

A black and white photograph of a person with short, light-colored hair riding a bicycle away from the camera on a paved trail. The person is wearing a dark long-sleeved shirt and light-colored pants. To the left of the trail is a grassy area with a modern, dark-colored park bench. In the background, there is a field of tall, dry grass and a line of buildings, including what appears to be a school or community center, under a clear sky.

CITY OF APPLETON

Trails Master Plan

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INTRODUCTION

The Appleton Trails Master Plan explores opportunities to enhance and expand multi-modal facilities, for both recreation and transportation purposes within the City of Appleton. New trails and improvements to existing trails will lend to the creation of a network that provides connections to key destinations and recreation opportunities within the city and region. This plan builds on existing proposals and planning efforts and includes the results of a trail audit and stakeholder input to identify and prioritize projects for network expansion.

Project Vision, Goals, and Objectives

The purpose of the Trails Master Plan for Appleton is to provide a framework for future investments in a system of interconnected multimodal transportation facilities in Appleton. The Trails Master Plan focuses on improving connectivity to local destinations, linking to the trail system in the Fox Valley, increasing safety and accessibility for all trail users, supporting economic development, and enhancing quality of life for Appleton area residents.

Developing the Trails Master Plan included consideration of future land use developments, major origins and destinations within the City, and review of current and proposed on-street bike lanes and trails. To identify trail connections, the project team conducted trail condition audits of existing trails such as the Apple Creek Trail, the Highview Trail, the Newberry Trail, the North Island Trail, and the Providence Trail. To maintain concurrency with existing plans and policies, the team reviewed the City of Appleton On Street Bike Plan, Appleton (Fox Cities) TMA and Oshkosh MPO Bicycle and Pedestrian Plan, City of Appleton Parks and Recreation Department Master Plan, the Downtown Plan, the Five-Year Updates to the City's Comprehensive Plan, and relevant plans for communities adjacent to Appleton.

Additional major considerations also included ADA accessibility, connectivity to future subdivisions, connectivity to private corporations and businesses, and trail purpose in terms of recreation and/or transportation.

This plan identifies trail alignments at a high level by referencing previous planning efforts, direction from city staff, and public involvement. As trails are implemented, further study will be conducted to verify and adjust the alignments through further detailed investigation and public involvement.





Setting

The League of American Bicyclists has ranked Appleton as a Bronze Level Bicycle Friendly Community. This accolade acknowledges Appleton has a growing population of bicycle commuters with programs and events to encourage more people to ride, increasing numbers of streets with dedicated bicycle infrastructure and trails, and plans and policies to further advance cycling in the community. This trails master plan will build upon these achievements and demonstrate Appleton's continued efforts to further improve conditions for bicycling as Appleton re-applies for bicycle friendly community status in 2017.

Bicycling, walking and trail use are becoming increasingly popular in Appleton. With a current total of eight miles of trails within the city, residents and community members have expressed a growing interest in trail expansion. As the City continues to grow and becomes even more of a regional cultural and tourist destination, it will be important that future capital investments and development projects incorporate trails, on-street bikeways, and pedestrian paths as vital community assets.

The past several years have seen growth in city and regional trail development including but not limited to: new Telulah park trail connection via Newberry trail, CB trail, key on-street bike lane striping projects, such as Mason, Fremont and John streets, and regional efforts such as the Fox Cities Paper Trail. In addition to these land based trails, the Fox-Wisconsin Heritage Water Trail passes through the center of Appleton.

Along with this expansion in trail development, there has been strong support from volunteers and private interests to add additional trails to the network. Some of these groups include Fox Cities Greenways, Fox Cities Cycling Association, the Appleton Bike/Ped Advisory Committee, and large employers, such as Kimberly Clark, who increasingly view trails as a baseline requirement for retaining existing and attracting new employees.

The City of Appleton also understands that trails are a core component of quality of life investment and directly support community and economic development efforts underway, such as the River Heath development and Eagle Flats. The City has identified future funding to support new trail construction in its CIP over the next 5-year period, including the potential for adding key river trail connections including trestle trails.



This Trails Master Plan will provide clear direction to City Council to invest in future trail connections over next several years while fostering additional opportunities for public-private partnerships to extend trail network.

Benefit of Trails

HEALTH & EQUITY

The ability for all Appleton residents and visitors to safely and conveniently walk and bicycle is a fundamental equity measure and translates to numerous community health and equity related benefits. Improved community health and wellness is directly related to increased levels of physical activity. A growing body of literature has shown a strong connection between parks and trails and increased physical activity. An expanded trail network, in combination with a complete network of sidewalks bike lanes and bike routes, could dramatically increase safe and convenient opportunities for residents and visitors to walk and bike, leading to increased frequency and duration of physical activity among residents. This could in turn lead to reduced risk of obesity, diabetes, heart disease, stress related health problems, and other health concerns attributed to physical inactivity.

TRANSPORTATION & ENVIRONMENTAL BENEFITS

The Appleton trail network will result in increased access and connections to many local and regional destinations. It would provide residents and visitors with more travel options and present a safe, comfortable, efficient, and enjoyable way for people to get around. Additionally, the network would provide the City with transportation-specific benefits related to reductions in the number of vehicle miles traveled (VMT). These benefits include reductions in the estimated costs of congestion, vehicle collisions, road maintenance, and direct household vehicle expenses - as well as the estimated environmental impact associated with vehicle emissions.



ECONOMIC & PROPERTY VALUE BENEFITS

The Appleton trail network will provide residents and visitors access to local parks, regional destinations of cultural and historical significance, and all of the everyday connections that the community makes for work, school, shopping, and play.

As a growing industry and significant economic driver in the region, tourism is an increasingly important basis for developing the regional trail network. Trail networks may also lead to the creation of tourism-based jobs.

Additionally, the transportation and recreation amenities that the network provides could incentivize residents and business owners to invest in property. Property value studies of similar trail systems show that nearby property owners can expect a 3.5% increase in property values.





**EXISTING
DOCUMENTS**

The development of a comprehensive trail network in the City of Appleton is addressed in numerous plans at both the local and regional levels. These plans address network extent, quality, and purpose. The following section provides a review of these existing documents, including:

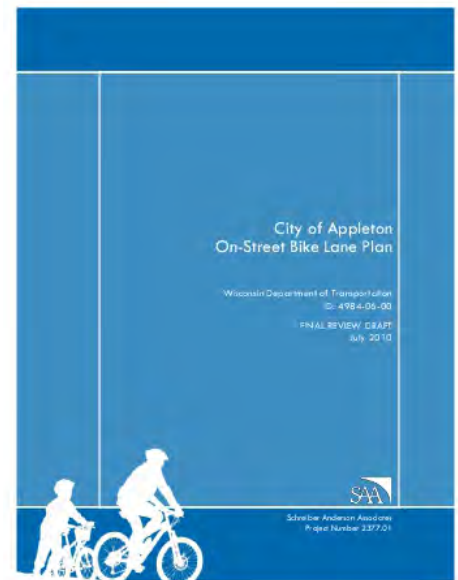
- » City of Appleton On-Street Bike Lane Plan (2010)
- » Fox Cities Transportation Management Area and Oshkosh Metropolitan Planning Organization Bicycle & Pedestrian Plan (2014)
- » City of Appleton Parks and Recreation Department Master Plan (2004)
- » Comprehensive Plan: Transportation Element (2010-2030)
- » Comprehensive Plan: Downtown Element (2010-2030)
- » Greenville Comprehensive Open Space & Outdoor Recreation Plan (2015)
- » Little Chute Comprehensive Park & Outdoor Recreation Plan, Supplement #1: Pedestrian and Bicycle Facilities Recommendations (2008)
- » Village of Kimberly Open Space & Recreation Plan (2013)

In addition to these planning documents, the Trails Master Plan team coordinated with Public Works to incorporate relevant information from the Downtown Appleton Mobility Study, which was completed in August 2016.

City of Appleton On-Street Bike Lane Plan

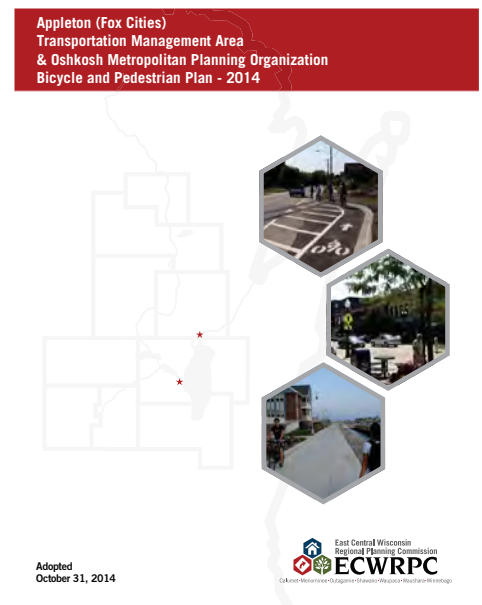
Adopted: September 15, 2010

This plan examines opportunities for implementation of an on-street network for the city. Building on regional and state goals for increasing the viability of bicycling for transportation, the plan provides guidelines for facility selection and implementation, education and encouragement programming, funding opportunities, and project prioritization. The plan recognizes the benefits of bicycling for public health, transportation cost, environmental impact, and social cohesion. A primary goal is to increase bicycle commute mode share by capturing a portion of the reported 49% recreational cyclists in the state. Snow and other debris were identified by stakeholders as a concern and barrier to use; recommendations in the plan call for snow clearing on facilities and bike parking locations to address this concern. The plan concludes with a prioritized project list and implementation time line, specific actions related to the 5 Es for all community members, standard element costs, and a general framework for route and wayfinding signage development.



Fox Cities Transportation Management Area & Oshkosh Metropolitan Planning Organization Bicycle & Pedestrian Plan 2014

The Bicycle & Pedestrian Plan aims to ensure that regional residents can safely and conveniently walk and bike between destinations, while maintaining access to transit services. The plan recognizes the benefits of active transportation for regional connectivity, economic value (through tourism, health benefits, and increased property values), and for addressing obesity and environmental concerns. Goals include increasing biking and walking trips to school, equity among modes, and providing connections among municipalities.



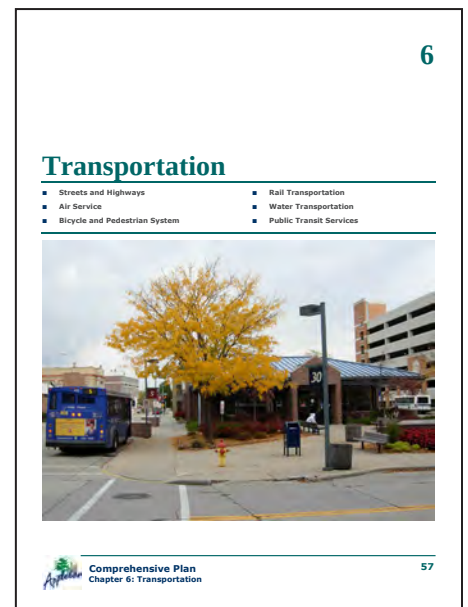
City of Appleton Parks and Recreation Department Master Plan 2004

The Parks and Recreation Department identifies acquisition of greenways, especially within new residential developments, as a primary goal. Multi-use trails are considered to be a park facility, and in the public outreach process the Department found significant demand for more trails. Over two-thirds of respondents indicated current use of the trail system, and more than half favored adding new trails.



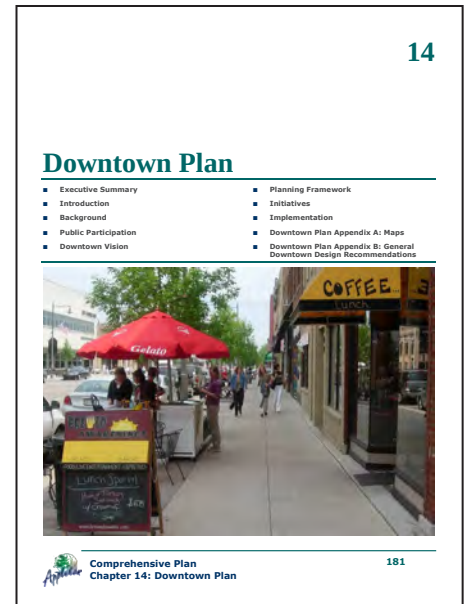
Comprehensive Plan – Transportation Element 2010-2030

Promoting bicycling as a viable means of transportation and increasing safety for all cyclists are primary goals of the Transportation Element. Similar to the other plans reviewed here, education, integration with transit, coordination with Safe Routes to School efforts are identified as primary pathways to achieve these goals. Connectivity to the regional trail system in addition to local destinations are important elements to this plan. Although the roadway network for motor vehicles is assumed to require expansion over the plan period, the plan recommends focusing this growth in a strategic manner so as to reduce congestion and lessen the environmental impact. However, several member towns do have plans in place to expand the existing width of several major corridors. This section will be updated as the Comprehensive Plan is updated in 2016.



Comprehensive Plan – Downtown Element 2010-2030

The Downtown Element focuses on the developing clear connections between adjacent multi-use trails and Downtown. By adding entry elements, wayfinding signage, and increased bicycle parking options, connectivity through downtown will be enhanced. The Plan prioritizes developing a rails-trail along the northern portion of downtown to improve connectivity to adjacent neighborhoods. Identifying safe routes and additional off-street opportunities is vital to addressing safety and connectivity concerns for bicycling in the area. This section will be updated as the Comprehensive Plan is updated in 2016.



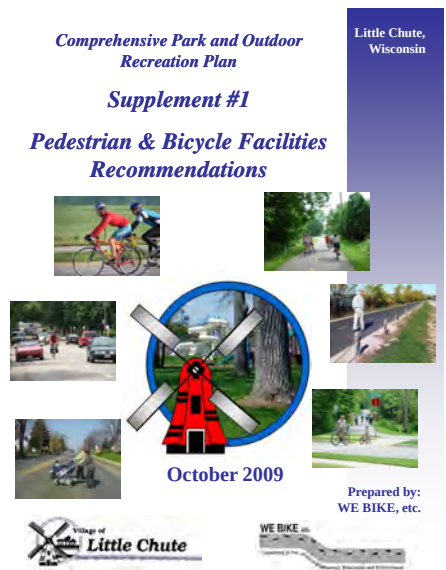
Greenville Comprehensive Open Space & Outdoor Recreation Plan 2015

Identifies a number of goals related to multi-modal facilities. Public input identifies frequent use of existing trail facilities during non-snow months, as well as support (67%) for more trail development. Plan recommends the development of a Town Bike and Pedestrian Facility Plan to establish levels of service, project prioritization, and network connectivity. Ten specific corridors are identified for improvement or development. While none of these trails provide a direct connection to Appleton, the CB Trail Extension and Design Drive Trail provide connections to proposed regional trails that have access to Appleton from 5-12 mph, and downhill bicyclist speeds can reach 20-30 mph. A design speed of 10 mph is used for bicycle signage and crossings.



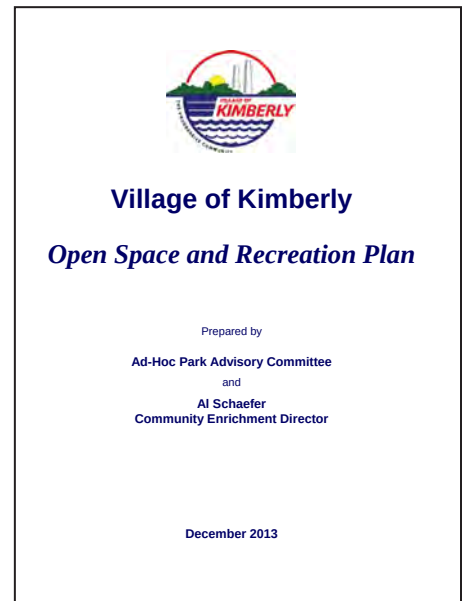
Little Chute Comprehensive Park & Outdoor Recreation Plan Supplement #1: Pedestrian & Bicycle Facilities Recommendations 2008

Accompanying element to the larger Park and Outdoor Recreation Plan that identifies specific guidelines and recommendations for the bicycle and pedestrian network. The plan identifies facility types and limitations, and encourages intersection treatments to improve safety for pedestrians and cyclists. Similar to other plans in the region, Little Chute identifies that education and enforcement are integral to a successful network. Despite minimal reported collisions from 2002-2007, the majority of those reported did involve cyclists. Utilizing this information as well as village-wide and corridor specific factor, the plan presents a recommended project list. One route in particular, bike lane along Highway 96, provides a clear connection into Appleton City Limits.



Village of Kimberly Open Space and Recreation Plan December 2013

The open space plan identifies needed multi-purpose trails interconnected with the CE Trail and neighboring communities. Specific links identified include Railroad Street, Kennedy Avenue, Marcella Street, Cobblestone, and Mill Site. Addition bicycle lanes could be implemented along complete street corridors, including Kimberly Avenue, 3rd Street, and John Street. Similar to regional goals, the plan aims to provide quality recreation facilities that are accessible to all ages and abilities, provide protection to natural resources, and promote region-wide cooperation. An accompanying action plan outlines all recommended projects, associated costs, and projected timeline for completion.

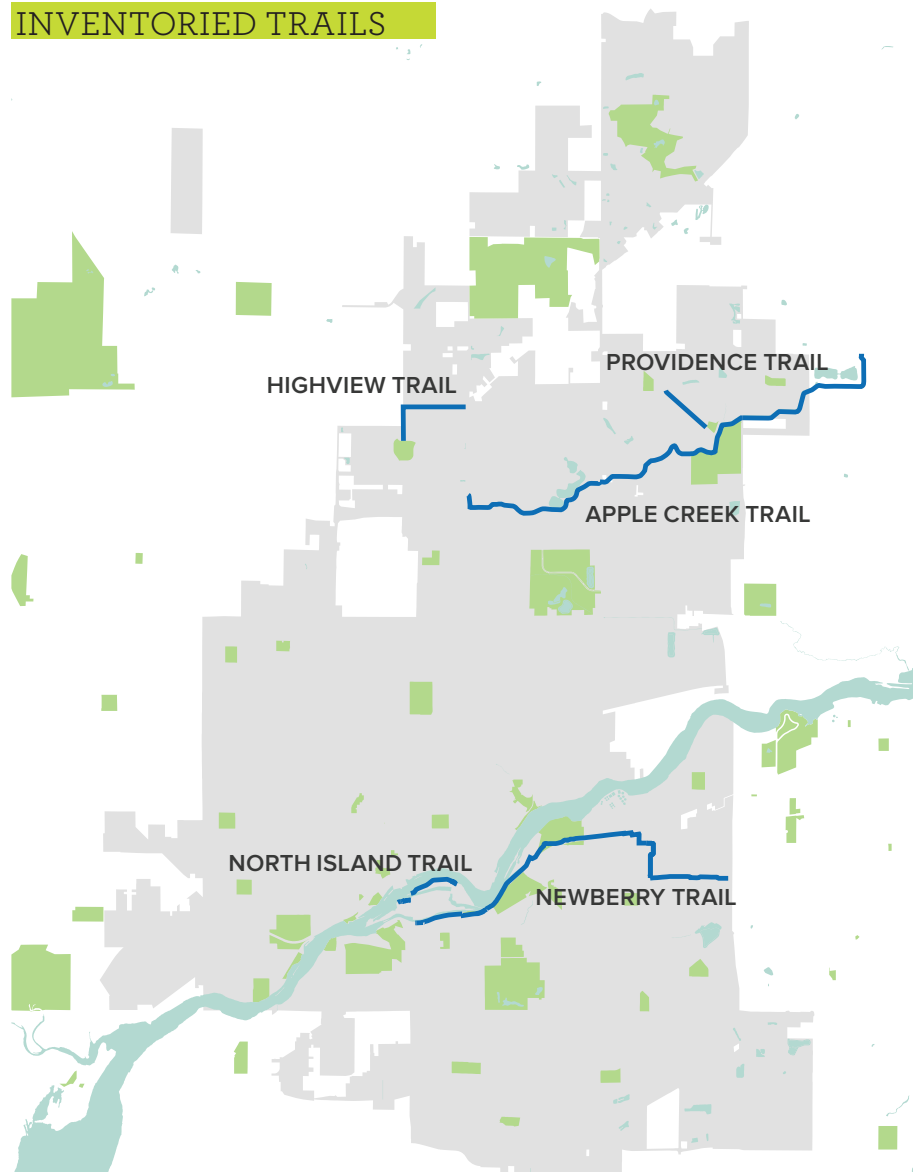




TRAIL CONDITIONS AUDIT

The condition of eight miles of trails within the City of Appleton were audited in early 2016. The project team collected information on trail condition, surface quality, and amenity locations along the trail network. The data summarized here is intended to provide a high-level snapshot of existing conditions and may contribute to the development of future trail projects and maintenance plans.

INVENTORIED TRAILS





Project staff collect trail inventory data using Collector for ArcGIS.

Trail Audit Location

The trails included in the existing conditions audit included the following:

- » Apple Creek Trail
- » Highview Trail
- » Newberry Trail
- » North Island Trail
- » Providence Trail

Trail Audit Methods

A team of two conducted the audit by walking along the length of each trail. Collector for ArcGIS paired with a GPS unit allowed for attributes related to trail condition and quality to be captured in their correct location along each segment. Additional images and descriptions were captured for items requiring further review.

The use of Collector allows for data captured in the field to be directly translated into a GIS database, which can be used in analysis of existing trail needs. The database is compatible with the city's existing system and can be updated by city staff as trail conditions and the extent of the system change.

Trail Audit Criteria

The following fields were entered into the Collector application. Each field is detailed with the type and definition of data entered.

- » Surface Issues
- » Crossings
- » Signs
- » Maintenance Concerns
- » Barriers/Obstacles
- » Amenities
- » Limited Sight-line

SURFACE ISSUE:

» Captures location of buckling, heaving, cracking, or other issue. The following types of issues are defined below¹:



Alligator: Fatigue cracking associated with repeated traffic loading; exhibits as parallel longitudinal cracks that begin to interconnect



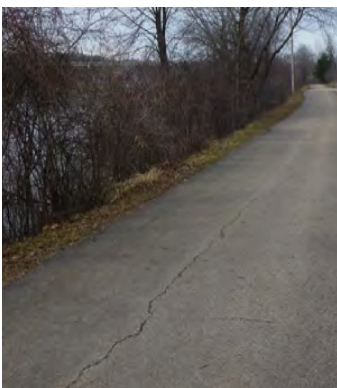
Patching: Area of pavement replaced with new material



Transverse: Cracks that run perpendicular to roadway centerline; can be caused by shrinkage due to low temperatures or cracks in underlying layers



Sags: Specific depressions of pavement due to settlement or displacement due to tree roots



Longitudinal: Cracks that run parallel to trail center line and are often discontinuous. These cracks are often associated with loading on the trail surface



Edge Condition: Locations along pavement edge where pavement has broken away from pathway

¹ Pavement Surface Condition Field Rating Manual for Asphalt Pavements. Northwest Pavement Management Association, 2008.



CROSSING:

- » Captures location of trail crossings with roadways



SIGNS:

- » Location of signs, including regulatory, wayfinding, and interpretative



MAINTENANCE CONCERN:

- » Captures location of maintenance concerns, including drainage issues



BARRIERS/OBSTACLES:

- » Locations of barriers to trail path, such as storm drains and utilities



AMENITY:

- » Captures location of items such as trash receptacles and benches



LIMITED SIGHTLINE:

- » Walls, fences, vegetation, and other barriers along the corridor that impact visibility



Seasonal pooling along trails were often associated with surface cracking.



Visible crossings improve comfort for trail users at intersections with roadways.



Edge conditions include cracking and disintegration of the trail surface.

Summary of Findings

Surface issues were the most common conditions documented during the trail audit. Cracking of the surface was severe along most of the trails; newer segments experienced less severe but still frequent cracking. Drainage issues were also frequent; pooling along the trail was common at the time of the audit.

Many of the crossings documented were considered to be insufficient, meaning that at least one curb ramp and/or crosswalk was missing. While trails provide a separated facility for all ages and abilities, crossings with roadways, rail lines, or other trail segments can decrease the safety for trail users. Adequate signage, markings, and accommodations should be made to provide for users of all ages and abilities.

Trail amenities, including benches, trash receptacles, and lighting were also inventoried. Lighting was present only along the North Island trail and the westernmost extents of the Newberry trail. Signs were distributed across all trails and primarily include regulatory signage; limited wayfinding signs was noted.

TABLE 1: TRAIL AMENITY INVENTORY

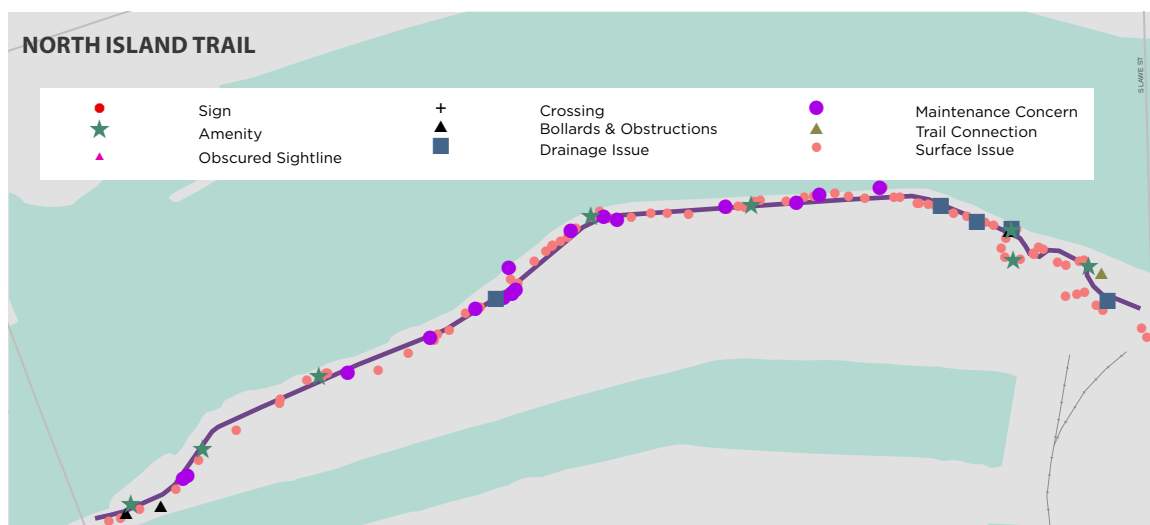
ITEM	COUNT
Signs	94
Lighting	25
Benches	22

Overall, trail widths were found to be consistently 10 feet, with only five total width changes noted. Trail surface varied between asphalt and concrete.

TABLE 2: SURFACE CONDITION SUMMARY

CONDITION	APPLE CREEK TRAIL	HIGHVIEW TRAIL	NORTH ISLAND TRAIL	PROVIDENCE TRAIL	NEWBERRY TRAIL
TRANSVERSE CRACKING	48	46*	58	16	126
LONGITUDINAL CRACKING	61	52*	5	4	53
EDGE CRACKING	56	4	9	9	19
ALLIGATOR CRACKING	17	0	0	1	11
PATCHING	19	10	9	2	6
SAGS/ SETTLEMENT	13	6	3	0	0
ROOT INTRUSIONS	1	0	16	1	4
DRAINAGE ISSUE	16	0	5	1	4

**Note that these numbers represent only a small portion of the number of transverse and longitudinal cracks on the Highview Trail. The density of cracks was often too high to document accurately.*



Example of trail audit results along the North Island Trail. Each point is maintained in a database compatible with existing city systems.

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EXISTING TRAIL NETWORK

A comprehensive trail network provides recreational and transportation opportunities for bicyclists, pedestrians, and other active users. Connectivity to an on-street network of bike lanes, signed routes, and sidewalks extends the reach of the network and provide access to destinations, neighborhoods, and places of employment.

The City of Appleton currently has an active transportation network that includes off-street trails, on-street bike lanes, sidewalks, sidepaths, and on-street signed routes. The On-Street Bike Lane Plan and regional planning efforts have identified numerous corridors for network expansion, providing connections to the existing network, regional destinations, and other regional bicycle and pedestrian facilities.

The following section explores both the existing and proposed network. This network will be used in the project development phase of the Master Plan.

CITY OF APPLETON

TRAILS MASTER PLAN

EXISTING NETWORK

- Existing Trail

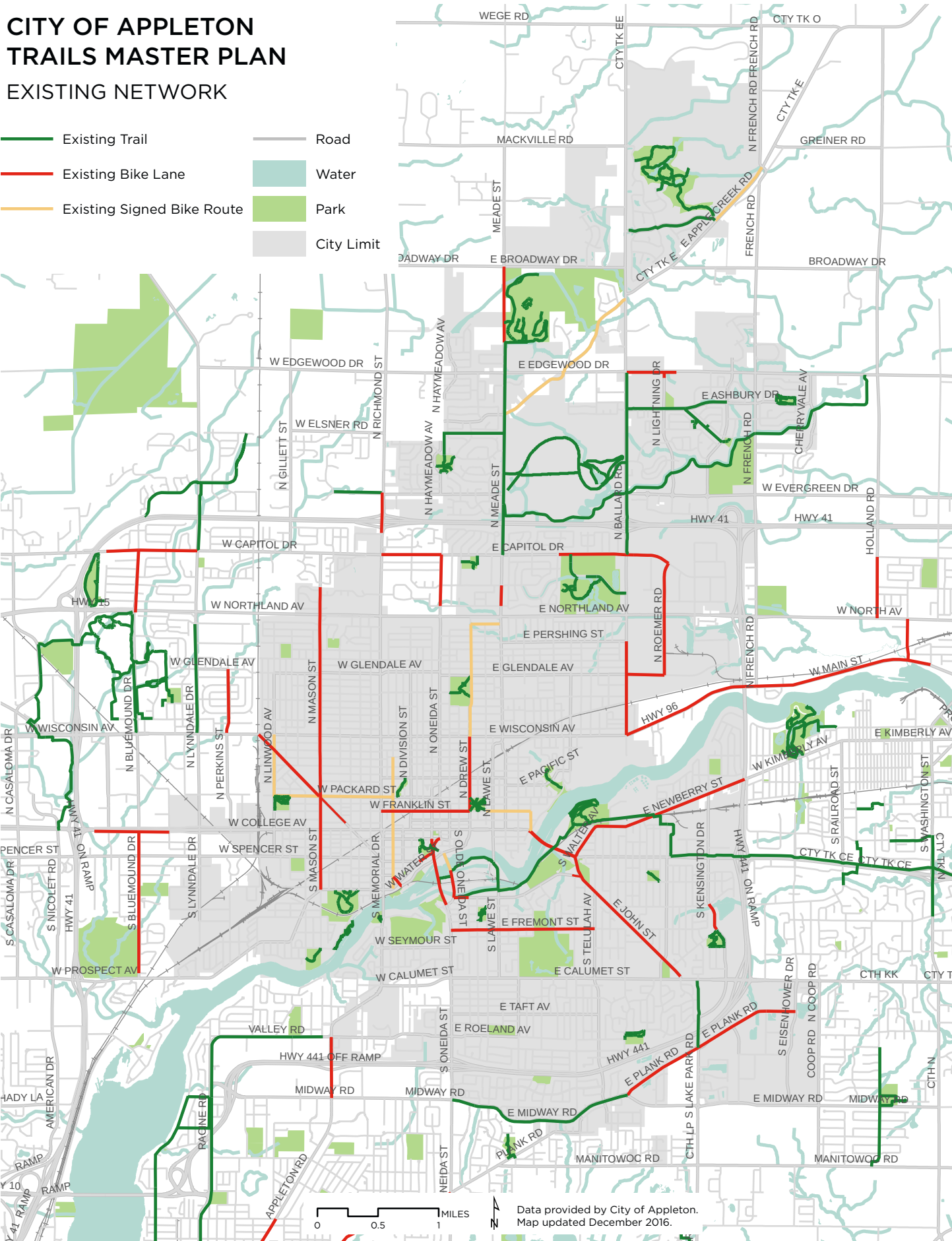
Existing Bike Lane

Existing Signed Bike Route
- Road

Water

Park

City Limit



Data provided by City of Appleton.
Map updated December 2016.

Existing Trail Network

The existing network within city limits is comprised primarily of off-street trails (often within parks), sidepaths separated from traffic, and on-street bike lanes. The map on the preceding page depicts the existing network both within and outside of Appleton City Limits.

In general there is minimal connectivity between existing trails, with significant disconnect between trails along the river and trails north of Highway 41; opportunities to connect with the on-street network are also limited. In many cases trails do not connect directly into the on-street network, or the on-street network doesn't extend beyond the trail connection. Connections within the network are important for the overall usability of the system; safe, clear connections can promote greater trail use and increase the utility of the overall network.

As seen in the existing network map, a limited number of signed routes help connect existing facilities for bicyclists who are willing and able to travel in a mixed-traffic environment. Delineating these routes provides key wayfinding information for these cyclists. Often these signed routes end without further wayfinding to help bicyclists reach their intended destination.

Signed routes are a relatively quick approach to extending the existing network but do not accommodate users of all ages and abilities. Facilities that offer more protection, such as separated trails and cycle tracks, accommodate a wider range of users. A more comprehensive network of protected facilities can increase the utility of trails as part of Appleton's active transportation network.

It is important to note that the city is actively working to expand the current network. Current efforts assess the feasibility of adding bike lanes to road resurfacing and reconstruction projects, while sidepaths are added where possible in new development areas.



Facility Types

TRAILS:

The City of Appleton has over 20 miles of existing trails within the city limits. Trails provides a facility for bicyclists and pedestrians that is separated from motor vehicle traffic.



SIDEPATHS:

Located adjacent to roadways, sidepaths are wide (usually approximately 10 feet) pathways similar to a sidewalk. Sidepaths are more separated than on-street lanes.



BIKE LANES:

Designated lanes for bicycle use are located adjacent to motor vehicle travel lanes and may be located adjacent to on-street parking.



SIGNED ROUTES:

Existing roadways are designated as bike routes and feature signs, as see in the image to the left, that identify the route and may also provide wayfinding when route changes direction. There are no physical improvements to the roadway, and bikes ride in mixed traffic.



SIDEWALKS:

Appleton features a comprehensive sidewalk network, providing designated pedestrian facilities throughout the majority of the city. With the exception of some areas in downtown, bicycles are permitted on sidewalks.

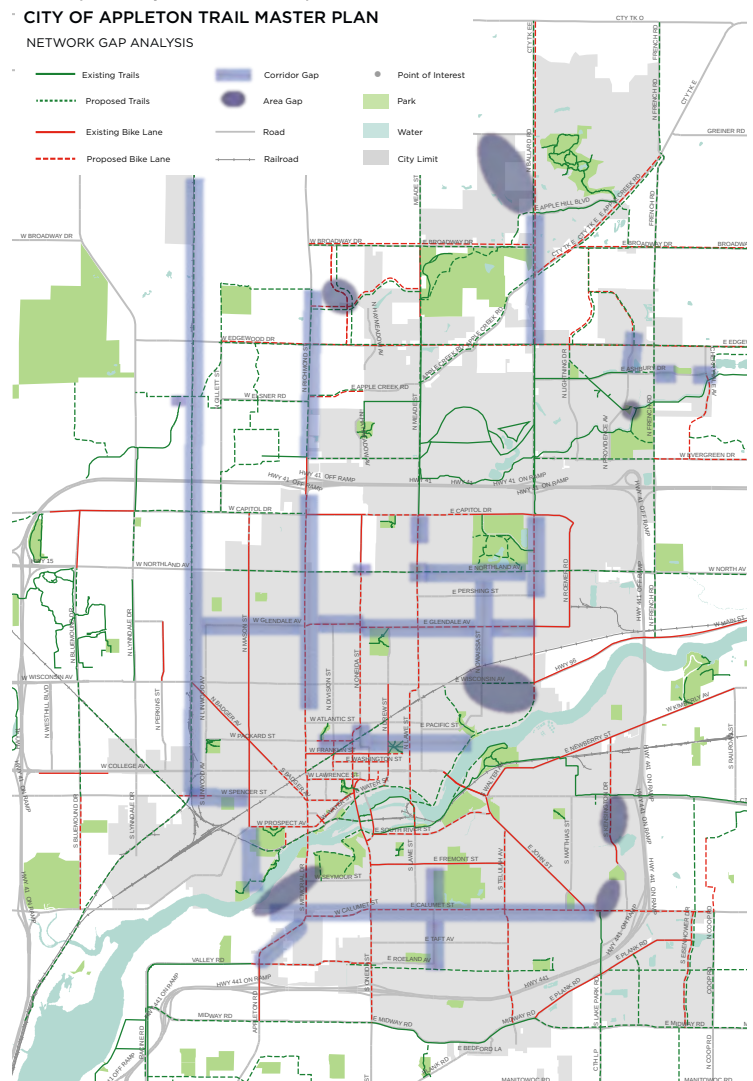
A map depicting both corridor and area gaps, shown to the right, identifies potential project areas that will help increase the coverage of the existing network. Gaps may be present along an entire corridor, at a specific intersection, or for an entire area. Additional geographic features or infrastructure may create a barrier, limiting travel between two areas. Examples of these gaps are shown below. The addition of facilities in these area will provide greater connectivity across the city and with the region.



Railroad tracks represent infrastructure barriers and require specific improvements for a safe crossing along bike and pedestrian routes. They also provide opportunities for parallel routes.



Facilities ending without further information can create gaps at intersections



CITY OF APPLETON TRAILS MASTER PLAN

PROPOSED NETWORK

Existing Proposed

Trail

Bike Lane

Signed Bike Route

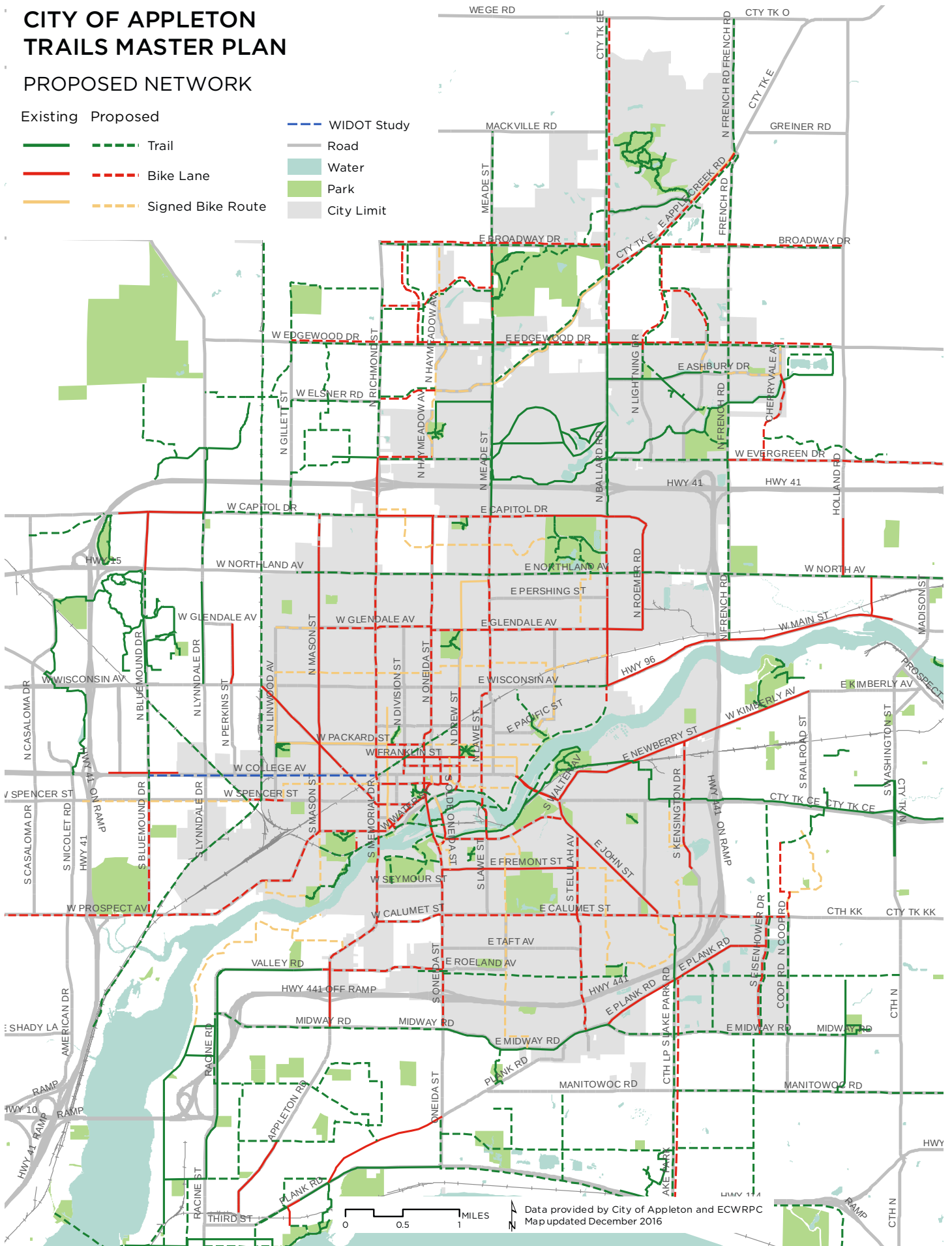
WIDOT Study

Road

Water

Park

City Limit



Proposed Network

The map on the previous page builds on the existing network within Appleton and includes facilities proposed in regional plans and the On-Street Bike Lane plan. In addition to facilities already proposed, new facilities were identified during stakeholder meetings held in May 2016, including those proposed in the ongoing Downtown Mobility Plan.

While this plan focuses on trails operated by the Parks, Recreation, and Facilities Department, project development considers connectivity with existing and proposed network segments regardless of facility type.



High visibility crossings and clear signage create continuity in the trail system at intersections with roadways.

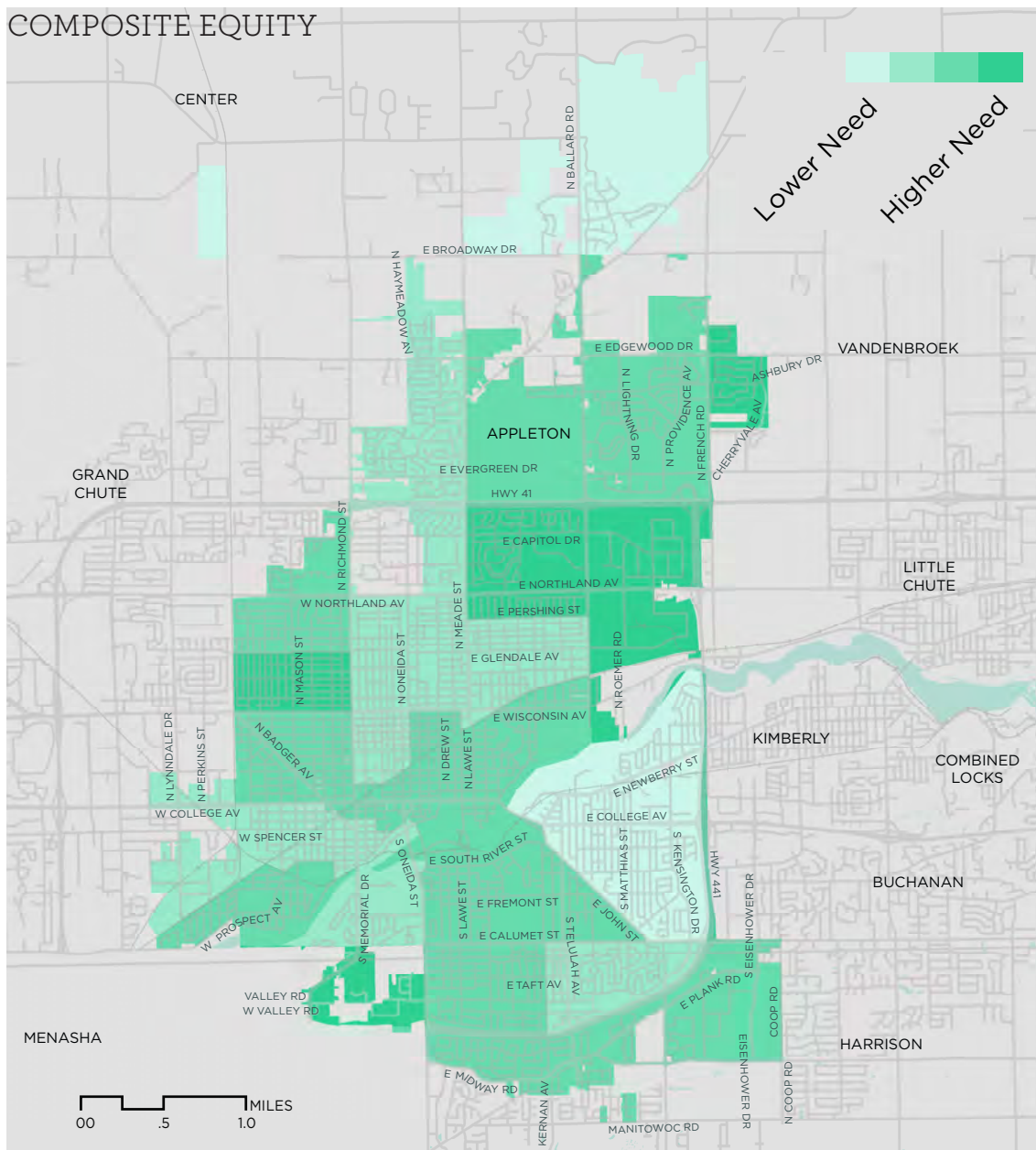
Equity Analysis

An equity analysis was conducted to better understand demographics within the City of Appleton and its relationship to facility access. The factors considered include: poverty, limited-English proficiency, non-white population, population under 18, population over 65, and population without a high school diploma. Historically these populations have been undeserved and are indicators of areas with relatively low levels of access to bicycle and pedestrian facilities.

The results are based on Census Tract boundaries as they compare with the state of Wisconsin. The five factors were then considered together to produce an overall equity score, as displayed on the next page. It is important to note that the data represent 2014 ACS data, based on a 5-year rolling average. For this reason, recent development may not be accurately accounted for. These maps provide a basis for analysis but require additional context-sensitive understanding.

The greatest areas of need are the northernmost Census Tract, north of the river along the eastern boundary of the city, and in the southwestern portion of the city near Valley Road. Individual factors varied in their distribution, however. For example, the south-western portion of the city exhibits the highest need in relation education, but scored lower for age and percent of households below poverty.

The equity analysis conducted during this planning process helps identify areas where making active transportation investments can have a large impact for children, older adults, low-income families, people of color, and people with limited English language abilities. For example, populations with limited English proficiency may be less likely to engage in the public process and may have different needs than those who do provide feedback. Therefore, additional outreach can be done in these areas to reach a wider range of the population and better understand how trail facilities can meet the needs of all residents in Appleton. These results serve as one input into project prioritization, discussed in the next chapter.





PUBLIC INVOLVEMENT

A robust public involvement process was used to help identify project priorities and refine recommendations for the Appleton Trails Master Plan. This project leverages public involvement processes happening concurrently for the Appleton Comprehensive Plan. The following is a complete list of opportunities for the public to provide input on the process:

- » June 2016 Trails Master Plan Survey
- » March 2016 City of Appleton Comprehensive Plan Issues and Opportunities Workshops
- » May 2016 City of Appleton Comprehensive Plan Downtown Design Workshop
- » City of Appleton Comprehensive Plan Survey
- » City of Appleton Comprehensive Plan Interactive Website

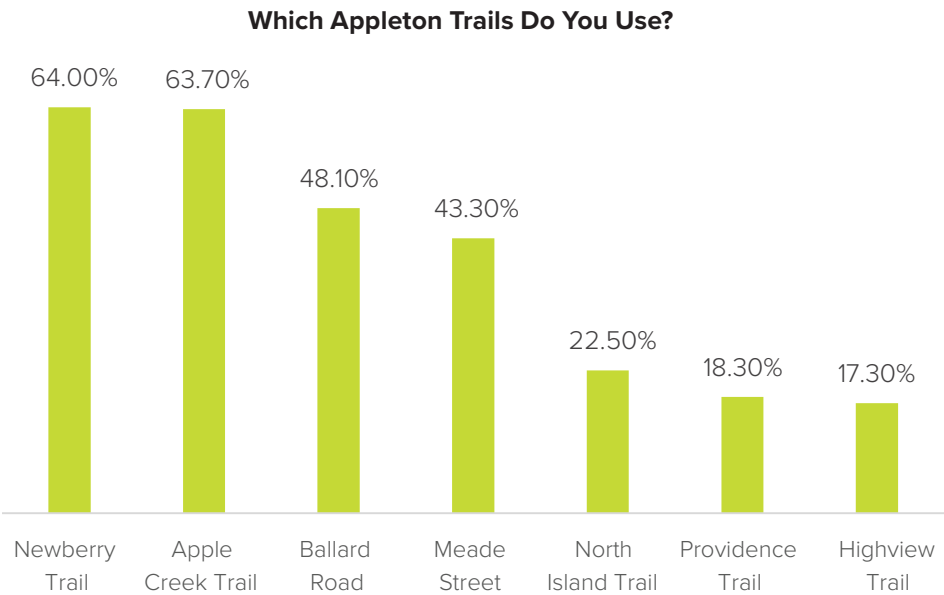
In general, respondents indicated a desire for more trails; support for the development of a dense network of trails, sidewalks, and bike lanes; and a need for more tools to better utilize the system, including wayfinding signage. A summary of comments received during the public involvement process follows.

June 2016 Trails Master Plan Survey Results

A public online survey was conducted from June 20 to July 5, 2016. The survey consisted of two parts: a four-question survey via SurveyMonkey as well as a public input map accessible through ArcGIS Online. The survey received 298 responses, and nearly 400 locations were noted on the map. The following section explores the results of this survey exercise.

EXISTING TRAIL USE

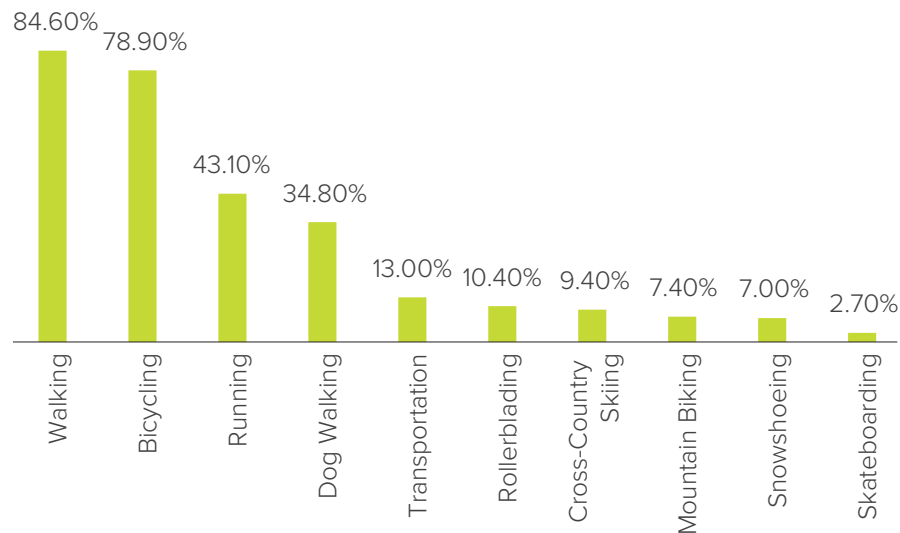
The SurveyMonkey component focused primarily on existing trail use and perceptions of existing trails. In addition to which trails, respondents were asked about how they use the trails and what features they like or dislike.



Respondents were asked to select the trails they currently use. Newberry and Apple Creek Trails received the highest response, while Ballard Road and Meade Street were also frequently indicated. Approximately 15% of participants also selected “Other.” The most frequent trails listed here included CE Trail, Paper Trail, Thrivent Trail, and the Fox Valley Tech Trail.

Several respondents indicated that they currently use trails but are not sure of the names or were unaware that trails were named.

**How Do You Use Appleton Trails?
(Select all that apply)**



The use of Appleton trails is diverse, ranging from expected activities--such as running, walking, and biking--to more seasonal uses of trails, including snowshoeing and cross-country skiing. Requests in the final question for plowing trails during the winter suggests a desire for year-round use of the trails, which may accommodate a wider range of activities through all seasons.

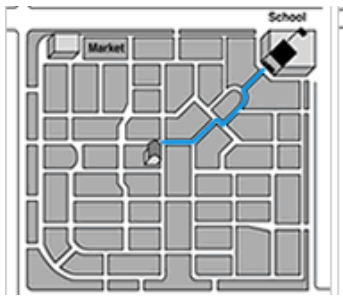
What Things Do You Like or Dislike About Appleton Trails?

	LIKE	DISLIKE	NO OPINION
TRAILS CAN BE USED FOR COMMUTING	72.3%	2.1%	25.6%
TRAILS CAN BE USED FOR SOCIALIZING AND RECREATION	92.6%	0.7%	6.7%
DOGS ALLOWED ON TRAILS	61.6%	14.7%	23.6%
PAVING CONDITION OF TRAILS	83.9%	5.5%	10.6%
SAFETY OF ROAD CROSSINGS	67.5%	17.1%	15.4%
BENCHES AND TRASH RECEPTACLES	74.1%	9.3%	16.6%
WAYFINDING SIGNS	58.8%	12.7%	28.5%

In general, respondents indicated that they like the qualities of Appleton trails. These responses, in conjunction with the following open-ended question, seem to suggest however that while there are some qualities and locations that are well-liked, this does not preclude improvement of these qualities in the overall trail network. For example, safe crossings and improved wayfinding were frequently requested, despite receiving favorable responses here. Identifying best practice locations on Appleton trails will provide further insight into the preferred features of the network.

SUGGESTIONS + RECOMMENDATIONS

Respondents were encouraged to provide additional feedback regarding Appleton Trails, including any additional suggestions for improving existing trails or expanding the system. A total of 145 individual responses were received, which covered a wide range of topics.



Connectivity - 46.3%

Comments specifically requested greater connectivity among trails both in Appleton and across the region; connectivity to destinations, including parks; and connectivity among the network, including bike lanes. Many comments focused on the discontinuity of the existing trail system and asked for both greater connectivity to facilitate commuting as well as options for connecting trails into loop systems without having to drive from home. (Image: Transportation and Growth Management Oregon Guide)



Safety - 29.9%

Comments regarding safety covered three primary concerns. First was safety in terms of separation from motor vehicle traffic. Greater delineation of bike lanes and the development of more trails that provide a separation from motor vehicles are preferred. Second, safety related to crossings and interactions with other modes of travel were frequently mentioned. Finally improvements to safety on the trails were a significant concern; additional lighting, emergency call boxes, and increased patrol were often noted.



Location - 22.4%

Many respondents presented specific ideas for location of trails and areas needed for improved connections. Increased opportunities along the river as well as connections with Grand Chute were most frequently noted. Increased trail opportunities in the southern portion of Appleton were also preferred. In addition to specific locations, 3.4% of respondents included preference for more natural settings in trail siting and design.



Amenities - 14.3%

Respondents requested additional amenities for the trails, including more benches, trash receptacles, dog waste stations, restroom facilities, and drinking fountains.

Crossings - 12.2%

Crossings were most often noted in conjunction with concerns regarding safety and connectivity of trails. Interaction of trails with roadways and other points of conflict with motor vehicles discourages use of trails. Desire to use trails with family members of all ages and abilities was mentioned with requests for improved crossing conditions. Comments also included requests for improved ADA accessibility via curb ramps.



Signage - 10.2%

Several comment expressed desire for more information regarding trails. Signage was noted by 10.2% of respondents, while nearly 5% of respondents also indicated improved information via the internet or other mediums. Respondents requesting more information indicated that they would be more likely to use other trails or connect trips if they could learn more. Wayfinding and regulatory signage were specifically requested to help users navigate the existing trail system and connect more easily to nearby destinations.



Trail Uses - 7.5%

Mountain biking, dog walking, and ATV use were mentioned as desired activities for the trail system. Greater opportunities for commuting as well as loop connections were also noted.



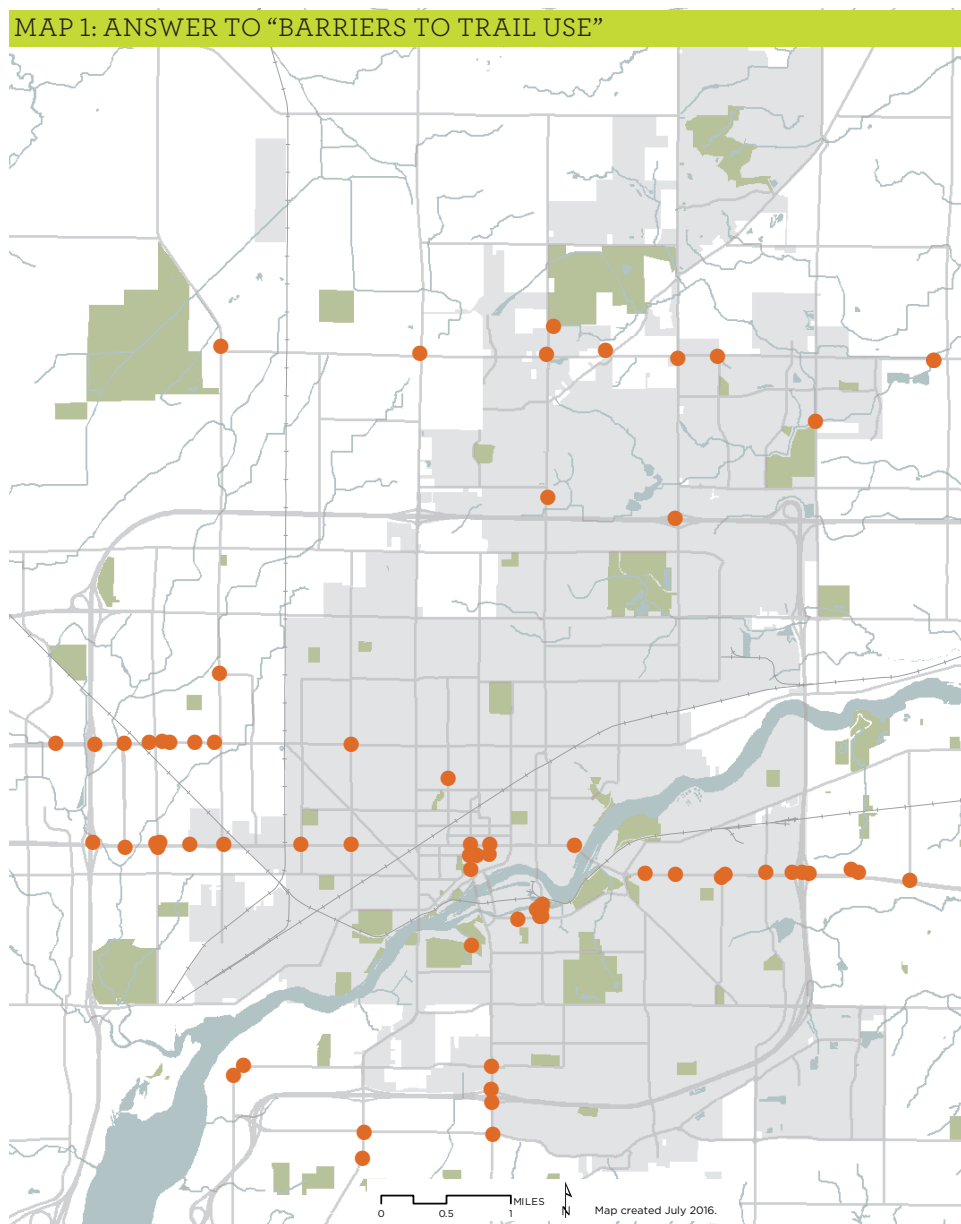
Maintenance - 6.1%

In regard to maintenance concerns, many respondents included both snow plowing in the winter and vegetation trimming as primary concerns. Similarly, some respondents requested information about repaving plans due to the surface condition along several trails.



PUBLIC INPUT MAP

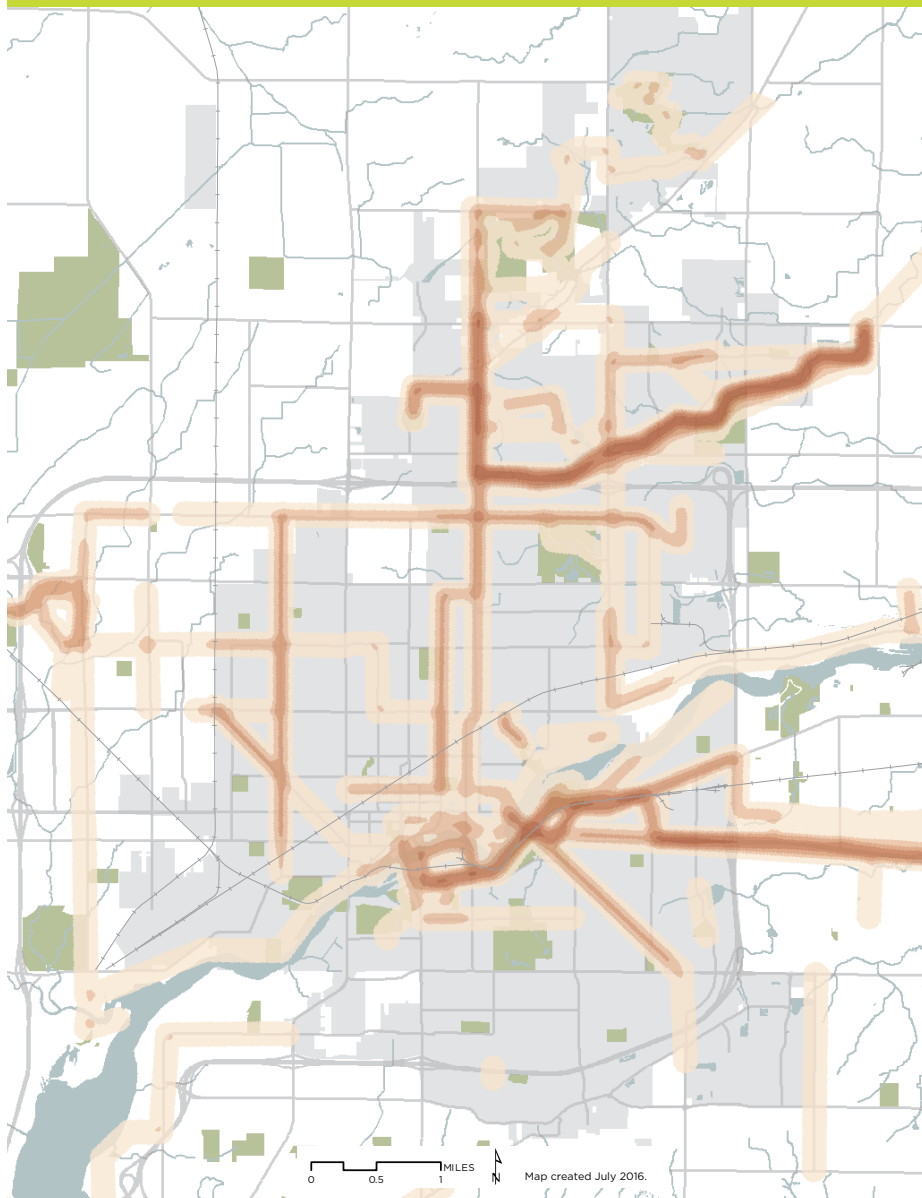
An online map provided the opportunity for Appleton residents to provide feedback on the location of trails and barriers to trail use. The inclusion of the mapping component was especially useful in this exercise as many respondents indicated that they were unaware of the names of the trails they use.



A total of 68 barriers were noted, occurring primarily noted along major arterials, especially on roadways that provide regional connectivity. An additional cluster of barriers were noted in downtown.

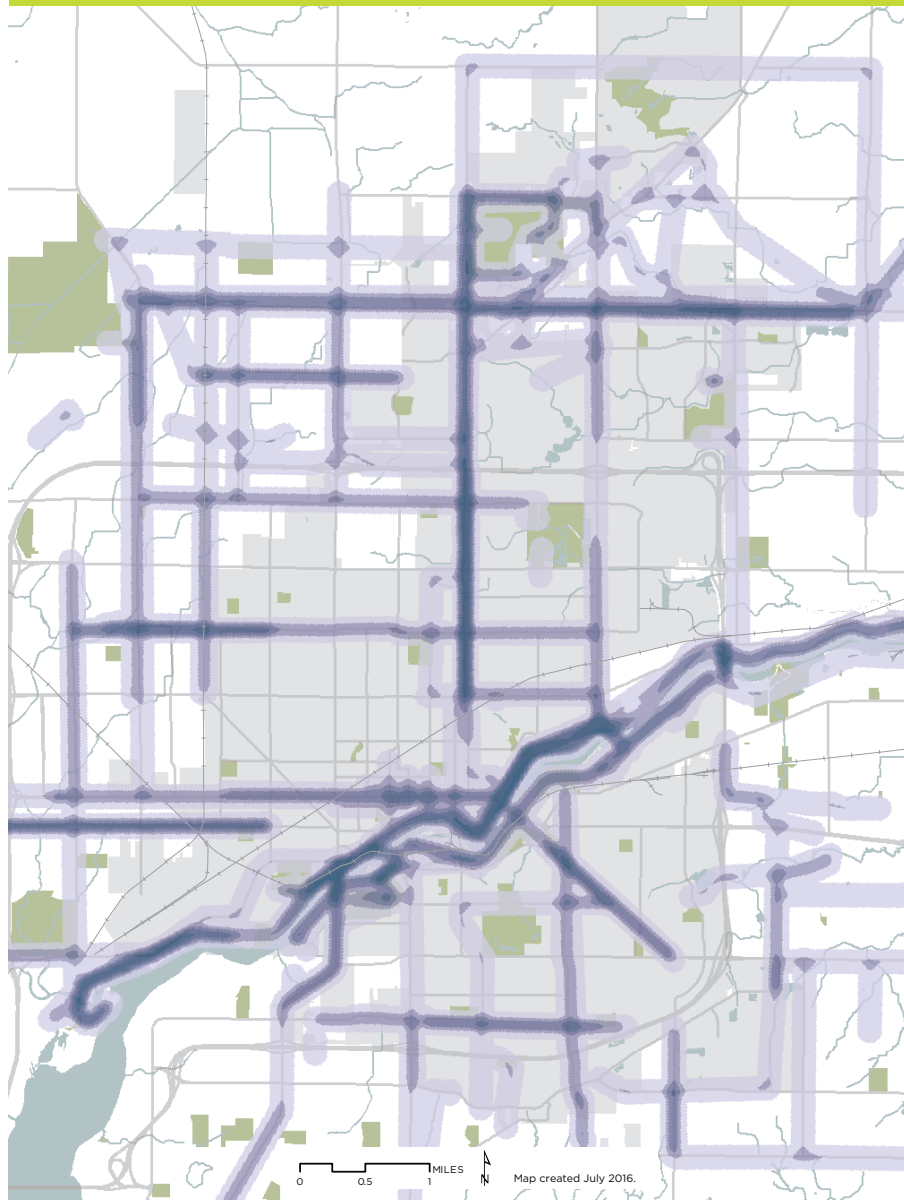
Darker areas represented a greater frequency of trail use, as indicated by 108 respondents. The most frequently noted trails include those along the river as well as trails and roadways in the northern portion of the city. These results are consistent with the survey responses indicated greatest use of the Newberry and Apple Creek Trails.

MAP 2: ANSWER TO “TRAILS I USE”



Darker areas represented a greater frequency of desired trail locations, as indicated by 210 respondents. Improved trails along the river, a north-south connection north of the river, and an east-west connection in the northern portion of the city were most commonly indicated.

MAP 3: ANSWER TO “WHERE I WANT TO SEE TRAILS”

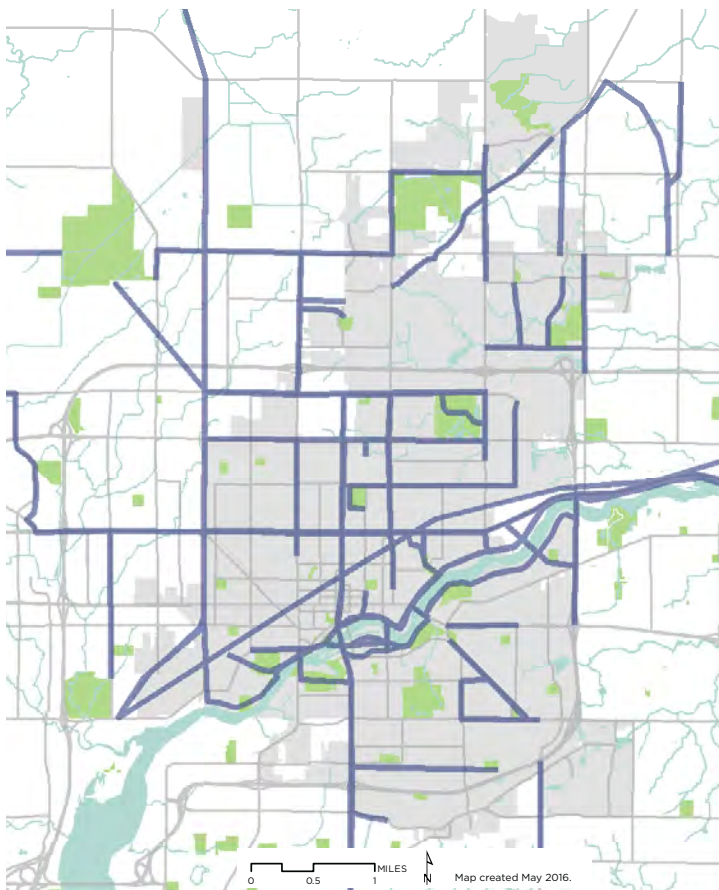


March 2016 City of Appleton Comprehensive Plan Issues and Opportunities Workshop

On March 14 and 16, public workshops were held to kick off the update to the city's Comprehensive Plan. Attendees participated in three activities. First they were asked to share their hopes and dreams for the future of Appleton as well as ideas for investing in the future. Several comments related to trail improvements, providing more trails, creating greater connectivity, and improving safety. A full list of comments can be found in Appendix 1.

Second, participants were asked what types of taxable and non-taxable development they would like to see in Appleton. Forty-six trail-related comments were generally in support of more and better-connected trails. More specific comments can be found in Appendix 1.

Finally, participants were asked to provide input specifically related to trails. A paper survey with accompanying map captured input regarding ways to improve and expand the existing trail network. This exercise was similar to the online survey described previously. The map below captures the locations identified as areas of high use or in need of improved connections during this exercise.



Map Summary

Participants indicated trails they frequently use, connections they'd like to see in the future, and areas in need of improvements. This map captures the summary of the comments provided during the March meetings described above.

May 2016 City of Appleton Comprehensive Plan Downtown & Trails Design Workshop

As part of the May 16-18 Design Workshop, the public had additional opportunities to share ideas related to the city's existing and proposed trail system. The kick-off meeting included small group exercises designed to solicit input into the downtown planning areas as well as the city's bike and pedestrian network. A summary of ideas and comments were generated during the report-out session at the end of the small group exercises; trail-related key findings are listed below.

- » Public access to the river is important; more stairs and bridges are needed
- » Wayfinding and beautification are needed to enhance river connectivity and downtown in general, especially for pedestrians
- » Trails need to be connected beyond the river and downtown to encourage broader access via walking and biking
- » Visitors need better orientation to downtown and the river
- » Jones Park should be used to connect the river to downtown

On the morning of May 17th, a Community Bike Tour was conducted by Fred Young (Alta) and Rob Gusky (Fox Cities Cycling Association). The tour included several stops along the Fox River, where participants had the opportunity to share their ideas for enhancing the trail system.

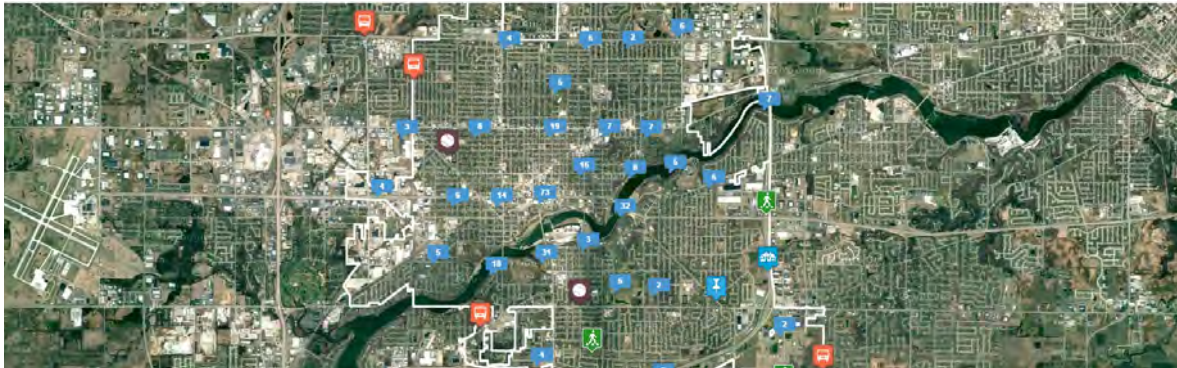
At the end of the three-day workshop, approximately 75-100 people attended the May 18th Open House, which included several display boards in the hall of the City Center Plaza. Two 30-minute presentations were provided to attendees. Written comments were solicited for key issues explored during the workshop. A summary of trail and walkability-related comments can be found in Appendix 1.

City of Appleton Comprehensive Plan Website

The ongoing Comprehensive Plan Update gathered data from over 1,000 Appleton residents in both an online survey and online web map format. The survey covered a wide range of topics, primarily related to downtown development; however, the importance of trails, a comprehensive bicycle network, and active transportation opportunities was clearly noted across many questions.

Over 50% of respondents indicated support for the development of more bicycle lanes in Appleton, while over 60% of respondents agreed that there should be more off-street dedicated facilities for bicyclists and pedestrians. Comments specific to these facility types echoed the results of the Trails Master Plan Survey: respondents want a connected low-stress network with safer crossings at railroads and intersections, more wayfinding elements, and more opportunities to connect to parks and other destinations. Many respondents called for facilities that accommodate all ages and abilities and that facilitate utilitarian trips, such as running errands, or commuting by bicycle or foot.

An online map solicited specific feedback related to a variety of issues, including 56 trails-specific comments. Comments identified critical links in the existing trail network, opportunities for enhanced trail connections, and areas in specific need of additional maintenance and repair. A full list of comments can be found in Appendix 1.



The online map allowed respondents to identify specific locations of concern for items addressed in the Comprehensive Plan.

Stakeholder Meetings

In addition to public involvement events listed above, four stakeholder committee meetings were held throughout the course of the project. The stakeholder committee was assembled from a broad range of interests to help guide the development of the plan. The consultant team also presented to the Bicycle and Pedestrian Advisory Committee and met with key stakeholders from Public Works and the Office of Economic Development.

Summary Of Public Involvement Activities

In general, Appleton residents are in favor of a well-connected active transportation network. Residents desire connections to destinations and across the region. An expanded trail network that is easy to navigate and addresses concerns of safety and accessibility is preferred, as is accommodation of all ages and abilities. Noted barriers appear to impact existing regional connectivity, while locations for new and improved trails focus on providing connections within the city. Additions of amenities or wayfinding signage may improve the utility of the trail network for residents, and improved maintenance may increase use across all seasons.

The information collected during the stakeholder meetings as well as that compiled during the public survey will help inform project development and selection as part of the Trails Master Plan.



PROJECT PRIORITIZATION

Projects to be addressed through this plan are developed from the gaps, key corridor connections, and existing trails analysis explored in the previous section. Projects identified include both new connections as well as projects derived from the trail audit findings. This section defines potential project segments then prioritizes these segments to identify which projects will have the most impact and should be implemented first.

Project Development

Three types of projects were identified based on trail audit data and proposed facilities:

- » Routine Maintenance: These projects capture routine maintenance that must occur on trails. These projects are captured in the accompanying Trail Design Best Practices manual (Appendix 4)
- » One-time Upgrade: Upgrade projects represent an opportunity to increase existing trail quality either through improving surface quality (addressing severe cracking, reducing drainage concerns) or addressing safety concerns through intersection and sightline improvements
- » New Connections: New connections are proposed trail segments, as identified in the future network map in the previous section

Project Prioritization

Full implementation is expected to take many years, which makes it important to develop a process for selecting which projects should be implemented first. The criteria developed for project prioritization are based on best practices in the field and are consistent with the goals and themes of existing local and regional bike plans, including serving a wide range of users, providing connections to key destinations, and closing network gaps.

Separate criteria were developed for Upgrade and New Connection projects to reflect the role these projects play in enhancing the network. While the criteria aim to provide an objective assessment of network improvements, project feasibility and priority are also impacted by ongoing planning efforts within the city, including CIP development and near-term department work plans. For this reason, the initial prioritization results are then reviewed with city staff and adjusted based on this feedback.

UPGRADE PROJECTS

Upgrade projects address all possible upgrades along a project segment as identified during the trail audit. Project segments are defined as existing trail segments that occur between major roadways, railroads, and other trails.

Upgrade projects located along the river scored the highest. These projects will serve the greatest number of residents. Although not considered in the prioritization exercise, these locations also provide significant connectivity to existing and proposed network links as well as a wide range of destinations.

The projects located along these segments are primarily related to surface quality, and when combined with crossing improvements can provide an immediate benefit to trail users in terms of both quality and safety. The North Island Trail scored as a high priority upgrade; however, the trail is being resurfaced during Fall 2016 and is omitted from the results on the following page.

Project priority scores were grouped based on 4 time periods for implementation: 0-5 years, 6-10 years, 11-15 years, and 16 or more years, where highest priority projects should be considered for

completion in the next 5 years. However, current scores are relative to the upgrade issues identified during inventory, and additional maintenance concerns may arise over subsequent years that can impact upgrade priority.

TABLE 3: UPGRADE PROJECT PRIORITIZATION CRITERIA

CRITERION	DEFINITION	OPERATIONAL DEFINITION	POINTS
Cost	What is the anticipated upgrade cost? (Low - Medium - High)	Project cost will be relatively low (surface improvements)	1
		Project cost will be relatively moderate (Drainage)	3
		Project cost will be relatively high (crossing, sightline, and obstruction improvements)	5
Safety	To What extent will the project provide an immediate safety benefit?	Project benefits safety through crossing or sightline improvements	5
		Project benefits safety by addressing pathway obstructions	3
		Project does not provide an immediate safety benefit	1
Ease of Implementation	How difficult is the project to implement?	Project implementation will be relatively difficult (crossing, sightline, and obstruction improvements)	1
		Project implementation will be relatively moderate (drainage improvements)v	3
		Project implementation will be relatively easy (surface)	5
Quality	To what extent does the project provide an immediate benefit to the overall quality of the trail?	Project benefits quality through surface or drainage improvements	5
		Project does not provide an immediate benefit to the overall quality of the trail	1
Benefit to Residents	What portion of the population will benefit from the upgrade?	Segment is within census tract with the highest population density (top 25% of census tracts)	5
		Segment is within census tract moderate population density (Top 50% of census tracts)	3
		Segment is within census tract with lowest population density (Bottom 50% of census tracts)	1
Extent of Deficiency	What is the density of upgrades recommended along a project segment?	Upgrade projects are most dense along segment (Top 25% of segments)	5
		Upgrade projects are moderately dense along segment (Top 50% of segments)	3
		Upgrade projects are least dense along segment (Bottom 50% of census tracts)	1
Benefit to under-served populations	To what extent does the new project provide network access to Census Tracts with identified need?	Project occurs in Census Tract with greatest identified need (Top 25% of Census Tracts)	5

CITY OF APPLETON

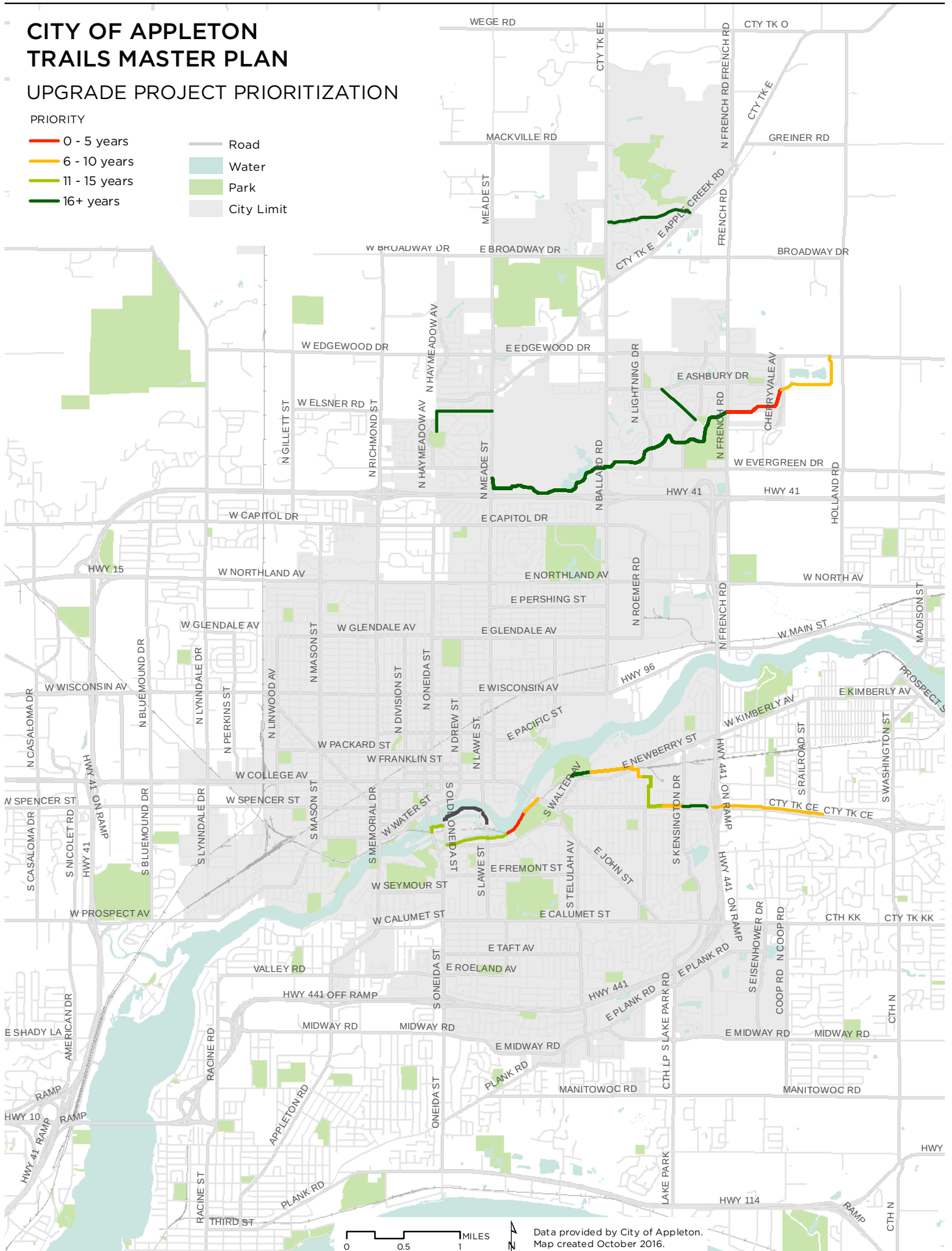
TRAILS MASTER PLAN

UPGRADE PROJECT PRIORITIZATION

PRIORITY

- 0 - 5 years
- 6 - 10 years
- 11 - 15 years
- 16+ years

- Road
- Water
- Park
- City Limit



Data provided by City of Appleton.
Map created October 2016.

PROJECT COST ESTIMATES

The table below shows cost unit estimates for each upgrade project issue. Each project may have had none, one, or multiple issues. The following pages show the total cost to upgrade each segment. To view the type of issue associated with each segment see Appendix 4.

UPGRADE PROJECT UNIT COSTS		
ISSUE	UNIT/COST ASSUMPTIONS	COST PER UNIT
Drainage	Installation of 16 LF of 12" culvert pipe (assumes 90 feet of trail removal and replacement)	\$8,500
Pavement Surface - Crackfill	Assumes crack is full trail width	\$50
Pavement Replacement	LF (assumes removal and replacement as part of a larger project)	\$25
Missing Crosswalk	Crosswalk (assumes a crossing width of 40 feet and ladder style markings)	\$1,520
Bollard Removal	One bollard (assumes concrete base)	\$375
Gate Removal	One Gate (assumes concrete base and two posts per gate)	\$750



Upgrade projects, such as improved crossings with roadways and rail lines, can improve trail safety and increase comfort a wide range of trail users.

UPGRADE PROJECT LIST

UPGRADE SEGMENTS 1-5 YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
Newberry Trail	West of E College Ave	East of S Lawe Street	0.24	\$51,600
Applecreek Trail	Cherryvale Ave	N French Rd	0.6	\$74,400
			SUBTOTAL**	\$126,000
			TOTAL***	\$151,200

UPGRADE SEGMENTS 6-10 YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
Newberry Trail	E College Ave	West of E College Ave	0.17	\$28,800
Newberry Trail	E Newberry St	West of E Newberry St	0.37	\$66,000
Newberry Trail	E Newberry St	South of E Newberry St	0.18	\$27,600
Newberry Trail	S Kensington Dr	West of S Kensington Dr	0.18	\$28,800
Newberry Trail	Highway 441 Ramp	Highway 441 Ramp	0.05	\$0
Newberry Trail	Highway 441 Ramp	Highway 441 Ramp	0.02	\$0
Newberry Trail	Highway 441 Ramp	Highway 441 Ramp	0.05	\$0
Newberry Trail	West of S Railroad St	Highway 441	0.39	\$0
Newberry Trail	S Railroad St	West of S Railroad St	0.39	\$0
Newberry Trail	East of S Railroad St	S Railroad St	0.12	\$0
Apple Creek Trail	E Edgewood Dr	Cherryvale Ave	0.7	\$34,800
			SUBTOTAL**	\$186,000
			TOTAL***	\$223,200

*Contingency is a 1.2 multiplier

**Costs assume work is part of larger projects

***Total includes engineering and construction oversight with a 1.2 multiplier.

UPGRADE PROJECT LIST

UPGRADE SEGMENTS 11-15 YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
Newberry Trail	S Lawe Street	S Olde Oneida Street	0.37	\$1,200
Newberry Trail	East of S Lawe Street	S Lawe Street	0.21	\$1,200
Newberry Trail	West of S Kensington Dr	N of E College Ave	0.47	\$94,800
			SUBTOTAL**	\$97,200
			TOTAL***	\$116,640

UPGRADE SEGMENTS 16+ YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
Newberry Trail	West of E Newberry St	West of E Newberry St	0.18	\$30,000
Newberry Trail	Highway 441	S Kensington Dr	0.22	\$33,600
Apple Creek Trail	N Ballard Rd	N Meade St	1.23	\$26,400
Apple Creek Trail	N Lightning Rd	N Ballard Rd	0.46	\$94,800
Apple Creek Trail	N French Rd	N Lightning Rd	0.94	\$33,600
Highview Trail	N Meade St	West of N Meade St	0.4	\$68,400
Highview Trail	N Meade St	West of N Meade St	0.27	\$44,400
Providence Trail	E Ashbury Dr	E of N Providence Ave	0.17	\$32,400
Providence Trail	E Ashbury Dr	E of N Providence Ave	0.09	\$14,400
Providence Trail	E Ashbury Dr	E of N Providence Ave	0.09	\$0
Providence Trail	E Ashbury Dr	E of N Providence Ave	0.14	\$42,000
			SUBTOTAL**	\$420,000
			TOTAL***	\$504,000

*Contingency is a 1.2 multiplier

**Costs assume work is part of larger projects

***Total includes engineering and construction oversight with a 1.2 multiplier.

NEW CONNECTIONS

New Connections consider proposed trail segments, as identified in the proposed network map. Project segments are defined as proposed trail segments that occur between existing network segments. The existing network includes trails, bike lanes, and signed routes. Sidewalks, while relatively complete throughout the city, were not included here as more information regarding ADA compliance and sidewalk quality is needed to determine effective network connections.

Following the initial prioritization process, city staff reviewed the recommendations and provided adjustments to better reflect ongoing planning and development efforts within the city.

Project priority scores were categorized based on anticipated timeline for completion. Highest priority projects should be considered in the next 5 years, with subsequent projects falling into categories of 6-10 years, 11-15 years, and 16 or more years.

TABLE 4: NEW CONNECTION PRIORITIZATION CRITERIA

CRITERION	GENERAL DEFINITION	OPERATIONAL DEFINITION	POINTS
Network Connectivity	To what extent does the new project enhance connectivity between existing trails or on-street bicycle facilities?	Corridor connects two existing bicycle facilities.	5
		Corridor extends an existing facility	3
		Corridor creates a new, unconnected facility.	0
Serves Destinations	To what extent does the project provide connections to destinations including parks, schools and jobs?	The corridor provides direct access within 1/4 mile to 5 or more schools, parks and top ten employment locations in Appleton	5
		The corridor provides direct access within 1/4 mile to one to four schools, parks and top ten employment locations in Appleton	3
		The corridor does not provide direct access to a park, school or top ten employment location in Appleton	0
Geographic Equity	To what extent does the new project provide bicycle network access to residents who currently do not have access?	The corridor would provide access to residents with no connection to the bicycle or trail network within 1/4 mile	5
		The corridor would provide access to residents with no E/W or N/S connection to the bicycle or trail network within 1/4 mile	3
		The corridor provides a new connection in an area already served by the network	0
Benefit to under-served populations	To what extent does the new project provide bicycle network access to residents of Census Tracts with identified need?	Project occurs in Census Tract with greatest identified need (Top 25% of Census Tracts)	5
		Project occurs in Census Tract with moderate identified need (Top 50% of Census Tracts)	3
		Project occurs in Census Tract with lowest identified need (Bottom 50% of Census Tracts)	0

NEW CONNECTIONS PROJECT LIST

NEW CONNECTIONS 1-5 YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
E Eagle Flats Pkwy	S Olde Oneida St	S Lutz Dr	0.30	\$282,000
South of Fox River	S Oneida St	W Seymour St	0.79	\$755,000
S of W Valley Rd	E of S Oneida St	E of W Schindler Pl	0.26	\$245,000
S of E Roeland Ave	Schaefer Circle	S Oneida St	1.73	\$1,642,000
E Midway Rd	Coop Rd	E Plank Rd	1.59	\$1,508,000
S Lake Park Rd	Valley Lane	Manitowoc Rd	0.47	\$447,000
E Water St	S Drew St	E Eagle Flats Pkwy	0.51	\$483,000
E of E Fall Creek Lane	N Fallview Lane	E of N Fallview Lane	0.06	\$56,000
N French Rd	E Edgewood Dr	City Boundary	1.57	\$1,493,000
Eisenhower Dr	E Plank Rd	E Midway Rd	0.79	\$748,000
S of W Lawrence St	W Lawrence St	W Prospect Ave	0.17	\$162,000
E of S Lawe St	W College Avenue	S Lawe St	0.19	\$182,000
			SUBTOTAL**	\$8,003,000
			TOTAL***	\$9,603,600

NEW CONNECTIONS 6-10 YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
S Lutz Dr	E Eagle Flats Pkwy	W of S Pierce Ave	0.65	\$617,000
S of W College Ave	W College Ave	N Drew St	0.87	\$826,000
Railway	W Northland Ave	W Wisconsin Ave	0.97	\$926,000
E Edgewood Dr	City Limit	N French Rd	0.51	\$481,000
N of E Broadway Dr	N Ballard Rd	E Broadway Dr	0.42	\$400,000
E Wisconsin Ave	N Ballard Rd	N Owaisa St	0.46	\$437,000
Future Spartan Ave	Meade St	Richmond St	1.00	\$952,000
S Mason St	W Prospect Ave	S Lutz Dr	0.10	\$92,000
Memorial Park	E Northland Ave	N McDonald St	0.64	\$611,000
E of Future Haymeadow Dr	Highview Trail	Future Haymeadow Dr	0.01	\$10,000
			SUBTOTAL**	\$5,352,000
			TOTAL***	\$6,422,400

*Contingency is a 1.2 multiplier

**Costs assume work is part of larger projects

***Total includes engineering and construction oversight with a 1.2 multiplier.

NEW CONNECTIONS PROJECT LIST

NEW CONNECTIONS 11-15 YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
E South River St	E South River Street	N of W Seymour St	0.70	\$668,000
N Coop Rd	E Calumet St	Valley Lane	0.55	\$523,000
South of N Green Bay Rd	NE of E College Ave	SW of College Ave	0.47	\$446,000
N Ballard Road	E Wisconsin Ave	W College Ave	1.26	\$1,193,000
Railway	W College	W Prospect Ave	1.61	\$1,533,000
Railway	W Wisconsin Ave	W College Ave	0.79	\$747,000
W Capitol Dr	N Richmond Dr	N Gillett St	0.38	\$357,000
N Lightning Dr	South of E Edgewood Dr	E Ashbury Dr	0.25	\$240,000
E of N Lightning Dr	E Ashbury Dr	N Lightning Dr	0.23	\$222,000
North of E Ashbury Dr	N Providence Ave	N French Rd	0.25	\$236,000
E Edgewood Dr	N French Rd	N Ballard Rd	2.05	\$1,948,000
E Edgewood Dr	N Meade St	N Richmond St	0.98	\$933,000
Youth Sports Complex	N French Rd	Apple Creek Trail	0.24	\$232,000
Planman Park	North of E Broadway Dr	West of N Meade St	1.05	\$996,000
South of Railway	N Rankin St		0.29	\$279,000
W College Ave	S Mason St	N Lilas Dr	0.51	\$485,000
E Broadway Dr	N Ballard Rd	City Boundary	1.00	\$950,000
E Evergreen Dr	N French Rd	N Ballard Rd	1.06	\$1,011,000
E Applecreek Rd	N Ballard Rd	N Meade St	1.44	\$1,365,000
Eisenhower Dr	E Calumet St	E Plank Rd	0.25	\$241,000
French Rd	City Boundary	E Edgewood Dr	0.50	\$475,000
E of Richmond St	N Haymeadow Ave	Richmond St	0.52	\$495,000
S of Pierce Park	S Lutz Dr	S Lehman Ln	0.20	\$191,000
Memorial Park			0.39	\$375,000
			SUBTOTAL**	\$16,141,000
			TOTAL***	\$19,369,200.0

*Contingency is a 1.2 multiplier

**Costs assume work is part of larger projects

***Total includes engineering and construction oversight with a 1.2 multiplier.

NEW CONNECTIONS PROJECT LIST

NEW CONNECTIONS 16+ YEARS				
LOCATION	CROSS STREET 1	CROSS STREET 2	LENGTH (MILES)	PROJECT COST (WITH CONTINGENCY)*
Coop Rd	Valley Lane	E Midway Rd	0.48	\$453,000
S Quest Dr	E Plank Rd	E Midway Rd	0.64	\$607,000
W College Avenue/Railway	S Drew St	N Richmond St	0.87	\$827,000
Railway	N Bluemound Dr	Proposed Trail	0.82	\$779,000
N Richmond Dr	N of E Edgewood Dr	N of W Evergreen Dr	1.32	\$1,255,000
W of N Richmond St	W Broadway Dr	W Edgewood Dr	0.95	\$904,000
S Covenant Lane	Newberry Trail	E Henry St	0.09	\$86,000
S of E Plank Rd	Coop Rd	E Plank Rd	0.99	\$942,000
N French Rd	Wedge Road	E Apple Creek Rd	1.17	\$1,114,000
N Ballard Rd	City Limit	E Apple Hill Blvd	1.39	\$1,321,000
E Apple Creek Rd	N French Rd	N Ballard Dr	1.58	\$1,506,000
W Evergreen Dr	N Meade St	N Richmond St	0.98	\$934,000
N Ballard Rd	E Apple Hill Blvd	E Edgewood Dr	1.16	\$1,098,000
Memorial Park	E Northland		0.13	\$126,000
Northland Ave	French Rd	E Meade St	1.60	\$1,521,000
Northland Ave	E Meade St	City Limit	1.70	\$1,616,000
			SUBTOTAL**	\$15,089,000
			TOTAL***	\$18,106,800

*Contingency is a 1.2 multiplier

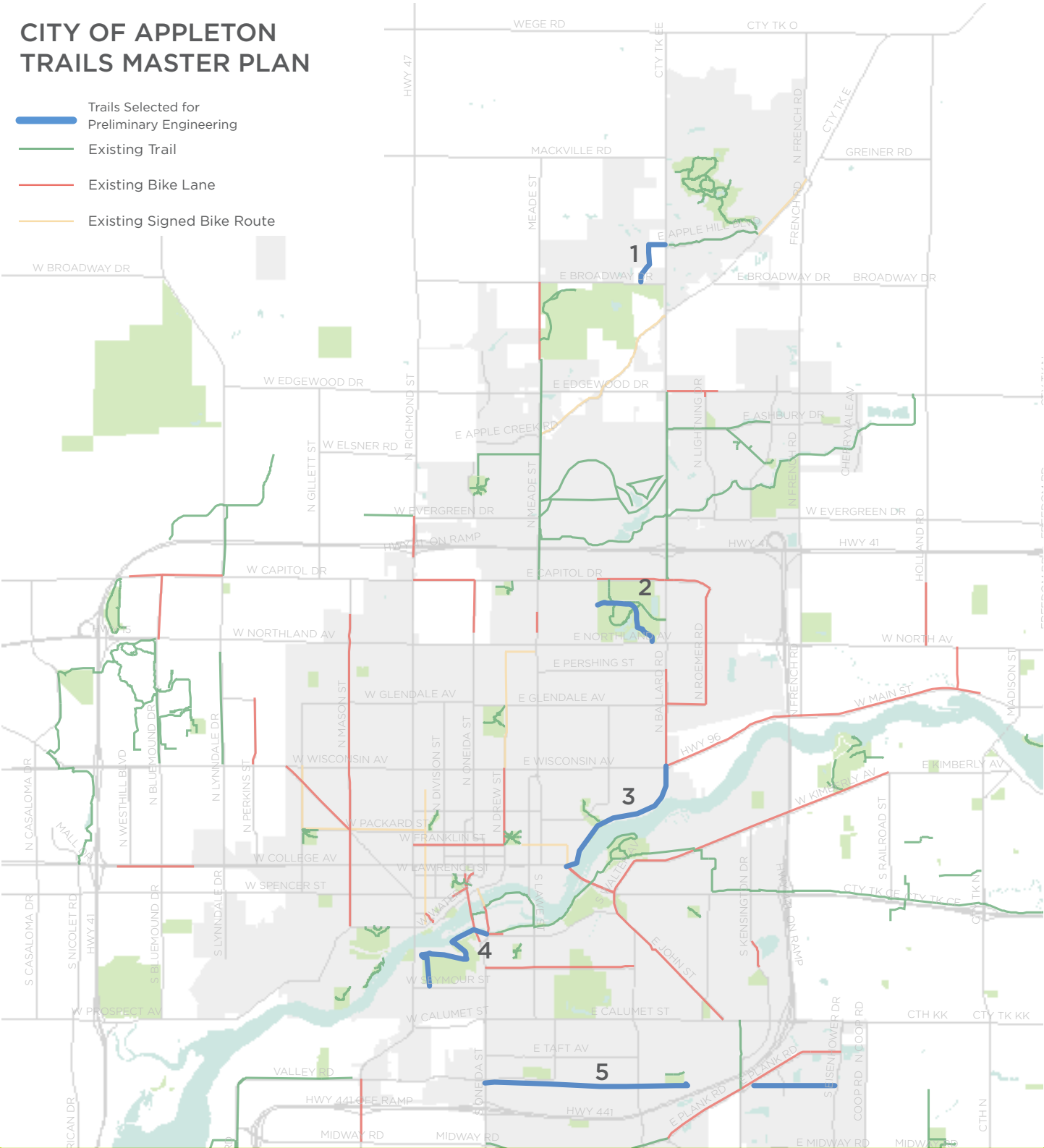
**Costs assume work is part of larger projects

***Total includes engineering and construction oversight with a 1.2 multiplier.

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CITY OF APPLETON TRAILS MASTER PLAN

- Trails Selected for Preliminary Engineering
- Existing Trail
- Existing Bike Lane
- Existing Signed Bike Route



PROJECT
DEVELOPMENT

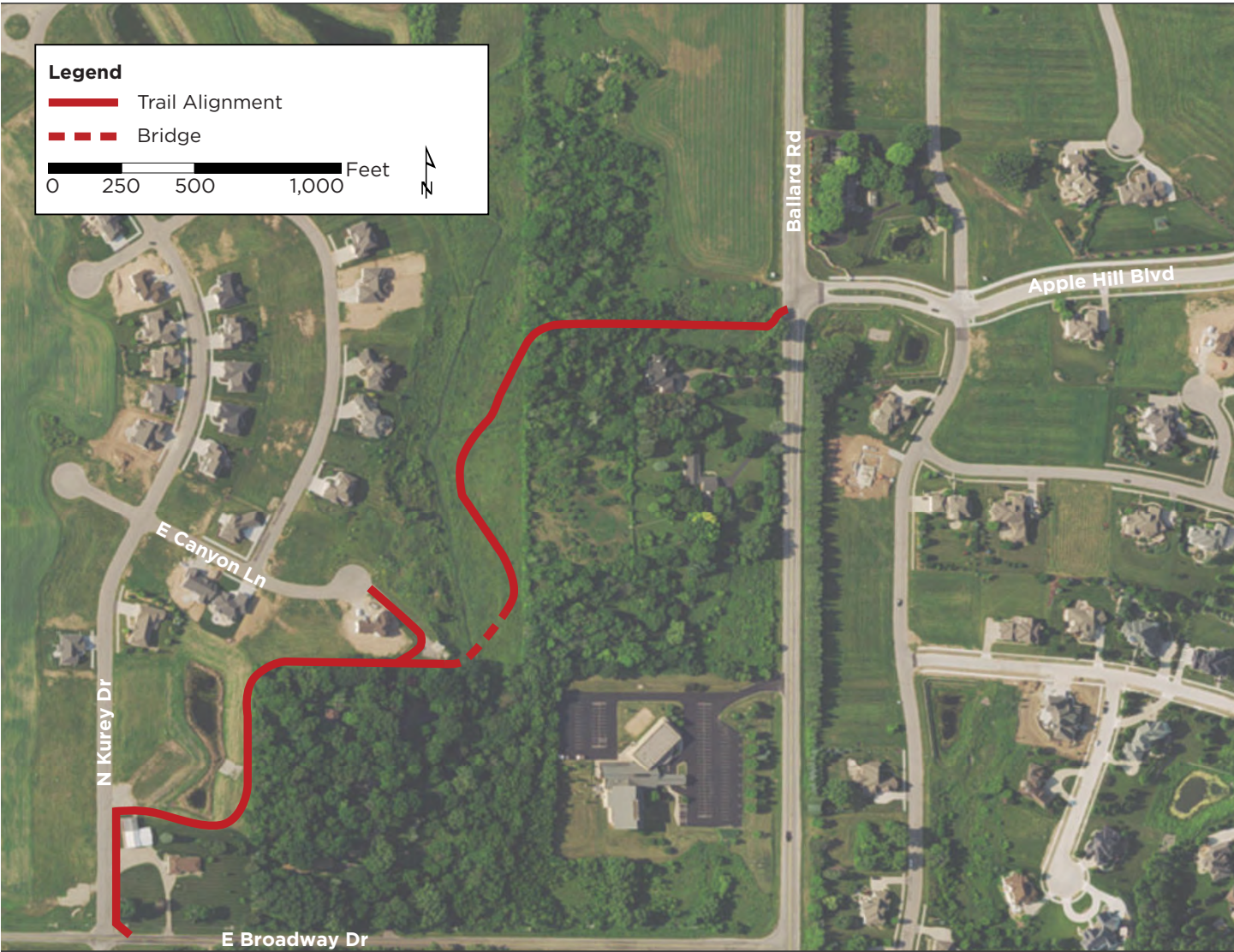
Five projects were selected for conceptual design development. The five projects--based on input from city staff, the project team, the stakeholder committee, and the Bicycle and Pedestrian Advisory Committee-- include the following:

1. Plamann Park Connection
2. Memorial Park Loop
3. Peabody Park/Fox River Trail
4. Riverview Gardens
5. WE Energies Trail

This section provides detail for the preliminary engineering completed for each of these projects, including trail descriptions, alignments, visualization, time-lines, and opinions of probable cost.

Plamann County Park

The Plamann Park access trail is a 3,000 ft bike and pedestrian path connecting the Apple Hill Farms development to Plamann Park. Primary features of this trail include a 200 ft pedestrian bridge to safely navigate slope and meet ADA regulations. The trail is routed along a navigable stream and meanders along minor terrain.



CHALLENGES

- » Utilities: None identified at this time.
- » Property Ownership: Easements may be required for final grading.
- » Slopes: Multiple slopes within the project will require significant cuts and fills to achieve an ADA compliant path. In one instance a significant drop off occurs near a building in close proximity to navigable stream crossing and property boundary which requires construction of longer bridge to meet ADA requirements and provide passage over the water feature.
- » Stormwater Management: Given the trail length and disturbance, Best Management Practices (BMPs) and stormwater facilities will need to be provided.
- » Hydric soils are present – a wetland delineation will be required. The presence of hydric soils across significant portions of the project site will present challenges in siting stormwater management facilities and BMPs. The edge of trail is placed 75 feet from the navigable stream in an attempt to avoid WDNR waterway permitting but, may require permitting for shoreland zoning.
- » The South connection to Broadway Drive which would ultimately enter Plamann Park is a 36-foot wide road. On-site inspection indicates that a 2-lane road (12-foot lanes) with a 7-foot separation and 10-foot trail accommodation would be a feasible alternative. This option lends itself to phased construction. The first phase could be to place chevron painting in the 7-foot separation median. The final recommendation would be to place a curb at the edge of traveled lane, as a physical barrier between vehicle traffic and trail users.
- » There is a garage located 200 feet north of the intersection at Kurey Drive and Broadway Drive which may present challenges in siting the trail while allowing positive drainage. As the trail runs north and diverts from Kurey Drive along the existing detention pond, the available area for a trail is limited.
- » The East connection at Ballard Road and Apple Hill Boulevard currently has the crossing placed to connect to south Apple Hill Boulevard. Apple Hill Boulevard currently has sidewalk access on both the north and south side of the road. An option to be considered is placing a pedestrian refuge at the median located on the east side of Apple Hill Boulevard. In doing so, the Plamann Park trail could connect and allow users to safely traverse to either the north or south side of Apple Hill Boulevard.



Photo simulation showing view of trail from Ballard Rd.

PERMITTING STRATEGY

The following list of agencies will need to be engaged throughout the design and permitting phases:

- » U.S. Army Corps of Engineers (USACE)
- » Wisconsin Department of Natural Resources (WDNR)
- » Outagamie County

IMPLEMENTATION TIMELINE

YEAR	1	2	3	4	5
DESIGN	24 months				
AGENCY COORDINATION + PERMITTING*	48 months				
CONSTRUCTION					5

*Does not include time for hazmat remediation

OPINION OF PROBABLE COSTS

Design Total	\$163,000
Design Engineering	\$163,000
Construction Total	\$1,492,000
Construction (with Contingency)*	\$1,356,000
Construction Oversight	\$136,000
Project Total	\$1,655,000

*Does not include real estate acquisition or hazardous remediation costs

*Opinions are in 2016 dollars based upon recent trail projects in the vicinity of the project location

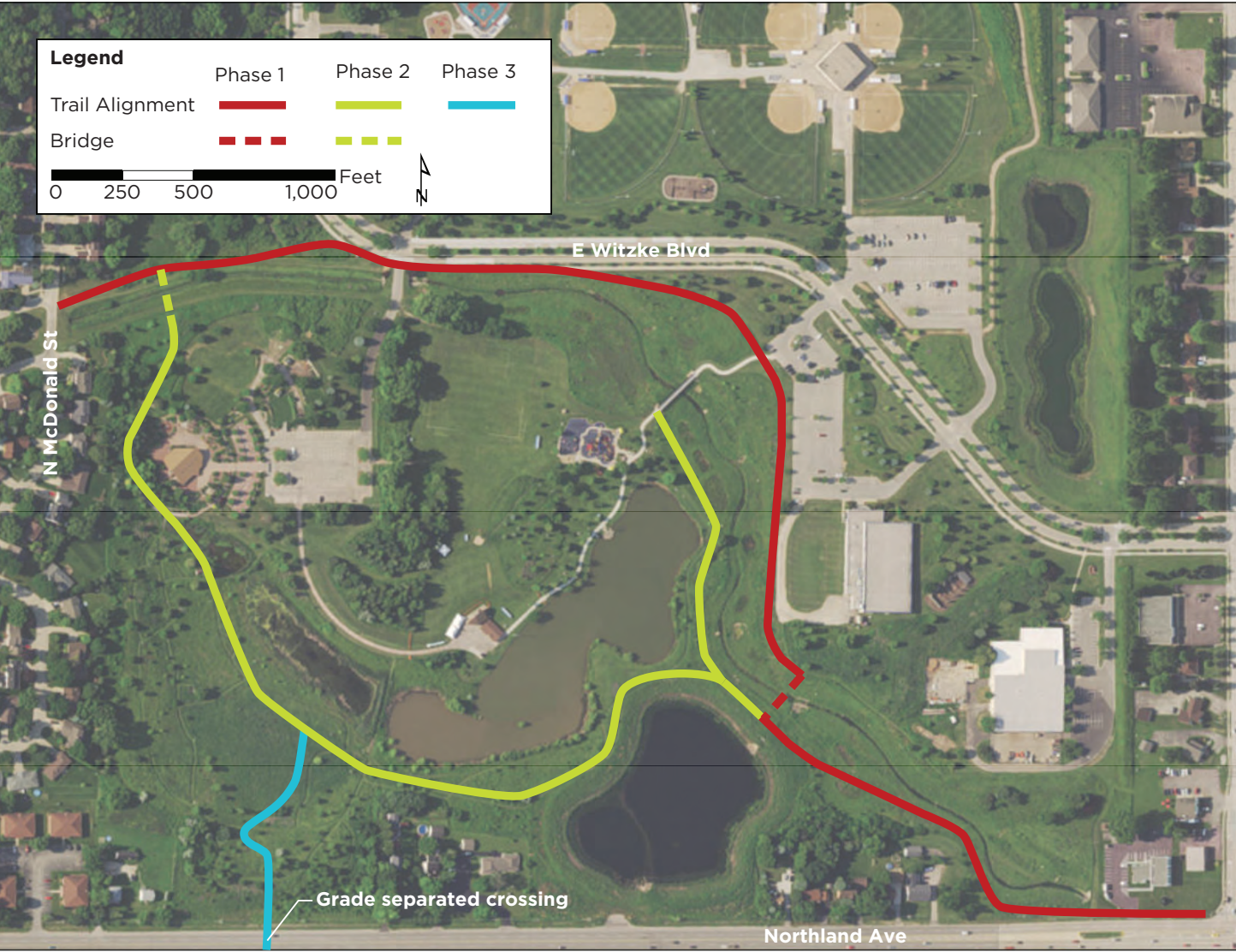
*Construction includes: Clearing & Grubbing, Common Excavation, EBS, Borrow, Base Aggregate Dense (1-1/4"), Asphaltic Surface, Concrete Sidewalk 6-inch (at take off and end points), Detectable Warning Fields, Culvert Pipe & Apron Endwalls, Pedestrian Bridge, Lighting, Signage, Restoration, Erosion Control, Mobilization, and Stormwater Management

FUNDING

POTENTIAL MATCHING	MAJOR FUNDING	CRITERIA & REQUIREMENTS
Local funding	WDNR; TAP	» TAP eligible (connects park across Ballard Rd. to adjacent trail network and residential areas) » WDNR eligible (provides access to outdoor based nature recreation)

Memorial Park Loop

The Memorial Park trail is an 8,800-foot long bike and pedestrian path connecting users from Ballard Road and McDonald Street. The trail is designed to allow users to access various amenities throughout the park. The trail navigates itself around drainage features and includes two 60-foot pedestrian bridges. The trail also recommends a pedestrian bridge over Northland Avenue connecting Longview Drive and Owalssa Street to the south side of Memorial Park.



CHALLENGES

- » Utilities: Utility poles and overhead facilities will need to be relocated along Northland Avenue.
- » Property Ownership: Possible easements may be required for final grading and construction of trailheads.
- » Stormwater Management: Given the trail length and disturbance, Best Management Practices (BMPs) and stormwater facilities will need to be provided.
- » Navigable stream present on the southeast corner of the project location. Hydric soils are present – a wetland delineation will be required. The presence of hydric soils across over significant portions of the project site will present challenges in siting stormwater management facilities and BMPs.
- » The City of Appleton has expressed interest in placing a pedestrian bridge from the south side of Memorial Park, over Northland Avenue, and connecting to Longview Drive and Owalssa Street. Review of this option presents immediate issues with the overhead utility and vehicle vertical clearance requirements. Complying with ADA requirements will present challenges, particularly with slopes and landings.

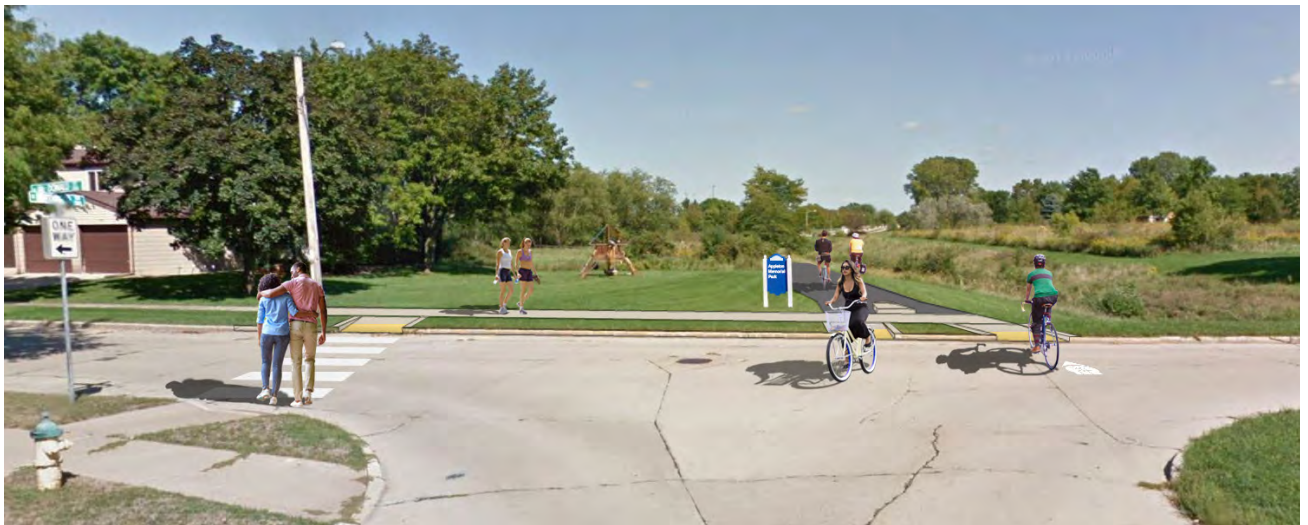


Photo simulation showing entry to Memorial Park from N McDonald Street.

PERMITTING STRATEGY

The following list of agencies will need to be engaged throughout the design and permitting process:

- » Section 4(f)
- » Wetlands
- » Outagamie County

IMPLEMENTATION TIMELINE: PHASE I

YEAR	1	2	3	4
DESIGN	18 months			
AGENCY COORDINATION + PERMITTING*	36 months			
CONSTRUCTION				3

IMPLEMENTATION TIMELINE: PHASE II

YEAR	1	2	3
DESIGN	12 months		
AGENCY COORDINATION + PERMITTING*	24 months		
CONSTRUCTION			2

IMPLEMENTATION TIMELINE: PHASE III

YEAR	1	2	3	4
DESIGN	24 months			
AGENCY COORDINATION + PERMITTING*	42 months			
CONSTRUCTION				3

*Does not include time for hazmat remediation

OPINION OF PROBABLE COSTS

	PHASE I	PHASE II	PHASE III
Design Total	\$128,000	\$90,000	\$376,000
Design Engineering	\$128,000	\$90,000	\$376,000
Construction Total	\$1,169,000	\$826,000	\$3,450,000
Construction (with Contingency)*	\$1,063,000	\$751,000	\$3,136,000
Construction Oversight	\$106,000	\$75,000	\$314,000
Project Total	\$1,297,000	\$916,000	\$3,826,000

*Does not include real estate acquisition or hazardous remediation costs

*Opinions are in 2016 dollars based upon recent trail projects in the vicinity of the project location

*Construction includes: Clearing & Grubbing, Curb Removal, Common Excavation, EBS, Borrow, Base Aggregate Dense (1-1/4"), Asphaltic Surface, Concrete Sidewalk 6-inch (at take off and end points), Detectable Warning Fields, Culvert Pipe & Apron Endwalls, Pedestrian Bridge, Lighting, Signage, Restoration, Erosion Control, Mobilization, and Stormwater Management

FUNDING

PHASE	POTENTIAL MATCHING	MAJOR FUNDING	CRITERIA & REQUIREMENTS
Phase 1	Local Funding	TAP	» TAP Eligible (Connects to residential areas & Ballard bike lanes providing strong North-South connection)
Phase 2	Local funding (In addition to sources cited in funding summary seek funding from local service clubs & health care providers)	WDNR	» WDNR Eligible (Provides access to nature-based recreation) » Consider developing as part of a "healthy living" internal trail loop to leverage funding from regional health care providers
Phase 3	Local funding	TAP; WDNR	» Good TAP potential (connection to large residential areas) » Potential WDNR funding (provides access to nature-based recreation)
Other	There may be an opportunity to use other funding sources which could offset trail related costs (for example, grading). Stream is a priority navigable waterway because it is considered an area of special natural resource interest. Therefore, stormwater quality improvements may be eligible for funding through WDNR Urban Non-Point Source Stormwater Management Grant.		

Peabody Park / Fox River Trail

The Peabody Park trail is a 2,800-foot bike and pedestrian path connecting Green Bay Road to Ballard Road. This trail follows alongside the riverfront and utilizes existing trail networks through both St. Joseph’s cemetery and Riverside cemetery. The walkway is ADA compliant and provides access for both transportation and recreational users.



CHALLENGES

- » Utilities: Shallow stormwater outlets along the alignment will need to be considered in setting vertical profile.
- » Property Ownership:
 - » The first 1,900-feet of the trail alignment is placed on City of Appleton property. The latter part of the trail is connected through the Riverview and St. Joe's cemeteries which will require coordination and an easement.
 - » Along this portion of the trail, St. Joe's has requested that "Stations of the Cross" structures remain untouched and undisturbed.
 - » Parcel 31117712 is under private ownership and is located immediately adjacent to the west trail limit. While the trail is not infringing on this property, coordination with this property owner should be considered. Note: Property is currently for sale.
- » Slopes: Upon entering the cemetery property, the lower trail route extending to the Fox River Environmental Education Alliance was field reviewed (topography and slope challenges deemed this not a viable route). However, the recommended route also presents significant grade challenges as the trail enters the cemetery. These challenges were found to be less significant and can be addressed with a boardwalk.
- » Stormwater Management: Given the trail length and disturbances, Best Management Practices (BMP's) and stormwater facilities will need to be provided.
- » Other: This trail alignment offers excellent access to the riverfront. Field inspection revealed that constructing this trail will require some bank stabilization and implementation of retaining walls. A boardwalk has been proposed for a portion of the trail in the cemetery property, where existing slopes and grades would require a significant amount of earthwork.

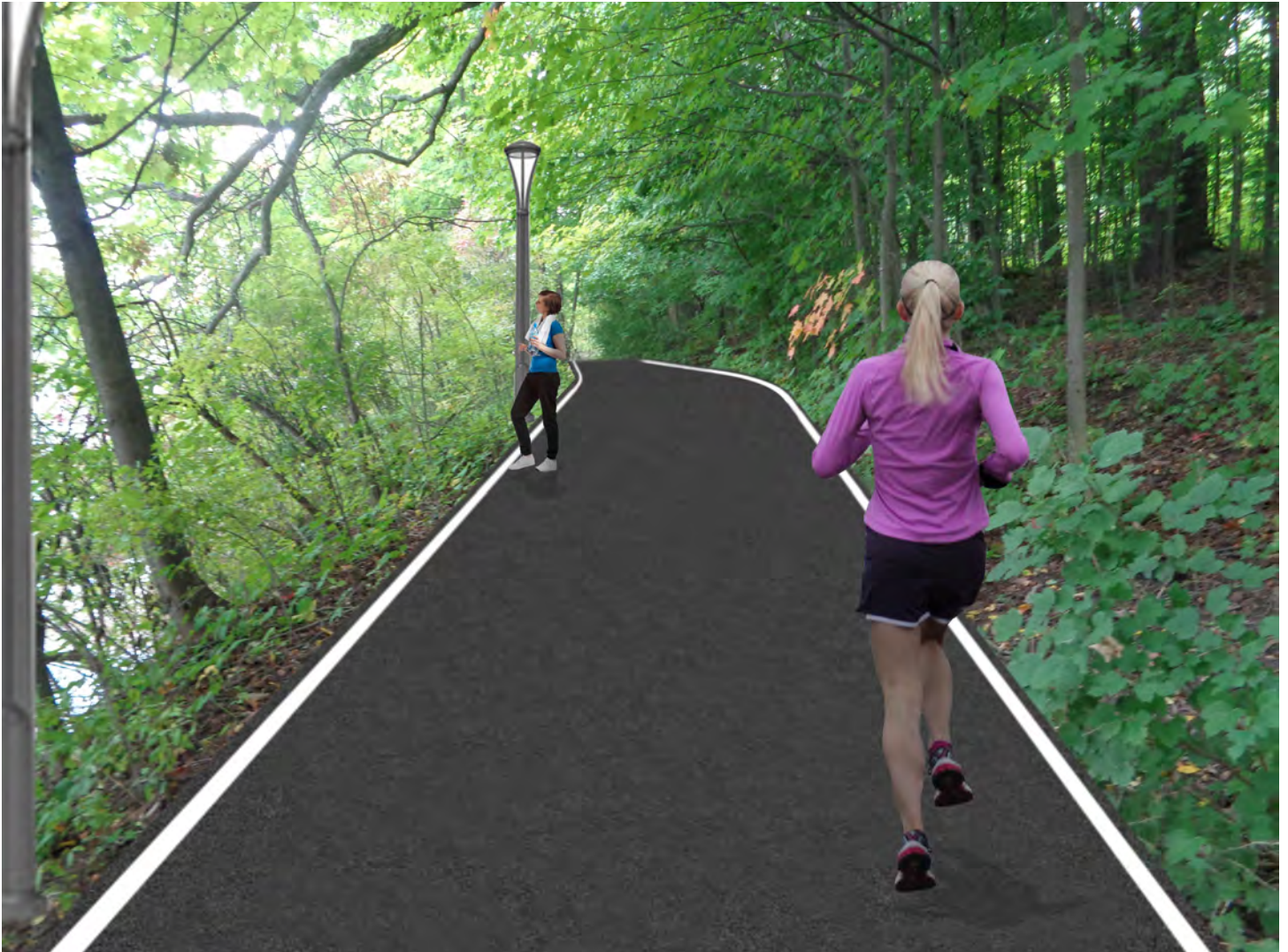


Photo simulation showing trail along the Fox River.

PERMITTING STRATEGY

The following list of agencies will need to be engaged throughout the design and permitting phases:

- » Cemetary Real Estate
- » Wisconsin Department of Natural Resources (WDNR)

IMPLEMENTATION TIMELINE

YEAR	1	2	3	4	5
DESIGN	36 months				
AGENCY COORDINATION + PERMITTING*	48 months				
CONSTRUCTION					5

*Does not include time for hazmat remediation

OPINION OF PROBABLE COSTS

Design Total	\$238,000
Design Engineering	\$238,000
Construction Total	\$2,183,000
Construction (with Contingency)*	\$1,985,000
Construction Oversight	\$198,000
Project Total	\$2,421,000

*Does not include real estate acquisition or hazardous remediation costs

*Opinions are in 2016 dollars based upon recent trail projects in the vicinity of the project location

*Construction includes: Clearing & Grubbing, Curb Removal, Common Excavation, EBS, Borrow, Base Aggregate Dense (1-1/4"), Asphaltic Surface, Concrete Sidewalk 6-inch (at take off and end points), Detectable Warning Fields, Culvert Pipe & Apron Endwalls, Boardwalk, Lighting, Signage, Restoration, Erosion Control, Mobilization, and Stormwater Management

FUNDING

POTENTIAL MATCHING	MAJOR FUNDING	CRITERIA & REQUIREMENTS
Local funding	WDNR	» Not a good fit for TAP (federally funded projects on utility ROW are challenging; presence of cemeteries. If trail phased in TAP funding may be appropriate for portion of segment)

Riverview Gardens

The Riverview Gardens access trail is a 6,900-foot bike and pedestrian path connecting Olde Oneida Street to Riverview Road and Riverview Lane. Primary features of this trail include a 1,450-foot elevated boardwalk which connects the Lock Keeper’s house and Riverview Gardens. The trail will provide traversable horizontal curves and alignment to accommodate both pedestrians and bicyclists around the point at Riverview Gardens. The walkway allows more vegetation to remain providing a scenic trail with a minimal footprint. Once in Riverview Gardens, the trail follows existing golf cart paths and follows former fairways until tying into existing roadways. This trail provides access for both transportation and recreational users.



CHALLENGES

- » Utilities: Existing water line from pump house appears abandoned but will need to be taken into account when setting final alignment and profile.
- » Property Ownership: Easements will be required from Riverview Gardens for the majority of the trail length. Riverview Gardens is aware of the project and is supportive of the project. Easements will also be required from Fox River Navigational System Authority (FRNSA). FRNSA is also aware of the project and is supportive.
- » Slopes: Slopes between the Lock Keeper's house and connection to the current cart path will present challenges in providing a trail with adequate clear zone while maintaining existing vegetation and buffer to waterway. These slopes also present challenges in providing ADA compliant grades for pedestrian use. The location of this trail adjacent to the waterway on a constant slope to the water feature will make stormwater treatment and compliance a challenge with this portion of the trail. The proposed alignment could include an elevated boardwalk to address these concerns. Benefits of an elevated boardwalk include minimized impact to existing vegetation, maintenance of current drainage, and reduced stormwater impacts. An alternate would require extensive grading of the hillslopes and construction of retaining walls and removal of significant vegetation along the slope. The slope following the existing cart path up to the existing greenhouses also presents challenges for ADA compliance and will require significant portions of fill to satisfy pedestrian guidelines for longitudinal slope.
- » Stormwater Management: Given the trail length and disturbances, Best Management Practices (BMP's) and stormwater facilities will need to be provided.
- » Hydric soils are present – a wetland delineation will be required. The presence of hydric soils across over significant portions of the project site will present challenges in siting stormwater management facilities and BMP's.
- » Cultural Resources: Pump House and boat anchor near Lock Keeper House.



Above: Photo simulation showing boardwalk along creek leading up to Riverview Gardens. Left: Photo simulation of trail along locks.

PERMITTING STRATEGY

The following list of agencies will need to be engaged throughout the design and permitting process:

- » USACE
- » FRNSA

IMPLEMENTATION TIMELINE: PHASE I

YEAR	1	2	3
DESIGN	18 months		
AGENCY COORDINATION + PERMITTING*	27 months		
CONSTRUCTION			4

IMPLEMENTATION TIMELINE: PHASE II

YEAR	1	2	3	4	5	6
DESIGN	36 months					
AGENCY COORDINATION + PERMITTING*	60 months					
CONSTRUCTION						6

*Does not include time for hazmat remediation

OPINION OF PROBABLE COSTS

	PHASE I	PHASE II
Design Total	\$118,000	\$432,000
Design Engineering	\$118,000	\$432,000
Construction Total	\$1,080,000	\$3,961,000
Construction (with Contingency)*	\$982,000	\$3,601,000
Construction Oversight	\$98,000	\$360,000
Project Total	\$1,198,000	\$4,393,000

*Does not include real estate acquisition or hazardous remediation costs *Opinions are in 2016 dollars based upon recent trail projects in the vicinity of the project location

*Construction includes: Clearing & Grubbing, Curb Removal, Common Excavation, EBS, Borrow, Base Aggregate Dense (1-1/4"), Asphaltic Surface, Concrete Sidewalk 6-inch (at take off and end points), Detectable Warning Fields, Culvert Pipe & Apron Endwalls, Boardwalk, Lighting, Signage, Restoration, Erosion Control, Mobilization, and Stormwater Management

FUNDING

PHASE	POTENTIAL MATCHING	MAJOR FUNDING	CRITERIA & REQUIREMENTS
Phase 1	Local funding (Consider making special request to Community Foundation)	TAP; TEA	» TAP eligible (connects to streets on both ends; provides safe alternative route for east-west connection) » May be TEA eligible. Consider developing trail as "job creation/retention" project to provide low-income job seekers to job training facilities
Phase 2	Local funding	WDNR; NRDA	» Consider developing trail to "provide public boating and fishing access" to Fox River.
Other	» TEA typically funds mfg.-related projects, however some ag-related projects have been funded » Water access would align with WDNR funding priorities. Several WDNR Knowles-Stewardship Programs may apply » May be good candidate for Outdoor Legacy Partnership Program by benefitting economically disadvantaged populations and providing access to outdoor recreational opportunities » May be good candidate for WE Energies Economic Health Foundation Grant		

WE Energies Trail

The WE Energies trail is a 10,415-foot bike and pedestrian path connecting Oneida Street to Eisenhower Drive. The trail follows an old rail corridor connecting to local bike and pedestrian accommodations around Horizons Elementary School. Bike and pedestrian upgrades will be made at the intersection of Lake Park Road and Schaefer Circle to safely transition users. The trail continues from Lake Park Road and connects at Eisenhower Drive. The walkway is ADA compliant and provides access for both transportation and recreational users.

PHASE I (WEST)

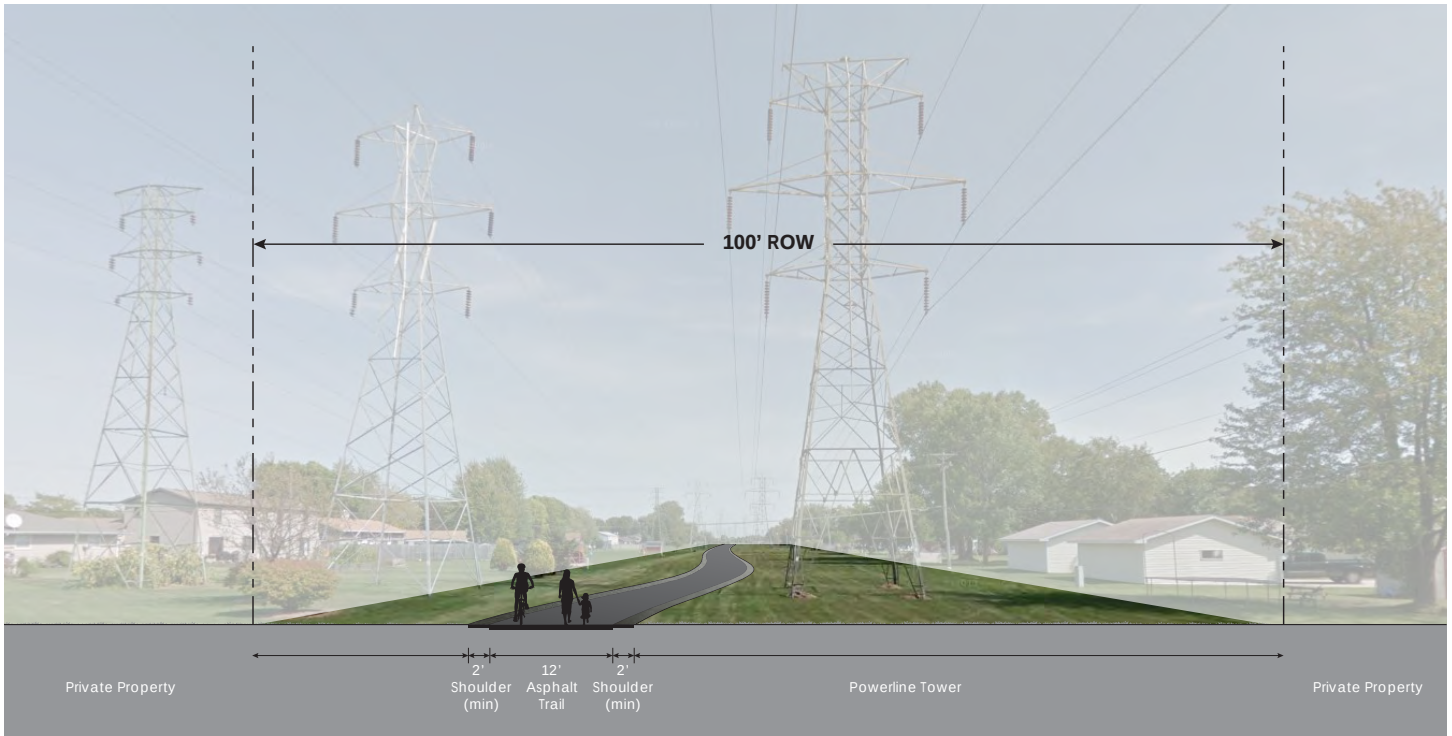


PHASE II (EAST)



CHALLENGES

- » Utilities: Existing ATC and WE Energies transmission and power poles run along the corridor of this trail. Coordination with these stakeholders has been established and they are supportive of the project. Easements will be required for WE Energies West (Wheatfield Drive to Schaefer Street). Modifications to existing easements will be required for WE Energies East (Lake Park Road to Eisenhower Drive).
- » Property Ownership: ATC has requested a 20' offset from their facilities. Along the corridor, there are locations at which we cannot satisfy the ATC offset and remain outside resident property lines. Ongoing communication with ATC to negotiate offset requirement.
- » Slopes: No concerns at this time.
- » Stormwater Management: Given the trail length and disturbances, Best Management Practices (BMP's) and stormwater facilities will need to be provided.
- » This trail will not be lighted, per ATC and WE Energies request. This trail will need to be constructed to accommodate utility trucks and is currently modeled with a more robust section.
- » Connection to the west at Oneida Street and Roeland Avenue will require coordination with WisDOT, who is currently designing this intersection. At the southeast corner of this intersection is an ATC substation. To the north of this substation is a 6.5 foot terrace and 5 foot sidewalk - any bike and pedestrian accommodations would have to be placed in this area.
- » The connection between Schaefer Street and the Schaefer Circle connection will consist of on-street bicycle accommodations and use of existing sidewalks for pedestrians.
- » A trail connection will be established at the East end of Schaefer Circle. A 10-foot curb cut will be placed and this portion of the trail will merge into the existing sidewalk. The existing sidewalk will be widened to 10-foot bike and pedestrian accommodation.
- » The round-a-bout at Plank Road and Lake Park road will connect WE Energies West to WE Energies East. Bike and pedestrian accommodations will extend from the southeast leg of the roundabout to the WE Energies East trail. Trail alignment will need to be adjusted around existing utility facilities
- » WE Energies West will connect at Eisenhower Drive as part of the City of Appleton 2017 design utilizing design best practice.



Above: Section showing relationship of trail to powerline towers and adjacent properties.



PERMITTING STRATEGY

The following list of agencies will need to be engaged throughout the design and permitting process:

- » Utilities with facilities along corridor
- » Real Estate

IMPLEMENTATION TIMELINE: PHASE I (WEST)

YEAR	1	2	3	4
DESIGN	18 months			
AGENCY COORDINATION + PERMITTING*	36 months			
CONSTRUCTION				3

IMPLEMENTATION TIMELINE: PHASE II (EAST)

YEAR	1	2	3
DESIGN	18 months		
AGENCY COORDINATION + PERMITTING*	27 months		
CONSTRUCTION			3

*Does not include time for hazmat remediation

OPINION OF PROBABLE COSTS

	PHASE I (WEST)	PHASE II (EAST)
Design Total	\$91,000	\$63,000
Design Engineering	\$91,000	\$63,000
Construction Total	\$669,000	\$464,000
Construction (with Contingency)*	\$608,000	\$422,000
Construction Oversight	\$61,000	\$42,000
Project Total	\$760,000	\$527,000

*Does not include real estate acquisition or hazardous remediation costs

*Opinions are in 2016 dollars based upon recent trail projects in the vicinity of the project location

*Construction includes: Clearing & Grubbing, Curb Removal, Common Excavation, EBS, Borrow, Base Aggregate Dense (1-1/4"), Asphaltic Surface, Concrete Sidewalk 6-inch (at take off and end points), Detectable Warning Fields, Culvert Pipe & Apron Endwalls, Signage, Restoration, Erosion Control, Mobilization, and Stormwater Management

FUNDING

PHASE	POTENTIAL MATCHING	MAJOR FUNDING	CRITERIA & REQUIREMENTS
Phase 1	Local funding; WE Energies Foundation Grant	WDNR	» Currently not a good fit for TAP (federally funded projects on utility ROW are challenging. Monitor for future applicability as WisDOT is working on this issue)
Phase 2	SAA	SAA	» SAA



IMPLEMENTATION

Implementation of the proposed trail network will require consideration of several factors when determining the order of projects. All proposed projects were prioritized based on a lower to higher priority scale, providing initial guidelines for project consideration.

Other factors that should be considered include overlap between trail projects and other ongoing efforts, funding opportunities, total project cost and regulatory challenges.

This section provides an overview of local, state and national funding options, a summary of cost assumptions and planning level opinions of probable cost for each project identified through the Master Planning process and a summary of cost and proposed schedule for maintenance activities.

Finally, a series of recommendations are provided that will enhance the growing trail network in Appleton and will encourage integration with the on-street network.

Funding Opportunities

Opportunities for funding the proposed network are available at the local, state, and federal levels. The opportunities noted include a range of options, from competitive technical grants to smaller awards with significant trail focus.

The City of Appleton should seek creative opportunities for funding and consider project need, type, and timeline when determining potential sources for funding. Opportunities for completing multiple projects concurrently may provide additional pathways for implementation, and partnerships with neighboring jurisdictions may create stronger applications. It is highly recommended that the City strengthen or initiate partnerships with agencies administering relevant grants in order to better understand the application requirements and specific considerations for each opportunity.

Appendix 3 provides a detailed matrix of potential funding sources, including general availability and relevance to the proposed network.



Pursuing funding opportunities will support upgrading existing Appleton trails, including developing more visible crossing, as well as implementing new trail connections.

Recommendations

The following recommendations address a variety of elements that will enhance the overall utility of Appleton's expanding active transportation network. These elements include safety improvements, network legibility, and integration with the on-street network. Drawn from best practices, public input, and the trail audit completed as part of the Trails Master Plan, these improvements can improve the overall quality of the growing trail network.

CONNECTIVITY: SEAMLESS TRANSITIONS

The utility of the existing trail network is expanded when coupled with on-street bikeways and sidewalks. Use of on-street facilities is often required for destination access. Improving connections to on-street facilities will increase the range of destinations that can be reached. Providing for seamless transitions between trails and on-street facilities encourages use of the facilities as one comprehensive network. These transitions can be enhanced through clear delineation of facilities, such as establishing clear trail entry points, reduction of barriers to trail or bike lane access, informative signing that brands the entire network and provides wayfinding, and provision of clear connections among the facilities. Greater network connectivity can also be achieved through providing bicycle and pedestrian connections at street ends.



May 2016



September 2016

An example of a recent project that provides a seamless transition from the trail on College Avenue Bridge to the signed route on Catherine Street.

CONNECTIVITY: NEIGHBORHOOD CONNECTIONS

Trails and on-street facilities provide access to a variety of destinations, including homes and other neighborhood-scale points of interest, such as parks and schools. Often neighborhood streets provide low-stress facilities that can also serve as connections between other facilities. Existing routes through neighborhoods should be inventoried to better assess existing network connectivity; further analysis should be completed to identify low-stress routes that can fill network gaps in these areas. Low traffic volumes and speeds, existing traffic calming infrastructure, and connections to destinations and the larger network should all be considered.

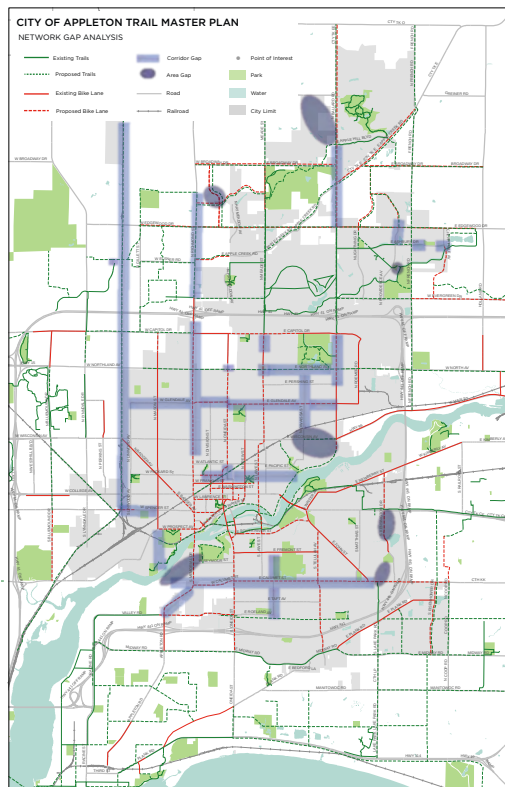
Establishing signed routes through neighborhoods can improve the utility of existing and future connections; signage will not only identify the route but also serve as wayfinding for bicyclists and pedestrians. Further, improvements to these vital links can further enhance the city-wide network and improve overall comfort of the network. Improvements can include surface quality, signage, and methods for reducing traffic volume and speed along these routes.



Speed and volume controls, including signs, pavement markings, and speed humps are used in this neighborhood bicycle boulevard in Portland, OR.

CONNECTIVITY: MISSING LINKS

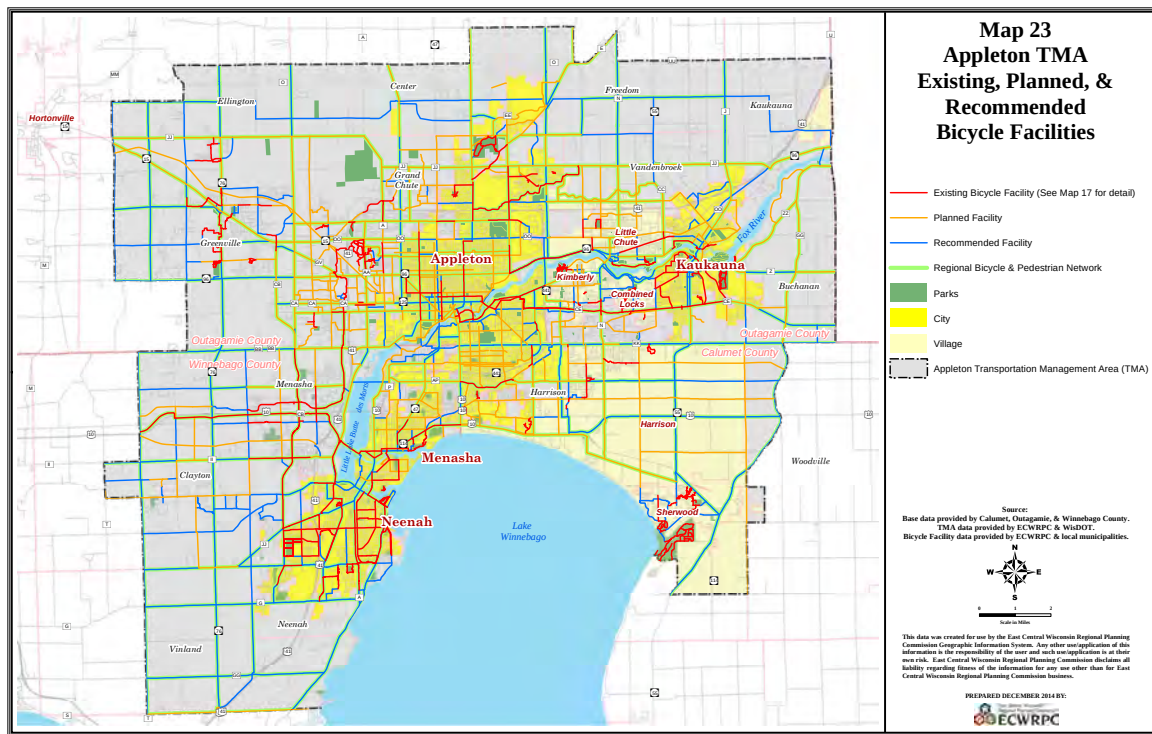
The network gap analysis map, as included in the Existing Trail Network section and below, identifies missing links in the existing network that limit the connectivity of the existing network. Gaps in the existing network result in disconnected facilities that may require bicyclists or pedestrians to travel on a high stress roadway for at least a portion of their trip. In some locations, an entire area may not have direct access to any facilities. The existing trail network provides low-stress segments that accommodate users of all ages and abilities; however, without connections across the network, the all-ages and abilities capacity is limited to small segments and result in a network accessible to only the strong and confident cyclists. The gap analysis should be used to further analyze where the most significant improvements in network connectivity can be achieved. For example, some location may require a relatively short extension of an existing facility or improved crossing to connect larger portions of the existing network. These small wins can significantly improve network utility for residents.



Existing gaps in Appleton's walking and bicycling network (explored further on page 29, represent areas of limited connectivity. Discontinuous facilities, as seen in the image on the right, force bicyclists into the roadway and can discourage walking in the area.

CONNECTIVITY: REGIONAL NETWORK

The growing network across the Fox Cities and extensive planned network outlined in the Fox Cities TMA/Oskosh MPO Bicycle and Pedestrian Plan provides residents with opportunities to connect to regional destinations, such as recreation or employment opportunities. As the network continues to grow throughout Appleton, facility development should aim to connect to trails, bike lanes, and sidewalks located in adjacent municipalities. Coordination among municipalities can better facilitate implementation in a cohesive manner that benefits residents and creates a connected network. Project coordination may also be used to leverage funding opportunities across the region.

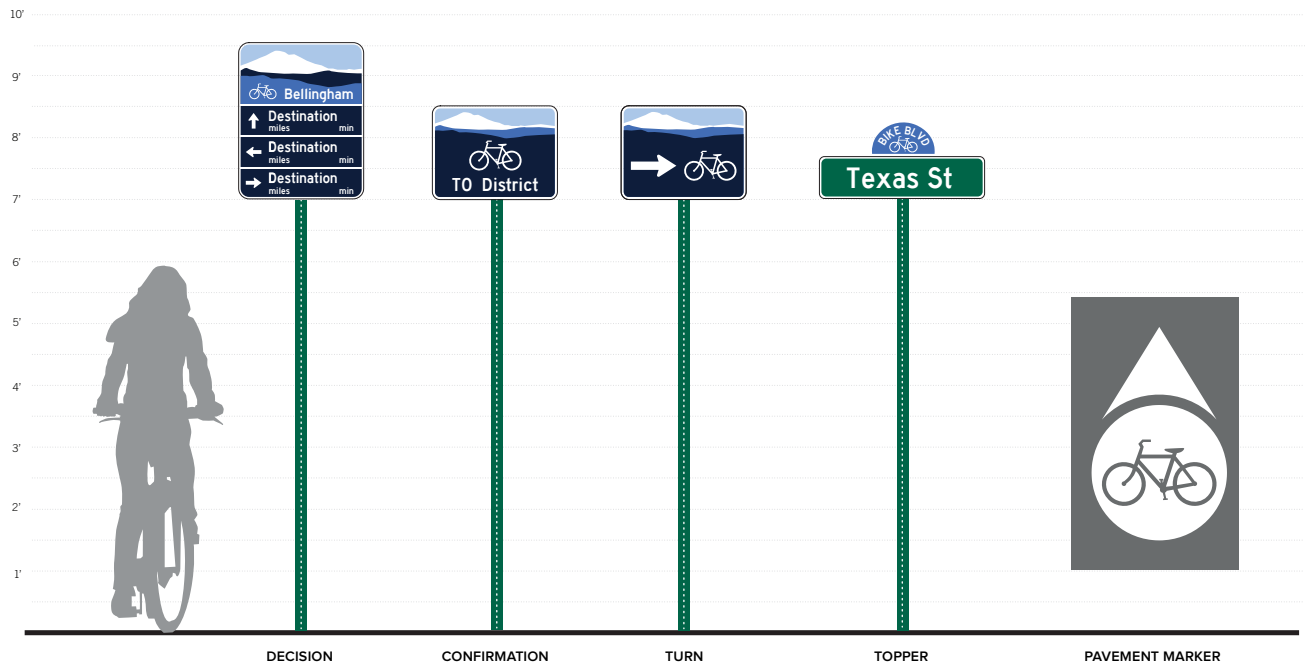


The proposed bicycle network across the Fox Cities, as outlined in the 2014 MPO Master Plan, aims to provide connections among municipalities and to major destinations. The Appleton Trails Master Plan builds on the facilities noted here, as well as developments that have occurred since, to provide a more connected trail network for Appleton residents.

SYSTEM-WIDE WAYFINDING

A comprehensive wayfinding system provides recognizable branding for the entire network while also increasing the utility of the system for all users. Current signage does not meet the needs of trail users in Appleton, as survey respondents frequently noted the need for more information regarding trails.

Clear signage helps users identify routes to their destinations while also providing information regarding bicycle-friendly facilities. Trail-specific wayfinding includes kiosks located at major entry points and trail heads provide additional information, including a system map. Similar branding, including colors, fonts, and symbols can be translated to on-street signs in order to create a city-wide system that encourages use of all facility types as one network. In order to be eligible for Federal funding options, wayfinding signage must be compliant with the Manual on Uniform Traffic Control Devices (MUTCD). MUTCD guidance defines uniform size, shape, color, and legibility of signs and messages included. However, the MUTCD also provides for inclusion of community identity and display of additional information through Community Wayfinding provisions.



The wayfinding sign family for Bellingham, Washington features Mount Baker, a distinctive feature in the area's landscape, to clearly define and brand the bicycle network. Sign toppers and pavement markers are more subtle options for defining greenways and other network links.

LIGHTING + SAFETY

Appleton's trails are important connections for pedestrians and bicyclists locally, as well as regionally for both utilitarian and recreation trips. The trail audit conducted during this project revealed that lighting is limited along some existing trails, and survey responses also indicated that residents are concerned with safety--and in particular, lighting--along new and existing trails. While the quantity of lighting is important, the provision of quality lighting is necessary to improve safety.

There are several benefits to including lighting to trail projects:

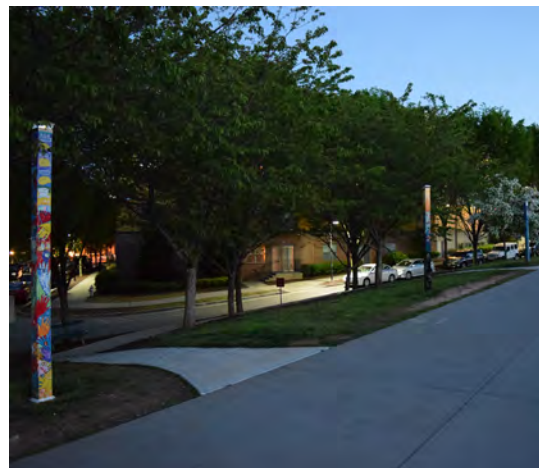
- » help pedestrians and bicyclists to safely navigate trails
- » provide visibility and security at all hours

Lighting should be of adequate brightness, providing enough visibility to identify a face up to 20 yards away. Lighting should provide uniform coverage and good color rendition. The use of metal halide or light emitting diode (LED) lamps are recommended. Average horizontal illumination levels are 0.5 to 2 foot candles or 5 to 22 lux¹. Trail lighting should be at a pedestrian scale, but avoid light fixtures mounted at eye level that could impair visibility. Pedestrian scale lighting is typically about 15 feet tall, has lower levels of illumination, and closer spacing to avoid dark zones between lights. Fixture choice can also serve to unify the trail system.

Residents also noted that call boxes or other security devices would improve the perception of safety on trails. However, call boxes are not recommended for installation. In many communities, call boxes are removed as cell phones approach universal usage. Maintaining call boxes is no longer cost effective, and ones that do remain are often subject to vandalism or prank calls. Call boxes are only recommended in locations with limited cell reception.



Pedestrian scale lighting could include bollards with lights along the trail.



Pedestrian scale lighting along the Atlanta Beltline.

¹

AASHTO, Section 5.2.12

PEDESTRIAN AND BICYCLE CROSSINGS

Clearly marked crossings with roadways can improve network connectivity and safety. While trails represent all ages and abilities facilities, the low-stress nature of trails can be quickly diminished at difficult, unsafe roadway crossings. The Access + Intersections chapter of the Trail Design Best Practices report (Appendix 4) provides greater detail for crossing options for both signalized and unsignalized intersections. Additional features, such as median refuge islands, can also improve the quality of crossing for wide intersections.

High quality crossings can employ features like clear signage, high visibility crosswalk markings, bulb outs to reduce crossing distance, rectangular rapid flashing beacons (RRFBs), or raised crosswalks to improve visibility. In addition to these items that improve safety and comfort for bicyclists and pedestrians, features such as detectable warning strips, pavement markings, and change in trail alignment can provide warnings to trail users to be mindful of the approaching intersection.

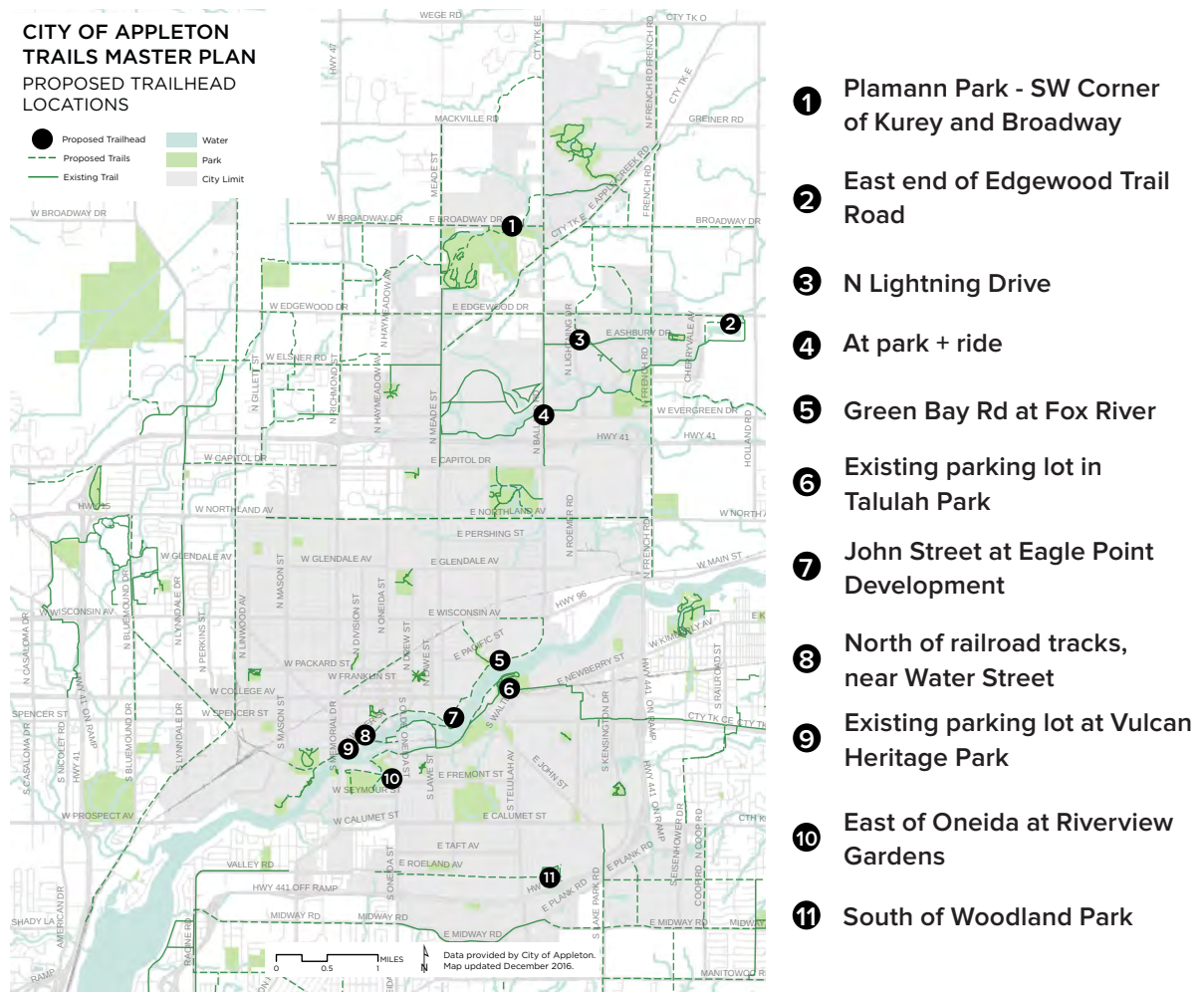


This raised crosswalk on the Burke Gilman Trail in Seattle, WA includes features such as clear signage, detectable warning strips, and pavement markings to provide warning to trail users and vehicles that they are approaching an intersection.

TRAILHEADS

Trailheads should be established at major access points along the trail network. Trailheads can include amenities such as parking (automobile and bicycle), comfort stations, drinking fountains, trash receptacles, bicycle repair stations, a location to change clothes, seating, wayfinding, and other informational signage. Information at trail heads can help orient a user to the larger network, including key connections to the on-street network and nearby destinations.

Survey responses indicated that many individuals were unaware of trail names and locations and were interested in learning more about the network. Clear designation of trails at popular access points can help increase public awareness of the growing system. Below is a map of potential trailhead locations identified during the course of this project. Further work should be done to assess the suitability and need for these and other locations.



END OF TRIP FACILITIES + AMENITIES

During the public involvement sessions, participants commented that they would like to use trails and an expanded bicycle network for utilitarian trips and to access destinations such as recreational facilities. Provision of end of trip facilities at destinations throughout the trail network can help encourage these trips.

End-of-trip facilities include bicycle parking options as well as amenities like those identified in the trail heads recommendation. Benches, comfort stations, bike repair stations, a location to change clothes, and similar features can enhance the overall network. Bike parking should include options for both short-term and long-term parking, in addition to climate-sensitive considerations. Parking located under shelters or other covered facilities can accommodate riders through most seasons. In general, all parking options should support the bicycle in at least two places, preventing it from falling over. Parking should also allow for the use of a U-lock across the frame and at least one wheel. Racks should be securely installed and placed within close proximity to trail access points, ideally in conjunction with trail heads or other destinations, such as parks, recreation facilities, transit stops, or schools. APBP's *Essentials of Bike Parking* is available online and provides detail on selecting and installing bicycle parking. The Trail Design Best Practices Report (Appendix 4) addresses end-of-trip facilities in greater detail.



Covered bicycle parking provides protection from inclement weather for short term parking. A bike repair station is also located under the shelter in the example to the left.



A bike repair station in Bellingham, WA includes bike repair manuals, bicycle parking (not pictured), and bike route maps and information.



Staple racks provide secure parking options for bicycles, accommodating 2 points of contact and a U-Lock. See Appendix 6 for more detail on parking selection.

MAINTENANCE

Routine trail maintenance can prolong the life of surface materials, increase the usability of the trail, and encourage greater use of the trail across all seasons. Throughout the public engagement process, overgrown vegetation, snow clearing, and surface maintenance were frequently noted as suggestions for improvement of the trail system. Cracks and similar surface issues were the most frequently observed items during the trail audit, and several locations were observed with decreased sightlines and operating space due to overgrown vegetation. Obstructions and poor surface quality can deter use of the existing network.

It is recommended that a routine maintenance schedule is developed and tracked, building from the audit data provided as part of this report. Maintenance of trail amenities, such as lighting, should also be considered.



Inadequate drainage not only impacts the quality of the trail and reduces the lifespan of surface materials, it also creates an obstruction to trail use. Routine maintenance can help address these issues and provide for a more usable network.

TRAIL COUNTS + USER SURVEYS

Trail count programs provide a means for assessing use of existing facilities while also allowing for assessment of benefits associated with trail development. As identified in the Fox Cities MPO Master Plan, a state-wide count program and methodology does not exist at this time for Wisconsin. Various jurisdictions within the Fox Cities TMA and Oshkosh MPO have conducted bicycle and pedestrian counts on trails but without consistent methodology among locations.

It is recommended that Appleton develop a trail count program to better assess demand for trails over time and across seasons. The count program should employ methods that are repeatable across the jurisdiction and, given the nature of Appleton's network, are appropriate for both on and off-street facilities. A growing range of methods and devices provide options of varying cost, duration, and reliability. If less permanent options are selected, a strict methodology regarding location, duration, and frequency should be developed in order to provide for data that can be compared over time. See Appendix 5 for further detail about current options in counting technology.

Implementation of counting hardware may provide more reliable usage data and better capture use over time as opposed to manual count methods. However, manual count methods can provide several benefits including: a method for engaging community advocates, a method for assessing placement of automated devices, and an opportunity to gather additional feedback on existing trails.

Appleton can gather input from trail users about the network through user surveys. Surveys can cover a range of topics, including purpose of trip, frequency of use, assessment of trail quality, and travel to and from the trail. By intercepting residents on the trails, the city can capture feedback from those using the facility.



A bike counter on the Second Avenue cycle track in Seattle, WA provides real-time display of the number of bicyclists per day and year-to-date.



Conducting intercept surveys on trails and other high-use corridors provides the opportunity to gather feedback from those who use the trails and help the city better understand why people use trails and what can be improved.

EDUCATION, ENCOURAGEMENT, + ENFORCEMENT PROGRAMS

Investment in active transportation infrastructure is further enhanced through the education, encouragement, and enforcement of appropriate facility use. Programs can range from community workshops and individualized marketing campaigns to Safe Routes to School and safety marketing campaigns. Education and encouragement programs help connect residents with the tools they need to learn about the facilities available to them, to gain the skills required to safely utilize the network, and to pursue a more active, sustainable lifestyle. Programs can partner with schools, employers, and other community organizations to reach a wide audience and better understand the needs of various user groups.

The Bicycle Friendly Community (BFC) report card, issued by the League of American Bicyclists in Spring 2013, identifies that bicycling education programs are not offered in middle or high schools in Appleton and are offered in only 1-25% of elementary schools. This is one example of how the city can improve the presence and knowledge of bicycling in the city, while also improving the BFC ranking.

Further, enforcement programs reinforce appropriate behavior and improve personal safety on the trails and across the city. Few opportunities exist to provide additional education to all modes, and programs such as traffic citation diversion courses can be one method for all modes to learn the legal rights and responsibilities when walking, bicycling, and driving. Programs can target all modes, and in partnership with the police department, can aim to curb behavior specifically known to endanger bicyclists and pedestrians. Enforcement can also include programs such as a volunteer trail steward program, where groups of volunteers bicycle along the trail network to enhance safety through additional observation as well as can answer questions regarding the network.



Encouragement and safety programs, such as the program highlighted above in Pasadena, provide communities with information about the area's bicycle, pedestrian, and transit networks. Programs provide specific information about how to use the area's active transportation networks.



The Scott Get Up & Ride program encourage Kimberly Clark employees to commute by bike at 62 sites around the world. In Neenah, WI discounts at local bike shops, secure parking, education programs, and cash incentives encourage employees to bike to work¹.

¹ <http://www.sustainabilityreport2010.kimberly-clark.com/people/involving-employees-in-sustainability.asp>

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