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DENVILLE
New Jersey



Denville



Trails

TRAILS MASTER PLAN

FOR

DENVILLE TOWNSHIP

MORRIS COUNTY



Denville Trail System

Trailhead



Open Year Round - Dawn to Dusk

Denville Township Trails Master Plan

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Boy Scout Troop 118
Estling Lake Corp
Jersey Off Road Bicycling Association
Borough of Mountain Lakes
Morris Area Freewheelers
Morris County Park Commission
Morris County Planning Board
Morris County Municipal Utilities Authority
New York-New Jersey Trail Conference
Protect our Wetlands, Water and Woods
Borough of Rockaway

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Chapter I

Executive Summary

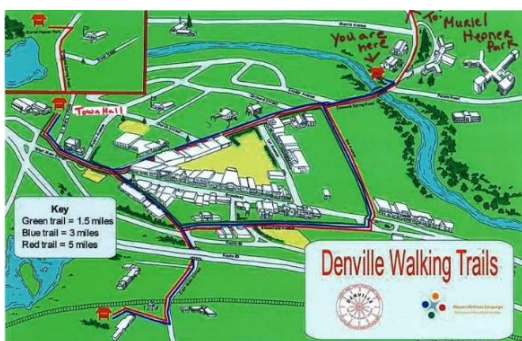


TRAILS AT JONATHON'S WOODS

Denville Township is a suburban community with a diverse landscape that makes it a highly valued community of northern New Jersey. Rapid development in the second half of the 20th Century led to a number of isolated residential developments scattered across the Township. However, over that time the Township was able to retain a vibrant central business district. The municipality was also able to preserve a substantial amount of public open space with developed recreational facilities. The Township has now identified a goal of creating a comprehensive multi-use trail system to link those dispersed neighborhoods to the town center, parks, schools and other destinations. Creating an accessible trail system will provide Denville residents with recreational opportunities and travel options within the community.

Denville Township engaged the firm Greener by Design, LLC to develop a Trails Master Plan to help them develop a strategy for the creation of a trail system as well as a responsible program for the maintenance, upkeep and expansion of that system. A six-month public outreach effort was conducted to develop a vision for the community to gauge the interest and goals of the residents. This plan reflects the input from a broad cross-section of the population. This outreach identified strong public support for the creation of a trail system. Further research and field work determined where the opportunities exist to carry out that vision. The Township is now embarking on a mission to provide the public greater access to its many parks as well as increasing pedestrian and bicycle access to key destinations like the NJ Transit's Denville Station, the central business district and other points of interest. The creation of this trails system will also foster a stronger sense of community. The Trails Master Plan will provide a clear direction to assist the current and future governing bodies of the Township with management of the trails system in a manner that will best meet the current and future needs of the Township's residents.

The Existing Trails



DOWNTOWN WALKING TRAILS

Denville Township currently lacks a formal network of trails. The effort to create a unified system will be starting with a nearly clean slate. The only paved walking and hiking trails maintained by the Township is a 0.33-mile loop trail within Muriel Hepner Park on Diamond Spring Road. While this is the only off-road paved trail within the municipality, Denville has an extensive sidewalk system that serves the central business district. A large kiosk located near the Library on Diamond Spring Road advertises the sidewalk system. No other wayfinding is present however. Jonathan's Woods is a County managed park in the northwest corner of Denville with an extensive natural surface trail system. The trails in this park were constructed and are maintained by the organization Protect Our Wetlands,

Water and Woods (POWWW) under the direction of the Morris County Park Commission (MCPC). The MCPC itself maintains trails in The Tourne County Park in the northeast portion of Denville. There are several miles of marked hiking trails there. Denville has several additional locations where there are natural trails including Den Brook Park, the Pio Costa tract leading to Holstein Lake and lands adjoining the soccer/lacrosse fields on Ford Road. The Denville trails are

generally not marked and lack trailheads, kiosks and parking. This limits the public's understanding and appreciation for these trails. In addition, there is no formal maintenance plan for these trails.



BOARDWALK AT MURIEL HEPNER PARK

The Township does have assets that can be used to create a system of multi-use trails that match the public's vision. There are over 1,500 acres of preserved land. The Township owns a number of smaller tracts that have been accumulated as leftover or undevelopable portions of housing projects. There are abandoned paper streets and utility rights-of-way. These fragments of land have the potential to serve as key connections that will allow existing trails to be incorporated into a useful trail network. Making a township-wide system out of these pieces will be difficult, but not impossible.

The current status of the trails in the Township presents a number of obstacles to creating a unified trail system in Denville. These issues should serve as a guide for prioritization of action. A long-term step-by-

step approach to overcoming the limitations that currently exist will eventually allow the goals of this plan to be implemented. The difficulties include:

- Limited geographic reach of existing trails
- No unified strategy for trails
- Isolated disconnected public lands
- Many portions of the Township do not have direct connections to the trails.
- Access to key destinations is limited.
- There is no existing system for scheduled maintenance or monitoring of the trails network.

Goals for Expansion

Public outreach and research have identified a number of new trail routes or trail connections that can substantially expand the Denville Trails System. This plan sets forth an ambitious strategy to bring the trail system to more neighborhoods, provide increased mileage and more interesting use options, and to connect the Denville Trails with regional trails and neighboring communities. Using these connections to expand the reach of the trail system will provide opportunities for loop hikes, connect isolated parks and incorporate long distance hiking and biking opportunities that are not currently available. Some of these proposals are modest, others more ambitious.

The Township needs to answer essential questions regarding trail surface and use. The installation of improved surfaces like asphalt or crushed stone will allow for multiple uses and for access to a wider range of residents. This will also increase cost and complicate construction. This is a cost-benefit policy decision that must be made. Natural trails are relatively easy to create and have a much lower cost in both dollars and labor. However, they will not provide the same opportunities for residents. Much of Denville has been built-out. The goals of connecting neighborhoods and allowing for bicycles, walkers, strollers and other more casual users tends to favor more miles of improved surface trails. This will require a capital investment by the Township to create a system that features these types of trails.

Twenty-three (23) potential new trail segments are proposed following the outreach and investigation conducted to prepare this plan. These trail segments are depicted in a detailed map found in Appendix 1 of this document. Chapter 4 provides descriptions of each proposed segment. Also, a number of new trailheads or access points have been identified and proposed. These locations are vital to increase awareness of the system and for improved accessibility for residents.

The length of each proposed segment and the estimated costs of constructing each section have been calculated as well. Additionally, land acquisitions, either in fee or through securing rights-of-way necessary to complete these segments have been catalogued and provided to the Township. The Denville Township Trails Committee has prioritized the

addition of these sections to the system based upon cost, utility, feasibility, and other factors, and categorized the additions into short-range, intermediate and long-term goals. Some of these additions can be accomplished easily, while others, although having high value, may need to wait until adequate funding or access to land is available to construct them.

One of the bigger challenges will be the division of the Township by major highways. Interstate 80, Routes 46 and 10 cross Denville from east to west. They essentially cut the Township into thirds. Identifying safe crossings will be essential to connecting the entire Township from north to south with trails. There is a pedestrian bridge in place across Route 46. There are road underpasses with sidewalks that cross the Interstate 80 corridor. Route 10 may be crossed at signaled intersections or possibly utilizing the bridge under the highway for Den Brook. Careful planning can overcome the impediments these roads present.

Maintaining the System

The Trails System requires regular maintenance to keep it in safe and viable condition. With only a limited trail system currently, this responsibility will be a new initiative for the township Public Works Department and committed volunteers.



REPAIRS AT MURIEL HEPNER PARK

Many routine tasks can be accomplished through the work of volunteers. Upkeep and maintenance of the more substantial improvements will need to be addressed by Township personnel or even outside contractors. Typical construction costs and maintenance tasks have been incorporated into this plan to allow the Township to forecast budgeting and staffing requirements in a rational and responsible manner.

Currently, trail assessment for maintenance needs is not undertaken on a scheduled basis and is often performed by volunteers. With the trail system planned to grow considerably, now is the time to determine roles and responsibilities for trail maintenance. This is critical so that adequate resources are provided to make the system grow and remain safe. The trail system needs

to be considered as a municipal infrastructural component like any other asset.

A maintenance plan that incorporates regular trail inspection is also a prime defense against negligence claims. Additionally, creating a program to supplement the work of Township personnel with volunteer trail maintainers to perform routine inspection and minor maintenance and upkeep will be extremely valuable.

A more systematic management system is recommended in the future for planning, scheduling, conducting and evaluating trail maintenance activities. Such a system will allow for rational budgeting decisions and scheduled repeating maintenance actions. A systematic approach will also help reduce exposure to accidents related to trail conditions and potential exposure to liability claims. Such a system would be based on the above-stated goals and objectives and include:

- A trails inventory with physical descriptions and general maintenance needs for each trail.
- Inspection and conditions reports.
- Standard work orders.
- Labor completion reporting.
- A cost tracking system.
- Volunteer or staff inspection reporting.
- Tracking for outside maintenance contracts or invoices.
- Tracking of public complaints, comments and responses.

All for the above factors should be incorporated into a document that will guide the Township in developing inspection schedules for each trail segment.

Responsibly Financing Denville Trails

One of the goals of the trails planning process is to establish a means of budgeting accurately for the maintenance, upkeep and expansion of the trail system. Municipal budgets are constrained by both policy and legal limitations that cap spending. Spending will be required to ensure the system is kept in a state of good repair. Budgeting for these expenditures needs to be undertaken in a thoughtful and fiscally responsible manner. This can be challenging when there are many different priorities competing for scarce public funds.

A Microsoft Excel budgeting tool has been created in connection with this Plan to guide the Township in the financial decision-making process. This document allows for projecting costs for both maintenance of the existing system and construction of new trail segments. It also allows the user to forecast costs over multiple years. It is adaptable to changing priorities and will give the Township the ability to adjust spending when priorities change.

As a baseline, maintenance and expansion costs have been calculated over a ten-year period from 2018-2027. The resulting costs for maintenance activities can be extracted from the spreadsheet and built into the municipal budget on an annual basis. Investments in new construction should be similarly planned, once an affirmative policy decision to undertake any new project based on available resources.

The costs for expansion of the system can also be accurately forecast. Budgeting for the construction of new miles of trail proposed in this plan can be budgeted over time. Additionally, having a clear and rational plan for expansion can provide the basis for applications for trail construction grants. Meeting the expansion goals outlined in this plan will require a number of acquisitions, either outright purchase or obtaining easements or rights-of-way to create new trails. This plan provides the detailed information for both costs and actions necessary to implement the proposed additions to the system.

The Future of Denville Trails

Over time, the expansion of the trail system will prove to be an excellent investment for the Township. Denville's trails will provide a myriad of recreational opportunities and access to the Township's extensive park system as well as to many other key destinations.

This Plan lays out a roadmap by which Denville can responsibly plan to expand, improve, and maintain its Trails System. Community input on the subject of trails has provided the basis for a logical approach to establishing important trail connections, access points, information, and other facets of the system that will improve access to trails and the overall trail experience. How rapidly the Plan can be put in place and what aspects of it are possible in any given year will depend on when the community groups that should be responsible for planning, construction and maintenance can adopt the Plan's recommendations and implement the steps it sets forth.

They include the following:

- Establish a Permanent Trails Advisory Committee
- Develop a system to monitor the conditions on the trails.
- Implement the proposed fiscal management system
- Institute a program for performing routine maintenance and upkeep
- Create a plan to dedicate funds on a repeating annual basis for maintenance of the system
- Make improvements to the trails (blazing, signage & repairs to problem areas)
- Construct additions to the trails system over time in an orderly and fiscally responsible manner.
- Revisit the plan on an annual basis to assess progress and make adjustments as necessary

These are all achievable goals for the Township. Keeping the trail system in a state of good repair, making upgrades to the system where needed and expanding the reach of the system to serve more parts of the Township as well as to provide additional opportunities for use will allow for the Denville Trails to become an important and valued resource for the Township's residents. Perhaps the most important issue to consider is that this is a long-term plan that will require a sustained commitment of resources. Achieving the goals in this plan will span changes in government and individuals or entities responsible for carrying out its aims. This plan will require a consistent dedication to completing this project, but the results will be worthwhile and valuable. The recommendations contained in this plan are designed to provide the Township with the means to achieve these goals and fulfill that commitment.

Chapter 2

Introduction



DEN BROOK

Denville Township is an established suburban community. Located at the geographic center of Morris County in northern New Jersey, the Township is a stable and mature community that has already experienced its period of rapid growth. The portions of the Township that have been, or will soon be, developed are clearly defined. The portions of the Township that will be permanently dedicated to public open space and recreation are also clearly defined. Accordingly, as part of the stewardship of the more than 1,500 acres of public open space and the goal of providing recreational opportunities for the Township’s residents, Denville looks to create a trail system to enhance the quality of life in the Township, foster healthy living and create the means to build a greater sense of community. The Township looks to create a comprehensive multi-use trail system that will connect geographically dispersed neighborhoods, parks, schools and the vibrant downtown.

Denville has undertaken the effort to determine what residents of the Township are looking for in a trail system and how to plan and implement the creation of that system in a rational and fiscally responsible manner. The Township looks to create a public asset that will be accessible the greatest number of residents across all age groups and that will appeal to as different interests as possible. This plan will build from the existing facilities in the Township to establish a well-designed functional network of public trails for walking, hiking, jogging, biking, strolling and other uses that will allow residents to fully enjoy the resources that Denville has to offer. This plan is designed to be implemented over an extended period of time. The recommendations are ambitious. The Township will need to prioritize actions and engage in a sustained effort to implement those recommendations as resources become available and circumstances permit.

Public Outreach

An extensive public outreach and research effort was conducted in preparation for creating this plan. It consisted of public meetings, meetings with public officials, with stakeholder groups and property owners. Additionally, an analysis of potential new trail routes and field confirmation of conditions were completed. Having the buy-in of the residents and having the plan represent their requirements and vision is essential for creating a credible plan that will enjoy public support and that will eventually be implemented.

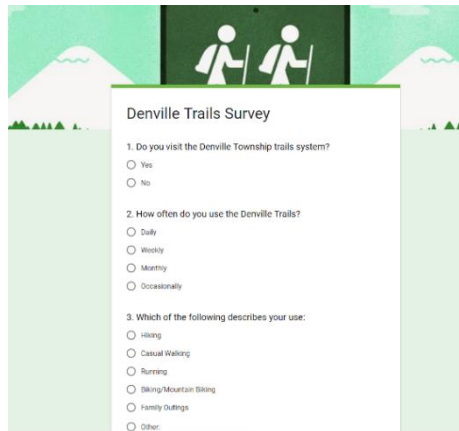
Methodology

The Denville Trails Master Plan is the result of significant community participation. The input from Denville community members and other important stakeholders helped to identify areas for improvement, maintenance suggestions, ideas for new trail segments and ideas for the long-term development of the trails. Three open public meetings were held to obtain public input. An online survey was conducted. Further, recommendations, ideas, and comments were gathered from on-site trail visits, public interactions, and conversations with established trails management and advocacy organizations. The Denville Trails Advisory Committee helped to develop the DTMP. Collaboration with interested groups has allowed this plan to represent a vision, tailored specifically to the Denville community, that presents solutions to areas of concern and long-term needs.

As part of the field research, the Greener by Design staff hiked the existing trails and the publicly accessible proposed trail segments. Additionally, drone overflights to obtain video footage of portions of the Township were performed to

provide an aerial view of the trails otherwise inaccessible on foot or car. These site visits were used to take inventory of existing trail conditions and to identify proposed segments for potential issues and specific areas of concern.

The Survey

A screenshot of an online survey titled "Denville Trails Survey". The survey is presented on a white background with a green header and footer. The header features a silhouette of two hikers on a trail. The survey questions are as follows:
1. Do you visit the Denville Township trails system?
 Yes
 No
2. How often do you use the Denville Trails?
 Daily
 Weekly
 Monthly
 Occasionally
3. Which of the following describes your use:
 Hiking
 Casual Walking
 Running
 Biking/Mountain Biking
 Family Outings
 Other

TRAILS SURVEY

Part of the outreach process utilized an online survey to accommodate the participation of Denville residents in the planning process. The survey elicited 275 responses. This is a relatively high response rate. This level of participation indicates that there is a strong interest in creating a more robust trail system in the Township. A summary of the survey results is found in Appendix 6. The survey respondents indicated a variety of desired uses with casual walking, hiking and biking being the most popular. The scattered trails within the Township provide some links to schools, neighborhoods, parks, and municipal facilities. However, the trails are not marked or maintained adequately, or are integrated enough to characterize them as a "trail system." This is evident by many survey respondents. A large majority (68%) of survey respondents indicated that Denville's trails are not up to par with other trail systems they have experienced. However, 94% of respondents feel that the trails in Denville are a

valuable asset to the community. It can be surmised that an expansion of trails in Denville will be a very welcomed addition by the community.

The Denville Trails Master Plan (DTMP) has been developed to look into the multitude of options for maintaining and improving the existing trails while also extending the system dramatically to benefit as many neighborhoods as possible. Denville hopes to benefit from connecting its trail network with other systems, including Jonathan's Woods trails and other neighboring municipality's trails such as Randolph Township. This Plan is designed to guide Denville's governing body in strategically planning to maintain the existing trails and to expand the trails for residents to use. It provides an additional section to break down budgeting costs necessary to maintain and expand the trails system.

Trails Vision Statement

With the adoption and future implementation of this plan, Denville is developing a new vision for its trails as an important public infrastructure component. Creating a comprehensive trail network will require a long-term commitment from the Township. This will be an investment that will provide for the enjoyment and benefit of all residents of the Township far into the future. The vision developed for the trails system is the result of the public outreach effort conducted. This vision encapsulates the community's wants and needs with regard to the existing trails as well as future improvements and additions necessary to achieve the identified goals.

This process identified these primary objectives:

- Provide every resident easy access to trails, parks and public facilities
- Respect for the New Jersey Highlands natural resources
- Managing trail uses that enhance the benefits to Denville residents of today and the future
- Provide for multiple uses of the trails
- Accomplishing the goals of this plan using an economically efficient methodology
- Reinforcing the lasting value of a new and integrated trails system to the Township
- Connecting the downtown business district with as many surrounding neighborhoods as possible to increase pedestrian accessibility

The Township has a collaborative and systematic vision for implementing this Trails plan. Trails management should maximize habitat protection, community partnerships, education, while also minimizing any negative impacts on the

environment and local residents. The formation of a permanent Trails Advisory Committee will be highly beneficial to the governing body and Township staff with trail planning, property acquisition, design, construction, and maintenance. The governing body, related municipal committees, interest groups (such as POWWW), and Denville residents should make up the Committee.

The Trails Advisory Committee will be responsible for developing and overseeing a volunteer program to help with trail construction and maintenance as well as making recommendations to the Township staff and governing body regarding project prioritization and grant funding opportunities. The Trails Advisory Committee will also be responsible for periodically updating the Trails Master Plan every few years and presenting the updated plan to the governing body for formal implementation. Township staff can lead the project adoption process, i.e. developing mapping and design details, reviewing deliverables from consultants, planning an annual budget, coordinating the bidding and assigning trail construction contracts, communicating with partners, and public relations.

Purpose

Opportunities for a variety of outdoor recreational activities are made available with trails. They offer benefits to a more diverse population than fields and facilities with singular purposes, such as tennis courts, golf courses, soccer and baseball fields. The DTMP allows users to further immerse themselves in the beauty of nature, namely the New Jersey Highlands, with open access to recreational exercise opportunities. Several of the proposed segments in this plan will also enhance pedestrian and bicycle access to the NJ Transit Denville Station to aid residents in the daily work commute. Additionally, trails are highly efficient in terms of cost effectiveness and land occupancy. They can be developed in detention areas, utility corridors, floodplains, alongside roads, and other areas without ability or potential for development.

The purpose of the DTMP is to guide Denville in the long-term development of a recreational trails program to prepare the Township in managing and maintaining this system year-long and for years to come. Sustainability and efficient management are the key to this maintenance program, which entails trail design, construction, and upkeep. The DTMP emphasizes documented safety inspection, user safety, and trail resiliency in its proposed program. Recommendations were influenced by assessing existing trails and their sustainability. This plan presents potential trail opportunities as well as estimates of capital improvement project costs. The DTMP is highly dynamic by nature; a continuous long-term routine of review and update is in order to accommodate for community needs, trails program adaptations, and changing development conditions.

Statement of Principles

The following principles were developed along with the vision statement. Input was provided from Denville Township officials and through public participation. The principles express various concepts that are vital to the development of a successful recreational trails management program to meet the vision.

Public Health, Accessibility & Recreation

This plan will enhance healthy outdoor recreational opportunities and provide access to public open space for Denville residents and visitors. Ecological integrity must be ensured at the same time. The ecological integrity of Denville's natural areas will be achieved through the creation of amenities, such as trailheads and access points, as well as environmental regulations. Appropriate infrastructure that supports accessibility and accommodates an equilibrium of recreation and livability must also be built.

Safety and Risk Management

Trail users must be made aware of potential risks while using the system, which can be communicated through trail signage and educational information. An effective trails maintenance program would promote good risk management. Important elements of good trails management practices consist of repairing the trails regularly, providing a means of navigation and wayfinding, and promptly responding to potential emergencies along the trails.

Financial Sustainability

The Township's limited budgets for planned capital projects have been taken into consideration in this plan. There are many initiatives that can be explored for the development and implementation of the plan. Its long-term success relies on sustainable and dependable funding strategies with respect to partnerships, cost-benefit analysis, and priority setting.

Stewardship and Responsibility

Communal accountability, stewardship, and responsibility needs to be encouraged among community groups, resource managers, individual users, and other partner agencies. Multi-agency and public involvement is where shared responsibility starts, such as the development of standards and regulations involved in managing the environmental, economic, and social aspects of trail use. Local volunteers should be provided opportunities for involvement and stewardship in monitoring and implementing the recreational trails program through a variety of policies.

Leadership, Partnerships & Innovation

Denville has the opportunity to play on its challenges of having a limited trails network to become a leader in trails development and making it a highly walkable community. Partnerships, innovation and collaboration must intersect to develop leadership that is fostered by an extensive plan for long-term management and natural environment resiliency. This type of leadership will strengthen Denville's value as an attractive destination. The recreational trails system is not only local but also regional; by partnering with Morris County, neighboring municipalities, and other stakeholders, Denville can efficiently optimize use of the system.

Awareness, Advocacy & Public Education

Community support of the planned trails system must be encouraged through awareness, advocacy, and public education. Educating the public for health benefits of daily walks, using your feet and bicycle pedals instead of a gas pedal will help to build a strong constituency that will support the trail system and its advancement. Advocacy and public education are necessary in establishing awareness and respect for such issues. Conducting public outreach, partnering with local organizations, publishing electronic and printed information, and organizing a volunteer program will help to promote awareness, trails use, and environmental education.

Tourism and Economic Considerations

A variety of marketing opportunities should be considered to showcase the availability of the recreational trails. The accessibility of the trails and the unique outdoor recreational experience will provide advantages for Denville's property values, and local businesses will benefit from Denville becoming a prime destination for visitors to enjoy the future trails system.

Goals and Objectives

Denville residents need to develop a high respect and enjoyment of the future trail system. This will take time as proposed trail segments begin to become "existing" trails and are enjoyed by the general public. This will result in a constituency that highly values the trail system and will push for its expansion. The Trails Master Plan has established a list of goals for continuous improvement of the system:

1. Enhance recreational opportunities for Denville residents
2. Enhance access to the downtown business district
3. Provide opportunities to gain access (visual and physical) to the Rockaway River
4. Provide residents with safe access to Denville's numerous parks
5. Promote health and fitness among Denville residents by means of outdoor recreation
6. Establish a logical, cost-efficient foundation for planning the maintenance of existing trails and proposed expansions
7. Provide access to the trails system for every resident of Denville

Enhance recreational opportunities for Denville residents

The DTMP intends to take advantage of Denville’s parks and open space; Denville has 1,495 acres of preserved open space. Recreational resources in the Township vary from municipal parks, county parks, and state-owned parks. Denville has 686 acres of municipal parks: Lakeshore Park, Cooks Pond, Gardner Field, Veterans Memorial Park, Veterans Field, Pocono Fields, Knuth Field, Ford Road Field, Todd Johnson Field, Muriel Hepner Park, Denbrook/Jaycee Park, Toft Hill Park, Birch Run Park, Beacon Hill Playground, and Denville Park. The New Jersey Department of Environmental Protection (NJDEP) manages the 5,800-acre Wildcat Ridge Wildlife Management Area, a portion of which is within Denville. There are two significant Morris County parks: Tourne County Park (286 acres within Denville) and Jonathan Woods (445 acres within Denville). Both are located in the northernmost regions of the Township. Denville has connections to the Townships of Parsippany-Troy Hills, Rockaway, Boonton, and Mountain Lakes Borough through various parks within its boundaries.

Denville’s existing trails have great room for improvement. Developing a more connected trails system in the northern and southern parts of Denville, will provide significant benefits for the public. Linking parks and neighborhoods and developing trail loops will not only improve the system’s utility but also user experience. Supplemental and improved trails will also offer opportunities for various recreational activities, such as casual walking, running, hiking, cycling, birding, dog walking, and birding. Expanding the trails systems to reach as many neighborhoods, parklands, and regions of the Township as possible is a feasible goal.

Enhance access to the downtown business district

Denville’s central business district is a true gem of the municipality. Highly popular as it is, increasing pedestrian and bicycle access to the core will help increase public use of the downtown without exacerbating vehicle parking concerns. The downtown is currently served by a very elaborate sidewalk system. Wayfinding will help users navigate to the downtown as well as other nearby destinations such as Gardner Field, the Library and community garden, St. Clare’s Hospital and the NJ Transit Denville Station.

Provide opportunities to gain access to the Rockaway River



DENVILLE PARK MEADOW

The Rockaway River was the overwhelming response to survey question #6 (see Appendix 6) asking what destination or park should have trails. The Township has made several purchases of homes along Riverside Drive as part of their efforts to address flooding along the Rockaway River. The Township has purchased several repetitive loss flood-prone homes adjacent to the Rockaway River. This has created a “pocket park” called Denville Park Meadow. With limited direct public access to the Rockaway River, this begins to address the public’s desire to increase trails along the river. This plan has several trail segments that will increase access to the Rockaway River, which bisects the center of Denville and offers a bucolic setting. One proposed trail segment involves the construction of a new pedestrian bridge across the river. This major initiative would open a large northeastern

portion of the Township to the central business district by foot or bicycle.

Provide residents with safe access to Denville’s numerous parks

Denville Township encompasses large expanses of open space and various major transportation corridors, i.e. US Route 46, the Christopher Columbus Highway (Interstate 80), and New Jersey Routes 10 and 53. Safety is the number one priority, so the trails planning process needs to consider it when increasing accessibility to the trails and local parks. Signage and marked road crossings are necessary for trail users and drivers alike and should be considered in the trail system’s planning. To supplement the precautionary measures, residents must be educated on safe navigation of the network and roadways by means of maps, pamphlets, and school presentations. This plan proposes two points to cross Route 10. One location is at a signalized intersection while the other is a grade separated crossing utilizing the Den Brook’s path under Route 10. Creating trails that will take trail users to these crossing points is a public safety concern

and will also enable access to many more parks that are currently a short geographic distance from neighborhoods, but are felt to be too daunting to attempt on foot or bike.

Promote health and fitness among Denville residents by means of outdoor recreation

Opportunities for healthy outdoor exercise will be made available to a majority of the Township's residential neighborhoods within safe walking distances once proposed trail segments become reality. The proposed trail routes will provide a great alternative to vehicular navigation. Designing signage and labeling trail segments will be influenced by the public's input on exercise regimen measurements, such as steps, time, and distance. The Township can encourage awareness and use of the trails system by promoting and sponsoring events that highlight the trail system's amenities and benefits.

Maintenance, upkeep, and expansion of the trails network

Denville will have the responsibility to maintain high standards for the conditions for its future trails system. A crucial component of long-term planning will be fiscal responsibility and a proper methodology for maintaining the system. Given that the existing trails are very limited this plan has proposed segments throughout Denville, from far north to far south and far east and west. Denville must strategically plan the investment for construction of new segments. The goals presented in this trails master plan may have to be broken down and carried out as a multi-year investment based on the municipal budget limitations.

Provide access to the trails system for every resident of Denville

Access to a broad range of recreational opportunities is an element of a livable and attractive community. Denville residents, regardless of age or physical ability should have the opportunity to easily find and use a multi-use system of paths and trails that can provide the chance for recreational activities and alternative ways to travel to parks, schools, destinations within the Township and between neighborhoods. A robust trail system will also connect the geographically dispersed sections of the Township to enhance a sense of community.

Chapter 3

The Landscape of Denville Township

Geography



TOPOGRAPHIC MAP OF DENVILLE

Denville Township is a 13-square mile municipality about 30 miles west of New York City. The community is known as the “Hub of Morris County” due to its location at the center of the county. The Township is in the Highlands physiographic province that stretches from south central Pennsylvania to western Massachusetts. The terrain is typical of the Highlands with a combination of rocky hills, small lakes, streams and wetlands. Typical of the Highlands region, the ridges are oriented from northeast to southwest. Elevations in the Township range from 458 feet above sea level in the Rockaway River valley to 1,033 feet along the ridgeline in the southern part of town.

Denville is bordered by Randolph Township to the west, Parsippany-Troy Hills Township to the south and east and Rockaway Borough, Rockaway Township and Boonton Township to the north. Randolph

and Parsippany-Troy Hills are also suburban communities, Rockaway Borough is a small centralized town, while Rockaway and Boonton Townships are somewhat rural municipalities. Denville shares characteristics with each of these adjoining municipalities. The northern portion of Denville is rural, most of the community is suburban, while the central business district functions as the center of the community. This presents a mix of typical suburban development, older lake communities, rural areas and a central business district with a vibrant Main Street. There is a variety of potential hiking destinations and experiences. Additionally, the town features two New Jersey Transit rail stations with service on two commuter lines (Morris & Essex and the Boonton Lines). Incorporating access to these train stations and to the downtown are prominent goals of this plan.

The Township is entirely within the Passaic River basin. Most of the Township drains to a major tributary of the Passaic, the Rockaway River. The Rockaway River valley and the river’s floodplain are major features of the Township’s geography. Den Brook, Hibernia Brook, Beaver Brook and Troy Brook are smaller tributary streams in Denville that feed the Rockaway River. The historic Morris Canal crossed the Township roughly following the course of the Rockaway River. Flooding along the Rockaway, particularly in the downtown, has been a reoccurring issue. The abandoned route of the canal and the undeveloped Rockaway floodplain offer opportunities for new trails and trail connections. A small portion of the southeastern corner of the Township drains to the Whippany River, another Passaic River tributary.

Three main highway corridors divide the Township. Interstate 80, U.S. Route 46 and N.J. State Highway 10 all traverse the Township from east to west. N.J. State Route 53 runs north to south connecting these three highways and the Township’s downtown. The three east-west routes are heavily travelled multi-lane divided highways with Route 80 also being a limited access freeway. These highways essentially divide the Township into thirds. Connecting these parts of the community with pedestrian trails is another goal of this plan. This may prove to be difficult as these major highways present obstacles for any trail routes that will run from north to south. Pedestrian crossings of these three highways will be difficult or impossible without major accommodations. However, a pedestrian bridge across Route 46 near the downtown area is in place and provides at least a partial solution to this issue.

Population Trends

Denville experienced significant residential development over the past half century. Much of that development can be characterized as decentralized suburban sprawl. Connecting the Township's scattered neighborhoods with a trail system can help build a sense of community and provide these automobile dependent developments with alternative ways to travel from neighborhood to neighborhood or from neighborhoods to destinations within the Township. The Township expects to increase development of the existing commercial areas in the central business district downtown and, potentially, in the industrial corridor along Route 10. Denville's Master Plan also anticipates development of a transit village near the NJ Transit Denville Station. Proposed trail system segments are designed to take advantage of that future development.

Denville's total current population estimated by the 2010 census is 16,800, with a population density of 1,417 residents per square mile. The Township's population density is somewhat greater than Morris County as a whole, which is 1,069 people per square mile, and marginally greater than New Jersey's statewide density which is 1,210 people per square mile. The Township grew rapidly following World War II with the population growth peaking between 1940 and 1950 with a 95% increase. Denville's population grew from 3,117 in 1940 to 14,380 in 1980. Since 1980 the Township has experienced modest additional growth to the current levels with the most recent tendency being towards a flat growth rate. This is in line with other outer suburban communities in northern New Jersey.

The recent decline in growth is attributable in part to an exhaustion of developable land in the Township and is partly due to the larger population trends impacting the greater New York region as a whole. After an extended period of sustained growth, most exurban communities in the New York metropolitan area have seen a dramatic drop in population increases or even an overall decline in population. At the same time, urban areas of the region have experienced robust growth. It is likely that Denville will see its population either remain steady or grow slowly over the next decade.

Demographics

The median age in the Township has increased from 43.4 to 44 years from 2000 to 2010. In terms of age distribution, residents between the ages of 40-49 (17%) made up the largest group. This was followed by ages 60-69 (15%), 10-19 (14%) and 50-59 (14%). Denville closely mirrors greater Morris County, which has an overall median age of 41.3 years, with the majority of residents in the 45-64 year-old age bracket but the age distribution in the Township trends slightly older than the county as a whole.

Of the 6,732 total households in Denville, 73% are families and 33% have children under the age of 18. Over 76% of the available housing units are single, detached homes, with 10% being 10 or more attached units. 87% of Township residents own and occupy their home. The housing construction boom in Denville, as in much of Morris County, occurred from 1970-1979, and the majority of current households (81%) moved to the Township in the period between 1980 and 2009. The residents tend to be long-term and stable with a less than 6% population turnover. This is far less than the annual rate of change in either Morris County or the State of New Jersey as a whole.

Denville residents are highly educated; 97% have a high school degree or higher, 53% have a Bachelor's degree, and 22% have a Graduate degree. The median household income is \$109,063. To put this in perspective, Morris County is the sixth-wealthiest county in the United States with a median household income of \$102,798. These demographic factors reflect a population that is highly interested in use of the Township's recreational facilities and accounts for the high response rate for the survey conducted in conjunction with this plan.

Built Environment/Land Use



DOWNTOWN DENVILLE

Denville Township is an interesting mix of typical suburban development, older lake communities, highway commercial development and traditional core downtown. Just less than half of the land in the Township has been developed. The vast majority (76%) of buildings in Denville are single family homes. Since 2010, new residential construction has slowed significantly. This is typical to most of the established northern New Jersey suburbs and is indicative of the market and demographic trends that currently favor development in the urban areas of the state. The Route 46 and Route 10 corridors feature strip office and commercial development mainly confined to highway frontage. The West Main Street/Broadway area of town consists of a traditional walkable “Main Street” with a mix of storefront businesses. The downtown

district is approximately ¾ mile walking distance from the NJ Transit Denville Station. Downtown Denville has an established network of sidewalks that will be incorporated into the trails system to connect the central business district with the rest of the community.

The majority of the Township is served by water utilities. Public water is provided by a municipally-owned water utility with water sourced from both Township-owned wells and the Morris County Municipal Utilities Authority. Sewer service is provided by the Rockaway Valley Regional Sewerage Authority with a small portion of the Township served by the Parsippany-Troy Hills Sewer Utility. Development in the Township is therefore not limited by the requirements for private wells and septic systems except for the portions of the municipality that are outside the existing sewer service areas. Most of the older lake community homes, that are primarily south of Route 46, have been converted to year-round houses and connected to sewer and water service.

Denville has approximately 94 miles of roadway. Some road walking along municipal streets will be necessary to make trail connections. The main corridors are U.S. Route 46, NJ Routes 10 & 53 and U.S. Interstate 80. A single exit/entrance pair from Route 80 near the intersection of Routes 53 and 46 serves the Township, including the central business district. Denville maintains 83.8 miles, Morris County maintains 2.6 miles, and the New Jersey Department of Transportation maintains the remaining 7.6 miles. The area surrounding the NJ Transit Denville Station is currently lightly developed and has the capacity to accommodate transit oriented/transit village mixed-use development in the future. This is an important location to connect to the trail system.

Natural Resources

Denville is located within the New Jersey Highlands region as designated by the New Jersey Highlands Water Protection and Planning Act. The vast majority of land in the Township is within the Planning Area where conformance with the regional master plan is voluntary and the strict regulations on development contained in the Act are not mandatory. A small portion of the Township (7 acres) along the northwestern border with Rockaway Township is in the designated Preservation Area where these strict regulations are mandatory. The Township has been deemed in conformance with the Highlands Regional Master Plan for that 7-acre area.

Beyond the portion of the Township in the Highlands Preservation Area, there are a number of important resources that enhance the quality of life in Denville and can serve as focal points for a trail network. They include forested areas, rivers and streams, rugged ridgelines and lakes. Many of these features are on public lands.

Preserved Land



MURIEL HEPNER ENTRANCE

Denville Township has approximately 1,539 acres of preserved public open space. This includes land owned and managed by the Township, by the Morris County Park Commission, the State of New Jersey and private non-profit conservation organizations. This represents about 18% of the land base in the Township. The largest municipally-owned park is Lakeshore Park, a predominantly undeveloped forested park between Indian Lake and Holstein Lake. The main Township recreational facility, Gardner Field, is located almost in the center of the Township adjacent to the municipal building and along the Rockaway River. Muriel Hepner Nature Park along Diamond Spring Road contains the only existing paved section of trail in the Township. A 1/3-mile loop that circles a small pond. This park is adjacent to the route of the abandoned Morris Canal that can also serve as a corridor for future trails. The canal right-of-way is currently being studied by the North Jersey Transportation Planning Authority for the feasibility of creating a greenway along its entire route, including through Denville Township. Veteran's Park in the southern portion of the Township has been developed for playing fields, including an artificial turf multi-purpose field, and is surrounded by undeveloped woodlands. The Liu Property on Ford Road is a large undeveloped forested tract. Finally, the Ayers-Knuth Farm on Cooper Road and the adjacent Knuth Fields are both potential trail destinations and facilities that can be incorporated into the trails network.

Two Morris County facilities, The Tourne and Jonathan's Woods currently offer hiking trails that will be incorporated into the Township system. The trails in Jonathan's Woods are maintained by a local organization POWWW (Protect Our Wetlands, Water & Woods) that was also instrumental in securing the land for this park as public open space. Additionally, the New Jersey Department of Environmental Protection (NJDEP) owns and manages the Wildcat Ridge Wildlife Management Area, a portion of which is within Denville's boundaries. The Wildlife Management Area provides connections to nearby sites outside the Township like the Wildcat Ridge Hawk Watch, Split Rock Reservoir and long-distance trails like the Highlands Trail and the Four Birds Trail. This plan's primary goal is to identify opportunities to connect these significant facilities via trails to enhance the public's enjoyment of these public resources.

Surface Waters

Denville is a Township of rivers and lakes. The Rockaway River is the main feature that courses through the center of the Township for over 3 miles. The river valley and its undeveloped flood plain provide an opportunity for routing trails that



DEN BROOK PARK

provide access to the river and to travel the Township from east to west. Frequent flooding will make selecting an appropriate route challenging. The river passes through Gardner Field, runs through the downtown area and across from Saint Clare's Riverside Hospital. The Rockaway is a popular fishing destination and public access is at a premium. Den Brook, in the southern portion of the Township, likewise provides the chance to create a pleasant and interesting trail from Route 10 to Casterline Road. Again, wet areas and flooding will make route selection critical. A large section of trail along Den Brook already exists. Completing this section is one of the recommendations contained in this report.

Denville contains several large lakes. Most of these lakes are located between Routes 46 and 10. Many are private lakes with homes surrounding them. Lake Estling and its surroundings, in particular, offers the opportunity to create a north-south trail connection of nearly a mile in length along this picturesque body of water. The property is privately held and would require an agreement between the Township and the lake association. Cedar Lake (private-owned), Indian Lake,

Holstein Lake, Openaki Lake, Lake Arrowhead, Cooks Pond, Cooper Lake, Diamond Springs Pond, and Rock Ridge Lake are also located within the Township. Many of the streams in the Township are classified as Category 1 or Category 2 waterways. These have enhanced protections through Department of Environmental Protection (NJ DEP) regulations. Crossings or other structures related to any trail construction will likely require permits from the NJ DEP.

Public Facilities

The existing trails system provides connections to various public facilities in the Township, and the proposed segments will expand the network of access to many more facilities. Denville's Central Business District and the Denville Station serviced by NJ Transit on Estling Lake Road have been marked as points of access on the existing Trails map. Saint Clare's Riverside Hospital on Pocono Road is a major employer in the Township and a likely destination for a trail connection. The proposed segments will also help to link the following facilities: the Denville Township Public Library, Community Garden and Valleyview School on Diamond Spring Road, Morris Knolls High School on Knoll Drive, and Lakeview Elementary School on Cooper Road. These points of access from various educational institutions will encourage thousands of students to interact with the Trails. Linking vital public facilities will create a sense of connected community throughout Denville.

Historic Sites

Originally part of Rockaway Township, Denville established itself an independent township in 1913. While the Historic Preservation Office of the NJDEP only lists 10 historic places in Denville, many more sites throughout the Township add to its rich culture. The land was first lived on by the Lenape Native Americans until Quakers arrived during the mid-17th century to mine for iron, copper, and gold as well as hunt for pelts. The English arrived soon after. During the 20th century, Denville, located on the Morris Canal, became a place of trading goods with Newark and Jersey City, and after constructing major roads and two rail lines, the Township became the "Hub of Morris County."

Predating the Revolutionary War and being one of the most talked about historic sites in Denville, the Ayres-Knuth Farm has been in operation for over 200 years. Other historic sites recognized by the New Jersey and National Registers are the Delaware Lackawanna and Western Railroad Boonton Line Historic District, Denville Interlocking Tower, Denville Railroad Station, Estling Lake Bridge, Ninkey Forge Historic District, Peer House and Store, Saint Francis Health Resort, and Union Hill Historic District.

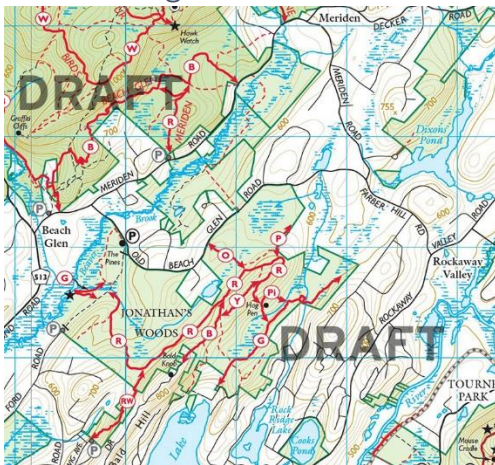
The Morris County Heritage Commission has also designated the Casterline House and General Winds House as historic sites. Additional sites that are not included on the registered lists are cemeteries, iron works, historic districts, and more locations that contribute to the cultural vitality of Denville. The Trails system's inclusion of these sites would be extremely beneficial, acting as points of interest and attracting larger trail-user demographics.

Chapter 4

The Trail System

This is an analysis of both the existing trails in Denville Township and proposed additions developed through the extensive outreach and research effort conducted as part of the background planning for this report. There currently is no cohesive trail system or planned network of trails. The goal of Denville Township is to build upon the currently existing trails with strategic additions of trail segments to develop a Township-wide trail system that provides residents with recreational opportunities and travel alternatives that connect neighborhoods, high-interest destinations and community facilities. A key recommendation is the creation of three main “trunk” routes (blue, red & gold) that will serve as the foundation of the system and connect the community from north to south. The ultimate aim is to create a comprehensive network of multi-use trails that will allow people living in Denville, as well as visitors to the community, to take advantage of the built and natural resources of the Township and to foster a sense of community by connecting the entire Township through those trails.

The Existing Trails



JONATHAN'S WOODS TRAILS MAP

There really is no existing “network” of trails. Denville currently has approximately 25 miles of marked trails that accommodate hiking, biking, running, cross-country skiing snowshoeing and casual walking. The existing trails include two marked routes that follow a series of sidewalk and roadway paths in and around the town center. The two Morris County parks account for the majority of the trail miles. At the northern end of the Township there are approximately 15 miles of trails within the Jonathan’s Woods property. The Tourne, located in Denville, Boonton Township and Mountain Lakes Borough provides another 7.7 miles of trails. A short (0.33 miles) paved trail in Muriel Hepner Park represents the only improved surface trail in the Township. There is a marked trail along Den Brook that currently dead ends about ¾ mile from the trailhead at Mount Pleasant Turnpike. There is an unmarked trail from a parking area behind Morris Knolls High School that leads to Holstein Lake. There are unmarked trails leading from the

soccer/lacrosse fields on Ford Road. Finally, there are several unmarked unofficial trails on Township-owned land on the western side of the Indian Lake neighborhood.

There is no cohesive system. The existing trails are a collection of disparate paths created in isolation without any defined strategy. The Johnathan’s Woods trails are currently maintained by volunteers with the organization Protect Our Wetlands, Water and Woods (POWWW). The Tourne Park trails are maintained by the Morris County Park Commission. The trail in Muriel Hepner Park is maintained by the Township. Beyond the sidewalk trail system, the existing trails are primarily natural and unimproved. There are minor sections that utilize boardwalk and crushed stone; however, the majority of the existing trails consist of unimproved natural surface. More importantly, there is no standardized system of wayfinding and only limited mapping of the existing trails.

The trails, as they currently exist, are underutilized. However, they do provide the foundation for a potentially vibrant and useful system. There are a number of obstacles that must be overcome, but this plan is designed to create a long-term vision and a step-by-step process to create a trail network that will be seen as a community asset. Connecting the current widely separated fragments of trail and public lands, linking the trails to neighborhoods and creating a system of user friendly trails is within the reach of the Township. Identifying and prioritizing the construction of new trail segments, selecting the desired surfaces and anticipated uses, developing a wayfinding and signage system, pinpointing

key tracts of land for acquisition to make connections and budgeting for the creation of the system are the basic steps that need to be taken. Also, creating a sense of ownership by the residents will build both patronage and support of the trails. This is a multi-year project. It must be undertaken with a strategic and rational plan.

Access to Existing Trailheads



HEDWIG AVENUE TRAIL HEAD

At present, Denville has a very limited number of official trails. There are a few existing trailheads. There are very few kiosks or maps. There is limited availability of parking. There are no formal or standardized signs or system of trail marking. Jonathan’s Woods, a county-owned park has several points of access that are difficult to find. Clearly marking points of access, creating points of entry for the trail system and just identifying the existence of the trail system will be basic requirements to permit users to take advantage of the trails and to allow for increased usage. Public awareness and ease of use and access are important elements to consider in planning and constructing a trail system.

There are trailheads to access Jonathan’s Woods on Old Beach Glen Road, at the end of Ford Road and at the cul-de-sac at the end of Hedwig Avenue. There are kiosks and maps at these locations. The Tourne can be accessed from Old Boonton Road in Denville as well as on McCaffery Lane in Boonton Township. These trailheads are well-marked and well-maintained. The remainder of the trails can be difficult to find. The trail to Holstein Lake can be accessed from a parking area at the end of Mackenzie Lane South within the Regency Condominium development. The trail along Den Brook is accessible from the parking area near the playground on Mount Pleasant Turnpike. Muriel Hepner Park is clearly marked and has sufficient parking on Diamond Spring Road. The unmarked trails on the west side of Indian Lake can be accessed from the end of Hussa Place and are identified by a “Green Acres” sign. A formal method of marking the entrances to Denville’s parks and trails is needed.

New Trails



FUTURE TRAIL HEAD - SMITH ROAD

The existing Denville trails were developed over time and independently without thought to a comprehensive Township-wide strategy. As the trail mileage expands, as more trail segments are brought online, with the addition of a wayfinding system and the creation of a true Township trail system, more municipal resources will need to be invested. A commitment to the development and maintenance of that system will be necessary to properly manage this asset for the long-term. Expansion of the trail system will create new recreational opportunities for residents and may draw visitors to the town to enjoy the trail system which can lead to economic opportunities for town businesses. Constructing new entrance points and trail segments will increase trail utilization and accessibility from neighborhoods throughout Denville.

Public outreach and research has identified a number of new trails or trail connections that can substantially expand the Denville Trails network. These connections are designed to expand the reach of the trail system, connect Denville trails with trails in surrounding communities, provide opportunities for loop hikes or access to additional neighborhoods, connect isolated parks or incorporate long distance hiking and biking opportunities that are not currently available to Denville residents. Some of these proposals are modest, others more ambitious. The proposed new trails take advantage

of the existing core trail system, lands that are owned or otherwise controlled by the Township or other public entities and existing trails outside the Denville network.

There were 23 potential new trail segments identified during the outreach and investigation conducted to prepare this report along with a number of new trailheads. Those trail segments are depicted in a detailed map with descriptions that are found in the Appendix to this document. The length and anticipated expense of constructing each section are also detailed there. The Denville Township Trails Committee has prioritized the addition of these sections to the system based upon cost, utility, feasibility and other factors. They have also been categorized into short-range, intermediate and long-term goals. Some of these additions can be accomplished easily, while others, although having high value, may need to wait until adequate funding or access to land is available to construct them. Having those trail segments identified as part of a comprehensive plan will be an advantage when seeking grant funding to assist with the construction of these additions.

New Trail Heads



TRAIL ENTRANCE-FORD ROAD FIELDS

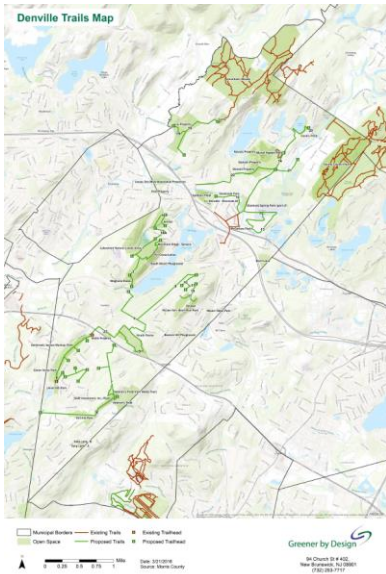
There are a number of new trailheads proposed by this plan. A simple consistent design for all trailheads, new and existing, should be adopted. Points of entry that are readily identifiable as access to “Denville Trails” should be established. A proposed design is included in the Appendix to this report. That design is simple and based upon the design utilized by neighboring Randolph Township. Denville Township owns small tracts of land at the end of cul-de-sacs, within developments at stormwater facilities and at rights-of-way for paper streets and sewer lines. These holdings should be recognized as valuable assets that can be incorporated into larger public holdings and as important access points. During the course of the research conducted in preparing this plan, a number of these sites were identified and field verified.

Short connecting trails from these access locations can link additional neighborhoods to the trail system. These new access points should be constructed with parking, where feasible and appropriate, access gates that are of the standard design, kiosks and signage. New access points should be prioritized to coordinate with the construction of the recommended new trails. The majority of new trail entrance points are designed to connect neighborhoods to the trails and to facilitate additions to the system. The full list of new access points can be found in the Appendix to this report along with a detailed map depicting their locations.

Proposed new trailheads include the following:

- **Smith Road/Morris County Farms** – Den Brook Park serves as an anchor for a series of trailheads that will help to create a loop trail through the Den Brook / Union Hill neighborhood. A multitude of trailheads are proposed in this area that will serve as a way to increase inter-connectivity of the neighborhood. There are numerous public rights-of-way that provide access to Den Brook Park from the neighborhood. There are additional connections proposed through land owned by the Denville Board of Education.
- **Casterline Road**- Opposite Lake Openaki. A gravel pull-off is already in place. This would provide access to the trail along Den Brook that will eventually be one of the system’s main trunk trails. This location would be the southern terminus of that trail.
- **East end of Lake Estling Property** – To the north, Vista Way and Thurmont Road terminate at the Lake Estling property. To the south, Magnolia Avenue and Birch Run Avenue terminate at the Lake Estling property. Obtaining public access for trails in this area will connect two distinct neighborhoods. Trailheads are proposed at the terminus of each of these streets.
- **Ford Road Fields**- Provides access to the Liu Property and to proposed trails connecting to Morris Catholic High School, the Curtis Property and Jonathan’s Woods. Parking for the field already exists.

Trail Segments



Following are descriptions of the 23 new trail segments proposed by this plan. These segments fill in gaps between existing trails, connect neighborhoods and public facilities to the trails and form the basis for linking scattered and isolated trail fragments to create a unified comprehensive trail system that serves the entire Township. When fully built, Denville residents will have the ability to use the trail network for recreation and for accessing places of interest or importance in the community. The system will also be linked to existing trails in neighboring towns as well as long distance trails that will provide unique and exciting opportunities beyond Denville Township. Additionally, a cost-estimation tool has been created to allow rational fiscal planning for additions to the system. The build-out of this proposed trail system will likely take place over an extended period of time. Some of these segments can be added quickly and easily while others will necessitate land acquisition or access agreements to cross land currently in private ownership. Over time, Denville will be able to create a useful and valuable system of multi-use trails that will serve Township residents far into the future.

PROPOSED NEW TRAIL SEGMENTS

The new trail segments proposed include the following in the order they were proposed and without prioritization:

1. **Warren Trail to Morris Knolls HS.** This is an existing, but unofficial trail that connects the high school to neighborhoods to the north.
2. **Mountain Rd to Morris Knolls HS.** A spur off of Segment #1 that follows the ridgeline and connects the high school with Mountain Road.
3. **Mackenzie Ln to Morris Knolls HS.** From the existing trailhead at the end of Knoll Road, this connector will run to the south, down the hill to Franklin Road, immediately north of the railroad trestle.
4. **Franklin Rd to Knuth Farm.** From a new trailhead immediately south of the railroad trestle on Franklin Road, traversing the Lake Estling private club property, south to connect to Lakeview Elementary School, to connect to Cooper Lane to Knuth Farm.
5. **Knuth Field/Farm Loop Trail.** Following the outer property boundary for the most part, including the wooded portions on the east, but remain unimproved through the historic building complex so as to not impinge on the historic context.
6. **Den Brook Park-Casterline Road.** Beginning in the north at a new trail head on Mount Pleasant Turnpike extending through Den Brook Park with a trail connector onto Old Mill Drive, southward until trail heads east between Kathay Terrace and Knoll Top Court, continuing east onto Board of Education property. This can be a complete loop trail utilizing neighborhood roadways to complete the loop. The segment would terminate at Casterline Road. A portion of this segment has been blazed.
7. **Shoppes at Union Hill to Veterans Park.** This will connect Knuth Farm to Veterans Memorial Park on Zeek Road. From the controlled signal at Route 10, heading south along the power line and the Forges development, crossing Zeek Road and connecting to Veterans Park.
8. **Veterans Park to Randolph Trail System.** From Veterans Park, following Denville owned land west of Zeek Road, heading south to Toft Hill Park and then following power line right of way to connect to the Randolph trail system at Openaki Road.

9. **Lake Estling to NJ Transit Denville Train Station.** Beginning in the southeastern corner of the Lake Estling Corp property where Trail Segment #4 leaves the Lake Estling property continuing north along the eastern edge of the Lake Estling Corp property northward, with trails heads connecting at to Magnolia Avenue, Birch Run Avenue, Vista Way (or Beverly Rd) and Thurmont Road, extending on public streets and sidewalks to the NJ Transit Denville Station.
10. **Magnolia Ave to Vista Way.** A connector between Magnolia Avenue and Vista Way, which traverses the Lake Estling Corp property.
11. **Birch Run Ave to Thurmont Rd.** A connector between Birch Run Avenue and Thurmont Road, which traverses the Lake Estling Corp Property.
12. **Municipal Complex to Pocono Rd.** This segment utilizes the existing roadway pavement and entails only signage and an information kiosk at the western terminus.
13. **Hospital Loop Trail.** A loop trail utilizing sidewalks along Pocono Road and extending around the outer edge of the property owned by the hospital south of Pocono Road.
14. **Town Center to Cooks Pond Sr Housing.** A sidewalk trail that will connect the Cooks Pond Senior Housing complex with the town center.
15. **Morris Catholic HS to Curtis Property.** From a new trail head on the Morris Catholic property extending northward through wooded public lands.
16. **Jemsel / Woodmont Park Loop.** Loop trail within Denville open space with trailheads at Landing Trail, Husa Place and Sioux Trail.
17. **Birch Run to Evergreen Rd.** Existing public access from Birch Run Avenue (opposite Poplar Place) eastward across Denville owned lands (as well as Lake Estling Corp) connecting to Evergreen Road.
18. **Thurmont Rd to Segment 17.** A relatively short connector to other proposed trail segments, creating another neighborhood access point to the NJ Transit Denville Station and town center.
19. **Ford Road to Liu Property.** From Ford Road proposed trail head eastward on Denville property connecting to Segment 15. Existing unofficial trail exists for a portion of this segment.
20. **Cooks Pond Sr Housing to Bush Rd.** From Diamond Spring Road, at Cooks Pond Senior Housing, traversing an existing undeveloped public right-of-way to connect to Bush Road.
21. **Towpath Rd to Diamond Spring Rd.** From the southern terminus of Towpath Road on land owned by Mountain Lakes, with a crossing of the Rockaway River being needed to continue trail across Diamond Spring Rd & following the Morris Canal route.
22. **Morris Canal.** Morris Canal route west of Diamond Spring Road extending to Savage Road. Portions of the trail will need to utilize road rights of way.
23. **Route 10 Underpass at Hill Rd.** This will create a connection to the Knuth Field/Farm park loop trail, running westward on the north side of Route 10, going under the bridge that traverses Den Brook and extending southward to connect with Mt. Pleasant Turnpike opposite the Den Brook Park parking area.

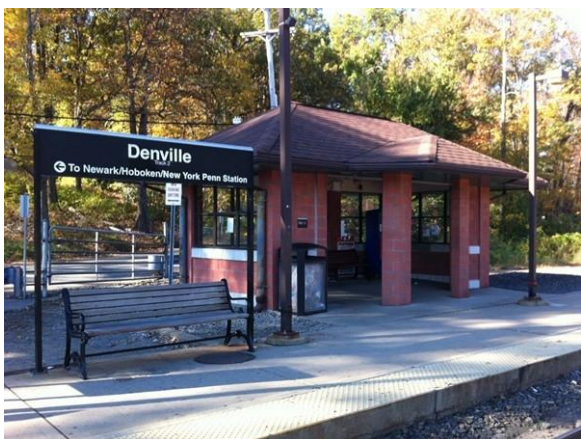
High Interest Trail Destinations & Linkages

The existing trails in Denville include a centralized network around the commercial downtown area. The routes that utilize the existing sidewalks and walkway provide residents with opportunities for biking and walking in that area. They allow for connections to Denville's Municipal Building and Gardner Field, Muriel Hepner Park, and the NJ Transit Denville Station. This plan intends to link a number of facilities that are currently not serviced by the trails that are geographically disbursed throughout the Township. These destinations include Lakeview Elementary School, Morris Knolls High School, and the Denville Township Public Library and community garden. Other municipal parks around Denville will be more accessible with the additional trail segments. Birch Run Park, Knuth Field, Veterans Memorial Park, Toft Hill Park, Denville Park, Ford Road Field, Cooks Pond, Lakeshore / Holstein Lake Park, Den Brook Park, the Liu Property and Pocono Fields should all be connected to the trails system. Additionally, Denville has many unique neighborhoods that are isolated from one another. due to hilly topography and no access through privately owned lands. There are many opportunities for expansion and connection to existing trails throughout the Township, trails in neighboring communities, and regional trails nearby.

Downtown Business Center

As the commercial hub of Denville, the downtown business center plays a vital role in the Township's economy but more importantly the sense of community, also as the highlight of Denville's existing trail system. It is a place of gathering for a variety of reasons: dining, shopping, parks, library and community garden. It has a prime location of being in close vicinity to the Rockaway River, Gardner Field, McCarter Park, schools, US Route 46, and Interstate 80. There is an existing pedestrian bridge over Route 46 to provide a grade separated crossing giving access from south of Route 46 to the central business district. Other crossings are possible at signalized intersections.

NJ Transit Denville Station



NJ TRANSIT DENVERLE STATION

The Township's existing trails network includes the NJ Transit Denville Station as one of its sidewalk destinations. Increasing pedestrian and bicycle access to the train station is a high priority for this plan. Future transit-oriented development in the vicinity of the train station is likely. That development should have access to the trails system. Walking or biking to the station is a valuable capability. Additionally, increasing access to the station without adding vehicles to the parking lot is of great importance. There are several proposed trail segments that will increase neighborhoods access to the train station. The segments include 9, 10, 11, 17 & 18. Access to the train station is a valuable capability for Denville residents. It can also help to increase the number of visitors to Denville seeking access to the trails and the downtown.

St. Clare's Hospital

As a major employer and being in the health and wellness sector, the hospital is a key destination. The existing sidewalk system at and near the hospital provides excellent opportunities. There are proposed segments nearby that will increase the trail system near the hospital, outside the existing sidewalks.

Parks

A major aspect of this plan is to showcase the value of Denville's parks and to provide greater public access to those lands. Muriel Hepner Park. Knuth Field/Farm Park, Johnathan's Woods, Tourne County Park, Veterans Memorial Park and its adjoining fire tower vista, Ford Road Field and Gardner Field present opportunities for outdoor recreation. Many of these trail heads and destinations offer opportunities for hikers to explore the trail system while youth recreation

activities are conducted in the parks. A great example of this will be a loop trail around the Knuth Field property. This trail will provide a variety of visual landscapes and terrains. The Knuth property has active recreation, a working farm, mature forest and stream corridor and a historic building complex. The loop trail of roughly 1.2 miles will be an excellent way for the public to experience the full extent of the property.

Schools

Connecting schools to the trails system can provide students with alternate routes for walking or biking and can link school facilities to neighborhoods. Riverview Elementary and Valleyview Middle Schools are connected to the sidewalk trail system. The Lakeview Elementary School is situated across from the Knuth Field property; however, there are only limited sidewalks connected to the school to the west. Proposed trail segments will increase the walkability to Lakeview Elementary School.

At present, there is an informal trail through the woods north of Morris Knolls High School. The plan proposes formal trails to service this high school, as well as Morris Catholic High School. The Morris County School of Technology is located on State Route 53 and is serviced by sidewalks along that major thoroughfare, as well as Fox Hill Road.

Lakes, Rivers and Ridgelines



**GREYSTONE STATION FIRE
TOWER**

Denville has an abundance of ridgelines as well as lakes and rivers that make for scenic views throughout the municipality. New trail segments will provide access to many of these assets including Cooks Pond and Holstein Lake. While the existing trail system has indirect access to the Rockaway River, two of the new trail additions will take advantage of the river's value by following its curvaceous path. Many of the lakes in Denville, such as Lake Estling and Cedar Lake, are only accessible to adjoining property owners. Some of the ridgelines with proposed trail segments will bring these lakes into view for trail users. The ridgeline and overlook at the N.J. Forest Fire Service's Greystone Station fire tower on Union Hill will provide a panoramic viewpoint stretching east to New York City and westward over the Highlands. The fire tower was erected in 1937 and is the tallest tower in service in northern New Jersey.

Neighborhoods

The residents of Denville are the heart and soul of the Township. Providing connections from neighborhoods is necessary to bring life to the trails with new users and visitors. Increasing the number of trails across all of Denville will help to reach as many neighborhoods as possible and will provide connections to different neighborhoods that are currently disconnected. Two great examples of this are: Segments 10 & 11 which will connect the Magnolia and Birch Run Avenue neighborhoods with the Thurmont Rd and Vista Way neighborhoods to the north; Segment 6 will create a loop trail through Den Brook Park and the surrounding neighborhoods and connect Knoll Top Court and Nicole Drive with Kathay Terrace, Sue Court and Nicole Drive to the north.

Surrounding Town Trail Systems

Randolph Township has the most elaborate trail system of all municipalities contiguous to Denville Township. Segment 8 provides a connection to the extensive Randolph trail system. Bush Road west of the Rockaway River and Norris Road/Old Denville Road are not safe for pedestrian usage given their narrow pavement width. When County bridge #1400356 on Bush Road that crosses the Rockaway River is replaced, this will provide an opportunity for a wider bridge with safe pedestrian access. Currently the bridge has no structural issues and is not scheduled for replacement in the near future; however, a wider structure will enable a safe connection to the Tourne Park's western portion, west of

Norris Road/Old Denville Road. A short connection from Jonathan's Woods on Old Beach Glen Road can allow for a connection to Wildcat Ridge Wildlife Management Area. This would allow for direct access to the long-distance Highlands Trail, the Four Birds Trail, the West Morris Greenway and beyond.

Land Acquisition

The proposed new trails and connections identified through the planning process would primarily take advantage of existing public lands. The land consists of current parkland, land acquired by the township as part of residential development, land owned by public entities like the County of Morris and the Denville Board of Education and utility rights of way. A number of small privately held parcels are located along the routes of proposed trail additions. Some of these are key tracts that are essential to creating key trail linkages or expansions. Others would facilitate easier or more convenient routes for the trail additions.



VIEW ABOVE LAKE ESTLING

The plan has identified a number of potential acquisition parcels that would enable the construction of new trails or new access points. A comprehensive list of properties that can provide trail access or connections has been compiled for guidance in making strategic acquisitions. The Township's open space acquisition program should incorporate these parcels into the open space plan. The opportunity to secure these key linkages should be considered and prioritized in conjunction with the greater open space goals of the community. Additionally, the planning board should take notice of these parcels when considering future development approvals. Taking advantage

of opportunities to secure access points or trail routes as part of the approval process, where appropriate, should be a standard element of the evaluation of land use applications. Development and re-development projects are prime occasions for acquiring trail accommodations. It is also recommended that the landowners for all of the privately-owned parcels identified in this plan be contacted by mail to make them aware of this plan and that their land is of interest for acquisition of a trail easement or outright purchase.

One example of a key privately held tract is the Estling Lake Corporation's holding at Block 30001, Lots 1 & 2. These parcels total 274 acres and run along the eastern side of Lake Estling. Gaining access to these lots would provide for the creation of approximately 1 mile of trail. More importantly, it would provide a vital connection between Township-owned parcels that would link the trail system from the southern part of town to the remainder of the proposed system. Acquisition is not necessary. An agreement for trail access along the western, southern and eastern property lines would allow for these connections. The proposed route of the trails would not interfere with current lake community activities nor disturb the woodland management activities on-going that maintain farmland tax assessment. Obtaining an agreement with the Corporation's membership to approve public access should be a priority. The trails that would be constructed would be an asset for the community as well as the lake's homeowners.

Priority

The construction of new trail segments needs to be conducted in a cost-effective and efficient manner. While all of the identified additions to the existing network have value, a methodology of prioritization needs to be identified. Some of the segments are subject to obtaining funding to permit the construction. Other segments are subject to the acquisition of key properties along their proposed routes. The new additions should be categorized into high, medium and low priority for construction as well as into short-term, intermediate-term and long-term priorities. Some segments may have high utility but also high cost and therefore be subject to securing adequate funding. Other segments may not be nearly as valuable but are simple and relatively inexpensive to construct.

Additionally, some trail segments may be more complex to build. Requirements for bridges, boardwalks or other hard infrastructure, the necessity of purchasing or otherwise gaining access to land and the need for environmental permits

may dictate when, or if, these segments can be constructed. The trails plan committee has prioritized the 23 candidate segments based upon a number of criteria. These factors include:

- Cost
- Necessity
- Utility
- Budget capacity
- Available supplemental funding
- Access to route
- Complexity/ease of completion
- Public interest/demand
- Consistency with plan

These are detailed in Appendix 2 and 8 of this report. All proposed additions are subject to the availability of funding and other resources that would permit their construction. The trails plan committee should review the list periodically and modify the anticipated construction dates as conditions change.

Chapter 5

Way Finding, Signage & Trail Marking



A good trails system is easy to navigate, offers multiple options for users to find routes of varying distances and connects to interesting destinations. The trails need to be readily identified and clearly marked. A key part of establishing a trail network for Denville Township will clearly and adequately identifying and marking the trails that are created. This means having a common method of blazing trails, clear signs that assist users with identifying access points and direction and creating a system that is easy to use and makes people comfortable using the trails. One of the primary goals of the Trails Master Plan is to recommend a method to provide users with safe access to and through Denville’s trail network.

This plan seeks to provide an easy, visible format for all trail users. A simple and understandable system of navigation can also assist emergency responders who may have to reach lost or injured trail users. The existing limited trail system lacks cohesion and navigational infrastructure. In general, there are few kiosks, trail heads, or trail indicators and mapping is inconsistent. Standard signage, maps, and trail marking remedy these issues. These measures can also eliminate confusion and enhance enjoyment of the trails.

Trail heads will need to be identifiable and clearly marked. Maps should be provided at all trail head locations. The build out of the proposed system will incorporate a number of road crossings. These crossings will need to be at safe locations with adequate signage to alert motorists. All road crossings should be clearly visible with pavement markings as well. Trail routes need to be marked in a manner that provides a clear understanding of the trail route and direction of travel. Finally, the trail system needs to be branded as a community asset to raise awareness and to create a sense of ownership among Township residents.

Blazing

CONTINUE STRAIGHT 	START OF TRAIL 	RIGHT TURN
SPUR LEADING TO A DIFFERENT TRAIL 	END OF TRAIL 	LEFT TURN

TRADITIONAL TRAIL BLAZING

Blazing is the term used to describe a system of marking trail routes that allow users to stay on a particular trail, identify different trails and navigate their way to their intended destination. Trails are usually identified by color markings. These can be as simple as a series of rectangles painted on trees, to plastic or metal tags or posts featuring the trail color. Blazes painted on trees or rocks are generally sufficient for primitive hiking trails. However, Denville proposes a more comprehensive system that will be accessible to a wide variety of residents with a range of physical capabilities, use options and reasons for using the trail network. This makes clear common-sense navigational aids important.

The traditional system of blazing trails utilizes color rectangles or other markings on trees. There is an established method for indicating the trail route, the beginning and end of a trail and turns. The establishment of unique color-coded routes necessitates the use of a trail marking system. Planning loop hikes, navigating direct routes and general use of the trail system would be enhanced by establishing a consistent blazing scheme. Color coding the trails and providing regular marking is an important element in creating a means of following the trails and identifying which trail a user is on. This becomes more essential as the trail system expands and becomes more complex. A common methodology for the system should also be adopted to create a consistent township-wide scheme for navigation. Distance markers and directional signs indicating high interest destinations should also be considered. Residents using the system for recreation or exercise, as well as for an alternative means of travel would benefit from this feature.



TRAIL HEAD KIOSK

The use of composite posts is recommended. They are commercially available and are designed specifically for use on hiking trails. The State of New Jersey currently uses these posts in several state parks such as Wharton State Forest and Brendan Byrne State Forest where trails follow old woods roads. They are easily seen and maintenance is low. They are relatively inexpensive and durable and are easy to install. A single post can also be used to convey additional information beyond merely the color indicator of the trail. These posts can be used to carry this additional information where appropriate. These posts require little or no maintenance and can be installed by Township personnel or volunteers. One manufacturer's product can be ordered with color caps that can also serve as trail blazing. The limited need to install markers and to have increased intervals between markings would also limit the expense involved in utilizing this style of trail marker.

The color identification system is an important element of creating main trunk routes utilizing both established trails and proposed additions to the trails network. These major routes will be blazed in unique colors. These major routes are described in a map contained in Appendix 1 of this report. Easily identifiable colors such as red, white, blue or yellow should be used for these routes. The trails should also be named to assist with differentiation of each trail. A number of spur trails will also be incorporated from both existing and proposed routes. Some of these spur trails will be substantial enough to warrant unique marking. Others that may only lead a short distance to a trail head or provide a connection between main trails should be marked in a systematic fashion which identifies them as connector trails and also indicates which trail they connect to. This plan calls for the establishment of a number of new trail heads in neighborhoods throughout the Township with connections to the main system. Logically and appropriately blazing these connections will become increasingly important as the trail network is expanded.

Where the Township chooses to construct and install improved trail surfaces such as crushed gravel or pavement trails routes will be clearly evident. An improved surface trail network is fairly easy to follow. The main issue is identifying the particular trail a user is traversing. Because the existing trails follow obvious routes, staying on the trail is not an issue. To assist users with navigating the system, trail posts can be spaced at relatively long intervals. Placing posts every $\frac{1}{4}$ along the trails would be sufficient to assist users in navigating the network. Costs could be minimized by utilizing paint blazes on trees where possible. Paint blazes will fade over time and need to be periodically renewed. Plastic or metal tags in the color of the trails (such as are currently in use in Jonathan's Woods) are a satisfactory alternative. There is a marginally higher cost involved in this method. The investment in labor for either painting blazes or tacking tags are similar.

Navigation

Navigating the trail system becomes an issue once substantial construction/installation has taken place. Only a small portion of the proposed trail network will pass through remote or isolated areas of the Township. However, the full build out will be fairly complex. A number of methods to assist with navigation of the trail network should be considered. The first, and most obvious, is the creation of user-friendly maps. Permanent map displays should be posted at every trail head. Pocket versions of these maps should be readily available at trail heads and at the municipal building. Digital versions of the map should be available for downloading. Incorporating the Denville Trail system into existing commercial smart phone applications such as "Map My Hike" or "All Trails" will then be possible.

As the system builds out, additional aids should be employed. Assigning each trail intersection or trail head a unique map-keyed number would provide instant recognition of location. Signs that indicate destinations and distances to that destination may be valuable. Finally, periodic marking of distances (every $\frac{1}{2}$ mile) along the trail can give users recognition of how far they have traveled and how far it may be to their destination. This can be particularly useful to residents using the trails for running or jogging.

Trailheads

All trailheads for the system should be clearly marked and easily identified as access points. A common but simple design should be adopted. Trailheads within neighborhoods should consist of little more than a sign and an information kiosk and a wooden barrier to prevent motorized vehicles. Major access points should incorporate these features but also provide for some amount of parking. Parking for several cars on a gravel surface would be sufficient in most instances. Strategically placed entrance points are a key element of raising awareness of the existence of the trails system and for providing access to the system for as many residents as possible.

Main Routes

Two of the goals of this plan are to create a comprehensive town-wide trail network and to use that trail system to link the geographically divided portions of the Township north of Interstate 80, between Interstate 80 and Route 10 and south of Route 10. Rather than leaving independent isolated sections of trail, identifying main trunk routes that tie these sections together into a unified system needs to be a priority. These trunk routes also form the foundation for creating opportunities for residents to walk, hike or bike longer distances and provides opportunities for linking the entire Township to high-interest destinations.

A main north-south route that runs from Veteran's Park in the south to Jonathan's Woods in the north should be a priority. There are limited places where this route could cross Routes 10, 46, and Interstate 80. It should also pass through the center of the downtown business district. This main trunk route should also feature a connection to the Randolph Trails on the southern end and a connection to Wildcat Ridge Wildlife Management Area on the northern end. A main branch running southwest to northeast, entirely north of Interstate 80, from Gardner Field to the Tourne should also be incorporated. An additional main branch, entirely south of Interstate 80, would run from the neighborhoods west of Indian Lake to the Union Hill Park. All other proposed trails would have connections to these two main routes.

Branding



The final recommendation concerns establishing a recognizable brand for the trails network. A new trails sign has been designed. This symbol should be used consistently to mark all entrances to the trails network as well as with all materials produced to support the trail system. The Trail Maps, the trail heads and the web site should all feature this brand prominently. Additionally, any future additional materials, such as a web-based or mobile phone application should utilize this design for consistency and for identification purposes.

The Denville Trails will develop into a well-known unique asset of the Township. Raising awareness of the existence of the trail system and providing the public with an easily recognizable symbol of that system will help to increase usage and public support for the trails network. The proposed design also communicates the different uses for the trail system in a simple and clear manner.

Denville also has an extensive sidewalk "trail" system in place. This sidewalk asset also needs to be publicized with signage. Posting conspicuous maps of routes in the downtown district can help raise awareness of the system, allow the public identify loop walking paths and encourage visitations to the downtown business district. The signage for the sidewalks should be smaller in scale as users will be in much closer proximity to the signs. Samples of signs for this purpose are also included in Appendix 4 & 7.

CHAPTER 6

TRAIL MAINTENANCE & MANAGEMENT

Overview

The creation of a trails system carries along with it a responsibility to maintain trails on an ongoing basis, so that they remain an attractive, viable recreational resource. This becomes a greater issue of the Township chooses to proceed with creating a multi-use network with improved surfaces. A well-planned and responsive maintenance management system is crucial to success of any trail system and ensures many enjoyable years of multi-use trails activities. Safety and security for trails users is a prime concern when designing a trail system and opening the way for public use.

Appropriately planning for periodic repair, upkeep and replacement of the trails infrastructure is an important element of maintaining the integrity and aesthetic qualities of the system. While initial construction of trails is generally accomplished through a combination of capital projects and cost-saving volunteer efforts, trail maintenance is often an afterthought. This section is designed to provide guidance for the long-term preservation of the trail system and for protection of the investment the Township has made in this community asset.

The need to maintain trails brings about a fiscal responsibility that requires long-term planning and a commitment of financial resources in the form of material and labor. Maintenance considerations should be part of the planning process when considering new trails and access points. Limits to the municipal budget require the ability to predict and prioritize multi-year investments needed to maintain trails in a viable condition. Allocating township personnel, volunteers, financial resources and, where necessary, outside contractors to perform required maintenance activities can be accomplished efficiently with a carefully planned approach.

Maintaining the System

The bulk of trail maintenance, particularly if trails are unimproved, consists of mainly labor. Painting and re-painting blazes, clearing brush and downed trees and preventing or repairing water damage make up the majority of tasks that need to be performed. With the exception of removing large downed trees, this work is within the capabilities of volunteer maintainers. Until now, the nonprofit organization Protect Our Wetlands, Water and Woods has been the entity that has undertaken the responsibility for ongoing maintenance of Denville's trails system. Other volunteers have also played a valuable role in creating and maintaining trails. The New York/New Jersey Trails Conference, a non-profit organization that has taken on responsibility for building and maintaining trails in New Jersey, New York and Connecticut, manages and trains a network of volunteers who care for hundreds of miles of hiking trails in the tri-state area. Their trails maintenance manual and training program is the premier standard for volunteer trail management. Working with the NYNJTC is an option for creating a volunteer program for Denville's trails. Using their program as a model for a municipal maintenance system is also an option.

If the trial system is to be durable and is to expand, consideration should be given to the potential role Township Public Works can play in creating and maintaining parts of the trails system, based on that agency's expertise, capacity, equipment, and budget. Systematic implementation of organized volunteer efforts, such as through as adopt-a-trail programs, coordination of community service volunteers, and partnerships with nonprofit organizations such as the Scouts, school service groups and community service organizations, are strategies that can be used to address trail labor needs. These require organization, equipment and a plan.

A systematic plan that incorporates regular trail inspection and tracking of maintenance needs is an effective approach to ensuring the trails remain open and liability issues are minimized. An organized, usable trail maintenance planning system would make the most efficient use of labor and allow for predicting trail system costs. Identifying and remedying potential trail hazards on a routine basis helps reduce exposure to accidents related to trail conditions and potential

exposure to liability claims. Greener By Design has developed a trails planning and maintenance tracking system that would allow Denville to plan new trails, trailheads and trail connections, and track and schedule maintenance activities. The tracking system also permits estimating the potential costs of these activities, allowing for realistic ongoing budgeting and pursuit of available funds to address trail costs of various types (e.g. clearing, surfacing, drainage, trailhead parking, bridges, etc.).

Maintenance Requirements

Maintenance of Denville's trail system can be performed through routine inspection of trail conditions that do not require scheduling and more structured tasks that should be performed on a routine basis and may require planning and capital investments. Routine activities that constitute good stewardship of the trail network include paying attention to:

- Trailheads: Trailheads should be inspected periodically to monitor parking conditions, check for dumping, ensure signs are in place, and ensure safe site distance for ingress and egress.
- Signs: Regulatory and directional signs should be inspected at a minimum of once per year by the municipality. This task should be monitored with the assistance of an overall signage placement schedule and mapping, and a maintenance record. Missing or damaged signs should be promptly replaced. Any safety concerns from missing or damaged signs should be corrected immediately. Since missing signs are a common occurrence on most trails systems, an inventory of signs and trail markers should be retained and brought along on inspections for prompt replacement, where possible.
- Trails Conditions: Trails should be inspected at least once per year to ensure viability for the intended use and the presence of hazardous conditions. Instances of trespass by vehicles and dumping should be documented and referred to Township Police for ongoing monitoring. Modifications may be needed to prevent vehicle trespass.

Trail maintenance requirements will vary based on geography traversed by trail, the presence of streams and wetlands, storm drainage, forest cover, soil conditions, and type and intensity of use. For example, trails suitable for individuals with mobility impairments should be maintained at a level of frequency that eliminates trail surface changes of greater than ¼ inch in the treadway. Or trails allowing bike use may require more ongoing inspection and maintenance than trails planned for more passive uses. All-in-all, the requirements for maintaining the trail corridors themselves can be organized into three basic categories:

- Routine maintenance, which includes low-intensity activities, such as brush clearing, trash collection, and debris removal. These are often needed on a regular basis to maintain the openness and aesthetics of trails. These activities can be carried out by volunteers and staff on an ad hoc basis, or by organized groups on a scheduled basis.
- Minor repairs, which usually can be expected approximately every five years, depending on intensity of use or physical setting. These activities include replacement of amenities (e.g., gates, bridges, kiosks, signs, etc.), seal-coating of paved trails, repainting or restriping of paved trails, repair of erosion structures, culvert clean-out and other basic, ongoing needs to maintain trails in good working condition. These needs can be identified based on the physical inspection of trails and scheduled based on the availability of personnel and funding.
- Reconstruction, involving resurfacing or reconstruction of trailheads and trails, replacement of bridges, culverts, fencing, water-diversion structures, and other infrastructure rehabilitation or replacement, repair of flood damage, removal of fallen trees, etc. These activities tend to be the costliest and should be planned and budgeted well in advance.

Considerations for the above types of trail maintenance needs are detailed below.

Routine Maintenance

Routine maintenance consists of activities that should be carried out on an annual basis. These can be performed by both volunteers and staff. Typical routine maintenance activities include:

- Periodic Inspection of trailheads, trails and trail infrastructure (bridges, culverts, retaining walls, etc.)
- Tree and brush clearing.
- Mowing.
- Replacing or updating maps and signs, including event and seasonal signs.
- Trash removal.
- Culvert clean-out.
- Patching, minor regrading of gravel surfaces or patching asphalt repair replacement.
- Planting, pruning, and general beautification.

Regulatory and directional signs should be inspected at a minimum of once per year by the municipality. Missing or damaged signs should be promptly replaced to maintain continuity of the signage system. Any safety concerns from missing or damaged signs should be corrected immediately. Since missing signs are a common occurrence, a stockpile of signs should be maintained and brought along on inspections for immediate replacement.

The yearly cost for routine maintenance tasks outlined above will depend on the maintenance capabilities already in place and the amount of volunteer labor used. In general, yearly routine maintenance costs can be estimated at \$6,000 per mile for performing the tasks described above.

Minor Repairs

Minor repairs may include the following activities:

- Replacement, repair, or repainting of trail support amenities, such as restrooms, signage, benches, trash receptacles, or hitching posts
- Minor repair of trail section through emplacement of fill, gravel, or other suitable material.
- Sealcoating of asphalt trails sections.
- Realigning gates.
- Replacing bridge components that show wear, including approach ramps, walls, and stairways.

Reconstruction

Reconstruction may consist of resurfacing of improved trails, regrading and resurfacing of granular trail surfaces, and replacement of infrastructure, such as bridges, culverts, gates, retaining walls, kiosks, etc. The usable lifespan of an asphalt surface trail is typically considered to be 10 years, depending on how well they have been maintained. Seal coating is a low-cost method that can extend the life of asphalt trails significantly, although settling of underlying soils or tree root penetration will eventually affect the pavement, but it does offer a lower cost means of extending a trail's life. Asphalt re-surfacing costs approximately \$1 per square foot for a 4-inch depth. Asphalt overlays should have a depth of 1 to 2 inches. In some cases, complete replacement of a trail section may be necessary, involving removing the existing trail, re-grading the trail base, and resurfacing. This kind of comprehensive maintenance will be necessary approximately every 20-25 years, regardless of trail type. Even natural surface trails may need to be fully regraded after 20 years of use. Trail costs for reconstructions 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.

Maintenance of the trail bridges and culverts is a critical component of the overall trail management program. Keeping them in a state of good repair is crucial to maintaining the integrity and aesthetic quality of the trail system. It is recommended that an initial inspection by licensed engineering professionals to provide a baseline of existing conditions and identify any necessary repairs. Periodic inspections of the trail bridges and culverts should be scheduled to identify any deficiencies that may exist and to allow for planning repairs or replacement where necessary. Bridge and culvert inspections should be completed annually and immediately following significant high rainfall events. If washouts occur around bridge abutments and foundations or culverts cannot handle high volume flows. All culverts should be

thoroughly cleaned a minimum of once each year. Maintenance and replacement costs will vary depending on the type, size, and location of the bridge or culvert structures.

Ecological Factors

The advancing range of the Emerald Ash Borer should be considered with some urgency as forestry and natural resource professionals predict that the infestation of this insect pest will result in a 90 plus percent loss of untreated ash trees in Morris County. The Borer has made its first appearance in Morris County in 2017 in central Morris County. Untreated ash trees along trails and popular recreation facilities are a cause for a user safety concern as the dying ash trees become very brittle with major limb drops. The trees also become more dangerous to fell if left to die in place. It is recommended that within the next 6 to 12 months the Township shall inventory the location of ash trees within 50 ft. of the trail bed, trailheads, and parking facilities. Since Morris County generally has a high percentage of ash trees in forested areas, it is likely that hundreds of ash trees will be present along the trail system. Once the nature of the infestations impact is understood along the trails system, the Township can assess removal or treatment options. In most instances leaving dead trees in forested areas provides cover for wildlife and it is ecologically beneficial to allow organic decay to improve the soil cover. It is likely that the Township will need to decide about the volume of dead ash trees that it can sustain on the forest floor without losing trail user desired aesthetic attributes of the suburban forest.

The trail system provides corridors for wildlife movement as well as for people. Co-existing with wildlife means informing users as to how to react if they encounter bears, racoons, deer, etc. Information on how to react to wildlife encounters is readily available and should be posted at trail heads and included in informational literature on the trails network and on social media.

Finally, the Township's follow green corridors that offer rewarding interaction with nature. In designing trail feature, consideration should be given to opportunities for people to stop and experience some of the richer ecological niches in the township. Benches, wildlife blinds and boardwalks can be used to allow restful wildlife observation and responsible access to sensitive natural areas

Maintenance Costs

The cost for replacement, repair, or repainting of trail amenities should be closely tracked. The Parks and recreation department should maintain records of the general costs of trail amenities as a means of estimating future repair and replacement costs. Replacement of a portion of a trail may be necessary due to flooding, erosion, or weak soils. Most paved sections of the Township's trails do not appear to have received a seal-coating application since their installation. This should be a priority maintenance project to extend the lifespan of current paved sections of the Denville Township Trails System. Sealcoating asphalt segments will increase the longevity of the trail and provide a quality riding surface. When performed, sealcoating will cost approximately \$3,500 per mile for a 6-foot pedestrian trail. A periodic cost such as this should be included in the Township's operating budget to ensure that adequate funding is available. Sealcoating as a topic cannot skip one important safety matter. Sealcoating tends to be slippery. It is recommended that a flat section of trail be tested with sealcoating to see if there are any real slipping incidents associated with the application of the product. If there are legitimate slipping concerns, seal-coating may not be a viable option for extending the life of the asphalt.

Maintenance costs will vary greatly depending on the type of trail, amount of volunteer labor use, available services, and geographic location of the trail. These costs, however, must be considered during the trail planning process.

Maintenance costs are rarely broken down into specific tasks such as those above. Most trails will be 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. A matrix of estimated costs based upon distance and type of surface is included in this plan. This tool should be used as a guide for budgeting and planning for upkeep, repair and replacement of the trails and associated infrastructure.

A Management System for Trail Maintenance

The Denville Trails Management System displayed in Appendix 8 is intended to provide an effective tool for planning the design, construction, and maintenance of trails, trailheads and trail connections. In addition, the spreadsheet format allows for estimating the cost of trails development and maintenance on an ongoing basis. The tool is in effect an inventory of each trail and trail section, containing a maps and physical descriptions of each trail segment. Planning, development and maintenance needs and associated costs can be identified for each trail, allowing for an orderly assessment of needs, priorities and associated costs. Priorities assigned to each trail or segment should, of course, be determined by Denville's recreational needs, community input and available financial resources.

The Trails Management System is more effective when accompanied by other support documents, such as:

- Trailhead and trail inspection reports documenting changes in trail conditions and maintenance needs.
- Reports documenting public comments and complaints, and associated responses.
- Work orders to address identified construction and maintenance needs.
- Labor completion reports for staff and contractors.
- A cost tracking system to link the Trails Management System to the Township's financial tracking process.

Obviously, responsibility for employing and regularly updating the Trails Management System will need to be assigned to ensure that it remains an effective tool for tracking Trails System needs and progress. The budgeting capabilities of the Management System will allow for ready and regular reporting to the larger township budgeting process, allowing for realistic estimates of Trail System needs and for planning improvements and maintenance.

Trail users can play a role in monitoring trail conditions and providing volunteer trail maintainers with a simple tool to report problems that require the attention of the Township will greatly enhance the ability to keep the trail system in optimal condition. A system by which Township personnel, volunteer trail maintainers and trail users can quickly, efficiently and accurately report on trail conditions requiring the attention is a valuable asset. Smartphone technology allows photographs of trail conditions to be transmitted with the precise geographic location of any problems. There are several applications available that provide this capability. One example is "[See Click Fix](#)", a smart phone application that enables the public to report issues they encounter. This is currently in use in many municipalities for allowing members of the public to document and report issues such as potholes in roads, sidewalk defects, and other conditions that a municipal government might need to address. This application could easily be adopted for reporting on the condition of Township trails. Obviously, a phone number would need to be established to which digital transmissions of trail-condition information can be sent, and a system for following up on reports developed.

The Township should consider establishing a citizen volunteer program to assist with trails maintenance. Minor routine maintenance and inspection responsibilities can be undertaken by a corps of residents leaving more substantial or complex tasks to the Township's paid employees.

Coordinating participants at the municipal level will allow the township to take advantage of residents who may be willing to undertake responsibility for adopting a section of trail. Morris County currently employs volunteers to maintain the Patriots' Path trails system using a similar methodology. The county's volunteer maintainer program has been very successful. Protect Our Wetlands, Water and Woods (POWWW) already maintains and creates new trails within Jonathan's Woods. This effort/infrastructure could be expanded as more trails come online throughout the municipality.

Chapter 7

Implementation

This plan sets forth an ambitious vision for the Denville Trails System. Moving from the current state where the Township has scattered and isolated trails without any cohesive layout to a comprehensive township-wide system will take time, commitment and resources. It will likely take at least a decade to make the network envisioned a reality. Denville needs to take a strategic and sustained approach to building this system that has clearly defined elements. The creation of this plan is the first element. From here the Township needs to establish the priority for each of the identified new additions. A multi-year budget for construction needs to be created. A program and budget for annual maintenance must be established. Understanding that the completion of this system will likely span several different administrations of the local governing body is also important. This plan needs to survive the periodic changes in government. Selection of the types of anticipated uses, the trail surfaces and associated infrastructure needs to be made. Finally, while not substantial, there are several key properties that are not currently in public control that need to either be purchased or otherwise accessed to permit the full build-out of the system.

As the plan implementation progresses, the maintenance responsibilities will grow. Right now, they are virtually non-existent. A rational and comprehensive approach to maintain the existing system, keeping the trail infrastructure in a state of good repair and strategically expanding the system is the plan's primary function. Having a tool that Denville Township can use to make informed and rational budgetary decisions will insure that the trail system will continue to be an asset to the community's residents long into the future.

This section provides an overview of the recommendations for creating a methodology for decisions for both maintaining the current system and adding segments to the trail network to increase its utility to the public. Additionally, there are upgrades to the system, mostly in the form of better trail marking, signage and trailhead construction that must also be factored into the costs for operating the trail network. Finally, there are segments of new trail that require either the acquisition of a right-of-way for a trail or the outright acquisition of the property. Planning for acquiring access to these properties needs to be factored into the decision-making process.

Funding sources are available to supplement the Township's investment in the trail system. Denville should take advantage of these resources in addition to partnering with organizations and agencies that can assist in trail construction. Providing context for each new addition and highlighting the enhanced value that each new project will provide to the public and how it will advance the goals of the plan will be a significant advantage in any competitive funding program. A Trail Management System has been designed as a part of this plan to assist the Township with planning the tasks necessary to maintain and expand the Denville Trails and to plan for the expenses likely to be incurred in that undertaking. Once costs are identified and sections prioritized, the Township can dedicate and pursue resources needed to systematically implement the Plan.

Prioritization

The Township's trails advisory committee must create an initial hierarchy for new additions to the trail system. There are 23 identified new trail segments. These proposed additions need to be ranked in order of priority to allow for the systematic build-out of the trails network over time. That ranking should be revisited periodically to ensure that it makes sense in terms of the order for implementation. There are a number of factors that should guide investments in the trail system. Prioritization of expenditures will require consideration of both new projects and maintenance of the existing system. The key is to have a rational and deliberate approach. There are many other details that can enter into the choices that are made associated with these factors as well. The requirement for environmental permits, local opposition, opportunities to collaborate with other communities or other considerations can enter into the evaluations.

Finance & Budgeting

The screenshot shows a spreadsheet titled 'Budgeting Tool' with columns for 'Year' (2018-2027) and 'Total'. Rows include categories like 'Personnel', 'Materials', 'Construction', and 'Maintenance'. The data is organized into a grid with various numerical values representing costs and budgets for each year.

BUDGETING TOOL

The financial obligations for the maintenance, upkeep and expansion of the trail system need to be carefully planned. Municipal budgets are constrained by both policy and legal limitations that cap spending. The existing system needs to be kept in a state of good repair. This needs to be undertaken in a thoughtful and fiscally responsible manner, which can be challenging when there are many different priorities that are competing for scarce public funds. It is also clear after the public process and evaluation conducted in conjunction with the preparation of this plan that there are key additions to the system that are a priority for residents and other

stakeholders. A comprehensive methodology for assessing how expenditures should be made will ensure that public funds for the Trails Network are expended in the most responsible manner possible.

A Microsoft Excel budgeting tool has been created to guide the Township in the financial decision-making process. This document allows for projecting costs for both maintenance of the existing system and construction of new trail segments. It also allows the user to forecast costs over multiple years. It is adaptable to changing priorities and will give the Township the ability to adjust to when priorities change.

As a baseline, maintenance and expansion costs have been calculated over a ten-year period from 2018-2027. The resulting costs for maintenance activities can be extracted from the spreadsheet and built into the municipal budget on an annual basis. Investments in new construction should be similarly planned, once an affirmative policy decision to undertake any new project based on available resources.

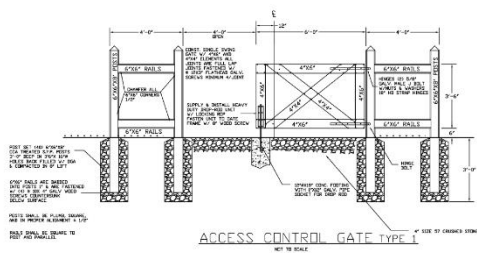
Maintenance

Denville’s current 0.33 miles of paved trails requires only a limited maintenance plan. There are many “unofficial” trails within the municipality that should be more properly maintained. The trail surfaces that exist are natural surfaces and a survey of the existing trail network found most of the trails in only fair to good condition. There were some notable problem areas that need to be addressed in the short term. However, the most pressing maintenance issue is implementing a consistent program that will insure that the trails remain in a state of good repair. This involves planning both the necessary tasks on a regular basis and budgeting the financial resources necessary to complete them over an extended period of time.

Recurring maintenance tasks become increasingly burdensome as additions to the trail network occur. Implementing the Trail Management System provided in conjunction with this plan will enable the Township to identify the tasks needed and forecast expenses with a reasonable degree of accuracy. Allocating township personnel, volunteers, financial resources and, where necessary, outside contractors to perform required maintenance activities can be accomplished efficiently with a carefully planned approach.

Infrastructure

Trail infrastructure in Denville will consist of a number of different items. Trail surface, drainage structures, bridges, kiosks, trailhead structures and signs are all part of the planned system. Wayfinding improvements should be planned as more trail segments are constructed. A standard design for trailhead and kiosk structures should be adopted. The costs for these structures has been calculated based upon design criteria provided by Greener by Design based upon local municipal professionals. These are basic structures that should be budgeted for as part of the recurring costs for the trail system.



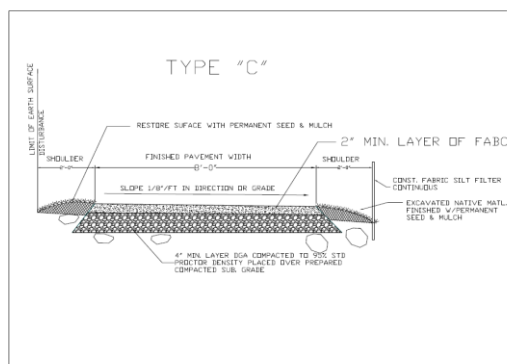
TYPICAL DESIGN TRAILHEAD STRUCTURE

Other more complex and expensive installations, such as bridges, culverts, drainage structures and other engineered infrastructure will require more thought and planning due to both the added expense and due to potential permitting requirements related to wetland crossings or other environmental considerations. These structures may be necessary for new trails that will cross streams or wetland areas. They will need lead time for construction and installation for design and application to the state Department of Environmental Protection for approvals. Identifying the need for these structures should be a priority when making the decision to add trail segments and connections that will need these features. It is recommended that the Township’s engineer be engaged to inspect each trail bridge structure and provide an estimated useful life for each. This data can then in turn be input to the Microsoft Excel Trail Management System to more accurately forecast on-going maintenance costs for the trail system. There are design options that may not require DEP permitting, which could save significant time and cost that can be considered with consultation with the Township’s engineer.

Other items such as trail signs, trail markers, maps and other incidental items have lower cost but should nevertheless be part of the budget and planning process. Keeping an inventory of these items on hand for marking new segments, marking existing segments or for replacement of damaged items should be standard practice.

New Construction

Each of the new trail segments recommended in this plan have been evaluated for cost. The Trail Management System itemizes each individual segment and projects the required cost for construction. Appendix 8 contains a summary of these costs for each individual segment. Distance, surface, new infrastructure, easement/right-of-way acquisition and other related costs have been calculated. Depending upon the type of trail, construction will either be conducted by Township personnel or will need to be bid to an outside contractor. The 23 new trail segments have been evaluated for estimated costs that include the reasonably anticipated items, including acquisition of land or access to land. This plan has identified nearly 100,000 linear feet, or approximately 18.7 miles of additional trail that would be added when fully implemented. This represents a major investment by the Township that will require significant investment to complete. The costs for specialty items such as boardwalks, puncheons or bridges have not been included in the cost estimates.



CROSS-SECTION PAVED TRAIL

The construction of all of the proposed trail sections would dramatically increase the trail miles in the network over a ten-year period. At the estimated cost per linear foot, this would require an investment of roughly \$3.2 million over that time. An additional \$350,000 is estimated for easements for gaining public access to privately held lands. This is a major investment of public funds that would need to be carefully planned. The Township would need to make policy decisions regarding this investment. A significant portion (up to 80%) of this cost is potentially reimbursable from trail grant programs that currently exist. However, these grants are competitive and cannot be counted on until awarded. Additionally, the Morris County trails grant program does not permit land acquisition in its program. The County does offer land acquisition grants through its Open Space Trust Fund program however.

To expand the Network, the Township will need to prioritize spending and decide if it is preferable to bond for this expense and/or allot a portion of the Township’s open space tax to this expense or construct these segments on a “pay

as you go” basis dependent upon the municipality’s general budget. This plan has projected the construction of these segments over the next decade based upon identified priorities; however, the ultimate decision needs to be made by the Township Council with advice from a permanent Trails Committee.

Land Acquisition

This Plan has identified and mapped 23 new trail segments to supplement the current system. The trail segments can take a number of actual courses to complete their routes. The final route these trails will take and whether they realistically can even be constructed, will depend on acquiring the outright purchase of the land, acquiring a right-of-way or trail easement, or securing access through other means such as tax foreclosure, a condition of new development approvals or a land set-aside in conjunction with construction of a development. Gaining access to existing utility easements or rights-of-way can also be a means for completing a trail segment or securing trail access. However, it is important to note that the utility company itself cannot grant public access on land that is owned by another private third party. The fee simple landowner must grant the public access.

A summary of potential parcels for acquisition has been provided to the Township in connection with this plan. This list should be available to the Township’s Open Space Committee and to the Township Planning Board. In total 33 privately owned parcels are planned to be traversed by the proposed trail segments. Access to the Lake Estling property should be a priority. This will likely require a license, right-of-way or trail easement along with a hold harmless agreement in favor of the lake association. Access to this property alone would allow for the creation of several miles of the envisioned comprehensive trail system.

Development approvals that affect any of these key links should take the potential for gaining access through either a land set aside, acquisition or dedication of a trail right-of-way/easement as part of the approval process. Future open space acquisition projects should include parcels from this list as part of the overall open space strategy of the community. The Township’s Open Space Tax and the County’s Open Space Trust Fund are readily available financial resources that can assist with these acquisitions as well as the state’s Green Acres program.

This Plan recommends that all privately-owned landowners that are identified along the course of any proposed trail segment be contacted immediately. Finding landowners willing to immediately provide access will help guide priorities for the initial years of this plan. It is also recommended that these landowners be invited to a seminar to learn more about the plan and how it might impact their land.

CHAPTER 8

PARTNERS

There are many local and regional partners that can aid in evaluating, designing, enjoying and publicizing the Denville Township trail system. These include township, county and state agencies, businesses, hiking clubs, and nonprofit organizations that have a role in promoting and managing trail systems, who can provide knowledge regarding design and maintenance of trails. Partners can provide funding for land acquisition and trails development, cooperative planning assistance, opportunities for expansion of the Trail system and connections to trails in nearby areas. Working with partner agencies and organizations can increase the impact and capabilities beyond what the township can achieve on its own and offers the prospect for bringing added value to the Township's residents. A list and brief description of existing and potential partners follows.

Government Entities

Municipal Agencies

In addition to the Township Committee's role in setting policy, municipal entities and individuals such as the Planning Board, Environmental/Landmarks Advisory Committee, Parks Advisory Committee, Wildlife Management Advisory Committee, Traffic Advisory Committee, Recreation Director and Township Engineer can play a key role in developing trail concepts and designs, to ensure trails are attractive, safe, and reasonable to manage. Other municipal entities that should be part of the trails planning and management process to ensure public safety include the Police and Fire Departments, Rescue Squad, and Office of Emergency Management and 911 Dispatch.

County Agencies



Morris County maintains one of the finest park systems in New Jersey. In addition to the thousands of acres of public land acquired, the county also administers a substantial Open Space and Farmland Preservation Trust Fund. The county collects a dedicated surcharge on real estate taxes that was authorized by voter referendum in 1992. Funds from the open space tax are administered by the Morris County Department of Planning. A substantial portion of those monies are distributed to Morris County Municipalities for assistance with the purchase of land for open space. The county has been a valuable partner for the acquisition of land, including significant purchases in Denville Township.

Just since 2004, over \$161 million in open space funding has been distributed to preserve over 9,300 acres of land. In 2014, authorization was granted to spend open space trust fund monies on trails construction. In 2017 over \$868,000 was available for trail construction grants. This funding will continue to be offered for municipalities to create and improve hiking, biking and multi-use trails. Information on the preservation trust can be found at this link: <https://planning.morriscountynj.gov/divisions/prestrust/>. County agencies own significant lands within the Township. They include Jonathan's Woods, The Tourne and the Sullivan Tract of the Morris Canal Greenway.

The Morris County Park Commission- The Park Commission stewards more than 18,700 acres of parkland, which includes 38 facilities: historic sites, golf courses, outdoor educational and recreational facilities, arboreta, conservation areas, 150 miles of trails, and a sports/ice skating arena. More than 3.5 million people visit county parks each year. County holdings include Hedden Park located in Randolph which provides significant hiking opportunities, especially for residents living north of Route 10. The Park Commission oversees the Patriots' Path trail, comprised of 55 miles of main trails and 35 miles of spur trail located on 291.9 acres. Patriots' Path is a trail system of hiking, biking and equestrian

trails, as well as green open spaces. It links several federal, state, county, and municipal parks, as well as watershed lands, historic sites, and other points of interest throughout Morris County. They can be contacted at the following address: MCPC, P.O. Box 1295, Morristown, NJ 07960.

<http://m66.siteground.biz/~morrissa/index.php/parks/patriots-path>



Morris County has recently made a significant effort to promote the development of trails. In 2014, authorization was granted to spend county open space trust fund monies on trails construction. In 2017 over \$868,000 was available for trail construction grants. This funding will continue to be offered for municipalities to create and improve hiking, biking and multi-use trails. Information on the preservation trust can be found at this link:

<https://planning.morriscountynj.gov/divisions/prestrust/>.

Morris County Department of Planning and Public Works

The Department of Planning and Public Works for Morris County contains the Division of Planning & Preservation. Among the programs in this Division are: Farmland Preservation, Open Space Preservation, Historic Preservation, Long Range Planning and the Planning Board, Land Development Review and Transportation Management. They also administer the annual Morris County Open Space and Farmland Preservation Trust Fund Grants. This department is developing a bike and pedestrian plan for Morris County. This plan has called for shared roadways and multi-use paths throughout the county.

<https://planning.morriscountynj.gov>

State Agencies

New Jersey Green Acres Program



The State of New Jersey is a valuable partner in the acquisition of open space and large-scale land stewardship projects. Although New Jersey has a history of providing significant funding for open space, in 2015 a stable source of funding for open space and stewardship was established with a portion of revenue from the state's Corporate Business Tax. The State Green Acres Program administers the Green Acres Planning Incentive program, which provides grants to municipalities for open space acquisition based on an adopted open space and recreation plan. Low-interest loans are available through the new Jersey Infrastructure Trust on a case-by-case for open space acquisition for those municipalities that have not adopted a formal open space plan. Green Acres also makes low-interest loans available for the development of recreational facilities.

<http://www.state.nj.us/dep/greenacres/>

The state's program to promote trails was established in 1974 with the passage of the New Jersey Trails System Act. Since 1993, the NJDEP has delegated funding from The Federal Highway Administration's Recreational Trails Program (RTP) in the form of National Recreation Trails Program grants that provide financial assistance to municipalities and non-profit organizations for the development and maintenance of trails and trail facilities. Since the program's inception in 1993, New Jersey has awarded more than \$16 million to federal, state, county and local governments, and non-profit agencies. Projects are funded on an 80% federal share and 20% matching share basis. Funds are awarded through a competitive application process with a deadline in mid- December.

Contact: Brandee Chapman, Coordinator, (609)-984-1339. NJDEP-Division of Parks & Forestry, N.J. Green Acres Program, PO Box 404, Trenton, NJ 08625-0404. Trails@dep.nj.gov

New Jersey Department of Transportation

The New Jersey Department of Transportation has established funding, through the federal Transportation Equity Act for the 21st Century (TEA-21), to maintain and enhance New Jersey's transportation system and improve quality of life. The program focuses on projects that will preserve and protect environmental and cultural resources as well as promote alternative modes of transportation under the Transportation Alternatives Program. Projects include land acquisition, bikeway and trail construction, historic preservation, and environmental mitigation to address water pollution and scenic or historic highway programs.

Contact: Joe Jagniakowski, (609)-530-3686. Division of Local Aid and Development, NJ Department of Transportation, 1035 Parkway Avenue, P.O. Box 600, Trenton, N.J. 08625. <http://www.state.nj.us/transportation/>

New Jersey Department of Community Affairs, New Jersey Historic Trust

The New Jersey Historic Trust was created by law in 1967 to preserve the state's historic resources. The mission of the Trust is to advance historic preservation in New Jersey for the benefit of future generations through education, stewardship, and financial investment programs that save our heritage and strengthen our communities. The Trust receives an allocation (historically \$6 million) per year for historic preservation projects, which are awarded in the forms of grants for restoration projects. Morris Township contains many state important historic resources that may be eligible for funding through the Trust.

P.O. Box 457, 06-508 E. State St., Trenton, NJ 08625, Phone: (609)-356-8856. <http://www.njht.org>

Nonprofit and Service Group Partners

Several nonprofit organizations have the capacity to assist Denville with the acquisition of key open space parcels both within and adjoining the township, to help carry out this plan, including making linkages to neighboring communities. Non-profits can provide access to volunteers, grant funding, planning and technical assistance to supplement the resources that Denville Township can dedicate to trail construction and maintenance. Additionally, they can provide a constituency for support of the trail system and to advocate for improvements and investment in the Trail system. Potential cooperating Non-profit organization and service group partners include:

- Boy Scouts of America - Black River District
- Canal Society of New Jersey
- Denville Scout Troop 118
- Denville Scout Troop 17
- Freewalkers, Inc.
- Girls Scouts of Northern New Jersey
- Jersey Off Road Bicycling Association (JORBA)
- The Land Conservancy of New Jersey
- Morris Area Freewheelers
- Morris Trails Partnership
- New Jersey Bike and Walk Coalition
- New Jersey Conservation Foundation
- New Jersey Recreation and Park Association
- New York-New Jersey Trail Conference
- New Jersey Interscholastic Cycling League
- Protect Our Water, Wetlands and Woods (POWWW)
- The Trust For Public Land (TPL)



Boy Scouts and Girl Scouts

There are several Scout organizations that provide opportunities for youth to engage in and gain recognition from community service. With its outdoor programming designed to promote leadership, independence, responsibility and fitness for girls and boys, the Scouts are ideal partners for volunteer projects, such as trail clearing, building and maintenance. In particular, Eagle and Gold Scout candidates seek hands-on projects that advance conservation and recreation.



Canal Society of New Jersey

The Canal Society of New Jersey is dedicated to the preservation of the route and structures associated with the now abandoned Morris Canal that ran from Philipsburg, NJ to Jersey City, NJ. The canal passed through Denville. A part of the society’s work is to assemble a greenway running the length of the former route of the canal. The canal’s right-of-way can be incorporated into the proposed trails network for Denville Township.

<https://sites.google.com/site/morriscanalworkinggroup/>

<https://canalsocietynj.org/>



FreeWalkers

FreeWalkers: a non-profit 501(c)3 organization that offers events, information, & networking educating the public on the benefit of walking.

<http://freewalkers.org/>



Jersey Off Road Bicycle Association (JORBA)

JORBA is a 501(c)3 non-profit organization which is dedicated to serving off road cyclists as a member of equal standing within the trail user community. Its focus is to build and maintain sustainable multi-use trails, organize and encourage volunteerism and responsibility, and advocate and foster mountain biking as a healthy, environmentally sound, and sustainable activity.

<http://www.jorba.org/node/12>



The Land Conservancy of New Jersey (TLC-NJ)

TLC-NJ is a private, non-profit land conservation organization that has assisted municipalities since 1997 to preserve land and plan trails in communities throughout Morris County. TLC-NJ offers services that include open space acquisition and trails planning and mapping. It produced a formal update to Denville’s Environmental Resource Inventory Presentation in 2013. TLC-NJ’s Partners for

Parks program advances projects that help enhance federal, state, county, municipal and non-profit organization owned lands through corporate partners, who benefit from team building and acquiring stewardship skills. The program has completed over 544 projects with more than 9,000 volunteers.

<http://tlc-nj.org/>



Morris Area Freewheelers Bicycle Club (MAFW)

MAFW is a volunteer organization dedicated to promoting all aspects of road cycling. The members of the Club primarily reside in the following New Jersey counties: Morris, Sussex, Hunterdon, Essex, Somerset, Warren, Union, and Passaic.

<http://www.mafw.org>



Morris Trails Partnership

Members of this organization are avid hikers, bikers, and horseback riders who manage trails throughout Morris County.

<http://www.morristrails.org>



New Jersey Bike and Walk Coalition (NJBWC)

NJBWC is the only state-wide advocacy organization for bicyclists and pedestrians. The organization is focused on safety for bicyclists and pedestrians, as both groups face an increasing threat from distracted drivers and many of the state's streets are inadequately designed for biking and walking. Its mission also includes promoting bicycling and walking for fun, fitness and transportation, educating bicyclists, walkers and drivers about rights and responsibilities, and connecting communities with smarter transportation systems.

<http://njbwc.org/about/>



New Jersey Conservation Foundation (NJCF)

NJCF is a statewide conservation organization that both preserves land and provides technical and financial support for land conservation projects. NJCF facilitates the Garden State Greenways program, which seeks to establish contiguous belts of preserved lands across New Jersey, including trails. NJCF's prime focus area is the New Jersey Highlands.

<http://www.njconservation.org>



New Jersey Interscholastic Cycling League

The New Jersey Interscholastic Cycling League is a chapter of the National Interscholastic Cycling Association (NICA) – a California-based 501(c)(3) non-profit organization. The organization organizes mountain bike racing league for middle and high school student athletes. The League considers itself a youth development organization, whose goal it is to build strong body, strong mind and strong character in our student athletes, with a focus on inclusivity and equality.

<http://www.newjerseymtb.org/>



New Jersey Recreation & Park Association (NJRPA)

NJRPA is dedicated to enhancing the quality of life by promoting recreation, parks, conservation, and leisure services through education, professional development, public awareness, legislative advocacy, and direct membership services. NJRPA supports park, recreation, and natural resources management programs through their 700 volunteer members that include professionals, citizens, government agencies, students and faculty, non-profits, and commercial suppliers of parks and recreation products and services. The Association can provide valuable expertise for trails development.

<http://www.njrpa.org/home.cfm>



The New York-New Jersey Trail Conference

The Trail Conference is a nonprofit organization with a membership of nearly 10,000 individuals and 100 clubs committed to: Developing, building, and maintaining hiking trails, among other activities. The Trail Conference organizes volunteer service projects that keep these trails open, safe, and enjoyable for the public. Its Trail University program attendees contributed 1,132 hours of service in the state of New Jersey. Volunteers recruited through Trail University help maintain nearly 700 miles of hiking trails in New Jersey and over 1,400 miles in New York. Denville's local POWWW organization is a partner with the NYNJTC. They are active in maintaining and mapping the trails in Jonathan's Woods.

<https://www.nynjtc.org/>



Protect our Wetlands, Water & Woods (POWWW), is a not-for-profit conservation organization and land trust based in Denville, New Jersey. POWWW's mission is to protect the wetlands, woodlands and potable water supplies throughout the Beaver Brook watershed in Denville, Rockaway and Boonton Townships. POWWW identifies and supports land acquisition, provides site stewardship and offer public education programs. They currently maintain the trail system within Jonathan's Woods.

<http://www.powww.org>



The Trust for Public Land (TPL)

TPL’s New Jersey office is located in Morristown. TPL strives to protect “parks for people”, such as urban parks and trails, and has the capacity to preserve large tracts of open space.

<http://www.tpl.org>

Finally, there are several hiking clubs that scheduled hikes in northern New Jersey that can be a source of feedback and volunteerism, to bring trail experience and expertise to the Trails System.

<https://www.njhiking.com/hiking-clubs-nj/>

Business Partners

Local and regional businesses represent potential partners in advancing the trail system, by providing recreational programming, volunteers, and, in some cases, grants.



FirstEnergy Foundation's contributions to local nonprofit organizations help communities. It funds projects that help improve the vitality of communities, supports safety initiatives and supports employee community leadership and volunteer interests. Additionally, JCP & L maintains several power line rights-of-way in the Township that can provide important links in the proposed trails system.

https://www.firstenergycorp.com/content/fecorp/community/firstenergy_foundation.html




Marty’s Reliable Cycle in Randolph and Morristown sponsors regular bicycle rides through Morris County. They will partner with municipalities that provide opportunities for bicyclists to access trails. <http://martysreliable.com/>



Recreational Equipment, Inc. (REI) sponsors adventure trips and provides funding for conservation and recreation throughout the United States. REI has four locations in New Jersey including one in East Hanover (Morris County).

<https://www.rei.com/about-rei.html>

 Saint Clare’s Health Saint Clare’s Health-Denville operates Saint Clare’s Hospital on Pocono Road in Denville. The Hospital’s Healthy Community initiative is a potential partner for the Township as the trail system provides a natural opportunity for community recreation and exercise as part of a healthy lifestyle.

<https://www.saintclares.com/Our-Locations/Saint-Clares-Denville-Hospital.aspx>

Neighboring Municipalities

Opportunities may present themselves for Denville to connect its trails with those of neighboring communities to form regional trail systems, or for Denville to collaborate with neighbors on open space projects that would allow for trail connections. In this regard, the Township should be aware of those entities in neighboring communities that have responsibility for open space and recreation planning and execution. Following is a list of organizations in neighboring communities that are potential collaborators in open space and trail projects

- Boonton Township Recreation - <https://www.boontontownship.com/recreation>
- Boonton Township Open Space Committee - <https://ecode360.com/8466761>
- Estling Lake - <https://www.estling.org/>
- Mountain Lakes Recreation Commission - <https://mtnlakes.org/committees-and-commissions/recreation-commission/>
- Parsippany-Troy Hills Township Open Space Committee - <https://ecode360.com/5105711>
- Parsippany-Troy Hills Township Recreation Department - <http://www.parsippany.net/Departments/Recreation/>
- Randolph Township Department of Parks and Recreation - http://www.randolphnj.org/government/parks_recreation
- Rockaway Borough Parks and Recreation - <https://rockbororec.org>
- Rockaway Township Recreation Department - <https://rockawaytownship.org/165/Parks-Recreation>