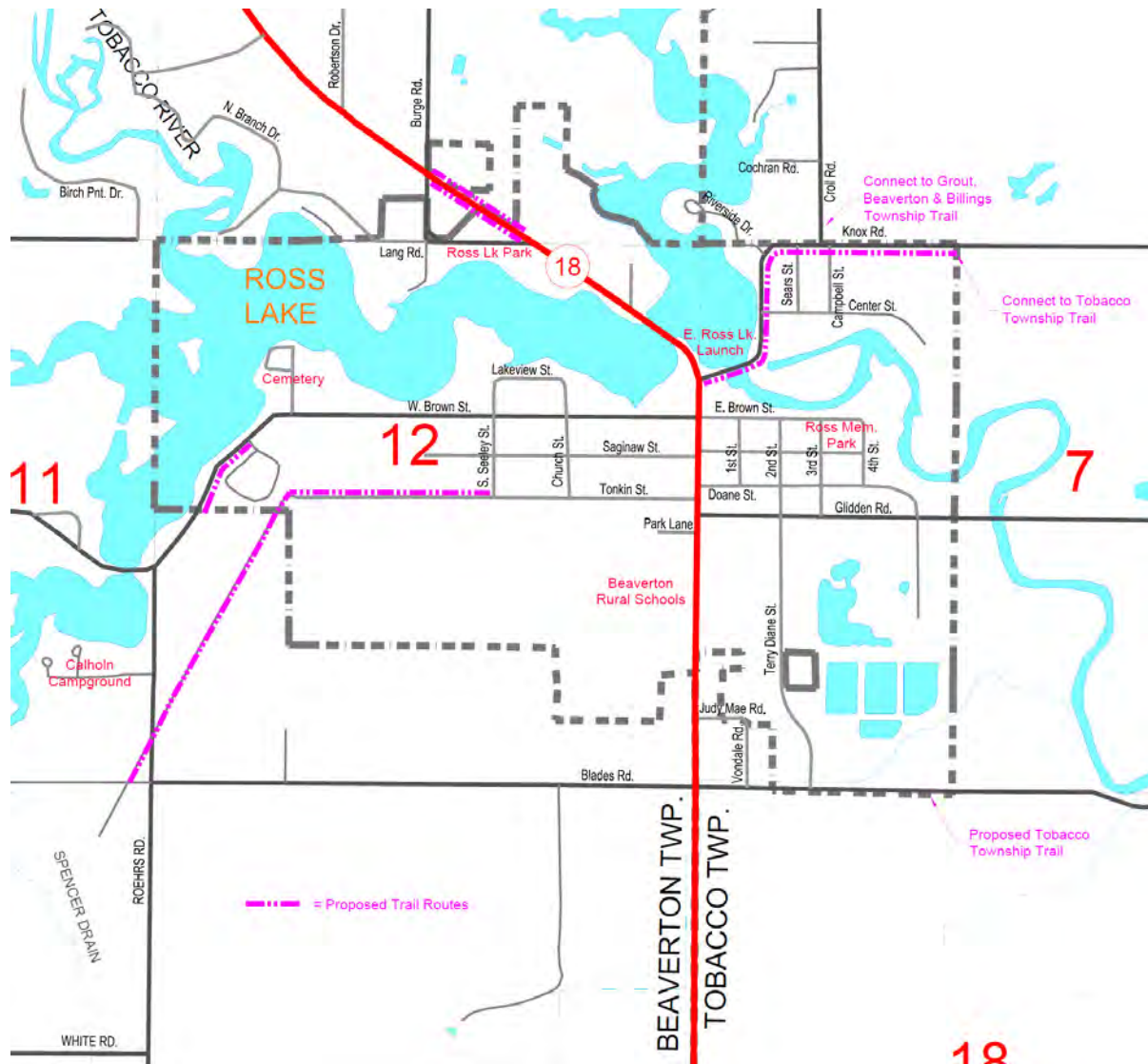
As was previously mentioned, this Master Plan represents a long-term vision that may well not be fully implement for 20 to 30 years because of a variety of factors including funding, feasibility, public involvement, and political and community priorities. Therefore a hierarchy of trails segments should 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 favorable if the opportunity presents itself. Primary routes where denser populations are present should be considered highest priority.





- = Grout, Beaverton & Buckeye Township's Potential Trail Routes
- = Tobacco Township's Potential Trail Routes
- = City of Beaverton's Potential Trail Routes
- = City of Gladwin's Potential Trail Routes

## Gladwin County Overall Trails Master Plan Map



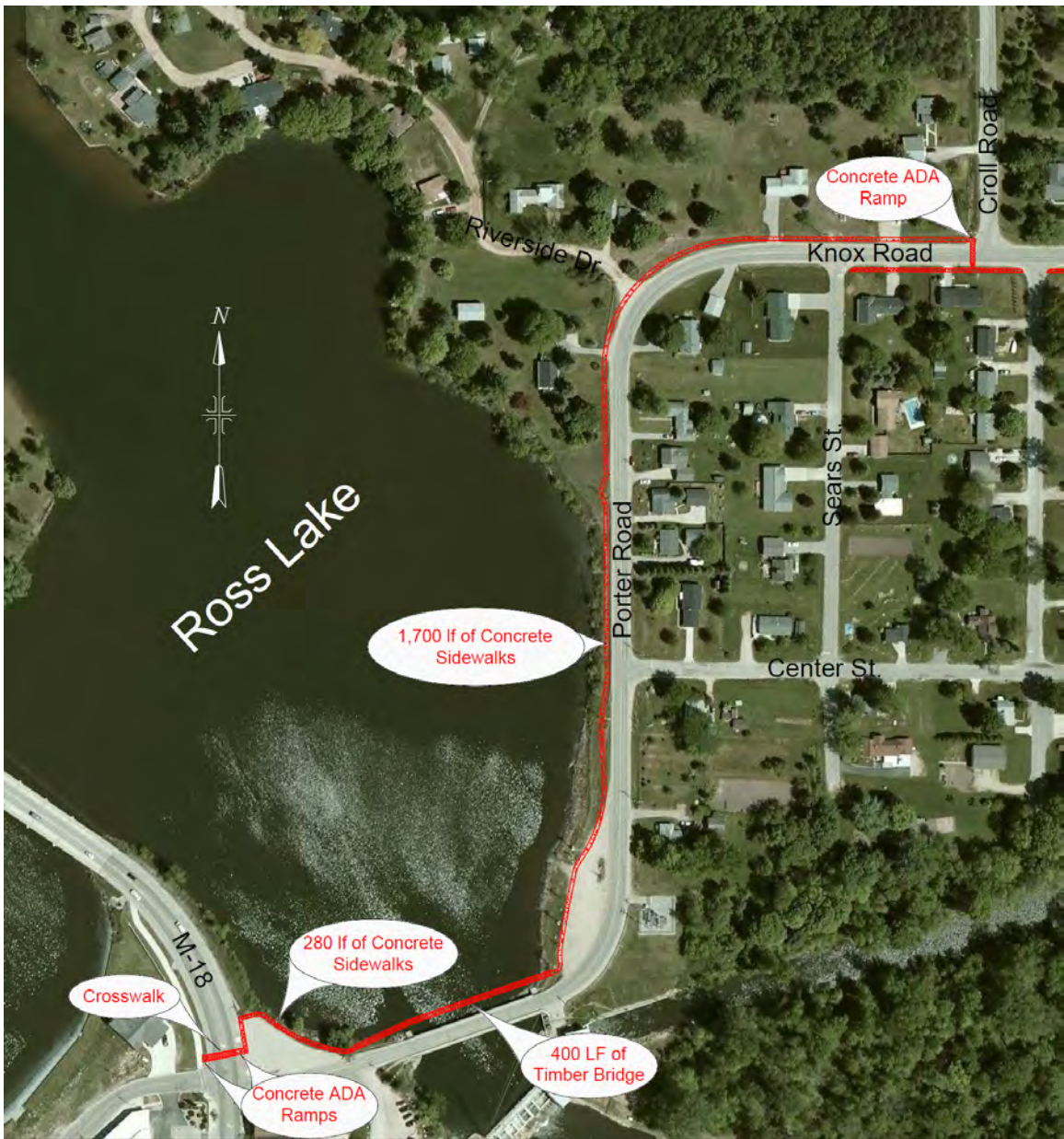
**City of Beaverton Trails Master Plan Map**

**TRAIL SEGMENTS AND DESCRIPTIONS**

*Porter / Knox Trail*

The Porter / Knox Trail connects the downtown Beaverton (M-18) area to the northeast side of the city and will connect to adjacent trails from Tobacco Township to the east and Buckeye Township to the north that eventually connect with trails in the City of Gladwin. This Trail segment will consist of concrete sidewalks, crosswalks and a timber bridge. ADA ramps at street intersections are included and signage is an important element for this trail route.







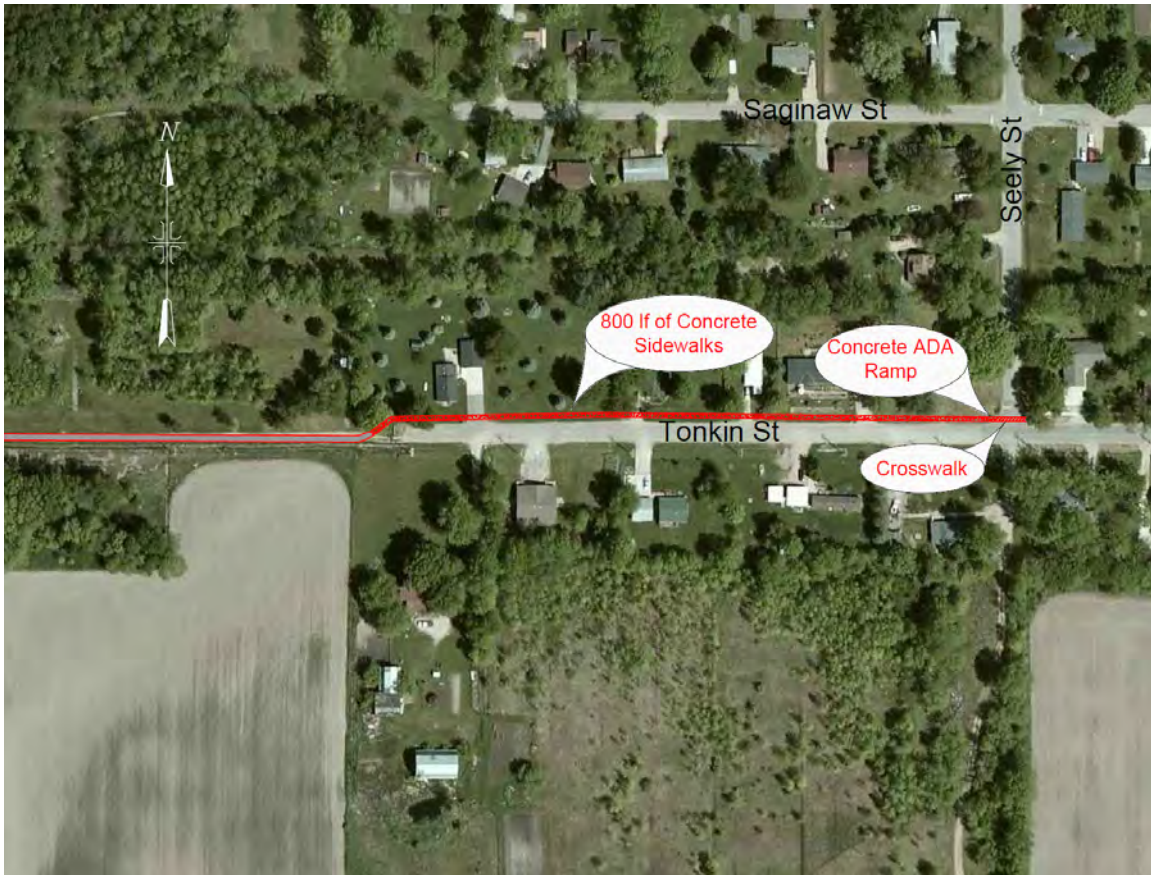
**Porter / Knox Trail Opinion of Costs**

ADA Ramps @ M-18.....	\$2,000.00
Crosswalk @ M-18 .....	\$7,000.00
Concrete Sidewalk (280 lf M-18 to Timber Bridge) .....	\$8,000.00
Timber Bridge over Ross Lake (400 lf).....	\$250,000.00
Concrete Sidewalk (1,700 lf Timber Bridge to Croll Road).....	\$40,000.00
ADA Ramp @ Croll Road.....	\$1,000.00
Crosswalk @ Knox Road .....	\$3,000.00
ADA Ramp @ Knox Road .....	\$1,000.00
ADA Ramp @ Sears Street.....	\$1,000.00
Concrete Sidewalk (300 lf Sears Street to Campbell Street) .....	\$8,000.00
ADA Ramps @ Campbell Street .....	\$2,000.00
Concrete Sidewalk (1,300 lf Campbell Street to City Limits).....	\$35,000.00
Engineering .....	\$50,000.00
Contingency .....	\$42,000.00
<b>Total Trail Costs .....</b>	<b>\$450,000.00</b>



*Tonkin Road / Rail Trail*

The Tonkin Road / Rail Trail traverses the existing sidewalks on Tonkin Road west and south along the old rail road grade to the Roehrs Road to the city park. This Trail segment will consist of concrete sidewalks, crosswalks and HMA paved trails. This trail segment will require obtaining a license from Consumers Energy to use the former rail road grade. The HMA paved trail would mostly be built on the existing railway that follows the old rail road grade. ADA ramps at street intersections are included and signage is an important element to this trail route.







**Tonkin Road / Rail Trail Opinion of Costs**

ADA Ramp @ Seely St .....	\$1,000.00
Crosswalk @ Seely St .....	\$3,000.00
Concrete Sidewalk (800 lf from Seely Street to Dead End).....	\$15,000.00
HMA Pathway (3,600 lf from Dead end @ Tonkin St to Roehrs Rd) .....	\$90,000.00
Crosswalk @ Roehrs Road .....	\$3,000.00
HMA Pathway (600 lf from Roehrs Rd to Park Boundary) .....	\$8,000.00
Consumers Energy Application Fee & 1 <sup>st</sup> year's license fee.....	\$2,000.00
Engineering .....	\$18,000.00
Contingency .....	\$15,000.00
<b>Total Trail Costs .....</b>	<b>\$155,000.00</b>

*West Brown Street Sidewalk*

The West Roehrs Road Sidewalk connects the existing sidewalk from downtown to the mobile home park and continues this sidewalk southwesterly along Brown Street to the apartment complex. This Trail segment will consist of concrete sidewalks and ADA ramps. The Steering Committee did discuss that the path could follow the north side of Brown Street along the Shore of Ross Lake.



**West Brown Street Sidewalk Opinion of Costs**

ADA Ramps .....	\$1,000.00
Concrete Sidewalk (880lf).....	\$12,000.00
Engineering .....	\$3,000.00
Contingency .....	\$4,000.00
<b>Total Trail Costs .....</b>	<b>\$20,000.00</b>



North M-18 Sidewalks

The North M18 Sidewalks connect the existing sidewalk on the north side of the city at Lang Road and M-18 and continues northwesterly on both sides of M-18. This Trail segment will consist of concrete sidewalks and ADA Ramps. This segment will require some additional grading efforts because of deep ditches on both sides of M-18.



North M-18 Sidewalk Opinion of Costs

ADA Ramps .....	\$20,000.00
Concrete Sidewalk (1,770lf).....	\$30,000.00
Engineering .....	\$7,500.00
Contingency .....	\$7,500.00
<b>Total Trail Costs .....</b>	<b>\$65,000.00</b>

**TRAIL PRIORITIZATION**

The City has prioritized these potential trails and has determined that the first priority would be to help make the Beaverton – Coleman Rail Trail connection from Midland – Gladwin County line north into the City of Beaverton. The first priority in accomplishing this would be beginning with the Token Road / Rail Trail. The first step in this segment is to acquire the easement from consumers to develop their corridor for trail use. After the lease agreement is negotiated then construction for the proposed trail may begin. Clearing and rough grading will make this trail segment a partially usable trail for the corridor and be the next step of this segment. After the trail is graded it will be ready for paving and completion of this segment.

Additional, this phase should include the involvement of the townships within Midland County that the remainder of the trail will affect to make the connection of this rail trail to the City of Coleman and the ultimately the Pere Marquette Rail Trail.

The next priority will be completing the connection towards the City of Gladwin. The River Road Trail which will follow River Road from Tobacco Township north to the City of Gladwin's South Park is a trail segment in the adjacent township's master plan. This project will be a long term goal and with the cooperation of the Road Commission may be constructed as segments of the roads are scheduled for reconstruction. The City of Beaverton's priority will be the construction of the Porter / Knox Road Trail to connect the City to the adjacent township's trails to make that connection to the City of Gladwin.

The M-18 and West Brown Street Trails are lower priorities, but are smaller projects that may be more easily accomplished and may be constructed if the opportunity arises.

A meeting was held on the 30th of July with representatives of Gladwin County, the City of Gladwin, Grout Township, Buckeye Township, Tobacco Township, and the Gladwin County Road Commission presenting the Pedestrian and Bicycle Plans for their communities. Priorities for a county-wide Pedestrian and Bicycle Trail System were discussed set. The first priority is to be the River Road Trail from Gladwin to Beaverton and the second priority is to be a trail on the Consumer's Energy right-of-way in Beaverton Township. Goals are to have a widely-used trail in the most populated area of the county and ultimately a connection with the Pere Marquette Rail Trail in Midland County. The group agreed that an "intergovernmental authority" among the municipalities would be needed to begin to find funding for the trail system and to be responsible for the operations and maintenance of the trails. Representatives will meet again in August.

**POTENTIAL FUNDING SOURCES**

This Bicycle and Pedestrian Trails Master Plan is a long-term vision for a connected non-motorized network within the city 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 the community to reference as it continues 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

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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 and updated 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.

**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 due in April for development projects and in August for acquisition projects.

### The Land and Water Conservation Fund (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 Michigan Department of Natural Resources 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.

#### 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.

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 were submitted. Applications can be found at [www.biketcba.org](http://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 with 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 1<sup>st</sup> 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](http://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](http://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 group.

### 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 a trail or greenway project.

### Foundations

Private Foundations are non-governmental, nonprofit organizations have a principal fund of its 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 of 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.

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, applications format and time frame.



- A well-designed initial letter and single page description of the goals, benefits, costs, budget, and partnerships of the plan may be submitted.
- Linking the Plan 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 other contributors' lists towards the total amount of the request.

Identify which are likely to 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 business. Be prepared with a match or 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. Funding is extremely competitive. Understanding the funding source will require work up front, but could save you the time of completing an entire application 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 partnerships 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 reader and evaluator of your grant application has never been to your community and that they know very little about 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's 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 times 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.

### 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.*

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.

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 design. 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 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.