



Irondequoit Seneca Trail Feasibility Study

Town of Irondequoit
Monroe County, New York

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EXECUTIVE SUMMARY

Irondequoit Seneca Trail Feasibility Study



The purpose of the Irondequoit Seneca Trail Feasibility Study is to assess the feasibility of developing a 3.6-mile multi-use trail along the eastern side of the Genesee River from St. Paul Boulevard through Seneca Park to the O'Rorke Bridge in the Town of Irondequoit. The trail is designed to link the existing El Camino Trail with the existing Irondequoit Lakeside Multi-Use Trail and the proposed Genesee River Promenade Boardwalk.

The study area is 274 acres, located in both the Town of Irondequoit and the City of Rochester, and is primarily comprised of an inactive railroad corridor and Seneca Park. The railroad right-of-way is 3.67 miles long and forms the eastern edge of the study area. The southern portion of the railroad property is owned by Monroe County, and the northern portion is owned by CSX. The remaining land between the railroad corridor and the Genesee River is comprised of Monroe County-owned Seneca Park and areas owned by New York State.

The planning process for this study included outreach to both the general public and to key stakeholders. Representatives from various organizations served on the steering committee, and provided continuity and study oversight. The general public was invited to attend two Town Planning Board meetings to learn more about the trail project, and provide feedback to the committee. The Irondequoit Seneca Trail Feasibility Study builds on previously completed planning initiatives that have occurred in and adjacent to the study area.

The study included an inventory and analysis phase where the existing conditions in and around the Irondequoit Seneca Trail study area were assessed. Topography, soils, ecological character, habitat, drainage, wetlands, land use, destinations, property ownership, access, and circulation were all evaluated. None of these factors present a significant constraint to the development of a trail in the study area. The project addresses a number of opportunities and constraints, which include: connectivity to other parks and trails, adaptive re-use of a transportation corridor, habitat diversity, scenic views, historic resources, active transportation, and property ownership.

Alternatives. Alternatives were developed by carefully evaluating the data gathered in the inventory and analysis phase. When the feasibility study was initiated, one trail route was originally envisioned to connect the El Camino Trail to the Irondequoit Lakeside Trail. This route utilized the path of the abandoned CSX Railroad corridor from St. Paul Boulevard to Thomas Avenue. This alternative is 3.67 miles in length, and offers a single pathway for all user groups along the eastern side of the study area. Utilizing the railroad corridor for the trail route has a number of opportunities, but also a number of issues. In stakeholder meetings, it was clear that the railroad corridor route was not preferred by all property owners.

The Monroe County Department of Parks, one of the two property owners, offered alternative routing possibilities. The County owns most of the land in the southern half of the study area. This land is contained in Seneca Park and the Seneca Park Zoo. Rather than a single pathway, the second alternative is a system of different routes that provide options for different users. In this alternative, the northern part of the trail would still be located in the abandoned railroad corridor currently owned by CSX. The southern part of the trail would be comprised of a trail network that includes an improved riverside trail, shared park roads, and an earthen pathway in the railroad corridor.

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Recommended Trail Alignment. The recommended trail alignment is a system of trail segments that collectively provide a safe, accessible experience for trail users of all types. The trail alignment combines features of both of the alternatives, and has four main segments.

The recommended location for the northern part of the trail is in the abandoned railroad corridor currently owned by CSX. Traveling from north to south, this trail segment (the Rail Trail) will follow the railroad corridor from Thomas Avenue to Seneca Park Avenue for 1.62 miles.

The central portion of the trail system will have two trail segments - the Riverside Trail and the Railroad Pathway - when the Rail Trail splits. These segments begin when the trail reaches Seneca Park Avenue. In this location, the main trail (the Riverside Trail) will curve to the west to more closely follow the river along an existing footpath through Seneca Park. The main trail will be developed in the same manner as the northern section of the trail.

The second trail segment (the Railroad Pathway) will continue straight in the railroad corridor, south of Seneca Park Avenue. In this area, a simple earthen trail will serve as a neighborhood pathway. Aside from minor drainage and access improvements, the trail in the railroad corridor will not receive any upgrades south of Seneca Park Avenue.

After traveling about two-thirds of a mile, the main trail will split again near Olmsted Landing, for a total of three segments. The Riverside Trail will continue along the river, but cyclists will be encouraged to instead use park roads to travel through the park. Experienced cyclists can continue on the Riverside Trail, but conditions will not be appropriate for all cyclists. The park roads travel in a simple loop through the park, with little vehicular traffic. With minor upgrades to signage and pavement markings, the park roads can be safely shared by bicyclists and motorists.

The Riverside Trail will require improvements in the form of repairs, upgrades, and realignment in select locations, as well as resurfacing. Both the Shared Park Roads and the Riverside Trail will connect with the El Camino Trail. The Railroad Pathway also continues through this southern segment, located slightly to the east in the railroad corridor.

To accommodate users of all mobility levels, the trail system will also include an ADA-accessible loop trail. The 1.1-mile loop trail will be accessible from three park lodges/shelters and their respective parking lots near the Trout Pond in Seneca Park. The loop uses part of the Riverside Trail, as well as a loop around Trout Pond.

Implementation. The trail system is proposed on properties that are owned by Monroe County and CSX Railroad. A strategy for acquiring private property and/or public right-of-way is needed to create a continuous trail between St. Paul Boulevard and Thomas Avenue. In the southern section of the trail corridor, Monroe County owns land adjacent to the trail corridor. Representatives from Monroe County were included in discussions during the course of the study, and should continue to be included in future discussions about trail development, management and ownership.

Preliminary discussions found County representatives to be receptive to the possibility of trail development on County land. Discussions with CSX Railroad were not pursued during the course of the study. Acquiring the land from CSX is most likely to happen through some sort of partnership between New York State, Monroe County, the Town of Irondequoit, and the Genesee Land Trust. Some combination of these partners could effectively acquire the land, build the trail, and maintain the facilities.

In addition to information about property ownership, the feasibility study also includes implementation information regarding SEQRA documentation, the permitting process, funding opportunities, design details, and project phasing. The study also addresses trail construction standards, user guidelines, and operations and maintenance. Appendices are included that provide a summary of public input, an overview of schematic costs, the economic impact of trails, and potential areas of conflict between trail users.



A. BACKGROUND AND PURPOSE OF STUDY

The purpose of the Irondequoit Seneca Trail Feasibility Study is to assess the feasibility of developing a 3.6-mile multi-use trail with associated trail amenities along the eastern side of the Genesee River from St. Paul Boulevard through Seneca Park, and to the O'Rorke Bridge in the Town of Irondequoit. The trail is designed to link the existing El Camino Trail with the existing Irondequoit Lakeside Multi-Use Trail and the proposed Genesee River Promenade Boardwalk. Please see [Figure 1](#) for an illustration of the project location.

1. STUDY AREA

The Town of Irondequoit and the City of Rochester are both located in the north-central portion of Monroe County in Western New York. The City of Rochester is located west and south of Irondequoit. The Town of Irondequoit is bordered on three sides by major bodies of water: Lake Ontario to the north, Irondequoit Bay to the east, and the Genesee River to the west.

The study area is 274 acres, located in both the Town of Irondequoit and the City of Rochester, and is primarily comprised of an inactive railroad corridor and Seneca Park. The railroad right-of-way is 3.67 miles long and forms the eastern edge of the study area. The southern portion of the railroad property is owned by Monroe County, and the northern portion is owned by CSX. The remaining land between the railroad corridor and the Genesee River is comprised of Monroe County-owned Seneca Park and areas of property owned by New York State.

2. STUDY OBJECTIVES

The Irondequoit Seneca Trail Feasibility Study was guided by the following objectives:

- Provide active transportation between community resources and destinations.
- Provide opportunities for universal access.
- Maintain user safety.
- Offer a high-quality user experience.
- Protect and enhance existing resources.
- Emphasize sustainability and maintainability.

INTRODUCTION

Irondequoit Seneca Trail Feasibility Study

B. COMMUNITY INVOLVEMENT

Planning of any kind cannot be done in a vacuum, and must be informed by local residents. New York State has identified principles to guide community planning processes, which state that planning should be continuous, comprehensive, participatory, and coordinated. Citizen participation is a key component in the process. [Table 1](#) chronicles the meetings that were conducted regarding this project.

Table 1: Chronology of Community Involvement

Date	What	Purpose
November 9, 2013	Committee Trail Walk	Project Kick-off
March 6, 2013	Committee Meeting	Present Inventory, Analysis, and Preliminary Recommendations
March 25, 2013	Public Meeting	Project Overview, Presentation of Inventory, Analysis, and Preliminary Recommendations, Solicit Input from Community
July 22, 2013	Public Meeting at Irondequoit Planning Board	Present Recommendations, Solicit Input from Community

The planning process for this study included outreach to both the general public and to key stakeholders. Representatives from the Genesee Transportation Council, the Town of Irondequoit Conservation Board, and the Genesee Land Trust served on the steering committee, and provided continuity and study oversight. The general public was invited to attend two Town Planning Board meetings to learn more about the trail project, and provide feedback to the committee. Town officials felt that the Planning Board meetings offered the widest audience, since the meetings are televised locally, and the video recordings are available on the Town's website. [Appendix A](#) includes information related to public outreach.

C. RELATIONSHIP TO OTHER PLANS AND STUDIES

The goal of planning is to improve the welfare of people and their communities by creating more convenient, equitable, healthful, efficient, and attractive places for present and future generations (APA, 2011). Planning enables civic leaders, businesses, and citizens to play a meaningful role in creating communities that enrich people's lives. In developing new plans, it is important to refer to plans and studies that have already been completed to evaluate how the new plan relates to existing plans. This feasibility study builds on the following planning initiatives:

- Urban Trail Linkages - Genesee Riverway & Eastman Trails: Planning & Preliminary Design Study (2013)
- Rochester Bicycle Master Plan (2011)
- Town of Irondequoit Comprehensive Master Plan Update (DRAFT 2011)
- Local Waterfront Revitalization Program for the Towns of Irondequoit, Penfield and Webster (DRAFT 2010)
- Rochester Running Track Railroad Bridge: Pedestrian Conversion Feasibility Study (2010)
- Town of Irondequoit Comprehensive Energy and Environmental Policy (2009)
- Regional Trails Initiative: Phase 1 – Rochester TMA (2002)
- City of Rochester Local Waterfront Revitalization Program (1990)
- Monroe County Waterfront Recreation Opportunities Study (1990)
- Town of Irondequoit Local Waterfront Revitalization Program (1988)
- Town of Irondequoit Comprehensive Master Plan (1985)
- Town of Irondequoit Zoning Map

The trail and amenities as proposed are compatible with the general principles and specific projects found in the planning documents listed above. It is also interesting to note that during the course of the study, Monroe County nominated the Irondequoit-Seneca Trail corridor to the New York State Regional Open Space Committee to be included as a possible regional trail project in the New York State Open Space Plan.

D. PARALLEL PROJECTS

As with most planning efforts, other projects are planned or proposed concurrent to the planning efforts at hand. The purpose of this section is to briefly describe projects that are being proposed within or adjacent to the Irondequoit Seneca Trail System that could potentially impact trail use or contribute to the objectives of the feasibility study. The projects discussed in this section are not necessarily being proposed, developed, or funded by the Town of Irondequoit. They may be independent initiatives sponsored by a variety of public and private organizations.

1. GENESEE RIVER PROMENADE BOARDWALK

PROJECT SPONSOR: TOWN OF IRONDEQUOIT

The Town of Irondequoit received funding from the NYS Department of State in 2006 to design a 4,600 foot boardwalk promenade for the east bank of the Genesee River, to increase public access for pedestrians and bicyclists. There is presently no access along the riverfront and this project will advance implementation of the Town's Local Waterfront Revitalization Program and other local planning initiatives.

2. LIGHTHOUSE POINTE

PROJECT SPONSOR: LIGHTHOUSE POINTE PROPERTY ASSOCIATES, LLC

Private developers have proposed a mixed use development on the east bank of the Genesee River in Irondequoit and Rochester on the site of a former landfill. The nearly 50-acre waterfront development project will include about 500 residential units, retail, a hotel, docks, and a promenade for public bike and pedestrian access. After lengthy court proceedings, the developer succeeded in obtaining a court order directing the NYS Department of Environmental Conservation (NYSDEC) to deem the site eligible for the Brownfield Cleanup Program. The property is immediately adjacent to the northern terminus of the Irondequoit Seneca Trail corridor.

3. ROCHESTER BICYCLE BOULEVARDS PLAN

PROJECT SPONSOR: CITY OF ROCHESTER, DEPARTMENT OF ENVIRONMENTAL SERVICES

The City of Rochester is preparing to work with a consultant to develop recommendations for creating a network of bicycle boulevards in the City with a focus on alternatives to streets for which on-street bicycle facilities are challenging and/or to provide connections between key destinations. The study covers the entire City, however some of the initial candidate corridors identified by the City in the request for proposals intersect with the proposed trail corridor. Connections between the trail and the bicycle boulevards would be effective active transportation links.

4. ROCHESTER RUNNING TRACK RAILROAD BRIDGE PEDESTRIAN CONVERSION

PROJECT SPONSOR: CITY OF ROCHESTER, DEPARTMENT OF ENVIRONMENTAL SERVICES

The Rochester Running Track Bridge, which spans the Genesee River, is an abandoned railroad bridge located at the southern end of the El Camino Trail. The City worked with a consultant to determine the apparent feasibility of rehabilitating the bridge, and converting the former rail corridor into a multi-use trail connecting the east and west segments of the Genesee Riverway Trail and the El Camino Trail. The concept level estimate for rehabilitation and provision of a concrete deck with aesthetic steel railings is \$2.6 million. The City is working to identify funding sources, and plans to undertake the formal process of project evaluation, justification, and scope definition, followed by preliminary and final design, and finally construction.



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5. ROCHESTER ON-STREET BICYCLE IMPROVEMENTS

PROJECT SPONSOR: CITY OF ROCHESTER
DEPARTMENT OF ENVIRONMENTAL SERVICES

The City of Rochester has on-street bicycle improvements planned for the road network located adjacent to the southern portion of the project study area. Sharrows will be added to East Ridge Road from St. Paul Boulevard to Rutledge Drive in the next few years when the roadway is resurfaced. Bicycle lanes, pedestrian crosswalks, and signage have recently been added to St. Paul Boulevard from Tyler Street to the Irondequoit Town line. These improvements enhance the connection between Seneca Park and the existing El Camino trail.

6. SENECA PARK ZOO PARKING & ACCESS IMPROVEMENTS

PROJECT SPONSOR: MONROE COUNTY
DEPARTMENT OF PARKS

The Monroe County Department of Parks was constructing an overflow parking lot for the Seneca Park Zoo in the Spring of 2013. The parking lot will accommodate approximately 100 vehicles. The lot is located at the southern terminus of the Irondequoit Seneca Trail, and will provide parking for trail users. The parking and access improvements also include a paved pedestrian pathway along the railroad right-of-way to connect the new parking lot to the existing zoo parking lot.

7. TOWN OF GREECE BICYCLE AND PEDESTRIAN MASTER PLAN

PROJECT SPONSOR: TOWN OF GREECE DEPARTMENT OF PLANNING AND DEVELOPMENT

The Town of Greece has engaged the services of a consultant team to prepare a bicycle and pedestrian master plan to inventory existing active transportation facilities, identify gaps in the network, and establish priority projects that increase the accessibility and safety of active transportation for residents and visitors in the Town of Greece. Community input will be a key element in the process of establishing the recommendations. This project will aim to better connect residential neighborhoods with commercial/service areas of town and trail systems already in place, increase access for all ages and abilities, and focus on techniques for the long-term maintenance of Greece's active transportation network.



ACTIVE TRANSPORTATION BENEFITS

Irondequoit Seneca Trail Feasibility Study

The goal of creating a new multi-use trail as a part of an improved active transportation system is compatible with other community planning efforts related to transportation and sustainability. While pedestrian and bicycle improvements are important to meet the needs of Irondequoit today, they are likely to be even more important in meeting the needs of tomorrow. With the development of this feasibility study, the Town of Irondequoit is taking a progressive stance in addressing important issues, such as rising fuel prices, environmental degradation, and health problems related to inactivity. The Irondequoit Seneca Trail System connects other active transportation facilities, and will help the Town and the region to harvest the long-term economic, environmental, health and social benefits of active transportation.

Transportation accounts for more than 30 percent of the carbon dioxide emissions in the United States (West, 2007). In addition, transportation is a significant household expense for many people. However, there are other transportation options besides using a motorized vehicle, which include active transportation possibilities, such as walking and bicycling. Walking and bicycling as a means of transportation offer environmental, health, economic and social benefits.



Active transportation has benefits in each one of these categories, but the synergy between these varied and disparate benefits results in enhanced community sustainability:

- A local economy that is robust and balanced, with better access to jobs, education and health care.
- Increased health for persons engaging in active transportation, and increased safety for all.
- Ecosystems that thrive as a result of reduced air pollution and reduced greenhouse gas emissions.
- Infrastructure that encourages culturally and socially diverse groups to prosper and connect to the larger community.

The following pages discuss the various benefits associated with active transportation.

ACTIVE TRANSPORTATION BENEFITS

Irondequoit Seneca Trail Feasibility Study



Switching to active transportation reduces emissions of greenhouse gases and other pollutants that contribute to global warming, smog, and acid rain. Greenhouse gases are atmospheric gases – primarily carbon dioxide, methane and nitrous oxide – which trap the sun's heat, making the Earth a greenhouse. Emissions of greenhouse gases enhance the Earth's greenhouse effect, contributing to climate change. Air pollution includes ground level ozone and fine airborne particles, as well as carbon monoxide, nitrogen oxides and sulfur oxides. This mix of substances makes smog (SES, 2007). Air pollution also causes lung cancer and respiratory problems. A study of U.S. cities found that mortality rates were 17-26% higher in cities with the dirtiest air compared to those with the cleanest air.

In the United States, 88% of all trips are made by car—and many of those cars carry only one person.

(West, 2007)

Half of the average person's greenhouse gas emissions result from transportation.

- Motor vehicle emissions represent 31% of total carbon dioxide, 81% of carbon monoxide, and 49% of nitrogen oxides released in the U.S. (LAB, 2012).
- Short car trips are much more polluting than longer trips on a per-mile basis.
- 60 percent of the pollution resulting from auto emissions is released during the first few minutes of operation of a vehicle (LAB, 2012).

The majority of Americans use their cars to make short trips of a mile or less, causing major environmental damage.

- Of all the trips made in the United States, 50% are less than three miles and 28% are one mile or less.
- A personal motor vehicle is driven in 72% of trips involving less than one mile.
- 50% of the working population commutes five miles or less to work.

Choosing active transportation is an easy way to reduce our environmental impact – bicycling and walking create zero greenhouse gas emissions. A short, four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe (Worldwatch Institute). Infrastructure designed to accommodate vehicles is harmful to the environment as well. There are 800 million automobile parking spaces in the U.S., totaling 160 billion square feet of concrete and asphalt. The environmental impact of all of these parking spaces is equivalent to 10 percent more carbon dioxide emissions per automobile (Bikes Belong, 2012). Active transportation can reduce air pollution, minimize traffic congestion, and help to lessen our national dependence on petroleum.

ACTIVE TRANSPORTATION BENEFITS

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The most valuable natural resource of any community is the health of the residents. In 2012, the Centers for Disease Control and Prevention (CDC) reported the following statistics from 2010:

- Obesity has risen dramatically in the last 20 years
- 35.7% of U.S. adults age 20 and older – over 78 million people – are obese
- The percentage of young people who are overweight has more than tripled since 1980
- 17% of young people age 2-19 years – over 12.5 million people – are obese
- Overall, adults aged 60 and over were more likely to be obese than younger adults

In Upstate New York, childhood obesity trends exceed or match national trends. In 2004, 21% of Upstate New York 3rd graders were obese, which exceeds the national rate of 17% (Upstate NY, 2004). Childhood overweight and obesity is a precursor for adult obesity. The *Strategic Plan for The Prevention of Childhood Overweight and Obesity in Monroe County, NY 2007-2017*, cites “the physical environment and the lack of affordable and safe recreational venues for many children,” as a factor in childhood overweight and obesity.

Research studies have found that overweight and obese children have lowered academic achievement in standardized test scores (CA Dept of Ed, 2005). Also, findings in other studies show that children who are physically active perform better academically and miss fewer days of school (Dwyer, 1996).

Despite the proven benefits, most people – including more than 50% of American adults – do not get enough physical activity to provide health benefits (CDC, 2012). With this in mind, opportunities for exercise and healthful outdoor activity are more than expendable extras. Parks, trails, and open space resources take on new meaning and value. Opportunities for recreation and active transportation support the health and wellness of local residents, and have significant and quantifiable economic impacts. Active transportation provides an opportunity to incorporate regular physical activity into the daily routine.

...studies have found that
overweight and obese
children have lowered
academic achievement in
standardized test scores...

(California Department of Education, 2005)

Regular physical activity can make a person look and feel better, as well as reduce the risk of disease. Unhealthy diet and physical inactivity can cause or aggravate many chronic diseases and conditions, including type-2 diabetes, hypertension, heart disease, stroke, and some cancers (CDC, 2012). Regular physical activity is an important component of a healthy lifestyle, and aids in the prevention of many chronic diseases, disabling conditions and chronic disease risk factors (CDC, 2012).

ACTIVE TRANSPORTATION BENEFITS

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Health care costs and insurance rates are escalating, causing serious impacts to the local economy. Lack of physical activity is contributing to a growing number of serious illnesses and health problems among all age groups.

- In 2008, health care costs associated with obesity were estimated at \$147 billion (CDC, 2012).
- Medical costs for people who are obese were \$1,429 higher than for those of normal weight (CDC, 2012).

In addition to health-related costs, operating a personal automobile is very expensive.

- Of every dollar earned, the average household spends 18 cents on transportation, 94% of which is for buying, maintaining and operating cars, the largest source of household debt after mortgages (APTA, 2007).
- The average vehicular commuter spends over \$7,500 per year on commuting expenses, which include the cost of gas, vehicle wear and tear, vehicle maintenance, and insurance.
- In comparison, the cost of operating a bicycle for a year is only \$120.
- On average, switching from driving to walking and cycling saves \$1.42/mile, money that can be re-invested in the local economy.

For some households, active transportation can even reduce the need for additional cars, which can be a yearly expense between \$5,000 and \$11,800 (APTA, 2007). With the money saved on a vehicle, or even just the additional parking, fuel and maintenance required to commute in a vehicle, an active commuter can pay for transit expenses, purchase a good quality bicycle, or buy new walking shoes, with money left over. Better bicycling conditions will provide access to recreational and work destinations, schools, public transit, and local shops. This will, in turn, promote additional economic development in the vicinity of these destinations. The number of people bicycling can be a good indicator of a community's livability - a factor that has a profound impact on attracting new residents, businesses, workers, and tourists all which contribute towards stimulating the economy.

In Portland, Oregon, it is estimated that by 2040, each dollar they have invested in active transportation infrastructure will result in more than \$8 in benefits. Relatively modest investments – comparable to the construction cost of one mile of an urban 4-lane highway – led to tremendous growth in bicycling. Over time, this will produce secondary benefits in the form of fuel and health care savings worth at least eight times the upfront investment. Conversely, according to the Rochester Cycling Alliance website, nearly every dollar we burn on gasoline leaves the Rochester area (RCA, 2012). By developing transportation programs and encouraging active transportation, the local economy would capture these potential savings and keep shoppers centrally located, resulting in increased community reinvestment.

ACTIVE TRANSPORTATION BENEFITS

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Improving transportation equity by cultivating better walking and bicycling conditions provides mobility for the one-third of people in the United States who do not have cars. This improves access to jobs, education, and health care.

- Cities that promote bicycling tend to retain youth, attract young families, and increase social capital.
- Improved bicycling conditions add to the vitality and quality of life of the community and provide access to recreational destinations across the region.
- Bicycling and walking increases opportunities for social interaction and contributes to a sense of community.
- Increased active transportation typically increases safety for motorists, bicyclists, and walkers. For example, in Portland, Oregon, bicycle crashes went down by 50%.
- Infrastructure encourages culturally and socially diverse communities to prosper and connect to the larger community.

Active transportation can reduce stress and allow for more community interaction. Riding a bicycle allows a commuter to choose a less busy route and by-pass traffic lights. Walkers and cyclists see more of their community than stoplights, white lines and car bumpers, and benefit from the stress relief that accompanies physical exercise.

Cities that promote bicycling tend to retain youth, attract young families, and increase social capital.

(Indianapolis Bicycle Master Plan)

Studies have shown that the longer the regular commute, the greater amount of stress that a commuter feels. Stress often leads to fatigue, headaches, and irritable moods, which can subsequently affect work performance and household dynamics. It is easier and less expensive to park a bike than a car, which further reduces the stress of commuting. In addition, a culture dependent on cars encourages urban sprawl, which destroys communities and keeps people isolated from one another.

Land use and building patterns exacerbate health problems by providing new, disconnected neighborhoods that have few opportunities for walking or biking. In addition, our lifestyles have become increasingly sedentary in our post-industrial society. Walking and bicycling provide an opportunity to simultaneously obtain the benefits of transportation and physical exercise.

INVENTORY AND ANALYSIS

Irondequoit Seneca Trail Feasibility Study

This section contains an inventory and analysis of existing conditions in and adjacent to the Irondequoit Seneca Trail Corridor. The topics discussed in this section include the physical and environmental conditions of the study area, property ownership, circulation and transportation, and an assessment of key issues.

A. PHYSICAL AND ENVIRONMENTAL CONDITIONS

This section describes the existing environmental conditions within the study area and in some instances, the surrounding area. Information is presented on topography, soils, ecological character, drainage and water-related issues and land use.

1. TOPOGRAPHY

The study area includes approximately 274 acres of land. Information regarding topography and soils was obtained from aerial surveys, on-site observations and existing published sources.



The topography in the study area is relatively flat with a gentle slope toward the north in the direction of Lake Ontario. Interspersed throughout the corridor are a few areas of steep terrain. The western edge of the study area slopes down dramatically to the Genesee River, but the trail corridor generally remains on the ridge. Slopes range from 0 to 100 percent within the study area, but are predominantly 0 to 10 percent. Elevations along the ridge range from approximately 405 feet above mean sea level (AMSL) to approximately 256 feet AMSL. See [Figure 4](#) for more detail.

Changing topography provides interesting and varied terrain for many trail users. The variety of terrain will offer elevated viewpoints and scenic views when the trail is near the river, and when there are openings in the vegetation. However, the terrain may present a challenge to those requiring an ADA-accessible pathway. The terrain includes several steep areas that would prevent the entire trail corridor from being accessible. To accommodate all trail users, the trail system will be designed to provide an accessible route where the terrain is appropriate.

2. SOILS

The Soil Survey of Monroe County, New York has mapped general soil associations and soil types within the County. The soil survey indicates that at least 26 different soil types are present within the study area. All soil types located in the City of Rochester are lumped together and classified as urban land. The soils found in the largest quantities in the study area include: AI, AtF3, CgB, HIB, Lp, PgB, and Ub. Please see [Figure 7](#) and [Table 2](#) for more information.

Table 2: Soils Predominantly Found in Study Area

Abbreviation	Soil Name	Slopes	Drainage
AI	Alluvial Land	0-2% slopes	Somewhat poorly drained
AtF3	Arkport, Dunkirk, and Colonie soils	20 to 60% slopes, eroded	Well drained
CgB	Cazenovia gravelly loam	3-8% slopes	Moderately well drained
HIB	Hilton loam	3-8% slopes	Moderately well drained
Lp	Lockport silty clay loam	0-15% slopes	Somewhat poorly drained
PgB	Palmyra gravelly loam	3-8% slopes	Well drained
Ub	Urban land	Not specified	Not specified

The railroad bed is comprised of compacted fill material, and not necessarily subject to the properties of the listed soils. This compacted fill provides an excellent base for trail development. However, the remaining portions of the study area, outside of the railroad bed, are primarily comprised of the soils listed in [Table 2](#). The characteristics of the soils are variable, with drainage ranging from well drained to somewhat poorly drained. Soil textures in the study area are primarily silty and gravelly loams.

For trail planning purposes, most of the soils are fundamentally suitable for trail use. However, in select areas, some soils may present an erosion problem, and some soils may have drainage issues. Poorly drained areas of alluvial land (Al) and Lockport silty clay loam (Lp), as well as eroded areas of Arkport Dunkirk and Colonie soils (AtF3), may have drainage and erosion issues that will need to be addressed during trail planning and construction.

3. ECOLOGICAL CHARACTER

The study area is located along the eastern rim of the Genesee River Gorge between State Route 104 and Pattonwood Drive amongst a mix of forested, vacant, residential, and commercial land (see [Figure 2](#)). The study area consists largely of upland ecological communities on gently rolling terrain. Several steep drainages cross the study area and flow west to the Genesee River. Man-made structures observed within the study area included park benches, picnic tables, and several wooden bridge crossings.

Inventory of Existing Cover Types. The site is comprised of a variety of cover types, from forests to wetlands.

Northern Deciduous Forest. Northern deciduous forest dominates the majority of the study area. In several areas along the steep slopes of the gorge, this community transitions to small areas of mixed coniferous – deciduous forest with increased presence of eastern hemlock (*Tsuga canadensis*). The overstory of the northern deciduous forest community is diverse and consists of the following species:

- red oak (*Quercus rubra*)
- white oak (*Quercus alba*)
- Norway maple (*Acer platanoides*)
- red maple (*Acer rubrum*)
- black cherry (*Prunus serotina*)
- American basswood (*Tilia americana*)
- pignut hickory (*Carya glabra*)
- shagbark hickory (*Carya ovata*)
- pin oak (*Quercus palustris*)
- American beech (*Fagus grandifolia*)
- eastern cottonwood (*Populus deltoides*)
- eastern hemlock (*Tsuga canadensis*)

The understory and shrub layers are comprised primarily of:

- box elder (*Acer negundo*)
- honeysuckle (*Lonicera* sp.)
- hawthorn (*Crataegus* sp.)
- blackberry (*Rubus* sp.)
- buckthorn (*Rhamnus cathartica*)
- hop hornbeam (*Ostrya virginiana*)
- multiflora rose (*Rosa multiflora*)
- Japanese barberry (*Berberis thunbergii*)
- gray dogwood (*Cornus racemosa*)

At the time of the site visit, the herbaceous layer consisted of sparse new growth. This layer likely includes common species such as wood fern (*Dryopteris* sp.), goldenrods (*Solidago* spp.), and asters (*Aster* spp.).

Scrub Shrub Wetlands. A small scrub shrub wetland occurs approximately 1,200 feet northeast of Trout Pond. This wetland appears to be associated with the drainages flowing to the Genesee River. As a result, this wetland would most likely be regulated as a federally jurisdictional wetland by the U.S. Army Corps of Engineers (Corps) under

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Section 404 of the Clean Water Act. This wetland is not identified on either National Wetland Inventory (NWI) or New York State Department of Environmental Conservation (NYSDEC) wetland mapping.

The shrub and sapling layer of this wetland is dominated by the following species:

- speckled alder (*Alnus incana*)
- willow (*Salix* sp.)
- red maple (*Acer rubrum*)

Species observed in the herbaceous layer included marsh marigold (*Caltha palustris*), skunk cabbage (*Symplocarpus foetidus*), and sensitive fern (*Onoclea sensibilis*).

Emergent Wetlands. Extensive emergent wetlands occur at the base of the gorge along the Genesee River. Access to these areas is limited because of the gorge's steep slopes, but these wetlands appear to be dominated by broad-leaved cattail (*Typha latifolia*) with scattered willows. These areas are identified on NWI mapping as palustrine, emergent, persistent, seasonally flooded/saturated (PEM1E). Three of these areas are identified in NYSDEC mapping as RH-6, RH-21, and RH-20 (see [Figure 6](#)). RH-20 is a Class I wetland and RH-21 and RH-6 are Class II wetlands. These wetlands would likely be regulated as federally jurisdictional wetlands by the Corps and as state jurisdictional wetlands by the NYSDEC under Article 24 of the New York State Environmental Conservation Law (ECL).

Invasive Species. Invasive plant species are problematic in certain areas of the study area. Invasive species such as honeysuckle, buckthorn, multiflora rose, and Japanese barberry are beginning to concentrate heavily in upland areas throughout the study area. Norway maple is also common throughout the study area.

Rare, Threatened, and Endangered Species. According to the NYSDEC online database, no rare, threatened or endangered (RTE) species have been documented in the vicinity of the study area. Additionally, no RTE species were observed during the site visit. However, it is important to note that the NYSDEC database is limited and should be considered a preliminary indication of the presence of RTE species. If it is determined that a potential for RTE species exists in the study area, then detailed plant and wildlife surveys, conducted during the growing season, would be recommended.

Habitat Assessment. As previously described, the study area is comprised of several ecological community types. The value of these communities to various wildlife species is summarized below.

Northern Deciduous Forest. Large areas of contiguous woodland provide habitat for forest wildlife species such as wood thrush, veery, eastern wood pewee, red-eyed vireo, black-and-white-warbler, black-capped chickadee, great crested flycatcher, and pileated woodpecker. However, relatively few areas of contiguous forest within the study area appear large enough to support forest interior species.

The study area is a fairly narrow, linear parcel. The southern third is closely associated with the Seneca Park Zoo, Trout Pond, and related roads and facilities. The middle third provides a larger contiguous block of forest with a more natural setting. The northern third is very narrow and is influenced/disturbed by adjacent residential properties. Mammals that utilize forest habitat include gray squirrel, eastern chipmunk, and whitetail deer. Animal species documented within forested habitats during the site visit include:

- northern cardinal (*Cardinalis cardinalis*)
- mourning dove (*Zenaida macroura*)
- American robin (*Turdus migratorius*)
- northern flicker (*Colaptes auratus*)
- red-tailed hawk (*Buteo jamaicensis*)
- pileated woodpecker (*Dryocopus pileatus*)

- red-bellied woodpecker (*Melanerpes carolinus*)
- eastern gray squirrel (*Sciurus carolinensis*)
- common garter snake (*Thamnophis sirtalis*)

Scrub Shrub Wetland Habitat. This small wetland located approximately 1,200 feet northeast of Trout Pond likely provides food, water, and/or cover for many of the upland species mentioned previously. The area also likely supports various amphibians, insects and aquatic invertebrates. No wildlife species were observed within this wetland during the site visit.

Emergent Wetland Habitat. Several large areas of emergent wetlands occur along the eastern shore of the Genesee River. This community type provides excellent habitat for amphibians, fishes, aquatic invertebrates, waterfowl and other waterbirds. These emergent wetlands likely provide foraging habitat for aerial insectivores such as songbirds and bats. Wildlife species expected to use these areas include great blue heron, mallard duck, green frog, spring peeper, and American toad. Areas of more open water likely support various fishes and turtles. During the site visit, the following species were documented in emergent wetlands:

- Canada goose (*Branta canadensis*)
- mallard duck (*Anas platyrhynchos*)
- red-winged blackbird (*Agelaius phoeniceus*)
- northern leopard frog (*Rana pipiens*)
- American toad (*Bufo americanus*)

4. DRAINAGE AND WATER-RELATED ISSUES

As described previously, the study area includes streams and wetlands. There are federal and state designated wetlands in or near the study area based on preliminary review of both United States Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping and the NYSDEC freshwater wetlands mapping database.

Waters of the United States. Waters of the United States as defined by the United States Army Corps of Engineers (Corps), include all lakes, ponds, streams (intermittent and perennial), and wetlands. Wetlands are defined in Section 404 of the Clean Water Act as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions” (EPA, 2001). Jurisdictional wetlands are defined by the presence of three criteria: hydrophytic vegetation, hydric soils, and evidence of wetland hydrology during the growing season (Environmental Laboratory, 1987). However, it has been determined that the Corps does not have jurisdictional authority over waters that are “non-navigable, isolated, and intrastate” (EPA, 2001). Ultimately, the status of all delineated waters will need to be determined during a field visit with a local District Corps representative.

Review of NWI mapping indicates that there are federally-mapped wetlands located within or adjacent to the study area. The federally mapped wetlands are identified in [Figure 6](#). Most of these wetlands occur along the Genesee River, but a few are related to drainage through the study area.

New York State Freshwater Wetlands & Protected Streams. The Freshwater Wetlands Act (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law) gives the NYSDEC jurisdiction over state-protected wetlands and adjacent areas (100-foot upland buffer). The Freshwater Wetlands Act requires the NYSDEC to map all state-protected wetlands (typically over 12.4 acres in size) to allow landowners and other interested parties a means to determine where state jurisdictional wetlands exist. Review of NYSDEC mapping indicates that there are three wetlands located within the study area boundary that are regulated under Article 24 of the Environmental Conservation Law. The state-regulated wetlands are identified in [Figure 6](#).

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the NYSDEC has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams. In addition, small lakes and ponds

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with a surface area of 10 acres or less, located within the course of a stream, are considered to be part of a stream and are subject to regulation under the stream protection category of Article 15. Protected stream means any stream, or particular portion of a stream, that has been assigned by the NYSDEC any of the following classifications or standards: AA, AA(t), A, A(t), B, B(t) or C(t) (6 NYCRR Part 701). A classification of AA or A indicates that the best use of the stream is as a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The best usages of Class B waters are primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing. Streams designated (t) indicate that they support trout, and also include those more specifically designated (ts) which support trout spawning. Classification D is unprotected waters and suitable for fishing and non-contact recreation.

These streams, along with all other perennial and intermittent streams in the study area, are also protected by the Corps under Section 404 of the Clean Water Act. No stream occurs within the study area that is regulated by Section 10 of the Rivers and Harbors Act of 1899 (navigable waters), except for the portion of the Genesee River that is located adjacent to the study area. The streams that cross the study area are classified by the NYSDEC as Class B waterways. One stream is buried below the study area in a large culvert that drains into the river through a waterfall below the rim of the gorge. The other stream begins in the Trout Pond in Seneca Park, and drains north to the Genesee River through the study area.

A formal wetland delineation is needed to make a final determination of wetland and stream boundaries. The wetland delineation would need to be conducted according to the three-parameter methodology presented in the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the updated methodologies presented in the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (2009). A final determination of jurisdictional status can only be made after an on-site agency review of identified boundaries.

The study area also contains the original drainage system from the railroad, which is still intact and functional. This system includes drainage ditches on one or both sides of the rail corridor, as well as culvert pipes and collection points under the railroad. The system may require some minor maintenance to clean out ditches and pipes. Drainage issues and drainage structures are identified in [Figure 9](#).

5. EXISTING AND PLANNED LAND USES

A snapshot of existing land use in and around the study area is provided in [Figure 2](#). Most of the land in the study area is either vacant land or classified as 'Wild, Forested, Conservation and Public Park' land. A small area of the study area is commercial land. The land use for the remaining portion, located in the railroad corridor, is classified as Public Services.

As described previously, the study area is bordered on the western side by the Genesee River. The land use along the eastern side of the study area is primarily residential, with a few vacant parcels and a few commercial properties mixed in. The proximity of residences to the proposed trail corridor was considered in determining trail alignment alternatives. The number of homes located within 50 feet of the railroad corridor was assessed during the study. The 49 houses located within this area are mapped in [Figure 9](#).

6. DESTINATIONS AND POINTS OF INTEREST

In and around the trail corridor are a number of destinations. Some destinations are a point of interest that might generate visits from people who live outside the local area, while others are more common services that would be visited primarily by local residents. Some of these destinations can be considered pedestrian generators, or destinations that are frequented by pedestrians. Destinations include, but are not limited to:

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Table 3: Destinations and Points of Interest near the Irondequoit Seneca Trail

Destination	Type	Location/Notes
Pinegrove Irondequoit Senior Center	Community Resource	Pinegrove Rd.
Irondequoit Public Library – West	Community Resource	Cooper Road
Charlotte Library	Community Resource	Lake Avenue
U.S. Post Office	Community Resource	East Ridge Rd.
Wegmans Supermarket	Dining / Shopping / Entertainment	Titus Avenue
House of Guitars	Dining / Shopping / Entertainment	Titus Avenue
Charlotte/Lake Ave Commercial Area	Dining / Shopping / Entertainment	City of Rochester
Stutson Bridge Plaza	Dining / Shopping / Entertainment	Pattonwood Drive
Shopping Plazas	Dining / Shopping / Entertainment	Seneca Rd. and Clinton Ave.
Irondequoit Lakeside Multi-Use Trail	Open Space and Recreation	O'Rorke Bridge to Culver Rd.
Ontario Beach Park	Open Space and Recreation	City of Rochester
Charlotte Pier	Open Space and Recreation	City of Rochester
Camp Eastman	Open Space and Recreation	Lake Road
Durand Eastman Park	Open Space and Recreation	Lake Road
Durand Eastman Golf Club (Public)	Open Space and Recreation	Kings Highway
El Camino Trail	Open Space and Recreation	Runs from Irondequoit to Downtown
Seneca Park Zoo	Open Space and Recreation	
Seneca Park	Open Space and Recreation	Public Access / County Park
Maplewood Park	Open Space and Recreation	Across Pedestrian Bridge
Marinas and Rochester Yacht Club	Open Space and Recreation	City of Rochester
Turning Point Park	Open Space and Recreation	View across the Genesee River
Spezio Park	Open Space and Recreation	St. Paul Boulevard
Lake Ontario	Open Space and Recreation	
Genesee River	Open Space and Recreation	
Abundant Grace Church	Place of Worship	Lake Avenue
Christian Community Church	Place of Worship	Lake Avenue
Holy Cross Church and School	Place of Worship	Lake Avenue
Temple Emanu-El	Place of Worship	St. Paul Boulevard
Temple Beth David	Place of Worship	St. Paul Boulevard
Trinity Communion Church	Place of Worship	Winona Boulevard
Lutheran Church-Resurrection	Place of Worship	St. Paul Boulevard
St. Margaret Mary Church	Place of Worship	Rogers Parkway
Northridge Church	Place of Worship	St. Paul Blvd. and Ridge Rd.
Charlotte High School (RCSD)	School	Lake Avenue
Dake Junior High School (WICSD)	School	Cooper Road
Seneca Elementary School (WICSD)	School	St. Paul Blvd. and Thomas Ave.
West Irondequoit High School	School	Cooper Road
Southlawn Elementary School (WICSD)	School	Rawlinson Road
Rogers Middle School (WICSD)	School	Northfield Road
Rochester City School # 50	School	Seneca Avenue

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Table 3 includes the following types of destinations and points of interest:

- community resources, such as libraries, post offices, and schools;
- locations for dining, shopping and entertainment;
- open space and recreational resources, such as parks, zoos and marinas;
- and places of worship.

This list of destinations is not exhaustive. Rather, it gives a sampling of destinations that are in biking and walking distance from the trail corridor. Other types of common destinations (which are too numerous to list individually) include banks, restaurants, bars, coffee shops, auto mechanics, fitness centers, and doctor's offices.



It is important that residents and visitors are able to safely walk (or bike) to and between some of these destinations. Strong pedestrian connections between destinations are what sustain a thriving pedestrian environment. Trail planning should strive to improve access for all types of trail users, whether the trail is being used for recreation, or to provide a connection between destinations. Trail planning should also be context sensitive, and follow current best practices and guidelines from Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO), and New York State Department of Transportation (NYSDOT).

B. PROPERTY OWNERSHIP

This section reviews adjacent property ownership, as well as easements and rights of way within the study area.

1. ADJACENT PROPERTIES

A substantial number of properties are located adjacent to the study area, resulting in a significant number of property owners that would potentially be affected by the proposed trail improvements. More detail about adjoining land uses and land owners was provided in the *Existing and Planned Land Uses* section earlier in the chapter. With a significant number of property owners that will potentially be affected by any improvements, trail alignment alternatives were developed that would minimize the impact on existing property owners, and therefore decrease the possibility of potential difficulties in developing the trail.

2. EASEMENTS AND RIGHTS OF WAY

The railroad corridor is currently owned by two separate property owners. At the beginning of the study, the southern section of the corridor was purchased by Monroe County. The County owns the railroad corridor between St. Paul Boulevard (at Long Acre Road) and Seneca Park Avenue. The northern portion of the railroad corridor, between Thomas and Seneca Park Avenues, is owned by CSX Railroad. Please see **Figure 3** regarding property ownership.

As a key landowner, the Monroe County Department of Parks was included in discussions regarding trail alignment alternatives. Additional trail routes through Seneca Park were suggested by the County for consideration. The land associated with the alternative trail routes is also owned by Monroe County.

C. CIRCULATION AND TRANSPORTATION

The following section addresses trail connections, sidewalks, roadways and intersections in the study area.

1. TRAIL CONNECTIONS

Connecting the proposed Irondequoit Seneca Trail System to existing and proposed active transportation corridors in the study area is critical to making it useful and effective for trail users. The following section describes existing and proposed trail connections. See **Figure 7** for an illustration of trail connections.

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Trails – Existing. The following trails are either in or adjacent to the study area.

El Camino Trail. The El Camino: Butterhole-Seneca Park Trail is a multi-use pedestrian greenway that was adapted from an old railroad line. The 2.25-mile trail runs from Mill Street in High Falls all the way to the Seneca Park pedestrian bridge. The Trail provides a safe, continuous pedestrian and bicycle route - accessible to citizens from all walks of life -- that links key destinations in the city.

Genesee Riverway Trail. A designated National Recreation Trail, the 18-mile Genesee Riverway Trail is an off-road trail for walking, running and bicycling along the Genesee River. It extends through the scenic, historic and cultural heart of Rochester, from the Erie Canal to downtown and Lake Ontario. It provides pedestrian access to the Genesee River, its scenic gorge, three waterfalls, eight pedestrian bridges, and eleven parks, including four historic parks designed by Frederick Law Olmsted. The GRT is a network of riverside trails on both sides of the Genesee River, as well as several small neighborhood linkages. There are a few small gaps remaining in the overall network, including some on-road sections. The trail connects to the 84-mile long Genesee Valley Greenway to the south.

Irondequoit Lakeside Multi-Use Trail. The Irondequoit Lakeside Multi-Use Trail is an approximately 4.8-mile paved pedestrian and bicycle trail that runs from the north side of Culver Road in Sea Breeze to Pattonwood Drive to the O'Rorke Bridge. The trail follows portions of Culver Road, St. Paul Boulevard, Lake Shore Boulevard, and Sweet Fern Road. The trail is a joint project of the Town of Irondequoit and Monroe County. Trail amenities include signage, rest stops, and a 13-foot-wide timber boardwalk bridge crossing Tamarack Swamp.

Lake Ontario State Parkway Trail. This newly constructed 3.3-mile, 12-foot wide, paved multi-use trail extends through the Town of Greece and the City of Rochester. The trail parallels the north side of the Parkway beginning at the existing I-390 Bike Path on the west side of I-390 and extends to the Genesee Riverway Trail. Designated parking is available in the lot on the north side of Janes Road, just west of the I-390 overpass.

Seaway Trail. The Great Lakes Seaway Trail, formerly named and commonly known as the Seaway Trail, is a 518-mile National Scenic Byway in the northeastern United States, mostly contained in New York but with a small segment in Pennsylvania. The trail consists of a series of designated roads and highways that travel along the Saint Lawrence Seaway—specifically, Lake Erie, the Niagara River, Lake Ontario, and the Saint Lawrence River. It begins at the Ohio state line in rural Erie County, Pennsylvania, and travels through several cities and villages (including the City of Rochester) before ending at the Seaway International Bridge northeast of the Village of Massena in St. Lawrence County, New York. The Seaway Trail is used by bicyclists, as well as vehicles, to visit unique historical locations and cultural heritage sites in addition to outstanding views and scenic vistas.

Trails – Planned. The following trails are currently planned in or adjacent to the study area.

Eastman Trail. A route is proposed to link the proposed Route 390 Trail in the west to the Genesee Riverway Trail to the east, through or adjacent to the Eastman Business Park (EBP). A recently completed feasibility study determined that much of the EBP is not a feasible location for a multi-use trail at this time. Sections at the east and west ends of the EBP were determined to be feasible, and an on-road bike route was identified as the only alternative between these two off-road sections.

Genesee River Promenade Boardwalk. The Town of Irondequoit received funding from the NYS Department of State in 2006 to design a 4,600 foot boardwalk promenade for the east bank of the Genesee River, to increase public access for pedestrians and bicyclists. There is presently no access along the riverfront and this project will advance implementation of the Town's Local Waterfront Revitalization Program and other local planning initiatives.

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2. SIDEWALKS, ROADWAYS, AND INTERSECTIONS

No roadways cross the proposed trail route. This is a tremendous benefit, both in regards to trail user safety and reduced trail construction cost. However, the study area has roadways (and sidewalks) that are adjacent to the study area. It is critical to connect to the existing transportation network at junctions where sidewalks or roads are nearby. Sidewalks and roadway conditions are described for all relevant intersections. See [Figure 8](#) for an illustration of existing conditions.

Thomas Avenue. The proposed northern trail terminus is at Thomas Avenue, which is a County-owned road, with a functional classification as a major collector. There is no signal on the roadway at the location where the trail corridor ends. In 2010, the NYSDOT calculated the annual average of daily traffic at 6,500 vehicles per day. The CSX railroad corridor (within the study area) ends at the western side of Thomas Ave, just south of Pattonwood Drive. To the north, this segment of Thomas Avenue has sidewalks on both sides, which connect to Pattonwood and the Irondequoit Lakeside Multi-Use Trail. To the south, the sidewalks are not continuous. There are sidewalks in some locations, and generous shoulders in other locations along the corridor.

Seneca Park Avenue. This roadway meets the trail corridor at the point where the railroad corridor transitions from County ownership to CSX ownership. Seneca Park Avenue is a low volume local street that dead ends at the trail corridor. The roadway lacks sidewalks, but due to low traffic volumes, the street is still a comfortable route for trail users to access a trail.

Maplehurst Road. This roadway ends at the County-owned railroad corridor. Maplehurst Road is a Town-owned local road, with sidewalks on both sides. This roadway is an important neighborhood connection, and a comfortable route for trail users to access Seneca Park and the trail system.

Covington Road. This roadway also ends at the County-owned railroad corridor. Covington Road is a Town-owned local road, with sidewalks on both sides. This roadway is an important neighborhood connection, and a comfortable route for trail users to access Seneca Park and the trail system.

Westbourne Road. This roadway also ends at the County-owned railroad corridor. Westbourne Road is a Town-owned local road, with sidewalks on both sides. This roadway is an important neighborhood connection, and a comfortable route for trail users to access Seneca Park and the trail system.

D. RAILROAD HISTORY

The Rome, Watertown and Ogdensburg (RW&O) Railroad (also known as the Hojack Line) operated along the south shore of Lake Ontario, from Niagara Falls to Potsdam. The line went through Rochester and Irondequoit along the lake, near Charlotte. In the 1880's, the owner wanted to transport people from the lake into downtown Rochester in order to compete with other railroad lines. He purchased a foundering trolley line that ran along the eastern side of the Genesee, built a railroad trestle across the river, and in 1887, opened a passenger line into downtown.

This additional stretch of the RW&O carried passengers from the main line into downtown Rochester until 1914. At this time, the line was bought out by NY Central Railroad, and started to be solely used for freight. One of the principal uses for the freight line was to bring coal to RG&E's Beebe Station. Over time, the trestle became weakened, and the use of the line for freight became cost-prohibitive. Beebe Station was closed and abandoned in the late 1990's, and freight service along this stretch of railroad ended around the same time. The railroad corridor is now owned by several different parties, which include the City of Rochester, Monroe County, and CSX Railroad. Portions of the rail corridor now contain the El Camino Trail, and other portions are part of the study area for this feasibility study.

E. OPPORTUNITIES AND CONSTRAINTS

The following opportunities and constraints were considered in relation to the study area and possible trail routing possibilities.

1. OPPORTUNITIES

The following characteristics of the trail corridor are presented as opportunities, or elements that can be exploited to the advantage of the project.

Safety. The trail corridor does not cross any roadways, which increases the safety of the route for trail users, and reduces the complexity of future trail development.

Trail Connections. The trail corridor connects with a number of other trails, and will serve as an important connection in the regional trail system. The trail will connect to the El Camino Trail, the Irondequoit Lakeside Multi-Use Trail, the Lake Ontario State Parkway Trail, and the Genesee Riverway Trail.

County Park Connections. Portions of the trail corridor are adjacent to the Seneca Park Zoo and within the boundaries of Seneca Park, which offers opportunities to enjoy the park and zoo, as well as logistical benefits, such as shared parking.

Historic Resources. The trail will not only provide access to open space, but also to historic resources. Seneca Park is designed by Frederick Law Olmsted, and the railroad corridor has a history of its own. Both of these resources add to the interpretive and educational possibilities that could be developed along the trail corridor.

Scenic Views. The trail corridor offers access and connection to the Genesee River gorge, and opportunities to enjoy the dramatic scenic views. Different trail routing options through the study area are possible, and some of the routes offer more scenery than other routes.

Habitat Diversity. The trail corridor crosses through different habitats and vegetative cover types, which provides opportunities for environmental education related to wildlife habitat, species diversity, and other related topics. Even if there were no formal interpretive efforts, the corridor provides access and opportunities to view a natural landscape in a relatively developed area.

Adaptive Re-Use of Transportation Corridor. Converting a former railroad corridor to an active transportation corridor is an opportunity to re-use an abandoned part of the transportation system for new purposes. The compacted grade of the railroad corridor offers an excellent base for trail development. In addition, by utilizing the railroad corridor for trail development, this will preserve the corridor for future uses, such as light rail. Despite the conversion to an active transportation corridor, no legal change in land use will occur that would prevent the corridor to be used for more intensive transportation uses in the future.

Active Transportation. Developing a trail system that provides connections to numerous destinations, as well as the roadway/sidewalk network, and a number of other trails provides a significant opportunity to advance the regional active transportation network. Active transportation is a means of getting around that is powered by human energy, primarily walking and bicycling. Offering ample opportunities for people to engage in active transportation helps to address health problems and environmental concerns.

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2. CONSTRAINTS

The following issues are presented as constraints, or elements that may challenge the success of the project.

ADA Accessibility. The study area presented some issues related to ADA accessibility, due to the steepness of trail slopes in select areas. An ADA-accessible trail may not be feasible throughout the entire trail corridor.

Proximity of Residential Properties. The railroad corridor is in close proximity to a substantial number of properties, subsequently resulting in numerous property owners that would potentially be affected by the proposed trail improvements. Nearly 50 homes are located within 50 feet of the railroad corridor. Trail development could be influenced by property owners who are concerned about a trail in their backyard.

3. BOTH

Some issues are presented as both an opportunity and a constraint, because they have elements of advantage and challenge for the project's success.

Property Ownership. The portions of the study area that have been considered for trail routing possibilities are owned by two key property owners, CSX Railroad and Monroe County. With only two property owners involved, the negotiations for trail development will be less complicated than if numerous property owners were involved. However, with only two property owners, both of these stakeholders can exert a significant amount of influence over the trail routing and development process.

Isolated Areas. Throughout the trail corridor, there are isolated areas with low natural surveillance. Natural areas of relative solitude are uncommon in urban, developed areas. The opportunity to be alone in natural surroundings is an opportunity for many people to enjoy the peace and quiet of nature. However, for other people, isolated areas present a constraint, as they may have concerns regarding their personal safety.

This chapter describes the alternatives considered for the Irondequoit Seneca Trail System, and describes the potential trail user groups.

A. PLANNING FOR TRAIL USERS

The following section discusses different types of trail users, including bicyclists, pedestrians, emerging user groups, and non-motorized winter sports enthusiasts. Please also see [Appendix D](#) for a discussion of managing conflict between trail users.

1. BICYCLISTS

On average, bicyclists require a minimum width of 40 inches to operate. When bicyclists are traveling alongside motor vehicles, a width of five feet or more is recommended to allow bicyclists to safely maneuver.

While the minimum operating space and bicycle facility width remains relatively the same between users, the skills, confidence and preferences of bicyclists vary significantly. The challenge in planning for bicycle facilities is designing for the diversity of user skills. According to the Federal Highway Administration (FHWA), the Federal policy goal for bicycling is “to accommodate current use and encourage increased use, while enhancing safety.”

The FHWA identifies the following types of bicycle users:

- Group A: Advanced Bicyclists
- Group B: Basic Bicyclists
- Group C: Children

Defining the bicyclist skill level through three groups and designing for the specific groups helps to refine roadway and path treatments. A description of the three different types of bicycle users by the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities is provided below.



Group A: Advanced Bicyclists. Group A is comprised of advanced or experienced riders who are generally using their bicycles as they would a motor vehicle. They are riding for convenience and speed and want direct access to destinations with minimal detours and delays. Advanced riders are typically comfortable riding with motor vehicles in traffic. They comprise the majority of the current users of collector and arterial streets and are best served by the following:

1. Direct and convenient access to destinations usually via the existing street and highway system.
2. The opportunity to operate at maximum speed with minimum delays.
3. Sufficient operating space on the roadway or shoulder to reduce or preferably eliminate the need for either the bicyclist or the motor vehicle operator to change position when passing.

Ideally for Group A riders, all roads would be “bicycle friendly.”

Group B: Basic Bicyclists. Group B is comprised of basic adult and teenage riders who may also be using their bicycles for transportation purposes, such as getting to the store or visiting friends. Group B bicyclists are less confident of their ability to operate in traffic without special provisions for bicycles. Basic riders prefer to avoid roads with fast and busy motor vehicle traffic unless there is ample roadway width to allow easy overtaking by faster motor

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vehicles. Thus, basic riders are comfortable riding on neighborhood streets and shared use paths and prefer designated facilities such as bike lanes or wide shoulder lanes on busier streets. Some will develop greater skills and progress to the advanced level, but there will always be many millions of basic bicyclists. Group B bicyclists prefer:

1. Comfortable access to destinations, preferably by a direct route, using either low-speed, low traffic-volume streets or designated bicycle facilities, avoiding routes with high volume or high traffic speeds.
2. Well-defined separation of bicycles and motor vehicles on arterial and collector streets (bike lanes or shoulders) or separate bike paths.

Group B bicyclists would be best served by designated bicycle facilities on key routes through main travel corridors with lower volume rates and similar travel times.

Group C: Children. Group C bicyclists are children riding on their own or with their parents. This group may not travel as fast as their adult counterparts, but still require access to key destinations in their community, such as schools, convenience stores and recreational facilities. It is important to make sure children do not develop a false sense of security if they are encouraged to ride on a busy street. Group C bicyclists prefer the following:

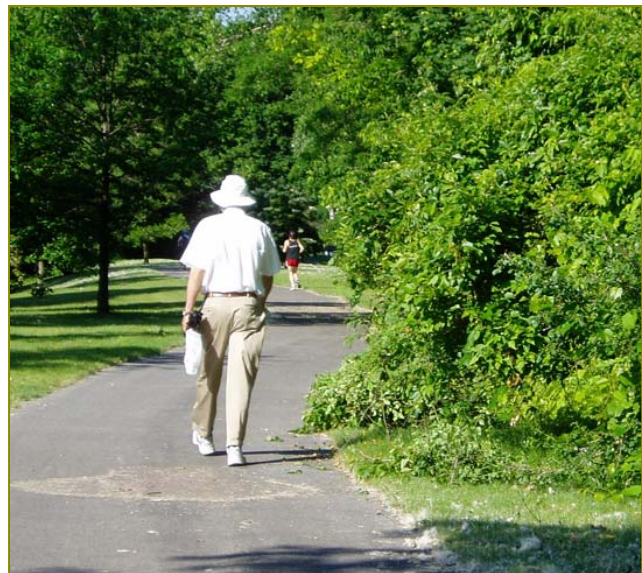
1. Access to key destinations surrounding residential areas, including schools, recreation facilities, shopping, or other residential areas.
2. Residential streets with low motor vehicle speed limits and volumes linked with shared use paths and busier streets with well-defined pavement markings between bicycle and motor vehicles.
3. Well-defined separation of bicycles and motor vehicles on arterial and collector streets linked with shared use paths and other bicycle facilities.

Group C bicyclists would be best served by routes that provide access to key destinations, but keep them off of busy roads, as safety is more important than travel time.

2. PEDESTRIANS

On average, two people walking side-by-side or passing one another generally require 4.67 feet of space, while two people in wheelchairs need a minimum of 5 feet to pass one another. While the minimum operating space and pedestrian facility width are relatively the same between users, the skills, confidence and preferences of pedestrians vary. These variations are mostly a result of differences in age and differences in physical, cognitive and sensory abilities.

The 2010 New York State Supplement to the National Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways 2009 Edition mandates that crossings be designed to accommodate a walking speed of 3.5 feet per second. This walking speed should be used in the design of any crossing facilities.



The 2004 AASHTO Pedestrian Guide provides an overview regarding different types of pedestrians. It is more difficult to classify pedestrians into the same types of categories presented for bicyclists. Pedestrians exhibit a wide range of physical, cognitive, and sensory abilities and disabilities. All pedestrians are part of the transportation mix and should be anticipated in the design of pedestrian facilities. **Table 4** lists some of the common characteristics of pedestrians at various ages.

Table 4. Common Pedestrian Characteristics by Age Group¹

Age Group	Ages	Characteristics
Infants and Toddlers	0-4	<ul style="list-style-type: none"> ▪ Learning to walk ▪ Requires constant adult supervision ▪ Developing peripheral vision, depth perception ▪ Act impulsively and unpredictably
Young Children	5-8	<ul style="list-style-type: none"> ▪ Increasing independence, but still requiring supervision ▪ Limited peripheral vision and poor depth perception ▪ Act impulsively and unpredictably
Preteens	9-13	<ul style="list-style-type: none"> ▪ Susceptible to “darting out” into intersections ▪ Poor judgment ▪ Sense of invulnerability
High School Aged	14-18	<ul style="list-style-type: none"> ▪ Improved awareness of traffic environment ▪ Poor judgment ▪ Feel invincible
Adults	19-40	<ul style="list-style-type: none"> ▪ Active, fully aware of traffic environment
Middle-Aged Adults	41-65	<ul style="list-style-type: none"> ▪ Are still active ▪ May experience a slowing of reflexes, range of motion, and observational skills
Senior Adults	65+	<ul style="list-style-type: none"> ▪ Difficulty crossing street ▪ Vision loss and reduced abilities under low light/night conditions ▪ Difficulty hearing vehicles approaching from behind ▪ High fatality rate if hit

Both AASHTO and the FHWA note that there is no single “standard pedestrian” and that the transportation network should accommodate a variety of pedestrians. For example, children and adults perceive their surroundings differently. Children require adult supervision in order to navigate the transportation system safely and independently. Children sometimes walk more slowly than adults, and have a lower eye height.

Older adults also have different needs. This group of pedestrians requires more time to cross the street, desires more predictable surfaces, benefits from handrails in steep areas, and needs places to rest along their route. Older pedestrians are also more likely to be killed or seriously injured in a crash. Because we live in an aging population, the needs of older pedestrians will continue to increase.

In addition, some pedestrians have limited mobility. This can be due to physical disabilities, as well as carrying packages, pushing strollers, or otherwise transporting items. The ability to reach a destination depends on a person’s speed, coordination, endurance, and the types of obstacles, grades and cross-slopes he or she encounters

¹ AASHTO Pedestrian Guide, 2004; and FHWA Bicycle & Pedestrian Program.

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along the way. Accessibility guidelines provide minimum specifications for accessibility that meet the needs of most people. However, exceeding the minimum standards will make environments accessible to more people.

3. EMERGING USER GROUPS

The following section briefly summarizes a study conducted by Bruce Landis, Theodore Petrisch and Herman Huang and sponsored by the FHWA, "Characteristics of Emerging Road Users and Their Safety", Publication No. FHWA-HRT-04-103, printed in October 2004. According to recent research, emerging road and trail users constitute an increasing portion of transportation system users. With the development of new technologies and changing demographics, devices such as kick scooters, inline skates, hand cycles, and recumbent bicycles are becoming more common than they were even ten years ago. Electric personal transporter devices (e.g., the Segway™) are relatively new technologies that are now appearing on paths and roadways around the country. Additionally, the American population is aging, and the number of people using mobility assistive devices (such as manual wheelchairs, powered wheelchairs, and powered scooters) is increasing.

Emerging User Types include:

- Inline skates
- Kick scooters
- Strollers
- Recumbent bicycles
- Bicycle trailers
- Power wheelchairs
- Skateboards
- Electric bicycles
- Tandems
- Segway™
- Manual wheelchairs
- Assistive power scooters
- Adult tricycles
- Hand cycles

With the increase in the number of emerging users comes a greater need to design and build suitable facilities. Many communities throughout the United States have adopted the AASHTO Guide to the Development of Bicycle Facilities as a standard for bike lane, shared roadway, and shared use trail design. As its title implies, the guide is written with bicyclists in mind, so its recommendations are based on the physical dimensions and operating characteristics of bicyclists. Emerging users have different characteristics from bicyclists, and as such, trails



designed and built to accommodate bicyclists may not meet the needs of these emerging users.

The findings of this study demonstrate that there is great diversity in the operating characteristics of various road and trail user types. AASHTO's design bicycle length of 6 feet and width of 30 inches were adequate for the majority of observed users. However, bicycle trailers and recumbent bicycles exceeded the design length. Power wheelchairs exceeded the design width. The recommended two-way trail width of 10 feet gave most users traveling single-file in opposite directions enough room to pass each other, though some only barely. The recommended two-way trail width of 10 feet was not wide enough for many user types to complete a three-point turn. The growing need to accommodate emerging users is not restricted to off-street shared use paths. The results of this research are valuable in determining how to better accommodate emerging user groups.

4. NON-MOTORIZED WINTER SPORTS ENTHUSIASTS

With a lengthy season of winter weather, sports that take advantage of cold and snow are standard in Upstate New York. Popular non-motorized winter trail uses include cross-country skiing and snowshoeing. Other less frequently practiced types of non-motorized winter sports include dog sledding, snow biking (cycling, usually with a mountain bike, on snow and/or ice), skibobbing (using a bicycle-type frame attached to skis instead of wheels) and skijoring (cross-country skiers pulled by dogs). Winter trail uses are generally physically demanding, requiring endurance and skill. Winter sports enthusiasts can often utilize hiking, biking, or multi-use trails when they are covered with snow.



Cross country ski trails are designed specifically for skiing and are often a system of looped trails of varying difficulty over rolling terrain in a park-like setting. Other winter uses are often prohibited along designated ski trails unless there is space alongside the ski tracks for the additional use. Ski trails are, however, often compatible with a variety of summer uses. Many formal ski trails are groomed for skiers while other trails are designed for backcountry skiing without mechanized grooming. Narrow ski trails often restrict users to traveling in only one direction from the trailhead while wider ski trails are often groomed with two sets of tracks for two-way traffic. Cross country ski trails are often rated to signify their comparative level of difficulty. While a linear trail may not be the preferred terrain for cross country skiers, it is likely that skiers would utilize the Irondequoit Seneca Trail System.

Information on winter sports compiled from the NY Statewide Trails Plan, 2010 and the NJ Trails Plan Update, 2008.

5. POTENTIAL AREAS OF CONFLICT BETWEEN USERS

Multi-use trails, when they are well designed, carefully maintained, and effectively managed, are a significant community resource. However, trails can have a number of conflicts and challenges, which can be addressed by physical design and management responses. Potential conflicts on the Irondequoit Seneca Trail System include conflicts between different types of trail users, conflicts between motorists and trail users at road crossings, and conflicts between trail users and property owners. **Appendix D** discusses ways to manage conflict. The trail and facilities proposed for the Irondequoit Seneca Trail System are designed to accommodate most trail users described in this section.



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B. DEVELOPMENT AND ANALYSIS OF ALTERNATIVES

The alternatives presented in this section were developed by carefully evaluating the data gathered in the inventory and analysis phase. The trail alignment alternatives are described here and illustrated in [Figure 11](#).

1. ALTERNATIVE 1

When the feasibility study was initiated, one trail route was originally envisioned to provide the most direct connection between the El Camino Trail and the Irondequoit Lakeside Trail. This route utilized the path of the abandoned CSX Railroad corridor from St. Paul Boulevard to Thomas Avenue. This alternative is 3.67 miles in length, and would offer a single pathway for all user groups along the eastern side of the study area. Utilizing the railroad corridor for the trail route has a number of opportunities, but also a number of issues.



The railroad corridor offers an ADA-accessible route, which would provide a route for all users. However, this route does not maximize the scenic value of the Genesee River. In addition, the railroad corridor is in close proximity to residential areas. This provides connection opportunities to the sidewalk network, but would also place trail users within 50 feet of nearly 50 homes. This close proximity could invite conflicts between trail users and property owners, and is likely to be controversial with some neighborhood residents.

The railroad corridor also offers a compacted base, which is good for trail development. Trail materials, whether stone dust or asphalt, can be cost-effectively utilized on top of the existing base material for an excellent trail surface. Finally, in stakeholder meetings, it was clear that the railroad corridor route was not preferred by all property owners. The Monroe County Department of Parks, one of the two property owners, offered alternative routing possibilities for the project advisory committee to consider.

2. ALTERNATIVE 2

During the process of conducting the feasibility study, other trail routes were proposed by Monroe County. The County owns most of the land in the southern half of the study area. This land is contained in Seneca Park and the Seneca Park Zoo. Rather than a single pathway, the second alternative is a system of different routes that provide options for different users. In this alternative, the northern part of the trail would still be located in the abandoned railroad corridor currently owned by CSX and would capitalize on all of the advantages stated above while maximizing the scenic value of the Genesee River.

The southern portion of the trail system would split at two main 'decision points'. Traveling from north to south, the trail would follow the railroad corridor from Thomas Avenue to Seneca Park Avenue for 1.62 miles. At this point, the main trail would veer to the west to more closely follow the river along an existing footpath through Seneca Park. After traveling about 3,500 feet, the trail would split again near Olmsted Landing. The main trail would continue along the river, but cyclists would be encouraged to instead use park roads to navigate their way through the park. Experienced cyclists could continue on the main trail, but conditions would not be appropriate for all cyclists.

Both the park road and the riverside trail would connect with the El Camino Trail. The park roads travel in a simple loop through the park, and do not experience much vehicular traffic. With minor signage and pavement marking modifications, the park roads can be safely shared by bicyclists and motorists. The riverside trail will require fairly

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extensive improvements in the form of repairs, upgrades, and realignment in select locations, as well as resurfacing. The riverside trail offers a scenic route with several overlook locations.

To accommodate users of all mobility levels, the trail system alternative also includes an ADA-accessible loop trail. The 1.1-mile loop trail would be accessible from three lodges/shelters and their respective parking lots near the Trout Pond in Seneca Park. The loop uses part of the riverside trail, as well as a loop around Trout Pond. See [Figure 14](#).

3. OTHER ALTERNATIVES CONSIDERED

The project advisory committee advised the consultant to combine the two alternatives into one solution. No other trail alignment alternatives were considered, however different levels of trail improvements were identified. Please see [Table 5](#) for an illustration. 'A' represents basic improvements, 'B' represents moderate improvements, and 'C' represents extensive improvements. The shading represents the recommended level of improvements.

Table 5. Level of Improvement Options for Trail Development

	Rail Trail (CSX Ownership)			Railroad Pathway (Monroe County Ownership)			Shared Park Road (Monroe County Ownership)			Riverside Trail (Monroe County Ownership)		
	A	B	C	A	B	C	A	B	C	A	B	C
Drainage Improvements		●	●	●	●	●	N/A	N/A	N/A		●	●
Surface Improvements (Stone Dust)		●			●		N/A	N/A	N/A		●	
Surface Improvements (Asphalt)			●			●	N/A	N/A	N/A			●
Fence Removal (Between Monroe County Railroad ROW and Seneca Park)	N/A	N/A	N/A	●	●	●	N/A	N/A	N/A	N/A	N/A	N/A
Trail Connections	●	●	●	●	●	●	●	●	●	●	●	●
Neighborhood Gateways			●			●	N/A	N/A	N/A			●
Neighborhood Connections		●	●	●	●	●					●	●
Signage	●	●	●	●	●	●			●	●	●	●
Pavement Markings	N/A	N/A	N/A	N/A	N/A	N/A		●	●	N/A	N/A	N/A
Seating		●	●		●	●	N/A	N/A	N/A		●	●
Guide Rail		●	●	N/A	N/A	N/A	N/A	N/A	N/A			●
Overlooks / Resting Areas			●			●	N/A	N/A	N/A			●

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C. ACCESS, OWNERSHIP AND CONTINUITY

1. ACCESS POINTS

Access to the Irondequoit Seneca Trail System can easily occur from several publicly accessible locations. These locations include St. Paul Boulevard, Seneca Park Avenue and Thomas Avenue. In addition, neighborhood connections to the railroad corridor can occur from Westbourne Road, Covington Road, and Maplehurst Road. Trail user parking and access is proposed in Seneca Park, as well as at the northern end of the trail. In addition, on-street parking is possible on Seneca Park Avenue. These locations may require some improvements to make access safer and more comfortable. Please see **Figures 13 and 15** for illustrations of potential parking and access locations.



The trail will also intersect with a number of other trails, forming a critical link in the regional trail network. These connections have already been discussed in previous report sections. Access to the trail will need to be limited in order to keep unauthorized vehicles from entering the trail corridor, but managed in such a way that emergency and maintenance vehicles could enter the trail when necessary. Trail gateways and access gates are described in the Recommendations section of the report.

2. PRIVATE PROPERTY USE AND ACQUISITION

The properties where the Irondequoit Seneca Trail System is proposed are owned by Monroe County and CSX Railroad. A strategy for acquiring private property and/or public right-of-way is needed to create a continuous trail between St. Paul Boulevard and Thomas Avenue. In the southern section of the trail corridor, Monroe County owns land adjacent to the trail corridor. Representatives from the Monroe County Department of Parks have been included in discussions during the course of this study, and should continue to be included in future discussions about trail development, management and ownership. Preliminary discussions with Monroe County have found the County to be receptive to the possibility of trail development on County land. Discussions with CSX Railroad were not pursued during the course of the study.

Acquiring the land from CSX is most likely to happen through some sort of partnership between New York State, Monroe County, the Town of Irondequoit, and the Genesee Land Trust. Some combination of these partners could effectively acquire the land, build the trail, and maintain the facilities. There are other local examples of similar public-private partnerships that have been used to develop and maintain trails, which include the Lehigh Valley Trail and the Genesee Riverway Trail.

D. ECONOMIC BENEFITS OF TRAILS

Studies from all over the country have shown that trails can contribute to the communities where they are established by providing recreation, transportation, a sense of community, increased property values, and lower crime. However, in some communities, the creation of walking and biking paths has been met by resistance from members of the community who worry that property values may be negatively impacted, that there will be loss of privacy, or the potential for more crime in their neighborhood.

Appendix C provides a compilation of several studies that illustrate that trails, greenways, and bicycle pathways have been shown to have positive economic benefits on surrounding property values. One study from Seattle, Washington reported that concerns about decreased property values, increased crime and a lower quality of life due to the trail was unfounded, and in fact the opposite was true – a multi-use trail is an amenity that helps sell homes,

increase property values, and improve the quality of life. Another example from Boulder, Colorado found that housing prices declined an average of \$4.20 for each foot of distance from a greenbelt. The average value of property adjacent to the greenbelt was 32% higher than those 3,200 feet away. These studies collectively demonstrate that trails are a benefit to the greater community, as well as the nearby property owners.

E. SEQRA DOCUMENTATION AND PERMITTING PROCESS

Development activity related to implementing the proposed project may involve potentially adverse impacts to the environment from construction activities. The following is a framework to comply with applicable State and Federal permitting requirements.

1. SEQRA DOCUMENTATION

The Irondequoit Seneca Trail System is subject to State Environmental Quality Review Act (SEQRA) review because the actions proposed may potentially impact the environment. The Feasibility Study is an Unlisted Action because the trail is likely to be financed with public funding and over 2.5 acres will be disturbed. The likely SEQRA process for this project is outlined as follows:

- a. Complete Part I of a Full Environmental Assessment Form for circulation to the involved agencies.
- b. Determine the appropriate Lead Agency.
- c. Determine the significance of the environmental impact within 20 days.
- d. If a Negative Declaration is determined, the lead agency must:
 - Prepare, file, publish and distribute the Negative Declaration. Every Negative Declaration must: identify the relevant areas of concern; thoroughly analyze the relevant concerns; and document the determination in writing, describing the reasons why the environmental concerns that were identified and analyzed will not be significant.
 - Maintain the file for public access.
- e. If a Positive Declaration is determined, the following must be completed:
 - The lead agency must file a notice of the Positive Declaration.
 - A scope of the environmental issues may be prepared. Although not required, scoping is completed to address the environmental issues, which may be done by the lead agency, by the applicant, or by a consultant. If conducted, all involved agencies should participate in the scoping process. A draft scope should be given to anyone who has written to express project interest.
 - A draft environmental impact statement (EIS) must be prepared. The lead agency, project sponsor or their consultant can prepare the draft EIS.
 - The lead agency must determine acceptance of the draft EIS within 45 days. If adequate, the lead agency prepares, files, distributes and publishes a Notice of Completion.
 - Once the Notice of Completion of the draft EIS is filed, a public comment period begins for a minimum of 30 days.
 - A public hearing can be held. If a public hearing is held the following must be done: a Notice of Public Hearing must be prepared and filed; a notice must be published in the newspaper in the area of the potential impacts at least 14 days before the hearing, and the public comment period must continue for ten days following the hearing.
 - A final EIS must be prepared within 45 calendar days after the close of any hearings or within 60 days after following the draft EIS, whichever occurs last. The lead agency is responsible for the adequacy and accuracy of the final EIS.
 - Notice of Completion of the Final EIS must be prepared, filed, distributed and published.

Detailed instructions for each step of the SEQRA review can be found at the New York Department of Environmental Conservation's website under regulations, Chapter VI: 617: State Environmental Quality Review Act. An additional SEQRA review for each construction phase is not necessary.

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2. PERMITTING PROCESS

The proposed trail will require permitting and coordination with a number of different state and federal entities, including, but not limited to, the United States Army Corps of Engineers (Corps), NYS Department of Environmental Conservation (NYSDEC), NY State Historic Preservation Office (SHPO), United State Fish and Wildlife Service (USFWS), and the New York Natural Heritage Program (NHP).

Joint Application. Submittal of a Joint Application for Permit to both the Corps and the NYSDEC will be required prior to commencing construction of this project. There is a potential for disturbance to both Waters of the United States and NYSDEC mapped wetlands and streams as a result of the construction of this project. Prior to submitting a Joint Application for Permit, an on-site wetland delineation will need to be conducted, a wetland delineation report prepared, and a jurisdictional determination site visit conducted with the regulatory agencies involved.

NYS Department of Environmental Conservation. This project is likely to disturb greater than one acre of land and a Stormwater Pollution Prevention Plan (SWPPP) will be needed to obtain coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-10-001. Stormwater management practices set forth in a SWPPP should be designed to protect water quality, enhance operations and reduce maintenance. All measures and practices should comply with NYSDEC requirements. Prior written authorization from the NYSDEC is needed in order to proceed with construction activities that disturb more than 5 acres at a time.

In addition, NYSDEC regulations require a weekly site inspection by a licensed professional engineer or landscape architect (or their representative) to review compliance with the prepared plans during construction. Site inspections must also be performed within 24 hours of any storm event exceeding ½ inch of rainfall.

NY State Historic Preservation Office. Coordination with the SHPO will be necessary to confirm the absence or presence of known archeologically sensitive areas, listed sites and eligible sites within the project area.

U.S. Fish & Wildlife Service. Coordination with the USFWS will be necessary for potential impacts on federally listed rare, threatened or endangered wildlife species.

New York Natural Heritage Program. Coordination with the NHP will be necessary to identify any State endangered and/or threatened wildlife and plant species and/or important ecological communities that are located in the project area boundary.

edr is capable of providing all the necessary services to assist with the permitting process.



A. PREFERRED TRAIL ALIGNMENT

The preferred trail alignment for the Irondequoit Seneca Trail is a system of trail segments that collectively provide a safe, accessible experience for trail users of all types. The trail alignment combines features of both of the alternatives that were described in the previous chapter. The trail system has four main segments. Please see **Figures 12 and 17** for illustrations of the proposed trail system.

1. NORTHERN SECTION: RAIL TRAIL

The preferred location for the northern part of the trail is in the abandoned railroad corridor currently owned by CSX. Traveling from north to south, this trail segment (known as the Rail Trail) will follow the railroad corridor from Thomas Avenue to Seneca Park Avenue for 1.62 miles. This northern section features two scenic overlooks. Two alternatives for parking were considered. The first and preferred alternative is located north of Pattonwood Drive off of Marina Drive. An existing small parking/turn around area within the County ROW, in close proximity to the Irondequoit Lakeside Trail, could be expanded to accommodate a maximum of 10 cars. Trail users could connect to the Irondequoit Seneca Trail by crossing Pattonwood Drive at the signalized crosswalk or by following the existing asphalt walkway underneath the O'Rorke Bridge to the existing sidewalk along Thomas Avenue. The second alternative is to construct a new parking area north of Pattonwood Drive, between Timrod Drive and Marina Drive, located on land owned by the Town of Irondequoit. Alternative two is further removed from the Rail Trail and does not provide the level of pedestrian connectivity that alternative one provides, and is therefore less desirable. Negotiations with the land owners would be necessary for both alternatives.

2. CENTRAL SECTION: RIVERSIDE TRAIL AND RAILROAD PATHWAY

The central portion of the trail system will have two trail segments - the Riverside Trail and the Railroad Pathway - when the Rail Trail splits. These segments begin when the trail reaches Seneca Park Avenue. In this location, the main trail will curve to the west to more closely follow the river along an existing footpath through Seneca Park. The main trail (the Riverside Trail) will be developed in the same manner as the northern section of the trail. This section of the trail has three scenic overlooks.

The second trail segment will continue straight in the railroad corridor, south of Seneca Park Avenue. A dirt trail (the Railroad Pathway) will continue south, serving as a neighborhood pathway. Aside from minor drainage and access improvements, the pathway in the railroad corridor will not receive any upgrades south of Seneca Park Avenue.

3. SOUTHERN SECTION: SHARED PARK ROADS

After traveling about 3,500 feet (0.68 miles), the trail will split again near Olmsted Landing, for a total of three segments. The Riverside Trail will continue along the river, but cyclists will be encouraged to instead use park roads

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to travel through the park. Experienced cyclists can continue on the Riverside Trail, but conditions will not be appropriate for all cyclists. The park roads travel in a simple loop through the park, with little vehicular traffic. With minor upgrades to signage and pavement markings, the park roads can be safely shared by bicyclists and motorists.

The Riverside Trail will require fairly extensive improvements in the form of repairs, upgrades, and realignment in select locations, as well as resurfacing. The Riverside Trail through the southern section offers a scenic route with one overlook location. Both the Shared Park Roads and the Riverside Trail will connect with the El Camino Trail. The Railroad Pathway also continues through this southern segment, located slightly to the east in the railroad corridor. The Railroad Pathway has one scenic overlook.

4. ACCESSIBLE LOOP

To accommodate users of all mobility levels, the trail system will also include an ADA-accessible loop trail. The 1.1-mile loop trail will be accessible from three lodges/shelters and their respective parking lots near the Trout Pond in Seneca Park. The loop uses part of the Riverside Trail, as well as a loop around Trout Pond.

B. DESIGN DETAILS

The Irondequoit Seneca Trail study was primarily focused on assessing the feasibility of locating the trail in a particular location. However, preliminary design decisions were made to allow for estimating the cost of trail development. The following design elements are recommended.

1. TRAIL DESIGN AND MATERIALS

The trail system is comprised of three different character types. In the main portions of the trail – both the Rail Trail and the Riverside Trail – an eight foot wide asphalt trail surface is recommended. Other trail surfaces, such as recycled asphalt or stone dust, are also options for the main trail corridor. Recycled asphalt pavement is becoming an accepted alternative for trail design. Depending on availability, this material should be considered as an option during construction design.

The southern portion of the railroad corridor – the Railroad Pathway, which is envisioned as a lesser-used neighborhood pathway – will not be resurfaced. The trail surface will remain as a compacted dirt surface. The park roads are low-traffic asphalt park roadways. To upgrade these vehicular routes to be used as shared park roads, the route will require pavement markings and signage.

2. GATEWAYS, TRAILHEADS AND INTERPRETIVE SIGNAGE, EMERGENCY LOCATION MARKERS

Trailheads require site amenities to define the trail character, provide information, and keep trail users safe.

Gateways. Each trailhead presents an opportunity to define the character of the trail. Using the history of the railroad as a guide, the preliminary design for aesthetic features reflects this railroad character. Trail gateways have been designed that utilize locally salvaged railroad materials. Pier caps could be constructed from local stone, recycled steel or salvaged railroad tie plates. Piers could be constructed from recycled railroad ties, with metal strapping used to define the structure. The gateways would welcome trail users as they enter the trail. **Figure 18** illustrates a proposed trail gateway.

Trailheads and Interpretive Signage. One trailhead is proposed at each end of the trail, as well as one in the middle at Seneca Park Avenue. Each trailhead should have parking, as well as an informational kiosk with trail maps. **Figure 19** provides examples of various signage types – including kiosks, directional signs, and milepost bollards – as well as their proposed locations. **Figure 12** indicates proposed trailhead locations.

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Emergency Location Markers. Markers will be located on remote sections of the trails where there are no easily identifiable landmarks by which a trail user could describe their location. Each sign has a unique code, is GPS located, and is entered into the 911 system with notes on how to access each specific location. Emergency location markers have been successfully installed in Turning Point Park and have received positive feedback from emergency responders and the Rochester Police Department. Refer to **Figure 19** for examples.

3. DRAINAGE IMPROVEMENTS AND STREAM CROSSINGS

Improvements are needed for two existing footbridges in the study area. New decking and handrails, as well as repairs to existing structure will be required. If the bridge structure is in good condition, the existing footers will be re-used. If the footers are determined not to be structurally sound, then more extensive bridge improvements will be necessary.

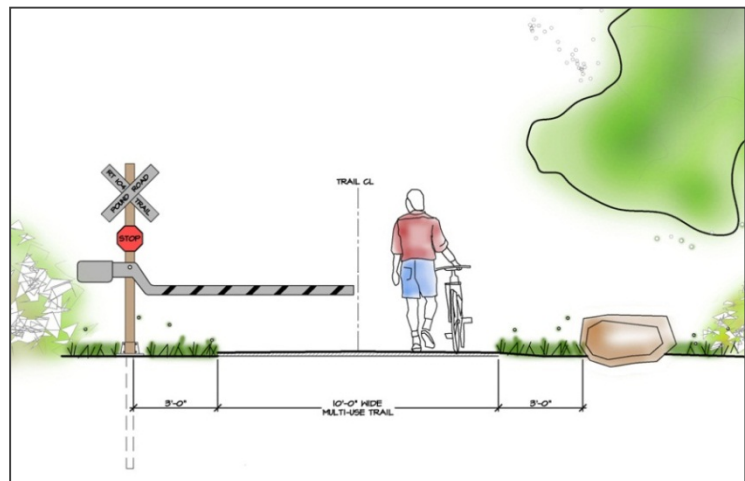
4. GUIDE RAILS, SITE FURNITURE, AND ACCESS CONTROL

Guide rails, site furniture and access control features are required to make the trail safe and comfortable.

Guide rails. In select areas of the trail, guide rails will be necessary to keep trail users safe from steep slopes at the edge of the river gorge. Timber guide rails are recommended, and a detail is shown on **Figure 18**.

Site Furniture. Locally sourced limestone slabs provide attractive, inexpensive, maintenance-free seating. Clusters of two or three boulders provide seating areas, which are recommended at regular intervals along the trail and at trailheads. Bicycle racks are recommended in select locations.

Access Control. Trail access control gates are recommended at primary trail entrances. The trail access gates can be a standard-issue gate, or the railroad theme could be used to inspire more interesting gates. **Figure 18** (and the inset drawing) illustrate a preliminary design concept for a railroad-themed access gate. Access to the trail needs to be limited to trail users and emergency vehicles, but does not need to receive the standard treatment.



Preliminary design concept for a railroad-themed access gate

C. PHASING

The proposed Irondequoit Seneca Trail is a multi-use trail system that passes through two different municipalities, and utilizes land owned by two different property owners. It is possible that the trail will be built in two different phases. A phasing plan has been developed, with phases breaking at property boundaries. **Figure 20** illustrates the recommended trail alignment and proposed phases for implementation.

1. PHASE ONE

The first phase of trail development is likely to occur in the southern part of the trail network, on the property owned by Monroe County. Preliminary conversations with the Monroe County Department of Parks indicated support for trail development. The shared park roads would be the easiest and least expensive improvement to pursue. The Railroad Pathway would also require fairly low effort. The Riverside Trail would involve more expense and effort, but would offer the greatest benefit to trail users.

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2. PHASE TWO

The second phase of trail development is likely to occur after land acquisition issues have been addressed. The northern portion of the trail is proposed on land that is currently owned by CSX Railroad. This property will likely require purchase by Monroe County, the Town of Irondequoit, an organization like the Genesee Land Trust, or some other entity in order to make the trail a reality. CSX has not been approached regarding the options for locating a trail in the abandoned railroad corridor. After land ownership has been addressed, the construction of the Rail Trail should constitute phase two of trail development.

This chapter discusses funding sources, trail construction standards, user guidelines, and operations and maintenance. Also included, is a summary of factors not addressed in this study.

A. POTENTIAL FUNDING SOURCES

This section identifies and discusses the numerous sources which can be used to provide monetary assistance for bicycle and pedestrian facilities and programs. Some programs are more appropriate than others for funding the Irondequoit Seneca Trail System, but this list has not been edited in order to provide a range of funding solutions.

Many of these funding sources are available on the federal level, as dictated in the new transportation legislation, Moving Ahead for Progress for the 21st Century (MAP-21). These federal programs are administered by the New York State Department of Transportation (NYSDOT). Additionally, there are other state and regional funding sources which can be used to help achieve the goals and objectives of this plan. A number of private funding sources exist which can be used by local governments to implement bicycle- and pedestrian-related improvements. The following quick-reference table (**Table 6**) includes all of the funding sources that are described subsequently in greater detail.

Table 6: Potential Funding Sources

Funding Source	Category	Relevant Project Type(s)
National Highway Performance Program	Federal	Bicycle transportation and pedestrian walkways (Section 207)
Surface Transportation Program	Federal	Bicycle transportation and pedestrian walkways; modification of sidewalks to comply with ADA; recreational trail projects; Scenic Byway projects; SRTS projects (Section 207)
Highway Safety Improvement Program	Federal	Intersection safety improvement, pavement and shoulder widening; bicycle/pedestrian/disabled person safety improvements; traffic calming; installation of yellow-green signs at pedestrian and bicycle crossings and in school zones; transportation safety planning; road safety audits; improvements consistent with FHWA publication "Highway Design Handbook for Older Drivers and Pedestrians"; safety improvements for publicly owned bicycle and pedestrian pathway or trail
Congestion Management and Air Quality (CMAQ)	Federal	Bicycle and pedestrian facilities (TA projects)
Transportation Alternatives (replaced TE, SRTS, Recreational Trails)	Federal	Bicycle and pedestrian facilities; Safe routes for non-drivers projects and systems; preservation of abandoned railway corridors including for pedestrian and bicycle trails; Safe Routes to School infrastructure and non-infrastructure projects: school-based facility, education, and enforcement projects/campaigns
State and Community Highway Safety Grants	Federal	Safety-related programs and projects (Section 402)
HUD Community Development Block Grants	Federal	Public facilities and improvements, such as streets, sidewalks, sewers, water systems, community and senior citizen centers, recreational facilities, and greenways

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Urbanized Area Formula Grants, Capital Investment Grants and Loans, and Formula Program for Other than Urbanized Area	Federal (FTA)	Bicycle access to public transportation facilities, shelters and parking facilities, bus bicycle racks
CHIPS (Consolidated Local, State, and Highway Improvement Program)	State	Bike lanes and wide curb lanes (www.dot.ny.gov/programs/chips)
CFA (Consolidated Funding Application)	State	Various state agencies, including the Environmental Protection Fund and the Department of State
The Greater Rochester Health Foundation	Regional	Community health and prevention projects and programs
Bikes Belong Coalition (www.bikesbelong.org/grants)	Private	Bicycle facilities; end-of-trip facilities; trails; advocacy projects such as Ciclovias
National Trails Fund (www.americanhiking.org/our-work/national-trails-fund)	Private	Hiking trails
Global ReLeaf Program (www.americanforests.org/our-programs/global-releaf-projects/global-releaf-grant-application/global-releaf-project-criteria)	Private	Trail tree plantings
Robert Wood Johnson Foundation (general) (www.rwjf.org/grants)	Private	Various
The Conservation Alliance Fund (www.conservationalliance.com/grants/grant_criteria)	Private	Land Use
Surdna Environment/Community Revitalization (www.surdna.org/grants/grants-overview.html)	Private	Community revitalization and environment, including greenway trail design

1. FEDERAL FUNDING SOURCES: MAP-21 FUNDED PROGRAMS

With the adoption of Moving Ahead for Progress for the 21st Century (MAP-21), the funding landscape for bicycle and pedestrian projects changed radically. Whereas under SAFTEA-LU (MAP-21's legislative predecessor), non-motorized transportation facility projects had been eligible under dedicated funding categories that included the Transportation Enhancements Program (TEP), Safe Routes to School (SRTS) and recreational trails. These dedicated programs have been folded into a new category, Transportation Alternatives which recasts, at reduced funding levels, the former TE program.² Transportation Alternatives includes TA projects (see list below), previously

² Section 101 (29) Transportation Alternatives.--The term 'transportation alternatives' means any of the following activities when carried out as part of any program or project authorized or funded under this title, or as an independent program or project related to surface transportation: (A) Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.)(B) Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs. (C) Conversion and use of abandoned railroad corridors for trails for

eligible Safe Routes to School Projects,³ Recreational Trails projects, and boulevard projects in former Interstate Highway rights of way. Eliminated programs include Safe Routes to School, National Scenic Byways, and the Paul S. Sarbanes Transit in Parks program. The Land and Water Conservation Fund has been funded at a reduced amount through 2013. As before, non-motorized projects must be "principally for transportation, rather than recreation, purposes" and must be designed and located pursuant to the transportation plans required of States and Metropolitan Planning Organizations. The exception to this rule is the Recreational Trails Program (RTP), under which projects may be used for recreational purposes.

Whereas before there were different funding methods for each program, new MAP-21 TA funds will be distributed through grant programs. Fifty percent of the funding will be distributed according to population share. For areas over 200,000, the MPOs will manage the distribution of funds by grant competition. For areas under 200,000, the state will manage the distribution through a competitive grant program. These funds are limited to this use and are not transferable. The remaining fifty percent will be distributed by DOTs, and is transferable to other highway uses. The combination of reduced available funding and increased competition for funds due to the combining of programs may lead to a reduction in bicycle and pedestrian projects being funded.

National Highway Performance Program. Funds may be used to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway in the National Highway System, including Interstate highways.

Surface Transportation Program (STP). Funds may be used for the construction of bicycle transportation facilities and pedestrian walkways, as well as many other related facilities (bicycle parking, bike-transit interface, etc.). Transportation Alternative projects are eligible for STP funds. Modifications of public sidewalks to comply with the Americans with Disabilities Act (ADA) are also covered.

Highway Safety Improvement Program. Funds for bicycle- and pedestrian-related highway safety improvement projects, strategies and activities on a public road that are consistent with a State strategic highway safety plan.

pedestrians, bicyclists, or other non-motorized transportation users. (D) Construction of turnouts, overlooks, and viewing areas. (E) Community improvement activities, including--(i) inventory, control, or removal of outdoor advertising; (ii) historic preservation and rehabilitation of historic transportation facilities; (iii) vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control; and (iv) archaeological activities relating to impacts from implementation of a transportation project eligible under this title. (F) Any environmental mitigation activity, including pollution prevention and pollution abatement activities as mitigation to-- (i) address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff, including activities described in sections 133(b)(11), 328(a), and 329; or (ii) reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.

³ Authorized in the 2005 SAFETEA-LU bill, Safe Routes to School projects include: (f) Eligible Projects and Activities.— (1) Infrastructure-related projects.-- (A) In general.--Amounts apportioned to a State under this section may be used for the planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school, including sidewalk improvements, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bicycle parking facilities, and traffic diversion improvements in the vicinity of schools. (B) Location of projects.--Infrastructure-related projects under subparagraph (A) may be carried out on any public road or any bicycle or pedestrian pathway or trail in the vicinity of schools. (2) Non-infrastructure-related activities.--(A) In general.--In addition to projects described in paragraph (1), amounts apportioned to a State under this section may be used for non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training, volunteers, and managers of safe routes to school programs.

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Congestion Mitigation and Air Quality (CMAQ) Improvement Program. Established in 1991 and continued in MAP-21, CMAQ will continue to provide funding for projects that help State and local governments meet the requirements of the Clean Air Act. Whether they include attainment or non-attainment areas, States may use CMAQ funds for CMAQ- or STP-eligible projects. Projects must be included in the MPO's current transportation plan and transportation improvement program (TIP) or state transportation program (STIP) in areas without an MPO. It is important to note that future additional funding from this program is unlikely to be available in the Genesee-Finger Lakes region and there is a backlog of eligible projects in the region that makes funding for new bicycle and pedestrian projects unlikely within the MAP-21 timeframe (through 2014).

Transportation Alternatives. As mentioned earlier, this new program now provides funding for what used to be funded by three separate programs (Transportation Enhancements, Safe Routes to School, Recreational Trails). In addition to projects in these categories, TA money can be used to fund some road projects. Fifty percent of each state's funds will be distributed by the DOT, the remainder by the MPOs. There is an opt-out clause that allows up to fifty percent of the funds to be transferred to use in any program without restriction. Eligible activities include:

1. Bicycle and pedestrian facilities;
2. Safe routes for non-drivers projects and systems;
3. Construction of turnouts, overlooks and viewing areas;
4. Vegetation management practices in ROW and other activities under Sec 319 (landscaping/ beautification);
5. Historic preservation, rehabilitation and operation of historic transportation buildings, structures and facilities;
6. Preservation of abandoned railway corridors including for pedestrian and bicycle trails;
7. Inventory, control and removal of outdoor advertising;
8. Archeological activities related to transportation projects; and
9. Any environmental mitigation, including existing uses.

Safety and education activities are no longer specifically funded, but may be allowed under #2.

The Recreational Trails Program is now funded under the TA umbrella. Funds may be used for all kinds of trail projects. Of the funds apportioned to a state, 30 percent must be used for motorized trail uses, 30 percent for non-motorized trail uses, and 40 percent for diverse trail uses (any combination). Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles. The funding amount will remain the same as in 2009 (\$2,204,556). An important provision of the new bill allows the Governor of a state to opt out of the recreational trails program if the Governor notifies the U.S. Secretary of Transportation no later than 30 days prior to apportionments being made for any fiscal year.

Highway Safety Section 402 Grants. Generally unchanged from SAFETEA-LU. A State is eligible for these Section 402 grants by submitting a Performance Plan (establishing goals and performance measures for improving highway safety) and a Highway Safety Plan (describing activities to achieve those goals). Research, development, demonstrations, and training to improve highway safety (including bicycle and pedestrian safety) are carried out under the Highway Safety Research and Development (Section 403) Program.

Community Development Block Grants (CDBG). Through the U.S. Department of Housing and Urban Development (HUD), the CDBG program provides eligible metropolitan cities and urban counties (called "entitlement communities") with annual direct grants that they can use to revitalize neighborhoods, expand affordable housing and economic opportunities, and/or improve community facilities and services, principally to benefit low- and moderate-income persons. Eligible activities include building public facilities and improvements, such as streets, sidewalks, sewers,

water systems, community and senior citizen centers, and recreational facilities. Several communities have used HUD funds to develop greenways. <http://www.hud.gov/offices/cpd/communitydevelopment/programs/>

Title 49 USC allows the *Urbanized Area Formula Grants (Section 5307)*, *Capital Investment Grants and Loans (Section 5309)*, and *Formula Program for Other than Urbanized Area (Section 5311)* transit funds to be used for improving bicycle and pedestrian access to transit facilities and vehicles. Eligible activities include investments in "pedestrian and bicycle access to a mass transportation facility" that establishes or enhances coordination between mass transportation and other transportation.

2. OTHER FEDERALLY FUNDED PROGRAMS

National Park Service Land and Water Conservation Fund (LWCF) Grants. This federal funding source was established in 1965 to provide "close-to-home" parks and recreation opportunities to residents throughout the United States. Money for the fund comes from the sale or lease of nonrenewable resources, primarily federal offshore oil and gas leases, and surplus federal land sales. LWCF grants can be used by communities to build a variety of parks and recreation facilities, including trails and greenways. LWCF funds are distributed by the National Park Service to the states annually. Communities must match LWCF grants with 50 percent of the local project costs through in-kind services or cash. All projects funded by LWCF grants must be used exclusively for recreation purposes, in perpetuity. Projects must be in accordance with each State's Comprehensive Outdoor Recreation Plan.

3. STATE AND REGIONAL FUNDING SOURCES

CHIPS (Consolidated Local, State, and Highway Improvement Program). Funds are administered by NYSDOT for local infrastructure projects. Eligible project activities include bike lanes and wide curb lanes (highway resurfacing category); sidewalks, shared use paths, and bike paths within highway right-of-way (highway reconstruction category), and traffic calming installations (traffic control devices category).

New York State's Consolidated Funding Application (CFA) is a streamlined resource through which applicants can access multiple financial assistance programs that are made available through various state agencies. The CFA offers the opportunity for local governments (and other eligible applicants) to submit a single grant application to any appropriate agencies that may have resources available to help finance a given proposal. All submitted CFAs are also reviewed by the applicant's Regional Economic Development Council, which may elect to endorse the proposal as a regional priority project. Several grant resources have been made available that may be appropriate funding opportunities for implementation of active transportation efforts, including the Environmental Protection Fund's (EPF) Municipal Grant Program, EPF Recreational Trails Program, Department of State's Local Waterfront Revitalization Program, and the Environmental Facilities Corporation's Green Innovation Grant Program.

The Greater Rochester Health Foundation administers a competitive grant program to implement community health and prevention projects. While grant focus topics and cycles may vary from year to year (the letter of intent deadline for 2013 grants was August 6, 2012), bicycle- and pedestrian-related projects and programs may frequently be well suited for these opportunity grants. <http://www.thegrhf.org/>

4. PRIVATE FUNDING SOURCES

There are a number of for and non-profit businesses that offer programs that can be used to fund bicycle and pedestrian related programs and projects. Nationally, groups like Bikes Belong fund projects ranging from facilities to safety programs. Locally, Wegmans and Excellus have a strong track record of supporting health-based initiatives and may be resources for partnership or sponsorship.

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Bikes Belong Coalition. The Bikes Belong Grants Program strives to put more people on bicycles more often by funding important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. Most of the Bikes Belong grants awarded to government agencies are for trail projects. The program encourages government agencies to team with a local bicycle advocacy group for the application. Bikes Belong Coalition seeks to assist local organizations, agencies, and citizens in developing bicycle facilities projects that will be funded by MAP-21. Bikes Belong Coalition will accept applications for grants of up to \$10,000 each (with potential local matches), and will consider successor grants for continuing projects. Grant applications are accepted quarterly. <http://www.bikesbelong.org/grants>

American Hiking Society National Trails Fund. The American Hiking Society's National Trails Fund is the only privately funded national grants program dedicated solely to hiking trails. National Trails Fund grants have been used for land acquisition, constituency building campaigns, and traditional trail work projects. Since the late 1990s, the American Hiking Society has granted nearly \$200,000 to 42 different organizations across the US. Applications are accepted annually with a summer deadline. <http://www.americanhiking.org/NTF.aspx>

The Global ReLeaf Program. The Global ReLeaf Forest Program is American Forests' education and action program that helps individuals, organizations, agencies, and corporations improve the local and global environment by planting and caring for trees. The program provides funding for planting tree seedlings on public lands, including trailsides. Emphasis is placed on diversifying species, regenerating the optimal ecosystem for the site and implementing the best forest management practices. This grant is for planting tree seedlings on public lands, including along trail rights-of-way. http://www.americanforests.org/global_releaf/grants/

The Robert Wood Johnson Foundation. The Robert Wood Johnson Foundation seeks to improve the health and health care of all Americans. One of the primary goals of the Foundation is to "promote healthy communities and lifestyles." Specifically, the Foundation has an ongoing "Active Living by Design" grant program that promotes the principles of active living, including non-motorized transportation. Other related calls for grant proposals are issued as developed, and multiple communities nationwide have received grants related to promotion of trails and other non-motorized facilities. <http://www.rwjf.org/grants/>

Conservation Alliance. The Conservation Alliance is a group of outdoor businesses that supports efforts to protect specific wild places for their habitat and recreation values. Before applying for funding, an organization must first be nominated by a member company. Members nominate organizations by completing and submitting a nomination form. Each nominated organization is then sent a request for proposal (RFP) instructing them how to submit a full request. Proposals from organizations that are not first nominated will not be accepted. The Conservation Alliance conducts two funding cycles annually. Grant requests should not exceed \$35,000 annually. <http://www.conservationalliance.com/>

Surdna Foundation. The Surdna Foundation seeks to foster just and sustainable communities in the United States, communities guided by principles of social justice and distinguished by healthy environments, strong local economies and thriving cultures. <http://www.surdna.org/>

B. TRAIL CONSTRUCTION STANDARDS

(Derived from AASHTO "Development of Bicycle Facilities")

Class I bikeways (bike paths) are facilities with exclusive right of way, with cross flows by motorists minimized. Class I bikeways are typically described as serving "the exclusive use of bicycles and pedestrians." However, experience has shown that if significant pedestrian use is anticipated, separate facilities for pedestrians are one way to minimize conflicts. Motorized bicycles are prohibited on bike paths unless authorized by ordinance or approval of the agency having jurisdiction over the path. Likewise, all motor vehicles are prohibited from bike paths. Signing can strengthen these prohibitions.

1. WIDTHS

Under most conditions, a recommended paved width for a two-way shared use path is 10'. In sensitive ecological areas, however, an 8' trail width is allowed where sight distance and trail alignment are good, expected trail use is low, and access by the occasional trail maintenance vehicle will not cause trail surface damage. Where heavy bicycle volumes are anticipated and/or significant pedestrian traffic is expected, the pavement width of a two-way path should be greater than 10', preferably 12' or more. Another important factor in determining the appropriate trail width is that bicyclists will tend to ride side by side on bike paths, necessitating more width for safe use.

A minimum 2' graded area with a maximum 1:6 slope shall be provided adjacent to both sides of the path. A 3' graded area is recommended to provide clearance from poles, trees, walls, fences, guardrails, or other lateral obstructions. Where the paved width is wider than the minimum required, the graded area may be reduced accordingly. However, the graded area is a desirable feature regardless of the pavement width.

2. CLEARANCE TO OBSTRUCTIONS

A minimum 8' horizontal clearance to obstructions shall be provided adjacent to the pavement. A 10' clearance is recommended. Where the pavement width is wider than the minimum required, the clearance may be reduced accordingly; however, an adequate clearance is desirable regardless of the paved width. If a wide path has pavement that is contiguous with a continuous fixed object (i.e. a block wall), a 4" white edge stripe, 12" from the fixed object, is recommended to minimize the likelihood of a bicyclist hitting it. On structures, the clear width between railings shall be the same as the approaching paved path plus the minimum 2' clear areas. The vertical clearance to obstructions across a bridge or structure shall be 10'.

3. STRIPING AND SIGNING

A yellow stripe may be used to separate opposing directions of travel. A centerline stripe is particularly beneficial in the following circumstances: a) where there is heavy use, b) on curves with restricted sight distance, and c) where the path is not lit and nighttime use is expected.

4. INTERSECTIONS WITH HIGHWAYS

Intersections are a prime consideration in bike path design. If alternate locations for a bike path are available, the one with the most favorable intersection conditions should be selected. Where motor vehicle cross traffic and bicycle traffic is heavy, grade separations are desirable to eliminate intersection conflicts. Where grade separations are not feasible, assignment of right of way by traffic signals should be considered. Where traffic is not heavy, stop or yield signs for bicyclists may suffice. Bicycle path intersections and approaches should be on relatively flat grades. Stopping sight distances at intersections should be checked and adequate warning should be given to permit bicyclists to stop before reaching the intersection, especially on downgrades.

When crossing an arterial street, the crossing should either occur at the pedestrian crossing, where motorists can be expected to stop, or at a location completely out of the influence of any intersection to permit adequate opportunity

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for bicyclists to see turning vehicles. When crossing at midblock locations, right of way should be assigned by devices such as yield signs, stop signs, or traffic signals that can be activated by bicyclists. Even when crossing within or adjacent to the pedestrian crossing, stop or yield signs for bicyclists should be placed to minimize potential for conflict resulting from turning autos. Where bike path stop or yield signs are visible to approaching motor vehicle traffic, they should be shielded to avoid confusion. In some cases, "Bike X-ing" signs may be placed in advance of the crossing to alert motorists. Ramps should be installed in the curbs, to preserve the utility of the bike path. Ramps should be the same width as the bicycle paths. Curb cuts and ramps should provide a smooth transition between the bicycle path and the roadway.

5. DESIGN SPEED

The proper design speed for a trail is dependent on the expected type of use and on the terrain. The minimum design speed for a shared use path should be 20 mph. On unpaved paths, a lower design speed of 15 mph can be used. Similarly, where the grades or prevailing winds dictate, a higher design speed of 25 mph can be used. Installation of "speed bumps" or other similar surface obstructions, intended to cause bicyclists to slow down in advance of intersections or other geometric constraints, shall not be used. These devices cannot compensate for improper design.

6. HORIZONTAL ALIGNMENT AND SUPERELEVATION

The minimum radius of curvature negotiable by a bicycle is a function of the superelevation rate of the pathway surface, the coefficient of friction between the bicycle tires and the surface, and the speed of the bicycle. For most bicycle path applications, the maximum superelevation rate will be 3%. A straight 2% cross slope is recommended on tangent sections, and ADA guidelines require that cross slopes not exceed 2-3 percent. The minimum superelevation rate of 2% will be adequate for most conditions and will simplify construction. When transitioning a 3% superelevation, a minimum 25-foot transition distance should be provided between the end and beginning of consecutive and reversing horizontal curves.

7. STOPPING SIGHT DISTANCE

To provide bicyclists with an opportunity to see and react to the unexpected, a bicycle path should be designed with adequate stopping sight distances. The distance required to bring a bicycle to a full controlled stop is a function of the bicyclist's perception and brake reaction time, the initial speed of the bicycle, the coefficient of friction between the tires and the pavement, and the braking ability of the bicycle.

8. LATERAL CLEARANCE ON HORIZONTAL CURVES

Bicyclists frequently ride abreast of each other on bicycle paths, and on narrow bicycle paths, bicyclists have a tendency to ride near the middle of the path. For these reasons, and because of the serious consequences of a head-on bicycle accident, lateral clearances on horizontal curves should be calculated based on the sum of the stopping sight distances for bicyclists traveling in opposite directions around a curve. Where this is not possible or feasible, consideration should be given to widening the path through the curve, installing a yellow center stripe, installing a curve ahead warning sign, or some combination of these alternatives.

9. GRADES

Bike paths generally attract less skilled bicyclists, so it is important to avoid steep grades in their design. Bicyclists not physically conditioned will be unable to negotiate long, steep uphill grades. Since novice bicyclists often ride poorly maintained bicycles, long downgrades can cause problems. For these reasons, bike paths with long, steep grades will generally receive very little use. The maximum grade recommended for bike paths is 5%. It is desirable that sustained grades be limited to 2% if a wide range of riders is to be accommodated. Steeper grades can be tolerated for short segments (i.e. up to about 500 feet). Where steeper grades are necessitated, the design speed should be increased and additional width should be provided for maneuverability.

10. STRUCTURAL SECTION

The structural section of a bike path should be designed in the same manner as a highway, with consideration given to the quality of the base soil and the anticipated loads the bikeway will experience. It is important to construct and maintain a smooth riding surface with skid resistant qualities. Principal loads will normally be from maintenance and emergency vehicles. Expansive soil should be given special consideration and will probably require a special structural section. A minimum pavement thickness of 2 inches of asphalt concrete is recommended. Type "A" or "B" asphalt concrete (as described in Department of Transportation Standard Specifications), with ½ inch maximum aggregate and medium grading is recommended. Consideration should be given to increasing the asphalt content to provide increased pavement life. Consideration should also be given to sterilization of base soil to preclude possible weed growth through the pavement.

At unpaved highway or driveway crossings of bicycle paths, the highway or driveway should be paved a minimum of 10 feet on each side of the crossing to reduce the amount of gravel being scattered along the path by motor vehicles. The pavement structure at the crossing should be adequate to sustain the expected loading at that location.

11. DRAINAGE

For proper drainage, the surface of a bike path should have a cross slope of 2%. Sloping in one direction usually simplifies longitudinal drainage design and surface construction, and accordingly is the preferred practice. Ordinarily, surface drainage from the path will be adequately dissipated as it flows down the gently sloping shoulder. However, when a bike path is constructed on the side of a hill, a drainage ditch of suitable dimensions may be necessary on the uphill side to intercept the hillside drainage. Where necessary, catch basins with drains should be provided to carry intercepted water across the path. Such ditches should be designed in such a way that no undue obstacle is presented to bicyclists. Culverts or bridges are necessary where a bike path crosses a drainage channel.

12. BARRIER POSTS

Barrier posts may be necessary at entrances to bike paths in order to prevent motor vehicles from entering the trail. When locating such installations, care should be taken to assure that barriers are well marked and visible to bicyclists, day or night (i.e. install reflectors or reflectorized tape). Barrier configurations that preclude entry by motorcycles generally present safety and convenience problems for bicyclists. Such devices should be used only where extreme problems are encountered.

Striping an envelope around a barrier is recommended. If sight distance is limited, special advance warning signs or painted pavement warnings should be provided. Where more than one post is necessary, 5-foot spacing should be used to permit passage of bicycle-towed trailers, adult tricycles, and to assure adequate room for safe bicycle passage without dismounting. Barrier post installations should be designed to be removable, permitting entrance by emergency and service vehicles.

13. LIGHTING

Fixed source lighting reduces conflicts along paths and at intersections. In addition, lighting allows the bicyclist to see the bicycle path direction, surface conditions, and obstacles. Lighting for bicycle paths is important and should be considered where riding at night is expected, such as bicycle paths serving college students or commuters, and at highway intersections. Lighting should also be considered through underpasses or tunnels, and where nighttime security could be a problem. Depending on the location, horizontal illumination levels of 5 lux to 22 lux should be maintained. Light poles should meet the recommended horizontal and vertical clearances. Luminaires and poles should be at a scale appropriate for a pedestrian or bicycle path.

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C. USER GUIDELINES

Non-motorized trails are very popular, which results in congestion and potentially hazardous situations. Regardless of whether you are bicycling, walking, jogging or skiing, if you follow the same rules as everyone else, your trip will be safer and more enjoyable. Help make the multi-use trails safe for everyone by using the following guidelines:

1. **BE COURTEOUS.** All trail users, including bicyclists, joggers, walkers, wheelchairs, and skiers, should be respectful of other users regardless of their mode, speed, or level of skill.
2. **BE PREDICTABLE.** Travel in a consistent and predictable manner. Always look behind you before changing positions on the trail.
3. **DON'T BLOCK THE TRAIL.** When traveling in a group with other trail users or your pets, use no more than half the trail so as not to block the flow of other users.
4. **KEEP RIGHT.** Stay as near to the right side of the trail as is safe, except when passing another user.
5. **PASS ON THE LEFT.** Pass others, going your direction, on their left. Yield to slower and on-coming traffic. Use hand signals to alert those behind you of your moves. Look ahead and back to make sure the lane is clear before you pull out and pass. Pass with ample separation and do not move back to the right until safely past. Remember: children and pets can be unpredictable.
6. **STOPPING.** When stopping, move off of the trail. Beware of others approaching you from behind and make sure they know you are pulling over.
7. **GIVE AUDIBLE WARNING BEFORE PASSING.** Give a clear signal by using voice, bell or horn before passing. Give the person you are passing time to respond. Watch for their reaction. So that you can hear signals, don't wear headphones on the trail.
8. **OBEY ALL TRAFFIC SIGNS AND SIGNALS.** Use extra caution where trails cross streets. Stop at all signs and intersections and be cautious when crossing driveways. When entering or crossing a trail, yield to traffic on the trail.
9. **USE LIGHTS AT NIGHT.** Be equipped with lights when using a trail at any time from dusk to dawn. Bicyclists should have a white light visible from five hundred feet to the front and a red or amber light visible from five hundred feet to the rear. Other trail users should have white lights visible from two hundred fifty feet to the front, and a red or amber light visible from two hundred fifty feet to the rear.
10. **DON'T USE A TRAIL UNDER THE INFLUENCE OF ALCOHOL OR DRUGS.** Don't overestimate the safety of any trail. You may need all of your reflexes quickly, so it is important that they are not impaired.
11. **BE RESPECTFUL OF PRIVATE PROPERTY.** Trails are open to the public, but often the land on the side of the trail is private property. Please respect all property rights.
12. **CLEAN UP LITTER.** Do not leave glass, paper, cans, plastic, or any other debris on or near a trail. If you drop something, please remove it immediately.
13. **RECOGNIZE WHEN YOU HAVE OUTGROWN TRAILS.** Trails have engineering and design limits. If your speed or style endangers other users, check for alternative routes better suited to your needs. Selecting the right location is safer and more enjoyable for all concerned.

D. OPERATIONS AND MAINTENANCE

Guidelines for the operation and maintenance of the Irondequoit Seneca Trail will help establish this pathway as a multi-use trail destination that can be managed and maintained safely and efficiently over the long term.

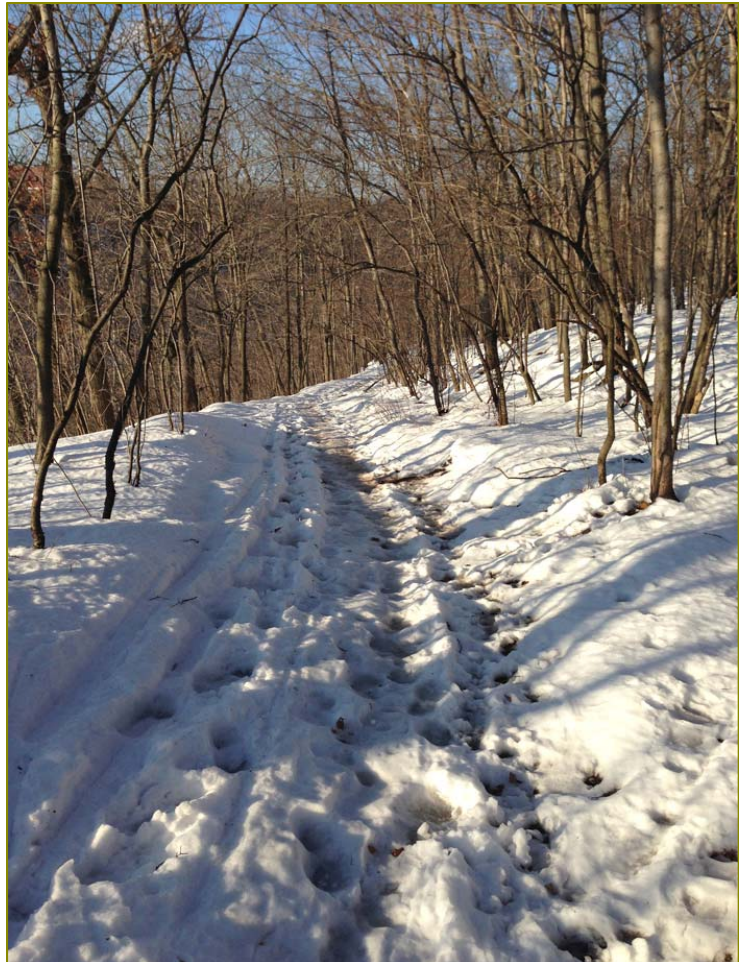
1. OPERATIONS

The operation of a trail consists of the day-to-day management of trail use. This includes law enforcement, marketing, special events, map and brochure updates, and other functional considerations. The specific policies regarding the operation of a trail will most likely be decided in advance of trail construction. After construction, a large part of trail operation consists of the day-to-day execution of those policies.

2. MAINTENANCE

The maintenance of a trail includes the various activities involved in keeping the trail in a safe, usable condition. This includes numerous efforts ranging from mowing and brush removal to replacement of damaged signs or benches to reconstruction of the trail. Lifetime trail maintenance will place ongoing costs on the operating agency, and this should be considered during the trail planning and funding process.

In most cases, funding granted for trail construction cannot be applied to ongoing operations and maintenance. In order to maintain the quality of a newly constructed trail, local trail operators must plan for the continued maintenance of the facility.



3. RECOMMENDATIONS

These recommendations are designed to assist trail operators in the operation and maintenance of trail facilities, and should be viewed as guidelines. As guidelines, they have no legal requirement, and should be altered based on conditions specific to a particular operating entity or trail.

Establish an Operations and Maintenance Policy. Before the trail opens, the implementing group should set forth a policy document outlining specific rules pertaining to the trail and specific tasks that will be performed for its operation and maintenance. This policy will be the guide for the ongoing administration of the trail. The document should be unique to the particular community or trail to which it applies.

The Operations and Maintenance Policy may cover a wide range of issues. The following items should be major considerations in the policy.

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- Permitted uses on the trail.
- Whether user fees will be collected, and in what manner (e.g. pay-as-you-go, trail passes).
- Marketing of the trail. Some communities may desire to reap the economic benefits of trails by actively marketing their facilities. The costs associated with marketing can vary greatly, depending on the intended audience and the intensity of the campaign.
- Policing and security on the trail. This may include the creation of an emergency response plan; provision for trail patrols through existing law enforcement or with special community bike patrols; or a plan for other safety measures such as emergency phones or call boxes.
- Liability. In many cases, existing laws will determine liability. The operating agency should fully understand the liability associated with the trail and verify that insurance is adequate.
- Encroachment. Some local agencies may take ownership of a corridor that is being encroached upon by adjacent landowners. This is particularly true of railroad corridors bounded by agricultural uses. The implementing agency should set forth definitive policies relating to existing and future encroachments.
- Snow removal. In mild winters, some users will expect hard-surfaced trails to be plowed for use throughout the season. The operating agency should determine whether or not it will perform this maintenance.
- Seasonal maintenance. The operating agency should determine who will perform this maintenance. In many cases, volunteers or existing clubs can groom trails.
- Cooperative maintenance agreements. In some cases, trail owners may wish to explore the possibility of partnering with other government entities or private organizations in the operation and maintenance of a trail. Any operations or maintenance agreements should be articulated in the operations and maintenance policy.
- Use of volunteers. Volunteers can be a cost-saving benefit for trail operators. They do, however, need to be supervised, and liability prevents their use in certain situations.
- Evaluation of trail conditions. Every trail should be evaluated on a regular schedule to identify the need for major and minor repairs. The operations and maintenance policy should delineate how often trail evaluations take place, preferably once a year.
- Short- and long-term maintenance program. See "Recommended Maintenance"

Recommended Maintenance. Different types of trails will differ greatly in their maintenance requirements. All trails however, will require a variety of maintenance activities at different points in their lives. **Table 7** outlines some general guidelines for maintenance activities and the frequency at which they should be performed.

- "Frequency" refers to how often each maintenance item should be performed.
- "Maintenance" refers to the specific maintenance activity to be performed.
- "Performed by" refers to who may undertake the particular maintenance activity.

Table 7: Recommended Maintenance

Frequency	Maintenance	Performed by
As needed	Tree/brush clearing and mowing Sign replacement Map/signage updates Trash removal/litter clean-up Replace/repair trail support amenities (parking lots, benches, restrooms, etc.) Repair flood damage: silt clean-up, culvert clean-up, etc. Patching/minor regrading/stone dust replacement	Volunteers, trail operator
Seasonal	Planting/pruning/beautification Culvert clean-out Installation/removal of seasonal signage	Volunteers, trail operator
Yearly	Surface evaluation to determine need for patching or regrading Evaluate support services to determine need for repair or replacement	Trail operator
5-year	Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary	Volunteers, trail operator
10-year	Resurface / regrade / restripe	Hired contractor, trail operator, volunteers
20-year	Replace / reconstruct trail	Hired contractor, trail operator, volunteers

4. MAINTENANCE COSTS

Maintenance costs will vary greatly depending on the type of trail, amount of volunteer labor, construction quality, and available services. These costs, however, must be considered during the trail planning process, to ensure that trail owners can pay for the ongoing maintenance of the trails they develop.

Maintenance costs are rarely broken down into specific tasks such as those listed in [Table 7](#). Most trails are maintained by an existing agency, such as a local or state park, public works, or maintenance department. Estimated costs, therefore, are broken down by the type of maintenance performed. There are three basic types of

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maintenance. Routine maintenance includes all the general activities, such as brush clearing, trash collection, and sweeping, that may take place on a regular basis throughout a season. Minor repairs refer to activities that can be expected every five years or so, such as amenity replacement, repainting, or re-striping. Major reconstruction refers to significant expenditures involving resurfacing or reconstruction. These activities are the most costly trail maintenance activities and should be planned for in advance.

Routine Maintenance. Typically, most of the routine maintenance of a trail facility will be performed by an existing agency or volunteer group. Local trail owners should be well equipped to include trail maintenance into their parks or public works maintenance budgets and activities. Activities considered routine maintenance include:

- Yearly facility evaluation to determine the need for minor repairs
- Tree and brush clearing
- Mowing
- Map/signage updates
- Trash removal and litter clean-up
- Repair of flood damage: silt clean-up, culvert clean-out, etc.
- Patching, minor regrading, or stone dust replacement
- Planting, pruning, and general beautification

The yearly cost for routine maintenance depends on the maintenance capabilities already in place with the trail owner and the amount of volunteer labor used. In general, yearly routine maintenance costs can be estimated at \$5,000 per mile. This figure does not include snow removal.

Minor Repairs. The need for minor repairs should be determined by a yearly facility evaluation (see Routine Maintenance, above). Minor repairs may include the following activities:

- Replacement, repair, or repainting of trail support amenities, such as signage, benches, trash receptacles
- Replacement of a portion of the trail
- Re-striping of trails

The cost for replacement, repair, or repainting of trail amenities is based on the initial cost of those amenities. Trail operators should maintain records of the general costs of trail amenities as a means of estimating future repair and replacement costs. If custom elements, such as lighting or benches are used in trail design, the trail owner should consider ordering extra elements at the time of construction and storing them for future use, thereby defraying the cost of single-runs later.

Re-striping of bike lanes on existing pavement will cost the same as the original striping. The trail owner should keep a record of the original bid to determine the price of re-striping a trail using contracted labor. In many cases, it is cost effective to perform re-striping along with other trail or highway maintenance. In such instances, the trail owner will be the best source of cost information.

Major Reconstruction. There is one activity considered to be major reconstruction, the complete replacement, regrading, and resurfacing of all trails. Complete replacement of a trail involves removing the existing trail, regrading the trail base, and resurfacing the facility. This kind of comprehensive maintenance will be necessary every 20 years, regardless of trail type. Even natural surface trails may need to be fully regraded after 20 years of use. Trail costs for reconstruction are the same as the cost of a new trail plus the cost of demolishing the existing trail. As with

any major trail project, however, a detailed cost estimate should be performed during the project planning stages. The best guide for estimating the replacement cost of a trail is to consider the original construction cost.

A major cost such as trail replacement should be considered well in advance. It may be more difficult to secure large state or federal grants for trail reconstruction. Therefore, a trail owner should consider the eventual cost of trail replacement and financially prepare for that significant maintenance activity.

E. FACTORS NOT ADDRESSED IN THE STUDY

In the course of preparing the *Irondequoit Seneca Trail Feasibility Study*, there were a few issues that were not addressed or resolved. These issues should be considered as the proposed improvements move into the next phase of development. The following issues need to be considered:

1. Environmental permitting is outlined in this report, and will be a critical undertaking in the next phase of trail development. An archeological investigation may be necessary, but was not part of this study.
2. Land acquisition is discussed in this report, but all property owners were not contacted during the study.
3. To get the trail constructed, the following steps will be necessary:
 - a. Secure funding for property acquisition and construction
 - b. Finalize property acquisition and access
 - c. SEQRA and permitting
 - d. Environmental testing as required along the railroad corridor
 - e. Design development
 - f. Construction documents
 - g. Bidding
 - h. Construction
 - i. Acceptance by client
 - j. Management and maintenance plan
 - k. Programming and community involvement
 - l. Identify possible community partners, such as the Genesee Land Trust