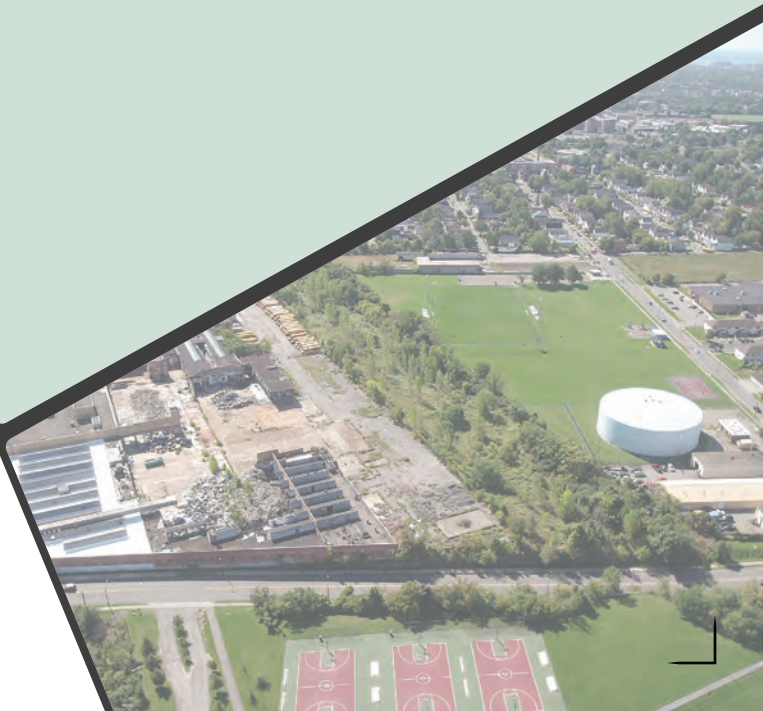


Northeast
GREENWAY
Initiative



Rail Trail Extension



ACKNOWLEDGEMENTS



The Northeast Greenway Initiative is made possible thanks to Ralph C. Wilson, Jr. Legacy Funds administered by the Community Foundation for Greater Buffalo.

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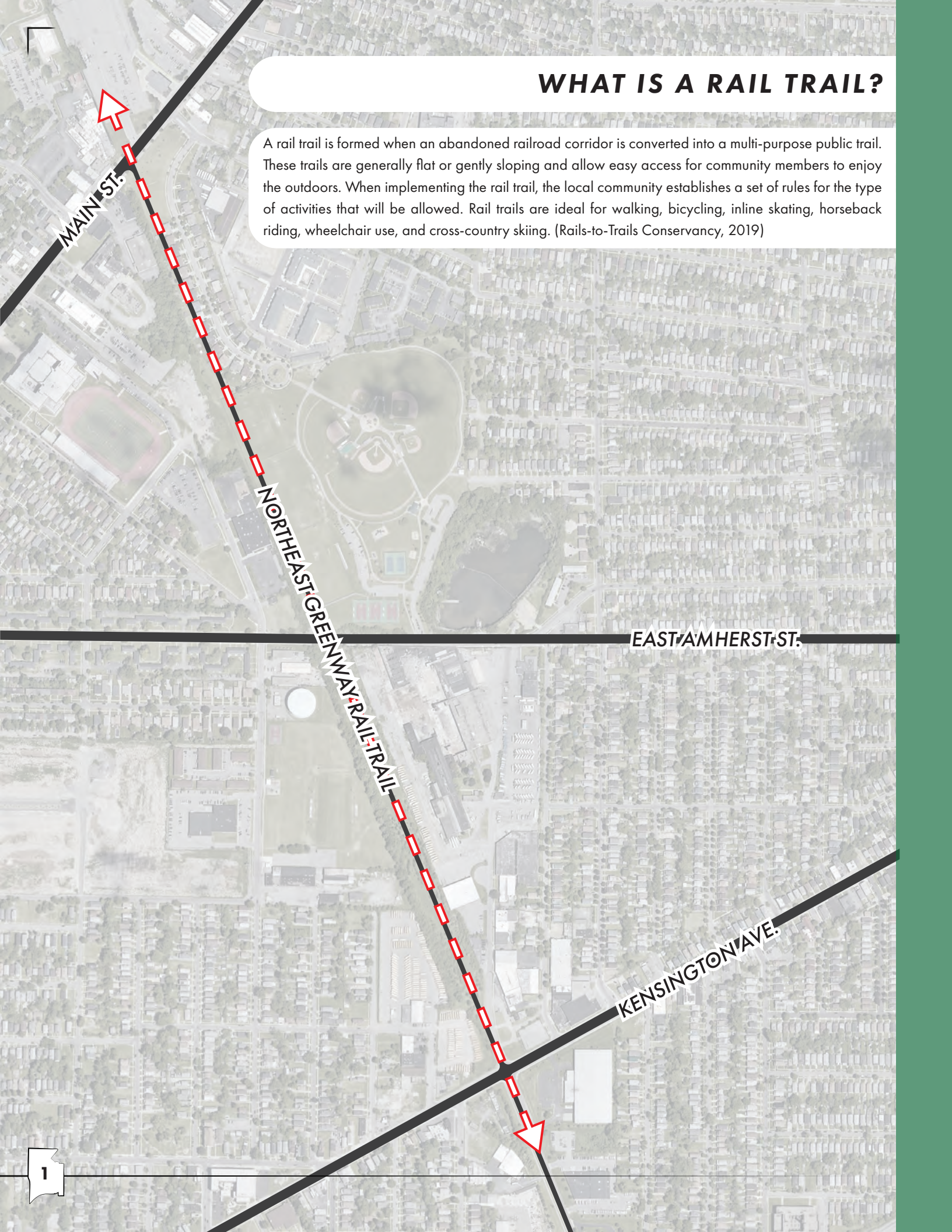


TABLE OF CONTENTS

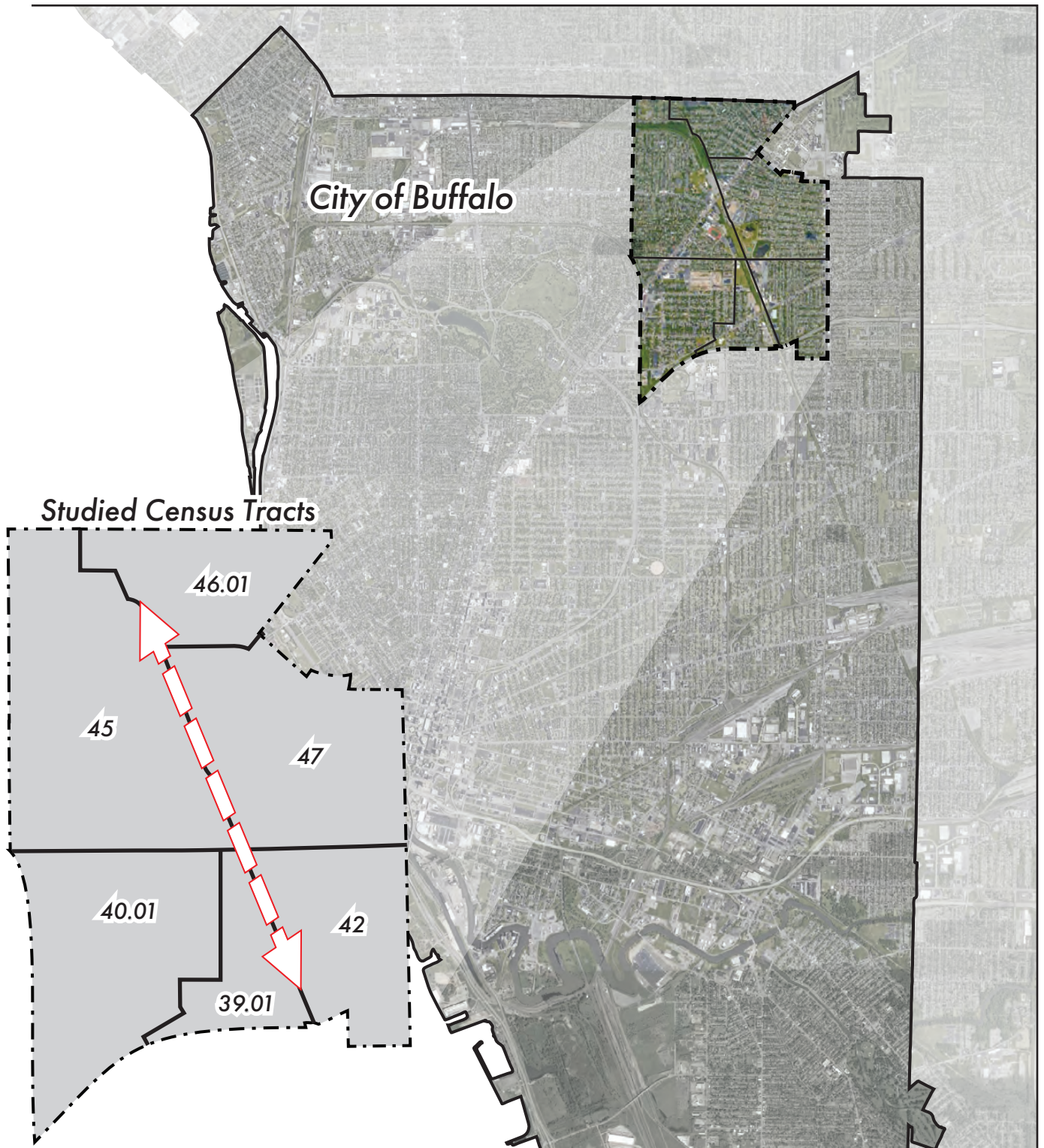
Introduction	1-8
<i>What is a Rail Trail? Project Study Area Regional & Local Bicycle Infrastructure Maps Project Area History Benefits & Goals</i>	
COMMUNITY CONDITIONS ANALYSIS	9-26
<i>Community Connections</i>	<i>9-10</i>
<i>Parks Religious & Spiritual Organizations Schools Healthcare Facilities Community Connections Asset Map</i>	
<i>Accessibility & Circulation</i>	<i>11-14</i>
<i>Traffic Count Bus & Metro Route Access & Circulation Walkability Bikeability Transit Rideability Commuting Characteristics Slope Active Transportation Map</i>	
<i>Healthy Neighborhoods</i>	<i>15-17</i>
<i>Population Density Study Area Community Racial Makeup Study Area Age Distribution Health Statistics Potential Environmental Justice Areas</i>	
<i>Environmental Health</i>	<i>18-19</i>
<i>Land Cover Impervious Surfaces & Tree Canopy Remediation Sites TRI Facilities with On-Site Disposals</i>	
<i>Economic Activation</i>	<i>20-26</i>
<i>Household Median Income Poverty Housing Density Safety/Crime Statistics & Perceptions Recently Completed & Proposed Local Projects Food, Beverage, & Retail Ownership Small Employment Centers Private vs Public Ownership Map Zoning & Land Use Business Associations & Community Groups</i>	
PROJECT SECTIONS & RECOMMENDATIONS	27-46
<i>Introduction</i>	<i>27-28</i>
<i>Section One: Existing North Buffalo Rails to Trails to McCarthy Park</i>	<i>29-36</i>
<i>Challenge 1: North Buffalo Rails to Trails to Main Street Challenge 2: Crossing Main Street Challenge 3: South of Main Street & McCarthy Park</i>	
<i>Section Two: McCarthy Park to Kevin Roberson Park</i>	<i>37-44</i>
<i>Phase I: Early Activations Phase II: Implementation of Multi-Use Trail Phase III: Creating a Recreation Greenway</i>	
<i>Section Three: Kevin Roberson Park to William Gaiter Parkway</i>	<i>45-54</i>
<i>Challenge 1: Access at Kevin Roberson Park Challenge 2: Access at Clyde Avenue Challenge 3: The Intersection Challenge 4: Access across from Warwick Avenue Challenge 5: William Gaiter Parkway Multi-Use Trail</i>	
<i>Final Route Recommendations</i>	<i>55-56</i>
TRAIL AS A DESTINATION	57-68
<i>Green Infrastructure Ecology Public Art Recreation Signage, Wayfinding, & Signaling Overall Funding Strategy Planting Recommendations</i>	
CONCLUSION	69

WHAT IS A RAIL TRAIL?

A rail trail is formed when an abandoned railroad corridor is converted into a multi-purpose public trail. These trails are generally flat or gently sloping and allow easy access for community members to enjoy the outdoors. When implementing the rail trail, the local community establishes a set of rules for the type of activities that will be allowed. Rail trails are ideal for walking, bicycling, inline skating, horseback riding, wheelchair use, and cross-country skiing. (Rails-to-Trails Conservancy, 2019)

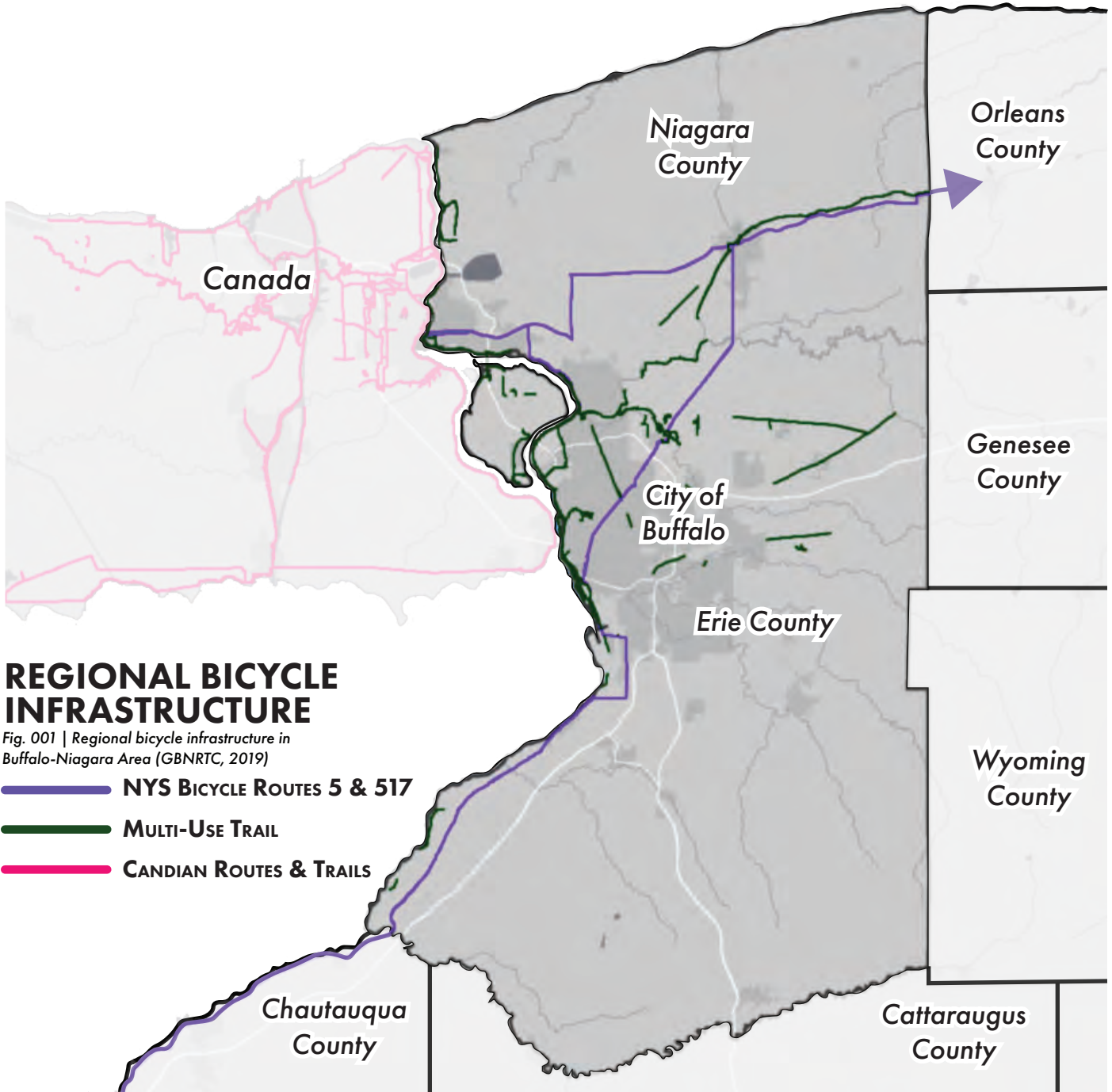


PROJECT STUDY AREA



The Northeast Greenway Initiative will run approximately one mile along the former Delaware, Lackawanna, and Western (DL&W) railway corridor, from Main Street to Kensington Avenue, in the City of Buffalo.

The project area is bounded by six census tracts in northeast Buffalo, New York: 45, 46.01, 47, 40.01, 39.01, and 42. These six census tracts encompass the impact area identified for the Northeast Greenway Initiative project.



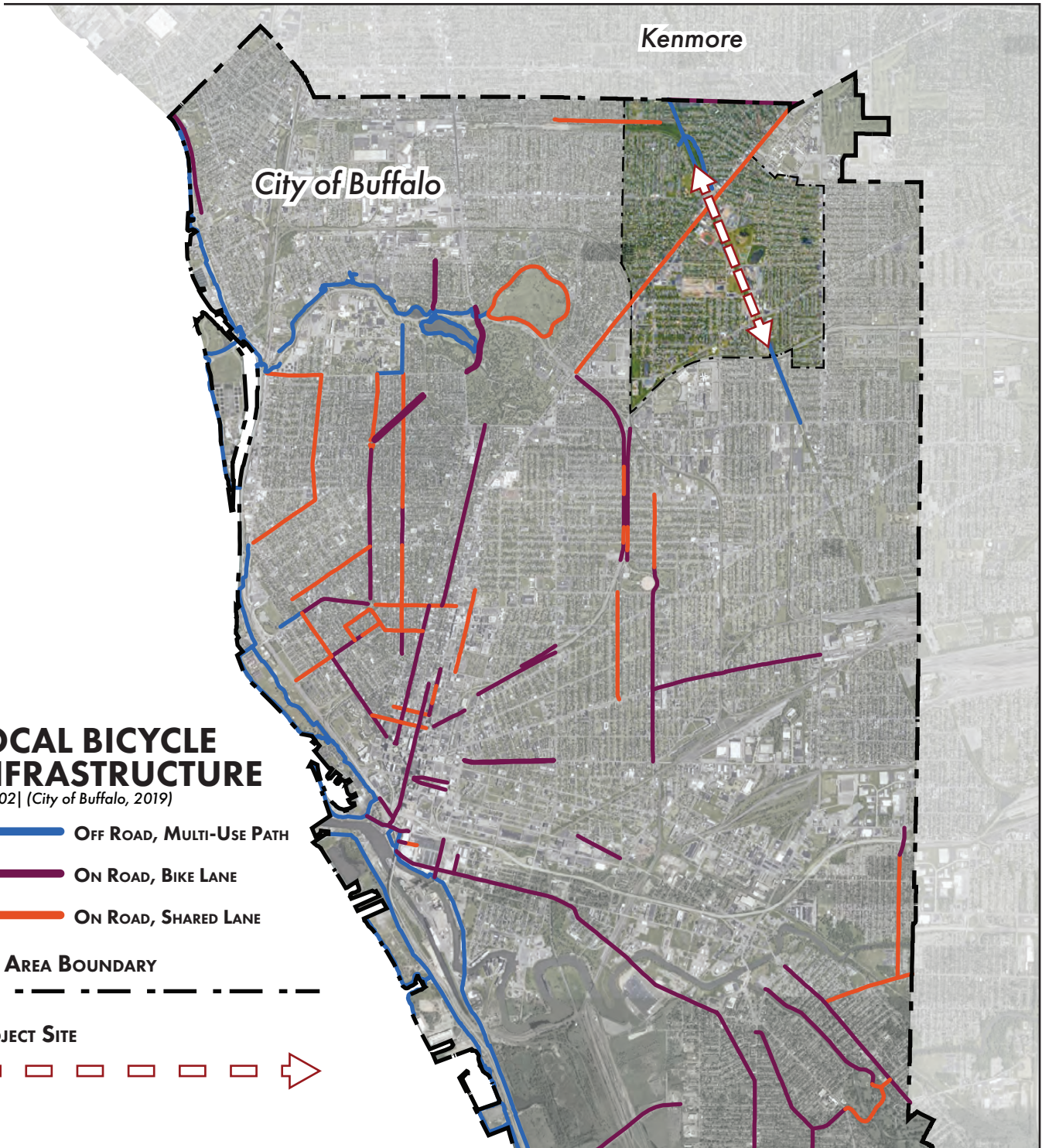
REGIONAL BICYCLE INFRASTRUCTURE

Fig. 001 | Regional bicycle infrastructure in Buffalo-Niagara Area (GBNRTC, 2019)

- NYS BICYCLE ROUTES 5 & 517
- MULTI-USE TRAIL
- CANDIAN ROUTES & TRAILS

The City of Buffalo is an important hub for regional bicycle connectivity with connections to the evolving Erie Canalway Trail, New York State Bicycle Route 5 and Route 517, and routes that cross the Canadian border into Southern Ontario.

The Northeast Greenway Initiative will bolster regional connectivity of bicycle facilities through its link to Bicycle Route 517 which extends along Main Street and the Tonawanda Rails to Trails, connecting to the City of Tonawanda and the Erie Canalway Trail.



LOCAL BICYCLE INFRASTRUCTURE

Fig. 002 | (City of Buffalo, 2019)

- OFF ROAD, MULTI-USE PATH
- ON ROAD, BIKE LANE
- ON ROAD, SHARED LANE

SITE AREA BOUNDARY

PROJECT SITE



In recent years, the City of Buffalo’s bicycle infrastructure has expanded through the goals set forward by the Bicycle Master Plan completed in 2016. The plan details 10 outlining goals for a build-out of over 300 miles of additional new bicycle infrastructure throughout the city.

Residents who are interested in cycling recreationally, but are concerned about safety, will benefit from making protected on- and off-road bicycle facilities. Implementing a rail trail extension is an important step to completing a well connected vision for the Buffalo Bicycle Network as outlined in the Buffalo Bicycle Master Plan.

PROJECT AREA HISTORY



Fig. 003 | 1928 Aerial Photographs 8226 Plate 222. Buffalo, NY.
(UB Libraries. 1928)

Buffalo's history is one that is inseparable from the history of the transportation of goods and people. A city that grew because of its geographic location at the meeting place of the Erie Canal and the Great Lakes, Buffalo has always been an important transport hub. Railways crisscrossed the city with various lines that served as industrial corridors, especially along the city's East Side. Railway companies that built lines through Buffalo included the New York Central, Lehigh Valley Railway, Erie Railroad, and the Delaware, Lackawanna and Western Railroad (DL&W).

The current North Buffalo and Tonawanda Rails to Trails run along the former International Railway (an interurban line that connected downtown Buffalo, Tonawanda, and Niagara Falls) and Erie Railroad right-of-ways. The Northeast Greenway Initiative will follow the right-of-ways of the Erie Railroad and the DL&W, stretching from Main Street to Kensington Avenue. The connecting multi-use trail to the south, along William Gaiter Parkway, continues along this right-of-way to East Delavan.



Fig. 004 | Erie County Aerial Photos 1951. Buffalo, NY
(Erie County. 1951)

At East Delavan, the two former rail routes diverged with the DL&W Railway continuing to the southeast while the Erie Railroad continuing north-south a few blocks west of Bailey Avenue. Opportunities exist to extend the rail trail along this length of the Erie Railroad.

The Erie Railroad was originally chartered as the New York and Erie Railroad in 1832 in order to connect New York City and the Great Lakes. The first incarnation of this trans-New York State railroad was completed in 1851, however, it bypassed Buffalo and terminated in Dunkirk, New York. The railroad eventually made it to Buffalo and was placed along the Northeast Greenway Initiative project site (Dunn, 2000). On October 10, 1881, the City of Buffalo approved the construction of DL&W Railway road crossings, including a bridge across Main Street "leaving a clear roadway underneath at least twelve feet in height and twenty-eight feet in the clear" (City of Buffalo DPW, 1906).



Fig. 005 | Erie Railway, Kensington Avenue Station, Kensington Avenue (Erie Railroad Company. 1968)

Most railroad crossings in Buffalo are no longer at grade. Increased injuries and death due to people getting hit by trains precipitated the construction of bridges separating much of the city's vast rail lines from roads. While at Main Street each railroad crossing had its own bridge, at Kensington Avenue, all the railroads crossed using the same bridge. When East Amherst Street was extended through the area, bridges were also constructed for the two railways to cross the street just east of the intersection with Manhattan Avenue.



Fig. 006 | Erie Railway, Main Street Station, Main Street (Erie Railroad Company. 1968)

Sanborn maps depict railway spurs and connecting branches to businesses located along the corridor, including the Militaire Motor Vehicle Co. (later the Harrison Radiator Division of General Motors) off of the DL&W lines and along Clyde Avenue. The Buffalo Pressed Steel Company (later the Muller Wiper Co.) was located along the Erie Railroad, just north of Kensington Avenue along Liberty Avenue. Main Street's numerous businesses to the east had railroad connections, including McDougall-Butler Company Paint Manufacturers, Beltinger Coal, and Coke Corporation. The Erie Railroad constructed two stations along this line, one at Kensington Avenue and one at Main Street. The Kensington Station was built in the 1880s, but by 1913, it was reportedly deteriorating and unused (Grow, 1977). The Kensington Station was located along the west side of the tracks, just north of Kensington Avenue.



Fig. 007 | International Railroad Company interurban that operated along rail right-of-way of the North Buffalo and Tonawanda Rails to Trails. (Tonawanda-Kenmore Historical Society. 1937)

What are the benefits?

Rail trails are more than just a recreational amenity. These multi-use corridors provide value to community users, including public health, transportation, and economic benefits (Rails-to-Trails Conservancy, 2019).

Community Connections

Connections between communities and neighborhoods are important benefits of rail trails. Rail trails can create connections between regional cycling infrastructure to establish extensive trail networks. In this way, rail trails can connect neighborhoods to the regional community and establish premier recreational amenities.

It is also important to create a sense of identity for the trail. Rail trails can become a canvas for communities to artistically express their collective identity. Walls that once supported bridges with train tracks can be transformed into beautiful pieces of art through an engagement process that results in a sense of place and a peaceful atmosphere for walking and riding. Community participation can be encouraged through public art installations, community events, and tree and seed plantings.

Accessibility

Trails that are flat and ADA compliant increase accessibility for people of all abilities. Multi-use trails are created for leisure recreational use that are protected from vehicles and other dangers.

Healthy Neighborhoods

While most Americans make the connection between exercise and health, many people still live sedentary lives. Rail trails and greenways create opportunities for outdoor recreation and non-motorized transportation, while also providing diverse populations with increased access to green space. Providing an alternative space for exercise and transportation can help control weight, heart disease, cholesterol levels, diabetes, lower the risk of certain cancers, and help reduce anxiety and depression (Rails-to-Trails Conservancy, 2019). People are more likely to be physically active if they have recreational options close to their homes. Rail trails and greenways create healthy, active transportation options by providing people of all ages with a safe and accessible path to walk, jog, cycle, or skate.

Environmental Health

Rail trails have been shown to provide a host of benefits to the environment. Historic urban rail corridors tend to have an adequate amount of space for native habitats to thrive, supporting biodiversity and giving trail users access to nature in an urban setting.

Additionally, rail trails can celebrate the industrial legacy of the region, while also remediating contaminated industrial sites through the use of green infrastructure and ecosystem services. As rail trails continue to expand transportation networks and commuter transportation options, they have the potential to reduce greenhouse gas emissions through zero emission transportation options.

Economic

There are also several economic benefits associated with rail trails. They can increase the value of nearby properties. When considering where to move, many homebuyers rank walking and biking paths as one of the most important features of a new community (The Pennsylvania Land Trust, Loza, & Richman, 2011). Similarly, businesses often choose to locate near trails because they can increase pedestrian traffic, creating a consistent flow of customers.

Another economic benefit of investing in rail trails is employment. The designing, engineering, and construction of walking and bicycling facilities create more jobs per dollar than other types of transportation infrastructure (Rails-to-Trails Conservancy, 2019).



Fig. xx | Source

GOALS



- Connect residents to local and regional assets, such as transportation infrastructure, surrounding neighborhoods, and other multi-use trails.
- Trailheads and entry points should serve as an amenity to surrounding neighborhoods and encourage residents to use the rail rail system.



- Ensure all potential users have access to the rail trail and its amenities.
- Protect rail trail users from potential hazards and dangerous conditions.



- Provide amenities and infrastructure that allow residents in the area to engage in a healthy lifestyle.
- Create a rail trail that encourages active transportation and active recreation.
- Acknowledge the benefits associated with increased ecological services.



- Maintain the integrity of the natural environment and continue to address ecosystem needs.
- Incorporate green infrastructure to address local and global environmental concerns, including stormwater runoff, destruction of habitats, and rising urban temperatures.
- Ensure that the benefits of the proposed rail trail are available for future generations to enjoy.



- Activate local and regional economies by increasing access to assets, destinations, and jobs.
- Create a rail trail that serves as a destination for local and regional residents.





COMMUNITY CONNECTIONS

The project area includes several neighborhoods with a host of diverse community assets. The Northeast Greenway Initiative offers the potential to connect these assets through engaging a variety of stakeholders, including block clubs, community organizations, local businesses, and employment centers. In addition to established assets, there are a number of proposed construction projects and increased development interests in the project area. The following section aims to create an inventory of established and proposed assets that can be leveraged to support a community outreach and engagement plan and inform the corresponding design and implementation of the Northeast Greenway Initiative.

Parks

A number of parks within the project area provide the potential for the Northeast Greenway Initiative to serve as a parkway corridor. The Northeast Greenway Initiative will connect McCarthy Park and Kevin Roberson Park (formerly Manhattan Park), both of which are primarily used for sports and athletics. By linking the Northeast Greenway Initiative trail to the existing North Buffalo Rails to Trails, trail users will also be connected to Shoshone Park, Minnesota Linear Park, and parks further north along the Tonawanda Rails to Trails. Building on Frederick Law Olmsted’s vision of a connected system of parks in Buffalo, the Northeast Greenway Initiative can play an integral role in connecting public green spaces throughout the city.

PARK NAME	AMENITIES	RESTROOM
McCarthy Park	Playground; Sports Fields -Baseball, Football, Soccer, Tennis, Basketball	Yes, Limited Hours
Kevin Roberson Park / Manhattan Avenue Park	Playground; Sports Fields - Football, Basketball	Yes, Limited Hours
Minnesota Linear Park	Walk / Run Recreation Amenity	No
Shoshone Park	Playground; Sports Fields - Baseball	Yes
Dewey Park	Sports fields, Public Pool	Seasonal Bathroom

Table 001 | (Google, 2019a)

SCHOOLS (within .5 mile of trail)	TYPE of SCHOOL	GRADES	SIZE
Buffalo United Charter School	Charter	K - 8	660
Middle Early College High School	Public	9 - 12	394
Public School 61.	Public	K - 8	267
Charter Middle School For Applied Technologies	Charter	6 - 8	n/a

Table 002 | (Google, 2019a)

Schools

Educational institutions are located within the project area. The two schools closest to the trail right-of-way are the Buffalo United Charter School on Manhattan Avenue and the Middle Early College High School (at Bennett High School) on Main Street. Additional schools located nearby include Westminster Charter School, St. Joseph School University, the University at Buffalo South Campus, and Charter Middle School For Applied Technologies. Another key educational asset within the project area is All High Stadium, located behind Bennett High School, which attracts residents for youth sporting events as well as FC Buffalo league soccer games. There are also many child daycare services throughout the study area.

The rail trail will provide safer routes for youth who walk or cycle to nearby schools, parks, and sporting events at All High Stadium. Including programming around the Federal Safe Routes to School initiative, such as walking to school utilizing the rail trail, could help to activate this space (USDOT, 2015). It is recommended that partnerships with nearby schools be sought in order to boost the use of the rail trail as a safe route for students traveling to and from school and sporting events.

Religious & Spiritual Organizations

There are many religious and spiritual organizations surrounding the rail trail. These religious and spiritual communities have the potential to be valuable stakeholders and community partners who can participate in the Northeast Greenway Initiative’s stewardship planning and visioning process. New Beginning Church of God is the closest to the project site, located a block east of McCarthy Park. Some religious institutions include (Google Maps, 2019a):

- Blessed Trinity Catholic Church
- Central Park United Methodist Church
- Elim Christian Fellowship
- Mt Calvary Holy Church-America
- New Testament Revival Cathedral

Healthcare Facilities

Nearby healthcare facilities include Planned Parenthood - Buffalo Medical Health Center, located at the corner of Main Street and East Amherst Street and Metcare Pharmacy along Benwood Avenue. Additional healthcare facilities located near the project site include the Veterans Administration Hospital on Bailey Avenue, Erie County Medical Center (ECMC) on Grider Street, and Sisters of Charity Hospital on Main Street. These three hospitals are major employment centers, and employees who bicycle or walk to work can benefit from the Northeast Greenway Initiative.

COMMUNITY CONNECTIONS ASSET MAP

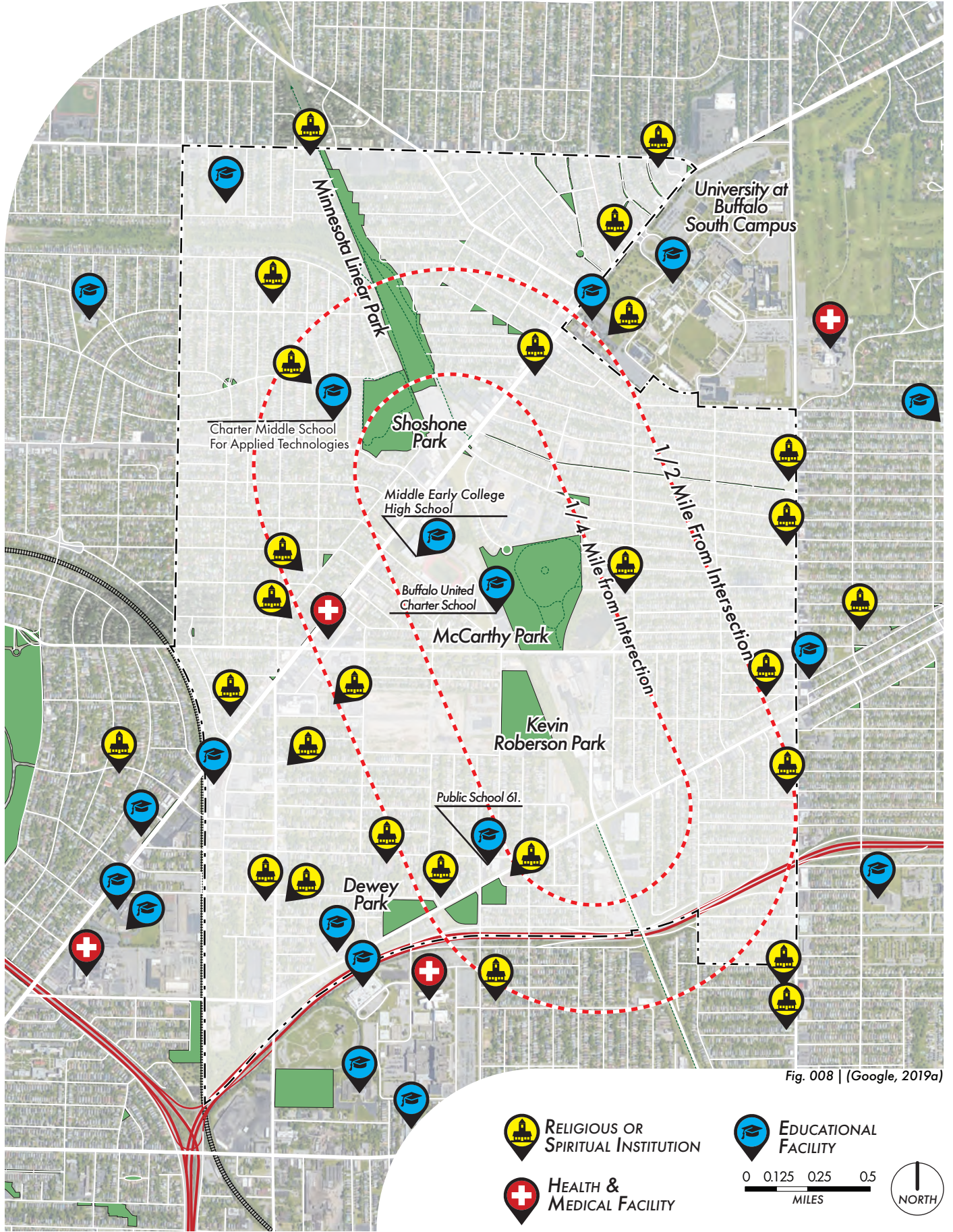


Fig. 008 | (Google, 2019a)



ACCESSIBILITY & CIRCULATION

Average Daily Traffic (ADT)



Traffic Count

According to New York State Department of Transportation (NYSDOT) traffic counts, the Northeast Greenway Initiative intersects several streets with a high volume of daily traffic (Figure X) (2019b). The rail trail intersects with a portion of Main Street between Hertel Avenue and Niagara Falls Boulevard, which approximately 26,936 vehicles per day travel through. This portion of Main Street is a heavily trafficked route both into and out of the city as well as home to two park and ride metro stations and the University at Buffalo South Campus. Safely moving trail users across Main Street is a challenge because of these high traffic volumes. The proposed project also intersects East Amherst Street, which has a daily traffic count of 6,465 vehicles, and Kensington Avenue, which has a daily traffic count of 12,360 vehicles. While these streets do not have the high traffic volume Main Street does, adequate measures still need to be taken to safely move trail users through these intersections.

Bus & Metro Route

The Northeast Greenway Initiative offers viable solutions to address transit challenges, including improvements to existing infrastructure, increasing transit-oriented development, and creating accessible connections between commercial and residential developments as well as bus and metro resources. There are approximately 15 bus stops within the vicinity of the Northeast Greenway Initiative. Connecting the proposed rail trail and associated bicycle infrastructure to several of these transit stops will increase access to the trail while also encouraging multi-modal transportation. This is beneficial to the success of the trail as a city-wide resource as well as to the City of Buffalo and associated organizations that depend on ridership income to maintain and expand transit infrastructure.

The City of Buffalo has a single-line metro rail underneath Main Street that extends from the University at Buffalo South Campus to downtown. Along this line is the LaSalle Metro Station, located at the northern end of the Northeast Greenway Initiative. This station is of particular importance because it is a major transit hub for multiple surrounding communities. The proposed rail trail will connect Buffalo's East Side to the metro in large part through incorporating safe options to cross Main Street, one of the city's busiest streets which is currently a division between the East Side and the LaSalle Metro Station.

Access & Circulation

The LaSalle Metro Station, which is on the northwest side of Main Street, is the primary public transportation option in the study area and provides access to the Niagara Frontier Transportation Authority (NFTA) Metro rail and bus system. From the Northeast Greenway Initiative's starting point at LaSalle Metro Station, the proposed rail trail will extend in a southeast direction, crossing by Main Street, McCarthy Park, Amherst Street, Kevin Roberson Park, and Kensington Avenue, where it will then connect to the William Gaiter Parkway multi-use trail. The William Gaiter Parkway multi-use trail follows the former railroad right-of-way that passes underneath Kensington Expressway.

Street connections in the project area offer numerous connectivity opportunities. The Tonawanda and North Buffalo Rails to Trails to the north of LaSalle Metro Station are primarily accessed from Main Street and Kenmore Avenue. Shoshone Park, which is bordered by the North Buffalo Rails to Trails and LaSalle Metro Station, can be accessed directly by Hertel Avenue. The existing parks and trails to the southeast of Main Street are primarily accessed from East Amherst Street, Manhattan Avenue, and Kensington Avenue. East Amherst Street, LaSalle Avenue, and William Price Parkway all provide direct access to McCarthy Park. Manhattan Avenue provides direct access to Kevin Roberson Park and connects to Kensington Avenue.

There is also exceptional east-west connectivity via NFTA buses in the project area. On-street parking is allowed on Main Street and off-street parking is managed on a site-to-site basis, with the LaSalle Metro Station offering a large parking lot for private vehicles.

Walkability

“Walk Score” is a popularly used measure of walkability, bikeability, and public transit rideability, though this index is generally considered to be subjective. The service uses algorithms to analyze pedestrian routes, destinations, amenities within a five-minute walk, population density, block length, and other factors. The highest possible score in each category is 100 (Walk Score, 2019c).

Locations within the project area that were included in the walkability analysis include Shoshone Park, 2929 Main Street, McCarthy Park, Kevin Roberson Park, and 18 Kensington Avenue. Although the population density surrounding Kevin Roberson Park and McCarthy Park is relatively high (see report section on *Healthy Neighborhoods*), these areas have mid-range scores, indicating that there are much needed pedestrian infrastructure improvements.. Conversely, the high scores observed on Main Street are indicative of the wide sidewalks, relatively flat incline, and commercial destinations.

Bikeability

“Bike Score,” a component of the “Walk Score” measure, takes into account bike lanes, steep hills, destination and road connectivity, and bike community mode share (Walk Score, 2019a). The scores in the vicinity of the Northeast Greenway Initiative are within the mid-range, which shows that there is a need for increased bicycle infrastructure throughout the Project Area.

The City of Buffalo is focused on improving active transportation options across the city, including bikeability. The Buffalo Bicycle Master Plan Update (City of Buffalo et. al., 2016b) rates major roads in Buffalo based on the level of comfort for bicycling or Bicycle Level of Service (BLOS). According to the Plan, 75% of all roads in the City of Buffalo received a score of “D” or worse—on a scale from “A” to “F”, where “A” is the most comfortable and “F” is the least comfortable (2016).

A BikeSpace Analysis and Bicycle Network Gap Analysis were performed in order to identify opportunities for bicycle infrastructure improvements in the City of Buffalo (2016). These analyses revealed roadways that are ideal for road diets or the reduction and reconfiguration of vehicle lanes to allow for the expansion of bicycle, pedestrian, and/or parking infrastructure. Kensington Avenue was identified as a moderately feasible candidate for a road diet and East Amherst Street was identified as a feasible candidate for a road diet (City of Buffalo, 2016). Since the Northeast Greenway Initiative will increase the number of pedestrians and bicyclists accessing the rail trail from surrounding communities, continued advocacy for improvements to on-road bicycle infrastructure is vital.

Transit Rideability

“Transit Score” is the third component of “Walk Score.” “Transit Score” indicates the availability and quality of public transportation access in an area, including the nearest stops, the frequency of the route, and the type of route (Walk Score, 2019b).

Commuting Characteristics

The majority of residents (70 percent) in the project area do not own a personal vehicle (US Census Bureau, 2017). This indicates that households are dependent on public transportation and other active transportation methods to get around the city. However, 77 percent of residents who commute to work use a personal vehicle, and roughly 18 percent use active transportation (US Census Bureau, 2017). Improved access to pedestrian and bicycle infrastructure and to the metro rail station could enable more residents to engage in active transportation as they commute. Additionally, given that commute times are relatively low (Figure 010), it is likely that many residents could walk, bike, or take public transit to work if provided adequate infrastructure.

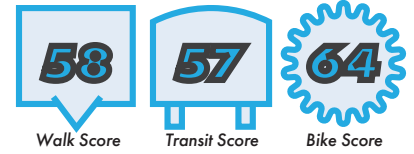
Shoshone Park



2929 Main Street



McCarthy Park



Kevin Roberson Park



18 Kensington Avenue

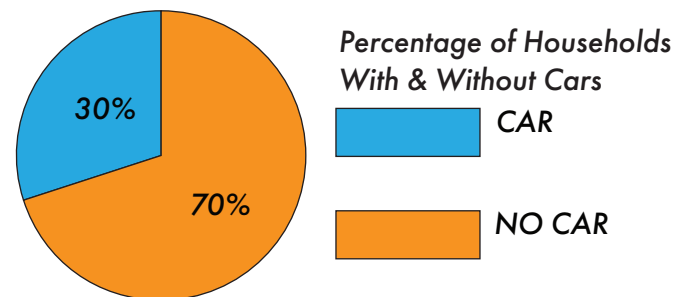


Fig. 010 | (U.S. Census Bureau, 2017)

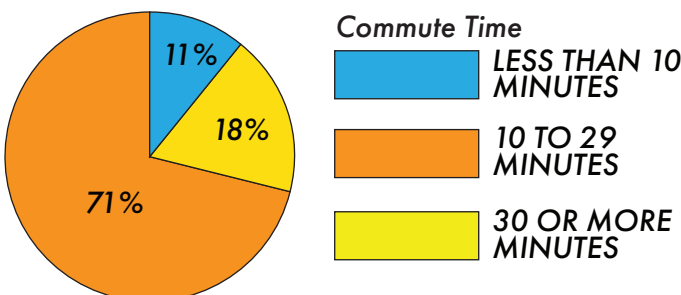


Fig. 011 | (U.S. Census Bureau, 2017)

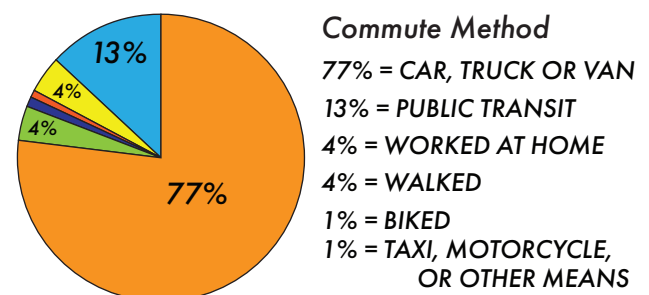


Fig. 012 | (U.S. Census Bureau 2017)

Slope

The land along the proposed rail trail location is relatively flat and does not pose major complications for trail construction due to grade changes. One problematic location is at the intersection of the rail trail and East Amherst Street. East Amherst Street is much lower than the right-of-way, as it once a train underpass. Two rail bridges once extended over East Amherst Street and allowed for industrial rail transportation over this steep grade. While the bridge no longer exists, the street is flanked to the northern and southern sides by two vertical rock walls (Figure 013b).

The second topographically-challenging location is along the western side of McCarthy Park and eastern edge of the Buffalo Niagara Charter School. This is directly west of the right-of-way, near McCarthy Park fenced athletic fields. Here, there is yet another vertical rock face that drops down approximately six feet (Figure 013a). This area poses potential danger to trail users, and a fence or other barrier should be considered to reduce the potential for injury or falls.

Other areas with grade changes have been analyzed and found to be non-prohibitive to new trail construction. Such areas include the access points to the rail trail at Kevin Roberson Park and Clyde Avenue.

Slope within the Project Area - Buffalo, NY



Fig. 013a | Section 2



Fig. 013b | Section 2 - E. Amherst St.



Fig. 013c | Section 3 - Clyde Ave.

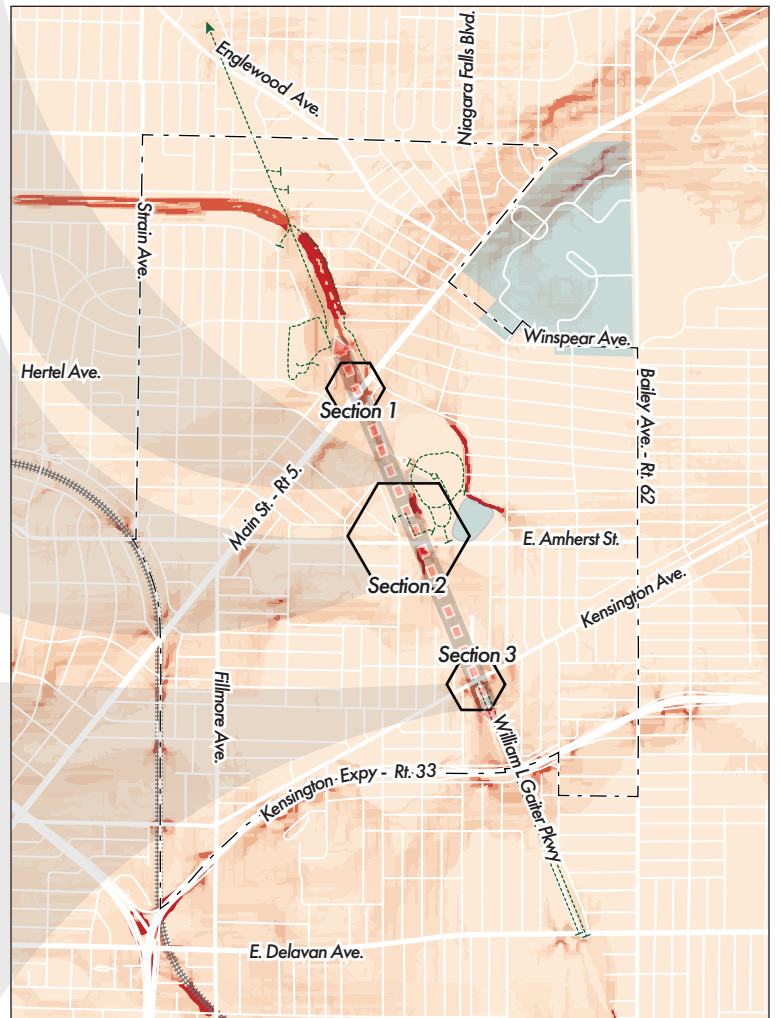


Fig. 013 | (USGS, 2019)

ACTIVE TRANSPORTATION MAP

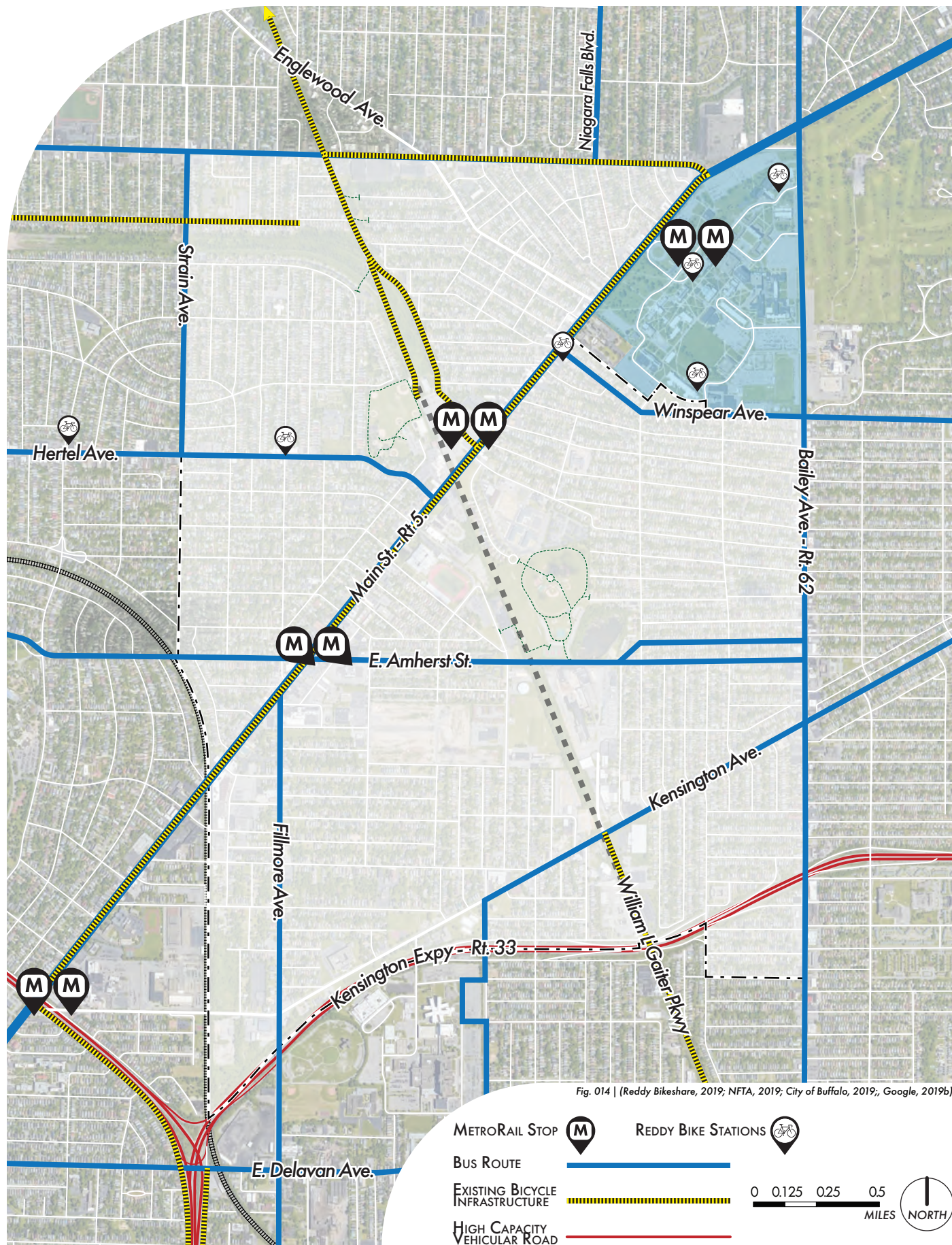


Fig. 014 | (Reddy Bikeshare, 2019; NFTA, 2019; City of Buffalo, 2019; Google, 2019b)

METRO RAIL STOP

REDDY BIKE STATIONS

BUS ROUTE

EXISTING BICYCLE INFRASTRUCTURE

HIGH CAPACITY VEHICULAR ROAD

0 0.125 0.25 0.5
MILES



HEALTHY NEIGHBORHOODS

Introduction

A clear understanding of the current health conditions within the study creates a base point of knowledge that the Northeast Greenway Initiative can build or improve upon. Additionally, it helps inform the Northeast Greenway Initiative planning process and ensures that the elements included in the project are in direct response to the real needs or desires of the surrounding community. As such, data was compiled to understand who lives in the project area, including a breakdown of age, race (which is correlated with environmental justice designations), population density, and current health conditions. The following section takes a closer look at each of these elements to better understand the need for a rail trail and how it will create opportunities for residents to engage in healthier lifestyles.

Population Density

According to the US Census Bureau, the project area's population in 2017 was 23,955, while the total population of the City of Buffalo was 258,612. (U.S. Census Bureau, 2017) As demonstrated in Figure 015, the project area has a marginally high population density compared to other parts of the city, indicating that there is a considerable cluster of residents who have immediate access to the rail trail. The Northeast Greenway Initiative has the potential to serve as a resource not only for the many residents within the project area, but also for the city's entire population.

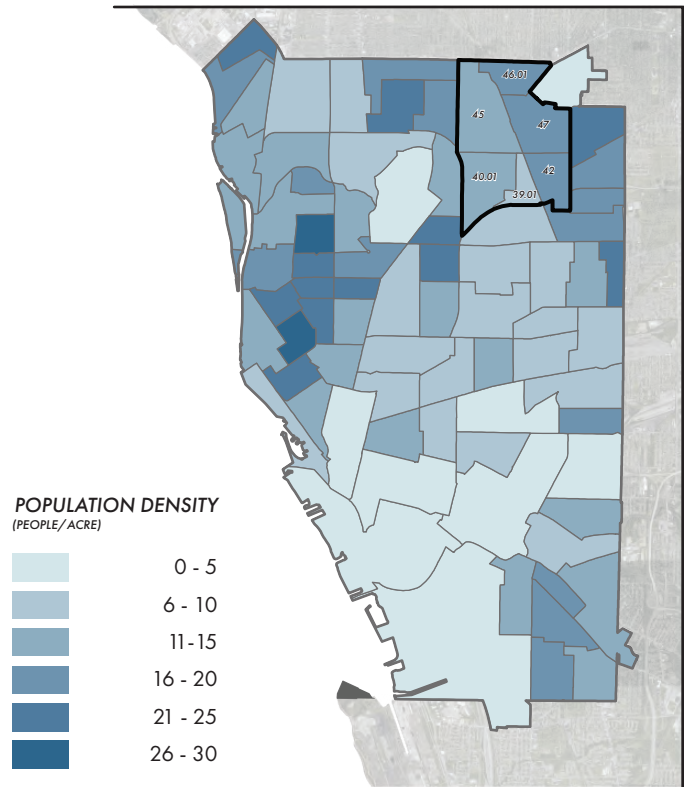


Fig. 015 | (U.S. Census Bureau, 2017)

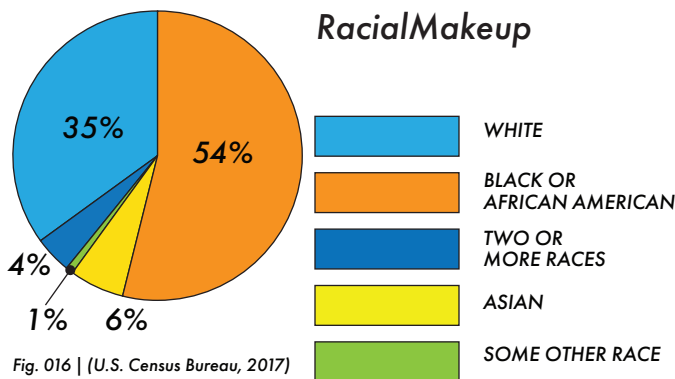


Fig. 016 | (U.S. Census Bureau, 2017)

Study Area Community Racial Makeup

A breakdown of the racial composition of residents demonstrates that the majority of people living within the community are Black or African American. The second largest group of people are white, and only 6% of residents are Asian. (U.S. Census Bureau, 2017) The Northeast Greenway Initiative has the potential to bridge the racial divide in a highly segregated city, but must also be attentive to unintended consequences such as gentrification and displacement.

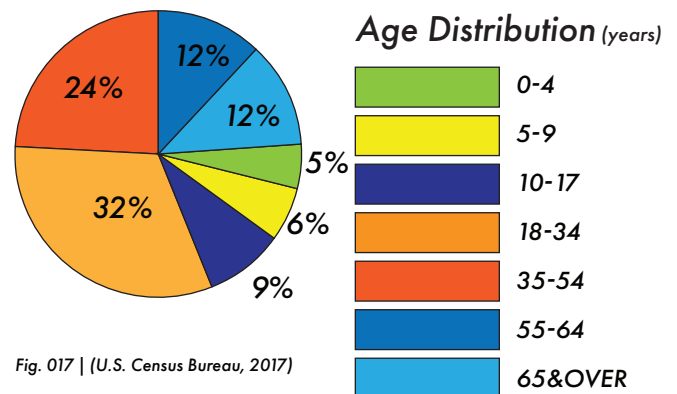


Fig. 017 | (U.S. Census Bureau, 2017)

Study Area Age Distribution

An age distribution analysis was conducted to better understand potential trail users in the project area. The majority of residents living in the area are between the ages of 18 and 34. (U.S. Census Bureau, 2017) It is likely that many people in this age group will engage in active transportation for commuting purposes. Nonetheless, rail trails, when designed according to ADA standards, are a great asset to all members of the community, regardless of age or ability. Whether a family decides to take a stroll with their children or someone is biking to work, rail trails accommodate a variety of users within a wide range of age

Health Statistics

The health statistics for this inventory focus on the zip code 14215 (which includes census tracts 39.01, 42, and part of 47), which is the zip code that the majority of the Northeast Greenway Rail Trail would intersect. According to the 2017-2019 Erie County Department of Health Community Health Assessment, 14215 has significantly higher poverty rates than many other zip codes in the county and is one of five zip codes where 70% of clinic patients reside. The proportion of Black and African American residents in this area is higher than the proportion in both the City of Buffalo and Erie County as well. Hospital admission rates for the zip code are 150% more than the area average, and even higher among Black and African American residents at 210% above the average (ECDOH, 2019).

As illustrated in Figure 018, this zip code has higher rates of adult obesity and adult diabetes as well as a lack of leisurely physical activity compared to the rest of the city. This zip code is also a "Community of Concern" for child lead poisoning, and is characterized by some of the most severe rates of multiple, generally untreated chronic diseases in the county, including cardiovascular issues, diabetes, and cancer (ECDOH, 2019).

As shown in Figure 018, rates of adults that self identify as physically inactive are higher in many census tracts on the East Side of Buffalo and within the project area (CDC, 2015). Additionally, rates of physical inactivity are higher on the southern edge of the project area (which is adjacent to the Northeast Greenway Initiative) than the existing North Buffalo Rails to Trails to the north.

As shown in Figure 020, there are also high rates of obesity on the southern edge of the study area. While high rates of physical inactivity and obesity are not likely to be completely addressed by the construction of the Northeast Greenway Initiative, the increased access to active transportation that their rail trail will provide can only add value to this area.

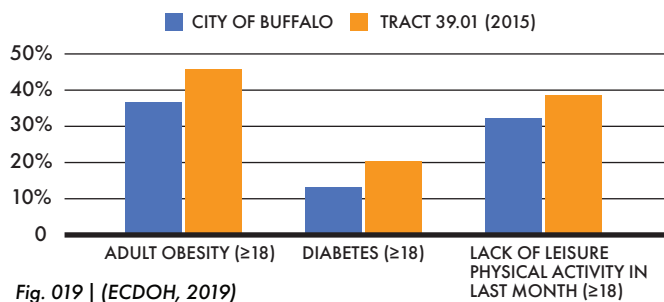


Fig. 019 | (ECDOH, 2019)

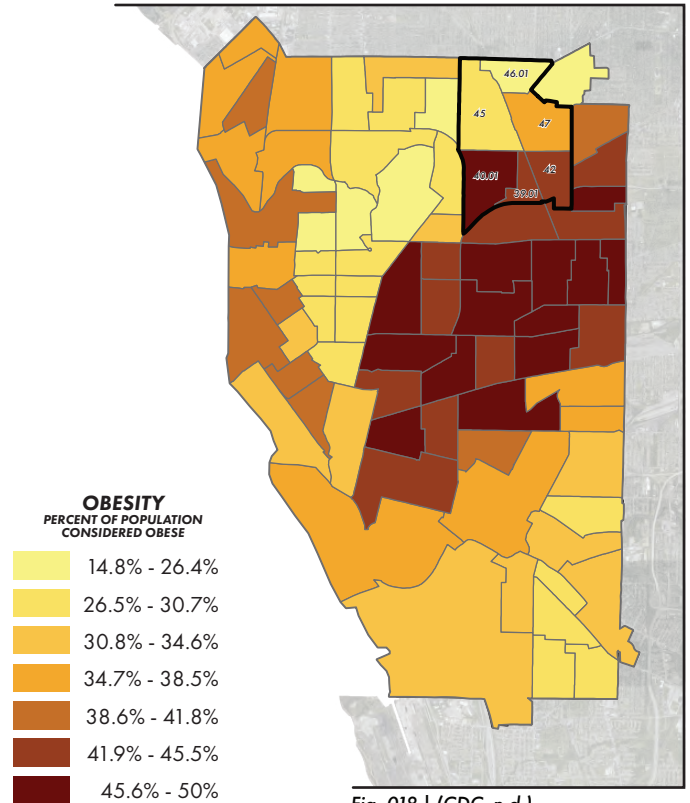


Fig. 018 | (CDC. n.d.)

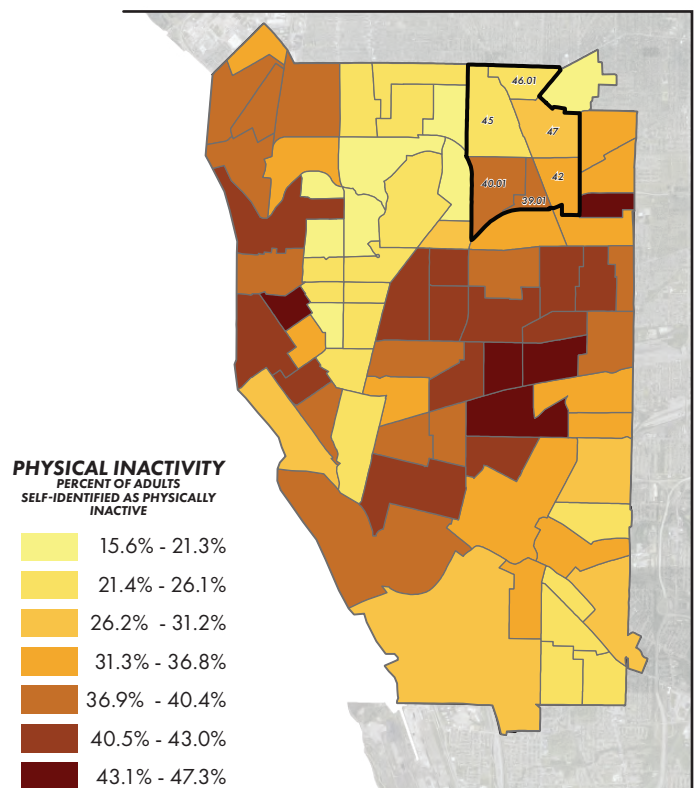


Fig. 020 | (CDC. n.d.)

Potential Environmental Justice Areas

The rail trail right-of-way runs through a Potential Environmental Justice Area (PEJA) (Figure 021). Environmental Justice Areas are defined by high poverty levels and large numbers of people of color. As defined by the New York State Department of Environmental Conservation (NYSDEC), a PEJA is a census block in which:

- 51.1% or more of the population in an urban area is part of a minority group; or
- 33.8% or more of the population in a rural area is part of a minority group; or
- 23.59% or more of the population in an urban or rural area has a household income below the federal poverty level (NYSDEC, n.d.)

Historically, communities of color have been inordinately impacted by areas of environmental concern and the shortcomings of environmental protections. PEJAs are identified so that people who are disproportionately impacted by environmental issues can seek recourse and get the assistance that they require and deserve from environmental policies and regulations (USEPA, 2019e). The Northeast Greenway Initiative will help mitigate environmental injustice by establishing valuable green and open space, adding to the community character, and contributing to the creation of healthier ecosystems and biodiversity.

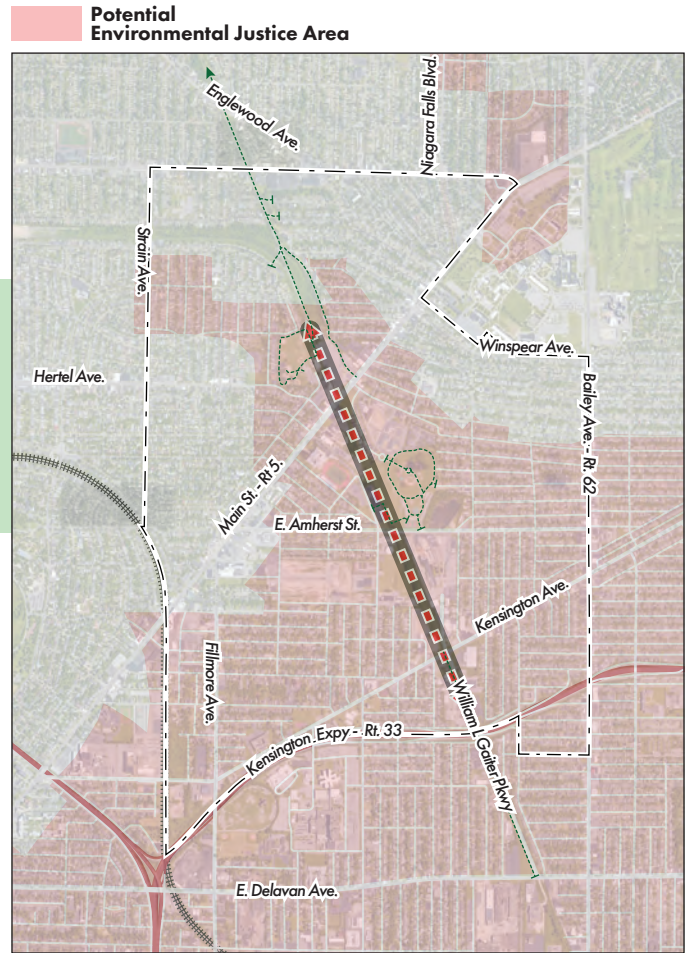


Fig. 021 | (NYSDEC, 2009)



Fig. 022



ENVIRONMENTAL HEALTH

Introduction

An exhaustive environmental analysis was completed to determine potential environmental assets and risks in the proposed Northeast Greenway Initiative project area. An environmental inventory was conducted for the proposed project area, including the analysis of land cover, existing wetlands, natural heritage communities, rare plants and animals, biodiversity, critical environmental areas, flood plains, and sloped surfaces. An analysis of potential environmental degradation factors was also completed, including Toxic Release Inventory sites (TRI), Brownfields, bulk storage sites, and potential chemical spills. The following section details the environmental assets and risks most pertinent to the proposed project area.

Land Cover

Compared to the City of Buffalo, the project area does not include unusual or extraordinary land cover types. It is within an urban area consisting of a mixture of low, medium, and high-intensity development while accommodating various areas of developed open space. There are no hardwood forests, large bodies of water, or agricultural lands within the project area (Yang et al., 2018) (Figure 023a).

Impervious Surfaces & Tree Canopy

Despite the fact that that the project area has developed open space, low-intensity development, and partially pervious surfaces (i.e. allowing rainfall to penetrate the ground, typically by soil and vegetated ground) (Figure 023b), there is very little tree canopy, especially along and immediately adjacent to the proposed rail trail location (Figure 024). However, there are patches of areas surrounding the proposed rail trail that have a high percentage of tree canopy, including the North Buffalo Rails to Trails and the west side of the William Gaiter Parkway multi-use trail (Coulston et al., 2012; Yang et al., 2018). Tree canopy is significant for two reasons. Trees offer shade and wind protection, which make travel via bicycle and foot both safer and more enjoyable. Trees also have aesthetic value and make trails more pleasant, especially for those who desire to escape the built landscapes of the city. Second, tree canopy provides habitat for bird and insect species. Rail trails can support ecosystem functions by acting as greenways that connect natural features and provide habitat and transportation mediums for wildlife. Because of its situation amongst existing greenways and park infrastructure (Figure 008), the proposed rail trail location can serve as a greenway that links with other parts of the city that are highly vegetated.

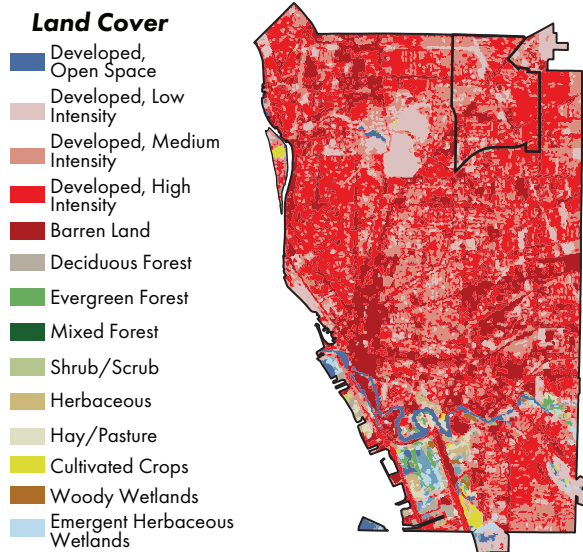


Fig. 023a | (Yang et al., 2018)

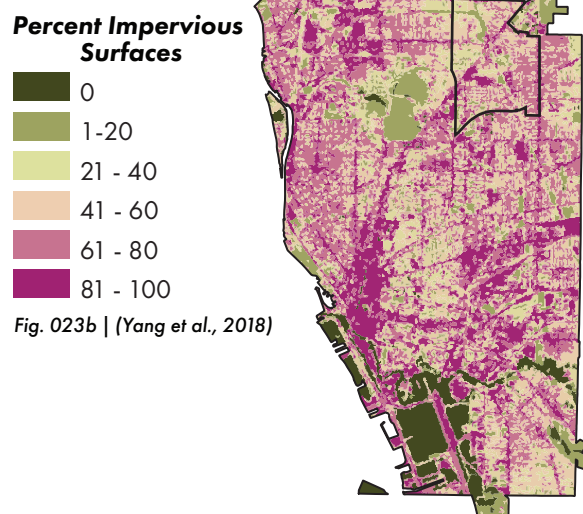


Fig. 023b | (Yang et al., 2018)

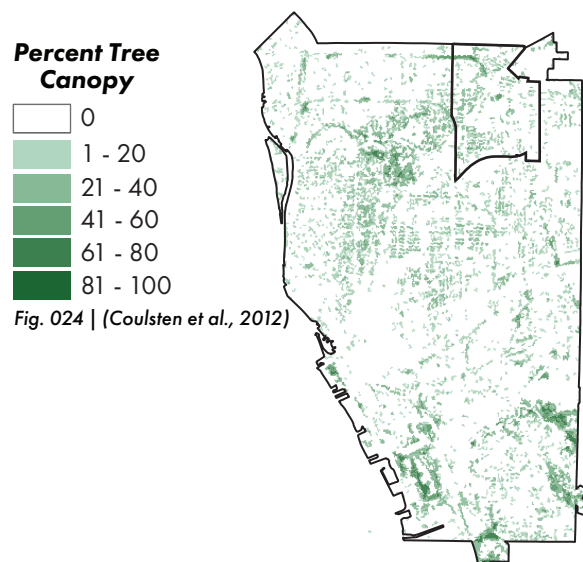


Fig. 024 | (Coulston et al., 2012)

Remediation Sites

Figure 025 is an overview of remediation sites within the project area. The sites documented are from 1978 to the present and include both active and inactive sites managed under the Department of Environmental Conservation's (DEC) remediation programs.

The sites depicted in green have undergone remediation but still require continued maintenance and monitoring of treatment systems. Within the project area, there are four sites that have completed remediation. These include Brownfield Cleanup Program sites at 89 LaSalle Avenue and 129 Holden Street as well as Environmental Restoration Program sites at 1 Liberty Avenue and 887/889 Kensington Avenue. Contamination on these sites was mostly the result of industrial dumping of demolition debris such as slag, ash, heavy metals, and petroleum among others (NYSDEC, 2013).

The remediation completed sites have been cleaned up to residential (the highest standard of remediation) or commercial standards. The insignificant public threat classification marked in purple is directly along the rail trail path, but has been remediated and is now the location of a residential subdivision along William Price Parkway (NYSDEC, 2013). These remediation projects are compatible with the proposed use of the site as a rail trail.

TRI Facilities with On-Site Disposals

Federal Environmental Protection Agency (EPA) Toxic Release Inventory (TRI) sites are facilities that must report annually to the EPA the type and quantity of chemical substances that they have released into the environment. Chemicals included in the TRI program are those that cause cancer, chronic human health effects, significant negative acute adverse human health effects, or significant negative environmental impacts. There are four TRI sites along the rail trail, which are shown in Figure 025 and summarized in the table below.

MAP ID	FACILITY	LOCATION	RELEASE DESTINATION	REPORT YEARS
1	Materion Advanced Materials Technologies & Services, Inc.	2978 Main St	Air	1987-2018
2	General Motors Corp., Harrison Radiator Division	56 Clyde Ave	Air	1988-1989
3	Fenner Precision	33 Clarence Ave	Air	1987-1992 1994-1997 2001, 2003-2014
4	L.D. McCauley, Inc.	848 Kensington Ave	Air	1987, 1990

Table 003 | (USEPA, 2019a, 2019b, 2019c, 2019d)

Out of these four sites, only two of them - Materion Advanced Materials Technologies and Fenner Precision - have reported chemical releases into the air in the past 10 years (USEPA, 2019a, 2019b, 2019c, 2019d). Still, the presence of TRI facilities along the rail trail indicate a history of local air pollution, which can have adverse human and environmental health impacts. More detailed information on these four TRI facilities and their chemical releases can be explored in the online EPA TRI Database.

The active clean up marked in orange in the project area is of particular significance. The DEC describes this Brownfield Cleanup site as highly disturbed. While current zoning and land use for the site is industrial/manufacturing, the proposed redevelopment of the site after cleanup is student housing and commercial retail, which will eventually result in the site being remediated to standards appropriate for the rail trail. The property owner, Keystone Corporation, has submitted a Brownfield Cleanup Program application, and it is currently being reviewed (NYSDEC, 2013). While the timeline for the project is unclear, it could possibly be incorporated into an overall neighborhood revitalization vision.

While there are no significant public health threats (depicted in red) within the project area, the American Axle Plant located at East Delavan Avenue and William Gaiter Parkway abuts the William Gaiter Parkway multi-use trail, an existing path that the Northeast Greenway trail will connect to (NYSDEC, 2013). As a goal of this project is to envision interconnected bike routes across the city and region, the site's close proximity to the extended multi-use path is significant.

Remediation Sites

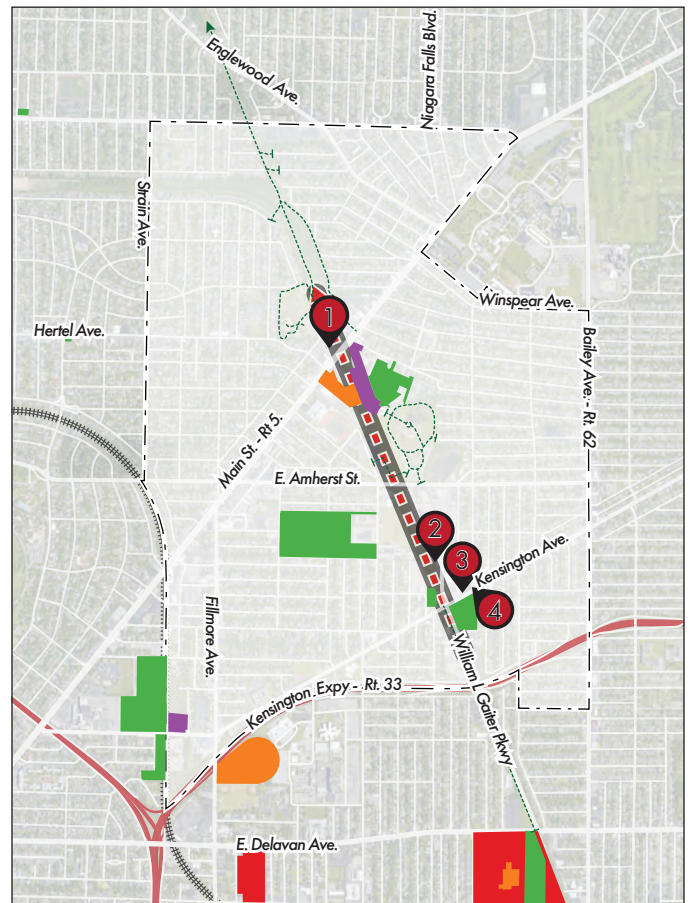


Fig. 025 | (NYSDEC, 2013; Erie County Department of Environment and Planning, n.d.)



ECONOMIC ACTIVATION

Introduction

The Northeast Greenway Initiative has the potential to stimulate economic activity within the project area, benefiting both residents and businesses. An analysis of existing economic activities helps to provide an image of how the economy can grow and prosper for the community. Land use and zoning in the project area have been examined to determine what types of activities are occurring and what types of activities can occur in the future. Furthermore, median income, poverty levels, and housing density were examined to understand the context as well as the level of need to provide economic growth opportunities for residents. An inventory of businesses, employment centers, parcel ownership, and project proposals were also conducted to identify potential partners and supporters of the Northeast Greenway Initiative.

Household Median Income

The project area's median household incomes range from \$23,269 to \$62,742 per census tract. The median household income of the total project area is \$36,310, which is slightly under the median household income for the City of Buffalo. (U.S. Census Bureau, 2017)

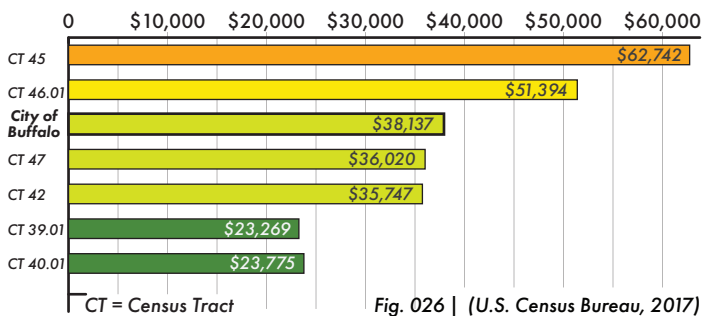


Fig. 026 | (U.S. Census Bureau, 2017)

Poverty

Historically, the City of Buffalo has faced economic decline due to the loss of traditional jobs in manufacturing, population loss and rapid suburbanization, and subsequent vacant and abandoned housing. This history of economic strife has resulted in many city residents living in poverty. The project area experiences a slightly higher average poverty rate than the city (30% versus 28%, respectively) (US Census Bureau, 2017). Two census tracts in the project area, 46.01 and 40.01, have extremely high poverty rates of 40% (US Census Bureau, 2017). Rail trails, like the Northeast Greenway Initiative, can become catalysts for economic activity by providing alternative and reliable commuting routes, connecting consumers with local businesses and organizations, and developing more attractive urban landscapes that draw investment.

The high level of poverty in the project area also indicates that some residents may find it difficult to afford a personal vehicle and other transportation expenses. Upon completion, the Northeast Greenway Initiative will create a pedestrian-friendly environment in which residents can walk and use bicycles as a way to commute, eliminating some households' reliance on automobiles.

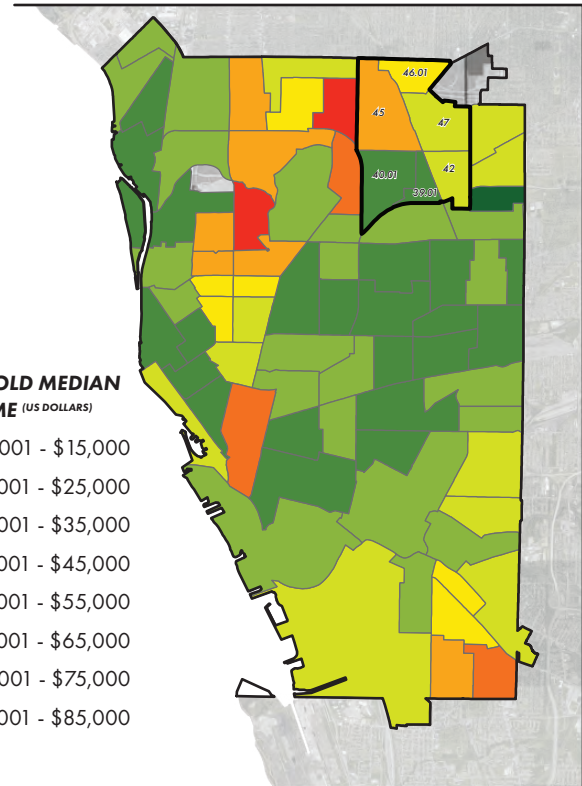
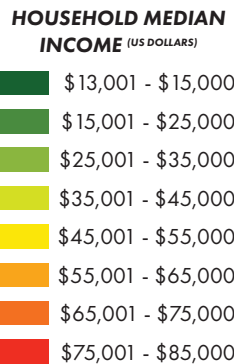


Fig. 027 | (U.S. Census Bureau, 2017)

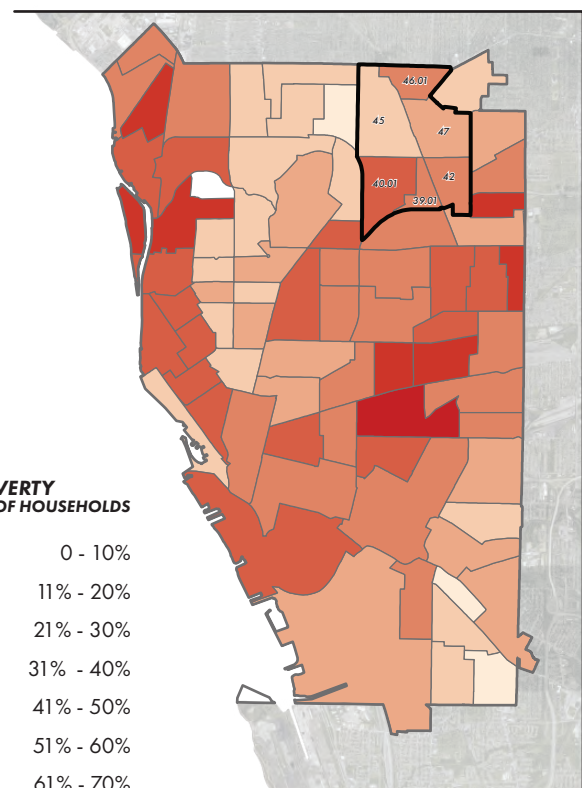
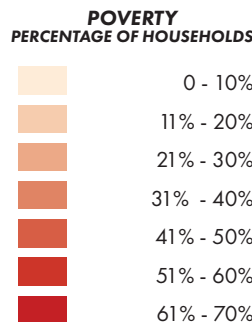


Fig. 028 | (U.S. Census Bureau, 2017)

Housing Density

The project area demonstrates a fair amount of housing density. A large majority of the project area contains five to eight housing units per acre. There is another portion of the project area where the density consists of nine to 12 housing units per acre. The Northeast Greenway Initiative will serve the dense neighborhood, providing residents with the opportunity to engage in activities along the rail trail. (U.S. Census Bureau, 2017)

Study Area Vacancy:

The majority of properties located in the project area are occupied. Vacancy is not a cause of concern for this neighborhood.

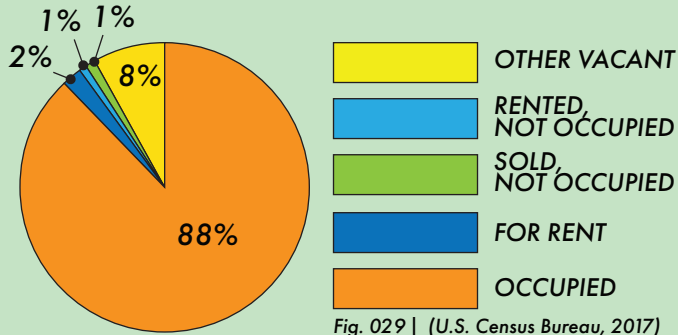


Fig. 029 | (U.S. Census Bureau, 2017)

Housing Tenure:

The number of renters versus homeowners within the project area are comparable. 54% of the residents own their homes while 46% are renters (US Census Bureau, 2017). While creating economic activation within this area will provide benefits for homeowners, it will be important to make sure that proper steps are put in place to prevent renters from being unable to afford their current units.

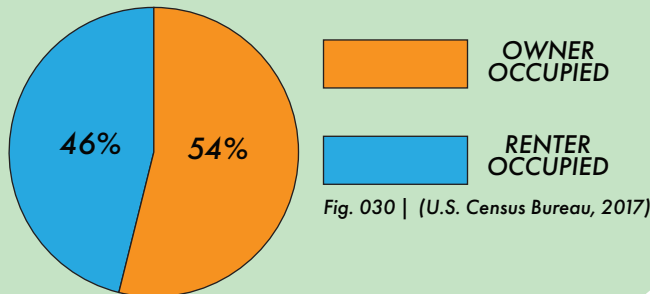


Fig. 030 | (U.S. Census Bureau, 2017)

HOUSING DENSITY (HOUSING UNITS/ACRE)

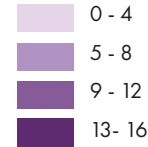


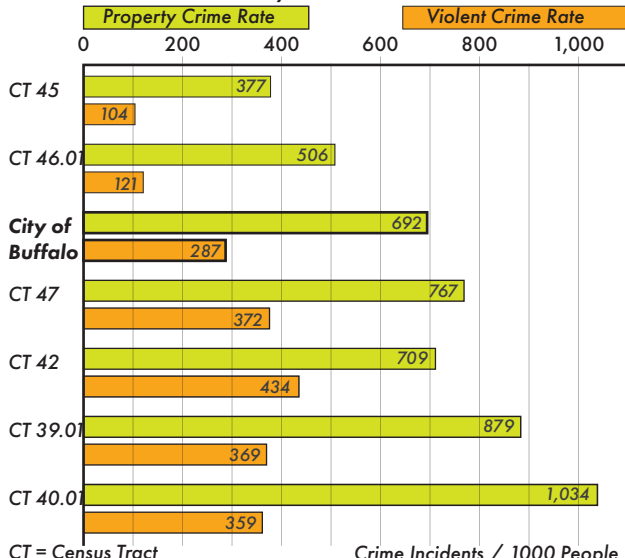
Fig. 032 | (U.S. Census Bureau, 2017)

Safety / Crime Statistics & Perceptions

The real and perceived concern of crime and safety in urban communities can deter residents from outdoor physical activity, making crime and safety a broader determinant of health-related behavior (Rails-to-Trails Conservancy, 2012). As a result, crime and safety should be addressed with the development of new trails. However, the perception that urban trails can result in increased crime and violence does not align with reality. In fact, studies have consistently shown that trails often reduce the prevalence of crime (Greer, 2000; Rails-to-Trails Conservancy, 1998; Rails-to-Trails Conservancy, 2012).

An analysis of crime rates, the number of crime incidents for every 1,000 residents, demonstrates that the area surrounding the existing North Buffalo Rails to Trails has lower crime rates than the area surrounding the Northeast Greenway Initiative rail trail as well as the greater City of Buffalo (Figure 031) (BPD, 2019). The North Buffalo area has seen the recent construction of the rail trail and linear park, thriving commercial districts, large volumes of pedestrian traffic, and increased investments in the housing stock, all of which have contributed to lower crime rates in the area. The construction of the Northeast Greenway Initiative has similar potential in that it will bring more pedestrian traffic to the area and "eyes on the street" that can drive a sense of community accountability and is often associated with reductions in crime. This is further bolstered by the economic benefits of the rail trail, such as increased employment and growth in commercial business districts. The Northeast Greenway Initiative should also include preventative safety measures, including adequate lighting and sufficiently spaced emergency blue light call boxes, both of which currently exist on the North Buffalo Rails to Trails.

Study Area Crime Rates



Crime Incidents / 1000 People
Fig. 031 | (Open Data Buffalo, 2019)

Recently Completed & Proposed Local Projects

Many proposed construction projects are clustered in the northwestern portion of the project area near Main Street. These projects may be potential partners as rail trail stewards and/or advocates for the rail trail since it will be a major amenity for residents in these complexes. Since 2929 Main Street is under construction, it represents a valuable opportunity for collaboration.

Axis 360, 89 Lasalle Ave

This development is geared towards students and includes 700+ beds throughout the 339 units. There is a range of studio apartments and apartments with multi-bedroom layouts. Monthly rents start at \$810 per student for a three-bedroom plan, two bedrooms units are \$830 and studio apartments are \$1000. This project was completed in 2018 (Buffalo Rising, 2018).

The Lofts at University Heights, 91 Lisbon Ave

This property faced a \$16 million repurposing of its 73,000 sq. ft. building. It was converted from an old school into affordable housing units. There are with 44 loft apartments with rental prices that range from \$500 - \$740. The project, which was completed in 2018, was funded through the Better Buffalo Fund as part of the Buffalo Billion (Epstein, 2018a).

Highland Park

This LPCiminelli development project on the sprawling Central Park Plaza site features a range of upscale apartments. Apartment range from 690 square feet one-bedroom apartments at \$925 a month, to 1,430 square feet two-bedroom and two and a half-bathroom apartments at \$1,675 a month. When the project is finished, there will be 717 residential units featuring a mix of rental apartments, owner occupied townhouses, and some commercial leasing opportunities. The initial phase of the project has been completed with further expansion in progress (Highland Park, 2017; WCPerspective, 2018).

2929 Main Street

This development project is adjacent to the rail trail project site. 2929 Main Street will have 320 residential units which will be marketed toward graduate students. The five-story building will consist of 200,000 sq. ft. of residential space and 12,000 sq. ft. of retail/commercial use space. Remedial work on the building was completed in June 2019. Studio and one-bedroom units will be rented for approximately \$1,100 to \$1,200 per month, while the two-bedroom apartments will go for \$1,700 (\$850 per room). The site plan was approved in April of 2019 (Buffalo Rising, 2019; Epstein, 2018a).

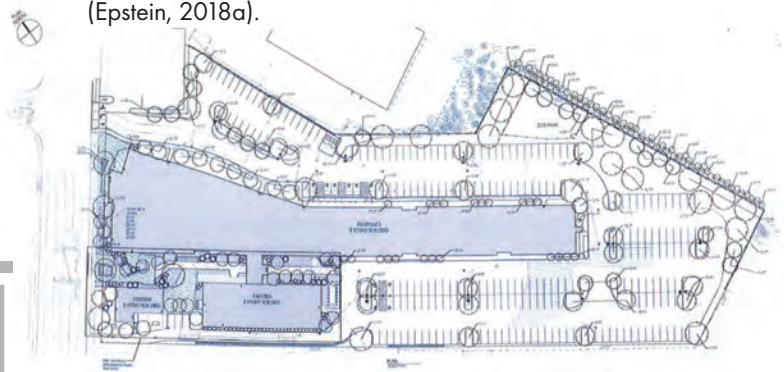


Fig. 033 | 2929 Main Street Proposed Development (Hopkins Sorgi & Romanowski PLLC., 2018.)



Fig. 034 | 2929 Main Street Proposed Development | (Buffalo Rising, 2019)

Food, Beverage, & Retail

Main Street has numerous food service and retail establishments that will be available to trail users at the northern section of the Northeast Greenway Initiative. While only a few of these establishments are within close proximity to the middle and southern sections of the rail trail, the proposed one-mile rail trail connection will improve accessibility to those establishments that are mostly located within a quarter of a mile from the LaSalle Metro Station trailhead and less than a mile from the Amherst Street and Kensington Avenue trailheads.

BUSINESS	ADDRESS	TYPE	DIST. TO A TRAILHEAD
Businesses near Main Street Trailhead			
Aldi's Grocery	3060 Main St	Retail	.03mile
Monro Auto Service	2955 Main St	SEC	.04mile
Tru Mold Shoes	53 LaSalle Ave	SEC	.1mile
Famous Doughnuts	3043 Main St	Food	.1mile
Winspear Liquor	3087 Main St	Retail	.11mile
The Body of Wealth Fitness	3053 Main St	Retail/Gym	.03mile
Materion Advanced Materials Group	2978 Main St	LEC	.05mile
Elbers Landscape	2918 Main St	Retail	.05mile
The Steer Restaurant and Saloon	3151 Main St	Rest	.2mile
St. Andrew's Episcopal Church	3107 Main St	Religious	.11mile
Jim's Steakout	3094 Main St	Rest	.12mile
Western New York Independent Living	3108 Main St	SEC	.14mile
Clark Academy of Dance	3068 Main St	SEC	.05mile
Illios Piano Store	2940 Main St	Retail	.08mile
Keystone Corporation	2929 Main St	LEC	.11mile
Businesses near Amherst Street Trailhead			
Happy Little Campers Daycare	212 E Amherst St	SEC	.15mile
The Cedar Bus Company	401 E Amherst	LEC	.20mile
Food Plus Market	414 E Amherst St	Retail / Grocery	.23mile
Heritage Crystal Clean	60 Clyde Ave	LEC	.19mile
KJ Fashions Clothing	439 E Amherst St	Retail	.27mile

Table 004 | (Google Maps, 2019)

Ownership

The rail trail right-of-way is publicly owned property. Adjacent to the right-of-way, there are also several properties that are owned by the City of Buffalo (Figure 035). For example, LaSalle Metro Station has a large underutilized parking lot that is owned by the City of Buffalo and the Niagara Frontier Transportation Authority (NFTA). These publicly owned properties adjacent to the project site will likely ease the development process.

Small Employment Centers

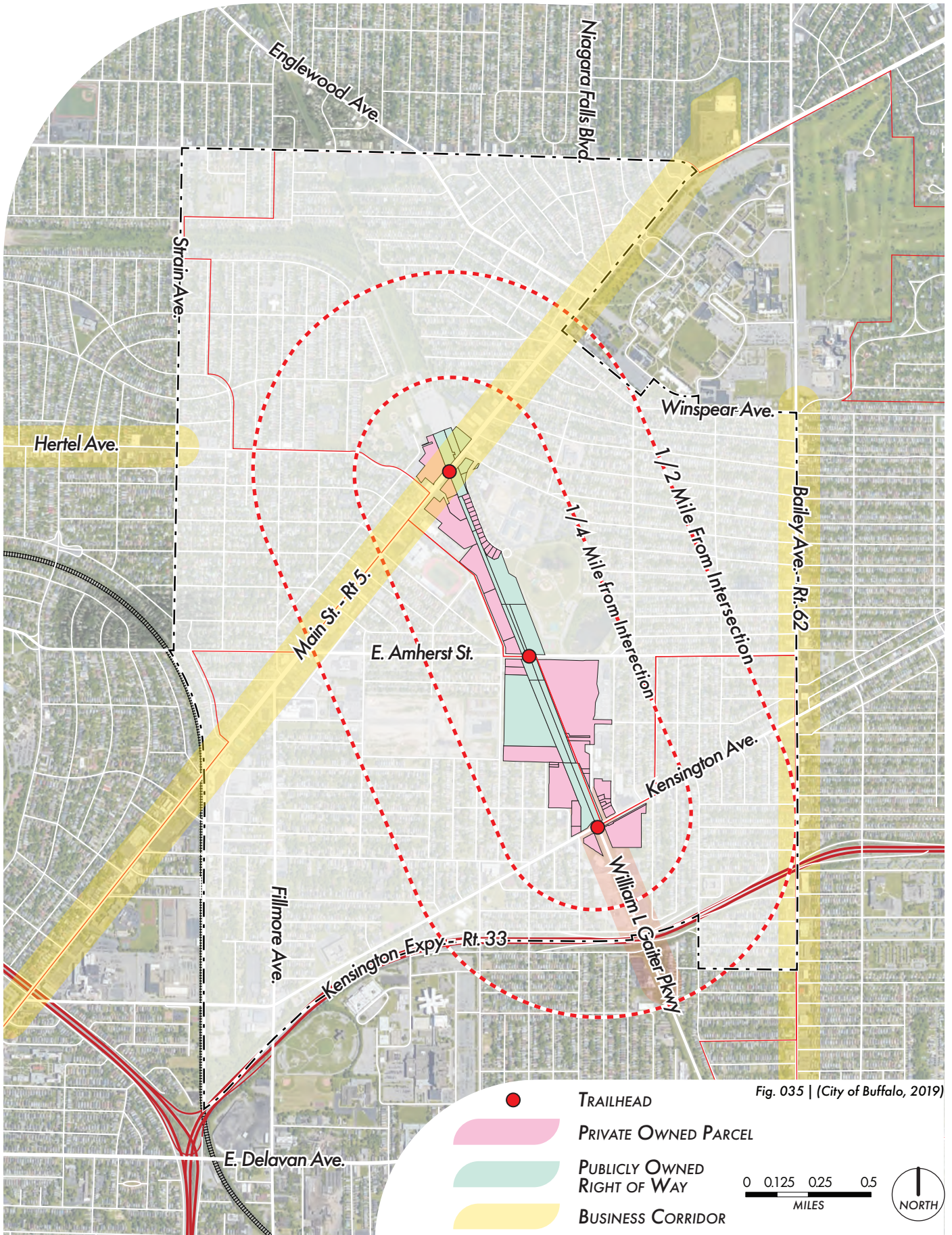
Small employment centers are non-retail businesses that employ fewer than 15 people (NYS Senate, 2019). Large employment centers are non-retail businesses that employ 16 or more people (NYS Senate, 2019). The southern section of the project area has the highest density of large employment centers, including manufacturing and transportation organizations. Main Street has a variety of small employment centers, including a piano repair shop and a fitness center.

BUSINESS	ADDRESS	TYPE	DIST. TO A TRAILHEAD
Businesses near the Kensington Avenue Trailhead			
Le Mac Packaging	440 William L Gaiter Pkwy	LEC	.03mile
Stritt and Priebe Inc.	37 Clyde Ave	LEC	.10mile
First Student Inc.	140 Shawnee Ave	Auto Trans.	.10mile
AMR Ambulance Co.	481 William L Gaiter Pkwy	LEC	.12mile
Safetec of America, Inc.	887 Kensington Ave	LEC	.08mile
S&H Machine Co.	83 Clyde Ave	LEC	.17mile
Tent and Table Party Store	60 Clyde Avenue, Building 25	Retail	.20mile
NHS of South Buffalo	135 Manhattan Ave	SEC	.23mile
Gersitz Hardware	901 Kensington Ave	Retail	.17mile
Limousine Service of Buffalo	62 Clyde Ave	Auto Trans.	.12mile
RMC International	80 Clyde Ave	Com Retail	.14mile
Tom's Car and Truck Repair	800 Kensington Ave	Auto Repair	.05mile
Ange's Auto Sales	Federal & Kensington	Retail/Auto	.12mile
MVP Skatepark and Events	27 Federal Ave	Recreation	.11mile
SheetMetal Workers	24 Liberty Ave	LEC	.08mile
Robins Specialty Upholstery Repair	2 Palos Pl	SEC	.18mile
Qua Vadis Barber Shop	886 Kensington Ave	Retail	.15mile
Fenner Precision	852 Kensington Ave	SEC	.1mile

William Price Parkway, which is east of the rail right-of-way, has several parcels with backyards that appear to be encroaching onto the right-of-way. These property owners may have concerns about building a multi-use trail that abuts their backyards, presenting a potential challenge to the route of the rail trail.

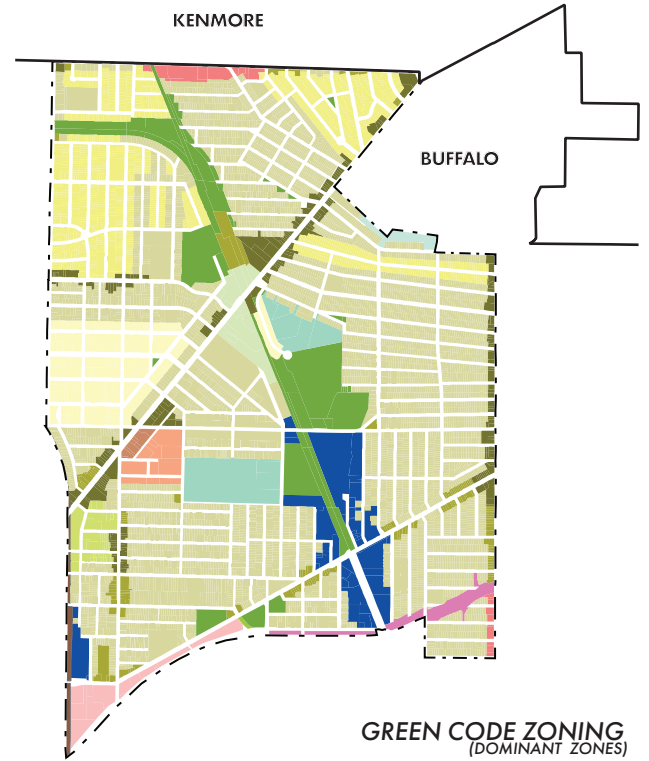
Private companies such as Bethune Hall LLC, Main & Hertel LLC, and First Student Inc. own many of the industrial parcels within the project area. However, given that many of these properties have vacant or industrial uses, their property owners may be less opposed to the development of this project.

PRIVATE VS PUBLIC OWNERSHIP MAP



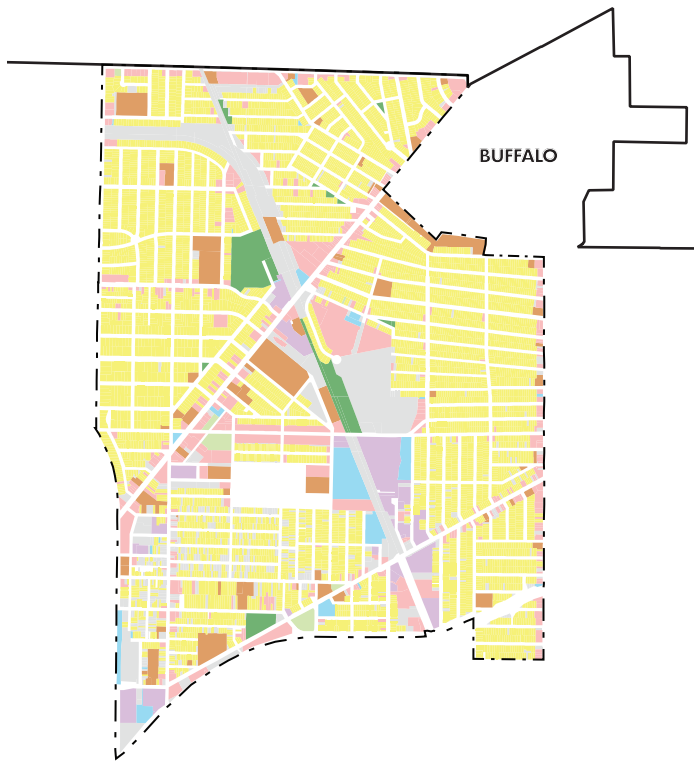
Zoning

The Buffalo Unified Development Ordinance promotes a range of zoning classifications in the project area (Figure 036) (City of Buffalo et. al., 2016a). The primary zoning classifications are neighborhood zones. More specifically, the project area consists primarily of residential zones (N-3R) as well as mixed-use cores (N-1C), secondary employment centers (N-1S), mixed-use centers (N-2C and N-3C), mixed-used edges (N-2E and N-3E), and single-family (N-4-30 and N-4-50) zones interspersed throughout the remainder of the project area (City of Buffalo et. al., 2016). This mix of zones creates a variety of moderately compact residential blocks with occasional small, mixed-use buildings. Directly abutting the south side of the project site is a collection of light industrial (D-IL) and heavy industrial (D-IH) zones. Two large-scale residential developments in the project area are zoned as residential campuses (D-R). These D-R zones are directly adjacent to the project site and introduce a higher population density to the project area (City of Buffalo et. al., 2016).



GREEN CODE ZONING
(DOMINANT ZONES)
Fig. 036 | (City of Buffalo, 2019)

 N-3R	 N-3C	 D-R
 N-4-30	 D-IL	 N-1C
 N-4-50	 D-OG	 N-3R



LAND USES
Fig. 037 | (NYSGIS Program Office, 2018)

 RESIDENTIAL	 COMMUNITY SERVICES
 VACANT LAND	 INDUSTRIAL
 COMMERCIAL	 PUBLIC SERVICES
 RECREATIONAL	 GREEN SPACE

Land Use

A portion of the rail trail right-of-way is made up of parcels classified as vacant property (Figure 037). Vacancy along the right-of-way provides the opportunity to develop the rail trail and serves as a potential space for trailheads with added amenities. Surrounding the right-of-way are several different land uses, including residential, industrial, and commercial.

Shown Below: The vacant rail right-of-way along the northern edge of the project area, depicted in grey as vacant land, is surrounded by established residential and commercial designated land uses. Conversely, the southern portion of the project area has more industrial land uses surrounding the right-of-way.

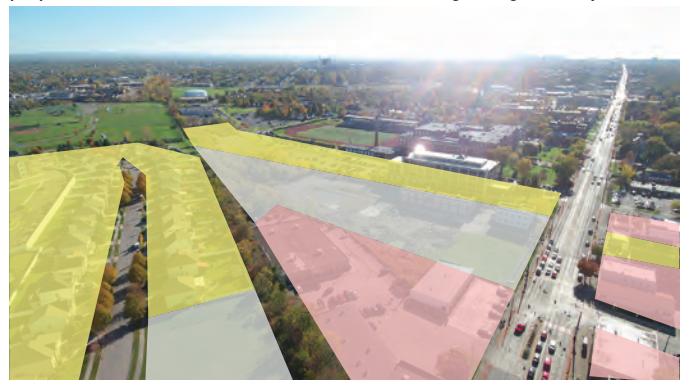


Fig. 038 | (City of Buffalo, 2019)

Business Associations & Community Groups

The presence of businesses, business associations, and community organizations are important assets to urban communities. Businesses supply jobs to residents and community organizations provide services like housing, economic development, food pantries, and other social benefits. These entities can benefit from the rail trail as well. It can help employees commute to work and provide a relaxing location for breaks for lunch, exercise, or just to enjoy the fresh air and natural surroundings. Additionally, trail users are more likely to frequent businesses along the rail trail.

The project area has several business associations and community organizations located near the project site:

University District Community Development Association (UDCDA) - "A full service agency offering a wide array of youth and senior service programs to residents. UDCDA also spearheads community and housing development projects throughout Buffalo's Northeast." (UDCDA, n.d.)

The Main Street Business Association - "A group of business owners and entrepreneurs working to maintain and enhance the local business community along Main Street in University Heights." (University Heights Collaborative, n.d.)

The Bailey Avenue Business Association - A group of local stakeholders, including business owners, property owners, and municipal officials, with a goal to foster a thriving business environment along Bailey Avenue.

The Parkside Community Association - Buffalo's oldest, largest, member-based neighborhood association. A nonprofit with a mission of advocating, communicating, and acting on behalf of the Parkside neighborhood to preserve and enhance the quality of life (Parkside Community Association, 2019).

The Hertel Business Association - A group of volunteers who are committed to beautification, preservation, prosperity, and growth of Hertel Avenue (Hertel Business Association, 2019).

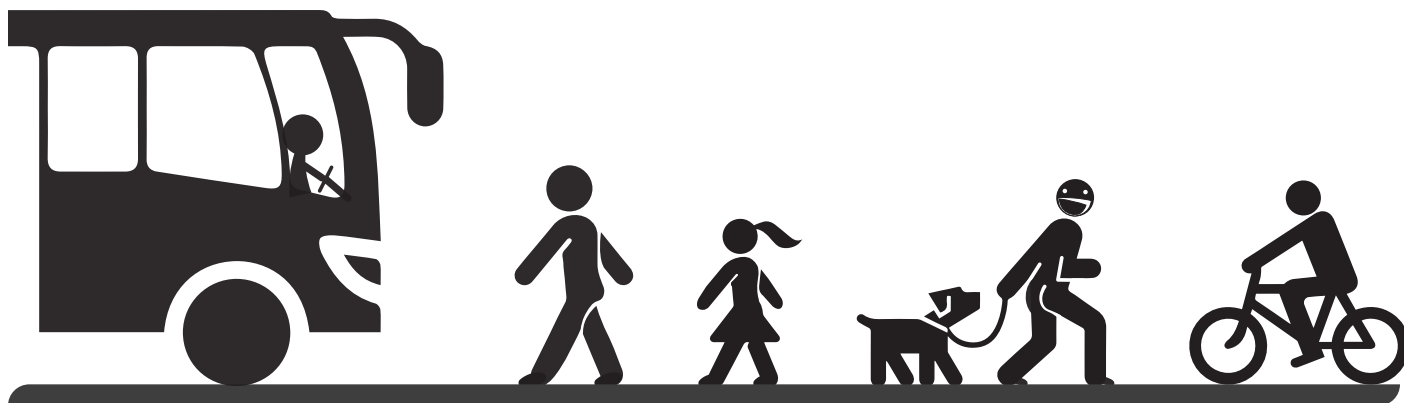
Buffalo Executives Association - A Business relationship and networking organization that helps member businesses work with one another and support each other.

The Lions Club of Buffalo - Committed to sight conservation while maintaining an international partnership with the United Nations, philanthropic organizations, and health professionals. Lions Clubs also make commitments to youth programming, outreach programs, environment, housing for disabled, and countless other volunteer initiatives.

Neighborhood Housing Service (NHS) of South Buffalo - located on Manhattan Avenue. Dedicated to a mission "to aid and assist in the preservation, stabilization, and revitalization of economic and aesthetic conditions of residential and commercial zones as to promote a higher quality of life and social existence" (NHS of South Buffalo, 2017).

The University Heights Collaborative - A community-based group working to enhance residents' quality of life. Also serve as an umbrella organization for Block Clubs and Neighborhood Watch groups in University Heights. (UDCDA, n.d.)

The Tool Library - An all-volunteer nonprofit tool-lending library located at 5 W. Northup Place. Leads large-scale community projects such as neighborhood clean-ups, tree-plantings, and public art installations. (UDCDA, n.d.)



PROJECT SECTIONS



Fig. 200

The project focuses on connecting the gap between the North Buffalo Rails to Trails and the William Gaiter Parkway multi-use trail through the construction of the approximately one mile Northeast Greenway Initiative. The objective is to provide connections to existing pathways and create a continuous multi-use rail trail with improved amenities for an overall enhanced shared pathway system. The proposed rail trail will utilize the former rail right-of-way to provide increased access to Minnesota Linear Park, Shoshone Park, McCarthy Park, and Kevin Roberson Park.

At the northern end of the Northeast Greenway Initiative is the North Buffalo Rails to Trails, which is a multi-use trail less than one mile in length, located between the LaSalle Metro Station and the Tonawanda Rails to Trails. The North Buffalo Rails to Trails connects with the Tonawanda Rails to Trails to create a combined 4.6 miles of multi-use pathways. Minnesota Linear Park runs parallel to the North Buffalo Rails to Trails and is bounded by Merrimac Street to the south, Nicholson Street to the north, and the existing trail to the east. At the southern end of the Northeast Greenway Initiative is the William Gaiter Parkway trail, which is a multi-use trail adjacent to the parkway that is just under one mile long, extending from Kensington Avenue to East Delavan Avenue.

The proposed rail trail is broken down into three sections - *North Buffalo Rails to Trails to McCarthy Park (Section One)*, *McCarthy Park to Kevin Roberson Park (Section Two)*, and *Kevin Roberson Park to William Gaiter Parkway (Section Three)*. Each section has unique designs to help improve the existing conditions, develop a physical connection, and provide amenities to encourage more pedestrians and bicyclists to use the rail trail. The three sections have their own challenges and opportunities based on their location, as each of the trail sections is surrounded by different land uses, community assets, and varying population densities.



SECTION ONE, MAIN STREET INTERSECTION

Fig. 201 | Terra Perspectives, 2019)



SECTION TWO, EAST AMHERST STREET INTERSECTION

Fig. 202 | (Terra Perspectives, 2019)



SECTION THREE, KENSINGTON AVENUE INTERSECTION

Fig. 203 | (Terra Perspectives, 2019)

SECTION ONE | EXISTING NORTH BUFFALO RAILS TO TRAILS TO MCCARTHY PARK

Introduction

Despite the presence of existing paths and bike lanes, there are certain challenges with connecting the North Buffalo Rails to Trails to McCarthy Park. The challenges are:

- The section of Main Street between LaSalle Avenue and Hertel Avenue has high vehicle traffic. It is important to design the Main Street intersection with the utmost convenience and safety for trail users, including protected bike infrastructure and safe pedestrian crossings.
- Residents who reside on William Price Parkway addressed several concerns with a proposed plan for McCarthy Park. The primary concern raised by residents involved the additional pedestrian traffic in the neighborhood (Buffalo Public Schools et. al., 2018; Buffalo Public Schools et. al., 2019a). According to the land use and zoning analysis of this report, the backyards of the homes along William Price Parkway may be encroaching on the rail right-of-way. These two challenges involving William Price Parkway highlight the need for public involvement throughout the entirety of this project.
- The Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) proposed a design for mixed-use transit-oriented development in the LaSalle Metro Station parking lot (2018). Since the LaSalle Metro Station intersects with the proposed trail, coordination with the NFTA is essential to ensure that pedestrians and cyclists are able to cross through this high traffic zone and access amenities that come with the transit-oriented development.

While these challenges impact the design of the rail trail, there are viable solutions to address them and make the overall development attractive to the public. The public's experience on the rail trail can be enhanced by incorporating ongoing commercial developments and transit-oriented development into the trail.

It is important to note that the following recommendations for Section One are based on existing conditions and do not incorporate newly proposed developments. This reduces potential conflicts with proposed developments and plans within the project area.

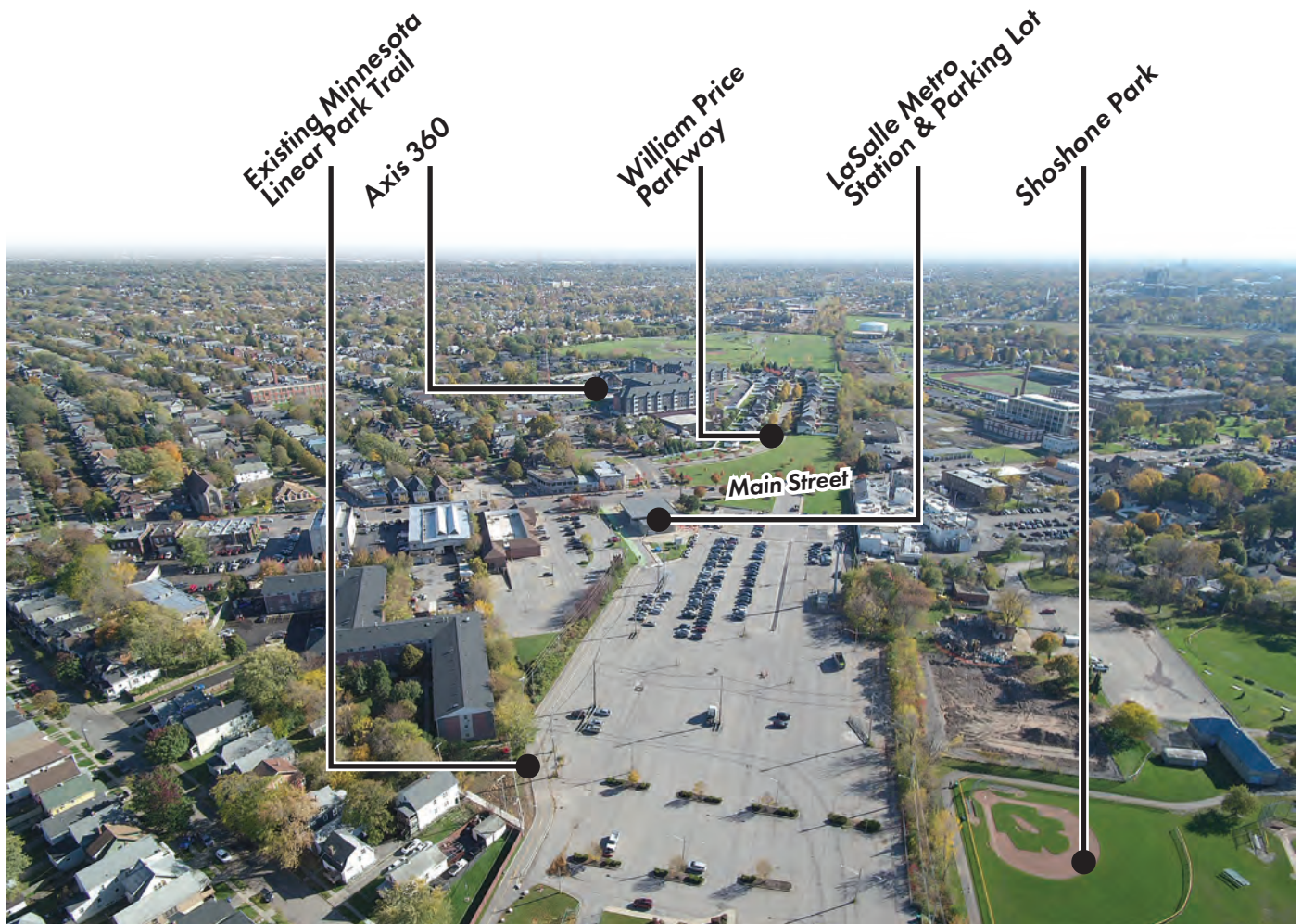
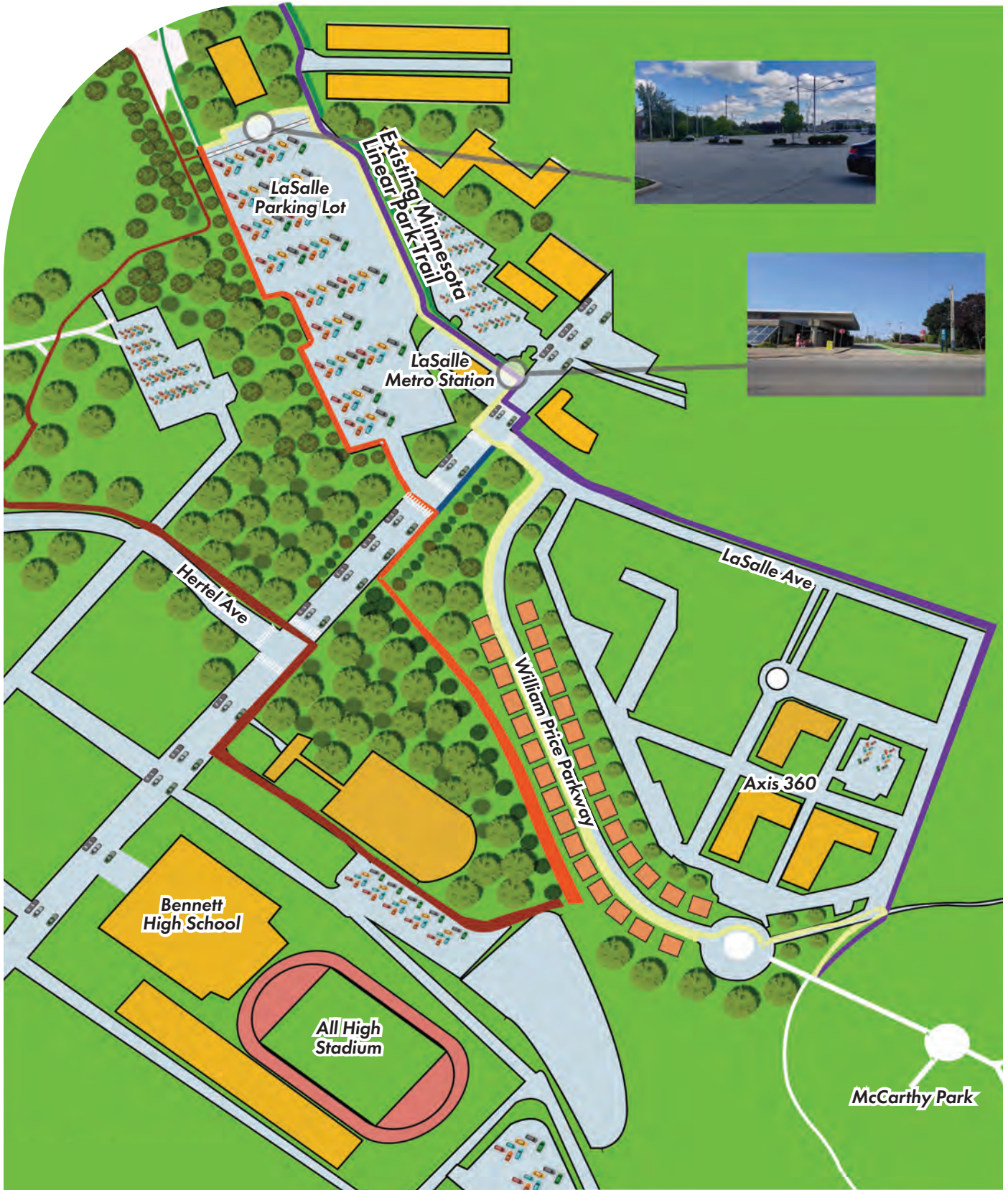


Fig. 039 | Diagram of Notable Locations

LaSalle Metro Station parking lot to the north of the rail right-of-way, which extends across Main Street.



Section One: Route Options

Fig. 040

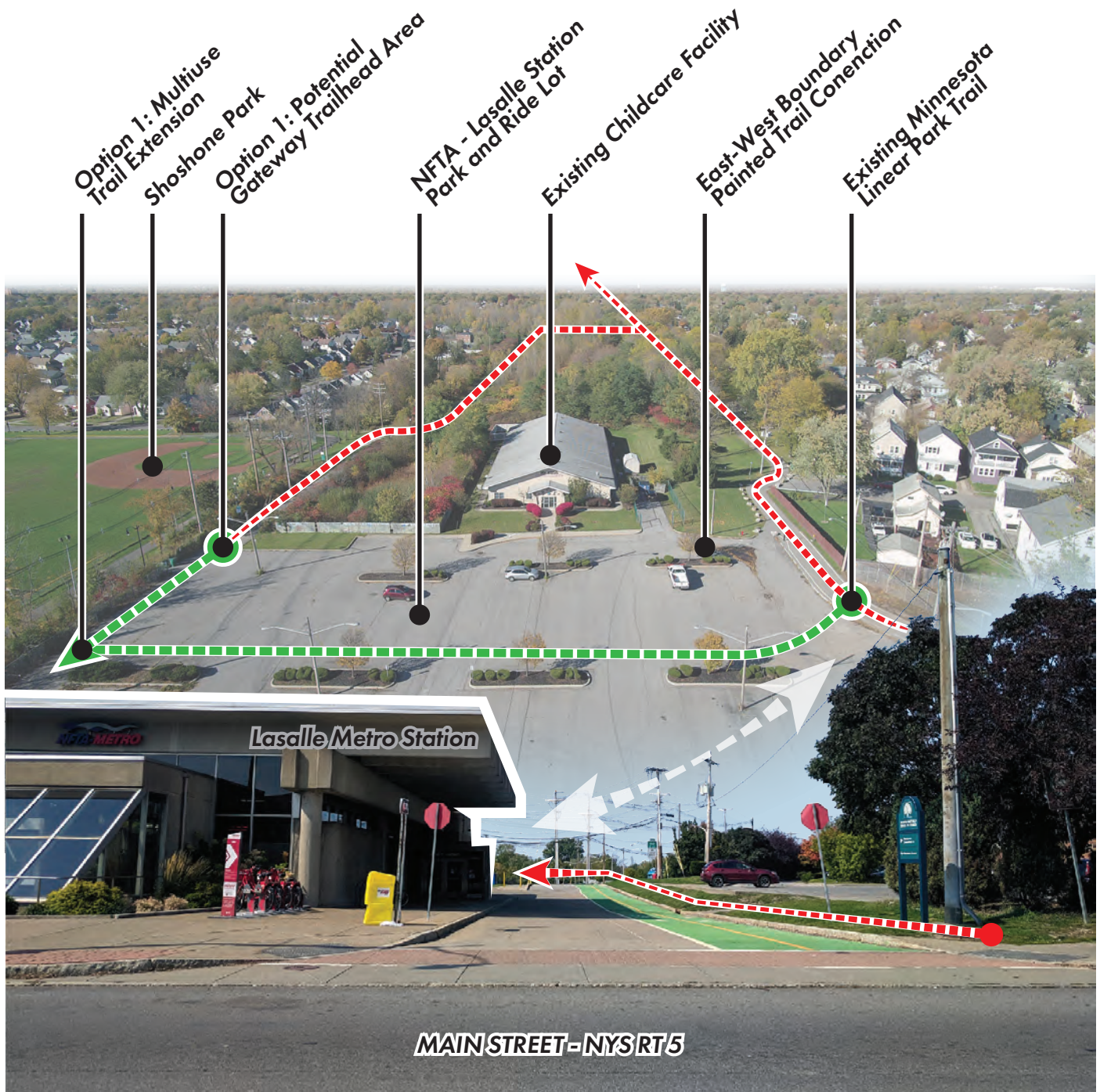
- OPTION 1
- OPTION 2
- OPTION 3
- OPTION 4



Challenge 1: North Buffalo Rails to Trails to Main Street

The existing North Buffalo Rails to Trails currently terminates at the LaSalle Metro Station, leading cyclists and pedestrians to the station's underutilized parking lot. The parking lot does not have clear lines or signage depicting a separation between parking spaces and the bike trail. Even though this part of the trail is close to the LaSalle Metro Station, there are no public restrooms or relaxation spaces in the immediate vicinity that could offer relief to rail trail users. Additionally, along Main Street the speed limit is posted at 30 mph, but vehicles are often observed going much faster, especially during off-peak hours.

The Northeast Greenway Initiative offers the potential to coordinate with and improve upon the expansive LaSalle Metro Station parking lot. Through developing interconnected rail trail infrastructure which will serve as a trail head for North Buffalo Rails to Trails, Minnesota Linear Park, and the proposed Northeast Greenway Initiative, the LaSalle Metro Station has the potential to be a thriving transportation hub.



Solutions & Recommendations:

Option 1: LaSalle Metro Station Parking Lot

In this option, the unsafe and underutilized LaSalle Metro Station parking lot would transform into a parking lot that prioritizes the pedestrian and cyclist. The primary feature of this option is the addition of a protected multi-use path that cuts east to west through the parking lot. This option also features improved signage, complete restriping of the parking lot, and new vegetation in the parking islands. This option may also include the creation of a multi-use path along the western boundary of the LaSalle Metro Station parking lot, extending from the existing trailhead at the southwest boundary of the parking lot, adjacent to Shoshone Park, to an intersection point with the existing sidewalk along Main Street. This option enhances the safety of trail users by using a striped parking stall configuration and a painted path to separate cyclists and pedestrians from vehicles in the parking lot.

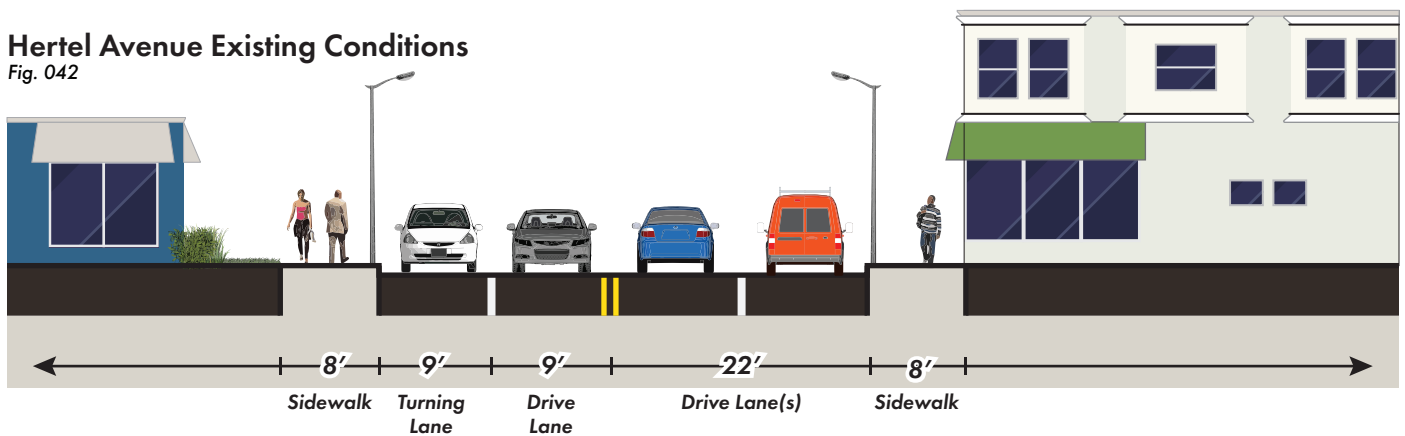
This project would require collaboration with the NFTA. The NFTA and GBNRTC are exploring options for transit-oriented development for the LaSalle Metro Station parking lot (GBNRTC & WSP, 2018). As such, this option has the potential to create a trailhead at the northeast corner of the parking lot, turning several underutilized parking stalls into trailhead amenities such as signage to guide trail users along this route. One potential challenge of this route is the downslope at Main Street due to the former railroad bridge.

Option 2: Shoshone Park to Hertel Avenue

The second option involves guiding rail trail users to Hertel Avenue via a North Buffalo Rails to Trails access point through Shoshone Park. The main benefits associated with this option are the use of existing infrastructure and access points at Shoshone Park. The main challenge with this option involves the separation between cyclists and vehicles along Hertel Avenue. This section of Hertel Avenue is primarily residential homes and has a posted speed limit of 30 mph, although it does still see high traffic counts. This option would require changes to the Hertel Avenue streetscape in order to better accommodate cyclists. The addition of a cycle track or protected bike lanes is recommended in order to enhance the safety of the cyclist.

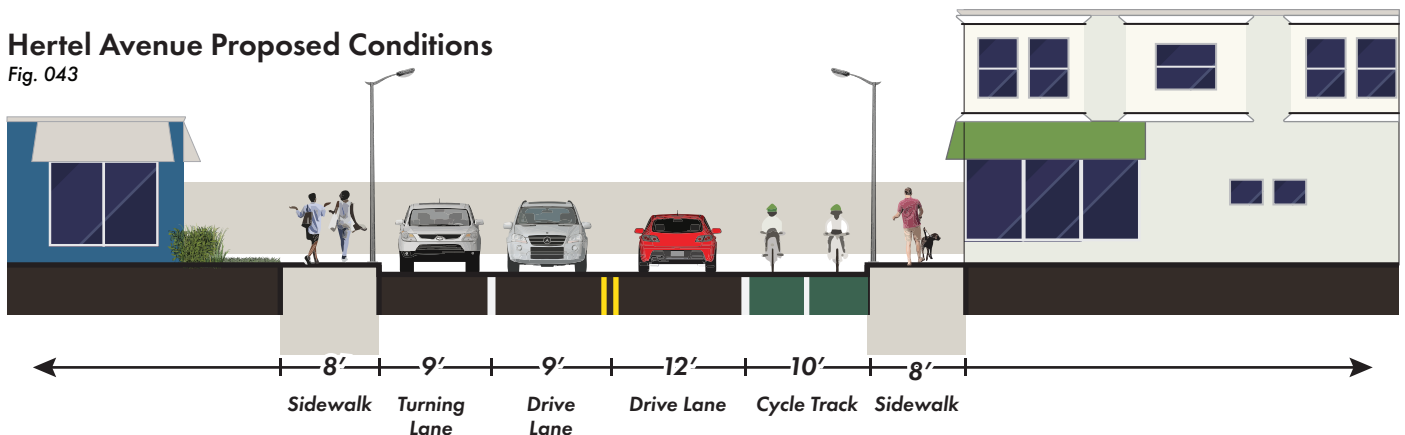
Hertel Avenue Existing Conditions

Fig. 042



Hertel Avenue Proposed Conditions

Fig. 043



Challenge 2: Crossing Main Street

The most challenging aspect of Section One is ensuring rail trail users can safely cross Main Street. As shown with Figure 009 of this report, approximately 26,936 vehicles a day travel through the length of Main Street between Niagara Falls Boulevard and Hertel Avenue (NYSDOT 2019b). Plans for this crossing should consider the interactions between motorists, cyclists, and pedestrians as well as existing plans for Main Street.

For the purposes of this report, the recommendations are based on the existing conditions along Main Street. As shown in Figure X, two former railroad bridges crossed over Main Street between Hertel Avenue and LaSalle Avenue. Despite the demolition of this former railroad bridge, there is still a significant slope on either side of Main Street between Hertel Avenue and LaSalle Avenue, and will likely need to be graded to be ADA compliant. This report does not explore the option of reconstructing a bridge over Main Street for pedestrians and cyclists, due to the prioritization of the installation of a bridge at East Amherst Street where there are two rock cliffs and a severe grade change. However, a bridge at Main Street could be further explored as the Northeast Greenway Initiative continues to develop.

Solutions & Recommendations:

Option 1: HAWK Signal

The first option for crossing Main Street is to install a High intensity Activated crossWalk (HAWK) signal between LaSalle Avenue and Hertel Avenue (NACTO, 2013a). Trail users will travel along the proposed multi-use path for the LaSalle Metro Station parking lot, cross Main Street using the HAWK signal, and continue along the proposed rail trail right-of-way. The proposed HAWK signal will be installed at the rail right-of-way, where the two former railroad bridges crossed over Main Street. This option also features a pedestrian island incorporated into the existing median as well as improved signage. The pedestrian island will serve as a refuge in the event the pedestrian or cyclist cannot cross Main Street in the allotted amount of time set by the HAWK signal.

What is a HAWK signal?

A HAWK signal is used to warn and control vehicle and pedestrian traffic at unsignalized locations along a street. Beacons will alert automobile traffic to stop during a pedestrian crossing (NACTO, 2013a).

How will the HAWK signal function?

Signals are activated by pedestrians and cyclists who push a button on one of the device's poles. HAWK flashing lights are activated to signal that cars need to slow down and come to a stop to yield to pedestrians or cyclists that are crossing the street. The signal permits vehicles to proceed once the pedestrians have cleared the roadway (NACTO, 2013a).



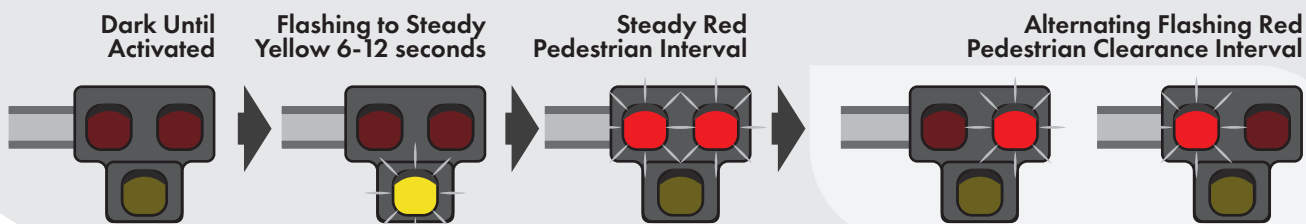
Existing
Fig. 044



Proposed
Fig. 045

Standard HAWK Beacon Signal Light Pattern

Fig. 206



Option 2: Hertel Avenue & Main Street Intersection

The third option is to reconstruct the Hertel Avenue and Main Street intersection to guide pedestrians and cyclists across the intersection. In this option, trail users travel along the proposed two-lane cycle track or bike lane along Hertel Avenue, cross at the Hertel Avenue and Main Street intersection, and continue along the proposed multi-use path that cuts through the 2929 Main Street development.

Benefits associated with this option include the use of existing street infrastructure as well as the development of a new route connecting to Shoshone Park. The primary challenge associated with this option is finding the optimal route to guide pedestrians and cyclists to this intersection. The proposed Hertel Avenue and Main Street intersection is shown in Figure 049. There is a slight adjustment to the driving lanes through restriping that would help to prioritize the pedestrian and cyclists. The proposed intersection also has highly visible bike lanes with additional signage informing pedestrians and the drivers of correct crossing behaviors.



Existing
Fig. 048



Proposed
Fig. 049



Proposed Example 1
Fig. 046



Proposed Example 2
Fig. 047

Option 3: LaSalle Avenue & Main Street Intersection

The second option is to reconstruct the LaSalle Avenue and Main Street intersection to guide pedestrians and cyclists across the street. In this option, trail users would travel along the proposed multi-use path for the LaSalle Metro Station parking lot, cross at the intersection of LaSalle Avenue and Main Street, and continue along the sidewalk and proposed bike lane for LaSalle Avenue or William Price Parkway.

The primary challenge associated with this option is reconstructing the intersection to better serve pedestrians and cyclists. The main benefit associated with this option is the minimal infrastructure changes regarding the reconfiguration of the intersection. An example of the proposed LaSalle Avenue and Main Street intersection is shown in 046. The example provided demonstrates that slight adjustments to the organization of the intersection could help prioritize both pedestrians and cyclists along a highly visible designated path. In order to ensure the full effectiveness of this intersection crossing, proper signage informing pedestrians and drivers of correct crossing behaviors is necessary. Crossing signals and clearly marked bike lanes and crosswalks will give pedestrians and cyclists the priority and allow them to safely cross Main Street. This option will also require intensive collaboration with the NFTA, NYSDOT, and the City of Buffalo.

Challenge 3: South of Main Street to McCarthy Park

The final challenge is determining the optimal route to move pedestrians and cyclists from Main Street to McCarthy Park. Currently, pedestrians traveling from Main Street encounter several barriers resulting in limited entry into McCarthy Park. While there are multiple route options that the Northeast Greenway can take to solve this, there are also unique aspects to this challenge, including stakeholder engagement, public participation, managing interactions between private property and pedestrians, and improving access to McCarthy Park. In this section, the proposed rail trail can be built behind fenced yards along the rail right-of-way or striped along the street frontage of residential homes along LaSalle Avenue and William Price Parkway. The route along the former right-of-way has limited space for uses aside from the trail, creating a potential challenge. Additionally to these route options being in close proximity to residential homes, public participation with the residents located in this part of the project area is essential to the future of the rail trail.

Solutions & Recommendations

Option 1: Existing Rail Right-of-Way

The first option is the creation of a multi-use trail along the existing rail right-of-way between Main Street and McCarthy Park. The existing right-of-way exists behind houses along William Price Parkway. The current condition of this part of the right-of-way consists of dense tree coverage and overgrown vegetation. As shown in Figure 050, the proposed multi-use trail will coincide with the natural landscape of the right-of-way. The main challenge associated with this option is the potential encroachment issues along William Price Parkway. The potential encroachment limits the amount of space for the multi-use path, and the residents of William Price Parkway may raise concern about the additional foot and bicycle traffic behind their homes (Buffalo Public Schools et. al., 2018; Buffalo Public Schools et. al, 2019). The main benefit associated with this option is that it creates a multi-use trail completely separated from all other roadways, ensuring that pedestrians and cyclists do not have to interact with vehicle traffic. This option also creates the most direct route from McCarthy Park to Main Street.

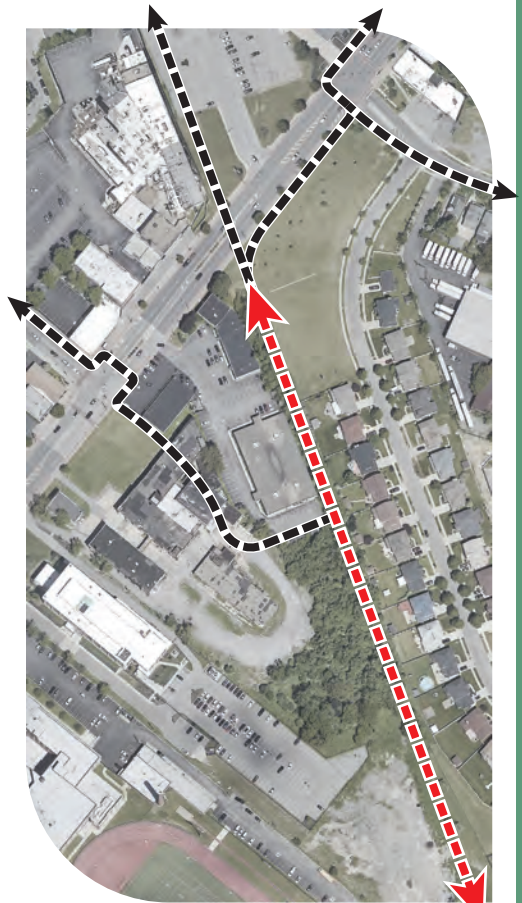


Fig. 050

Option 2: 2929 Main Street Development

The third option involves creating a multi-use trail or a bike lane through the 2929 Main Street property at Main Street and Hertel Avenue, where apartments are being built. As shown in the *Recently Completed & Proposed Local Projects* section of this report, the proposed development includes 200,000 square feet of residential space and 12,000 square feet of retail and commercial space (Hopkins, Sorgi, & Romanowski PLLC, 2018). The main benefit associated with this option is that it separates part of the rail trail from vehicle traffic. The main challenge associated with this option is the potential complexity of collaborating with the project developer. Because this project is deep in the planning process, collaboration with the developers will need to occur sooner rather than later. If the proposed trail is not incorporated into the initial development plans, the rail trail project may require an easement with the property owners. If collaboration does occur, it is important to inform the developers and property owners of the benefits of having a multi-use trail through their property.



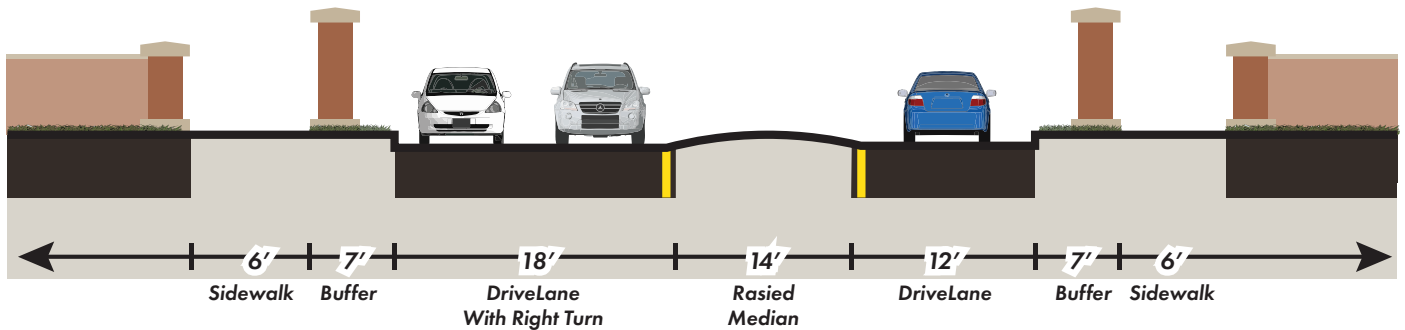
Fig. 051

Option 3: LaSalle Avenue

The second option is the creation of a bike lane or cycle track along LaSalle Avenue, from Main Street to Cordova Avenue. This length of LaSalle Avenue currently contains two driving lanes and a turning lane as it approaches Main Street. An example of how LaSalle Avenue can be restriped to better accommodate cyclists is shown in Figure 052. If this option is chosen, cyclists would enter McCarthy Park through the preexisting path along Cordova Avenue. The main challenge associated with this option is related to cyclist safety. Because cyclists will be traveling along LaSalle Avenue with vehicle traffic, there is an added risk of cyclist related accidents. The main benefit associated with this option is the relatively low cost associated with repainting this segment of LaSalle Avenue. This option also makes use of existing access points to McCarthy Park.

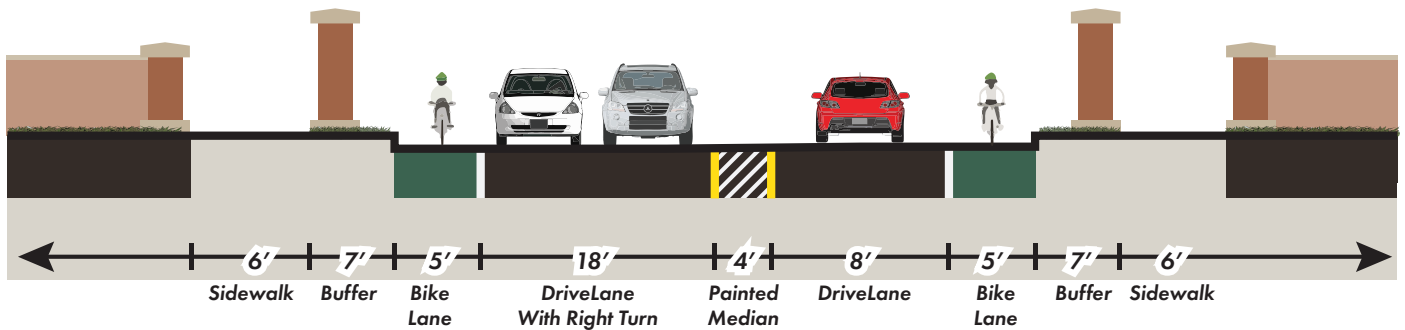
Main Street at LaSalle Existing Conditions

Fig. 052



Main Street at LaSalle Proposed Conditions

Fig. 053



Option 4: William Price Parkway

The final option is to have cyclists and pedestrians travel along William Price Parkway. Trail users will turn onto William Price Parkway from LaSalle Avenue and continue on the road to the McCarthy Park entrance. As William Price Parkway is a dead-end street that only sees traffic from residents on the street, there will be limited conflicts between cyclists and vehicles. Low amounts of traffic will also require few changes to the streetscape, making this route a low-cost option. Potential streetscape changes include the addition of sharrows, signage, and the designation of a bike boulevard. This option could also be used as a temporary trail while other route options are being constructed. Similarly to Option One, the primary challenge associated with this option involves community engagement with the residents who reside along William Price Parkway. During a McCarthy Park planning process, residents addressed concerns of increased pedestrian traffic (Buffalo Public Schools et al, 2018; Buffalo Public Schools et. al., 2019). As such, a transparent and community-engaged process will be required for this route to be successful.



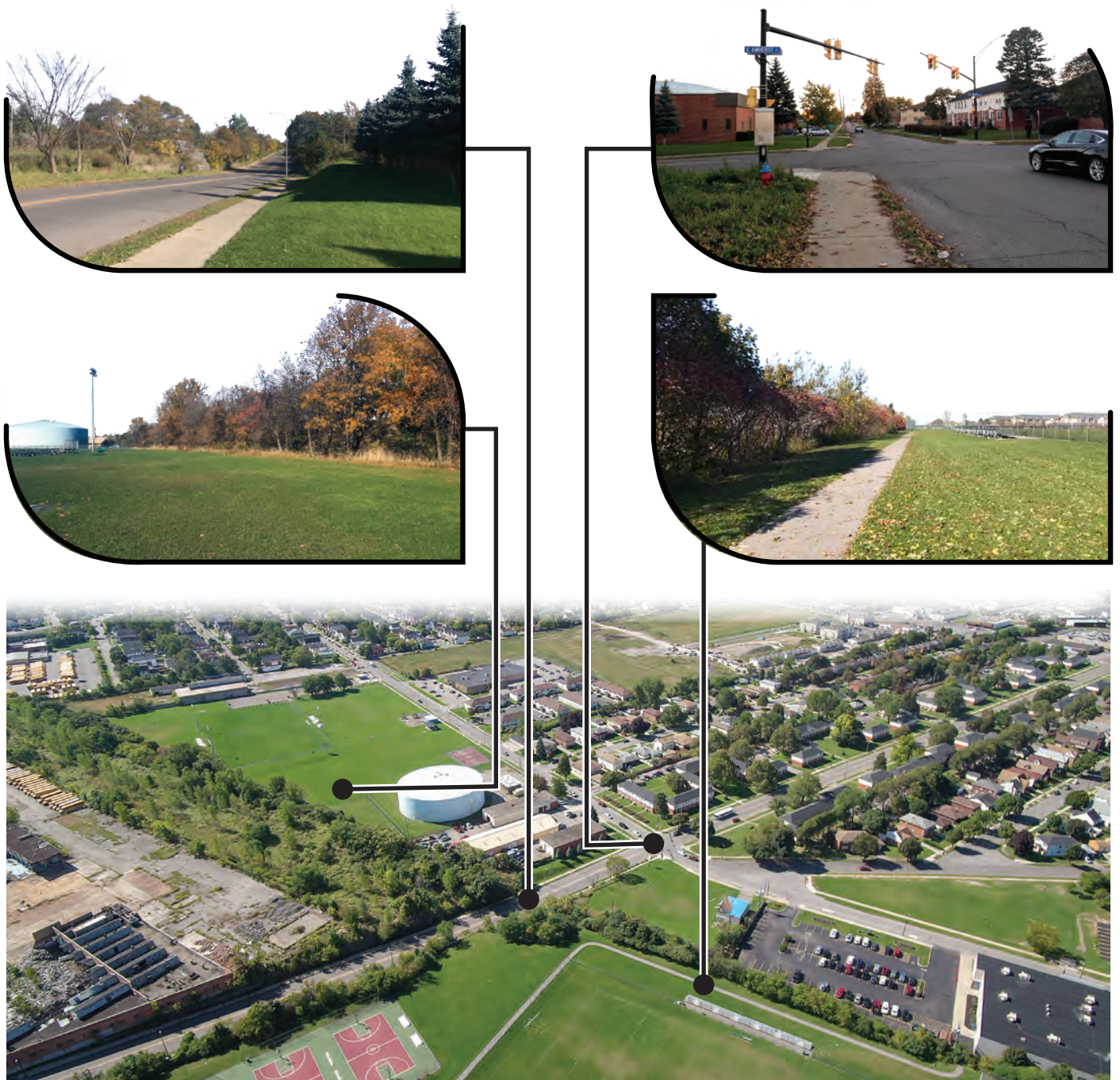
William Price Parkway
Fig. 054

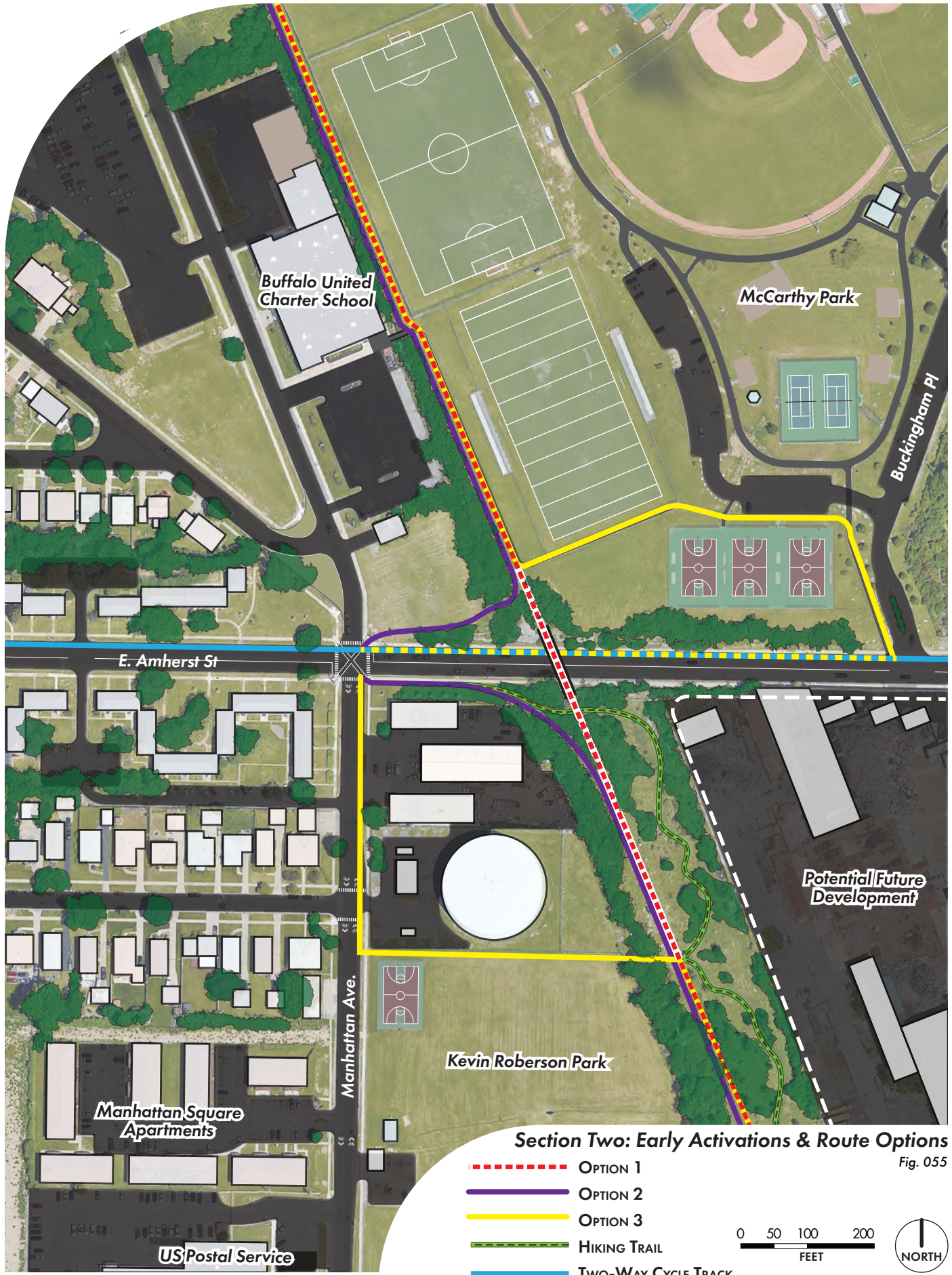
SECTION TWO | MCCARTHY PARK TO KEVIN ROBERSON PARK

Introduction

The section of the Northeast Greenway Rail Trail running alongside McCarthy Park, crossing East Amherst Street, and continuing south along the now-abandoned rail right-of-way to Kensington Avenue presents many exciting opportunities for the creation of enhanced neighborhood connections and recreational experiences. This initiative presents an opportunity to put the former rail right-of-way to productive use for surrounding communities by activating the space through a pedestrian and cyclist trail that connects two existing parks, McCarthy Park and Kevin Roberson Park.

Major challenges confronted in this section are crossing East Amherst Street, obtaining the necessary easements to build direct connections between the trail and the Manhattan Avenue and East Amherst intersection, and navigating a sheer grade change at the East Amherst crossing. While the Section Two preferred option is to use a bridge at the East Amherst crossing, two alternatives routes are also discussed.

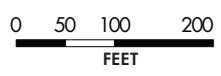




Section Two: Early Activations & Route Options

Fig. 055

- - - OPTION 1
- OPTION 2
- OPTION 3
- - - HIKING TRAIL
- TWO-WAY CYCLE TRACK



Trailhead Opportunity

McCarthy Park is a highly utilized 34.5 acre neighborhood park that sits west of the Northeast Greenway rail trail right-of-way. McCarthy Park is primarily dedicated to athletic fields and facilities for use by Buffalo Public Schools, Medaille College, and intramural teams as well as some recreational amenities, including four small play areas, two charcoal grills, and a small pavilion. The Northeast Greenway Initiative will provide an alternative access point for McCarthy Park to access the facilities as well as the rail trail.

The existing design of McCarthy Park includes several paths that circulate users around the park, which lend to the harmonious addition of a multi-use trail on the rail right-of-way. The park also has a number of neighborhood access points, including walking paths from Hewitt Avenue, Dunlop Avenue, Dartmouth Avenue, and William Price Parkway as well as a bike path connecting from LaSalle Avenue and Camelot Court. These access points will also act as neighborhood connections to the proposed trail, further rooting the trail within the community.

These existing amenities, including parking, neighborhood access points, path networks, and public restrooms, position McCarthy Park as an ideal trailhead location. The Empire State Trail Design Guidelines identify the following as key components of a trailhead: wayfinding signage to indicate restrooms and drinking water access, bicycle and pedestrian connections to existing local streets, ADA compliant parking that can also accommodate loading and off-loading bicycles, shade areas, seating with backs, and ADA accessibility (Empire State Trail et. al., 2017). Following these guidelines, it is recommended that the restrooms at McCarthy Park are upgraded to meet current public restroom standards and ADA accessibility, and shift to a schedule of regular open hours for trail users. Drinking fountains should be installed near restroom facilities. Wayfinding signage for the Northeast Greenway Initiative should be installed to direct trail users to these amenities in McCarthy Park.



Fig. 056

Phase I: Early Activations

Phase One of the Northeast Greenway Initiative includes low-cost activations that increase safety for pedestrians and cyclists while also stimulating the connectivity and access to the rail trail right-of-way. In reviewing the existing street infrastructure along East Amherst Street, there are a number of concerns that require a low level of intervention to implement.

Pedestrian Crossings

There should be a crosswalk across East Amherst Street at the entrance to McCarthy Park. Residents from the surrounding communities are already crossing the busy road to enter the park without a crosswalk, creating a safety concern. Yet, it should be noted that the installation of a crosswalk has the potential to create a false sense of safety for pedestrians and, therefore, an increased danger of being hit by an oncoming vehicle. This is highlighted by the fact that the McCarthy Park entrance is not at an intersection. It is suggested that a flashing light be installed to alert oncoming vehicles when pedestrians are crossing. If funding does not allow for this, additional crossing signs should be installed along East Amherst Street before vehicles reach the crosswalk.

Similar activations are recommended at the East Amherst Street and Manhattan Avenue intersection. The eventual completion of the Northeast Greenway Initiative will require that pedestrians from surrounding communities be able to safely access the rail trail. Such interventions also align with the City of Buffalo Department of Public Works, Parks and Streets (City of Buffalo DPW, 2017) and the Buffalo Bicycle Master Plan's (City of Buffalo et. al., 2016b) proposals to implement a cycle track on the north side of East Amherst Street between Manhattan Avenue and Parkridge Avenue. Safety at this intersection crossing is further highlighted by Phase Two recommendations that connect the intersection to two East Amherst Street access points. As such, early activations at this intersection are logical within the preliminary project implementation. It is recommended that crosswalks be installed according to NACTO standards (NACTO, 2013b). These standards include a high-visibility crosswalk through the use of ladder or zebra striping, a vehicle stop bar set back at least eight feet from the crosswalk, and all crosswalks set back at least 10 feet from the start of the curb curve, ensuring a clear buffer from cross vehicle traffic (NACTO, 2013b).

TYPES OF CROSSWALKS

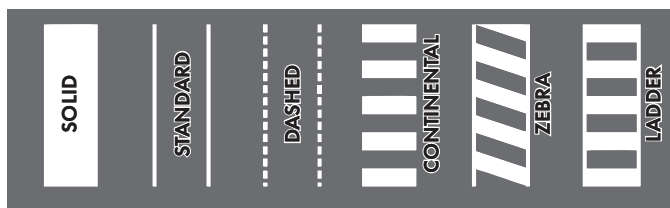
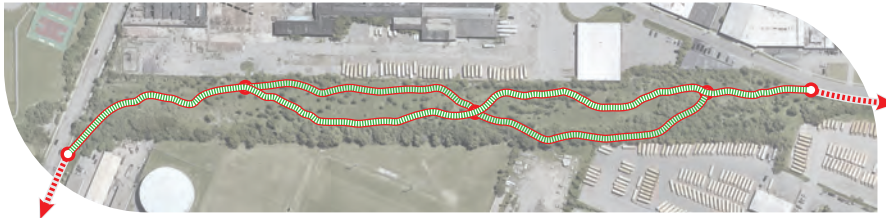


Fig. 057 | (NACTO, 2013b)

Hiking Trail

The Northeast Greenway Rail Trail right-of-way between East Amherst Street and Kensington Avenue offers a unique opportunity for the creation of a hiking trail. This part of the right-of-way once had multiple rail lines and is significantly wider than the other sections - approximately 193 feet. (Fig. 058) This allows for more than enough space to include the traditional 12 foot multi-use trail in addition to a walking/hiking path. Creating the hiking trail will require some clearing of trees, brush, and leftover railway waste, such as cement, but can feasibly be done through volunteer help and tools available to UDCDA, The Tool Library, or other local organizations. Furthermore, the hiking trail will stimulate the initial use of the rail trail, building community support and precedence for the eventual installation of the paved multi-use trail. It is also suggested that even once funding and support for the paved multi-use trail has been achieved, the hiking trail still be preserved as an alternative recreational use of the right-of-way. This Phase One hiking trail activation is further explored in the Recreation section of the report.



Phase One Hiking Trail Path
Fig. 058



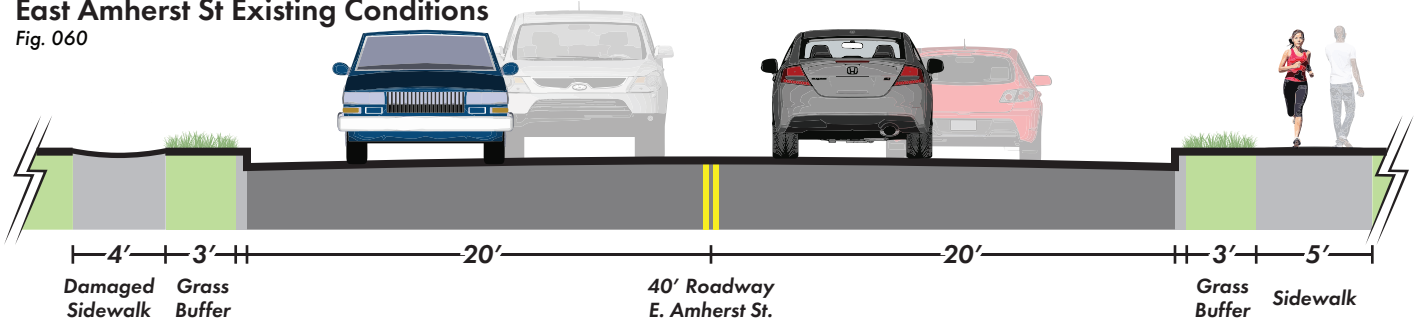
View from within the interior successional forest area of the former rail bed where a hiking path is suitable.
Fig. 059

Improving Existing Infrastructure

A final Phase One activation is to improve sidewalks along East Amherst Street and Manhattan Avenue. While this activation is not necessarily low-cost, it is an important step toward building out adequate and safe pedestrian infrastructure. Large segments of concrete sidewalk along the northern side of East Amherst Street made has deteriorated to such an extent that there is now only loose gravel and overgrown grass. In anticipation of the Northeast Greenway Initiative and the East Amherst Street cycle track proposal that will increase pedestrian and cyclist activity, it is suggested that local stakeholders advocate that the City of Buffalo improve the sidewalks in the general area.

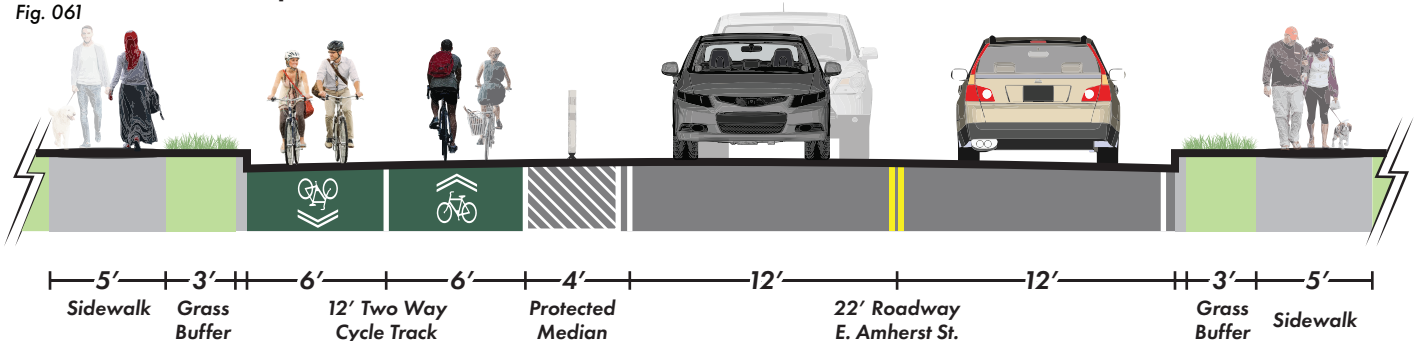
East Amherst St Existing Conditions

Fig. 060



East Amherst St Proposed Conditions

Fig. 061



Phase II: Implementation of Multi-Use Trail

Phase Two of Section Two of the Northeast Greenway Initiative focuses on implementing the multi-use trail along the abandoned rail right-of-way. There are three proposed options, which can be implemented in place of one another or in addition to one another. While the decision to implement which option is dependent on a number of factors including funding, land easements, and public support, the more pedestrian and bicycle infrastructure that is completed, the more robust and successful it is anticipated that the Northeast Greenway Initiative will be. Underlying all of this, the implementation of various route options will increase connectivity for bicyclists and pedestrians from various surrounding neighborhoods, building on key city and region-wide infrastructure.

Option 1: Right-of-way with Bridge

Constructing a bridge for the rail trail to cross East Amherst Street is the preferred option for this crossing. A bridge across East Amherst Street will be beneficial for three main reasons: it allows the trail to maintain a minimal grade change when crossing East Amherst Street, eliminates the potential for conflict between vehicle traffic and trail users, and is geographically the most efficient and linear option.

Reduced Conflict Between Vehicles & Trail Users

The bridge option eliminates the need for an at grade trail crossing of East Amherst Street as well as the potential for trail users to come into conflict with vehicle traffic traveling along the street. As vehicle users may neglect to yield to trail users crossing the street, eliminating conflict between vehicles and trail users is the preferred option.

Minimal Grade Change

Reducing the grade change makes it easier for trail users to physically navigate the trail. A user-friendly trail that maintains a limited slope is more accessible for users of varying skill levels. Steeper and longer grades can be physically difficult to navigate for bicyclists, pedestrians, wheelchair users, and people that are mobility impaired.

Reducing the grade change is also an important safety measure. Bicyclists going downhill often travel at higher speeds and are more likely to crash into other trail users, raising the potential for injury. The bridge option also offers the best opportunity for maintaining a continuous line of sight along the trail, giving the trail users a better sense of their surroundings.

Since the trail right-of-way is significantly higher than the street grade of East Amherst Street, an at grade crossing would require trail users to navigate a considerable grade change in order to approach the street. Alternatively, a bridge across East Amherst Street will ascend only a small grade differential in order to reach the bridge level. In order to achieve this successfully, the bridge will need to be raised up high enough to clear East Amherst Street.



Rendering of Option 1 bridge over East Amherst Street, including cycle track and improved sidewalk on the north side of the street.
Fig. 062

Geographic Efficiency

While the two alternative routes for this crossing require the trail user to leave the right-of-way, the bridge option allows trail users to continue straight along a linear trail without having to leave the right-of-way. Furthermore, the bridge option eliminates the necessity to acquire easements for approaches to the intersection of East Amherst Street and Manhattan Avenue as would be needed in Option Two.

As recommended by the Empire State Trail Design Guidelines, the bridge deck should be wide enough to provide for two feet of clearance on either side of the trail (a total deck width of 16 feet) (Empire State Trail et. al., 2017). The Empire State Trail Design Guidelines also recommend a 48 inch high guide rail for such a bridge (Empire State Trail et. al., 2017). Furthermore, the NYSDOT Bridge Manual calls for a minimum clearance of 12 feet for bridges, although a higher clearance may be necessary, requiring the bridge to be raised a few feet (NYSDOT, 2019a).

Input from local professionals indicates that a prefabricated bridge would need to have a span of about 135 feet with foundations reconstructed and pinned to the rock. The estimated cost for this bridge is \$200,000 to \$300,000, plus engineering costs. This bridge would be similar to bridges built for the Ransom Creek crossing in the Town of Amherst and the Ransom Road bridge in the Town of Clarence. The bridge most likely would not need to be built to carry vehicles since both sides of the rail trail will be easily accessible from other routes in the case of emergencies (either through McCarthy Park or Kevin Roberson Park).

Considerations

Challenges with the bridge option include the cost of constructing and maintaining the bridge. The bridge will need to be constructed with a clearance of 14 feet or greater as not to interfere with truck traffic along East Amherst Street.

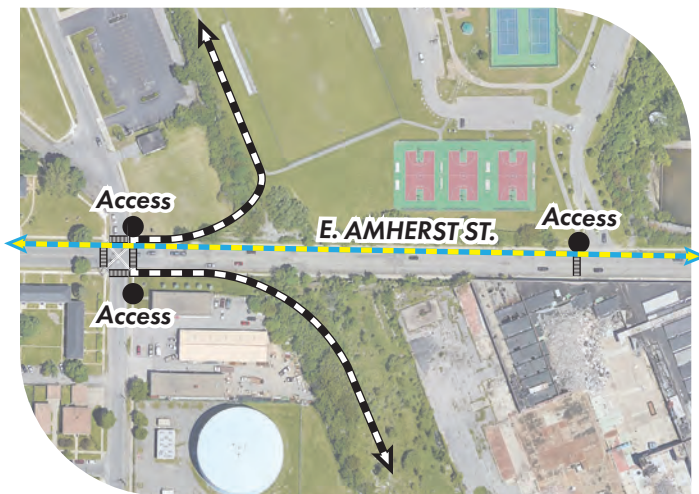
Option 2: Access Point Connection

Adding access points on both the north and south sides of East Amherst Street will allow for greater ease of access for trail users from the adjoining neighborhoods.(Fig. 063) Multi-use access trails will connect the rail trail running along the rail right-of-way to the intersection of Manhattan Avenue and East Amherst Street. These access points are beneficial in that they allow for greater ease of access to the rail trail and surrounding parks from the adjoining neighborhoods. The access points also enhance connections with local schools, with the potential of the rail trail providing safer route options to school than walking along roadside sidewalks.

Adding access points on both the north and south side of East Amherst Street can also serve as an alternative trail route if the installment of a bridge is not possible. Furthermore, the second suggested trail route is to have the multi-use access trails connect to each other, creating one continuous trail. Trail users traveling north to south on the rail trail will divert from the rail right-of-way at the southern end of McCarthy Park, continue onto the northern access point, cross East Amherst Street at the Manhattan Avenue intersection, and re-connect to the rail right-of-way via the southern access point.

While this is a secondary route recommendation, the access points remain vital to the trail no matter the circumstances. As such, if the bridge is successfully installed, the development of both access points should still be considered. If only one access trail is feasible, it is recommended that the northern access point be given priority since it will connect with a protected two-way cycle track on East Amherst Street that has been recommended by the City of Buffalo Department of Public Works, Parks and Streets (City of Buffalo DPW, 2017). The northern access point also aligns with the Buffalo Public School Facilities and City of Buffalo Parks Department’s design plan for McCarthy Park which was completed in 2019 (Buffalo Public Schools et. al., 2019b). The proposed plan includes a staircase into the park at the same location as the northern access point. It is suggested that instead of a staircase, a ramp be installed that is both conducive to a future bicycle and walking trail, while also ensures accessibility in accordance with the ADA.

Challenges to constructing these access points include obtaining easements for privately owned parcels and navigating the grade changes from the trail right-of-way down to the intersection. The northern access point will run along the edge of the largely vacant parcel at 264 East Amherst Street, privately owned by 264 East Amherst Street LLC. The southern access point will require an easement for 261 Manhattan Avenue, which is privately owned by 243 Manhattan Avenue/Properties LLC. The southern access point will likely be more challenging to construct because there is a building on the parcel, adjacent to the proposed access trail. In addition to easements, both access points will likely require clean fill to reduce the currently steep grade change as well as the



Option 2 Access Point & Circulation Route Map
Fig. 063

Option 3: Through McCarthy Park & E. Amherst St

If a bridge across East Amherst Street (Option One) or multi-use access points to the right-of-way on the northeast and southeast corners of East Amherst Street and Manhattan Avenue (Option Two) are not feasible, the existing trail networks in McCarthy Park can be leveraged to complete the Northeast Greenway Initiative rail trail. This route will follow existing multi-use trails that have various neighborhood access points, and exit onto East Amherst Street at the park entrance/exit. (Fig. 064) From here, cyclists will follow the proposed on-road cycle track on the northern side of East Amherst Street toward Manhattan Avenue. For this option to be safe for cyclists, sharrows on Manhattan Avenue are recommended to encourage drivers to consider cyclists on the road.

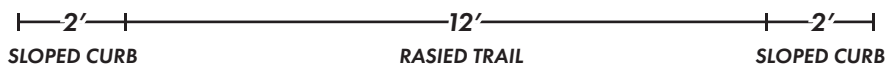
To better facilitate the crossing of East Amherst Street at the Manhattan Avenue intersection, it is recommended that painted bike lanes in the form of an "X" are installed. (NACTO, n.d.)(Figure 067) This will allow cyclists from either direction to safely cross at the intersection. Bike priority sensors and signals will need to be installed to halt all traffic and give priority to bike and pedestrian trail users (Figure 066). It should be noted that this "X" intersection crossing is only required for the Option Three route, which continues onto Manhattan Avenue and reconnects to the rail right-of-way via Kevin Roberson Park. That being said, this intersection recommendation includes cutting-edge bicycle infrastructure that ensures safety and ease of cyclists above that of cars.



Option 3 McCarthy Park Trail Map E. Amherst St Proposed Cycle Track Fig. 064



Cross section of multi-use trail with tree line buffer. Fig. 065



Considerations

Using sidewalk and on-road bicycle infrastructure will lead users toward Kevin Roberson Park where an additional access point is recommended. This access point should run parallel to the water tank and football field on the northern end of the park. There is a steep elevation change at this point, which will need to be considered when constructing the trail to ensure that the slope is ADA compliant.

This route option is dependent on the City of Buffalo’s impending plan to install a cycle track on East Amherst Street (City of Buffalo DPW, 2017). UDCDA and stakeholders should advocate for the installation of the delayed cycle track project on East Amherst Street. This improvement in bicycle infrastructure will result in a low-cost solution, as the cycle-track is already planned, and a more comfortable and convenient bicycle route for trail users. A potential detraction from this route option is that using on-road cycling facilities might intimidate less experienced bicycle users, resulting in a loss of perceived safety and comfort for some segments of the trail.

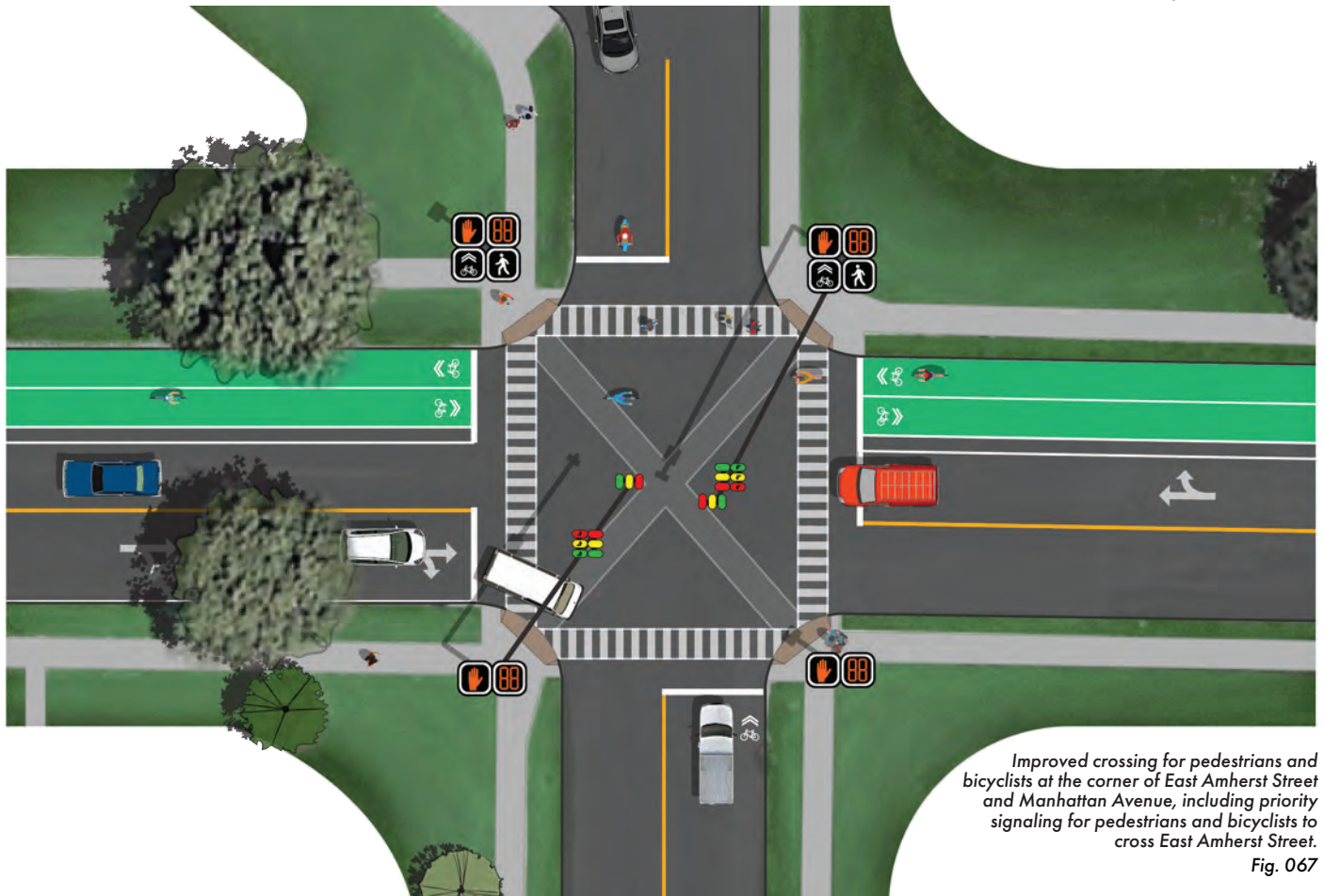
An additional challenge to leveraging existing infrastructure in McCarthy Park is that the existing trails are in need of upgrades and repairs. There are frequent cracks in the pavement and other park amenities are prone to severe flooding during rain events.

Phase III: Creating a Recreation Greenway

Phase Three of Section Two of the Northeast Greenway Initiative focuses on making the trail a destination by using added value elements to activate the space. The use of green infrastructure, public art, hiking paths, exercise equipment, and pollinator gardens along the trail provide a variety of benefits (see The Trail as a Destination Section), and make the Northeast Greenway Initiative a standout urban rail trail within the region. The trail offers the potential to create public-private partnerships with outside organizations and community groups to further add to amenities. The trail south of East Amherst Street is an ideal location for these added-value elements because of the wide width of the former rail right-of-way (193 feet) (Figure O65). This extra space presents the opportunity to create a linear greenspace from East Amherst Street to Kensington Avenue. We recommend the creation of a tree line buffer using a diverse range of native plant species, including both coniferous and deciduous tree cover. This will create a natural buffer between present industrial sites to the west of the trail, including an abandoned site and a large school bus depot.



Fig. O66 | (Google, 2019a)



Improved crossing for pedestrians and bicyclists at the corner of East Amherst Street and Manhattan Avenue, including priority signaling for pedestrians and bicyclists to cross East Amherst Street.

Fig. O67

SECTION THREE | KEVIN ROBERSON PARK TO WILLIAM GAITER PARKWAY

Introduction

Section Three's boundary stretches a quarter-mile from Kevin Roberson Park to Kensington Avenue, and another quarter-mile from Kensington Avenue to William Gaiter Parkway. North of the intersection at Kensington Avenue, along Clyde Avenue, there is no cycle track. The only sidewalk along Clyde Avenue is on the east side of the roadway where it provides access to surrounding businesses. The west side of Clyde Avenue includes a densely vegetated area with ecologically diverse successional plant material. Here, the railbed is elevated approximately 15 to 20 feet above street grade, but the steep slopes are masked by a thick herbaceous understory, a leafy cover below the tree canopy. Any slope transition would require cut and fill grading techniques to accommodate a 20:1 foot ADA accessible trail with a 5% maximum slope and 2% cross slope. (USDOJ, 2010) For the trail to achieve a landing at 20 feet above grade at the required slope, approximately 600 feet of trail would be needed.

Along the western side of William Gaiter Parkway, there is a designated linear and unmarked eight-foot wide cycle track and four-foot wide sidewalk. The multi-use trail along William Gaiter Parkway also accommodates a three-foot planting strip between the road and sidewalk and a six-foot planting strip between the cycle track and sidewalk.

After numerous site visits and an analysis of Section Three's existing conditions, the following five areas were identified for design interventions. Design recommendations are provided for each of the identified challenges.

1. The access point at Kevin Roberson Park
2. The access point at Clyde Avenue
3. The intersection at Kensington Avenue
4. The access point across from Warwick Avenue
5. The William Gaiter Parkway multi-use trail



Fig. 205



Challenge 1: Access at Kevin Roberson Park

Kevin Roberson Park is south of East Amherst Street and adjacent to the westward side of the rail trail. It includes a soccer field, basketball court, playground, pavilion, storage shed, parking lot, and open space. The Northeast Greenway Initiative trail would run alongside Kevin Roberson Park before sloping down to grade level along Clyde Avenue and crossing Kensington Avenue. This presents an ideal opportunity for an added neighborhood connection, especially since there is a parking lot within Kevin Roberson Park that could serve as a trailhead. The challenge here is the steep slope at the ideal entry point to the rail trail from Kevin Roberson Park. In order to make the rail trail accessible, the entry path at this location will need to slope upwards more gradually than the current landscape allows.

Option 1: Depressed Entry to Trail

In order to make sure that the Northeast Greenway Rail Trail is accessible to people of all abilities, we recommend following the guidelines laid out by the Buffalo Bicycle Master Plan (City of Buffalo et. al., 2016b). The standards set forth in the Master Plan meet ADA requirements and are such that people of all ages and abilities are able to utilize bike infrastructure. For the access point at Kevin Roberson Park, the challenge is bringing the trail down a sloped embankment to grade level, while maintaining an appropriate slope to distance ratio of 1:20 to make sure that it is still accessible. See Section 402.2 of the 2010 ADA Standards for Accessible Design (USDOJ, 2010).

It is recommended that the trail be slightly depressed into the hill to ensure that the gradient can slowly increase until it reaches the level of the trail. This will require grading that allows the path to maintain a 1:20 slope ratio of rise over run (one foot increase in elevation over every twenty feet of horizontal distance). For an example of a depressed trail, see Figure 069.

Option 2: Ramp or Stairs at Entry to Trail

Without a depressed trail, it will be necessary to install a ramp that connects to the bike path. To be ADA compliant, any ramps installed cannot have a slope steeper than 1:12 (USDOJ, 2010). The recommendations also caution that ramps should have the least possible running slope and that stairs should also be provided to accommodate those for whom walking up the longer distance of the ramp may not be physically feasible (i.e. people with heart disease or limited stamina). See section 405.2 of the 2010 ADA Standards for accessible design for information.

If stairs or ramps will be present at this connection, there needs to be handrails provided on both sides. For adults, the top gripping surface of handrails need to be 34 inches (865 mm) off of the ground at a minimum, and 38 inches (965 mm) at a maximum. If there is to be a second handrail to accommodate children that need one, the gripping surface should be 28 inches (710 mm) off of the ground, as per Section 505.4 of the 2010 ADA Standards for accessible design. (USDOJ, 2010)



Example of an ADA approved, graded slope providing accessible transition for bicycle and pedestrian access between trail and park areas.

Fig. 069 | Dequindre Cut, Detroit Michigan (Transportation Alternatives Data Exchange, 2009)

Priorities of the Northeast Greenway Initiative are to improve bike infrastructure, provide people with more ways to exercise and recreate, and provide a viable way for residents to commute to work and other destinations.

As such, adequate neighborhood connections are vital to the rail trail's success.

Challenge 2: Access at Clyde Avenue

Once past Kevin Roberson Park, the Northeast Greenway Initiative trail continues southward toward Kensington Avenue, parallel to Clyde Avenue. Clyde Avenue experiences a fair amount of traffic with buses and trucks, and there is no sidewalk on the western side of the street closest to the rail trail. Like the entry point at Kevin Roberson Park, the entry point at Clyde Avenue also has steep slopes. The slopes are steepest immediately adjacent to the corner of Kensington and Clyde Avenues and become less steep further north along Clyde Avenue.

The two parcels at the northwest corner of the Kensington Avenue, Clyde Avenue, and William Gaiter Parkway intersection are owned by the City of Buffalo and zoned as vacant industrial. Being vacant and city-owned is ideal for the rail trail, as it offers the opportunity and space to install an off-road, multi-use trail. However, there is currently a tall chain-link fence that runs around the neighboring property to the west, which is owned by First Student Inc., and then wraps around the right-of-way and runs northward behind the buildings along Clyde Avenue.

Option 1: Multi-Use Trail along Clyde Avenue

The first option is to place a new, off-road multi-use trail on approximately the first 350 feet of Clyde Avenue and avoid the fence at the intersection. A portion of the fence approximately 350 feet north of the intersection would need to be opened up in order to provide access to the rail trail. Although this would put trail users within close proximity to Clyde Avenue, this option is preferable because it largely avoids the steep slopes along the right-of-way adjacent to the intersection. Bollards should be installed between the multi-use trail and Clyde Avenue to serve as a protective feature for bicyclists and pedestrians. (Figure 070)

Option 2: Multi-Use Trail away from Clyde Avenue

The second option is to remove the section of the fence at the intersection to make space for an off-road, multi-use trail extending northward immediately from the intersection. While this option may be more comfortable for trail users since the path would not run along Clyde Avenue, it would entail additional costs since the steep slopes adjacent to the intersection would require grading and more intensive construction and design components. This option may also require a ramp and a staircase due to the steepness of the slope.

*Please see the previous section entitled Access at Kevin Roberson Park for specific information on necessary accessibility considerations.



**CLYDE AVE.
EXISTING & PROPOSED**
Fig. 070

Challenge 3: The Intersection (Figure 071, 072)

The Kensington Avenue, William Gaiter Parkway, and Clyde Avenue intersection is currently lacking the proper infrastructure to make it a safe place for pedestrians and trail users. There are no crosswalks or striping on the street that otherwise would divide traffic. There is also a wide turning radius for each of the corners that accommodates heavy truck and commuter traffic alike. Refurbishing this intersection is an important element for the implementation of the proposed trail.

Recommendation 1: Crosswalks & Lane Striping

Highly visible crosswalks should be painted using ladder or zebra style markings (NACTO, 2013b). The visibility of markings plays a key role in the effectiveness of the path and the safety of users. Maintaining the marked crossings after painting them should be a high priority. Thermoplastic and epoxy markings offer increased durability over conventional paint (Empire State Trail et. al., 2017). Striping should also be done on the streets to create divided lanes with visible turn arrows.

Recommendation 2: Refurbishing the Curbing

Curbing should be refurbished to reduce the distance and time spent within the intersection while crossing. Conventional intersections, like the intersection at William Gaiter Parkway, include crosswalks on the innermost points of the four corners of the intersection. Crosswalks should be removed from the four points of the intersection and set back onto the approaching roads. This reduces the distance of the crosswalk and discourages vehicle encroachment into the crosswalk (NACTO, 2013b).

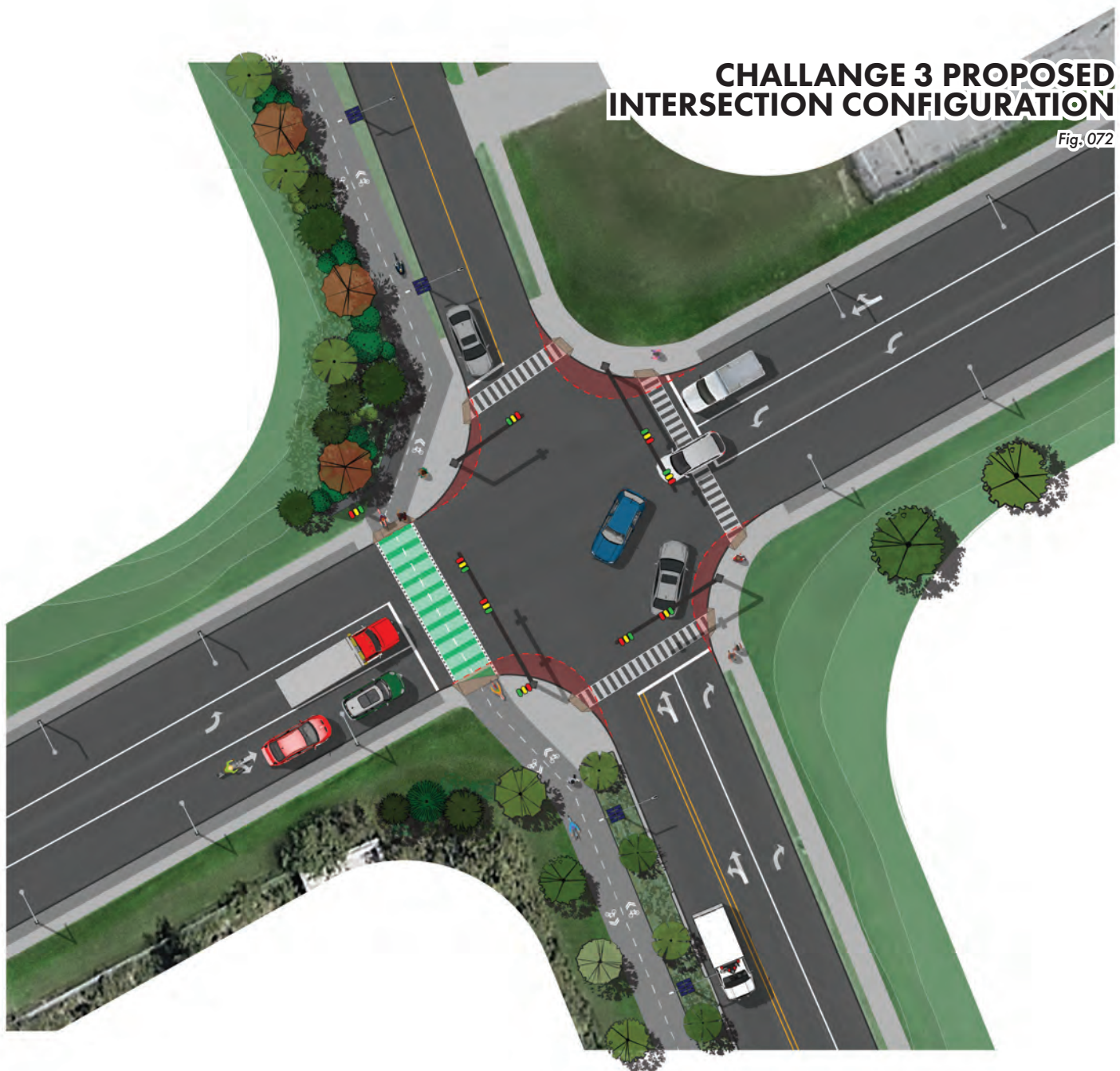
Recommendation 3: Traffic Signals

Using a red-signal indication to stop motor vehicle traffic provides the most protection for pedestrians and trail users. Full traffic signals should include signals facing the trail users to indicate when it is safe to cross. Signals are normally activated by push buttons, but may also be triggered by embedded loop, microwave, infrared, or video detectors. Minimum crossing times are determined by the width of the street, and the maximum delay for activation of the signal should be two minutes (NACTO, 2013b).



CHALLENGE 3 PROPOSED INTERSECTION CONFIGURATION

Fig. 072



Challenge 4: Access across from Warwick Avenue

A sidewalk exists at the southeastern end of the William Gaiter Parkway multi-use trail that connects Norfolk Avenue and Northumberland Avenue to the east with William Gaiter Parkway and Warwick Avenue to the west. The sidewalk serves as a connection point between the William Gaiter Parkway multi-use trail and many residential properties. However, the existing sidewalk is overgrown with shrubbery, potentially preventing residents from acknowledging and using the William Gaiter Parkway multi-use trail. (Figure 073)

Recommendation: Upgraded Sidewalk

Having the multi-use path in close proximity to neighborhoods allows for a more inclusive environment. It's important for neighborhoods to have a clear connection to the path to provide residents easy access to the rail trail. In addition to the Kevin Roberson Park access point, there should also be an access point at Norwalk Avenue and Northumberland Avenue. Minor adjustments should be made to clear the sidewalk of obstacles and trash, provide adequate lighting, and improve safety. Trail signage should also be implemented at this location to inform nearby residents that the trail exists a short distance away from their homes.



Sidewalk adjacent to Warwick Avenue
Fig. 073

Challenge 5: William Gaiter Parkway Multi-Use Trail

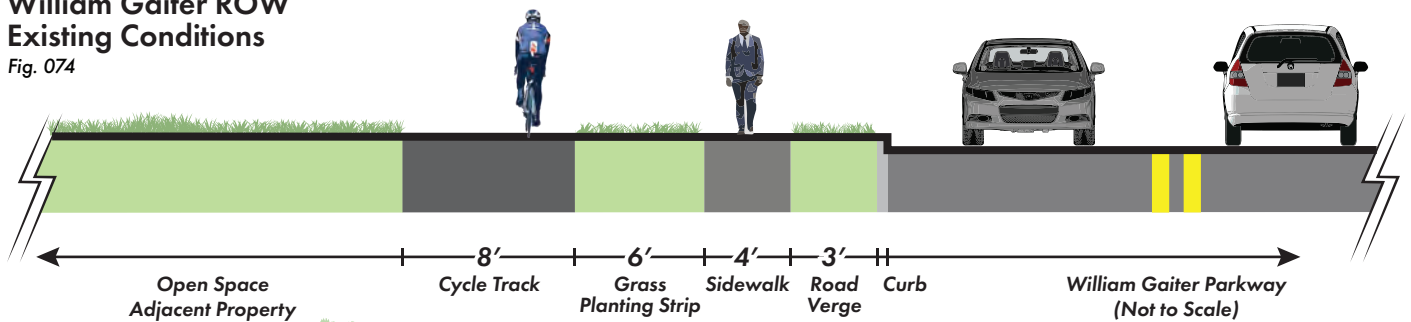
Challenge 5a: Corridor Infrastructure Deterioration

The current composition of the William Gaiter Parkway multi-use trail has a number of notable issues that deter trail users:

1. The proximity of the sidewalk to the road is too close for the safety and enjoyment of pedestrians. The western side of William Gaiter Parkway is paralleled, first, by a sidewalk and, next, by a cycle track (Figure 078). William Gaiter Parkway is a trucking route with a speed limit of 30mph and has no shoulders or on-road parking spaces. The sidewalk is only four feet wide with little buffer space between pedestrians and traffic. Some pedestrians choose to walk on the cycle track instead, which is a further distance from the road. This is not an adequate solution to the insufficiency of the sidewalk since the cycle track's width of approximately eight feet does not provide enough space for both cyclists and pedestrians.
2. There are neither natural nor man-made barriers between pedestrians and cyclists and the road. This not only makes traversing the sidewalk and cycle track unpleasant, as large vehicles are passing by just a few feet away, but also deepens the sense of insecurity experienced along the trail.
3. The trail quality is also hampered by excessive litter that is trapped in the overgrown grass (Figure 076). The litter not only contributes to the trail's unpleasing environment but also poses a risk to pedestrians and cyclists who are encountering various types of unsafe materials; particularly, broken glass.

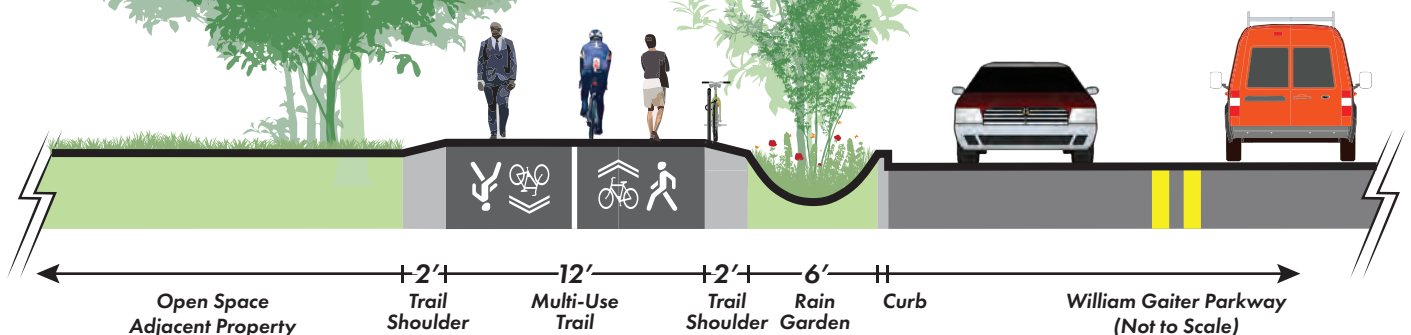
William Gaiter ROW Existing Conditions

Fig. 074



William Gaiter ROW Proposed Conditions

Fig. 075



Recommendation: Trail Redesign & Designation

The proposed design of the rail trail along William Gaiter Parkway aims to protect the health and safety of pedestrians and cyclists by distancing trail users from moving vehicles, establishing a physical barrier, and removing unsafe material (i.e. litter) (Figure 076). These objectives can be achieved while also accentuating community character and improving aesthetic appeal.

1. To distance pedestrians from the road and maintain consistency with the rest of the rail trail, it is recommended that the existing sidewalk be removed. The cycle track should be expanded into a 12 foot wide multi-use trail with appropriately painted demarcations. This will open up space for a six foot wide, depressed rain garden and a system of swales between the multi-use trail and the road. This will also allow for a larger buffer between the pedestrians and the road. (Figure 075)
2. The rain garden should be planted with shrubs, grasses, flowers, and trees. The rain garden will create a protective and visual barrier between trail users and the road.
3. The inclusion of rain gardens along William Gaiter Parkway will add natural beauty to the trail and likely deter littering from the start. In addition, the vegetation will require maintenance, which can be coupled with the pick-up and removal of litter.

Challenge 5b: Lack of Adequate, Productive Vegetation

Another problem that has impacted the experience of both pedestrians and cyclists along William Gaiter Parkway is the inadequate amount of vegetation and tree canopy (Figure 074, 078). Fortunately, the UDCDA and the Tool Library have begun the process of re-treeing the length of the William Gaiter Parkway multi-use trail by facilitating the planting of 50 trees in November of 2019. The event was a huge step forward in improving the quality of the multi-use trail, and continuing efforts like the re-tree event is recommended. It is essential that the multi-use trail experiences more growth in trees and vegetation for the following three reasons:

1. Vegetation mitigates flooding and stormwater runoff, which is of particular importance in this section of the trail (see *Green Infrastructure: Why Does it Matter?*).
2. Vegetation improves air quality, which is a critical component of this neighborhood, which is surrounded by industrial land uses (Figure 037, 038) and experiences significant public health risks compared to the rest of the City of Buffalo (see *Healthy Neighborhoods Section*).
3. The lack of tree canopy exposes pedestrians and bicyclists to the direct sun and other poor weather conditions.



Fig. 076



Lack of tree canopy and absence of protective features for pedestrians and bicyclists going south along William Gaiter Parkway. Fig. 077



Current William Gaiter Cycle Track & Sidewalk Fig. 078

Recommendation: Green Infrastructure Installments

As discussed in the report section, *Green Infrastructure: Why Does it Matter?*, the state of the environment encompassing this section of the rail trail not only detracts users, but also contributes to adverse environmental impacts like stormwater runoff. This section is within Combined Sewer Overflow (CSO) Basin 53 and has been identified by the Buffalo Sewer Authority as a commercial cluster ideal for green infrastructure installments (BSA, 2019). While inadequate stormwater runoff interventions along William Gaiter Parkway may not directly impact the rail trail (rather, it degrades water quality at points of CSOs), the need for stormwater management along William Gaiter Parkway opens up the opportunity to pursue green infrastructure funding for projects that can improve the natural landscape of the rail trail while also diverting stormwater (see report section titled Green Infrastructure). Furthermore, William Gaiter Parkway is a primary entry point to the Northeast Greenway Initiative trail, and therefore, there are incentives to upgrade the aesthetics and function of William Gaiter Parkway through methods like green infrastructure installments.

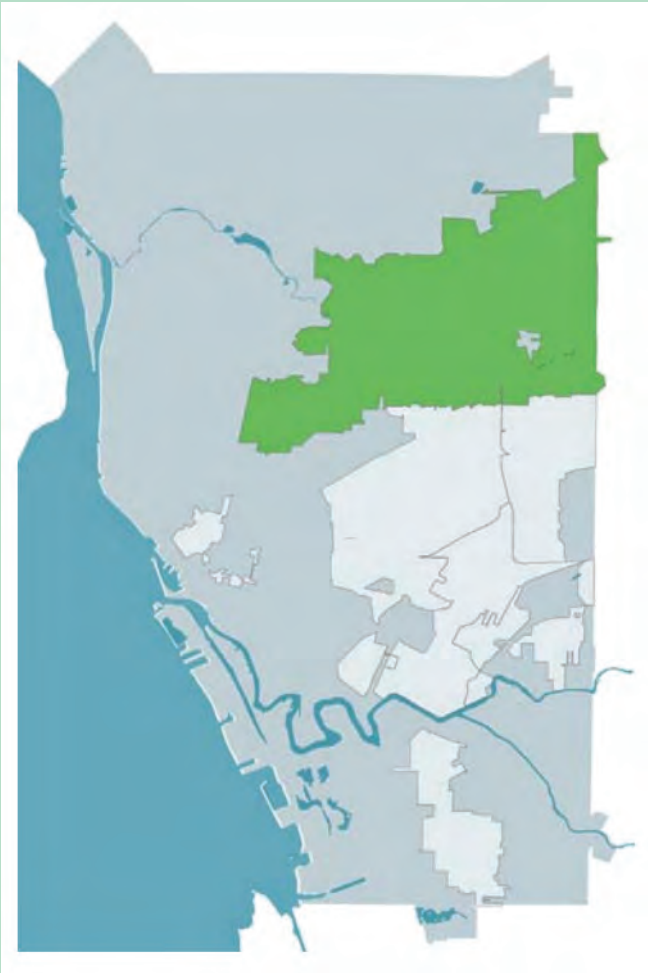
The green infrastructure projects conducted throughout the City of Buffalo should be used as a guideline for the transformation of William Gaiter Parkway and the green infrastructure objectives in this location: diverting stormwater, improving air quality, and reducing exposure to adverse weather. To achieve these objectives while making the trail more visually appealing, the green infrastructure installments should consider these components:



*Tree planting along William Gaiter Parkway.
Fig. 079*

1. To combat the City's copious stormwater runoff, a rain garden is recommended in the space between the multi-use trail and the road in the proposed trail design. (Figure 075) Stormwater runoff is diverted into the rain gardens via curb inlets, where it is absorbed into the soil, drawn up by vegetation, and transpired back into the air.
2. Adverse public health consequences (both physical and mental) associated with the built environment and air quality can be mitigated through the installation of vegetation. The rain gardens should include native plant, shrub, and tree species that will be able to survive Western New York climate, add natural beauty to the trail, improve local air quality and city-wide water quality, and attract desirable wildlife, like butterflies and pollinator species (see *Plant Recommendations* section).
3. Also contributing to many of the same benefits as the rain gardens are the recommendation of tall, leafy trees along the western side of the multi-use trail (Figure 075). These trees will provide shade during the hot summer, shelter trail users from snow and rainfall, and curtail high wind speeds. In combination, these services will make the trail more easily traversable by pedestrians and cyclists throughout all four seasons.

GREEN INFRASTRUCTURE: WHY DOES IT MATTER?



CSO Basin 53.
Fig. 080 | (Buffalo Sewer Authority. 2019). Rain Check 2.0.

The intersection of William Gaiter Parkway, Kensington Avenue, and Clyde Avenue are within Combined Sewer Overflow (CSO) Basin 53, a 3969-acre priority area delineated by the Buffalo Sewer Authority (BSA) for its contribution to combined sewer overflows (CSO) (Figure 080). Buffalo endures a number of CSOs each year, a process in which stormwater enters the combined sewer system, exceeds the capacity of the system, and forces both stormwater and raw sewage to be released into local waterways, threatening the health of ecosystems, residents, and visitors (BSA, 2019). CSO Basin 53 discharges into the Scajaquada Creek, whose watershed has been identified as the 11th most unhealthy in the State of New York (NYNHP, 2018).

To reduce the amount of stormwater entering the sewer system and prevent sewer overflows, the BSA proposes the strategic installation of green infrastructure systems throughout the priority basins. Green infrastructure is a plant-based solution that diverts stormwater from the combined sewer system by capturing, retaining, and releasing it slowly over an extended period of time. Green infrastructure can be developed through a number of models, including rain gardens and bio-retention basins, bio-swales, tree pits, planters, green roofs and walls, and general green space (BSA, 2019).

CSO Basin 53 has large corridors that open up the opportunity to develop a system of connected green spaces (BSA, 2019). The Northeast Greenway Rail Trail is located between two existing corridors, the North Buffalo Rails to Trails, which is already surrounded by a substantial amount of vegetation, and the William Gaiter Multi-use Trail, which is bordered by grass

but lacks tree canopy. The intersection of William Gaiter Parkway, Kensington Avenue, and Clyde Avenue has also been identified by the BSA as a “commercial cluster” where green infrastructure can be used to mitigate the adverse visual impact of parking lots, enhance the pedestrian experience, reinforce community character, and promote revitalization (BSA, 2019).

Moreover, CSO Basin 53 has been identified as an area with a high need for green infrastructure investment by the green infrastructure equity index, which analyzes both socioeconomic factors - race and ethnicity, income, educational attainment, child and elderly population, owner occupancy, primary language, and unemployment - and built environment factors - traffic, ozone, particulate matter, access to green space, tree canopy, impervious surfaces, and vacancy. The study indicated that, compared to the rest of the city, CSO Basin 53 has a large minority population, high unemployment, low owner-occupancy, high poverty, and high vacancy. Green infrastructure projects can work against these inequalities by promoting the development of a green workforce, initiating contracting and procurement for green infrastructure projects, sparking neighborhood revitalization, and leveraging green infrastructure projects as a platform for strengthening public engagement in decision-making processes (BSA, 2019).

FINAL ROUTE RECOMMENDATIONS | TRAIL OPTIONS

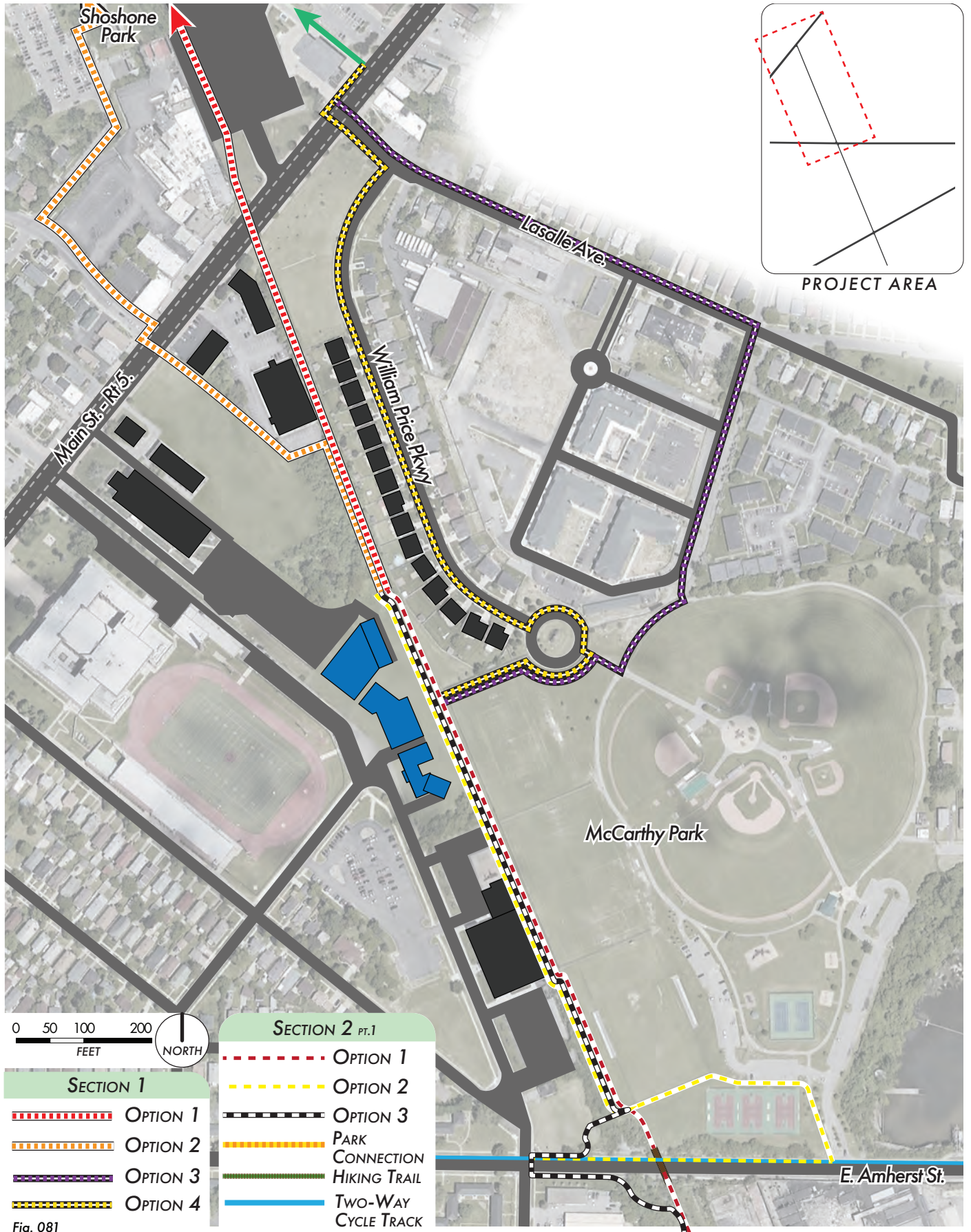


Fig. 081

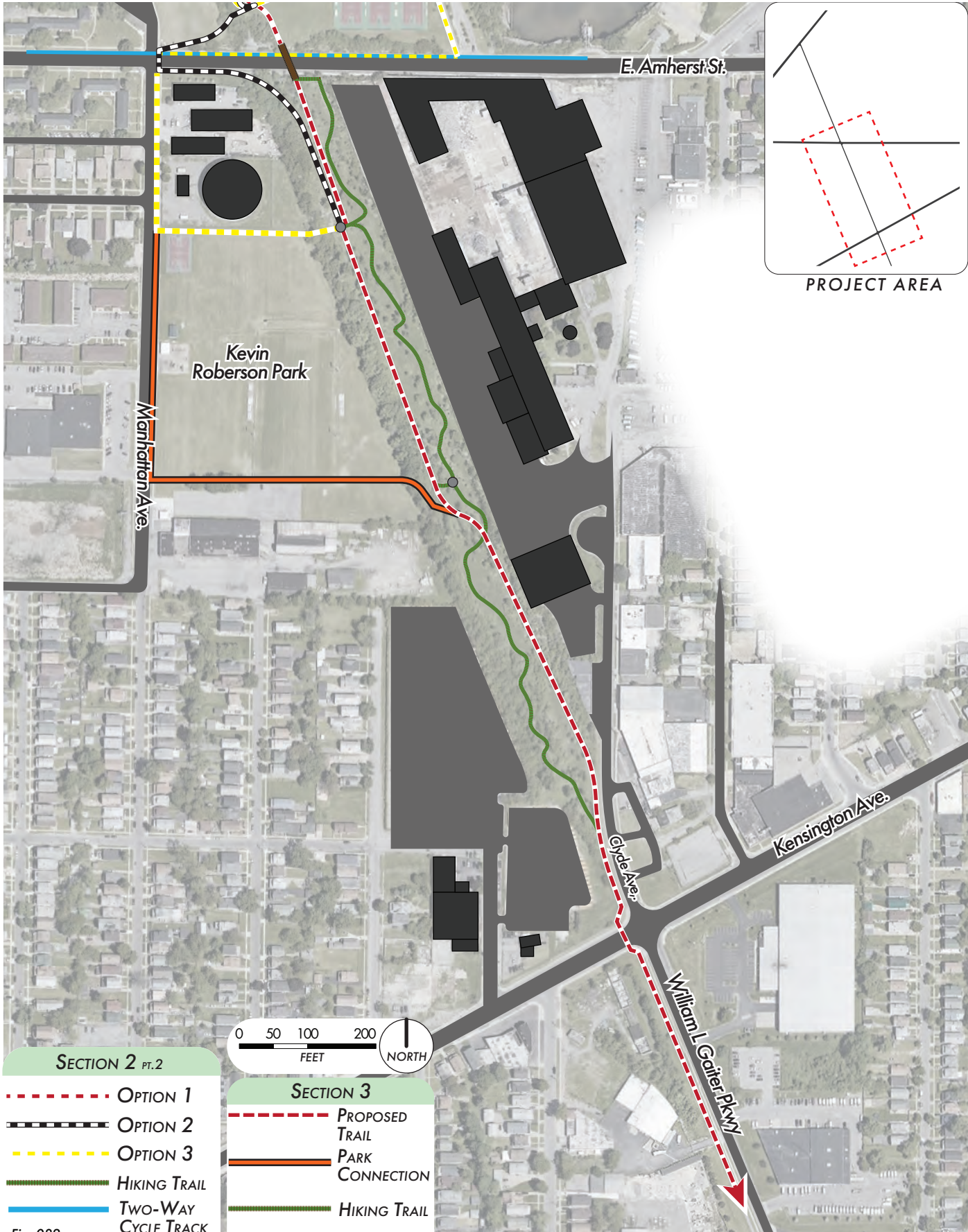


Fig. 082

TRAIL AS A DESTINATION

Urban multi-use trails are often thought of as a means of connecting local destinations through active transportation. However, multi-use trails in urban settings also have the potential to be destinations themselves. The layering of unique features throughout the rail trail has the potential to make the Northeast Greenway Initiative a premiere recreational destination, attracting users from across the region. This report identifies several added value features that will create a sense of place along the Northeast Greenway Initiative and distinguish the trail as a regional destination. These distinctive features also present opportunities for unique funding sources that can help to make the Northeast Greenway Initiative a reality.



Green Infrastructure

The use of green infrastructure will create beautiful green spaces, provide a host of ecosystem services, and provide additional funding sources for the project.



Ecology

The construction of an ecology walk will beautify the trail, celebrate native biodiversity, and establish a regional destination for the study of monarch butterflies and other species. The use of native plants and trees will be encouraged to fully realize the potential ecological value of the Northeast Greenway Initiative.



Public Art

The use of public art throughout the Northeast Greenway Initiative presents the opportunity to bring the East Side into the larger Buffalo artscape, engage the community in multi-medium art installations, and establish creative nodes along the trail.



Recreation

Placed-based recreational opportunities throughout the rail trail will provide an opportunity for residents to get active through the establishment of an urban hiking trail and outdoor exercise equipment.



Wayfinding & Signage

Branded wayfinding and signage for the Northeast Greenway Initiative will create a distinctive sense of place and direct trail users to amenities along the trail and within the community.



Overall Funding Strategy

National, state, and local funders should be engaged for the completion of the Northeast Greenway Initiative. Grassroots fundraising is recommended to build buy-in from the community and strengthen the project.

Distinctive rail trail segments and nodes have the potential to create mini-destinations that encourage individuals to visit the trail. These distinctive features can also create a sense of place that is helpful for wayfinding. For instance, friends can meet for a bike ride at a particular sculpture or take a daily walk to the pollinator gardens.

Examples of Green Infrastructure Around Buffalo

A number of green infrastructure projects have already been completed by the Buffalo Sewer Authority that serve as local examples. Basing the Northeast Greenway Rail Trail's green infrastructure off of pre-existing projects will maximize the trail's continuity with the rest of the city. (BSA, 2018)

Windsor Avenue

The North section of Windsor Avenue, from Forest Avenue to Bird Avenue, was retrofitted with curb inlets and rain gardens. Road verges without trees were planted with vegetation such as native perennials. The design of the rain gardens on Windsor Avenue is between those of the rain gardens on Northland Avenue and Elmwood Avenue. They do not contain grates over the curb inlets or fencing around the gardens, but most of the gardens do contain decorative vegetation, as opposed to just grass and existing trees (Figure 083).



Curb inlets and rain gardens on Windsor Avenue.
Fig. 083



Curb inlets and trees on Northland Avenue.
Fig. 084

Northland Avenue

The section of Northland Avenue between Fillmore Avenue and Grider Street was retrofitted with curb inlets, trees, and stormwater planters. Beforehand, it was a space similar to William Gaiter Parkway, where the road is surrounded by grass, little tree canopy, and industrial buildings. Now, the green infrastructure installments contribute to a larger Northland Corridor project, which aims to manage stormwater, increase walkability, develop a more attractive urban landscape, and stimulate economic activity (Figure 084).

Elmwood Avenue

The northern section of Elmwood Avenue, from Forest Avenue to Bird Avenue, was retrofitted to include porous sidewalk, curb inlets, and rain gardens. Elmwood Avenue is a mixed-use road that is highly trafficked by cars, bicyclists, and pedestrians. To avoid impacting or obstructing pre-existing trees, the rain gardens were separated into individual spaces, rather than being continuous along the road verge. The rain gardens include a small metal fence, a grate covering the curb inlet, and decorative vegetation. The more elaborate design of these rain gardens accentuates the aesthetic benefits that green infrastructure can have on a space and the safety benefits they can provide to pedestrians and bicyclist (Figure 085).



Curb inlets, rain gardens, and porous sidewalks on Elmwood Avenue.
Fig. 085



IMPLEMENTING GREEN INFRASTRUCTURE

The use of green infrastructure along the rail trail will attract users to beautiful natural spaces and provide a host of environmental benefits. Green infrastructure is most commonly associated with its use for stormwater management, however, the benefits are expansive. Green infrastructure's other major contributions to urban environments include urban heat island mitigation, improved air quality, and reduction in physical and mental illnesses. These added environmental benefits make the case for expanding green infrastructure initiatives across the entire rail trail.

Due to the urban heat island effect, urban areas exhibit warmer temperatures than surrounding suburban and rural areas. Even in a cold-climate city like Buffalo, heat-related stress can have serious health consequences for urban residents. The mortality rate in Erie County is about 14% higher on 90 degree days than 70 degree days (Madrigano et al., 2015).

Green infrastructure reduces heat-related stress in two ways: providing shade and reducing air temperatures (Gunawardena, Wells, & Kershaw., 2017). Another contributor to poor health in urban environments is low air quality, largely due to building and vehicle pollution. Vegetation along transportation corridors improves air quality by absorbing air pollutants (Pugh, et al., 2012). More shade and cooler temperatures in the summer and better air quality year-round will result in healthier outcomes for community members.



Example of a typical permeable paver system used for higher run off infiltration. Fig. 086 | (Reading Rock, n.d.)



Example of a rain garden using native species to absorb and prevent runoff. Fig. 087 | (Perry, 2018)

In addition to reducing temperatures and air pollution, green infrastructure is associated with higher levels of physical activity, lower rates of cardiovascular disease, and decreased mortality by respiratory disease (Richardson et al., 2013; Villeneuve et al., 2012). Increased access to green infrastructure is also related to lower rates of mental illnesses, like depression and anxiety (Cohen-Cline et al., 2015; Richardson et al., 2013).

The section of the rail trail between East Amherst Street and Kensington Avenue has seen a significant amount of regrowth since the removal of the rail right-of-way, including vegetation and tree canopy. However, most of the rail trail has very little vegetation besides grass. Additionally, the rail trail south of the Kensington Avenue intersection is located within a Priority Combined Sewer Overflow (CSO) Basin, which provides an incentive to develop green infrastructure for stormwater management purposes (see Section 3 of the report). This presents the opportunity to leverage green infrastructure not only for its environmental benefits but also for its added value to the trail experience for users.

By providing space for recreation, exercise, relaxation, and immersion in nature, green infrastructure offers greater opportunity for community members to exercise and improve their physical and mental health. It is recommended that green infrastructure installments be included along the entire trail as a means of attracting more users and providing greater health and environmental benefits to the community.



Example of a typical street scale, side walk adjacent Bioswale. Fig. 088 | (Tip of the Mitt Watershed Council, n.d.)

Green infrastructure funding is typically targeted towards projects that aim to reduce stormwater runoff. Vegetation and pervious surfaces are installed to capture rainwater that would otherwise spill off of impervious surfaces, enter stormwater drains, exceeding the capacity of a wastewater treatment plant, and cause sewage overflows into local waterways. Green infrastructure can also service communities by improving air quality, providing protection from adverse weather, providing space for exercise, and enhancing neighborhood aesthetics. By applying for green infrastructure funding, the Northeast Greenway Initiative will not only be able to positively impact the region’s water quality, but also make the rail trail more beautiful, safe, and healthy.

Local

- Buffalo Sewer Authority Rain Check
- Cameron and Jane Baird Foundation
- Western New York Foundation
- East Hill Foundation
- NYPA Buffalo & Erie County Greenway Fund

State & Regional

- DEC Water Quality Improvement Project (WQIP) Program
- DEC Environmental Justice Community Impact Grant Program
- DEC Urban & Community Forestry Program Cost Share Grants
- EFC Green Innovation Grant Program
- Great Lakes Commission Green Infrastructure Champions Program

National

- EPA Urban Waters Small Grants
- EPA Great Lakes Shoreline Cities Green Infrastructure Grants
- US Great Lakes Restoration Initiative
- NFWF Resilient Communities Program
- NFWF Five Star and Urban Waters Restoration Grant Program
- Homes and Community Renewal Community Development Block Grant



Example of a brick laid dry swale with native grasses and path lighting. Fig. 089a | (Wikimedia, n.d.)



Example of a sloped swale and rain garden using large stone buffers as check dams to reduce runoff velocity and allow for infiltration. Fig. 089b | (SMC, 2015)



UTILITY PARTNERSHIPS

The Rails-to-Trails Conservancy cites several instances where rail trail corridors across the country have been able to negotiate property easements or licenses with utility companies that generate a lump sum or annual fee that provides a sustainable funding source for trail maintenance and stewardship. Successful partnerships with utility companies include the Heritage Rail Trail County Park in York County, PA that received a \$500,000 upfront payment as well as roughly \$2,000 annual fees for a telecommunications easement and the Washington & Old Dominion Trail near Washington, D.C. that receives \$450,000 annually (or \$7,000 per trail mile) for a fiber optics easement (Rails-to-Trails Conservancy, 2019).

This proposal recommends the consideration of underground utilities, including water, sewer, geothermal, electric, and fiber optics utilities, as a viable option for the Northeast Greenway Initiative because these utilities are likely to have less opposition from neighbors since they are concealed beneath the trail. Concerns include the potential for trail closures and disruptions due to line maintenance as well as potential safety concerns for any above ground utility equipment, mitigation of which should be considered in any legal agreement pursued.

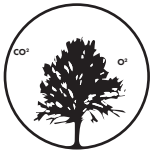
The Erie County Broadband Feasibility Study completed in 2017 states that, “Spectrum has an agreement with New York State to provide access to 145,000 new units and 100Mbps service to two million new homes and businesses in Upstate New York, which should benefit the residents of Erie County.” Just this year, County Executive Mark Poloncarz plans to invest \$20 million to lay approximately 360 miles of fiber optics throughout the county, including an emphasis on the East Side of Buffalo (Dewey, & Tan, 2019). The current push from private and public entities in the region to bring more equitable access to fiber optics and high speed internet to Buffalo, particularly the East Side, presents an opportunity for the Northeast Greenway Initiative to be an early partner in the implementation process.





ECOLOGY

The Northeast Greenway Initiative presents an opportunity to improve local ecological resources in the project area and involve community members in the exploration of natural assets. The project area has the ability to accommodate a variety of new plantings and vegetation that reinforce and celebrate the ecological biodiversity of the region while also creating educational and recreational opportunities for local residents. The creation of an ecology walk will enable residents to discover a hidden wilderness in the center of the urban landscape. In addition to the preservation of existing habitats, the walk has the potential to incorporate ecological enhancements, including monarch butterfly waystations, pollinator habitats, tree canopy, and sensory-stimulating gardens. Such opportunities can engage surrounding schools, residential neighbors, private and public institutions, and the general trail users who will find themselves in an outdoor classroom.



- **Carbon Sequestration & Storage**

Ecosystems help to regulate the global climate by sequestering carbon and breaking down greenhouse gases. As trees and plants grow, carbon dioxide is removed from the atmosphere and effectively being locked away in plant tissue. In this way forest ecosystems are carbon stores. Biodiversity plays an important role by improving the capacity of ecosystems to adapt to the effects of climate change.



- **Local Climate Regulation & Air Quality**

Trees provide shade whilst forests influence rainfall and water availability both locally and regionally. All vegetation plays an important role in regulating local air quality through removing particulate pollutants from the atmosphere.



- **Erosion Prevention & Soil Fertility:**

Soil erosion is a key factor in the process of land degradation and global desertification. Vegetated cover helps to provide a vital service to the environment by preventing soil erosion through a network of plant roots that binds material. Healthy soil fertility is essential for plant growth and agricultural purposes while providing nutrients required to support plant growth and remediating toxins soils.



- **Biological Control**

Ecosystems are vital to for regulating pests and vector borne diseases that attack plants, animals, and people. They help to regulate pests and diseases through the activities of predators and parasites while controlling invasive populations. Birds, bats, flies, wasps, frogs and fungi all act as natural controls.



- **Recreational, Mental & Physical Health**

Walking and playing sports in green space is not only a good form of physical exercise but also lets people relax. The role that green space plays in maintaining mental and physical health is increasingly being recognized, despite difficulties of measurement. It has been recognized throughout the United States that access to ample amounts of greenspace provides a sense of social cohesion due to activity options.



- **Spiritual Experience & Sense of Place**

In many parts of the world natural features such as forests, water, caves, or mountains, are considered sacred or have a religious meaning. Nature tends to be a common element across major religions and traditional spiritual movements as some associated customs are important for creating a sense of belonging within a community.



- **Tourism**

Ecosystems and biodiversity play an important role for many types of tourism which in turn provides considerable economic benefits to localities as a vital source of income. Cultural and eco-tourism helps to educate people about the importance of biological diversity and the natural features, both present and from the past.



- **Maintenance of Genetic Diversity**

Genetic diversity is the variety of genetic composition between and within species populations. Some habitats have an exceptionally high number of species, making them more genetically diverse than others and are known as 'biodiversity hotspots'.



Fig. 090



Fig. 091



Fig. 092

Monarch Butterfly Waystations & Pollinator Habitat

Western New York and the City of Buffalo are stopover sites or migration waystations for monarch butterflies as they make their way from southern Canada to Mexico in the summer months. (Figure 093) Unfortunately, over the past 50 years, monarch butterflies have seen population decline as a result of illegal deforestation, climate change, and habitat degradation from the use of chemical pesticides and herbicides (Cunningham, 2016). There has been a national push to support monarch butterfly populations through research and habitat conservation. In Western New York and the location of the Northeast Greenway Initiative, The University at Buffalo (UB) is involved in Monarch Watch, a national effort to catch and tag monarch butterflies (Gee, 2019).

The Northeast Greenway Initiative gives an opportunity to build on these efforts by reestablishing monarch butterfly habitat through the construction of native pollinator gardens and monarch migration waystations. Such gardens have the potential to serve as outdoor classrooms for students of all ages, from primary school through university, to study the unique biodiversity of our region. (Figure 096) Additionally, there are opportunities for the Northeast Greenway Initiative to partner with local organizations such as the Eastern Monarch Butterfly Farm located in Clarence, NY, to establish educational signage and programming in conjunction with the pollinator gardens. Ultimately, the Northeast Greenway Initiative has the potential to become a summer destination for the celebration of monarch butterflies and local biodiversity.

In addition to insects, wind also pollinates plants and trees, which is essential for the development of fruits, vegetables, and seeds. Animal pollination is an ecosystem service mainly provided by insects but also by some birds and bats.



Fig. 093 | (Smith, 2019)



Fig. 094 | (Fedorchuk, 2019)



Fig. 095 | (Torke, 2019a)



Fig. 096 | (Torke, 2019b)



PUBLIC ART

The Northeast Greenway Initiative can leverage public art to further bring the East Side into the larger Buffalo artscape. Currently, a majority of public art investments in the City of Buffalo are concentrated in affluent neighborhoods. In recent years, there has been a push to bring more public art to the East Side, primarily through murals along Bailey Avenue. Further investment in the public art ecosystem of the East Side, with an emphasis on local artists, will support a rich and diverse artistic history that is often overlooked by the Buffalo arts establishment.

The former industrial infrastructure along the Northeast Greenway Rail Trail is an ideal space for the installation of public art that captures the unique historic and contemporary contexts of the surrounding area. Additionally, the expansive area that comprises the former rail right-of-way poses opportunities for the installation of multi-medium public art, such as outdoor sculptures, mural art, and “found” art pieces (i.e. painted rocks placed by young artists). The establishment of an art walk through artistic nodes along the Northeast Greenway Initiative trail will create a unique experiential attraction and a strong sense of place for trail users.

Artistic Expression

Public art has the potential to reflect and reveal the identity of the community in which it is located. For this reason, it is imperative that local artists are engaged in the creation of public art that speaks to the community.

Ecological Sculptures

Through the intentional placement of multi-medium and dual purpose pieces, like this sculpture in Silo City that doubles as a bee habitat, we can establish an art walk along the trail that creates a distinct sense of place. (Figure 098)

Community Murals

We recommend engaging the community in the creation of public art for this portion of the trail, similarly to the North Buffalo Rails to Trails Community Crossroads event where people of all ages helped paint the mural pictured here. (Figure 099)



Fig. 097

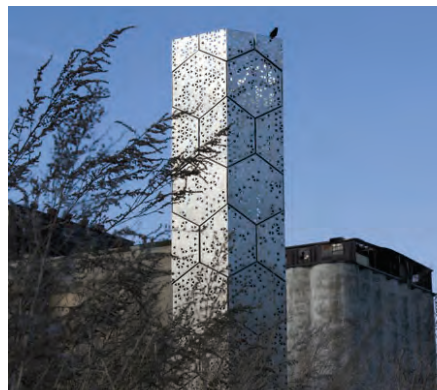


Fig. 098 | (Frearson, 2013)



Fig. 099 | (Cotton, 2017)

Public art funding can be allocated to a public art project or an art program that is generally geared toward a specific population, for instance youth. There is precedence of public art on similar trail projects, including a mural along the North Buffalo Rail Trail which connects to the Northeast Greenway trail. Public art serves multiple purposes: It beautifies a trail, engages community, tells a unique story, and draws recreational users to the trail. In the case of the Northeast Greenway Trail, there are key opportunities to create art that is centered on the local community’s history and culture. We envision the Northeast Greenway Trail as not only being a biking and walking trail, but also an art trail. In addition to traditional public art murals, there is an opportunity to engage local artists and groups to create multiple art forms at various locations along the trail.

Local

- Arts Services Initiative of Western New York
- Buffalo Arts Commission
- Erie County Office of Arts, Culture and Tourism (ACT)
- Public Benefit funding
- Erie County Cultural Resource Advisory Board (EECRAB)
- The Seymour H. Knox Foundation
- Grigg Lewis Foundation Inc
- M&T Charitable Foundation
- The John R. Oishei Foundation
- Margaret L. Wendt Foundation
- The Cameron and Jane Baird Foundation
- Western New York Foundation

State & Regional

- New York State Council on the Arts (NYSCA)
- NYSCA Community Arts DEC Grant
- NYSCA Arts Education DEC Grant
- NY Foundation for the Arts (NYFA)
- Surdna Foundation
- The Kresge Foundation
- Wallace Foundation

National

- Americans for the Arts
- The National Endowment for the Arts
- The Awesome Foundation



The City of Buffalo, specifically within the West and East Sides, is dealing with adverse health outcomes. As discussed in the Healthy Neighborhoods section of the report, there are elevated rates of physical inactivity and obesity for the city within the project area (CDC, 2015). Interestingly, the northern edge of the project area, where the existing North Buffalo Rails to Trails is, has notably better health outcomes. The development of the Northeast Greenway Initiative, which will exist on the southern edge of the study area, has the potential to provide residents opportunities to be more active and, therefore, healthier.

Most trails are traditionally considered active transportation connectors, serving as routes for recreational users to get from one destination to another. The Northeast Greenway Initiative will indeed serve this purpose of active transportation, but also has the potential to offer place-based recreational opportunities that are rooted within the community. Fitness amenities will build on existing assets like McCarthy Park and Kevin Roberson Park while providing residents a variety of ways to get active. Additionally, place-based recreation will increase access for people with disabilities as well as people of all ages.

Hiking

The wide rail right-of-way between East Amherst Street and Kensington Avenue offers a unique opportunity for the creation of a hiking trail. The hiking trail will be a wilderness experience in an urban setting, allowing families and individuals to experience nature in their backyards.

Exercise

Through the use of outdoor stationary exercise equipment, similar to that pictured in Youngstown, Ohio, residents can be active in place along the Northeast Greenway Rail Trail (Figure 103). Imagine trail users of all ages enjoying free, outdoor exercise equipment and inspiring each other to get healthy.

Play

Building on the existing McCarthy Park and Kevin Roberson Park amenities, residents can play on updated athletic fields and creative playground equipment designed for all ages and abilities.



Fig. 100 | (Red Lake Falls Parks and Recreation, 2017)



Fig. 101 | (YNDC, 2018)



Fig. 102 | (Kaboom, 2019)

Multi-use trails promote walking and biking, both of which are forms of active transportation that have a multitude of public health benefits, including lower risk of depression, obesity, heart disease, adult-onset diabetes, high blood pressure, and osteoporosis (Walk + Roll Peel, 2019). In addition, active transportation, the creation of trails improve air quality and reduce greenhouse gas emissions, reduce noise pollution and congestion, and create valuable green space for residents. The Northeast Greenway Initiative is located within a “community of concern” identified by the Erie County Department of Health as a result of severe rates of chronic diseases. A multi-use trail is a major investment in public health and preventative health measures for this community. For this reason, public health funding is priority for Northeast Greenway Initiative. With strategic marketing and outreach, targeted programming, and an emphasis on accessibility, the Northeast Greenway Trail can serve as a catalyst for healthy living, promotion of walking and biking, and active recreation for all ages.

Local

- Catholic Health Community Benefit Grant
- BlueCross BlueShield: Blue Fund
- Wegmans
- Ralph C. Wilson Jr. Foundation
- Independent Health
- John R. Oishei Foundation
- Seymour H. Knox Foundation
- M&T Charitable Foundation
- WNY Foundation

State & Regional

- NYS Health Foundation
- Requires municipal partner
- Kresge Foundation
- Open Society
- Robert Wood Johnson

National

- USDOT: Safe Routes to School
- USDOT: Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Fixing America's Surface Transportation (FAST))
- USDOT: Transportation Enhancement Program (TEP)
- Federal Highway Administration: Recreational Trails Program (RTP)
- Congestion Mitigation and Air Quality Program (CMAQ)
- HUD: Community Development Block Grant Program (CDBG)
- Urban and Community Forestry (UCF)
- Environmental Justice Grant Programs: Community Impact Grants Administered by NYS DEC





SIGNAGE, WAYFINDING, & SIGNALING

Branded signage and wayfinding can help define the Northeast Greenway Initiative as a regional destination. The establishment of an extensive signage and wayfinding system can guide trail users through the trail and connect them to local amenities. Examples of these amenities include, but are not limited to, trailheads, restrooms, and bike repair stations. Signage also offers the opportunity to acknowledge the unique historic context of the rail trail and Buffalo's industrial legacy. Layering recognizable features throughout the trail, such as pollinator gardens and art sculptures, can aid users in wayfinding as well. This concept connects to Kevin Lynch's *Image of the City*, where Lynch suggests that providing "landmarks" can help people create a personal mental map of a particular area (1960). The following signage and wayfinding examples are just some of the options the Northeast Greenway Initiative can make use of in creating an extensive signage and wayfinding system. All of the examples below will complement the improved bicycle and pedestrian infrastructure, and guide users along their most preferred route.



Fig. 103



Fig. 104

Off Road:

Gateway Marker: Placed in a prominent and central locations within view of the rail trail's entrances/trailheads, gateway markers announce the presence of the rail trail.

Double/Single Panel Kiosk: Placed at the rail trail's gateways, kiosks serve as system-wide educational tools, trip planning devices, regulatory information centers, and interpretive signs.

Trail Directional Sign: Placed within communities to direct rail trail users to the trail system, trail directional signage serves navigational purposes while also notifying unknowing residents that the trail exists.

Trail/Pavement Blaze: Placed on objects throughout the trail, such as trees or lamps, trail/pavement blazes are high-visibility markers that make users aware of the route. They should be located after turns and at intersections as confirmation to the user that they are still on the correct route.

On Road:

Confirming/Reassurance Assembly: Placed at a location beyond an intersection, confirming/reassurance assemblies are secondary directional signage to confirm that a user has made the correct route choice.

Destination Sign: Directs trail users to nearby attractions and amenities, with a maximum of three destinations displayed on each sign.

High Visibility Painted Bike Crosswalks: Features used in conflict areas to increase the visibility of crosswalks and give priority to bicyclists. Typical applications include locations near bike lanes or cycle tracks and across turning conflict areas where the bicycle path may be unclear.

Bicycle Signal Heads: An electrically-powered traffic control device used in combination with an existing conventional traffic signal or hybrid beacon. Bicycle signal heads are used to increase safety within bicycle facilities and guide cyclists through challenging intersections where their crossing needs differ from those of pedestrians or vehicles.

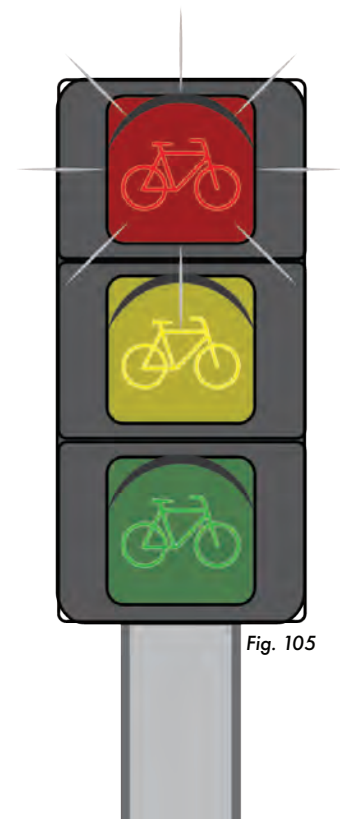


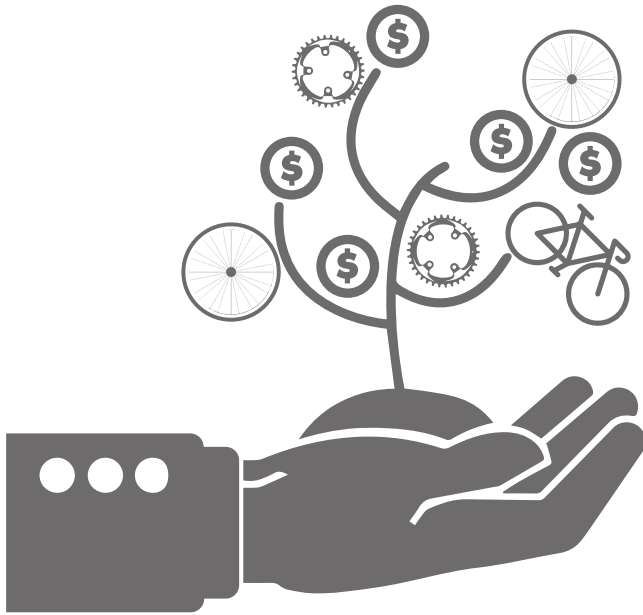
Fig. 105



OVERALL FUNDING STRATEGY

Applying for and receiving sufficient funding will be a critical component in the development and maintenance of the Northeast Greenway Rail Trail. Here, we outline how to approach funding, identify local and grassroots sources of funding, and offer suggestions for alternative funding sources that will add auxiliary value to the rail trail. Although this section does not contain an exhaustive collection of funding sources, it can serve as a starting point and provide direction during the pursuit for funding.

While all of the funders listed in this section have explicitly funded programming in the past, a deeper investigation into their mission and scope is required in order to decide which sources best align with the Northeast Greenway Initiative's project, timeline, and objectives.



1. Research the funder.
 - a. Look for funding priorities and grant cycles/due dates on the funder website.
 - b. Review past 990 forms on GuideStar.
2. Contact the program officer and request an informational phone call or meeting.
3. Send a project overview document in advance of the meeting.
4. Review the project and explicitly ask if the project aligns with the funder's priorities. Whether the answer is yes or no, be clear about finding out why. This will either help to guide the application process or offer the opportunity to shift the project scope to better align with the funder's priorities. The latter is rarely suggested, though, as developing the project to meet a funder's priorities instead of the local community's priorities can risk the project's credibility.

Local Non-specific Funders

The Buffalo Niagara region has a number of local funders that contribute to a variety of community projects. Some of these local, non-specific funding sources include:

- Ralph C. Wilson, Jr. Foundation
- Launch NY
- Buffalo Sewer Authority
- The East Hill Foundation
- Community Foundation for Greater Buffalo
- Cullen Foundation
- The Margaret L Wendt Foundation
- The Cameron and Jane Baird Foundation
- Row Boat Foundation
- Independent Health Foundation
- New York Power Authority
- The KeyBank Foundation
- The M&T Charitable Foundation
- The First Niagara Foundation
- The John R. Oishei Foundation
- The Peter and Elizabeth C Tower Foundation
- The Health Foundation for Western and Central New York
- The Seymour H Knox Foundation
- The Western New York Foundation
- University at Buffalo Foundation
- Roswell Park Alliance Foundation
- Kaleida Health Foundation
- Rich Family Foundation

Grassroots Fundraising

In addition to seeking institutional and public funding sources, it is suggested that the project leaders also consider seeking grassroots funding as well. This could be done through an online crowdfunding page, a fundraising event, or direct asks to local donors that have a stake in seeing the project succeed. While grassroots funds are unlikely to fund the entirety of the project, community investment has the benefit of building local project stakeholders that want to see the project succeed. Examples of resources that can help with these efforts are:

- Benevon Development Model
- Grassroots Institute for Fundraising Training
- CharityHowTo



PLANTING RECOMMENDATIONS

The development of the Northeast Greenway Initiative from the North Buffalo Rails to Trails to William Gaiter Parkway provides opportunities for a designed landscape and streetscape. Landscaping which increases tree canopy cover can help to decrease stormwater runoff, reduce soil erosion, increase biodiversity of insects and wildlife, sequester carbon from the atmosphere and improve outdoor air quality. According to Buffalo Niagara Waterkeeper, native plant species are well adapted to the Western New York climate and the environment, and offer more sustainable contributions than introduced plant species (2019). Native plants support clean water, aid in wildlife diversification, and promote healthy ecosystems (Buffalo Niagara Waterkeeper, 2019).

According to the New York State Stormwater Management Design Manual, areas that remain in their natural state “retain their natural hydrology and do not contribute to construction erosion” (Center for Watershed Protection, 2010). Site visits to the Northeast Greenway Initiative project area revealed a surprisingly vibrant array of plants along the rail right-of-way, with plant types ranging from sedges to softwood deciduous and evergreen trees.

The development of the rail trail will include the installation of paved trails and land grading in various locations. The healthy native plants that are thriving along the trail should be left in place whenever feasible as to keep disturbance to a minimum. Additionally, the installation of ramps, stairs, or bridges should prioritize erosion prevention both for the overall integrity of the trail construction and the livelihood of native plant species.

Plant recommendations are based on the conditions of the rail trail and the necessary requirements for various native plant species to survive. Below are suggested plant recommendations, sourced from a comprehensive guide provided by the Buffalo Niagara Waterkeeper titled, “Western New York Guide to Native Plants for your Garden” (2019). All of the plants below were selected based on their ability to thrive in various types of moist soil and in full sun to partial shade. In areas void of vegetation, the immediate planting of trees will increase tree canopy and provide partial shade for future plantings. As this area is a monarch butterfly migration corridor, the butterfly icon indicates which plants are known to attract butterflies.

Understory Plant Recommendations:

	NAME	SOIL	SUN	WILDLIFE & NOTES
Perennial Flowers	Butterfly Milkweed <i>Asclepias tuberosa</i>	Dry to Moist	☀️ ☀️	Butterflies and hummingbirds. Massing for visual impact.
	Purple Coneflower <i>Echinacea purpurea</i>	Dry	☀️ ☀️	Butterflies and Pollinating bees. Plant with <i>Rudbeckia</i> , in groups.
	Spotted Joe-Pye Weed <i>Eutrochium maculatum</i>	Moist to Wet	☀️ ☀️	Butterflies and pollinating bees. Plant in groups. Used effectively in a raingarden.
	Boneset <i>Eupatorium perfoliatum</i>	Moist to Wet	☀️ ☀️	Birds and butterflies. Used effectively in a raingarden.
	Queen of the Prairie <i>Filipendula rubra</i>	Moist Preferred Drought Tolerant	☀️ ☀️	Butterflies. Plant in Mass. Raingarden border planting.
	Blue Flag Iris <i>Iris versicolor</i>	Moist to Wet Flood Tolerant	☀️ ☀️	Birds and hummingbirds. Used effectively in a raingarden.
	Great Blue Lobelia <i>Lobelia siphilitica</i>	Moist to Wet	☀️ ☀️	Birds and butterflies. Border plant in consistently moist raingardens.
	Wild Bergamot <i>Monarda fistulosa</i>	Dry to Moist Well Drained	☀️ ☀️	Birds, hummingbirds and butterflies. Tolerant of adverse conditions.
	Foxglove Beardtongue <i>Penstemon digitalis</i>	Dry to Moist, Wet	☀️ ☀️	Bees and hummingbirds. Use in masses in high sun areas.
	Fall Phlox <i>Phlox paniculata</i>	Moist	☀️ ☀️	Hummingbirds and butterflies. Mass together to form garden borders.
Grasses & Sedges	Blackeyed Susan <i>Rudbeckia hirta</i>	Moist	☀️	Birds. Relatively easy to maintain.
	New England Aster <i>Symphotrichum novae-angliae</i>	Moist	☀️ ☀️	Butterflies. Very hardy. Use in combination with other plants.
	Broom Sedge <i>Andropogon virginicus</i>	Moist to Wet	☀️ ☀️	Birds and butterflies. Works best if planted in masses or grouped together.
	Blue Joint Grass <i>Calamagrostis canadensis</i>	Moist to Wet	☀️ ☀️	Birds. Winter grass. Highly durable and tolerant.
	Canada Wild Rye <i>Elymus canadensis</i>	Moist, well-drained, acidic tolerant.	☀️ ☀️	Birds and butterflies. Hardy and versatile, does well in dry sunny conditions.
	Virginia Wild Rye <i>Elymus virginicus</i>	Moist heavy soils, tolerates clay.	☀️ ☀️	Birds and butterflies. Excellent slope stabilizer.
	Switchgrass <i>Panicum virgatum</i>	Dry to Moist	☀️ ☀️	Birds and butterflies. Winter interest, accent plantings, difficult sites.
	Indian Grass <i>Sorghastrum nutans</i>	Dry to Moist	☀️ ☀️	Butterflies. Tolerant of poor soil conditions and infertile soil.
	Buttonbush <i>Cephalanthus occidentalis</i>	Moist to Wet	☀️ ☀️	Birds and butterflies. Ideal for a rain garden. Highly attractive to wildlife.
	Shrubs	Redosier Dogwood <i>Cornus Sericea</i>	Moist, well-drained.	☀️ ☀️
Elderberry <i>Sambucus canadensis</i>		Moist to Wet Well Drained	☀️ ☀️	Birds and butterflies. Used as hedgerow or in raingarden. Erosion Control.



Purple Cone Flower
Fig. 106 | (Buffalo Niagara Water Keeper, n.d.)



New England Aster
Fig. 107 | (Buffalo Niagara Water Keeper, n.d.)



Redosier Dogwood
Fig. 108 | (Buffalo Niagara Water Keeper, n.d.)

Table 005 | (Buffalo Niagara Water Keeper, n.d.)

Tree Recommendations:

Trees combat the urban heat island effect, reduce noise pollution, mitigate air pollution, manage stormwater runoff, and prevent soil erosion (Deeproot Silva Cell, n.d.). Trees also attract wildlife and contribute to ecological vitality (Song, Tan, Edwards, and Richards, 2018).

The trees shown in Table 005 are all suitable for urban environments and cold temperatures. During the winters in Buffalo, salt is used on roads and sidewalks to prevent slippery conditions for drivers and pedestrians. The following trees that we recommend for planting, were all chosen with the idea that the new rail trail would be cleared of snow for residents who may want to use it during the winter months. When high levels of road salt and sidewalk salts are used, choosing species that have some observed tolerance for salt may help to minimize damage to the trees (Bassuk et al., 2009).

Understory Plant Recommendations:

NAME	SOIL	MATURE HEIGHT	WILDLIFE & NOTES
American Hornbeam <i>Carpinus caroliniana</i>	Moist, well-drained.	35-50 feet	Birds and butterflies. Typically a understory tree. Slow growing.
Red Maple <i>Acer rubrum</i>	Moist, to well-drained.	30-50 feet	Birds. Tolerant of pollution and urban conditions. Can be used in a rain garden.
Hackberry <i>Celtis occidentalis</i>	Rich to moist soils.	60-100 feet	Birds. Tolerant of pollution and urban conditions. Can be used in a rain garden.
Eastern Redbud <i>Cercis canadensis</i>	Moist, well-drained. Salt tolerant.	15-30 feet	Birds and butterflies – one of the best food and shelter trees for wildlife.
Flowering Dogwood <i>Cornus florida</i>	Rich, well-drained.	12-36 feet	Birds and butterflies. Multi-stem form with spectacular native flowering.
American Larch <i>Larix laricina</i>	Rich, moist soils.	50-75 feet	Birds. Not tolerant of pollutants or urban conditions. Deciduous with evergreen appearance.
Eastern White Pine <i>Pinus strobus</i>	Moist, well-drained.	75-100 feet	Fast growing evergreen. Best used in interior forests, NOT along roadways.
Swamp White Oak <i>Quercus bicolor</i>	Poorly drained, heavy soils, clay	50-80 feet	Best used in raingardens, tolerates wet and dry conditions. Favorable urban tree.
American Basswood <i>Tilia americana</i>	Moist, well drained.	75-100 feet	Birds, and pollinating bees. Historical Buffalo waterfront tree.
Arborvitae <i>Thuja occidentalis</i>	Moist, well drained.	20-50 feet	Birds and small animals. Aromatic evergreen. Tolerant of urban pollution and dry conditions.
Snakebark Maple <i>Acer pensylvanicum</i>	Moist	15-25 feet	Birds. Part to full shade. Used effectively in and along a woodland border.
Service Berry <i>Amelanchier canadensis</i>	Moist, well drained.	15-25 feet	Highly attractive to birds. Produces Fruit. Several species to choose from with different traits.

Table 005 | (Buffalo-Niagara Water Keeper, n.d.)

Soil Considerations:

To prevent tree roots from growing into the new pathway and causing heaving, CU-Soil and Silva Cell Technology should be considered as part of any streetscape reconstruction and furthure tree planting efforts.

CU-Soil is a technology for urban tree plantings developed by Cornell University. It consists of a “rigid stone lattice that meets engineering requirements for a load-bearing paving base” and uncompacted soil that supports tree root growth. The combination of the lattice, formed by small stones and the non-compacted soil, provides spaces for the roots to be aerated and to grow. For urban areas like Buffalo that have extremely compacted soil that is not suitable for healthy tree growth, CU-Soil creates a healthy environment for trees to grow (Bassuk et al., 2015).

Another option for promoting healthy tree growth and stormwater runoff is a technology called Silva Cells. Silva Cells consist of a metal frame and deck that sit underground and maintain load-bearing capacity. The grid created by the frame posts and decks, which can be stacked, provides a non-compacted space and healthy soil for tree roots to grow in. This non-compacted space is also ideal for stormwater to run through via soil filtration (DeepRoot Green Infrastructure, 2019).



Fig. 109 Serviceberry spp.

Fig. 110 American Hornbeam



Fig. 111 Eastern Redbud

Fig. 112 Snakebark Maple



Closeup of CU-Structural Soil® after installation
Fig. 113 | Bassuk et al., 2015



Compaction of CU-Structural Soil® during installation.
Fig. 114 | Bassuk et al., 2015

CONCLUSION

The City of Buffalo and Western New York have seen the successful development of multiple rail trails, including the North Buffalo and Tonawanda Rails to Trails. However, the bicycle and pedestrian infrastructure throughout the city and region lack connectivity. Additionally, off-road trails and other bicycle routes often lack proper connections to each other, and pedestrian crosswalks are inconsistently marked and signaled.

The Northeast Greenway Initiative will link the North Buffalo Rails to Trails to the William Gaiter Parkway multi-use trail, connecting existing trails, creating greater community connections, and developing new and improved pedestrian infrastructure. The rail trail extension will also expand vital transportation infrastructure to the City of Buffalo's East Side. Rail trail development is an investment in people and place, and it is time that the East Side, which has dealt with a myriad of challenges such as inadequate public transportation, poor health outcomes, environmental injustices, and economic hardships, be the recipient of such investment. The Northeast Greenway Initiative offers the opportunity for the City of Buffalo to reinvest in a community that deserves more.

This report has built on the University District Community Development Association's (UDCDA) vision for the Northeast Greenway Initiative through developing an analysis of current neighborhood conditions within the project area, recommending rail trail routes that confront complex challenges, and developing recommendations to create a rail trail that not only serves as a way to get from one place to another, but is a place-based destination for art, recreation, and green space. But in order for the project to have the support of the people and meet real community needs and desires, a transparent design and implementation process should be established. The following recommendations offer next steps for the implementation of the Northeast Greenway Initiative.

Preliminary Cost Estimates & Fundraising Plan

While this report has incorporated some rough cost estimates for project aspects, the consultation of an engineer and expert in the development of multi-use trails is necessary to create a project budget. Although subject to change based on community input and unforeseen challenges, the project budget will inform the fundraising plan and project scope.

Community Engagement

A transparent process has the potential to create local engagement, ownership, and pride for the project, bolstering community support for the implementation and continued maintenance of the rail trail. As such, a participatory, community-engaged planning process that complements the UDCDA's current work should be prioritized. The varied recommendations included within this report can serve as a basis for community feedback. Additionally, residents should be encouraged to develop recommendations that are feasible within the project budget and scope. The presence of an engineer and multi-use trail expert for this engagement process will help align residents' goals with design and budget constraints.

Engineering, Concept Design, & Rail Trail Construction

The community-engaged process will inform the engineering and design of the rail trail. This design can potentially take aspects of this report, adapted and expanded upon by the community-engagement process, and develop a detailed plan for the Northeast Greenway Initiative. Key engineering elements will include the construction of the multi-use trail and the potential installment of a prefabricated bridge at East Amherst Street.

Community Programming

Once the Northeast Greenway Initiative rail trail is completed, it will offer a variety of recreational and educational opportunities. Community programming can include public events held on the right-of-way, community constructed art projects, partnerships with local businesses that offer benefits to employees that utilize the rail trail to commute to work, and partnerships with schools that take physical education, hiking, or sciences classes on green infrastructure or ecology walks.

LIST OF FIGURES

- Fig. 001 | Regional Bicycle infrastructure in Buffalo-Niagara area. Greater Buffalo-Niagara Regional Transportation Council (GBNRTC). (2019). GBNRTC Online Bike Map. Retrieved from <https://gbnrtc.maps.arcgis.com/apps/webappviewer/index.html?id=5568fe1b05484d4bbd723dcb84ea692c>
- Fig. 002 | 002 | City bike infrastructure in Buffalo, NY. City of Buffalo. (2019). Bike Lanes. Retrieved from Open Buffalo website: <https://data.buffalony.gov/Infrastructure/Bike-Lanes/hgv6-habj>
- Fig. 003 | Aerial Photo of Project Study Area. UB Libraries. (1928). 1928 Aerial Photographs 8226 Plate 222. Buffalo, NY. Retrieved from <https://research.lib.buffalo.edu/aerial-photographs/series-8226%0A>
- Fig. 004 | Aerial Photo of Project Study Area. Erie County. (1951). Erie County Aerial Photos 1951. Buffalo, NY. Retrieved from http://www2.erie.gov/aerial_photos/sites/www2.erie.gov/aerial_photos/files/uploads/1951/51_5H112.jpg
- Fig. 005 | Kensington Avenue Railway Station. Erie Railroad Company. (1968). Erie Railway, Kensington Avenue Station, Kensington Avenue, Buffalo, Erie County, NY. Buffalo, NY. Retrieved from the Library of Congress, <https://www.loc.gov/item/ny1194/>.
- Fig. 006 | Main Street Railway Station. Erie Railroad Company. (1968). Erie Railway, Main Street Station, Main Street, Buffalo, Erie County, NY. Buffalo, NY. Retrieved from the Library of Congress, <https://www.loc.gov/item/ny1195/>.
- Fig. 007 | International Railroad Company interurban train car. Tonawanda-Kenmore Historical Society. (n.d.). Buffalo News. Retrieved from <https://buffalonews.com/2016/08/11/gallery6511/#image=1>
- Fig. 008 | Map of Religious/Spiritual, Educational, and Healthcare Destinations. Google. (2019). Google Maps: Religious, Educational, & Healthcare Institutions.
- Fig. 009 | Average Daily Traffic in Project Study Area. New York State Department of Transportation (NYSDOT). (2019). Traffic Data Viewer. Retrieved from <https://gis3.dot.ny.gov/html5viewer/?viewer=idv>
- Fig. 010 | Household Car Access. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 011 | Commute Time. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 012 | Commute Method. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 013 | Challenging Slopes Along the Right-of-Way. United States Geological Survey (USGS). (2019). USGS NED 1/3 arc-second n43w079 1 x 1 degree ArcGrid. Retrieved from <https://viewer.nationalmap.gov/basic/#product-Search>
- Fig. 013a | Example Slope Section 2.
- Fig. 013b | Example Slope Section 2 - East Amherst Street.
- Fig. 013c | Example Slope. Section 3 - Clyde Avenue.
- Fig. 014 | Map of Existing Transportation Near Proposed Extension. City of Buffalo. (2019a). Bike Lanes. Retrieved from Open Buffalo website: <https://data.buffalony.gov/Infrastructure/Bike-Lanes/hgv6-habj>; Google. (2019b). Metro Rail Stations. Google Maps.; Niagara Frontier Transportation Authority. (2019). NFTA Bus Routes. Retrieved from <https://metro.nfta.com/Routes/System-map.aspx>; Reddy Bikeshare. (2019). No Title. Retrieved from Reddy BikeShare website: <https://reddybikeshare.socialbicycles.com>
- Fig. 015 | Population Density in Buffalo and in Project Area. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 016 | Community Racial Makeup. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 017 | Community Age Distribution. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 018 | Obesity Rates in Buffalo and in Project Study Area. Center for Disease Control and Prevention. (2015). 500 Cities: Local Data for Better Health. Retrieved from <https://www.cdc.gov/500cities/index.htm>
- Fig. 019 | Selected Health Trends for the City of Buffalo and in Tract 39.01. Erie County Department of Health (ECDOH). (2019). Erie County, NY, Community Health Assessment 2017-2019. Retrieved from <http://www2.erie.gov/health/sites/www2.erie.gov.health/files/uploads/pdfs/CHA.pdf>
- Fig. 020 | Physical Inactivity Rates in Buffalo and in Project Study Area. Center for Disease Control and Prevention. (2015). 500 Cities: Local Data for Better Health. Retrieved from <https://www.cdc.gov/500cities/index.htm>
- Fig. 021 | Potential Environmental Justice Areas that Intersect with Project Study Area. New York State Department of Environmental Conservation (NYSDEC). (2009). Potential Environmental Justice Areas - KML/KMZ File Format. Retrieved from <http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1273>
- Fig. 022 | Aerial Photo of Right-of-Way South of East Amherst.
- Fig. 023b | Land Cover in Buffalo and in Project Area. Yang, L., Jin, S., Danielson, P., Homer, C., Gass, L., Case, A., ... Xian, G. (2018). A New Generation of the United States National Land Cover Database: Requirements, Research Priorities, Design, and Implementation Strategies (pp. 108–123). pp. 108–123. Retrieved from <https://www.mrlc.gov/data>
- Fig. 023b | Impervious Surface Area in City of Buffalo and in Project Study Area. Yang, L., Jin, S., Danielson, P., Homer, C., Gass, L., Case, A., ... Xian, G. (2018). A New Generation of the United States National Land Cover Database: Requirements, Research Priorities, Design, and Implementation Strategies (pp. 108–123). pp. 108–123. Retrieved from <https://www.mrlc.gov/data>
- Fig. 024 | Tree Canopy in City of Buffalo and in Project Study Area. Coulston, J., Moisen, W., Gretchen, G., Wilson, B. T., Finco, M. V., Cohen, W. B., & Brewer, C. K. (2012). Modeling percent tree canopy cover: a pilot study. Photogrammetric Engineering & Remote Sensing, 78(7), 715–727. Retrieved from <https://www.mrlc.gov/data>
- Fig. 025 | Remediation Sites and Toxic Release Inventory Sites. Erie County Department of Environment and Planning. (n.d.). Natural Resource Inventory - Erie County, NY: Public Health. Retrieved from <https://www.arcgis.com/apps/MapSeries/index.html?appid=b-bee702e750942d5af21eb0790b8e42f>; New York State Department of Environmental Conservation (NYSDEC). (2013). Environmental Remediation Site Boundaries - New York State (NYSDEC). Retrieved from <https://www.dec.ny.gov/chemical/102009.html>
- Fig. 026 | Household Median Income Bar Chart. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 027 | Household Median Income Map of the City of Buffalo. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 028 | Levels of Poverty in City of Buffalo and in Project Study Area. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 029 | Study Area Vacancy. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 030 | Study Area Housing Tenure. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.
- Fig. 031 | Study Area Crime Rates. Buffalo Police Department. (2019). Crime Incidents. Buffalo, NY: Open Data Buffalo.
- Fig. 032 | Housing Density in City of Buffalo and in Project Study Area. United States Census Bureau. (2017). American Community Survey 2013-2017. Fact Finder.

- Fig. 033 | 2929 Main Street proposed development. Hopkins Sorgi & Romanowski PLLC. (2018). Amended Site Plan and Final Plat Application 2929 - 2939 Main Street (pp. 1–46). Retrieved from <https://buffalony.iqm2.com/Citizens/default.aspx>
- Fig. 034 | 2929 Main Street proposed development. Buffalo Rising. (2019). Construction Watch: 2929 Main. Buffalo Rising. Retrieved from <https://www.buffalorising.com/2019/06/construction-watch-2929-main-street/>
- Fig. 035 | Public v. Private ownership along right-of-way. City of Buffalo. (2019). City of Buffalo Parcel Viewer. Retrieved from City of Buffalo Parcel Viewer website: <http://gis.city-buffalo.com/cobapps/publicapps/HTML5/HTML5-PublicLaunch.aspx>
- Fig. 036 | Zoning. City of Buffalo, Camiros, Code Studio, Fisher Associates, & The Urban Design Project. (2016). Buffalo Greencode: Unified Development Ordinance. Retrieved from City of Buffalo website: <http://www.buffalony.gov-/DocumentCenter/View/1785/Buffer-Green-Code---Unified-Development-Ordinance-PDF?bidId=>
- Fig. 037 | Land Uses. New York State Geographic Information Systems (NYSGIS) Program Office. (2018). 2018 Erie County Parcels for Public Use. NYS GIS Clearinghouse.
- Fig. 038 | Aerial Land Use. City of Buffalo. (2019). City of Buffalo Parcel Viewer. Retrieved from City of Buffalo Parcel Viewer website: <http://gis.city-buffalo.com/cobapps/publicapps/HTML5/HTML5PublicLaunch.aspx>
- Fig. 200 | Aerial Image of Right-of-Way South of Main Street.
- Fig. 201 | Aerial Image of Section One Main Street Intersection. Terra Perspectives. (2019). Aerial and Landscape Photography
- Fig. 202 | Aerial Image of Section Two East Amherst Street Intersection. Terra Perspectives. (2019). Aerial and Landscape Photography
- Fig. 203 | Aerial Image of Section Three Kensington Avenue Intersection. Terra Perspectives. (2019). Aerial and Landscape Photography
- Fig. 039 | LaSalle Metro Station Parking Lot to the North of the Rail Right-of-Way That Extends Across Main Street.
- Fig. 040 | Section One: Route Options.
- Fig. 041 | Section One: Options.
- Fig. 042 | Section One: Hertel Avenue Existing Conditions.
- Fig. 043 | Section One: Hertel Avenue Proposed Conditions.
- Fig. 044 | Section One: Challenge Two Option One: Main Street Existing Conditions.
- Fig. 045 | Section One: Challenge Two Option One: Main Street Proposed HAWK Signal.
- Fig. 046 | Section One: Challenge One Option Two Proposed Example One.
- Fig. 206 | Section One: Standard HAWK Beacon Signal Light Pattern
- Fig. 047 | Section One: Challenge One Option Two Proposed Example Two.
- Fig. 048 | Section One: Challenge One Option Three Hertel & Main Existing Conditions.
- Fig. 049 | Section One: Challenge One Option Three Hertel & Main Existing Conditions.
- Fig. 050 | Section One: Challenge 3 Options.
- Fig. 051 | Section One: Option 4.
- Fig. 052 | Section One: Main Street at LaSalle Existing Conditions.
- Fig. 053 | Section One: Main Street at LaSalle Proposed Conditions.
- Fig. 054 | Section One: Option 4 William Price Parkway.
- Fig. 204 | Section Two: McCarthy Park to Kevin Roberson Park.
- Fig. 055 | Section Two: Early Activation & Route Option.
- Fig. 056 | Section Two: Trail Signage.
- Fig. 057 | Section Two: Type of Crosswalks.
- Fig. 058 | Section Two: Phase One Hiking Trail Path.
- Fig. 059 | Section Two: View from Within the Interior Successional Forest Area of the Former Rail Bed Where a Hiking Path is Suitable.
- Fig. 060 | Section Two: East Amherst Street Existing Conditions.
- Fig. 061 | Section Two: East Amherst Street Proposed Conditions.
- Fig. 062 | Section Two: Rendering of Option 1 Bridge Over East Amherst Street, Including Cycle Track and Improved Sidewalk on the North Side of the Street.
- Fig. 063 | Section Two: Option 2 Access Point & Circulation Route Map.
- Fig. 064 | Section Two: Option 3 3 McCarthy Park Trail Map
- Fig. 065 | Section Two: Cross Section of Multi-Use Trail.
- Fig. 066 | Section Two: Rail ROW Additional Width for Linear Greenspace.
- Fig. 067 | Section 3: Design Intervention Priority Areas.
- Fig. 205 | Section 3: Aerial Image of Section Three North from Kensington Avenue.
- Fig. 068 | Section 3: Route & Park Connection.
- Fig. 069 | Section 3: Transportation Alternatives Data Exchange. Dequindre Cut Greenway. (2009). Retrieved from <https://taimages.railstotrails.org/3-Rail-Trails/Dequindre-CutDetroit-MI/i-PZWW3qB/>
- Fig. 070 | Section 3: Clyde Avenue Existing & Proposed.
- Fig. 071 | Section 3: Challenge 3 Existing Intersection Configuration.
- Fig. 072 | Section 3: Challenge 3 Proposed Intersection Configuration.
- Fig. 073 | Section 3: Sidewalk Adjacent to Warwick Avenue.
- Fig. 074 | Section 3: William Gaiter Parkway ROW Existing Conditions
- Fig. 075 | Section 3: William Gaiter Parkway ROW Proposed Conditions.
- Fig. 076 | Section 3: William Gaiter Parkway Existing Conditions.
- Fig. 077 | Section 3: Lack of tree canopy and absence of protective features for pedestrians and bicyclists going south along William Gaiter Parkway.
- Fig. 078 | Section 3: William Gaiter Parkway.
- Fig. 079 | Section 3: William Gaiter Parkway Tree Planting.
- Fig. 080 | CSO Basin 53. Buffalo Sewer Authority (BSA). (2019). Rain check 2.0 opportunity report: The next generation of green infrastructure in Buffalo, NY.
- Fig. 081 | Final Route Recommendations 1.
- Fig. 082 | Final Route Recommendations 2.
- Fig. 083 | Curb Inlets and Rain Gardens on Windsor Avenue.
- Fig. 084 | Curb Inlets and Trees on Northland Avenue.
- Fig. 085 | Curb Inlets, Rain Gardens, and Porous Sidewalks on Elmwood Avenue.

- Fig. 086 | Permeable Paver System. Reading Rock. (n.d.). Permeable Pavers. Retrieved from <https://www.readingrock.com/products/hardscapes-outdoor-living/pavers/permeable-pavers>
- Fig. 087 | Rain garden with Native Plants. Perry, A. S. (2018). Cape Fear Chapter Installs York Residential Rain Garden in North Carolina. Retrieved from <https://www.surfrider.org/coastal-blog/entry/cape-fear-chapter-installs-york-residential-rain-garden-in-north-carolina>
- Fig. 088a | Example of Sidewalk Adjacent to Bioswale. Tip of the Mitt Watershed Council. (n.d.). Bioswale. Retrieved from <https://www.watershedcouncil.org/bioswale.html>
- Fig. 089a | Example of Brick Laid Dry Swale. Wikimedia. (n.d.). Planted brick swale, Balfour Street pocket park. Retrieved from https://commons.wikimedia.org/wiki/File:Planted_brick_swale,_balfour_street_pocket_park.JPG
- Fig. 089b | Example of Sloped Swale and Rain Garden. Stormwater Maintenance & Consulting (SMC). (2015). Bioretention & RSC Stream Restoration. Retrieved from <https://mdswm.com/portfolio/college-park/>
- Fig. 090 | White Tail Deer at Tift Nature Preserve in Buffalo, NY.
- Fig. 091 | Tift Nature Preserve in Buffalo, NY.
- Fig. 092 | Native Ecology Rewilded at Silo City in Buffalo, NY.
- Fig. 093 | Monarch Butterfly at Silo City in Buffalo, NY. Smith, J. (2019). Monarch Butterfly at Silo City.
- Fig. 094 | Youth Outdoor Classroom on Monarch Butterflies. Fedorchuk, L. (2019). Students at Kelly Mill Elementary in Cumming, Georgia, studying their garden and tracking their success with milkweed. Retrieved from <https://www.nrdc.org/stories/monarch-butterflies-get-head-start-schoolyard>
- Fig. 095 | Rain Garden with Butterfly. Torke, M. A. (n.d.). Small-Space Bird and Butterfly Garden. Retrieved from https://www.bhg.com/gardening/plans/dramatic/gardens-plans-that-attract-birds-and-butterflies/?slide=slide_50baebde-631b-459f-87eb-1fc40d31e017#slide_50baebde-631b-459f-87eb-1fc40D31e017 (a)
- Fig. 096 | Rain Garden. Torke, M. A. (n.d.). Small-Space Bird and Butterfly Garden. Retrieved from https://www.bhg.com/gardening/plans/dramatic/gardens-plans-that-attract-birds-and-butterflies/?slide=slide_50baebde-631b-459f-87eb-1fc40d31e017#slide_50baebde-631b-459f-87eb-1fc40D31e017 (b)
- Fig. 097 | Sculpture in Buffalo's Outer Harbor.
- Fig. 098 | Dual-purpose Sculpture and Bee Habitat. Frearson, A. (2013). Skyscraper for bees by University at Buffalo students. Dezeen. Retrieved from <https://www.dezeen.com/2013/05/06/skyscraper-for-bees-by-university-at-buffalo-students/>
- Fig. 099 | Studio Artist Andrea Pawarski's mural 'Unity Through Community.' Cotton, D. (2019). Studio Artist Andrea Pawarski's mural 'Unity Through Community' begins to take shape on the western abutment at the Crossroads. Retrieved from <https://www.buffalorising.com/2019/07/crossroads-of-creativity-2019/>
- Fig. 100 | Hiking Trail. Red Lake Falls Parks and Recreation. (2017). Paved Trails. Retrieved from <https://redlakefalls.com/parks-recreation/>
- Fig. 101 | Outdoor Exercise Equipment. Youngstown Neighborhood Development Corporation (YNDC). (2016). Homestead Park in Youngstown Ohio. Retrieved from <https://www.yndc.org/news-media/yndc-and-city-parks-department-reveal-two-outdoor-fitness-stations>
- Fig. 102 | Children Playing on Park Equipment. KaBoom! (2017). Rail Trail Symphony. Retrieved from https://kaboom.org/play_everywhere/gallery/rail_trail_symphony
- Fig. 103 | Northeast Greenway Wayfinding Sign.
- Fig. 104 | Northeast Greenway Branded
- Fig. 105 | Bike Priority Signal.
- Fig. 106 | Purple Cane Flower. Buffalo-Niagara Waterkeeper (BNW). (n.d.). Western New York Guide to Native Plants for your Garden. Buffalo, NY. Retrieved from <https://bnwaterkeeper.org/projects/nativeplantguide/>
- Fig. 107 | New England Aster. Buffalo-Niagara Waterkeeper (BNW). (n.d.). Western New York Guide to Native Plants for your Garden. Buffalo, NY. Retrieved from <https://bnwaterkeeper.org/projects/nativeplantguide/>
- Fig. 108 | Redosier Dogwood. Buffalo-Niagara Waterkeeper (BNW). (n.d.). Western New York Guide to Native Plants for your Garden. Buffalo, NY. Retrieved from <https://bnwaterkeeper.org/projects/nativeplantguide/>
- Fig. 109 | Serviceberry spp.
- Fig. 110 | American Hornbeam.
- Fig. 111 | Eastern Redbud.
- Fig. 112 | Snakebark Maple.
- Fig. 113 | Closeup of CU-Structural Soil After Installation. Bassuk, N., Denig, B. R., Haffner, T., Grabosky, J., & Trowbridge, P. (2015). CU-Structural Soil: A comprehensive guide. Retrieved from <http://www.hort.cornell.edu/uhi/outreach/in%5Cnhttp://www.structuralsoil.com/>
- Fig. 114 | Compaction of CU-Structural Soil During Installation. Bassuk, N., Denig, B. R., Haffner, T., Grabosky, J., & Trowbridge, P. (2015). CU-Structural Soil: A comprehensive guide. Retrieved from <http://www.hort.cornell.edu/uhi/outreach/in%5Cnhttp://www.structuralsoil.com/>

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