

A scenic photograph of a rural landscape. In the foreground, there is a field of tall green grass. Behind it is a large, flat, brown field, possibly a plowed field or a dry lake bed. In the distance, there are several red barns and other farm buildings, surrounded by green trees. The sky is blue with scattered white clouds. A tree branch with green leaves is visible in the top right corner.

LOWER NAZARETH TOWNSHIP RECREATION, PARKS, AND OPEN SPACE MASTER PLAN

November 2020

Toole Recreation Planning

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES



*Lower Nazareth Township,
Northampton County*

A Recreation, Park and Open Space Master Plan



November, 2020

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A photograph of a river flowing through a dense forest. The water is dark and turbulent, with white foam visible as it flows over rocks. The banks are covered in lush green vegetation, including tall grasses and various trees. A white rectangular box with a thin black border is superimposed over the center of the image, containing the text "EXECUTIVE SUMMARY" in bold, white, sans-serif capital letters.

EXECUTIVE SUMMARY

Executive Summary

Lower Nazareth Township is committed to delivering a higher quality of life to its residents by providing a variety of parks and recreation opportunities, and preserving desirable areas of open space. As the next step in planning for open space, parks and recreation, Lower Nazareth made the decision to move forward with updating the 1989 Lower Nazareth Township Recreation, Parks and Open Space Plan. The purpose of this Plan Update is to establish a foundation for future decision-making regarding recreation programming; park and trail maintenance, improvements and acquisitions; and the protection of open space.

This Plan provides a comprehensive look at Lower Nazareth's parks, recreation amenities and offerings, and public and private open space by:

- Examining the cultural, natural and built context of the community.
- Describing, assessing, and providing recommendations for existing parks and open spaces.
- Reviewing recreational programming and providing recommendations for improving Lower Nazareth's programming.
- Detailing the public engagement process undertaken to gather extensive community feedback.
- Studying the administrative workings of the Township.
- Reviewing funding options to supplement parks and recreation facilities and programming within the Township.
- Providing an implementable action plan that can guide the Township forward in accomplishing goals and objectives identified in this Plan.

Planning Process

The planning process for this Plan Update was designed to determine the specific actions, capital improvements and initiatives necessary to move from the current system to the vision of a parks and recreation system that serves citizens throughout their lifetime, close to home, with diverse recreation opportunities year-round, and protects natural resources. Recommendations identified within this Plan will require further discussion, public involvement, and approval for the actions to be undertaken.

Community support for open space, parks and recreation within the Township was strongly noted throughout the process. Many residents and community organizations participated in voicing their ideas, concerns, and suggestions regarding the kinds of facilities and services that are important to them as well as their ideas for supporting the parks and recreation system in the future. The public participation process included a steering committee, public opinion survey, key person interviews, focus groups, and public meetings.

Plan Goals

Input received through the public participation process and collaboration with the steering committee formed the basis for identifying the overarching goals of this Plan.

1. To protect remaining farmland and open space.

2. To provide open space, parks, recreation facilities, and programming throughout Lower Nazareth Township to meet the needs of residents.
3. To provide unique and enriching recreation opportunities to residents of all ages and abilities.
4. Continue to invest in parks, recreation, and their associated facilities to sustain and enhance quality of life in Lower Nazareth Township.
5. To improve connectivity and alternative transportation routes throughout the Township.

Recommendations

Recommendations can be found throughout this Plan.

Park Recommendations

There are eleven park facilities utilized by the residents of Lower Nazareth Township: five (5) municipal parks, one (1) municipal building and senior center, the county-owned Louise W. Moore Park, Lower Nazareth Elementary School, and three (3) privately owned recreation open space areas. Amenities at these facilities range from passive amenities such as scenic views, fishing facilities, and walking paths to more active amenities like playgrounds and sport fields. Each individual park facility has its own list of recommendations. However, some general recommendations include:

- Ensure ADA compliance.
- Provide for missing trail connections.
- Increase parking capacity.
- Install wayfinding signage.
- Improve natural habitat.

Trail Recommendations

Lower Nazareth Township has approximately 4-miles of trails most of which are either internal trails in parks or connecting trails from neighborhoods to parks. Trail planning and development continue to be a high priority for the region as well. Six (6) existing county and regional trails are located within 5 miles of the Township presenting several immediate opportunities to link Lower Nazareth to the greater regional system. Recommendations for the Township trail system include making the connections where needed, providing adequate signage, and amending local ordinances to require specific trail design elements.

Open Space Preservation Recommendations

The protection of open space has numerous documented benefits: improves the economic value of a community's land, water, business and social assets; protects wildlife habitat and biodiversity while contributing to improved water and air quality; and provides a natural, and often scenic, recreation resource that contributes to the local sense of place. Open space resources are only considered "protected" by a municipality, or non-profit land trust, when the development rights of those resources have been retired. Other forms of protection are considered temporary in nature.

Lower Nazareth has over 800 acres of permanently preserved open space and over 200 acres of temporarily preserved farmland (agricultural security areas). The Township has made several concerted efforts to preserve open space within the Township: open space funding referendum, ordinance regulations, and the pending adoption of an Official Map which identifies parcels to be acquired for development rights and/or parks in the future, areas for greenway preservation and the routes for future trails.

Open space preservation recommendations include:

- Develop an outreach program to inform residents and property owners about open space preservation efforts in the Township.
- Adopt the draft Official Map.
- Encourage properties that are classified as agricultural security areas to move toward permanent preservation easements.
- Create a property ranking system for open space and farmland preservation priorities.
- Acquire properties identified on the Official Map for preservation.
- Research and apply for grant funding.
- Update preservation tools and techniques utilized by the Township.

Recreation Recommendations

Recreation refers to team sports, individual competition, crafts, hobbies, bird watching, walking, bicycling, and much more. Lower Nazareth recognizes the need in their community, among all age groups, for robust and diverse recreation programming. For younger constituents, a variety of sports leagues and day camp-style programming is currently offered within the Township. For older residents, the establishment of a senior center in the Township municipal building provides the space and resources to target recreation opportunities specifically for an aging population.

Township Owned Recreation Facilities

Public Facility	Amenities
Lower Nazareth Township Park	Football Fields (2) Baseball/Softball Fields (6) Tennis Courts (2) Shuffle Board Bocci Playground Pavilion Concession Stand Restrooms Off Street Parking
Hahns Meadow Park	Monocacy Creek Access Open Meadow Fishing Off Street Parking
Surrey Glen Park	Monocacy Creek Access Playing Fields Fishing Off Street Parking
Georgetown Road Park	Monocacy Creek Access Meadow Access
Newburg Park	Soccer Fields (2) Trails Playground Restrooms Off Street Parking
Township Municipal Building & Senior Center	Gathering Spaces Kitchen Restrooms

Public Recreation Facilities (Not Township Owned)

Public Facility	Facilities & Amenities	
Louise W. Moore County Park	Internal Trails	Volleyball Courts
	Restroom Facilities	Badminton Court
	Playground	Pavilion/Community Garden
	Baseball/Softball	Tennis Courts
Lower Nazareth Elementary School	Playground	Basketball Court
	Soccer Field	Multiuse Field Space

Private Recreation Facilities

Private	Facilities & Amenities	
Northwood Racquet & Fitness Club	Tennis Courts	Event Room
	Volleyball Courts	Kitchen
	Racquetball/Wallyball Courts	Locker Rooms
	Fitness Center	Restrooms
	Lounge Areas	Off Street Parking
Dutch Springs	Aqua Park	Picnic/Pavilion Areas
	Aerial Park	Restrooms
	Camping	Off Street Parking
Lower Nazareth Rod & Gun Club	Pavilion	Restrooms
	Monocacy Creek Access	Off Street Parking

The Township has made many efforts to maintain and improving recreation facilities for its residents. Current ordinances require dedication of land for recreation and open space and establishing fees in lieu of dedication. The Township has successfully obtained funding for recreation facility improvements through grants. Lower Nazareth and partnering associations offer a handful of special events, some children's and senior events, and a wide variety of sports leagues.

Recreation recommendations include:

- Prioritize facility and infrastructure improvements.
- Develop a policy and fee schedule to charge for field and facility use in parks.
- Add additional special events throughout the year.
- Periodically reevaluate recreation trends and resident opinion on programming.

- Establish a specific Park Maintenance division within the Public Works Department.
- Explore the possibility of establishing a multi-municipal partnership for a joint Parks and Recreation department.

Moving Forward

Adopting this Plan is only beginning of the process. Implementing the Lower Nazareth Township Recreation, Parks and Open Space Plan Update is not one step, but more of an ongoing process of planning, doing, assessing effectiveness, and beginning the process anew over the next ten years to bring the Township ever closer to its recreation, park and open space goals.

To implement the Plan, an action plan has been provided. The action plan describes the specific actions to be taken to accomplish each objective identified as part of this Plan. The action plan also identifies timelines and responsible parties for accomplishing the action items.

As an adopted plan, it serves as a guide and should be used regularly. It is intended to seize opportunities and meet emerging needs as circumstances warrant. The process of implementing the plan is ongoing and continuous. Lower Nazareth Township should move ahead with the plan as adopted, but be prepared to adjust and switch strategies as necessary. Flexibility, patience, and adaptability will be essential in creating a parks and recreation system that suits the community.

A vibrant purple thistle flower is the focal point in the upper right, with a bumblebee perched on its spiky petals. The background is a dense, lush green field of various plants and foliage, creating a natural, wild setting. The lighting is bright, suggesting a sunny day.

PLAN OVERVIEW

Chapter 1: Plan Overview

Lower Nazareth Township in conjunction with the Steering Committee and the community has developed this Recreation, Parks and Open Space Master Plan Update to guide future decision-making regarding parks, recreation facilities, programs and services, facility management, and the allocation of financial resources. Making decisions based upon solid information is necessary to have community support and buy in. This plan provides current operational information and demographic data, identifies critical issues and trends, and establishes strategies and recommendations for improving Lower Nazareth Township's parks and recreation system.

The plan is not law or a regulatory document. It presents recommendations to achieve a parks and recreation system that serves the residents of the Township. It suggests management strategies and policies to protect natural resources and provide quality recreation opportunities. The recommendations of this plan update build upon the policies established in the 1989 Recreation, Parks and Open Space Plan and the following key issues identified by the Township:

- Aging facilities
- Inventory
- New facilities or park amenities
- Recreation programs
- Mission/vision/core values
- Partnerships
- Funding for future improvements

Although the intent of this Plan is focus on the values, needs and expectations of Lower Nazareth Township the use and enjoyment of these types of facilities do not end at municipal boundary lines. Consistency and cooperation with neighboring areas provides an invaluable regional perspective for planning for the future of recreational facilities. Other planning documents analyzed as part of the development of this Plan include:

- ❖ Nazareth Area 2030 Municipal Comprehensive Plan (2006)
- ❖ Northampton County Parks (2010)
- ❖ Livable Landscapes: An Open Space Plan for Northampton County (2015)
- ❖ Lehigh Valley Greenways Plan (2007)
- ❖ The Lehigh Valley 2030 Comprehensive Plan (2005, Update 2010)
- ❖ Lehigh Valley Trails Inventory (2013)
- ❖ Move LV Long Range Transportation Plan (2015)
- ❖ Move LV Congestion Management Process (2016)
- ❖ Natural Areas Inventory of Lehigh and Northampton Counties (2013)
- ❖ The Monocacy Creek Watershed Assessment and Conservation Management Plan (2017)
- ❖ Monocacy Creek Watershed Act 167 Stormwater Management Plan (2017)
- ❖ Bethlehem Township Comprehensive Plan Update (2017)

- ❖ East Allen Township Comprehensive Plan (2016)
- ❖ Palmer Township Parks, Recreation and Open Space Plan (2004)
- ❖ Tomorrow's Palmer-Comprehensive Plan (2017)
- ❖ Upper Nazareth Township Official Map (2010)

A review of the planning documents analyzed while developing this plan can be found in appendix 1.A.

Additionally, this update is consistent with the 2014-2019 Pennsylvania Statewide Comprehensive Recreation Plan in broad strokes but adopts a local perspective on the values, needs and expectations of Lower Nazareth Township.

Benefits of Parks and Recreation

- Enhance the beauty and environmental quality of neighborhoods
- Associated with higher levels of physical activity and lower levels of instances of chronic disease
- Strengthen the economy by contributing to the tax base
- Foster community pride, bring people together, create destination-oriented places, and connect people to each other and nature
- Conserve scenic vistas, maintains healthy ecosystems, and provides carbon-reducing sustainable landscapes

Sources: National Recreation and Parks Association (NRPA) and Pennsylvania Statewide Comprehensive Outdoor Recreation Plan, 2014-2019



LOWER NAZARETH COMMUNITY PROFILE

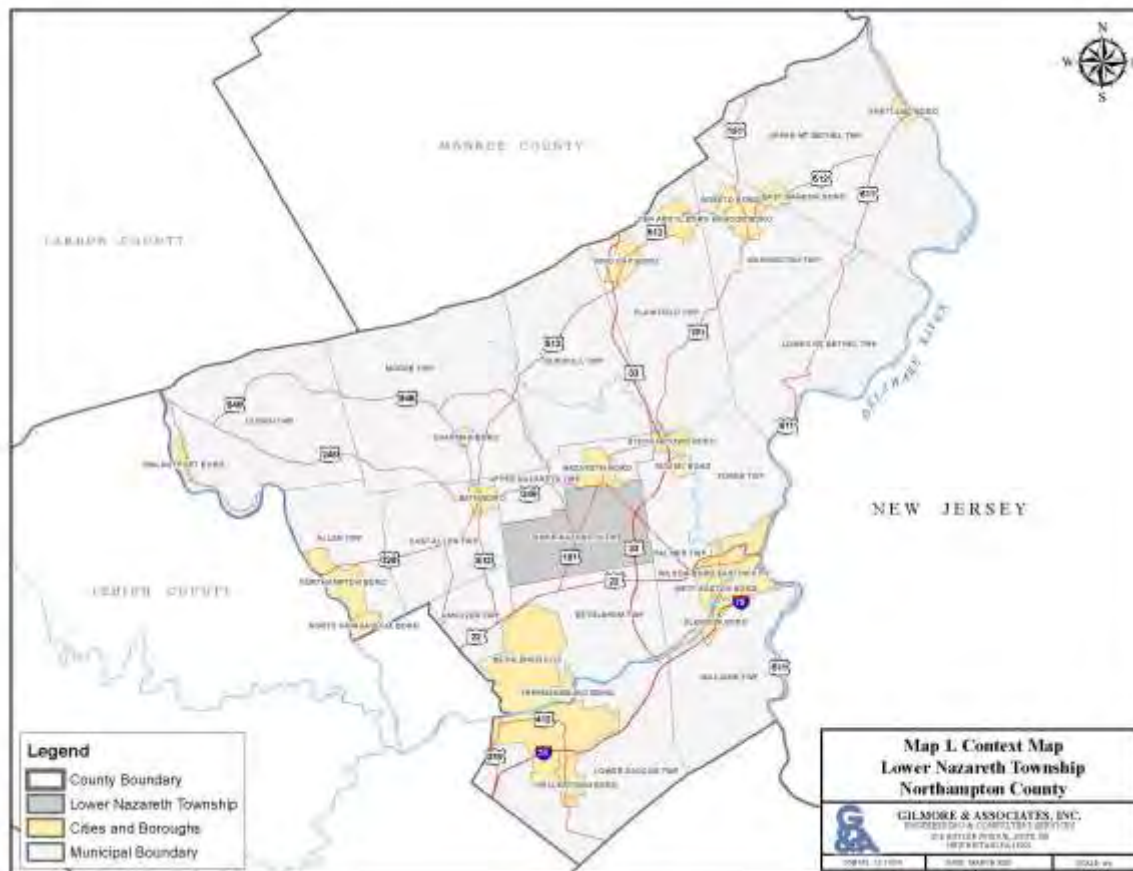
Chapter 2: Lower Nazareth Community Profile

Community Profile

Location

Lower Nazareth Township is located in the ever expanding Lehigh Valley region. This region is the third largest metropolitan area in Pennsylvania¹. With growth anticipated to continue well into the future², the need to plan for the preservation of natural resources, scenic views, and recreational opportunities is crucial to Lehigh Valley residents.

The Township itself is approximately 13.57 square miles³ and is surrounded by Upper Nazareth Township and Nazareth Borough to the north, Palmer Township to the east, Bethlehem Township to the south, Hanover Township to the southwest, and East Allen Township to the west. It is traversed by several major traffic routes including Routes 191, 248, 946 and 33.



¹ Lehigh Valley Greenways <https://lvgreenways.org/our-region/>

² Lehigh Valley Planning Commission <https://lvpc.org/projections.html>

³ Lower Nazareth Township, Official Website <http://lowernazareth.com/about>

History

Lower Nazareth Township was not officially incorporated until 1807. The area now known as Lower Nazareth Township was once part of the “Walking Purchase” of 1737. The region was referred to as “The Drylands” because it was barren and characterized by scrub oak. This misnomer lead settlers to believe the area was infertile. However, this proved to be false and farming became the primary use of land. A second early industry that developed in the region due to the unique geology of the area was quarrying operations⁴.

Farming and mineral extraction is still active in the region. However, residential and commercial uses are consistently expanding in Lower Nazareth Township. Residential development can be attributed to the desirable school district. Commercial development tends to follow residential development, add to that the Township’s accessibility from major travel corridors and it is easy to see why half of commercial land use in the Nazareth Area is located in Lower Nazareth Township⁵.



Lower Nazareth Historical Map

Government

Type: Township of the Second Class

Elected Officials: The Township has a five-member Board of Supervisors. As the legislative branch of government, the Supervisors are responsible for policy decisions, enacting ordinances and resolutions, approval of the annual budget, and levying taxes.

Appointed Boards and Commissions: The Board of Supervisors appoints members to volunteer for Township boards and commissions. The current boards/commissions include the following:

- Planning Commission
- Environmental Advisory Council

⁴ Lower Nazareth Township <https://lowernazareth.com/>

⁵ Nazareth Area...2030 Multimunicipal Comprehensive Plan, January 2006

- Agricultural Security Committee

Municipal Administration: The Township has a professional manager to carry out policy and manage daily operations.

See Appendix 2.A for a copy of the Township Zoning Map.

Demographic Trends

The socio-economic characteristics of a community have a direct effect on its parks and recreation services. Age, income, education, and family relationships are associated with recreation preferences. By looking at these characteristics, we can begin to forecast the demand that will be placed on parks and recreation facilities and services in the future. The following information is a summary of the demographic trends of Lower Nazareth Township based on current census data.

Population Trends

Approximately 6,000 people live within Lower Nazareth Township, which has experienced continued population growth over the past eighteen years. Population growth has been fairly consistent with an 8% increase between 2000 and 2010, and 2010 and 2018.

As seen in Table 2.1, population growth in Lower Nazareth Township from 2000-2018 is greater than that of Northampton County and the state.

Table 2.1 Pennsylvania, Northampton County, and Lower Nazareth Township Population, 2000-2018				
	2000	2010	2018	% Change 2000-2018
Pennsylvania	12,281,054	12,709,630	12,807,060	4.28%
Northampton County	267,066	297,735	304,807	14.13%
Lower Nazareth Township	5,259	5,674	6,125	16.47%

Source: U.S. Census Bureau, 2000 and 2010 Decennial Census, 2018 American Community Survey 5-Year Estimates

Table 2.2 shows population projections for the Township and the County to the year 2040.

Table 2.2 Northampton County and Lower Nazareth Township Population Projections, 2020-2040				
	2020	2030	2040	% Change 2020-2040
Northampton County	309,231	321,338	326,487	5.58%
Lower Nazareth Township	6,392	8,393	9,480	48.31%

Source: Lehigh Valley Planning Commission and Pennsylvania Population Projections 2010-2040, The Center for Rural Pennsylvania, March 2014

It is projected that the Township population will increase at a rate significantly greater than that of the County. Between 2018 and 2040 it is projected that the Township will experience an increase of 3,355 people.

Age

Age groups in a community are an important component of the parks and recreation planning process. Interests, abilities, and activities change throughout a lifetime, and affect the recreational and lifestyle

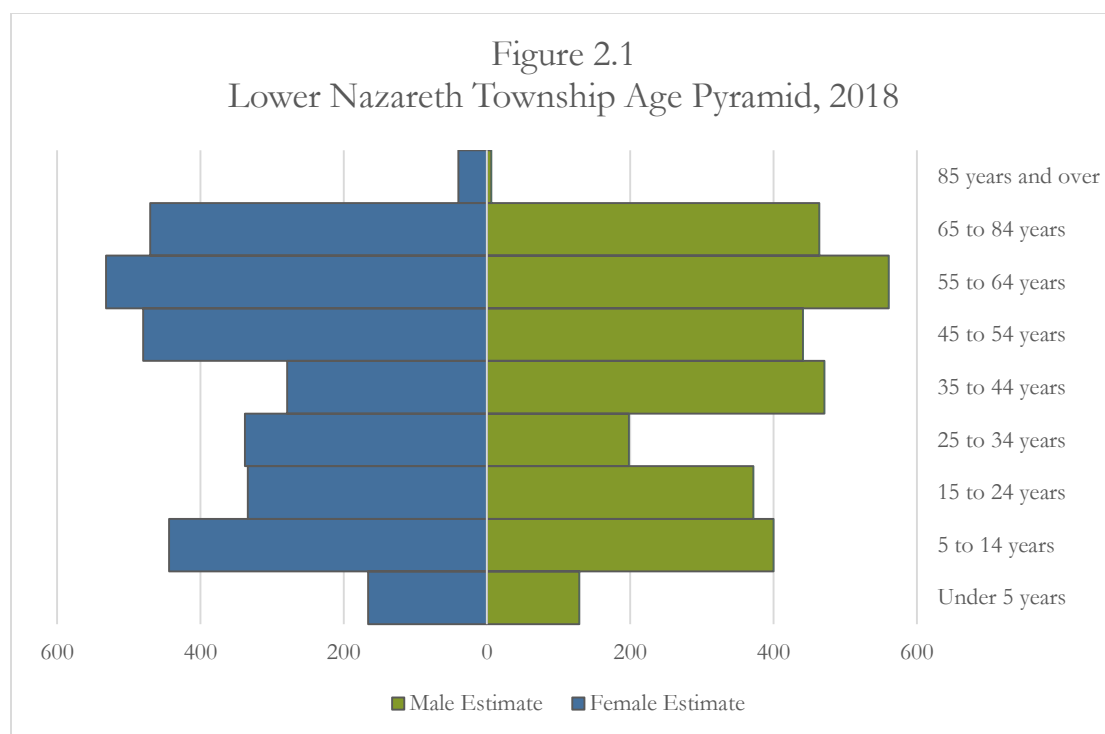
needs of the community. It is important to look at the percentage of individuals in a major age grouping in order to know how to target services. Table 2.3 shows the population by age group.

Table 2.3 Lower Nazareth Township Population by Age and Sex, 2018				
	Male		Female	
	Estimate	Percent	Estimate	Percent
Under 5 years	129	4.20%	166	5.40%
5 to 9 years	183	6.00%	134	4.30%
10 to 14 years	217	7.10%	310	10.10%
15 to 19 years	244	8.00%	206	6.70%
20 to 24 years	128	4.20%	128	4.20%
25 to 29 years	77	2.50%	126	4.10%
30 to 34 years	121	4.00%	212	6.90%
35 to 39 years	261	8.60%	141	4.60%
40 to 44 years	210	6.90%	138	4.50%
45 to 49 years	188	6.20%	289	9.40%
50 to 54 years	253	8.30%	191	6.20%
55 to 59 years	291	9.60%	259	8.40%
60 to 64 years	270	8.90%	273	8.90%
65 to 69 years	196	6.40%	261	8.50%
70 to 74 years	150	4.90%	123	4.00%
75 to 79 years	100	3.30%	65	2.10%
80 to 84 years	18	0.60%	21	0.70%
85 years and over	6	0.20%	40	1.30%

Source: 2018 American Community Survey 5-Year Estimates

As can be determined from Figure 2.1, Lower Nazareth Township has a large population of adults aged 55 years and older (2,073 persons). This cohort is greater than the population of school-aged children (19 years of age and younger) which is 1,589 people. The Township's median age of 44 is higher than the median age of both Pennsylvania at 40.7 and Northampton County at 42.1.⁶ Community recreation services should address both these age groups as they account for over half the Township's population.

⁶ U.S. Census Bureau, 2018 American Community Survey 5-Year Estimates



Source: 2018 American Community Survey 5-Year Estimates

Family Structure

One of the most marked changes in Pennsylvania's population in recent years has been the alteration of the family structure. The U.S. Census defines a "household" as:

"A household consists of all the people who occupy a housing unit. A house, an apartment or other group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is direct access from the outside or through a common hall.

A household includes the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone in a housing unit, or a group of unrelated people sharing a housing unit such as partners or roomers, is also counted as a household. The count of households excludes group quarters. There are two major categories of households, "family" and "nonfamily".

The number of households in Lower Nazareth Township increased by 123 households from 2010 (2,050) to 2018 (2,173), which is an increase of 6%. In contrast, the county experienced a moderate increase in the number of households between 2010 and 2018. Northampton County has had an increase of 2,417 households, which is an increase of 2.2% (111,706 in 2010; 114,123 in 2018).

In Lower Nazareth Township, the number of persons per household has increased by 0.06 persons from 2010 to 2018. There were 2.75 persons per household as of the 2010 Census. The 2018 ACS Estimates indicates Lower Nazareth has 2.81 persons per household.

The U.S. Census defines a “family” as:

“A family is a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people (including related subfamily members) are considered as members of one family. Beginning with the 1980 Current Population Survey, unrelated subfamilies (referred to in the past as secondary families) are no longer included in the count of families, nor are the members of unrelated subfamilies included in the count of family members. The number of families is equal to the number of family households, however, the count of family members differs from the count of family household members because family household members include any non-relatives living in the household.”

The number of family households in Lower Nazareth Township decreased by 9 households, which is a decrease of 0.5% from 2010 to 2018 (1,762 in 2010; 1,753 in 2018).

It should be noted that 34.7% of households in the Township have at least one child under 18 years of age and 43.7 % of households have at least one individual over 60 years of age. Again, these numbers are indicative of a Township that has large numbers of young families, and a steadily aging population.

Income

As seen in Table 2.4 below, the household, family, and per-capita income of Lower Nazareth Township is greater than that of Northampton County or the State.

The percentage of individuals living in poverty in Lower Nazareth is significantly lower than that in the State and lower than that in Northampton County.

	Table 2.4 Median Per Capita Income, 2018			
	Household	Family	Per Capita	% Individuals in Poverty
Pennsylvania	\$59,445	\$75,477	\$32,889	12.80%
Northampton County	\$67,565	\$81,212	\$34,017	9.10%
Lower Nazareth Township	\$102,438	\$107,366	\$43,803	4.00%

Source: 2018 American Community Survey 5-Year Estimates

Education

Lower Nazareth Township is a highly educated community. Table 2.5 provides the information related to educational attainment of those aged 25 and older. Bachelor’s degrees are held by 23.7% of residents 25 years or older, compared with 18.5% of people in Northampton County and 18.6% of people at the State level. Advanced or professional degrees are held by 16.5% of people in the Township aged 25 years or older. Overall, over 96% of those 25 years and older have at least a high school diploma.

Table 2.5 Educational Attainment of People 25 Years and Older, 2018			
	High School Graduate + %	Bachelor's Degree %	Advanced or Professional Degree %
Pennsylvania	59.40%	18.60%	12.10%
Northampton County	61.30%	18.50%	10.70%
Lower Nazareth Township	56.20%	23.70%	16.50%

Source: 2018 American Community Survey 5-Year Estimates

People with Special Needs

Table 2.6 outlines the number and percentage of the population with a special need or disability. The Americans with Disabilities Act defines a disability as “a physical or mental impairment that substantially limits one or more major life activities.” As seen from Table 6, 367 persons in the Township have a disability. This is less of a percentage (6%) of the entire population than when compared to the County (12.5%) or the State (13.9%). However, the Americans with Disabilities Act does require that recreational and other community activities and facilities are equally accessible to this population. Adequate planning for appropriate access and inclusion of this population should be ensured, especially in light of the continual aging and growth of the community as stated previously.

Table 2.6 Disability Status of Civilian Non-Institutionalized Population in 2018 (Raw Number and Percent*)			
	Lower Nazareth Township	Northampton County	Pennsylvania
Under 18	49/0.8%	3,073/1.03%	141,251/1.12%
Ages 18-64	176/2.87%	17,359/5.8%	877,368/6.97%
Ages 65+	142/2.32%	17,055/5.7%	732,965/5.82%
* -Percentage of Total Civilian Non-Institutionalized Population			

Source: 2018 American Community Survey 5-Year Estimates

Housing

Housing, specifically owner-occupied housing, is generally an indicator of the stability and wealth of a community. The percentage of owner-occupied housing is significantly higher in Lower Nazareth Township than in either Northampton County or the State, as is the percentage of detached single-family homes, and the median house value. Renter occupied housing is only 8.8% of the total housing stock in Lower Nazareth Township as compared with 27.9% within Northampton County and 31.4% in all of Pennsylvania. Table 2.7 below provides information on housing data. This data is indicative of a relatively stable community.

Table 2.7 Housing Information, 2010-2018						
	Lower Nazareth Township		Northampton County		Pennsylvania	
	2010	2018	2010	2018	2010	2018
Owner Occupied %	90.30%	91.20%	75.40%	72.10%	70.10%	68.60%
Renter Occupied %	9.70%	8.80%	24.60%	27.90%	29.90%	31.40%
Detached single-family homes %	85.30%	91.70%	58.70%	57.70%	56.80%	57.00%
Median House Value	\$319,300	\$295,800	\$220,800	\$225,000	\$165,500	\$186,000
Median Gross Rent	\$1,936	\$985	\$829	\$1,092	\$763	\$927

Source: U.S. Census Bureau, 2010 Decennial Census, 2018 American Community Survey 5-Year Estimates

Analysis

Demographic changes and trends affect planning for recreation facilities, services, and programs. Open space, parks and recreational facilities are an important part of the Township's identity and forms an integral part of the community by providing residents with a place to interact and socialize. Continued maintenance and improvement of the Township's open space, parks, and recreational facilities is therefore necessary not only for the obvious health benefits, but also for continued community cohesion.

Noting demographic changes allows the Township to anticipate future conditions and plan accordingly. With a steadily increasing population, improvements to, and maintenance of facilities are needed to keep pace with use, to ensure their safety, and to maximize efficiency and economy of resources. Additionally, while much of the current demand for the Township's parks and recreational facilities is generated by youth athletics, the Township must consider the needs of a growing middle-aged and senior population as citizens plan for an active and healthy future.

A photograph of a park area. In the background, there is a fenced-in area, possibly a sports field, with an American flag flying on a tall pole. Next to the fence is a blue shed. In the foreground, there are utility boxes and a large, leafless tree. Picnic tables are visible in the middle ground. A paved path leads from the bottom right towards the center of the image. The sky is blue with some clouds.

PARK FACILITIES

Chapter 3: Park Facilities

Park facilities, as they are in many communities, are an incredibly valuable resource for Lower Nazareth Township. Parks provide the space and amenities needed for active and passive recreation as well social and cultural events. Parks benefit and serve a wide range of user groups and ability levels as well.

Over the years, the dedication of public parks and the support for private recreation were calculated through national recreation and park standards that sought to establish local, community, and regional parks using formulas weighted by population data. In recent years, these formulas have given way to the recreation interests and physical abilities of residents that now guide recreation needs, adequate facilities, and support for parks.

Lower Nazareth Township owns five (5) municipal parks, that provide a variety of amenities for many user groups. Additionally, residents enjoy the use of county-owned Louise W. Moore Park and the facilities of the Nazareth School district-owned Lower Nazareth Elementary School. In addition to public spaces, there are three (3) privately owned recreation open space areas, each with different facilities.

Table 3.1. Public Parkland Resources Owned by Lower Nazareth Township

Public Park	Location	Acreage	Type of Recreation
Lower Nazareth Township Park & Municipal Building	306 Butztown Road	18 acres	Active & Passive
Hahns Meadow Park	Hanoverville Road	15 acres	Passive
Surrey Glen Park	Georgetown Road & Steuben Road	14 acres	Active & Passive
Georgetown Road Park	Georgetown Road	5 acres	Passive
Newburg Park	Newburg Road	88 acres	Active & Passive

Table 3.2. Public Parkland Resources in Lower Nazareth (Owned by Other Entities)

Public Resource	Location	Acreage	Type of Recreation
Louise W. Moore County Park	151 Country Club Road	125 acres	Active & Passive
Lower Nazareth Elementary School	4422 Newburg Road	24.68	Active & Passive

Table 3.3. Private Parkland Resources in Lower Nazareth Township

Private Resource	Location	Acreage	Type of Recreation
Dutch Springs	4733 Hanoverville Road	95.4 acres	Active
Lower Nazareth Rod & Gun Club	Georgetown Road	25.6 acres	Active/Passive
Northwood Racquet & Fitness	3738 Northwood Ave	5.08	Active

Township Public Parks Analysis & Recommendations

The Township currently owns and maintains five (5) parks. Three (3) of the parks offer primarily passive recreation and two of the parks focus more on active recreation. Newburg Park is one of two Township parks offering primarily active recreation and is currently under construction. Many of the proposed amenities in the park are completed or nearing completion. With these additions at Newburg Park, the Township is successfully expanding its active recreation offerings and the amount of users that can be accommodated. The existing public park system offers a well-rounded, sturdy foundation on which the Township can continue to build upon moving forward. The case for continually evaluating and improving existing parks is clear. The Township's population is aging and there is a renewed interest locally, and nationwide, in health, wellness, and alternative transportation. Park system improvements can address these desires and populations changes while providing concrete benefits for the quality of life of Township residents. The following analyses and recommendations for individual Township parks offer ideas for future improvements that address both immediate needs and long terms goals. By approaching park system improvements with both a short and long-term view, the Township can ensure that their parks meet the continually evolving needs and desires of residents.

Lower Nazareth Township Park



Lower Nazareth Township Park is currently the most active park in the Township. This 18-acre site packs an impressive array of active recreation amenities into a centralized location for Township residents. The park is home to the Township Municipal Building and senior center which serves many functions including hosting scheduled events and recreation programming. The park features six (6) baseball/softball fields, two (2) football fields and two (2) tennis courts. It also offers a bocci court and shuffleboard court, conveniently located near a picnic pavilion. Users also have access to restrooms, a concession stand, playground equipment, and parking lots. Paths throughout the park connect many of the amenities and also provide pedestrian access to the park from nearby neighborhoods. Additionally, the park has been designated as a PA DCNR Land and Water Conservation park.

Lower Nazareth Township Park is heavily used and intensely scheduled by a wide variety of user groups throughout the year. Additionally, the park's concentration of many active uses on one site can often lead to over-crowding during peak times. With the addition of new active amenities at

Newburg park, the Township has already begun to address some of these issues on the system level. Large groups, like athletic organizations, which bring significant crowds of users and spectators, are a key user population in the park. However, the added strain that these large groups place on park resources is also undeniable. The Township may want to consider exploring a policy of charging fees for field use. While it is understood that this is often unpopular with user groups, it could free up some much-needed funding to alleviate the pressure caused by consistent and concentrated use.

Recommendations for Potential Future Improvements:

General

- Reorient or relocate the bocci court for better drainage. *See Appendix 3.A for sample details.*
- Add a new pavilion (or pavilions) to better serve current and future park users. *See Appendix 3.B for samples.*
- Install an electronic or digital sign along the Nazareth Bethlehem Pike frontage to advertise Township events and announcements. *See Appendix 3.C for sample.*
- Formally name the park.
- Install signage (as required by PA DCNR) noting the designation as a PA DCNR Land & Water Conservation Park.

Trails/Connections

- Install benches along the walking trail. *See Appendix 3.D for sample photos.*
- Explore possible locations to create connecting trails that would allow pedestrians and cyclists to access existing park trails from Butztown Road or Route 191.

Restrooms

- Relocate/add restroom and lighting.
- Add an ADA-compliant parking area to the restroom building. *See Appendix 3.E for sample details.*
- Add a paved waiting area and seating to the restroom building.

Parking

- Expand the parking area and increase parking capacity.
- Create an underground storm water management system beneath the parking area to reduce pressure on the already limited park land.
- Removed the hedges around the existing parking area.
- Improve lighting in the parking area.

Township Municipal Building

- Create a seating area along the frontage of the existing Township Municipal building.
- Expand the existing parking near the Township building into the current bocci court location.

Ball Fields

- Add a vehicular drop-off area for the ball fields.
- Provide ADA trail access to the lower ball field.

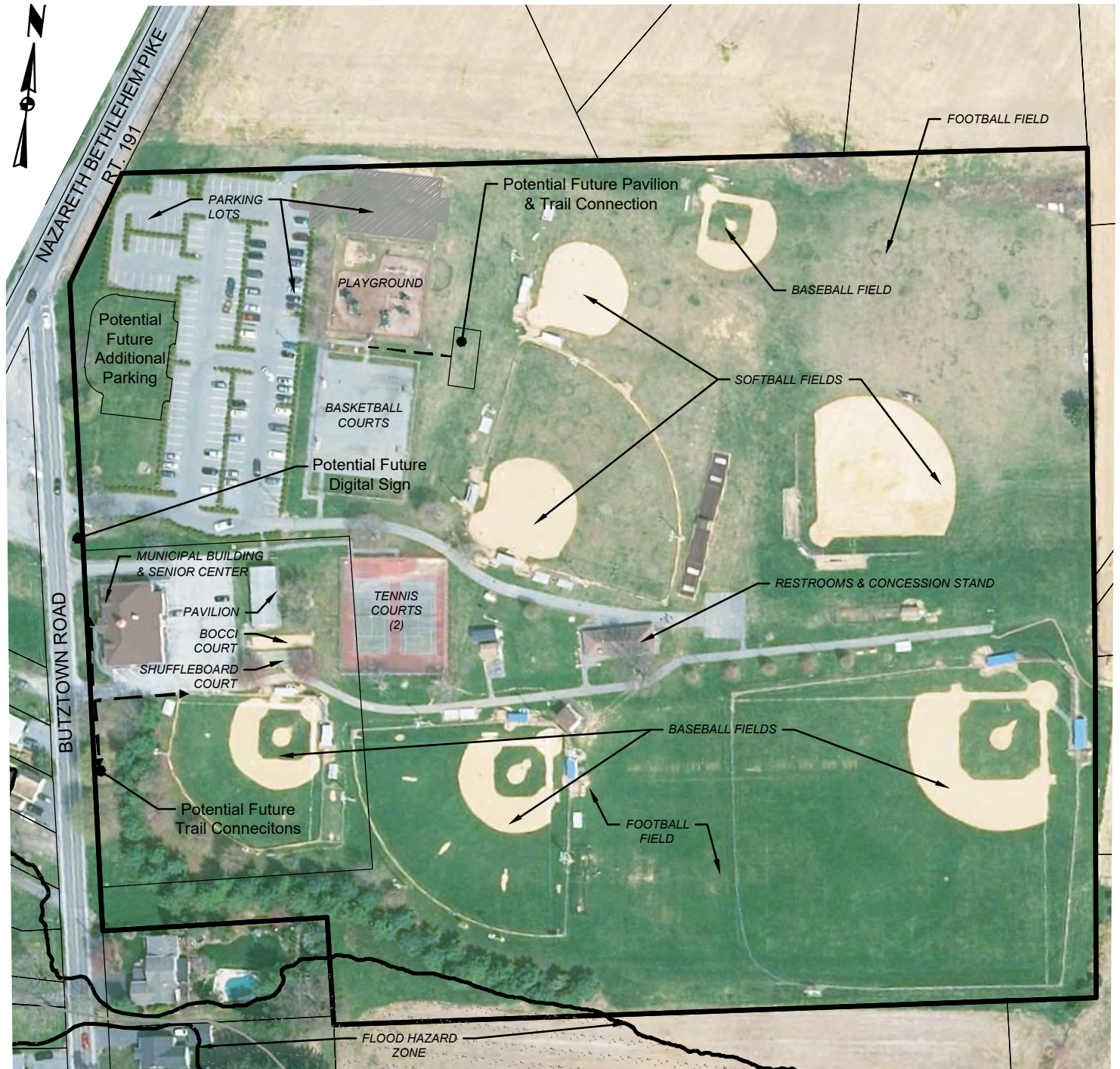
Playground

- Consider relocating or resizing the playground area.
- Examine and consider options for improving drainage in and around the playground area.

Tennis Courts

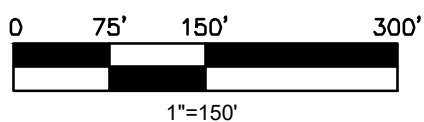
- Consider a ball machine rental for the existing tennis court
- Consider re-designing the lighting for the existing tennis court.
- Consider options for how to use the existing tennis courts for pickleball. *See Appendix 3.F for sample layouts.*

Map 2 - Lower Nazareth Township Park
Plan



PLAN NOTES:

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Lower Nazareth Township Park

201811034

7/22/2020



Hahns Meadow Park



Hahns Meadow is a 15-acre open space park, providing many opportunities for passive recreation. The park has access to the Monocacy creek for fishing and nature viewing as well as meadows, woods, and open field areas for walking and hiking. It features a gravel parking area, and rules and regulations signage which provide access and information to this undeveloped site. This park is considered a “Greenbelt Park” in addition to its designation as a PA DCNR Land and Water Conservation park.

Hahns Meadow is both ecologically and recreationally valuable as a sizable and largely untouched tract of open space with many natural features. Furthermore, the park is surrounded on several sides by agricultural and open land providing prime opportunities for open space preservation and habitat protection moving forward. However, from a user stand point, particularly for those that are elderly or require ADA accommodations, the park and many of its natural resources are difficult to access. Additionally, portions of the park are prone to flooding making access and improvements in these areas a challenge.

Recommendations for Potential Future Improvements:

General

- Naturalize all or a portion of the meadow area of the park. *See Appendix 3.G for more information.*
- Locate and install bird watching areas and or wildlife blinds. *See Appendix 3.H for more information.*
- Add an ADA accessible portable toilet unit.
- Expand the riparian buffer area and install native plantings. *See Appendix 3.I for more information.*
- Provide a picnic table and a trash can near the creek to better accommodate users who are fishing. *See Appendix 3.J for more information.*
- Consider acquiring the one the open field/farm land parcels adjacent to the park and developing them as a dog park. *See Appendix 3.K for more information.*

Signage

- Install park rules & wayfinding signage. *See Appendix 3.L for samples.*
- Install interpretive education signage. *See Appendix 3.M for samples.*

Trails

- Locate and install a mown loop trail around the meadow area.
- Plant trees along the trail mown loop trail. *See Appendix 3.N for samples details.*
- Locate and install several environmental interpretation areas along the proposed loop trail. *See Appendix 3.O for sample photos.*
- Locate and install a crushed stone trail that connects the creek access to the parking area. *See Appendix 3.P for more information.*
- Install a bench along the trail connecting the creek access to the parking area. *See Appendix 3.D for samples.*

Parking

- Improve the existing parking lot by delineating spaces, adding paved ADA parking spaces, a wooden guardrail and a street stop sign at the lot's intersection with Hanoverville road. *See Appendix 3.E for sample details.*

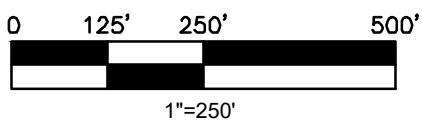
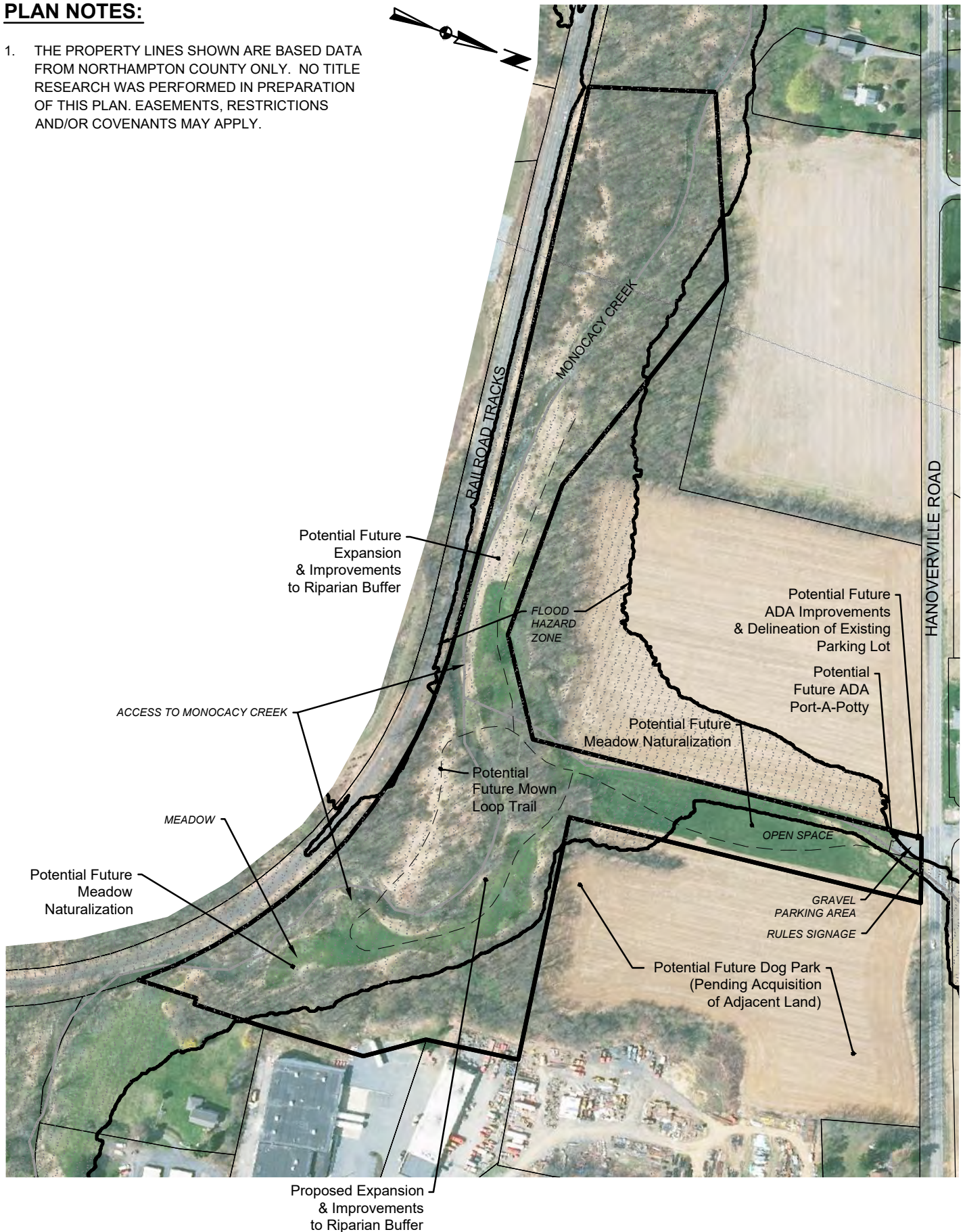
Habitat

- Add a kestrel nesting box. *See Appendix 3.Q for sample details.*
- Create and add a wildlife habitat education kiosk. *See Appendix 3.O for sample photos.*

Map 3- Hahns Meadow Park Plan

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Hahns Meadow Park

201811034

7/22/2020



Surrey Glen Park



Surrey Glen park offers a sizeable area of open space with excellent proximity to the Surrey Glen residential subdivision. This 14-acre park features large multi-use fields, a large parking area and rules and regulations signage. Surrey Glen has limited access to the Monocacy creek which offers opportunities fishing and wildlife viewing. Since the majority of the park land is comprised of open fields, Surrey Glen is able to host a wide variety of activities and events including soccer and field hockey.

This park's location and surrounding uses provide both opportunities and challenges. Despite the fact that the Monocacy Creek runs through the park, this section of the creek is difficult to access. The Rod & Gun club is located along Georgetown Road across the street from the park, and has excellent access to the creek. While this could present challenges given the nature of uses on the Rod & Gun club's private property, a cooperative partnership that would allow park users to access the creek on Rod & Gun land may be worth pursuing. The park is also adjacent to an active rail line and has several power lines running through it and along its street frontage, which could present some issues. The Township has already begun the process of making improvements to this park. A grant

application has been submitted to Northampton County with the goal of securing funding for a walking trail around the perimeter of the park and a nature-themed (stream/aquatic) playground

Recommendations:

General

- Install an open-air pavilion in the park for picnicking and shelter. *See Appendix 3.B for samples.*
- Install the nature-themed aquatic stream playground, as proposed in the Township's Northampton County Livable Landscapes grant application. *See Appendix 3.R for full grant application.*
- Pursue the option of a cooperative arrangement with the Rod & Gun club to utilize the creek access point on their property. If a shared creek access seems feasible, consider adding pedestrian improvements like a crosswalk to Georgetown road. Considering the fact, the PA Game Commission stocks the Monocacy creek from the bridge adjacent to the park on Georgetown Road during trout season, this area should be prioritized for fishing access.
- Locate and add ADA accessible portable toilet units and a privacy screen.
- Explore the option of adding a wooden bridge or overlook along the Monocacy creek to allow users greater access to the creek for fishing and nature viewing along with educational signage about aquatic wildlife. *See Appendix 3.S for Bridges samples and Appendix 3.T for Overlook samples.*

Signage

- Locate and install park rules signage, trail distance signage, and safety signage where needed in the park.

Field Areas

- Improve the field areas by installing sports markers, adding shade trees, and establishing an area for events. *See Appendix 3.N for sample tree planting details.*
- Add swallow nesting boxes to field areas. *See Appendix 3.U for sample details.*

Trails

- Install the loop walking trail, as proposed in the Township's Northampton County Livable Landscapes grant application. *See Appendix 3.R for full grant application.*
- Add trail connections to the adjacent neighborhoods.

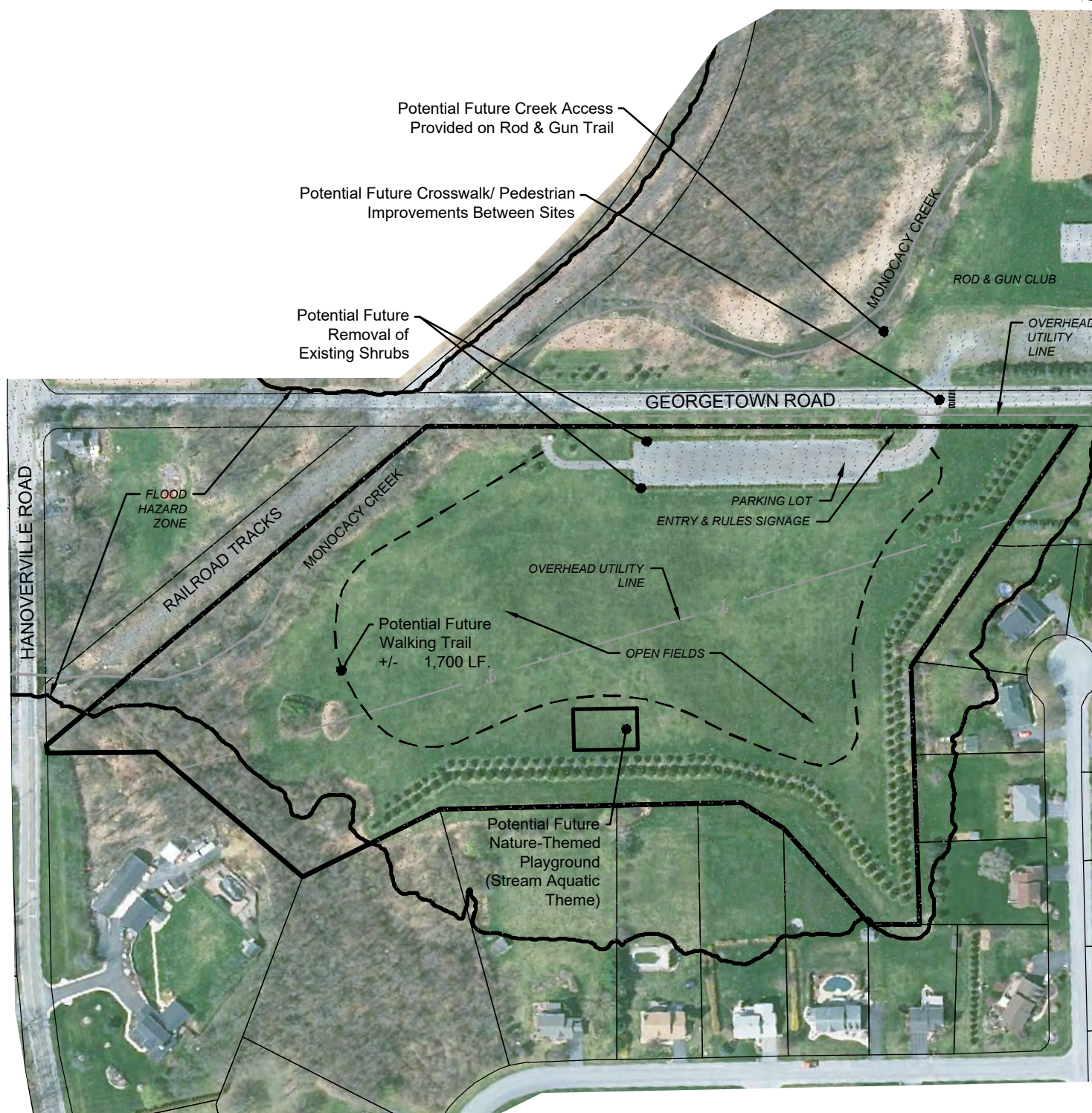
Parking

- Improve the existing parking lot by adding a wooden guiderail along the perimeter, dedicating ADA parking spaces, and relocating the existing trail entry point. *See Appendix 3.E for sample ADA parking details.*

Stormwater/Flooding

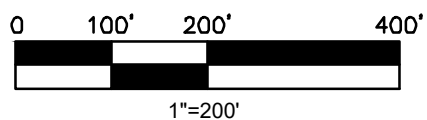
- Locate and install rain gardens within the park. *See Appendix 3.V for more information.*
- Expand the riparian buffer area and install native plantings. *See Appendix 3.I for more information.*

Map 4 - Surrey Glen Park Plan



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Surrey Glen Park

201811034

7/22/2020



Georgetown Road Park



Georgetown Road Park is a small, preserved open space situated within the Monocacy Creek Greenway. Like Hahns Meadow, this park is considered a “Greenbelt Park”. This 5-acre park features extensive frontage along and access to the Monocacy creek which creates opportunities for nature viewing, free play, walking, and other passive recreation activities. Rules & regulations signage is provided along the park’s Georgetown Road frontage, but it does not currently have any parking or vehicular access.

Despite its small size, Georgetown Road park is an important area of preserved open space that is strategically located halfway between Newburg Park and Surrey Glen Park along Georgetown Road. Its location creates a unique opportunity for connection between several Township Parks. Currently, the park’s greatest challenge is its lack of access. The park does not have any parking, vehicular access, or improved pedestrian access and therefore is largely inaccessible to most users. Flooding is also a significant concern on the site, which could limit some future improvements.

Recommendations:

General

- Install a path providing creek access. *See Appendix 3.P for more information.*
- Design and install interpretive signage and educational signage. *See Appendix 3.M for samples.*
- Install a small parking lot to accommodate approximately 4 cars.
- Explore the option of adding a wooden bridge or overlook along the Monocacy creek to allow users greater access to the creek for fishing and nature viewing. *See Appendix 3.S for Bridge samples and Appendix 3.T for Overlook samples.*

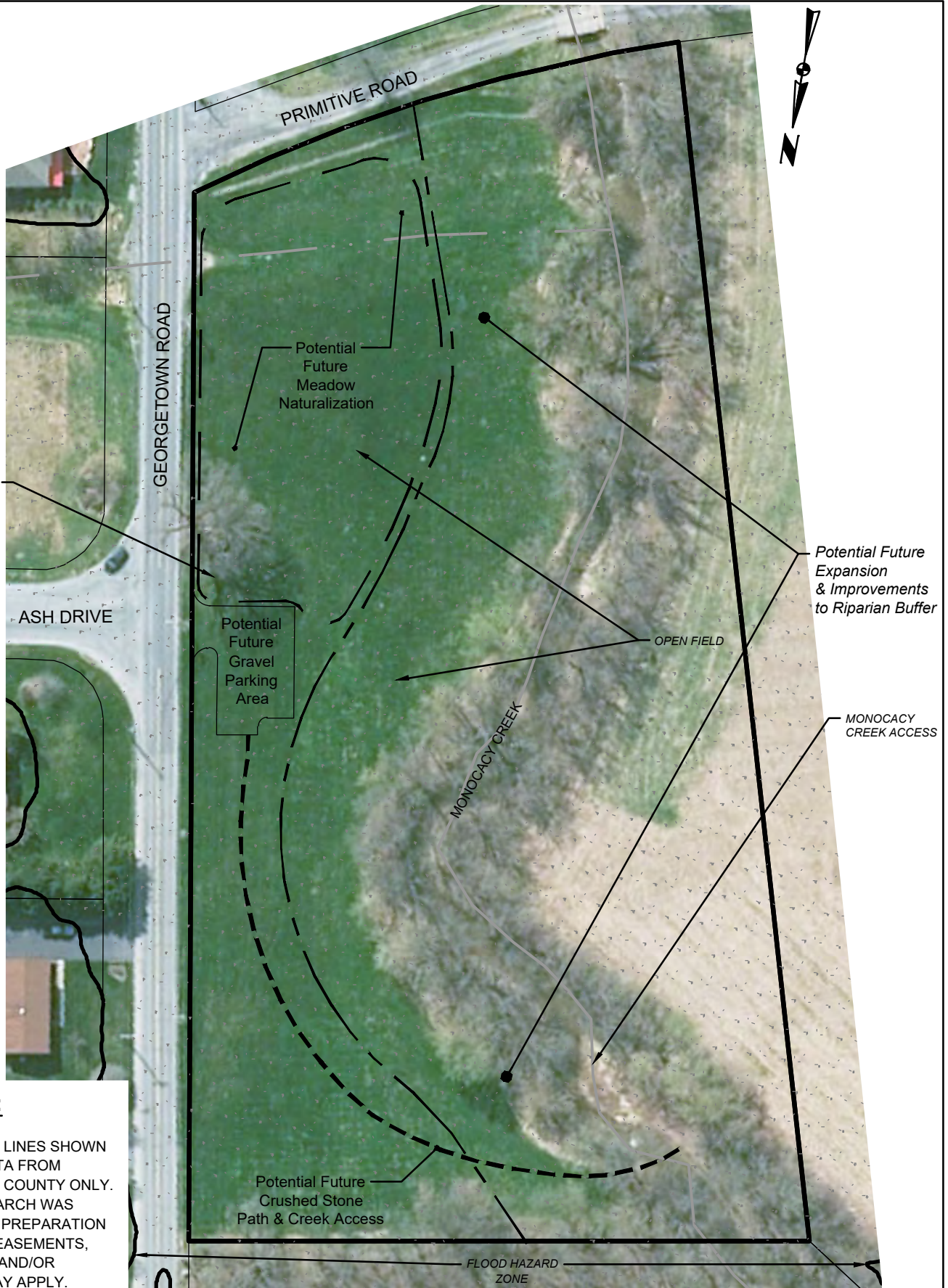
Habitat

- Naturalize all or a portion of the open field into a meadow area and install split rail fencing around the naturalized area. *See Appendix 3.G for more information.*
- Remove invasive plants and devise and consider a long-term invasive management strategy. *See Appendix 3.W for more information.*
- Expand the riparian buffer area and install native plantings. *See Appendix 3.I for more information.*
- Install swallow nesting boxes. *See Appendix 3.U for sample details.*

Stormwater Management

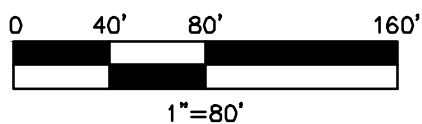
- Consider installing a constructed wetland to manage storm water and increase the potential for stormwater infiltration. *See Appendix 3.X for more information.*
- Redesign the swale in the park conveying storm water from local neighborhoods for better function and ecological value. *See Appendix 3.Y for more information.*

Map 5 - Georgetown Road Plan



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Georgetown Road Park

201811034

7/22/2020



Newburg Park



Newburg park is set to be the Township's largest park and is currently under construction. Once completed, this park will relieve pressure on some active recreation amenities at Lower Nazareth Township Park while providing additional active recreation opportunities. This ninety-acre park features two (2) completed soccer fields, a dog park, trails, a playground, parking, restroom facilities, and rain gardens. Restroom facilities, pickleball courts, tennis courts, basketball courts, a skate park, a baseball field, a football field, and two pavilions are also proposed as the construction of Newburg Park continues.

Newburg Park's location, located partially in Lower Nazareth and Upper Nazareth Townships, along with the long list of amenities that it will eventually offer will likely make this park a destination both within the Township and the region as a whole. As a result of this, it will be important for the Township to consider potential issues like crowding and overuse early on. Also due to its strategic location, the trails within the park have many important opportunities to create connections between the park and the Township as well as the park and the wider region.

See Appendix 3.Z for the Newburg Park Conceptual Plan.

Recommendations:

General

- Consider adding an additional vehicular entry point off of Georgetown road.
- Consider adding an additional parking lot to be accessed directly from Georgetown road.
- Complete the installation of the proposed loop trail and add benches at strategic locations for rest and views. *See Appendix 3.D for samples.*
- Install the proposed open-air pavilion. *See Appendix 3.B for samples.*
- Consider adding an area for individual batting practice.
- Consider how the currently proposed pickleball court could be also be used for one-on- one pickleball and make improvements accordingly. *See Appendix 3.F for sample layouts.*
- Explore the options for and install a nature play area in the park. *See Appendix 3.AA for sample photos.*
- Explore the option of add a family inclusive play space to the park. *See Appendix 3.AA for sample photos.*
- Explore the option of adding a splash pad to the park. *See Appendix 3.AB for samples.*
- Explore the option of adding an amphitheater to the park. *See Appendix 3.AC for sample.*
- Continue exploring the design and layout for the outdoor fitness area and make plans for future implementation. *See Appendix 3.AD for more information.*
- Continue exploring the design and layout of the dog park and make plans for future implementation. *See Appendix 3.K for more information.*

Habitat

- Consider creating and implementing a reforestation plan for the Georgetown Road Forest. *See Appendix 3.G for more information.*
- Add a meadow area along portions of the parks trail. *See Appendix 3.G for more information.*
- Create and install pollinator gardens. *See Appendix 3.AE for more information.*
- Install swallow nesting boxes. *See Appendix 3.U for samples details.*

Signage

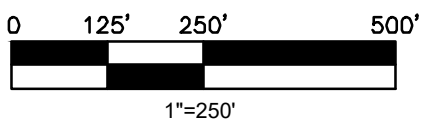
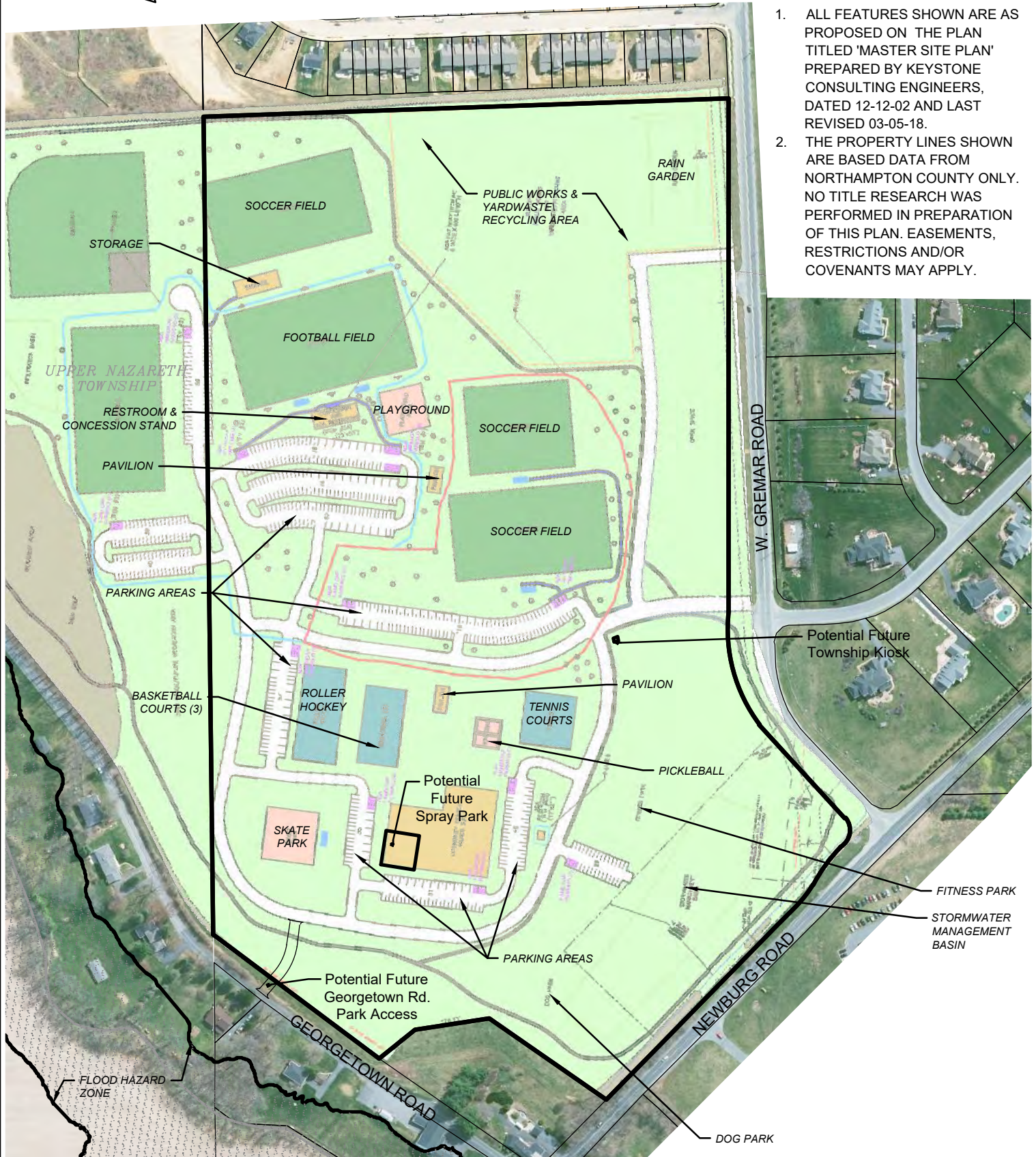
- Install a full Township kiosk, a park map, and trail signage. *See Appendix 3.L for samples.*
- Install digital or electronic signage along Gremer Rd. or Newburg Rd. to better promote park events and announcements. *See Appendix 3.C for samples.*

Map 6 - Newburg Park Plan



PLAN NOTES:

1. ALL FEATURES SHOWN ARE AS PROPOSED ON THE PLAN TITLED 'MASTER SITE PLAN' PREPARED BY KEYSTONE CONSULTING ENGINEERS, DATED 12-12-02 AND LAST REVISED 03-05-18.
2. THE PROPERTY LINES SHOWN ARE BASED DATA FROM NORTHAMPTON COUNTY ONLY. NO TITLE RESEARCH WAS PERFORMED IN PREPARATION OF THIS PLAN. EASEMENTS, RESTRICTIONS AND/OR COVENANTS MAY APPLY.



Newburg Park

201811034

7/22/2020



A paved asphalt trail winds through a rural landscape. On either side of the path are wooden fences. To the left, there's a field with some trees and a blue trampoline. To the right, there's a grassy field with several small evergreen trees and a blue shed in the background. The sky is overcast with grey clouds. A long shadow of the fence on the left is cast onto the path.

TRAILS

Chapter 4: Trails



Louise W. Moore County Park Entrance

The value of having access to a robust and interconnected trail network within one's community is, in many ways, higher now than ever before. Trails function as both alternative transportation and recreation. The benefits that trails provide in both of these roles are undeniable. As a source of alternative transportation, trail use reduces vehicular congestion on roads as well as vehicular use and emissions, all while improving the health, fitness, and the mental well-being of users. According to the 2017 National Household Travel Survey, more than a quarter of all the trips taken within the US are within a 20-minute walk or less and more than half of trips are a 20-minute bike ride or less. Despite this, the majority of these trips are taken by car.¹ With investments in proper trail infrastructure, communities can transform this from a statistic to a concrete benefit in emissions, traffic, and commute. From a health and recreation standpoint, the benefits are just as startling. The American Heart Association reports that for every \$1 spent on trails there are roughly \$3 worth of savings in healthcare costs.² The desire to walk among Americans for fitness, relaxation, and enjoying the outdoors is higher than ever. In 2009, the PA Comprehensive Outdoor Recreation Plan identified walking for pleasure or fitness as the most popular recreation activity in the state and the trend has continued.³ Trail infrastructure is the key to unlocking a multitude of benefits, savings, and opportunities for the Township.

¹ National Household Travel Survey - <https://nhts.ornl.gov/>

² American Heart Association - https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_474717.pdf

³ PA Statewide Comprehensive Outdoor Recreation Plan - <https://www.dcnr.pa.gov/Recreation/PAOutdoorRecPlan/1419RecPlan/Pages/default.aspx>

Existing Township Trails

Luckily, the Township has already recognized this unmet need in their community and has begun to shift focus and funds to trail projects. One excellent example of this is the nearly completed interior trail that the Township installed within Newburg park. This construction of this trail was funded using a 2019 Livable Landscapes grant from Northampton County and represents the beginning of a new push to prioritize trail development within the Township. The Township has also enacted a policy requiring the connection of all roads constructed within subdivisions. This policy lays the groundwork to utilize existing subdivision roads, along with minor improvements like directional signage, to provide connections through neighborhoods. The portion of the Newburg park internal trail within Lower Nazareth adds an additional 1.09 miles bringing the Township's trail total to just under 4 miles. Most of these existing trails fall into the categories of either internal trails in parks or connecting trails from neighborhoods to parks.

Table 4.1. Existing Trails for Public Use in Lower Nazareth Township

Trail Name	Location	Length	Type of Recreation
Lower Nazareth Park Neighborhood Trails	Belmont Dr & Eisenhower Dr	0.18 miles	Passive-Walking/Running Only
Louise W. Moore County Park Internal Trails	Louise W. Moore County Park	2.71 miles	Passive-Walking/Running Only
Newburg Park Internal Trail	Newburg Park	1.7* miles	Passive-Walking/Running Only

* Mileage reflects total trail system. 1.09 miles of trail are within the LNT park parcel, .61 miles are located on the adjacent parcel in Upper Nazareth Township.

County and Regional Trail Context

A long, diverse, and fairly well-connected network of trails can be found within the Lehigh Valley and in particular, within Northampton County. Furthermore, trail planning and development are continuing to be a high priority for the region. For example, Northampton county recently completed the *Northern Tier Trail Feasibility Study*. This study examines and outlines a method for creating a trail that would connect the Lehigh and Delaware rivers while serving as a link to both the National September 11th Memorial Trail (runs from New York City to Pennsylvania) and the Appalachian Trail (runs from Georgia to Maine) as well as the D&L Trail within the Delaware & Lehigh National Heritage Corridor (runs from Wilkes-Barre to Bristol Borough). Northampton County's ongoing funding and promotion of a well-linked trail network provides many opportunities for connections from these trails to the Township. The Two Rivers Trailway is another example of a planned trail system with potential connection opportunities to Lower Nazareth Township. Once completed, the Two Rivers Trailway will connect the confluence of the Delaware & Lehigh Rivers to the Kittatinny

Ridge portion of the Blue Mountain. Several municipalities that surround Lower Nazareth, including Stockertown, Tatamy, Palmer, and Bethlehem township, have existing trails that will eventually link the Trailway together. Currently, six (6) county and regional trails are located within 5 miles of the Township presenting several immediate opportunities to link Lower Nazareth to the greater regional system.

County and Regional Trails Near Lower Nazareth



Nor-Bath Trail | Length: 5.9 Miles | Type: Gravel | Distance from LN: 1.5 Miles W



Stockertown Rail Trail | Length: ~1 Miles | Type: Asphalt | Distance from LN: 2 Miles NE



Tatamy Rail Trail | Length: ~6 Miles | Type: Asphalt | Distance from LN: 2 Miles E



Palmer-Bethlehem Township Bikeway | Length: ~13 Miles | Distance from LN: 1.5 Miles SE



Monocacy Way | Length: 2+ Miles | Distance from LN: 5 Miles downstream

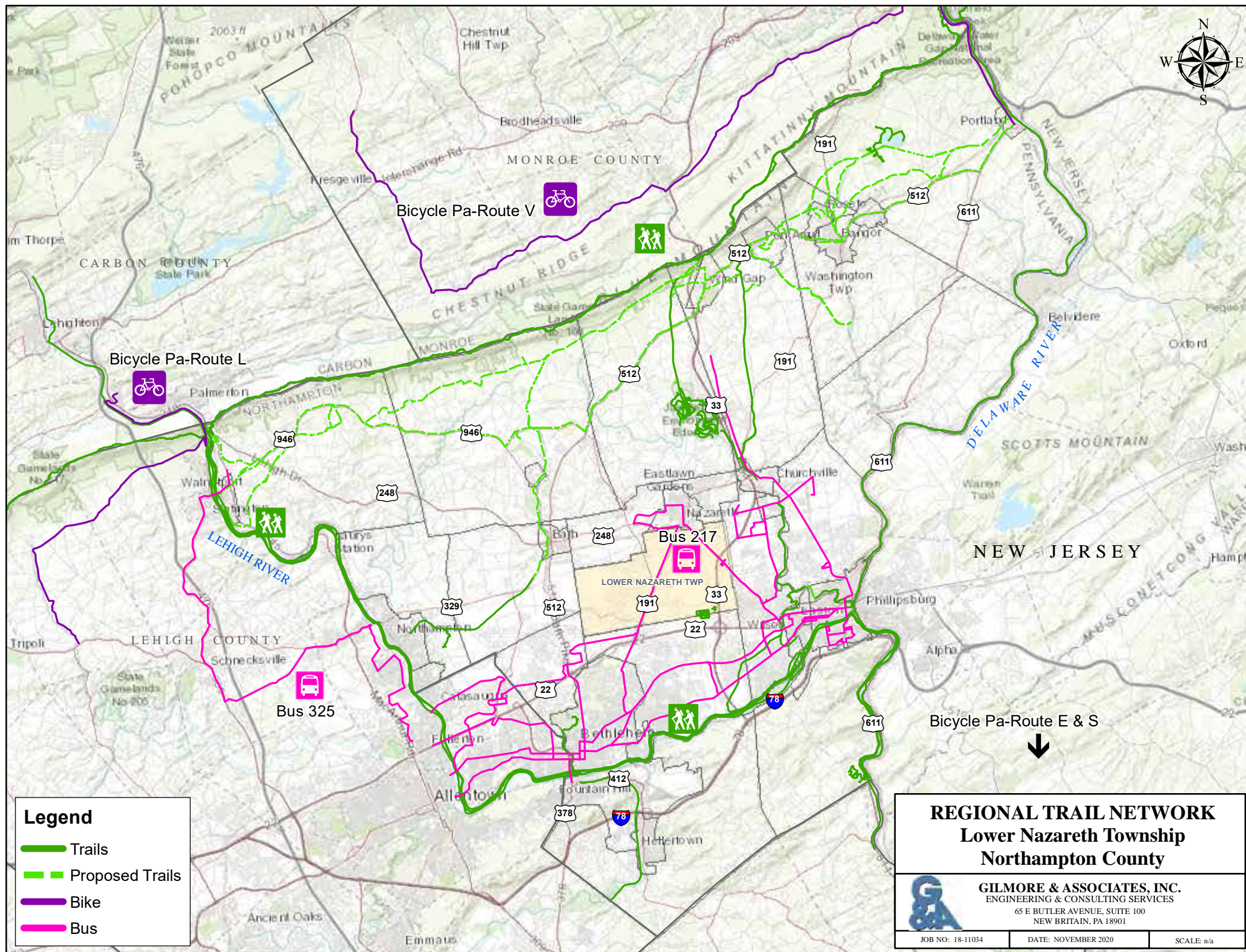


D&L Trail within the Delaware & Lehigh National Heritage Corridor | Length: 165 (Planned & Existing)
| Distance from LN: 3.5 Miles S

Currently, trail access in the Township is primarily within parks, with some limited connections to nearby neighborhoods. As a result, the existing trails offer recreation/fitness for pedestrians, runners, and cyclists, but do not provide a true source of alternative transportation. Currently, it is very difficult for pedestrians, cyclists, and runners to get around the Township.

From an ordinance standpoint, the Township does not currently have specific trail requirements. They do however require that pathways which provide access to recreation areas shall be 8' wide and constructed of macadam. Per the PA DCNR Trail Design and Development guide, the most common width discussed for trails is an 8-12' wide macadam path, with a minimum 4' buffer from the roadway. These guidelines should be considered if the Township finds it necessary to include specific trail requirements in their ordinance in the future, or if the Township desires to pursue grants from PA DCNR to fund future trails. *See Appendix 4.A for information on shared use trail widths.*

Map 7 - Regional Trail Network Map



Analysis & Recommendations for Existing Trails

Lower Nazareth Park Neighborhood Trails



Neighborhood Connecting Trail

A series of existing asphalt paths connect users to various park amenities in addition to the two neighborhoods located adjacent to the park. The connecting paths are particularly useful for residents of who live in the two developments adjacent to the park.

Recommendations:

- Consider additional trail connections, particularly along Butztown Rd. and Nazareth Pike, that would allow users who are not coming from the two adjacent neighborhoods to access the park by bike or foot.
- Examine and prioritize connections that provide links to nearby targeted open space preservation areas.

Newburg Park Internal Trail

Several internal loop trails makeup the trail system within Newburg Park. In total, this trail system covers roughly 1.7 miles spread out between parkland in both Lower and Upper Nazareth Townships. Just over 1 mile of the trail is located within Lower Nazareth. The loop trails are long and varied enough to offer a self-contained recreation and fitness experience for users.

Recommendations:

- Consider a connection to and the development of a trail running along Newburg Road that would allow users to access the park more easily by bike or foot.
- Examine and prioritize trail connections that provide links to nearby neighborhoods, parks (such as Georgetown Road Park), and targeted open space preservation areas.

- Consider adding benches and shade trees to create “rest areas” along the trail for users who may require or simply desire them to use the trail.

Louise W. Moore County Park Internal Trails



The trails within Louise W. Moore park offer a well-connected series of trails for multiple user types. These trails cover over 2.7 miles for pedestrians making them a great self-contained recreational trail experience for many users.

Recommendations:

- Consider studying, planning, and implementing a trail that would connect to the internal trails that are part of Louise W. Moore park and run along County Club Road to provide pedestrian access to the park.
- Consider a connection from the park to future and permanent protected open spaces along County Club Road and Hecktown Roads.
- Examine and prioritize trail connections that provide links from nearby neighborhoods to the park.

Overall Trail System Recommendations

Proper prioritization, planning, and funding are the next steps in developing a robust and well-connected Township trail system. In particular, the Township should consider focusing resources and energy on projects that create and enhance an interconnected system of trails within the Township and that connect to a wider comprehensive trail network. Projects creating internal trails within existing and future parks and open spaces are still valuable and should be pursued, but the more immediate focus should be on the connections that trails can provide as a form of alternative transportation.

- Take advantage of the Township policy requiring that subdivision roads connect, by utilizing safe subdivision roads wherever possible to link to existing and future trails.
 - Consider installing directional signage for pedestrians and cyclists on subdivision roads to clarify how these existing roads have established connections. *See Appendix 3.M for samples of trail directional signage.*
- Consider studying, planning for, and implementing trails or sidewalks along the rights-of-way of targeted open space preservation land including, but not limited to, the following:
 - Along Hecktown & County Club Roads along the parcel just North of Louise W. Moore County Park
 - In the rights-of-way along Newburg & Gradwohl Switch Roads for the large parcel of open land (located near the intersection of Rt. 191 and Newburg Road).
- Collaborate with neighboring municipalities and explore opportunities to establish connections from the Township to the nearby trail systems, such as:
 - A connection to the existing portion (and proposed future segments) of the Nor-Bath Trail from the western boundary of the Township utilizing Silver Crest and Jacksonville Roads.
 - A connection to the Two Rivers Trailway and in turn, the Palmer-Bethlehem Township Bikeway and the Tatamy Rail Trail by using Hollo Road and working collaboratively with Palmer Township and Tatamy Borough to establish routes through their municipalities.
 - Connections to The D&L Trail within the Delaware & Lehigh National Heritage Corridor and Monocacy Way from the Southern border of the Township.
- Establish and code riparian buffers along Monocacy and Schoeneck creeks in order to prioritize and establish areas within the buffer for potential trail development or acquisition/easement for future development.
 - Locate and consider options to where existing and proposed trails within riparian buffers could cross these creeks, presenting opportunities to install bridges. *See Appendix 3.D for sample pedestrian bridges.*

- Consider using crushed limestone and even boardwalks as needed to provide trail access to environmentally sensitive areas. *Refer to appendix 4.B for information on trail surface materials.*
- Consider studying, planning for, and implementing trails links to Township Parks other areas in the region, such as the following:
 - Utilize Hanoverville and Hecktown roads to connect the Township's eastern border to Georgetown road and then connect to Country Club Road and Louise W. Moore park, Hahns Meadow Park, and Surrey Glen Park.
 - A trail linking the proposed Surrey Glen Park trail to Newburg road using Georgetown Road and then connecting to Georgetown Road Park and Newburg Park.
 - Trails running both and east and west along Newburg Road that would allow connections to Nazareth Pike, the Township's eastern border, and Christian Springs Road.
 - Trails connecting the existing sidewalks along Corriere Road to potential sidewalks and trails along Northwood Ave. to the border with Palmer Township as well as Newburg Road.
 - A trail along Rt. 248 from Hollo Road to cross Rt. 191 and link to the Township's border with Nazareth Borough.
 - An internal perimeter trail of Hope Cemetery that also provides connections to Newburg Road and Rt. 191.
 - A trail that follows Rt. 946 that connects Rt. 191 to Christian Springs Road.
 - A sidewalk or trail that runs along Greinar Road and connects from Newburg road to Route 946, taking advantage of existing sidewalks wherever possible.
 - Trails that connecting Surrey Glen Park's proposed internal perimeter trail to the Monocacy Creek and to the adjacent neighborhood by way of Stafford Ave.
- Collaborate with adjacent municipalities to study options for and develop potential trail connections, such as:
 - A trail running along Hollo Road from Nazareth Pike to Rt. 248 with Palmer Township and Tatamy Borough to explore how it could connect to their existing sidewalks and trail systems, including the Two Rivers Trailway.
 - A trail that follows Gradwohl Switch Road and connects from Newburg Road to Route 191 and then connects to existing sidewalks and trail system.
 - A trail that would follow the rail line between the Township's northern border with Nazareth Borough, running west to the NorBath Trail and east into Nazareth Borough.
- Consider the option of designing grade separated or horizontally separated trails along heavily travelled roads to provide trail options in a safe manner for both the vehicular

traffic along the roadways and the pedestrians/bicyclists on the trails. *Refer to Appendix 4.C for examples.*

- Consider the option of strategically locating, planning for, and installing several trail heads to serve the trail network in the Township as it is constructed.
- Consider the option of providing benches along trails at strategic locations to accommodate users who may require or simply desire places to rest while using a trail. *Refer to Appendix 3.D for Sample Trail benches.*
- For immediate priorities or trails that could be constructed in the relatively near future, focus on locations where proposed trails can be installed along the boundaries of properties.
- For the long term, consider the option of acquiring conservation easements in and around properties to allow for trail construction. *Refer to Appendix 4.D for sample trail easement information.*
- Explore options for various types of trail surfaces to serve specific needs/areas within the Township. Options could include sidewalks, paving, or crushed limestone. *Refer to Appendix 4.B for trail surface information.*
- Utilize a ranking system to prioritize funding, resources, and energy for trail projects, as opportunities arise. *A sample ranking system has been included in Appendix 4.E for reference.*

See the Draft Township Official Map, found at the end of the Chapter 5 – Open Space for a map of proposed trails.

A landscape photograph of a green field under a cloudy sky. A white rectangular frame is superimposed on the image, containing the text "OPEN SPACE PRESERVATION" in bold, white, sans-serif capital letters. The text is centered within the frame and spans across the middle of the image. The background shows a lush green field in the foreground, a line of trees in the middle ground, and a sky filled with large, white, fluffy clouds.

OPEN SPACE PRESERVATION

Chapter 5: Open Space Preservation

Making the case for protecting farmland and open space preservation is no longer as challenging as it once was. Thanks to nation-wide analyses and reporting by members of the Land Trust Alliance, the Trust for Public Land, the American Farmland Trust and the American Planning Association, the benefits of protecting open space are immense and well documented. Closer to home, the Lehigh Valley Planning Commission has prepared reports and studies on the benefits of protecting open space and both Northampton County and Lehigh County have preserved thousands of acres of farmland, open space, greenways and trail areas. These studies have documented that the protection of open space improves the economic value of a community's land, water, business and social assets. They have also found that the unmitigated loss of open space, farms, and habitat is known to have a diminishing effect on the value of community assets. From an environmental standpoint, open space preservation protects wildlife habitat and biodiversity while contributing to improved water and air quality. Socially, open space provides a natural, and often scenic, recreation resource that contributes to the local sense of place.

Open space resources are only considered “protected” by a municipality, or non-profit land trust, when the development rights of those resources have been retired. Other forms of protection are considered temporary in nature. For parks, the level of open space protection that prevents a change of use is dependent on self-imposed restrictions, and at times upon agency-imposed restrictions from grants that may have been used for land acquisition or site improvements. For the purposes of this plan, these publicly owned ‘open spaces’ are placed under the category of ‘Permanently Protected Open Space Resources’. Privately-owned open spaces are either ‘Permanently Protected Open Space Resource’, or ‘Temporarily Protected Open Space Resources’ depending on the nature of the restrictions in place.

Maps showing the Township’s natural features can be found in the following appendices:

- A Soils Map can be found in Appendix 5.A, a Watersheds Map can be found in Appendix 5.B, and a Greenway & Steep Slopes Map can be found in Appendix 5.C.

This open space plan is intended to work in conjunction with the Township’s Official Map. In establishing this plan, the Township seeks to accomplish the following goals:

- Preserve the existing farmland and rural character of the Township.
- Conserve open space within the Township.
- Preserve water quality within the Township.
- Maintain and enhance the Township’s existing natural resources.
- Create opportunities for additional recreational areas within the Township.

Existing Township Open Space

Permanently Preserved Open Space Areas

Several properties within Lower Nazareth have been permanently preserved, primarily as a result of the work of farmers and the Northampton County farmland preservation program. Eleven (11) properties are permanently protected by farmland preservation easements provided through the county. Two park properties, Surrey Glen Park and Georgetown Road Park are preserved at the Township level through open space and conservation measures.

Table 5.1. Permanently Preserved Open Space in Lower Nazareth Township

Parcel ID	Location	Acreage	Protection
K7 23 2 0418	Gradwohl Switch Road	29.37	Farmland Easement Preservation
K7 21 8A 0418	Gradwohl Switch Road	39.5	Farmland Easement Preservation
K7 18 12 0418	Hollo Road	1.7	Farmland Easement Preservation
K7 21 8 0418	Gradwohl Switch Road	181.11	Farmland Easement Preservation
K8 8 1 0418	Hollo Road	33.4	Farmland Easement Preservation
K8 8 6 0418	Country Club Road	46.27	Farmland Easement Preservation
K8 8 6B-2 0418	Country Club Road	27.27	Farmland Easement Preservation
L7 4 2 0418	Newburg Road	43.73	Farmland Easement Preservation
L7 3 5 0418	Gradwohl Switch Road	38.02	Farmland Easement Preservation
K8 7 2 0418	Hollo Road	90.24	Farmland Easement Preservation
L8 1 3 0418	Country Club Road	22.06	Farmland Easement Preservation
L8 2 1 0418	Country Club Road	7.7	Farmland Easement Preservation
L8 1 4 0418	Newburg Road	11.6	Farmland Easement Preservation
L8 3A 1 0518	Newburg Road	28.7	Farmland Easement Preservation

K8 9 11 0418	Northwood Avenue	15	Farmland Easement	Preservation
L6 11 1 0418	Township Line Road	47.9	Farmland Easement	Preservation
L8 7 2 0418	Newburg Road	84	Farmland Easement	Preservation
L7 12 10 0418	Butztown Road	30.12	Farmland Easement	Preservation
L7 12 10B 0418	Butztown Road	1.81	Farmland Easement	Preservation
L7 6 10 0418	Newburg Road	54	Farmland Easement	Preservation

Temporarily Preserved Farmland Areas

Seven (7) parcels have been preserved temporarily through designation as an agricultural security area. Of the seven preserved parcels, three (3) are larger than 35 acres making them high priorities for preservation. While this is an important first step for these parcels, they are not considered permanently protected until they are covered by preservation easements.

Table 5.2. Township Agricultural Security Areas Not Currently Protected by an Easement

Parcel ID	Location	Acreage	Protection Needed
L8 7 1 0418	Newburg Road	65	Farmland Preservation
L8 8 1 0418	Newburg Road	5	Farmland Preservation
K8 9 9 0418	Country Club Road	58	Farmland Preservation
L8 1 1 0418	Newburg Road	26	Farmland Preservation
K7 20 7 0418	Nazareth Pike	47	Farmland Preservation
L8 10 1F 0418	Field Drive	25	Farmland Preservation

Analysis of Existing Open Space & Permanently Preserved Land

The Township has made significant progress in their preservation efforts, particularly with respect to the preservation of farmland and agricultural areas. Eighteen (18) agricultural parcels currently have some level of protection and two (2) parks are protected as open space or conservation easements. Two areas in which the Township could focus future efforts would be:

- Obtaining permanent farmland protections for parcels that currently have an agricultural security area designation.
- Increase efforts to obtain conservation easements for the preservation of open space and natural resource parcels.



Existing Farmland

Existing Township Open Space Protection Efforts

Earned Income Tax for Open Space Funding

In May 2019, the Township residents voted to pass a referendum to create an additional Earned Income Tax of 0.25% for the purposes of acquiring conservation easements, for the purposes of acquiring property development rights, and for related fees and expenses as authorized by law, and an ordinance imposing the additional tax for open space funding was enacted on August 14, 2019.¹

The referendum read as follows:

"Do you favor the imposition of an additional Earned Income Tax at the rate of 0.25% by Lower Nazareth Township to be used for financing the acquisition of open space, for the purpose of acquiring agricultural conservation easements, for the purpose of acquiring property development rights, and for related fees and expenses as authorized by law?"

YES or NO

Plain English Version

The ballot question asks the voters of Lower Nazareth Township whether the Township should impose an additional Earned Income Tax at the rate of 0.25% on an annual basis to purchase land or interests in land for preservation and conservation of open, undeveloped

¹ Township of Lower Nazareth Ordinance No, 234-08-19- <https://lowernazareth.com/formspublicationsordinances>

land in Lower Nazareth Township. The Township would use the money to do one (1) or more of the following:

- ✓ Acquire agricultural conservation easements. The Township could purchase agricultural conservation easements, or participate in State or County land preservation programs that acquire agricultural conservation easements. An agricultural conservation easement allows the landowner to retain his/her land and use it for farming and other agricultural purposes.
- ✓ Finance the acquisition of open space. The Township could purchase undeveloped land from landowners in the Township in order to protect sensitive natural areas such as woodlands, stream valleys or other unique natural resources or habitats.
- ✓ Acquire property development rights. Under this option, a landowner would sell the development rights of a property to the Township. The landowner would retain the property, but the property could not be developed.
- ✓ Additional related expenses. The Township would be authorized to use funds as authorized by 32 P.S. 5007. 1(a), as amended, to retire related indebtedness, pay transactional fees incidental to acquisition, pay for expenses necessary to prepare and amend the resource, recreation or land use plan, and to develop, improve, design, engineer, and maintain property acquired pursuant to the Act.²

From the 1.45% total EIT monies collected by the Township, Lower Nazareth distributes .7% to the Nazareth School District; .5% to the Township General Fund; and now .25% to the Open Space Fund, per the referendum. Open space funds from this new EIT are to be used solely for financing the acquisition of open space, acquiring agricultural conservation easements, acquiring property development rights and for related fees and expenses authorized by law under the provisions of the Open Space Acquisition and Preservation Law.³

Zoning Ordinance Provisions:

The Zoning Ordinance includes several sections that address the preservation of open space and recreation areas.

- ZO Section 1415 – Recreation, Land, Open Space and Fee Requirements
 - Refers users to the Township Open Space Ordinance, which includes requirements regarding the dedication of land, or fees in lieu dedication, for recreation and open space in proposed subdivisions and land development projects
 - At the present time the Township has enacted an open space referendum and an Earned Income Tax for Open Space Funding which have enabled the Township

² Ordinance #232-02-19 – Open Space Referendum - <https://lowernazareth.com/formspublicationsordinances>

³ Ordinance #234-08-19 – Earned Income Tax for Open Space Funding

to collect and utilize an additional .25% EIT for open space acquisition and related expenses.

- ZO Section 1419 – Methods of Preserving Common Open Space
 - Includes requirements regarding options for the ownership and maintenance of common open space areas created as part of a subdivision or land development. Ownership options include dedication to:
 - Lower Nazareth Township
 - Northampton County
 - Nazareth School District
 - A Homeowners Association - if common open space is not publicly owned
 - An established nature conservation organization – dedication can be of the land itself or a permanent conservation and or agricultural preservation easement.
- ZO Section 706-H.
 - Outlines the common open space requirements for development of multi-family dwellings and apartments.
 - Requires that a minimum of 25% of the total land area for any development involving 4 or more townhouses or apartments be reserved for common open space.
- ZO Article XVI
 - Includes environmental protection standards for the preservation of steep slopes, wetlands, riparian areas, alluvial soils, and floodplain areas.
- ZO Article IV
 - Sets forth the standards for the (AG) Agricultural zoning district, which is designed to protect agricultural lands and prime agricultural soils as well environmentally sensitive areas by restricting development, the extension of water and sewer lines, and intense residential growth within the district.⁴

Subdivision and Land Development Ordinance provisions:

The Subdivision and Land Development Ordinance also addresses the preservation of open space and recreation areas.

- SLDO Section 793
 - States that “the establishment, maintenance, and protection of open space and recreation areas shall be in accordance with the guidelines contained within "The Comprehensive Plan of Lower Nazareth Township”.
- SLDO Section 793.1
 - Outlines the criteria for the Township Board of Supervisors to evaluate and approve recreation lands for the dedication to the Township.

⁴ Township of Lower Nazareth Zoning Ordinance - <https://lowernazareth.com/formspublicationsordinances>

- Mentions that Cash in lieu of recreation land may be offered instead of land dedication, subject to the approval of the Board of Supervisors.⁵

Comprehensive Plan - Nazareth Area... 2030

Nazareth Area...2030 is a Multimunicipal Comprehensive Plan prepared by the Nazareth Area Council of Governments by the Lehigh Valley Planning Commission in 2006. Lower Nazareth Township participated as a member of the COG. The comprehensive plan was prepared for the boroughs of Bath, Chapman, Nazareth, Stockertown, and Tatamy and the townships of Bushkill, East Allen, Lower Nazareth, Moore, and Upper Nazareth. With respect to open space and conservation, the plan:

- Encourages that natural features such as floodplains and steep slopes greater than 25% be protected from development through local zoning.
- Encourages the municipalities to adopt strong agricultural zoning and develop agricultural conservation easement programs.
- Encourages the preservation of the most agriculturally productive soils by keeping the land in agricultural use and protecting agricultural operations from incompatible land uses.
- States that no development should take place in environmental protection areas including floodplains, wetlands (and an adjoining 50' buffer), slopes greater than 25%, 1st-3rd order streams (and an adjoining 50' buffer), 4th order and higher streams (including an adjoining 100' buffer), and all high or very high conservation value areas defined by overlapping natural features.⁶

Official Map

One of the recommendations of this Recreation, Park, and Open Space Plan is for the Township to consider the creation and adoption of an Official Map to serve as another tool by which the Township can support its open space planning and acquisition process. Once adopted, the Official Map will officially identify parcels to be acquired for development rights and/or parks in the future, areas for greenway preservation, and the routes for future trails. The Official Map will also serve as an ordinance guiding land use decisions and identifying public preservation desires.

Committees

In addition to its Board of Supervisors, the Township has several other boards and commissions that serve in an advisory role with respect to land development, planning, environmental and land conservation issues. The Planning Commission, Environmental Advisory Council, and Agricultural

⁵ Subdivision and Land Development Ordinance Lower Nazareth Township - <https://lowernazareth.com/formspublicationsordinances>

⁶ Nazareth Area...2030 Multimunicipal Comprehensive Plan - <http://lvpc.org/pdf/Nazareth%20Area%20Comp%20Plan%202030.pdf>

Security Committee all offer input and recommendations to the Board of Supervisors to enable the Board to make informed decisions. As the Township moves forward with utilizing earned income tax for open space funding, the Environmental Advisory Council (EAC) will assume responsibility for the program and make recommendations to the Board of Supervisors.

County and State Efforts that Support Land Preservation in Lower Nazareth Township

Lands with Preferential Assessment

The Northampton County preferential assessment program is a voluntary covenant that the county enters with a property owner who has valuable open space resources (farmland, forests, water resources) that they wish to preserve. Enrolled properties are assessed by the county at the fair market value, and as a result are afforded significant savings through preferential property tax assessments to incentive the owner to maintain the land as open space.

The two acts that enable preferential assessments are Act 515 (Pennsylvania Open Space Covenant Act of 1966) and Act 319 (Pennsylvania Farmland & Forest Land Assessment act of 1974). Act 319 involves more stringent requirements than act 515 and involves a soil classification and yield per acre calculation to determine a property's individual assessment. Lands with covenants under Act 515 and 319 are considered to be temporarily protected because the owners have the right to terminate the agreements at any time.

Agricultural Security Areas

Property owners choose to enroll in the Agricultural Security Area (or ASA) program, which strengthens farmer's rights to continue farming by protecting against potential conflicts from encroaching land development. Enrolling in an ASA is a prerequisite for enrolling into farmland preservation. ASA enrollment alone does not protect a property from or prevent development.

County Agricultural Conservation Easements

County level agricultural conservation easements allow farmers whose land is already enrolled in an ASA to sell an agricultural conservation easement (on a voluntary basis) to a county agricultural land preservation board. To date, eleven (11) farms in Lower Nazareth Township, totaling just under 870 acres have been temporarily protected through this program. The properties preserved through county program are listed in Table 5.2, as "Farmland Preservation Easement".

County Farmland Preservation Program

Northampton County created a farmland preservation program that will partner the County with municipalities to match funding on the state level. Lower Nazareth Township may be able to use the EIT tax to help preserve farmland that is seeking an agricultural easement. The County already has

guidelines that rank each farm submitting to become a preserved farm by way of agricultural easements. Lower Nazareth Township officials should continually stay in contact with county officials.

County Open Space and Livable Landscapes Program

The Northampton County Livable Landscapes Grant Program offers grant funding for Land Preservation including fee simple acquisition or conservation easements within natural areas, greenways, trails, river/watershed conservation areas, critical habitat, and/or open space. Grant funds may be used to purchase land in fee simple acquisition or a conservation easement that would permanently protect a property's open space, natural areas, watersheds, agricultural areas, and/or important natural features. Land Preservation projects are on an open grant round monthly throughout the year. Additional requirements are stated in the Livable Landscapes Grant Program Guidelines. Northampton County also conducts fee simple acquisition or conservation easement to buffer and/or add additional acreage to the County Park and/or Open Space System.

Potentially Vulnerable Existing Open Space Resources

Historic and Cultural Resources

There are no sites within Lower Nazareth township that are listed on the National Register of Historic Places and the Pennsylvania Historic and Museum Commission's Bureau of Historic Preservation database does not include any historic sites within Lower Nazareth Township.

The Kuntzman/Beck Farm, located along Newburg Road, is listed as eligible for registration by the Pennsylvania Historic and Museum Commission's Bureau of Historic Preservation Database.

The database also lists several properties in the township classified as having undetermined historic eligibility. The following properties are shown on the state map but do not have a determination of historic eligibility:

- Washko Open Tract – Located along County Club Road
- Fox Homestead – Located along Hecktown Road
- Mikol, Mary Annette, Farmstead – Located off of Hollo Road
- Several properties located off of Gradwohl Switch Road and Nazareth Pike
- Several properties located along Rt. 946

Scenic Resources & Natural Features

While it has not been recognized on any state or regional levels, the Monocacy Creek Greenway represents the Township's significant scenic resource. The greenway frames the Monocacy Creek with areas of riparian woodland, steep slopes, wetlands, and floodplains. The creek traverses the southwest corner of the Township and its east branch extends north, forming bisecting corridors of valuable scenery, wildlife habitat, and recreation lands.

Bushkill Creek Watershed Natural Heritage Area

The Bushkill Creek Watershed is recognized as a natural heritage area within Lehigh and Northampton Counties and is listed as having regional significance. While the Bushkill Creek itself does not run through the Township, a portion of the watershed covers the majority of the eastern portion of the Township. Most of the watershed located within Lower Nazareth is considered to be a supporting landscape of the core habitat immediately surrounding the Bushkill Creek and wetlands. The Township portions of the watershed drain into creek itself and due to its strategic location near the commercial corridor of Route 191, this area is highly susceptible to development. Per the Lehigh and Northampton County Heritage Inventory, it is recommended that this area be prioritized for open space preservation, particularly with a focus on the maintaining the natural hydrology of these areas. Many of the species of concern within this area require the preservation and restoration of wetland habitat in particular, for survival. Additionally, many areas that once supported critical species within open wet meadow, are now covered with tree canopy and should be considered for restoration.⁷

Dutch Springs Natural Heritage Area

The Dutch Springs Natural Heritage area occurs in the southwestern boundary of the Township along the southern boundary and it's supporting habitat followings the Monocacy creek through its entire run within the Township. It is recognized as a natural heritage area of state importance. The core area and supporting habitat are comprised primarily of wooded areas within the riparian corridor of the Monocacy Creek and their surrounding areas in order to provide nesting areas suitable for sensitive species of concern. The main preservation goals within this area are to protect open space from encroaching development and in order to preserve and improve water quality within the watershed.⁸

⁷ Natural Heritage Inventory of Lehigh and Northampton Counties, Pennsylvania – Update 2013 - https://www.google.com/search?q=lehigh+and+northampton+counties+natural+areas+inventory&rlz=1C1GCEA_enUS902US902&oq=lehigh+&aqs=chrome.69i59j46j0j46l3j0l2.2063j0j7&sourceid=chrome&ie=UTF-8#

⁸ Natural Heritage Inventory of Lehigh and Northampton Counties, Pennsylvania – Update 2013 - https://www.google.com/search?q=lehigh+and+northampton+counties+natural+areas+inventory&rlz=1C1GCEA_enUS902US902&oq=lehigh+&aqs=chrome.0.69i59j46j0j46l3j0l2.2063j0j7&sourceid=chrome&ie=UTF-8#

Analysis of Existing Township Open Space & Protection Efforts



Potential Future Park Land

Township has effectively laid the groundwork to design and implement a robust open space program. The referendum voted to approve the additional EIT for open space demonstrates that the Township has the public support financial backing needed to move forward. In addition, the Township's Environmental Advisory Council and Agricultural Security Committee are available to provide guidance and recommendations to the Board of Supervisors as they ramp up their preservation efforts.

Current Township ordinances include regulations requiring the preservation of land and natural resource protection. The ordinances also elaborate on how and to whom open space can be dedicated. However, there are a few areas in which the ordinances may need to be reviewed/revised to include current references. Township and county efforts have resulted in significant acquisitions and critical initial steps, but many open space and agricultural areas remain vulnerable. Issues of concern are:

- Land Use Zoning is a temporary means of protecting open space and natural resources.
- Special/Preferential Tax Assessments (currently this is only done at the county level) to help maintain the condition of these resources are temporary—determined by acts of legislation and the land use decisions of owners.
- Property deed restrictions may not protect open space and natural resources long term.
- Land development pressure and/or the location of approved/proposed land development projects can impact unprotected resources by increasing their value to developers, by diminishing the resource viability, and by fragmenting habitat.

Recommendations

Immediate Priority Recommendations

- Finalize and adopt the Township Official Map.
- Develop and promote educational materials for landowners and residents about the Township's open space program and preservation efforts.
- Develop an outreach program for landowners and establish a contact person for all communications with landowners in the future.
- Prioritize outreach about permanent agricultural preservation easements to landowners whose properties currently only have Agricultural Security Area designations.
- Clearly identify and outline open space and agricultural preservation priorities and use them to adapt the forms for scoring potential properties included in the appendices. Have the Environmental Advisory Council fill out the forms and then use those scores to rank properties by collecting information on a baseline data report sheet and scoring the property using an open space criteria evaluation.
 - A sample data report sheet can be found in Appendix 5.D.
 - A sample open space criteria evaluation can be found in Appendix 5.E.

Medium Priority Recommendations

- Consider acquiring parcels for park development, as shown on the Official Map.
- Consider acquiring parcels for development rights acquisition, as shown on the Official Map
- Consider evaluating parcels and identifying one to acquire for park development that is close to the Borough of Nazareth and would offer the potential for future park expansion.
- Consider and prioritize areas within the Monocacy and Schoneck Creek riparian buffers to be for potential open space preservation and public access.
- Consider and prioritize parcels within the core habitat of the Dutch Springs Natural Heritage area that for potential open space preservation and expansion of public access.
- Consider and prioritize properties within the Bushkill Creek Watershed Natural Heritage Area for potential open space preservation. Focus in particular on parcels with hydrological features that should be maintained or improved for the overall health of the watershed.
- Consider engaging the public in order to determine other priority areas or parcels in the township for open space or agricultural preservation.
- Consider grant funding sources to stretch the Township's EIT monies for open space further:
 - Northampton County Livable Landscapes Grant Program
 - PA DCNR Grants
 - Northampton County Farmland Preservation Program
- Develop long-term plans and strategies for the stewardship of open space and conservation areas.

Preservation Tool & Technique Recommendations

- Prioritize using fee simple ownership or conservation easements as the primary methods of land acquisition whenever possible to achieve permanent protection.
 - Fee Simple
 - The Fee Simple Ownership of real property is represented by the complete and total ownership of all the rights and privileges of that property. The owner is free to use, enjoy and dispose of the property. This does not preclude the property from: being taxed, its uses legally governed and policed, or condemnation.
 - Fee simple ownership offers a property owner a great deal of freedom to use and enjoy land as desired and restricted typically only by available finances and local land use regulations. In the case of owning land for open space and conservation purposes, outright ownership offers the chance to create outdoor active and passive recreation areas which are desired by a broader community populace and protect wildlife habitat with more direct control of its stewardship.
 - Fee simple ownership does come with detracting elements. The price to acquire the full bundle of rights of real property is costlier than that of acquiring only a portion, such as in the case of acquiring façade, trail or conservation easements. Note that long term maintenance and insurance are costs that should be considered.
 - The outright acquisition of land is the preferred method of establishing an area for use as a park or nature preserve. Unencumbered by a previous land owner's deed restrictions or personal or corporate interests, fee simple ownership will ensure the public or non-profit use of land will be free of obstacles to good park design and habitat protection as well as maintain the integrity of the new owner's community goals or non-profit mission.
 - Owning land in fee simple has long term requirements unique to a private, public, or non-profit land owner. Private owners will no doubt be responsible for keeping in good standing with local taxation offices, otherwise suffering the government disposition of their property, as well as keeping their land free of hazards which may attract or cause harm to non-owners.
 - For a public or non-profit owner, taxation is often exempt, however, hazards are still a concern and must be incorporated with long range planning and management for the use and care of the property.
 - Conservation Easements
 - A conservation easement is a legal agreement, between a property owner, or owners, and an eligible non-profit organization or government agency, which,

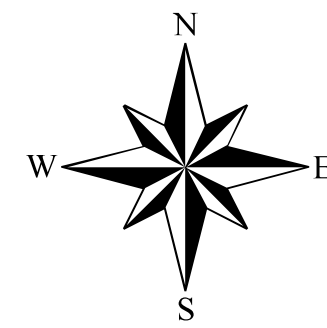
when recorded with the deed, highlights the conservation values of the property and restricts the future use of the property in order to protect those values.

- To hold a conservation easement is to own only a portion, or portions, of another owner's real property rights. And, as a separate and unique document recorded with the deed, the easement identifies a type of ownership separate from the owner and all successive owners. This "third party" ownership is designed, by intent and financial means, to outlive the original owners, their heirs and assigns, and to enforce the restrictions of the original owner on all future owners.
- Benefits of conservation easements include the following:
 - Perpetual Enforcement of the Conservation Values: A private property owner granting a conservation easement, and concerned residents, can take comfort in the fact that the conservation values will be monitored and enforced perpetually.
 - Land Kept in Private Ownership: Unless a property protected by a conservation easement is owned by a non-profit organization or government agency, it typically continues to be owned and managed privately, and as a result continues to contribute real estate taxes to the community.
 - Less Costly to Acquire: Considered only a part of the rights of property ownership, easements can be assumed to have only a part of the marketable value of the property, and as a result cost less to acquire.
- Explore options when structuring acquisition of conservation easements or open space land:
 - Consider partnering with qualified land trusts.
 - Consider allowing private residents and outside parties to donate to a municipal open space preservation fund with the understanding the use of these funds is limited to the acquisition of land or conservation easements.
 - Consider exploring how the fund could be used as matching dollars for state and federal grants.
- Consider establishing an open space bond program if the Township desires to make significant land acquisitions:
 - Bonds allow a municipality to approach the electorate for a single budget item in need of funding with specific terms and methods of repayment. Voters have especially favored bonds with funds not co-mingled with other municipal budget needs or general accounts.

- Borrowing—municipalities are eligible to issue bonds, use bond pools, or borrow from certain commercial lending institutes to amass the monies needed to acquire land or conservation easements.
 - Repayment—issued bonds are at times given interest rates higher than bank loans and the transaction costs of a government bond can be burdensome. Installments are typical and often funded by a millage increase in property taxes and in some cases dedicated earned income tax.
 - Millage Increases—repayment of any open space bond with property tax revenue presents both a public support challenge and competition for use of tax revenues for other municipal priorities. However, use of property tax revenue to repay smaller bonds can be easy to administer.
- Consider establishing a transfer of development rights program:
 - A Transfer Development Rights Program is the mechanism through which a municipality administers the transfer of property rights from one area of the community to another. It must be adopted in the municipality's zoning ordinance and each transfer approved by the zoning board, or planning commission, and the governing body. Using the master or comprehensive plan as a guide, an area is chosen from which the rights will be sent (the “sending area”) as well as an area which will receive them (the “receiving area”). The rights of the sending area are acknowledged by the municipality as credits to be used by a property owner in the development or improvement of the receiving area. Participation in the program is strictly voluntary between property owners in the sending area and property owners in the receiving area. A receiving area property owner must be willing to purchase the credits of a sending area property and the sending area property owner must be willing to sell them at the offered price. Similar to a conservation easement or purchase development rights program, the municipality may also purchase the sending area credits to retire the right to develop or improve a property.
 - The Pennsylvania Municipalities Planning Code does allow for the transfer of development rights from one municipality to another in situations where joint planning efforts of adjacent communities actually desire it.
 - Sending Area: Sending areas are defined by the municipality's planning documents and adopted into the zoning regulations by definition and description. A municipality may choose to design a sending area to achieve a goal of preserving farmland or open space across multiple properties and zoning districts. It may also choose to select specific properties from which it will send TDR credits as is often the case when sending credits from one existing building to another.
 - Receiving Area: Receiving areas are also defined by the municipality's planning and zoning documents. They are selected for their ability to support new development in areas where it is desired. Or, the municipality may choose to achieve a goal of

improving the built environment by accepting TDR credits toward increasing the square footage/ height of existing buildings.

Map 8 - DRAFT – Township Official
Map

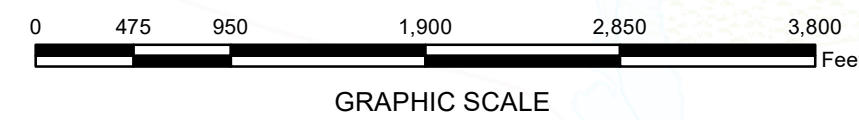


OFFICIAL MAP LOWER NAZARETH TOWNSHIP

NORTHAMPTON COUNTY, PENNSYLVANIA

623 Municipal Drive
Nazareth, PA 18064
(610) 759-7434

AUGUST, 2020



UPPER NAZARETH
TOWNSHIP

NAZARETH
BOROUGH

TO NAZARETH BOROUGH
& STOCKERTOWN RAIL TRAIL

PALMER
TOWNSHIP

TO TATAMY
RAIL TRAIL

TO PALMER-
BETHLEHEM
BIKEWAY

BETHLEHEM
TOWNSHIP

TO MONOCACY WAY
AND D&L TRAIL

TO NOR-BATH
TRAIL

HANOVER
TOWNSHIP

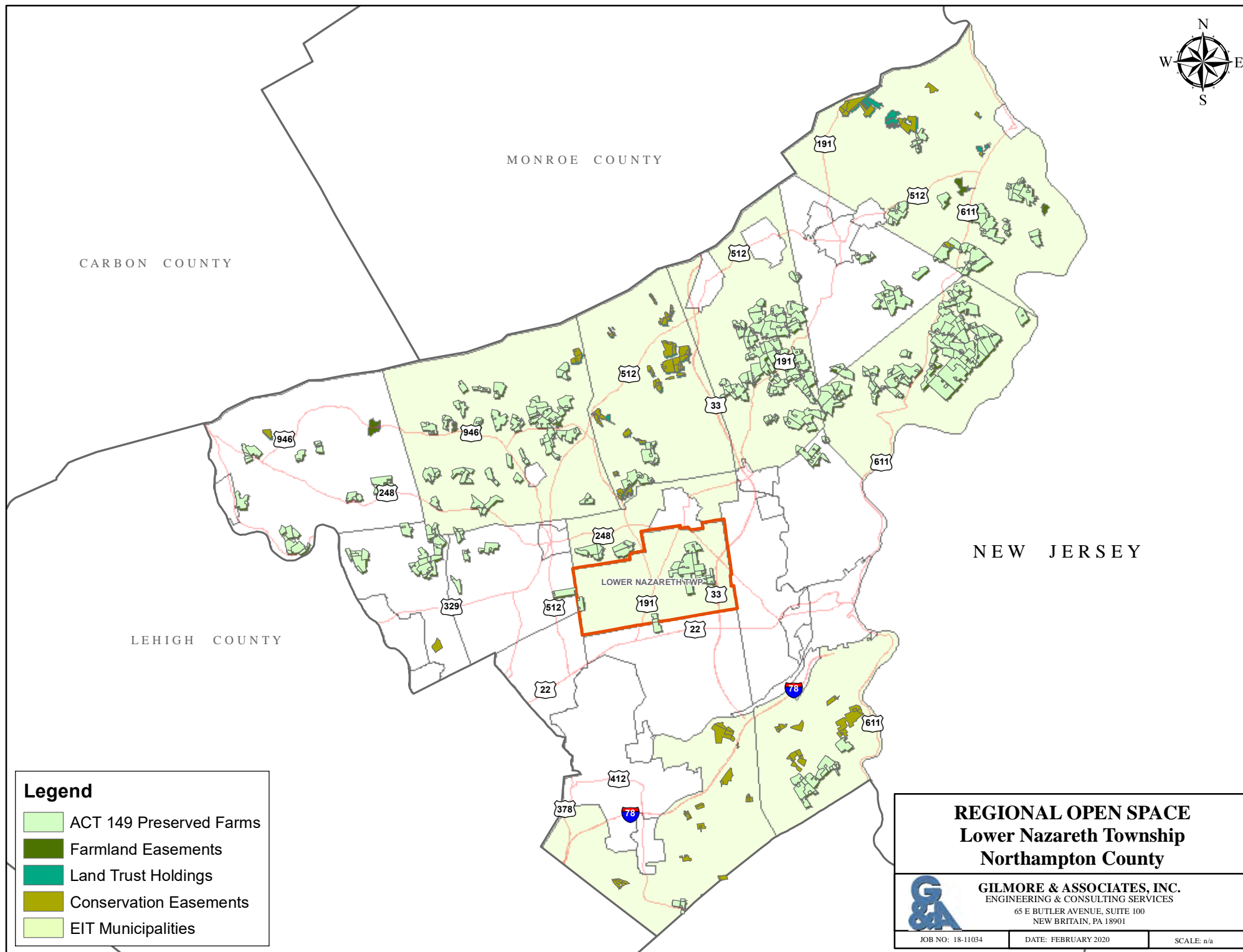
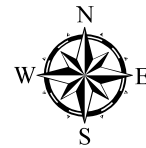
Legend

- Future Road Extensions
- Monocacy Creek Greenway Conservation Area (15' from Either Side of Creek and Tributaries as Shown)
- Proposed Recreation Path
- 100-Year Floodplain
- Private Recreation/Open Space
- Parks
- Existing Agricultural Security Area
- Lands to Be Acquired for Parks
- Lands Proposed for Development Rights Acquisition
- Preserved Farmland



GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

Map 9 - Regional Open Space Map



Legend

- ACT 149 Preserved Farms
- Farmland Easements
- Land Trust Holdings
- Conservation Easements
- EIT Municipalities

REGIONAL OPEN SPACE Lower Nazareth Township Northampton County



GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES
65 E BUTLER AVENUE, SUITE 100
NEW BRITAIN, PA 18901

JOB NO: 18-11034

DATE: FEBRUARY 2020

SCALE: n/a



RECREATION

Chapter 6: Recreation

Recreation is a term which broadly encompasses activities that people enjoy doing during their free time which have been recognized as socially acceptable and valued. Unlike leisure, which describes personally defined and valued free time activities, recreation activities serve both individual enjoyments and the common good.¹ Recreation can include team sports, individual competition, crafts, hobbies, bird watching, walking, bicycling, and much more. On both the personal and public levels, recreation provides significant health, wellness, and social benefits.

In particular, recreation involving physical activity has been recognized as critical for community health. According to the 2019 Community Health Needs Assessment Profile of Lehigh and Northampton Counties, 23% of adults (20 years and older), reported engaging in no physical activity or exercise.² Even among children, 18.5%, nationally, are considered to be obese.³ As the term recreation implies, enjoying the activity is critical and finding activities that participants both enjoy and that get them moving is imperative to reversing these statistics. Recreation activities without a physical component, like cards, crafting, and games, are also valuable for the social and mental wellness benefits that they have.

Lower Nazareth has already recognized the need in their community, among all age groups, for robust and diverse recreation programming. For local youth, a variety of sports leagues and day camp-style programming is currently offered within the Township. For older residents, the establishment of a senior center in the Township municipal building provides the space and resources to target recreation opportunities specifically for an aging population. With these improvements in mind, there is still an understanding that more can be offered and additional improvements can be made in the way of recreation programming for residents.

Existing Township Recreation Facilities

The Township is fortunate to have access to a variety of both public and private recreation facilities. These facilities provide opportunities for both active and passive recreation from playgrounds to playing fields to community gathering areas. Facilities located within the township are broken down into Township-owned public facilities, public facilities, and private facilities.

¹ Park and Recreation Professional's Handbook by Amy Hurd & Denise Anderson - <https://us.humankinetics.com/blogs/excerpt/definitions-of-leisure-play-and-recreation>

² Community Health Needs Assessment and Profile of Lehigh and Northampton Counties by The Lehigh Valley Health Network - <https://www.lvhn.org/community-health/community-health-needs-assessment-reports>

³ Walk/Roll LV Active Transportation Plan by The Lehigh Valley Planning Commission - <https://lvpc.org/walkrolllv.html>

Table 6.1. Recreation Facilities Owned by Lower Nazareth Township

Public Facility	Amenities	
Lower Nazareth Township Park	Football Fields (2)	Playground
	Baseball/Softball Fields (6)	Pavilion
	Tennis Courts (2)	Concession Stand
	Shuffle Board	Restrooms
	Bocci	Off Street Parking
Hahns Meadow Park	Monocacy Creek Access	Fishing
	Open Meadow	Off Street Parking
Surrey Glen Park	Monocacy Creek Access	Fishing
	Playing Fields	Off Street Parking
Georgetown Road Park	Monocacy Creek Access	Meadow Access
Newburg Park	Soccer Fields (2)	Skate Park
	Football Fields	Trails
	Playground	Dog Park
	Concession Stand	Restrooms
	Baseball Fields	Off Street Parking
	Basketball Courts	
Township Municipal Building & Senior Center	Gathering Spaces	Restrooms
	Kitchen	

Township-owned public facilities provide the backbone for the Township recreation system. From a programming standpoint, Lower Nazareth Township Park and Newburg Park offer the majority of the facilities required for athletics and events. One recent addition to the Township's facility offerings is the Senior Center. The senior center was developed in partnership with Northampton County by rehabilitating the existing Township municipal building located within Lower Nazareth Township Park. Currently the senior center provides a gathering space for the programs and events put on by the Lower Nazareth Adult Activities Association. Lower Nazareth Township Park also hosts events such as Halloween Movies in the Park, and the Fall Festival.

Table 6.2. Public Recreation Facilities (Not Township-Owned)

Public Facility	Facilities & Amenities	
Louise W. Moore County Park	Internal Trails	Volleyball Courts
	Restroom Facilities	Badminton Court
	Playground	Pavilion/Community Garden
	Baseball/Softball	Tennis Courts
Lower Nazareth Elementary School	Playground	Basketball Court
	Soccer Field	Multiuse Field Space

Township residents benefit from access to two additional public recreation facilities (that are not owned by the Township). Louise W. Moore County park provides a wealth of facility resources and program opportunities. The park offers four pavilions, which are available to rent for both public and private events. The Tennis courts are also available to rent for individual play and tournaments alike. Special events, like Kite Day in the Park, Nature Conservancy sponsored day camps, family snowshoe programs, and portions of the Northampton County Conservation District's Envirothon have all been held at Louise W. Moore Park throughout the years. Lower Nazareth Elementary school also offers the use of playgrounds, athletic fields, and basketball courts to the public during certain times of the year, week, or day. Much like Louise W. Moore Park, priority use and programming of the elementary school recreation facilities will not always be available to Township residents. However, their presence and availability still serve a portion of the Township's recreation needs.

Table 6.3. Private Recreation in Lower Nazareth Township

Private	Facilities & Amenities	
Northwood Racquet & Fitness Club	Tennis Courts	Event Room
	Volleyball Courts	Kitchen
	Racquetball/Wallyball Courts	Locker Rooms
	Fitness Center	Restrooms
	Lounge Areas	Off Street Parking
Dutch Springs	Aqua Park	Picnic/Pavilion Areas
	Aerial Park	Restrooms
	Camping	Off Street Parking
Lower Nazareth Rod & Gun Club	Pavilion	Restrooms
	Monocacy Creek Access	Off Street Parking

Private recreational resources in the Township include an active recreation park, members-only racquet facilities, and the Rod & Gun Club. These facilities satisfy some township recreation needs, but are restricted, often require fees or memberships and are not continuously available to residents during standard park and recreation hours.

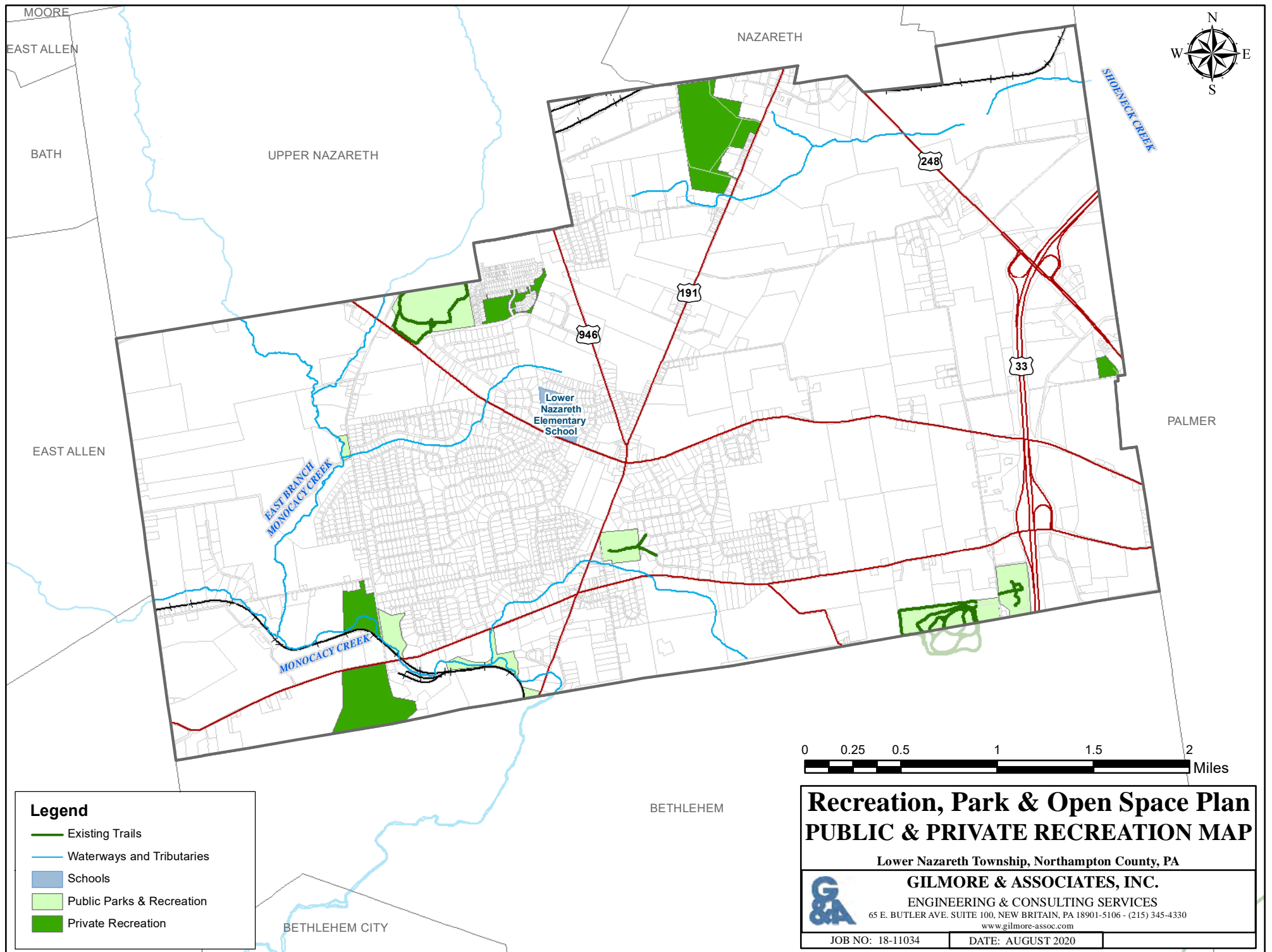


Dutch Springs- Water Park



Northwood Racquet & Fitness

Map 10 - Public & Private Recreation
Map



Area Recreation and Cultural Facilities

The Memorial Library of Nazareth & Vicinity

The Memorial Library of Nazareth & Vicinity offers many valuable opportunities for residents. The library provides traditional services like borrowing books, videos, and eBooks, in addition to public computer access, meeting room rentals, access to online research databases, test proctoring, and guided tours of their historic building. Furthermore, the library puts on a wide variety of programs and activities such as the summer reading program, free tax preparation services from AARP, educational workshops, adult and children's cooking classes, a teen advisory board, a summer coding club, art programs, and photography classes. The library also offers various special events such as a stuffed animal sleepover, a ladies' night out for mindfulness, a pride month celebration, DIY terrarium classes for adults, a special evening with John Adams, and the Nazareth Day Celebration.

The Northampton County Senior Center

The Northampton County Senior Center offers a wide range of activities/programs for their clients. Any residents 60+ years of age can become a client by completing and submitting the required Intake Form which is available at the Center. Several Health & Wellness Programs, such as Walk with Ease, and Arthritis Exercise Program are offered as well as programs such as Chronic Disease Self-Management Programs, Diabetes Self-Management Program, Healthy Steps for Older Adults and Healthy Steps in Motion. The Center also offers the opportunity for clients to have a congregate meal at lunchtime Monday through Friday. Detailed information regarding menus, programs, and events are available on the Northampton County Area Agency on Aging website.

Neighboring Municipality Park & Recreation Facilities

See Appendix 6.A for a list of neighboring park and recreation facilities.

Existing Recreation Associations, Programs, and Events

Recreation programming and events within Lower Nazareth are generally put on by a local association or the Township itself. Athletic associations currently dominate programming offerings. Several active recreation sports associations operate within the Township and many of them compete for use of Lower Nazareth Township Park. The Township also offers some non-athletic recreation programming, primarily for children and senior residents. A handful of special recreation events are also offered by the Township and local associations throughout the year.

General Recreation Associations & Programs

1. Lower Nazareth Adult Activities Association
 - a. Utilizes the Township Municipal Building/Senior Center
 - b. Meetings focus on card games and socializing
 - c. Meeting specifically for playing bridge and lessons
2. Summer Park Program
 - a. Summer ½ day program for 5-12-year olds
 - b. Run by the Township staff and hired summer staff
 - c. Utilizes Lower Nazareth Township Park

- d. The program features special events and presentations brought to the park

Sports Associations & Programs

1. Lower Nazareth Township Recreation Association
 - a. This organization functions as a subsidiary of the Township
 - b. Offers baseball/softball, basketball, football, field hockey, lacrosse, and soccer
2. Lower Nazareth Baseball
 - a. Tee-Ball & Coach Pitch Divisions
 - b. Farm Division
 - c. Minors & Majors Divisions
3. Lower Nazareth Softball
 - a. Tee-Ball & Coach Pitch Divisions
 - b. Girl Pitch Division
 - c. Minors & Majors Divisions
 - d. Juniors & Seniors Divisions
4. Lower Nazareth Baseball
 - a. Tee-Ball & Coach Pitch Divisions
 - b. Farm Division
 - c. Minors & Majors Divisions
5. Lower Nazareth Softball
 - a. Tee-Ball & Coach Pitch Divisions
 - b. Girl Pitch Division
 - c. Minors & Majors Divisions
 - d. Juniors & Seniors Divisions
6. Nazareth Little Blue Eagles Football
 - a. Jr. Little Blue Eagles Division
 - b. Flag Football Division
 - c. Jr. Pee Wees & Pee Wees Divisions
 - d. Jr. Varsity & Varsity Teams
7. Nazareth Little Blue Eagles Cheerleading
 - a. Ages 5-7 & Ages 8-13
8. Blue Eagles Basketball (serves the greater Nazareth area)
 - a. Instructional Division
 - b. In-House and Competitive Divisions
9. Nazareth Soccer Association (serves the greater Nazareth area)
 - a. U4 – U18 Teams offered
 - b. Micro Program for U4-U8
 - c. Classic Program (U9+) (Competitive Program)
10. Nazareth Clippers Lacrosse (serves the greater Nazareth area)
 - a. Boys: PreK-K, 1st-2nd, 3^{rs}-4th, and 5th-6th grade teams
 - b. Girls: K-2nd, 3rd-4th, 5th-6th, 7-8th grade teams



Existing Township Recreation Partnerships & Collaborative Efforts

1. Sports Leagues – Local and neighboring sports leagues are currently the strongest recreation partnerships that the Township has. They provide some of the most consistent recreation programming and have long established connections to many of the recreation facilities in the township. Long-term maintenance of these partnerships and particularly ongoing communication with league representatives will need to be continually prioritized.
2. Area Agency on Aging – Northampton County’s Area Agency on Aging has been a major partner and influence on both the development of the Township’s senior center and the day to day programming that it offers. This partnership allows the senior center to offer programming like bingo, games, arthritis exercise classes, knitting & crochet, crafts, sing-alongs, pinochle, various art classes, and nurse’s visits.
3. Northampton County – The county has served as a very important partner in achieving the Township’s recreation goals, particularly in the last couple years as many improvements were made to existing recreation facilities. The county was an instrumental partner in the rehabilitation of the existing municipal building to be used as a senior center. The Township has also worked with the county to secure grant funding to improve parks such as Surrey Glen, that could significantly increase their program offerings with facility improvements.
4. The Lion’s Club – The Lion’s club works in partnership with the Township’s Adult Activities Association to ensure that nearly all programming offered by the association is free for residents. This funding and partnership is crucial to ensuring that the Township’s aging population has access to affordable recreation activities.

Current Trends in Recreation

Lower Nazareth Township will benefit from regular review of the current national and statewide trends in recreation. The most current trends in recreation tend to get compiled by the National Recreation and Park Association and additionally shared by Pennsylvania Park and Recreation experts.

EMERGING TECHNOLOGY

Advancements in the world of technology are drastically changing the way recreation providers and users function in parks today.

For providers, improvements that make mass production and lower costs possible are changing the way they can monitor user trends, provide surveillance, and manage aspects like invasive species.

For users, web applications are helping to raise awareness of available recreation programs and can support activities that utilize GPS location, including interactive games, wayfinding, and educational information.



Photo Source: Web

ENVIRONMENTAL EMERSION

In recent years, multiple studies have recognized the astounding physical and psychological benefits the natural environment can have on individuals. From this the world has embraced a range of activities and park layouts designed to immerse park users in nature, with buffers from the visual and audible distractions of everyday life.



Longwood Gardens Nature Viewing Station

Developing Stewardship- connecting younger generations with nature, while always present, has been an area of growing importance as we develop and alter our landscapes. Connections through programming, natural play areas and trails, and educational help to foster an understanding and care for the natural world in our youth.

DEVELOPING AN EXPERIENCE

Parks and recreation are no longer as simple as a ball field and picnic table. Today these spaces are an *experience* that draw people in as a destination. Community parks, nature preserves, and sports complexes are now designed around a cohesive theme that is felt through signage, imagery, and branding that tie into the natural landscape.

For example, parks located in an area of natural beauty can build off of these features with natural play areas, trails, and wild life viewing stations.



Natural Playscape

HEALTH & SAFETY

In an age where diabetes and obesity are widespread, our health has become a nationwide concern. Recreation activities as simple as walking have a huge positive impact on improving our health and reducing risk of disease. Facilities and programs designed to improve our health and boost awareness of healthy practices are a growing trend with multiple funding opportunities at the local, state, and federal levels.

Safety in our parks and on our trails is a top priority in all aspects. Ample lighting, accessible walkways, and pedestrian protection along busy roads are more evident in our communities today. Equally evident are safety measures such as park hours, emergency call boxes, and design techniques to increase visibility and reduce activities like opioid abuse, increasingly seen in parks.



Emergency Call Box

FAMILY

Recreation trends are realizing that as families grow and individual interests emerge it's important to provide recreation for the whole family that combines active and passive recreation areas. New designs allow family members to participate in sport activities while siblings play in varying adjacent recreation areas, and parents can easily be involved in both. And, activities like camping, backpacking, and scavenger hunts capture the interest of families with teens.



Man's Best Friend- providing a place for residents to walk their four-legged family friend is a growing priority, and dog parks are one of the fastest growing park types in the US. Dog friendly parks, trails, and community areas should be considered when upgrading any park facility.

AGE & DIVERSITY

Traditionally age has been one of the largest dividers in the world of recreation, but that's a concept of the past with the emergence of countless new activities that include ages from 8 to 80. Inclusive games strengthen our multi-generational communities and help reduce isolation among older populations. Popular activities include pickleball, frisbee golf, nature viewing, and trails.



Park and recreation trends are also adjusting to implement inclusive policies for LGBTQ residents, including staff training, non-gender specific changes on forms, signage adjustments on existing restrooms, and neutral facilities in new restroom designs.

YOUNGER GENERATIONS

Park and recreation activities have grown beyond the playground and sports fields for kids today and include a range of active and passive recreation for individual and multiple players.

Activities like camps, educational sessions, esports, and crosses between technology, social media, and recreation, like geocaching and Pokémon GO are on the rise. There are also multiple new group games, some of which work on existing sports fields, and others that require facilities of their own. Examples include pickleball, gaga ball, and frisbee golf.



MORE THAN JUST A PARK

While in many situations' parks are pursuing simplicity and their roots of getting people out and active, they are also beginning to play a larger role in communities' quality of life and wellness.

Often a community gathering place, parks and recreation are often involved with food and nutrition assistance, afterschool care, dealing with the drug crisis, and even homelessness. Exploring how these services can be improved through partnerships and community involvement is a growing trend in the public recreation sector and should be considered when preparing recreation programming.

Recreation Analysis & Opportunities

Analysis of Park Facilities

The township recently made two significant steps in improving and expanding their recreation facilities. Once construction on Newburg park is complete, the Township will have drastically increased their capacity to accommodate athletics programming, particularly for soccer, baseball, and football. As outlined below in the programming analysis section, local soccer, lacrosse, and football and cheerleading leagues expressed concerns about local field availability. In the past only one field, located in Lower Nazareth Township park, had been available. The completion of Newburg park will also provide numerous opportunities for new and additional programming such as dog-centric events with the dog park, large gatherings at the pavilion, and opportunities for tournaments utilizing the infrastructure provided by the concession stand and restrooms. Finally, the potential for a future amphitheater in the park provides an excellent opportunity for future special events and programming, particularly for concerts and outdoor presentations. The other major facility improvement that the Township completed recently was the rehabilitation of the existing municipal building into a senior center. With this addition, the Township has provided their growing population of senior residents with the infrastructure for much needed programming and events, close to home.

The Memorial Library of Nazareth and vicinity is not within the Township itself, but it serves the greater Nazareth area and is an important source of cultural and educational programming and events for all ages.

The Township also owns and maintains several passive open space parks such as Georgetown Road and Hahns Meadow. These parks are beneficial to residents for the open space they provide, however they are not currently used for any significant recreation programming. There is great potential to provide environmental education programming at these parks, if facility improvements such as parking access and portable restrooms were provided.

Analysis of Park and Recreation Land Based on Population

The Pennsylvania Municipalities Planning Code provides the opportunity for municipalities to require the dedication of Park and Recreation land (or a Fee-in-lieu of dedication) from developers as part of the subdivision and land development process. This is an important strategy for the Township to utilize in order to provide enough park and recreation facilities to meet resident's needs. In order to determine the amount of land required to meet park and recreation needs, per dwelling unit, the following methodology should be considered. Assumptions for this method include the total amount of park land the municipality intends to provide. Step one is to determine the types of parks that are wanted/needed. National Recreation and Park Association Standards for park types are as follows⁴:

⁴ National Recreation and Parks Association. *Recreation, Park, and Open Space Standards and Guidelines*. 1985

Table 6.4. Recommended Recreation Land Based on Population

Park Type	Acres/1,000 Population	Service Area
Community Park	8 acres	2-mile radius
Neighborhood Park	2 acres	½ mile radius
Tot Lot	½ acre	¼ mile radius
Linear Park	1 acre	Community wide
Open Space	1 acre	Community wide

Based on the NRPA data, 12.5 acres of park and recreation land is recommended per 1,000 people. If we assume the Township intends to provide for park and recreation land at a rate of 12.5 acres per 1,000 residents, with an average household size of 2.81 persons per household, the calculation would yield 0.044 acres of parkland per household. However, because the calculation does not account for required infrastructure, improvements, and recreation equipment, additional research by the Pennsylvania Land Trust Association recommends doubling the above calculation to derive a public dedication standard that would more effectively meet anticipated demands.⁵ Therefore, it is recommended that the Township require developers to dedicate .088 acres of park and recreation land per dwelling unit, or an appropriate fee in-lieu of dedication. Funds could be used for either acquisition of additional land or improvements to existing facilities to meet the recreational needs of the current and future Township residents.

Lower Nazareth Township currently has ordinances in place requiring dedication of land for recreation and open space and establishing fees in lieu of dedication. It is recommended that these fees be reviewed to determine if they are sufficient. The Township should consider recalculating the fee so that it would be equal to the average fair market value of the land otherwise required to have been dedicated. The fee in lieu of dedication for each proposed dwelling unit would then be the value of 0.088 acres of land. The fee could then be established by the Board of Supervisors by Resolution as part of the Township fee schedule, which could be amended over time.

Recent and Pending Improvements

In recent years, the Township has been very successful in obtaining funding for recreation facility improvements through grants. The following are recently awarded or submitted and pending grants for parks and recreation facility improvements:

- Initial Infrastructure, Parking Lot, and Field Installation at Newburg Park - Northampton County Livable Landscape Grant (Awarded)

⁵Pennsylvania Land Trust Association. *Public Dedication of Land and Fees-in-Lieu for Parks and Recreation*. Last updated July 29, 2015.

- Walking Trail & Playground at Newburg Park – PA DCED Greenways, Trails, and Recreation Program (Awarded)
- Playground at Newburg Park – Northampton County Community Development Block Grant (Awarded)
- Playground at Newburg Park – Northampton County Community Investment Partnership Program (Awarded)
- Bathroom at Newburg Park – PA DCED Greenways, Trails, and Recreation (Awarded)
- Bathroom at Newburg Park - Northampton County Community Development Block Grant (Awarded)
- Walking Trail and Bathroom at Newburg Park – Northampton County Livable Landscapes Grant (Awarded)
- Surrey Glen Park Improvements – Northampton County Livable Landscapes Grant (Awarded)
- Surrey Glen Park Improvements – Northampton County Community Development Block Grants (Pending)
- Senior Center Parking Lot Re-Paving – PA DCED Greenways, Trails, and Recreation Program (GRTP) Grant (Pending)

The Township should continue to seek out and apply for grant funding for facility improvements. Considering the Township's relatively small size and budget, grants of all sizes are a great way to ensure funding for improvements to meet the needs of current and future residents.

See Appendix 6.B for a full list of current Township grants.

Existing Programming & Events Analysis

Currently, the majority of the Township recreation opportunities are self-directed. In many parks, the facilities have already been provided to allow users to pursue walking, fitness, athletics, outdoor activities, and socialization at their own time and pace, free of charge. This also reduces pressure on the already busy Township staff and their partners to provide programming and events. However, organized events and programming matter in the long run for keeping residents engaged and invested in their health, their local parks, and their communities. Currently, the Township and partnering associations offer a handful of special events, some children's and senior events, and a wide variety of sports leagues.

1. Summer Park Program

The Summer Park Program is one strong example of successful and well-loved Township recreation programming. The Summer Park Program is a six-week program from mid-June to the end of July for children ages five through 12 years. The program usually runs Monday through Friday 9:00 A.M. to 12 noon at Lower Nazareth Township Park. Fees are tiered for both residents and non-residents of Lower Nazareth Township. The program is limited to a maximum of 150 children per week. The Township revised the program successfully in 2019 to enable participants to register on a weekly basis rather than for the entire six-week program. As a result, registration significantly increased, with about 100 participants each week. The

program usually ends in July due to the vacation schedules of families resulting in low registration and the limited availability of recreation leaders who return to college in early August. In order for programs like this to continue to succeed the Township must continue to evaluate them yearly and make revisions. For example, given the program's popularity and the deficit that it currently operates with, it may be worth it to consider a gradual increase in registration prices moving forward. Leveraging successful programs like this one to raise money could free up more funding for additional programming in the future.

2. Special Events

The Township offers a handful of special events throughout the year. Outdoor movies in the Township Park creates opportunities for families to enjoy the park, spend time together, and socialize with their neighbors. The Township Fall Festival, held in the Township Park, and The Polar Express Experience, held in the municipal building, are examples of other Township run events that bring the community together. These events have been very popular with residents in the past and should be prioritized as annual events moving forward. Residents have expressed a desire to have more special events. Whether it involves partnerships with outside organizations, volunteer labor, or a small fee from participants, the Township should continue to get creative while offering unique events for residents.

3. Sports Leagues

Sports leagues often dominate the conversation when it comes to recreation programming. While athletics should never be the only programming focus, the growth in these programs cannot be ignored and the maintenance of these programs and the partnerships with the associations that run them must be maintained.

- a. Blue Eagles Basketball (BEB) – Blue Eagles Baseball recently tallied tremendous growth in all age groups for boy's & girl's with over 600 players from several local municipalities in 2019, including Lower Nazareth Township. Given the level of participation and growth in the league, the association's main challenges are securing enough gym time and recruiting volunteers for league operations.
- b. Lower Nazareth Baseball and Softball - In 2010, 500+ participants were in the league. In 2019, there were fewer than 250. The League has spent capital funds on purchasing an infield maintenance machine and installing batting cages. The League also got a grant to help run the Challenger League. League representatives stressed that they would prefer improvements and increased maintenance for existing facilities over constructing new facilities. Given current trends, the league would also like to see a partnership between all baseball/softball leagues in the area, the school district, and ideally a future township board or committee handling parks and recreation.
- c. Nazareth Soccer Association - Since 2016 the league has grown in participation by 12 percent from 1,131 participants to 1,262 in 2019, with about 20 percent of participants being Lower Nazareth Township residents. The organization has year-round play with two primary seasons of spring and fall. Over six hundred children participate (from all participating municipalities) in each season. The league does not currently utilize any fields within Lower Nazareth Township. The league has access to free community fields in Bushkill, Upper Nazareth Township and Nazareth Borough. They also have access to local school and church fields for small fees. Two additional fields within the

Township would assist the league in allowing other fields to rest regularly in order to keep them in safe playing condition for soccer athletes.

- d. Nazareth Clippers Lacrosse – The local lacrosse leagues has divisions for boys and for girls. 88 boys configured in seven teams were registered for the 2020 season, up from 77 in 2019. Meanwhile, the girl’s division has spring and fall seasons with a total of 73 participants between kindergarten and eighth grade. the club is a feeder organization for the newly formed middle school program in the Nazareth Area School District. They typically use fields in other townships and the football field in Lower Nazareth’s Municipal Park when it is available and the football league is not using it. Local schools have been supportive with field time as much as possible, but must prioritize their fields for use by school teams first. The girl’s division requested field use of the new fields and Newburg park and were offered Georgetown and Surrey Glen, which do not currently have adequate support infrastructure like parking and restrooms. League representatives stressed that if more fields were available, they would be able to grow their participating numbers. Currently, several different field sizes are needed to accommodate various age groups. A regulation size field that can be divided up for younger age groups could also help the league. They also reiterated that they could share and make good use of facilities that would accommodate up to 250 people for soccer training programs.
 - e. Nazareth Little Blue Eagles Cheerleading & Football – participation in 2019 was down to about 90 children participating in both the football and cheerleading programs offered by the Nazareth Little Blue Eagles. Overall, the league expressed gratitude to the Township and Township manager for providing excellent maintenance, support, and one of the best fields on the football circuit. Both Little Blue Eagles programs use the Township Municipal Park’s rectangular field as their primary practice and play area. This field is currently sufficient, but it is expected that with the growth of local lacrosse and soccer leagues, the Little Blue Eagles will be facing a lot of competition for use of this field.
4. Marketing and Promotion of Recreation Programming
- Lower Nazareth Township is an important source of information about parks and recreation opportunities for the residents via the Township’s newsletter, website, and Facebook page. The newsletter features a “Recreation Corner” that features recreation facilities, programs, and contacts for other community recreation providers such as the sports leagues. The Township website provides information about parks and recreation facilities, programs and activities, and meetings and contacts related to public recreation including those under the auspices of community-based organizations. The Facebook page has information about recreation programs in the Township as well as in other municipality’s in the area. Followed by 1,228 people, the Facebook page is an important forum for promoting parks and recreation, answering questions, and getting a sense of current public sentiment. The Township Manager leverages effective working relationships with stakeholders to increase public awareness about community parks and recreation.

Existing Partnerships Analysis

The ability to create and leverage partnerships with local associations, non-profits, neighboring municipalities, and even businesses is crucial to any successful recreation program. Particularly for a Township like Lower Nazareth with a small staff and limited resources, successful partnerships must be prioritized for the future success of Township recreation.

In the past, the Township has benefited from the leverage and support of a Parks and Recreation Board. While it has since been disbanded, assigning similar responsibility to the EAC or another Township Board or Commission could be a good way to ensure that these responsibilities are covered.

The County's Area Agency on Aging and the local Lion's Club have been consistent and valuable partners in both developing the Township senior center and offering varied and enriching senior programming. These partnerships allow the Township to offer quality and affordable programming to their growing senior population and should be maintained and prioritized moving forward. Similarly, the Lehigh Valley Health Network has expressed an interest in partnering with the Township to offer health screenings and flu shots. The Township municipal building and senior center could be an ideal location for these programs and the senior population could be target participants. The township should explore this partnership and gauge the amount of user interest for potential participants.

Local sports associations and leagues are another example of successfully maintained partnerships for the Township. The sports partnerships are a win all around as fields and facilities can be maintained by the township while programming responsibility is diverted to their association partners. This allows the Township to maintain a variety of athletics offerings without adding additional pressure to Township staff. Continued support for these partnerships will be essential as participation in athletics continues to grow in the Township.

The Memorial Library of Nazareth and Vicinity is another valuable partner and source of arts, cultural, and educational programming for Township residents. Residents of all ages can benefit enormously from the Library's general services as well as classes and events. The library and the other municipalities and agencies that support it should be considered partners in recreation throughout the Nazareth area.

The County's Louise W. Moore County park provides a valuable recreation facility, close to home for residents that does not require Township resources and maintenance. From a programming standpoint however, there could be untapped potential beyond individual facility use, that could be gained from establishing a partnership with the county to offer joint events. Considering all of the facilities currently available in Louise W. Moore park, a partnership with the county could be a cost-effective way for the Township to offer larger and broader types of events for residents while they save and plan for future improvements to their own recreation facilities.

In the past, working sessions have allowed Lower Nazareth Township, Upper Nazareth Township, and Bushkill Township to express a strong interest in collaborating on parks and recreation efforts. While nothing has been done on an official level, the potential for this partnership could offer numerous opportunities including discounted or eliminated fees to use neighboring parks, access to additional facilities, and access to new and different programming and events. All three townships are

under 10,000 in population but combined are at 21,332, which is a well-sized population for creating a parks and recreation system. The Townships could elect to explore the potential to collaborate in specific areas that they would like to work together on, like recreation programs, while potentially remaining autonomous in things like facility ownership. The Township already participates in the Colonial Regional Police Department and thus has some experience working via intergovernmental cooperation.

Recommendations

Facilities

- Leverage the Public Works Department's support and establish a specific Park Maintenance division within Public Works to maintain and protect the Township's investments in recreation facilities.
 - Establish a specific line of communication between Public Works and local sports leagues to ensure that maintenance issues are reported and resolved in a timely fashion.
- Consider prioritizing facility and infrastructure improvements to the Township's passive and open space parks in order to expand outdoor recreation and environmental education opportunities in the Township.
- Consider negotiating with surrounding municipalities that have community centers and other facilities that the Township does not have, to establish lower rates for Lower Nazareth Residents to use their facilities.
- Develop a policy and fee schedule to charge for field and facility use in parks.
 - Consider using an incremental approach to establishing fees that notifies organizations at least a year in advance of when fees will be implemented so that they have time to save and prepare.
- Consider amending the Township's existing Subdivision and Land Development (SALDO) ordinance to include the requirements for dedication of and fee-in-lieu of park and recreation land as outlined in the analysis section.

Programming

- Consider implementing a phased increase in registration prices for the Township's Summer Park Program.
- Consider adding additional special events throughout the year. Examples of special events to consider include the following:
 - Fitness Classes in Parks
 - Summer Concerts
 - Food Truck Festivals
- Periodically assess the opinions of Township residents to determine what they like and dislike about current township programming and what they would like to see more of in the future.

- Re-evaluate current recreation trends yearly or biannually, as provided by PRPS and other agencies, to determine what changes should be considered for the Township recreation program.

Partnerships

- Explore the possibility of establishing a multi-municipal partnership for a joint Parks and Recreation department in order to offer additional and more involved programs and facility access.
 - PA DCNR offers grant funds to assist communities in exploring inter-municipal parks and recreation. The \$10,000 Peer Study grant to be matched with \$1,000 split among the participating municipalities can be used to retain a park and recreation professional to facilitate discussions about this, provide examples, negotiate decisions regarding areas of agreement, funding formulas, budget, office location, and so on.
 - Should the participants agree that they would like to form some type of regional parks and recreation program or system, PA DCNR offers a four year grant to support a Circuit Rider. The Circuit Rider serves as the recreation professional managing the defined scope of services to be covered under the regional parks and recreation agreement. The four-year grant provides the salary for the Director in decreasing amounts from 100% to 75% to 50% to 25%. At least two municipalities must join together to be eligible for this program. The School District can also be partner. The municipalities participating pay for the salary balance, benefits, office space, equipment, seed money for materials and advertising, and whatever else is needed to support operations. By year five, the Director should have built up a successful financially sustainable parks and recreation operation. The financial support would then be derived from a mix of public and private resources including tax funds, grants, fees and charges, gifts, donations. Partnerships, sponsorships, bequests, and other means.
- Explore the options for how some of the responsibility and management for parks and recreation could be reassigned in order to bring together stakeholders in sports, trails, recreation programming, families, youth, seniors, special needs, and others to work together in achieving the vision the Township has for parks and recreation.
 - Consider reassigning some of the parks and recreation responsibility to the Township EAC or a subcommittee of the EAC focused on park and recreation or consider reestablishing a Parks and Recreation board in the Township
- Explore the option of regional recreation by holding a work session with Bushkill and Lower Nazareth Townships to explore pursuing a Peer Study for regional recreation. Consider inviting other municipalities in the School District as well. Consider inviting PA DCNR to come out to discuss this grant with the group. There are a number of multi-municipal parks and recreation organizations in Pennsylvania. While they rely on some level of municipal

support, they generally leverage every dollar they receive from the municipalities with several other dollars in non-tax funding. This becomes an investment not a cost for the municipalities. By sharing the cost of operations, they are paying much less than they would have to pay on their own while providing a higher level of service to their residents. Many of the duties now performed by the Township Manager and the management team could be absorbed by this position freeing up time for other duties by Township staff.

- Consider establishing a partnership with Lehigh Valley Health Network to offer health services and events at the Township Municipal Building and Senior Center, with a focus on health and wellness.
- Continually evaluate and consider adding new marketing strategies to the Township repertoire for promoting recreation programming and events. Consider using any of the following:
 - Email Blast for Parks and Recreation Information
 - Instagram
 - The local Patch Site
- Consider establishing closer communication between Sports associations and the Township to avoid conflict and ensure that both parties' needs are being met. Consider the following options to achieve this:
 - Involve sports association representatives in current and future Township parks and recreation planning and discussions.
 - Establish meetings between sports association representatives and the Township Boards and Commissions as facility improvements are considered to ensure that the needs of all parties are being met.

General

- Consider amending the current ordinances to require the dedication of 0.088 acres of park and recreation land per dwelling unit, or an appropriate fee in lieu of dedication, for subdivision/land development applications.
 - Consider reviewing the current ordinances regarding fee in lieu of park and recreation land dedication to determine if they are sufficient.
 - The Township should consider recalculating the fee so that it would be equal to the average fair market value of the land otherwise required to have been dedicated. The fee in lieu of dedication for each proposed dwelling unit would then be the value of 0.088 acres of land.
 - The fee could then be established by the Board of Supervisors by Resolution as part of the Township fee schedule, which could be amended over time.



MANAGEMENT AND FINANCING

Chapter 7: Management and Financing

Park and recreation professionals need a diverse set of skills and techniques to manage the complex systems in the ever-changing and demanding world of public parks and recreation. Successful operations are rooted in effective management. While it is important to do things right, it is even more important to do the right things.

Long term, about 75 percent of the cost of public parks and recreation is in maintenance and management. While the focus of park and recreation planning tends to be on land acquisition, facility planning, and development, the heart and soul of a parks and recreation department lies in management. Securing funding for capital improvement projects is comparatively easier than getting adequate funding and staff to manage the facilities, lands, and services.

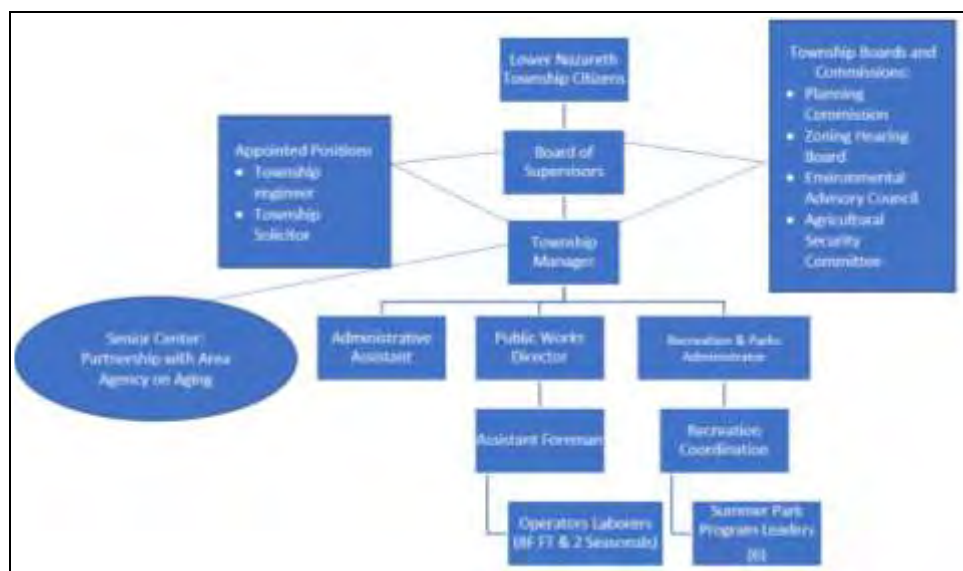
The purpose of the management and financing assessment is to work with Lower Nazareth Township in taking a fresh look at operations, revenues and expenditures. The assessment addresses organizational structure, volunteer advisory boards, staffing, employee development, public involvement, maintenance, information, and budget including revenues and expenditures.

Parks and Recreation Management

Lower Nazareth Township has empowered professionals working for the municipality to implement policy. This strategy to promote the day-to-day operations and planning by people trained and experienced in their professions, has produced a high caliber of innovation and collaborative management that has resulted in optimum public service with limited resources.

The Township does not currently have a designated parks and recreation department or a parks and recreation board. Instead, the Township has divided these functions among other departments and staff positions. The Township Manager has taken an active role that has been vital to the success of the parks and recreation system. The Township Manager has designated existing staff positions to carry out specified recreation functions such as sports league coordination, Summer Park Program Management, and customer service. The Township Manager and staff plan and carry out the special event programs such as the Halloween event and support events such as the Lions' Club's Egg Hunt. Additionally, the Public Works Director is responsible for routine park maintenance as well and park development and construction.

Figure 7.1: Township Organizational Structure



Since people and positions change over time, it is important to underscore the importance of a strong system of internal communication among the Township Manager and Public Works. The goal of effective communication is to ensure that everyone has the same vision and goals for what needs to be accomplished in parks and recreation.

Although the Township does not currently have a Park and Recreation Board, the Environmental Advisory Council has been filling some of the roles traditionally served by a Park and Recreation Board. The Environmental Advisory Council (EAC) advises the Board of Supervisors and the Planning Commission on matters dealing with protection, conservation, management, promotion and use of natural resources, located within the Township.

An option for the Township to consider is to officially delegate some of the responsibilities of a typical park and recreation board to the EAC, if the EAC is amenable. The essential duties may include, but are not limited to, the following:

- Make recommendations regarding a comprehensive system of recreation and park areas, facilities, and programs to meet the needs of the citizens.
- Review and make recommendations concerning the problems of parks and recreation facilities, programs, and improved recreation services.
- Make recommendations on rules, regulations, and practices regarding the use of facilities and the schedule of fees for programs and facility use.
- Provide to the Board of Supervisors an annual report on accomplishments, community parks and recreation needs, benefits of the parks and programs to the community, partnerships and budget.
- Maintain and update this Parks, Recreation, and Open Space Plan as a succinct, concise report with recommendations based upon changing needs and emerging opportunities, including an analysis of community recreation areas and facilities with particular reference to the extent and

adequacy of recreation opportunities offered and their effectiveness in terms of public expenditures involved and public needs to be met.

- Hold public meetings for citizen input.
- Review and make recommendations regarding proposed park and recreation facilities and all subdivision areas that contain parks and recreation areas. In addition to meeting the requirements of ordinances and the law, all land development plans should be reviewed in regards to parks and recreation facilities, fees-in-lieu of dedication, and trail linkages.

Another park and recreation management option the Township may consider is a cooperative, multi-municipal approach to park and recreation planning. The Township has previous experience with intergovernmental cooperation, i.e. participation with the Colonial Regional Police Department, and participation in the Nazareth Area Council of Governments. The municipalities of Lower Nazareth, Upper Nazareth, and Bushkill Townships (each with a population under 10,000) could collaborate on developing a regional parks and recreation system. A regional parks and recreation system would provide opportunities to share facilities, offer residents more recreation programs, and encourage coordination for special events.

Financing

Financing public parks and recreation services is a major challenge. The main areas to be considered in financing are capital improvements, operations, and maintenance. A capital improvement budget is used for improvements that cost more than \$10,000 and last more than five years. Such improvements include park and recreation facility development, purchase of major equipment such as trucks, or the rehabilitation of existing facilities. It could also include land acquisition. Many municipalities fund their capital improvement program through fees-in-lieu of dedication of parkland. Other ways to fund capital improvements include grants and gifts, fundraising, bond issues, partnerships, and loans. An operations budget supports the daily operation of parks and recreation. An operations budget is funded through taxes, user fees & charges, grants, gifts, donations, and sponsorships.

Municipal Revenue Sources

Lower Nazareth Township collects several municipal tax revenues: earned income tax rate of 1.45% for residents (0.5% Township share/0.25% Open Space Preservation / 0.7% Nazareth Area School District share) and 1% for non-residents; local services tax of \$52.00 per year; and a real estate tax of 4.15 mills. As per the Local Tax Enabling Act, other municipal revenue sources may include:

- Licenses and Permits: Revenues under this category are derived from cable television but also include revenues from permits for plumbing, zoning, alcoholic beverages, inspections, and occupancy permits.
- Fines and Forfeits: Fines from violations and accident reports.
- Interests and Rents: Property rentals such as meeting room rentals
- Grants and Gifts: The Township and the Borough pursue grant funding and donations for community endeavors.
- General Government Permits: Fees charged by the municipalities for regulatory actions regarding development, planning, and zoning hearings.
- Waste Collection: Fees for solid waste and trash collection.

- Public Safety: Charges for public safety include fees for inspections and accident reports to insurance companies.

School Districts

Pennsylvania's Local Tax Enabling Act empowers school districts to levy Special Purpose Taxes including a tax for Parks and Playgrounds at two mills (24 P.S. 20232 of the Act).

Operating Budget

Providing adequate financing and acquiring the resources to operate public parks and recreation services is a major challenge for municipalities. Lower Nazareth Township operates with a high degree of accountability, a deep sense of responsibility to the taxpayers, and a strong commitment to excellent public service. Most parks and recreation systems rely heavily on tax dollars to fund operations. However, the trend is moving towards a market-based economy in which the users pay for services or facilities from which they directly benefit.

The current 2020 budget has allocated \$51,500 to recreation. More than half of that amount goes toward the Summer Park Program wages and recreation safety insurance. A typically large portion of a recreation budget's expense, park personnel, is not a separate line item for Lower Nazareth Township because it is absorbed by the Public Works Department and other municipal departments. Table 7.1 provides a breakdown of the Township's parks and recreation budget between 2016 and 2020.

Table 7.1 Lower Nazareth Township Budget 2016 – 2020					
Line Item	2020 Budget	2019 Budget	2018 Actual	2017 Actual	2016 Actual
Revenues					
Summer Park Program	\$17,500	\$17,500	\$17,385	\$10,893	\$9,680
Business Donation	0	0	0	350	0
Field Use fees	500	2,500	330	3,360	3,580
Total	\$18,000	\$20,000	\$17,715	\$14,603	\$13,260
Expenditures					
Recreation					
Summer Park Program Wages	\$14,000	\$11,234	\$11,578	\$9,929	\$12,560
Summer Park Program Expenses	7,000	5,956	13,286	3,000	3,072
Recreation Safety Insurance	17,000	2,047	23,000	23,000	23,000
Total	38,000	19,237	47,864	35,929	38,632
Parks					
Park Personnel					9,312
Park Supplies	3,000	1,776	4,161	2,661	5,244
Fuel	3,500	1,342	3,446	1,884	1,853
Trash Removal	0	0	0	0	0
Park Facilities Maintenance	3,000	3,067	2,462	1,437	4,508
Contracted Services	4,000	1,750	2,084	1,930	1,960
Total	13,500	7,935	12,153	7,912	22,877
Total Parks and Recreation Expenditures					
Recreation	38,000	19,237	47,864	35,929	38,632
Parks	13,500	7,935	12,153	7,912	22,877
TOTAL EXPENDITURES	\$51,500	\$27,172	\$60,017	\$43,841	\$61,509

Capital Budget

A capital budget is for projects or purchases that cost more than \$10,000 and last more than five years. The 2020 budget does not show any Capital Construction or Capital Purchase allocation. The Township may benefit from exploring the development of a Capital Improvement Program (CIP). A CIP provides many benefits to the Township. It allows improvements to be scheduled efficiently and it encourages priority-setting and long-range financial planning by the Township.

Other Avenues of Support

While the budget presents important information about how the community supports parks and recreation, it is only part of the financial equation. The support for parks and recreation extends beyond the traditional budget allocation. Volunteerism has tremendous value. Getting people involved in civic associations, park friends' groups, trail groups, conservation organizations and sports leagues can alleviate some of the financial burden typically placed on a parks and recreation department.

Recommendations

Lower Nazareth's smaller population may place some limitations on the Township's staffing and financing ability. However, it also allows for creative solutions and cooperation among existing staff and between municipal boundaries.


Management

A separate park and recreation board may not be a feasible option for the Township in the immediate future. While this may be an option worth pursuing at a later time, the existing EAC could fill some of the roles normally undertaken by a park and recreation board. A clear outline of what the designated tasks to be performed by the EAC should be established and adopted by the group. A secondary option could be the collaboration with adjacent municipalities to form a regional park and recreation committee.

Financing

Recommendations for addressing the financing needs for parks and recreation facilities and programs may include, but are not limited to:

- Reevaluating and implementing user fees.
- Adopting a capital improvement program.
- Encouraging volunteerism.



PUBLIC PARTICIPATION PROCESS

Ed McCash

Chapter 8: Public Participation

Public Participation Process

Obtaining the input of those who reside in Lower Nazareth Township was a primary objective of this Plan. The public participation process has proven to be invaluable in understanding the priorities and preferences of residents, user groups, and other interested parties. This planning project included an integral four-pronged public participation process that included a steering committee, focus groups and key person interviews, a community survey and a number of public meetings.

Steering Committee

The purpose of the Steering Committee is to provide a wide range of community perspective, and to represent the interests of Lower Nazareth Township community members and parks and recreation facility and program users. The Steering Committee worked in an advisory capacity throughout the planning process. Their role was to contribute guidance, voice ideas and concerns, challenge thinking, provide feedback, review the plan at various stages of completion, participate in public discussions about the plan, and identify community contacts to include in the process.

Committee members included township staff, supervisors, public works employees, and representatives from the county. Each person within the steering committee brought multiple areas of experience and expertise to the table. The Steering Committee met approximately four times throughout the planning process.

Focus Groups and Key Person Interviews

The Steering Committee identified relevant community stakeholders that were approached to provide opinions on the status of parks, recreation, and open space within the Township. These stakeholders were approached in two ways – focus group meetings and individual interviews.

Focus group meetings were held with the Monocacy Creek Watershed Alliance, the Northampton County Conservation District, Wildlands Conservancy, the Lower Nazareth Environmental Advisory Council, representatives from the Lower Nazareth summer camp program, Nazareth Little Blue Eagles, Lower Nazareth Baseball and Softball league, and the Township Public Works Department.

In addition to the focus group meetings, an interview form was prepared and distributed to identified stakeholders (*refer to Appendix 8.A – Lower Nazareth Township Recreation, Park & Open Space Plan Stakeholder Interview*). Questions that were asked on the form included:

- What facilities are used by the stakeholder, and how often?
- The stakeholder's level of satisfaction with the facilities
- Preferred recreational activities
- Personal impressions/opinions of existing facilities and/or resources
- What elements need improvement?
- What elements should be preserved or maintained?
- What types of facilities and amenities are needed?
- What are the opportunities?

- What are the challenges?

Forms were distributed to the following organizations:

- Township Supervisors
- Members of the Planning Commission and the Zoning Hearing Board
- Public Works Department staff

Findings from the focus group meetings and key person interviews include the following (*refer to Appendix 8.B for more detailed interview findings*):

Conservation and Preservation organization representatives

- Create conservation priorities along the Monocacy
- Farmland preservation priorities east of 191
- Combine preservation, environmental restoration, and stormwater management
- Utilize non-profit groups as partners and funders for the conservation priorities

Neighboring Municipalities

- Interest in multi-municipal parks and recreation organization
- Top issues - manage organized sports and facility maintenance
- Lower Nazareth, Upper Nazareth, and Bushkill want more programming

Lower Nazareth Summer Camp

- Playgrounds need to include designs for older kids containing challenging features
- Incorporate nature into the parks
- Safe places to walk and bike
- Improve maintenance
- Need more parks that are bigger in size
- Mix of active and passive recreation

Lower Nazareth Baseball and Softball Leagues

- Improve and maintain existing facilities rather than build new facilities
- A new community recreation center should be the first priority among parks and recreation facilities. Many neighboring townships have one and Lower Nazareth does not.
- The league currently has to rent facilities for training in other communities. With league trends as they are, all leagues in the School District should work together with the District.
- Establish a township board to provide a forum for regular communication and discussion about parks and recreation.
- Volunteerism is a concern with fewer than 25 of the 150 families volunteering for two hours of work in the concession stand.
- Concern that routine park maintenance can suffer from demands on staff time to undertake capital improvement projects.
- Consideration could be given to some type of partnership with the Challenger League organization in Palmer Township where there is an official Miracle League facility.

Nazareth Little Blue Eagles

- The League was very complementary on park maintenance and expressed gratitude to the Township and the Township Manager for their support in providing one of the nicest fields among all the fields on the football circuit during the playing season.

Blue Eagles Basketball

- Given the level of participation and growth in the league, they face a challenge in securing enough gym time and recruiting volunteers for league operations.

Nazareth Soccer Association

- Need for additional fields to allow the rest of playing fields regularly to keep them safe and in good condition for young athletes.

Nazareth Clippers Lacrosse

- Home games on the Middle School's turf field are challenging as they are competing with the Middle School Lacrosse program for field space. The Girls Division has requested field use in the new park under construction. The Township offered Georgetown Park and Surrey Glen Park but neither site has adequate parking or restrooms. All sports groups have fields except for the lacrosse league. If more fields were available, they would grow.
- Different size fields are needed to accommodate different age groups with a fall back usage of a regulation size field divided up for the younger age groups.
- The lacrosse organization could also use a venue to accommodate up to 250 people for soccer training programs. The Nazareth Area School District has been very accommodating as much as they can within the policy that school programs get first preference on the use of sports fields.

Community Survey



Summer Camp interactive activity



Public Meeting #1 – Halloween Movies in the Park

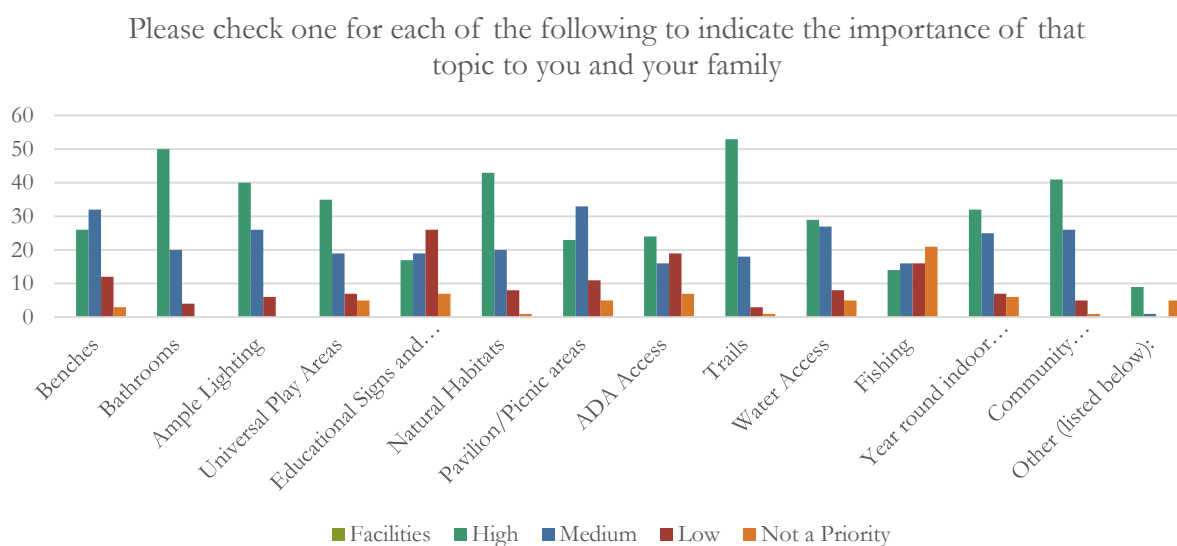


Lower Nazareth Recreation, Park, and Open Space Master Plan Public Meeting #2

Another method utilized to garner public involvement in the planning process for this Plan was a community survey. Paper surveys were made available at public meetings, and an online survey was shared with residents via the Township website. It should be noted only 87 survey responses were received. This amounts to approximately 1.88% of the adult population (persons 18 years and over). While this may seem like a very small percentage of the Township population, it does not mean that the results of the survey data collected is irrelevant. A survey can still give valuable answers without having a sample size that represents the general population. Resident feedback is one type of survey that does so, regardless of whether or not you have a statistically significant sample size. Obtaining resident's input gives valuable perspectives on how the Township can improve.

Surveys showed that 60% of respondents are Somewhat Satisfied with Lower Nazareth's existing park and open space facilities. The top three preferred activities include walking, bicycling, and using playground facilities. Other highly ranked activities include nature viewing, hiking, jogging, and fishing. Improvements needed to existing park and open space resources as identified by survey respondents were availability of bathrooms, habitat preservation, a community recreation center, and lighting. One third of respondents said they would like to be a community advocate. Responses were similar between the paper survey and the online survey. However, as per the responses to the paper survey, the most frequented facilities in Lower Nazareth include Louise W. Moore County Park, Surrey Glen Park, and Hahns Meadow Park, while the online survey showed more than half of respondents frequented the Lower Nazareth Township Park.

Figure 8.1. Survey Findings- Facility Importance



Public Meetings

Two public meetings were hosted during the project timeline. The first meeting was held on October 19, 2019. An informational station was open during the Halloween Movies in the Park event. The

second meeting was held on October 24, 2019 and was a more traditional meeting format located at the Lower Nazareth Township Park Community Building.

Both workshops provided residents with an opportunity to share their thoughts regarding existing facilities and to voice their future recreation, park, and open space needs. Public input was gathered through paper and online surveys, interactive display boards, and mapping activities.



GOALS AND OBJECTIVES

NO
PARKING
ANY
TIME

457

Chapter 9: Goals and Objectives

The Goals identified herein are general statements, which are meant to set the tone for decisions to be made in terms of the community's desire to improve its quality of life. Goals are stable and long ranging; they are not measurable actions, and may take years to achieve.

The Objectives under each Goal are statements indicating the achievements necessary to meet an overall Goal. Objectives have measurable results, and may range drastically in the length of time required for completion. This chapter lists objectives without assigning responsibility to any specific item. A more thorough breakdown of Action Items and responsibilities is provided within Chapter XX: Action Plan. Goals and Objectives listed within this chapter have not been listed or numbered in any significant order.

These tools and recommendations are to be used only as a guide for potential future development of the Township parks, recreation facilities and programs. Any and all future funding of goals, objectives and projects outlined in the Plan must have the prior approval of the Lower Nazareth Township Board of Supervisors. It is understood that before any action is implemented it should be further investigated to reflect changing circumstances as well as feasibility and affordability.

Goal 1: To protect remaining farmland and open space.

Objectives

- Establish a system of ranking remaining vulnerable open space
- Continue to review and make recommendations and, if necessary, to update local ordinances and regulations regarding open space preservation

Goal 2: To provide open space, parks, recreation facilities, and programming throughout Lower Nazareth Township to meet the needs of residents.

Objectives

- Continue to provide athletic facilities and fields to meet the needs of Township residents
- Provide for the safety and security of parks and recreation facilities throughout the Township
- Provide passive open space and un-programmed recreation areas for Township residents

Goal 3: To provide unique and enriching recreation opportunities to residents of all ages and abilities.

Objectives

- Work and collaborate with user groups to improve the infrastructure of parks and recreation facilities for the benefit of all
- Continue to provide a wide variety of programming activities to meet the needs of the various demographic groups within the Township

- Meet ADA guidelines for access throughout Township park and recreation facilities

Goal 4: Continue to invest in parks, recreation, and their associated facilities to sustain and enhance quality of life in Lower Nazareth Township.

Objectives

- Work to maintain and improve infrastructure of park and rec facilities in the Township
- Invest in improvements that promote Township recreation facilities and offerings
- Continue to add park and recreation amenities meet the needs of the various demographic groups within the Township

Goal 5: To improve connectivity and alternative transportation routes throughout the Township.

Objectives

- Plan for safe and accessible pedestrian and bicycle routes between schools, parks, and other community nodes
- Plan for the continued maintenance of pedestrian and bicycle routes throughout the Township
- Update local planning documents to reflect existing and proposed sidewalks and shared use path location
- Establish ordinance/design standards for pedestrian/bicycle pathways in accordance with the PennDOT Smart Transportation Guidelines

A photograph of a cornfield under a cloudy sky. The foreground shows rows of young corn plants in a field of brown soil. In the background, there is a line of green trees under a blue sky with large white clouds. The text "ACTION PLAN" is overlaid in the center in a white box.

ACTION PLAN

Chapter 10: Action Plan

The action plan serves as recommendations for a course of action for Lower Nazareth Township to consider over the next several years and beyond. The action plan is an effort to itemize the goals and objectives to be addressed by the Township. Goals and objectives, as well as action items are not binding, and may be modified, deleted or added to, as circumstances require. Plan recommendations should be re-evaluated on a regular basis to ensure they are still valid, appropriate, and current.

This action plan is to be used only as a guide for potential future development of the Township parks, recreation facilities, programs and policies. Any and all future funding must have the prior approval of the Lower Nazareth Township Board of Supervisors. It is understood that before any action is implemented it should be further investigated to reflect changing circumstances as well as feasibility and affordability.

The goals shown herein are general statements, which are meant to set the tone for decisions to be made in terms of the community's desire to improve its quality of life. Goals are stable and long ranging; they are not measurable actions, and may take years to achieve.

The objectives under each goal are statements indicating the achievements necessary to meet an overall goal. Objectives have measurable results, and may range drastically in the length of time required for completion.

Action Items – provide a further breakdown of tasks to be performed in order to meet overarching goals and objectives.

Responsible Party/Costs – provides an approximation of cost for each action item (where available) and the party responsible for completion of the task.

Priority – indicates approximate length of time for completion of the action item, or when the action item is to be completed. Immediate priority is to be completed within the next year, medium priority is to be completed within the next two to five years, and long term is to be completed between five to ten years after plan adoption.

Priorities may be changed based on the following: the overall feasibility and the value the initiative adds to the community weighted against the resources needed (financial and otherwise) to accomplish the goal. Before implementation, due diligence will be conducted as appropriate which may include strategic planning, public meetings surveys, studies, etc.

Goal: To protect remaining farmland and open space.

Objective	Action Item	Priority	Responsible Entity
Establish a system of ranking remaining vulnerable open space	Create and promote an application for farmers and landowners to acquire protection for their land	Immediate	BOS/Township staff
	Adapt the attached open space ranking forms (<i>found in appendix 5.D & 5.E</i>) as needed to meet the Township's goals and priorities for preservation	Immediate	BOS/Township Staff
	Coordinate with the community and partners to educate and promote farming in the Township	Ongoing	BOS/Township staff
	Establish and code riparian buffers along the Monocacy and Schoeneck creeks in order to establish areas within the buffer for potential acquisition/easement and restoration	Immediate	BOS/Township Staff
Continue to review and make recommendations and, if necessary, to update local ordinances and regulations regarding open space preservation	When new developments are presented, assess the opportunity to acquire open space.	Ongoing	BOS/Township staff
	Finalize and adopt the Official Map. (Currently in Progress)	Immediate	BOS/Township Staff
	Continually update the Official Map to include proposed parcels for land acquisition and proposed trails	Ongoing	BOS/Township staff
	Analyze the Township's existing regulatory documents, i.e. Zoning Ordinance and Subdivision and Land Development Ordinance, and update them as needed to reflect open space preservation goals	Ongoing	BOS/PC/Township staff
	Amend the current ordinances to require the dedication of 0.088 acres of park and recreation land per dwelling unit, or an appropriate fee in lieu of dedication, for subdivision/ land development applications.	Immediate	BOS/PC/Township Staff
Provide permanent protection for open space and agricultural parcels that have been identified as priorities for preservation	Purchase prioritized parcels through fee simple ownership or conservation easements wherever possible	Immediate	BOS/Township Staff
	Establish and design the structure of the Township Open Space Fund using the voter-approved EIT monies	Immediate	BOS/Township Staff

Goal: To provide open space, parks, recreation facilities, and programming throughout Lower Nazareth Township to meet the needs of residents.

Objective	Action Item	Priority	Responsible Entity
Continue to provide athletic facilities and fields to meet the needs of Township residents	Implement a field maintenance plan for the athletic fields throughout the Township	Immediate	User groups, Township staff, BOS
	Consider options for providing pickleball courts for both singles and doubles using existing tennis courts and/or new pickleball facilities	Medium	BOS/Township Staff
	Continually evaluate the demand on existing athletic fields and provide new fields accordingly	Ongoing	User Groups, Township Staff, BOS
Provide for the safety and security of parks and recreation facilities throughout the Township	Install security cameras where needed or appropriate	Medium	BOS/Police
	Install traffic calming improvements at Township parks including signs, pavement markings, and temporary speed bumps where appropriate	Medium	BOS/Township staff
	Install signs at each park clearly indicating park hours, park usage rules, field usage rules, and no parking areas, where needed	Medium	BOS/Township staff
	Remove any existing hedges and improve the lighting in and around all parking facilities	Immediate	BOS/Township Staff
	Establish a park maintenance division within the Public Works Department	Immediate	BOS/Township Staff
Provide passive open space and un-programmed recreation areas for Township residents	Set aside substantial, specific areas in various parks that are not to be used as athletic fields for sports user groups and are not to be scheduled for programmed play	Immediate	BOS/Township staff
	Naturalize portions of open field areas in Township parks into meadow areas	Medium	BOS/Township Staff
	Expand and improve the riparian buffers in parks using native plantings and other restoration strategies	Medium	BOS/Township Staff
	Provide access to the Monocacy creek where it flows through Township parks using wooden bridges, overlooks, or gravel access areas	Future	BOS/Township Staff
	Remove invasive plants and consider developing a long term invasive species management plan for open space, woodland, and forested areas in all parks	Immediate	BOS/Township Staff

Goal: To provide unique and enriching recreation opportunities to residents of all ages and abilities.

Objective	Action Item	Priority	Responsible Entity
Work and collaborate with user groups to improve the infrastructure of parks and recreation facilities for the benefit of all	Review proposed improvements and changes to maintenance plans for athletic fields and park structures with athletic user groups prior to implementation	Ongoing	Township staff
	Request detailed documentation of improvements made by athletic user groups – both financial and plan/specifications, for reference should any issues arise	Ongoing	Township staff
	Maintain open communication with athletic user groups regarding park infrastructure and create a system to resolve issues as they arise	Ongoing	Township staff
	Pursue the option of a cooperative agreement with the Rod & Gun club near Surrey Glen park to allow park users to access the Monocacy creek on Rod & Gun club property	Medium	User Groups, Rod & Gun Club, BOS, Township Staff
	Implement a fee schedule to charge user groups for field and facility use	Medium	User Groups, Township Staff, BOS
	Reassign some of the parks and recreation responsibilities to committee within the EAC or a new committee	Immediate	Township Staff, EAC, BOS
	Establish a partnership with local and regional municipalities and potential partners to share resources, facilities, and programming	Medium	Township Staff, BOS
	Maintain and establish recreation partnerships with a wide variety of sports leagues, institutions, non-profits and others to provide diverse recreation programming	Ongoing	Township Staff, BOS
Continue to provide a wide variety of programming activities to meet the needs of the various demographic groups within the Township	Perform an analysis of programming attendance and cancellations each year to streamline programs in order to maximize providing programming that is truly desired and explore new programming offerings/times	Medium	Township staff
	Using an online survey or other outreach method, periodically assess among people who participate in the Township's programming offering: what they like most about the current programming offerings, what they	Medium	Township staff

	like least, what they would like to see change, and what offerings they would most like to see provided		
	Provide new programming and special events throughout the year	Ongoing	Township Staff
Meet ADA guidelines for access throughout Township park and recreation facilities	Evaluate and upgrade playground safety surfacing as required to meet ADA access and ASTM F1291 impact requirements.	Immediate	Township staff
	Install only new playground equipment that meets or exceeds ADA accessibility requirements	Ongoing	BOS
	Upgrade access among athletic fields, restroom walkways, parking lots, playgrounds, buildings, and other features to meet ADA accessibility requirements	Ongoing	BOS
	Ensure that all proposed paths connecting parking and amenities and/or loop paths for walking within parks are ADA accessible	Immediate	BOS/ Township Staff
	Upgrade existing restroom facilities or provide new restroom or portable toilet facilities that meet or exceed ADA requirements in all parks	Medium	BOS/Township Staff
	Upgrade existing parking facilities or provide new parking facilities that meet or exceed ADA requirements including paved spaces, access aisles, and guard rails	Immediate	BOS/Township Staff

Goal: Continue to invest in parks, recreation, and their associated facilities to sustain and enhance quality of life in Lower Nazareth Township.

Objective	Action Item	Priority	Responsible Entity
Work to maintain and improve the infrastructure of park and recreation facilities in the Township	Evaluate existing drainage issues and provide stormwater improvements in all parks, prioritizing the design and installation of green stormwater solutions wherever possible including rain gardens, constructed wetlands, and naturalized swales	Immediate	BOS/Township Supervisors
	Install crushed stone paths in all naturalized park areas that provide access between amenities as well as loop walking trails	Medium	BOS/Township Staff

	Install benches along all walking trails in intervals that create rest areas for users of all ages and abilities	Medium	BOS/Township Staff
	Provide parking facilities for all parks and expand existing parking lots in heavily used parks	Immediate	BOS/Township Staff
	Install park and trail wayfinding signage and park maps and kiosks where required in all Township parks	Medium	BOS/Township Staff
Continue to add park and recreation amenities to meet the needs of the various demographic groups within the Township	Install the nature-themed aquatic stream playground, as proposed in the Township's Northampton County Livable Landscapes grant application	Immediate	BOS/Township Staff
	Provide and install pavilions in Township parks that do not currently have them	Medium	BOS/Township Staff
	Continually evaluate the potential for installing new and unique park amenities including but not limited to a dog park, an amphitheater, a splash pad, an outdoor fitness area, a family-inclusive play area, and nature play areas	Future	User groups, Township Staff, BOS
	Consider and explore the option of establishing a small boat/kayak launch area along the Monocacy Creek in one of the Township parks	Future	User groups, Township Staff, BOS
	Provide interpretive environmental education amenities that take advantage of the existing natural resources within parks including, but not limited to: educational signage, gathering areas, education areas, native gardens, and wildlife amenities	Medium	BOS/Township Staff

Goal: To improve connectivity and alternative transportation routes throughout the Township.

Objective	Action Item	Priority	Responsible Entity
Plan for safe and accessible pedestrian and bicycle routes between schools, parks, and other community nodes	Plan for a comprehensive trail(s) system throughout the Township	Immediate	BOS
	Plan for safe and accessible pedestrian/bicycle routes between schools, parks and other community nodes	Immediate	BOS/Township staff

	Plan for safe and accessible connections to shopping centers, libraries, museums and cultural centers, as well as transportation centers such as large neighborhoods	Medium	BOS/Township staff
	Explore possible locations and create trails that would connect to existing trails to provide pedestrian and cyclist access to all parks	Immediate	BOS/ Township Staff
	Take advantage of the Township policy requiring that subdivision roads connect, by utilizing safe subdivision roads wherever possible to link to existing and future trails.	Ongoing	BOS/ Township Staff
	Consider planning and implementing trails or sidewalks along the rights-of-way of targeted open space preservation land	Medium	BOS/ Township Staff
	Collaborate with neighboring municipalities and explore opportunities to establish connections from the Township to nearby trail systems	Medium	BOS/Township Staff
Plan for the continued maintenance of pedestrian and bicycle routes throughout the Township	Implement a continuing maintenance plan for maintenance of paths and trails	Immediate	Township staff
	Encourage the formation of a “Friends of the Paths” to assist with cleanup, maintenance, publicity, and other community activism surrounding the routes	Ongoing	Township staff
Update local planning documents to reflect existing and proposed sidewalks and shared use path locations	Map existing sidewalks, pathways, and shared use paths throughout the Township	Immediate	Township staff
	Map locations for proposed shared-use paths throughout the Township	Ongoing	Township staff
	Add the compiled map to local planning documents	Immediate	BOS/Township staff
Establish ordinance/design standards for pedestrian/bicycle pathways in accordance with the PennDOT Smart Transportation Guidelines	Prepare an ordinance based on the PennDOT Smart Transportation Guidelines including design standards for pedestrian/bicycle pathways within Lower Nazareth Township	Medium	BOS/PC/Township staff

Partnership Opportunities

Multiple partnership opportunities were identified during the preparation of the Recreation, Park and Open Space Plan’s stakeholder interviews, regional plan reviews, and site-specific recommendations. The following groups are potential partners Lower Nazareth Township should

seek to develop, or strengthen a relationship with to support the implementation of co-beneficial recommendations made in the Recreation, Park and Open Space Plan.

Monocacy Creek Watershed Association

This non-profit is committed to the protection, enhancement and stewardship of the Monocacy Creek, which they do through multiple stream clean up events and public education.

Information: Facebook Page or Email (monocacycrwa@gmail.com)



Monocacy Chapter of Trout Unlimited

The Monocacy Chapter seeks to “conserve, protect, restore and sustain” the coldwater fisheries of the Monocacy Creek, through multiple efforts including partnerships with PA Fish and Boat Commission and land trusts for stream improvement and riparian buffer projects, as well as public education.



Website: <http://www.monocacytu.org/>

Bushkill Stream Conservancy

This local conservancy strives to conserve and enhance the watershed through educational programs and environmental research, public outreach, recreation, restoration and historical documentation made possible through grant support.



Website: <https://bushkill.org/>

Wildlands Conservancy

This regional conservancy works to preserve open space and promote conservation in the Lehigh Valley, and the entire Lehigh River Watershed, through direct acquisition of conservation easements, and property fee simple, and educational programs and environmental research, public outreach, recreation, and restoration made possible through grant support and major donors.



Website: www.wildlandspa.org

Northampton County

Northampton County is one of the most important partners and sources of funding for the protection of open space, creation of trails, and expansion of recreation programming. The County Agricultural Land Preservation Program, the County Open Space Program, and grants through the Livable Landscapes initiatives can support nearly all park development, environmental restoration, and education opportunities in the township.



Lehigh Valley Planning Commission

The regional-metropolitan planning agency seeks to support the planning initiatives of the municipalities in the Lehigh Valley. It promotes and guides multi-modal transportation opportunities. Grants are available periodically for the development of these networks.

Local Business Partners

Through the planning process multiple partnership opportunities for local businesses presented themselves, including the potential for advertising in parks and inclusion in wayfinding signage in exchange for financial support.

Neighboring Municipalities

Both Upper Nazareth Township and Bushkill Township voiced support to develop recreation opportunities within Lower Nazareth that could be enjoyed by residents and the greater Nazareth region as a whole.

Funding Opportunities

There are multiple funding opportunities at the Federal, State, regional and local levels to support the park, recreation and open space priorities of Lower Nazareth Township. Primary sources of funding include the use of municipal dollars, earned from tax revenue, fees, developer concessions, and borrowing. Federal, State, County, and local funding opportunities are available to help plan, design, and construct the recommendations of this plan. Secondary sources of funds include private foundation monies and contributions from private donors, benefactors and non-profit groups.

See 10.A for a full list of potential funding and grant opportunities.





APPENDICES

Appendices

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- Appendix 3.A – Bocce Court
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- Appendix 5.A – Soils Map
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- Appendix 5.C. – Greenway/Steep Slope Map
- Appendix 5.D – Sample Data Report for Open Space
- Appendix 5.E – Sample Open Space Criteria Evaluation
- Appendix 6.A – Recreation Facilities in Neighboring Townships
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- Appendix 8.B – Compiled Stakeholder Forms
- Appendix 10.A – Funding Opportunities

Appendix 1.A Related Plan Review

Nazareth Area...2030 Municipal Comprehensive Plan 2006

This joint-municipal plan encompasses the 10 municipalities that make up the Nazareth Area, to develop an overarching vision for the future. The plan views the area as a whole to form a strategized regional approach to plan for development, community centers, and transportation infrastructure, with focuses on preserving natural features, farmland, open space, and historic resources. A range of goals and recommendations are made to protect open space and enhance parkland within Lower Nazareth.

Lower Nazareth Recreation, Parks & Open Space Plan 1989

This municipal plan identifies multiple goals and recommendations to: provide a large park to support programs for the entire Township; provide facilities that support recreation and free play; coordinate Township, recreation association, and school district activities; and expand opportunities for all ages and abilities.

Monocacy Creek Watershed... Act 167 Management Plan 2017

This plan mentions improvements to be made involving storm runoff and the impacts associated with the development of land. The overall purpose of this plan is come up with a strategic plan to reduce storm runoffs and ways to manage the problem. Also organize the stormwater management efforts within each watershed, and get the municipalities involved (in Northampton County & Lehigh County), along with the City of Bethlehem, so they can encourage programs in order to help reduce the issue. In order to do so, these municipalities must control the location, type, density or rate of development throughout the watershed.

The Monocacy Creek Watershed Assessment and Conservation Management Plan 2017

The overall idea of this plan was to govern the conditions of natural and historical resources within the watershed and charted recommendations for refining and protecting those resources. The City of Bethlehem partnered with Wildlands Conservancy in order to complete the assessment needed to do the report and come up with a restoration plan needed to fix the issues. The Monocacy Creek Watershed is 48.8 square miles and covers 13 different municipalities.

Natural Heritage Inventory of Lehigh and Northampton Counties 2013

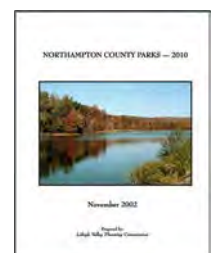
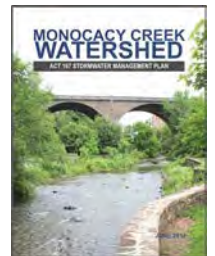
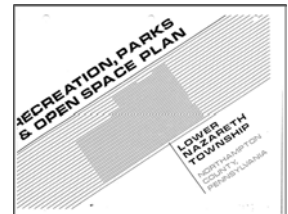
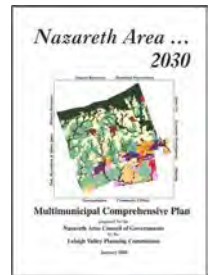
Prepared as a conservation tool and field guide, this inventory plan identifies and expands on rare, threatened, and endangered species within the Lehigh Valley, and provides recommendations to ensure their protection. The plan identifies important areas in Lower Nazareth including sensitive species of regional and statewide concern within wetland and riparian zones along Bushkill and Monocacy creeks, and potential vernal pools.

Livable Landscapes: An Open Space Plan for Northampton County 2015

This plan update acts to direct the restoration, conservation and improvements to the County's open space assets while forming connections between their natural resources, greenways and blueways, outdoor recreation, farmland, and scenic, cultural and historic assets. Open space is a key factor for obtaining a high quality of life and plan goals and recommendations are strongly pushed for by the public. The enhancement of Lower Nazareth's open space resources will directly support the plans regional priorities.

Northampton County Parks 2010

This county-wide plan examines Northampton's park assets and provides recommendations to improve and expand their facilities. The plan specifically promotes the expansion and improvement of parks and open space along the Monocacy Creek greenway to protect wildlife



corridors and provide water-based recreation, and the expansion of Louise W. Moore Park in Lower Nazareth to continue supporting county residents that enjoy this important resource. The expansion and enhancement of Lower Nazareth's park and greenway resources are supported by these county goals.

Lehigh Valley Greenways Plan 2007

Branching from the Comprehensive Plan for the Lehigh Valley, this plan analyzes resources that could grow into a regional greenway network and suggests ways to fully utilize the benefits of such a network. Within the plan the Monocacy Creek is recognized as a renowned High-Quality limestone stream and is called out as a greenway corridor, of which a Node is identified in Lower Nazareth at Dutch Springs. The plan recommends that the greenway be protected and efforts be made to develop a Monocacy Creek parkway to link Lower Nazareth's Surrey Glen Park to the Monocacy Complex in Bethlehem. Open space and greenway recommendations of this plan will support these recommendations.

Lehigh Valley Trails Inventory 2013

This regional plan reviewed and updated existing trail data throughout the Lehigh Valley to identify major gaps, update qualifications for safe road crossings, update databases, and provide recommendations for the regional trail network. The plan identified multiple trail routes and gaps surrounding Lower Nazareth Township, with conceptual links connecting to the municipality at Louise W. Moore Park and along the Schoeneck and Monocacy creeks. Multiple recommendations, including the development of future connections to these trails and the improvement of pedestrian facilities throughout municipalities at the local level, will be supported by the pedestrian safety and connectivity goals of Lower Nazareth's open space and recreation plan.

Move Lehigh Valley Long Range Transportation Plan 2015

This long-range plan provides the Lehigh Valley with a guide for future transportation projects that seeks to balance the transportation system to improve efficiency, sustainability, economic development, and quality of life. The plan touches on all modes of transportation, ranging from highways to air transit and pedestrian pathways and identifies projects for the Transportation Improvement Program (TIP). The plan specifically highlights planning for the development and enhancement of pedestrian and bicycle networks, and the protection of natural and agricultural resources when planning future roadways.

Move Lehigh Valley Congestion Management Process 2016

This plan update identified congestion along priority roadways throughout the Lehigh Valley and provided recommendations and mitigation strategies to address the congestion issues of each corridor. The recommendations are specifically provided to support the safe flow of increasing truck traffic volumes in the region.

Comprehensive Plan-Lehigh Valley...2030 (2005/Data Updates-2010)

This comprehensive plan covers topics that benefit the whole Lehigh Valley Area including Lehigh County and Northampton County. Some of the key aspects of the plan include: fixing and updating the roadways, making sure the farmland that currently exists is preserved/unchanged, protecting the natural features of Lehigh Valley and many more ideas, so the residents and future residents in those counties can benefit from them.



SEPTA Cycle-Transit Plan (2015)

This strategic plan identifies the increasing demand for cycle-transit, and examines techniques to adapt and better integrate the transit and bike networks to support a growing number of cyclists and reduce automotive use, improving the efficiency and sustainability of our transportation system. The plan specifically focuses on Bikes to, at, and on transit by identifying existing and future SEPTA actions.

Bethlehem Township...Comprehensive Plan Update 2017

This comprehensive Plan Update (2017) focuses on many different goals/policies over the next decade in order to better the lives of the residents in the Bethlehem Township. Some of which, include: better the streetscapes, protecting the natural resources that currently exist, offering new land use ideas for the area, coming up with solutions to fill the open space, and many more.

East Allen Township...Comprehensive Plan (2016)

This comprehensive Plan is based on the information contained in the Comprehensive Plan of 1982, updated in 2001. The main goal of this plan is to ensure that the residents currently living there and any residents in the future have a sustainable place to live with many opportunities. They work to fix current problems that exist and also to point out opportunities that are available that weren't offered in the past.

Tomorrow's Palmer (Sustaining the Legacy): 2017 Comprehensive Plan

This plan was put in place in order to make substantial and sustainable changes to the Township of Palmer, so the residents could benefit from them. This plan notices issues and comes up with ways to fix those issues, while also pointing out opportunities that the township has in order to effectively grow for the future generations to come.

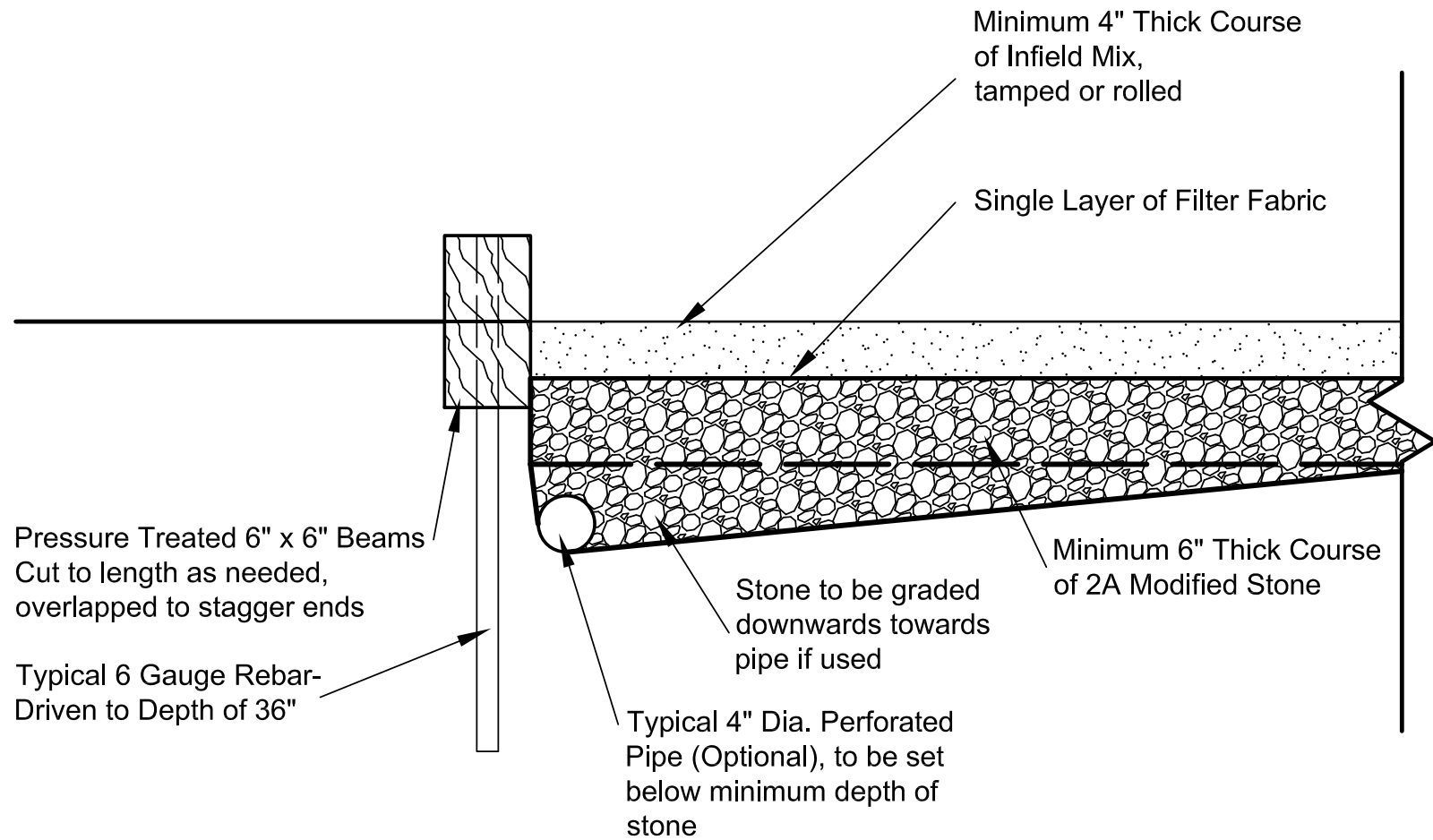
Palmer Township...Parks, Recreation and Open Space Plan (2004)

This Park, Recreation and Open Space plan is set in place to help the quality of living for the residents. There are two key aspects to this plan, which include, protecting the open space and land that currently exists in the township and also to offer recreational opportunities to the people who live in the township and/or visit the township.

Upper Nazareth Township...Subdivision and Land Development Ordinance

The goal of this ordinance is to help regulate and control the sector of lots and also the expansion of the land in the township. Also, to help the approval of the plans that will go in place, modifying the land in the building lots if needed, street design, and basically any other improvements needed structurally in the Upper Nazareth township related.

Appendix 3.A - Bocce Court Details



Appendix 3.B - Pavilion Samples

Pavilion Example – “Raleigh” from Enwood Structures



Appendix 3.C - Digital or Electronic Park Signage

Digital/Electronic Park Signage Example – Montgomery Township Community Recreation Center



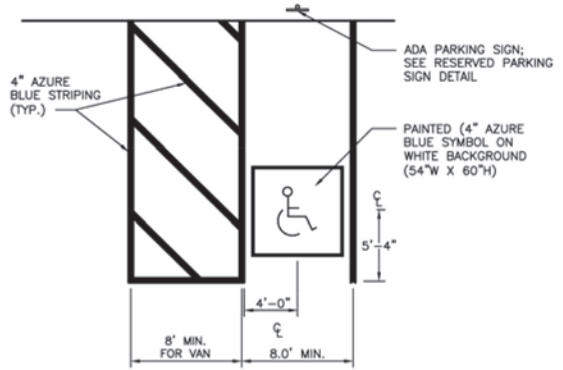
Appendix 3.D - Trail Benches

Trail Bench Examples



Cynwyd Heritage Trail

Appendix 3.E - ADA Accessible Parking

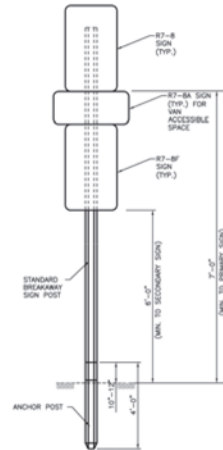
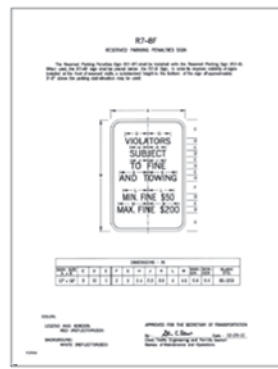


A.D.A ACCESSIBLE PARKING STRIPING

NOT TO SCALE

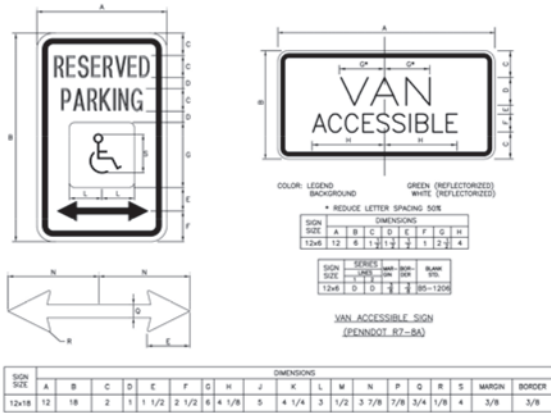
SIGNAGE AND STRIPING NOTES

1. ALL PROPOSED SIGNS SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 236M, "HANDBOOK OF APPROVED SIGNS", LATEST VERSION.
2. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 111M (TC6600), LATEST VERSION.



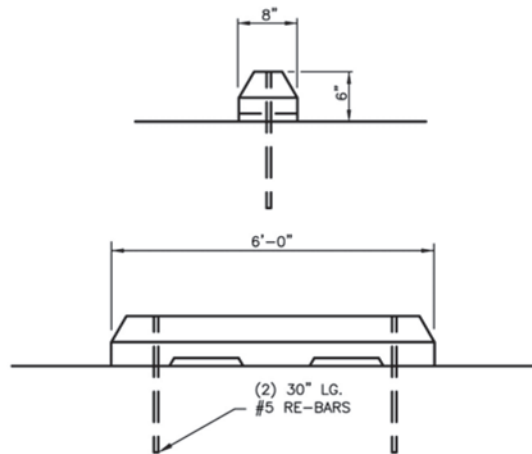
SIGN POST INSTALLATION DETAIL

NOT TO SCALE



RESERVED PARKING SIGN (R7-8)

NOT TO SCALE



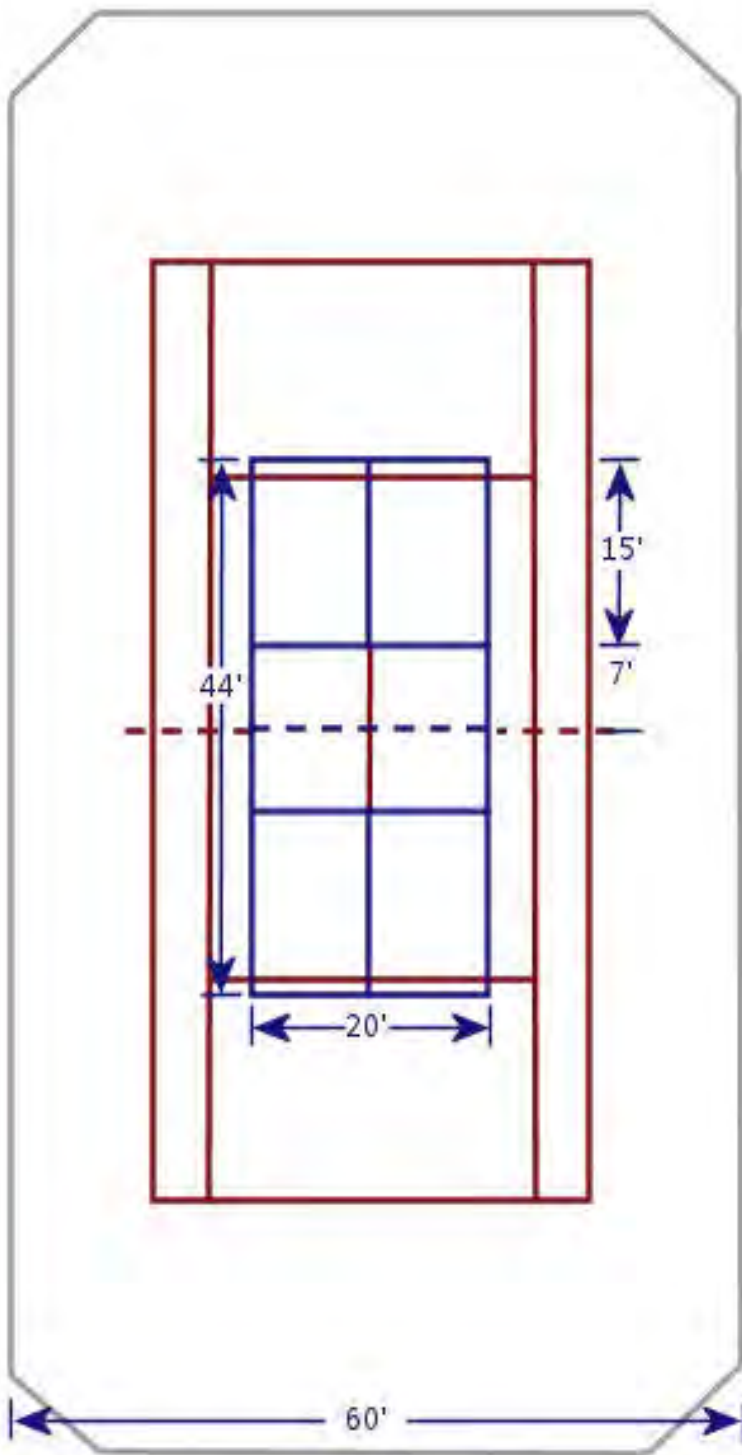
PRECAST CONCRETE WHEEL STOP DETAIL

NOT TO SCALE

Appendix 3.F - Pickleball Court Striping on Tennis Courts

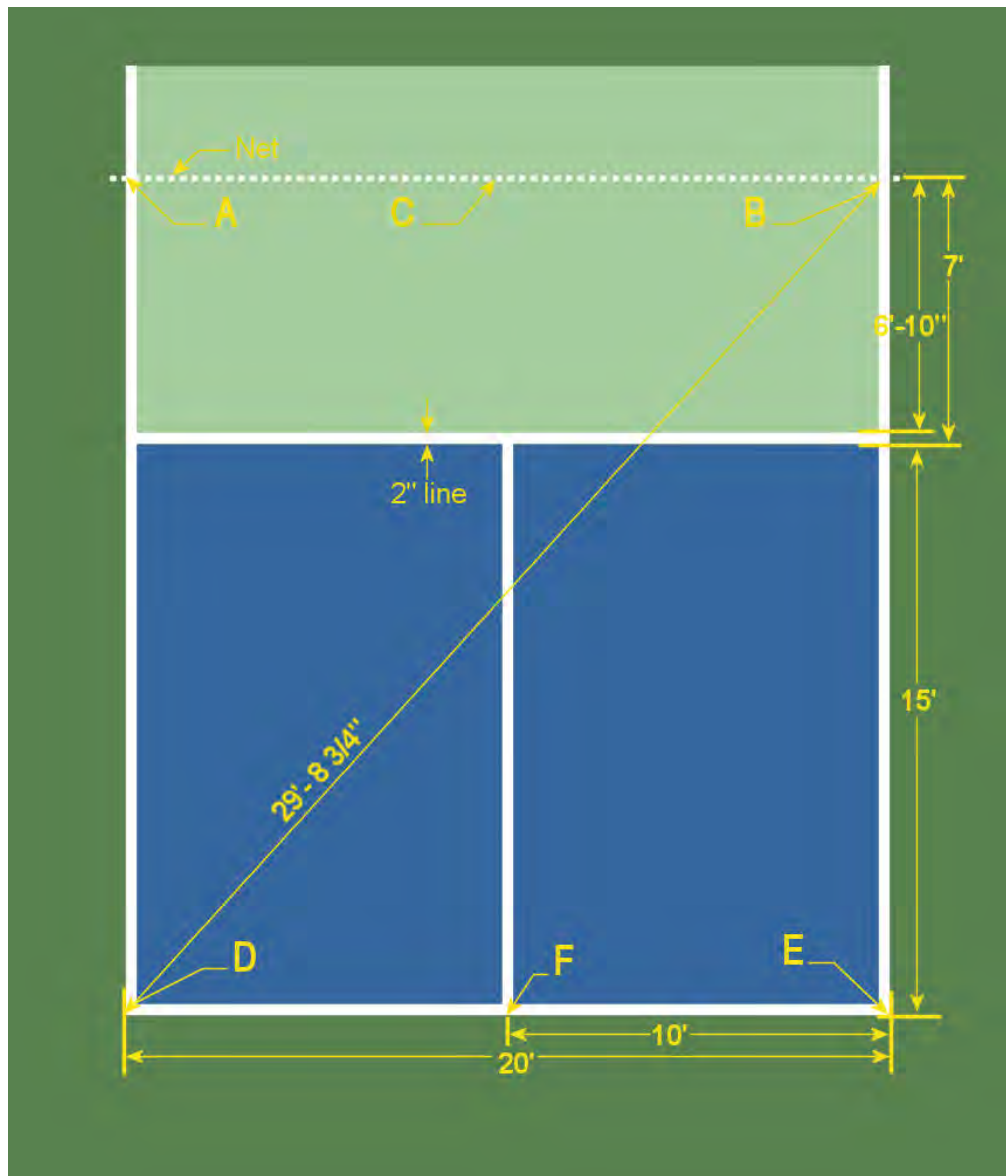
Pickleball Striping on Tennis Court Examples

One Pickleball Court on Tennis Court Layout Example



USA Pickleball – One Pickleball Court per Tennis Court

USA Pickleball – Half Court, Temporary Pickleball Layout



BMP 6.7.2: Landscape Restoration



Landscape Restoration is the general term used for actively sustainable landscaping practices that are implemented outside of riparian (or other specially protected) buffer areas. Landscape Restoration includes the restoration of forest (i.e. reforestation) and/or meadow and the conversion of turf to meadow. In a truly sustainable site design process, this BMP should be considered only after the areas of development that require landscaping and/or revegetation are minimized. The remaining areas that do require landscaping and/or revegetation should be driven by the selection and use of vegetation (i.e., native species) that does not require significant chemical maintenance by fertilizers, herbicides, and pesticides..

<ul style="list-style-type: none"> Minimize traditional turf lawn area Maximize landscape restoration area planted with native vegetation Protect landscape restoration area during construction Prevent post-construction erosion through adequate stabilization Minimize fertilizer and chemical-based pest control programs Creates and maintains porous surface and healthy soil. Minimize mowing (two times per year) Reduced maintenance cost compared to lawn 	<div> Commercial: Yes Ultra Urban: Limited Industrial: Yes Retrofit: Yes Highway/Road: Yes </div> <div> <u>Stormwater Functions</u> Volume Reduction: Low/Med. Recharge: Low/Med. Peak Rate Control: Low/Med. Water Quality: Very High </div> <div> <u>Water Quality Functions</u> TSS: 85% TP: 85% NO3: 50% </div>
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Other Considerations

- Soil investigation recommended
- Soil restoration may be necessary

Description

In an integrated stormwater management plan, the landscape is a vital factor, not only in sustaining the aesthetic and functional resources of a site, but also in mitigating the volume and rate of stormwater runoff. Sustainable landscaping, or Landscape Restoration, is an effective method of improving the quality of site runoff. This often overlooked BMP includes the restoration of forest and/or meadow or the conversion of turf to meadow.

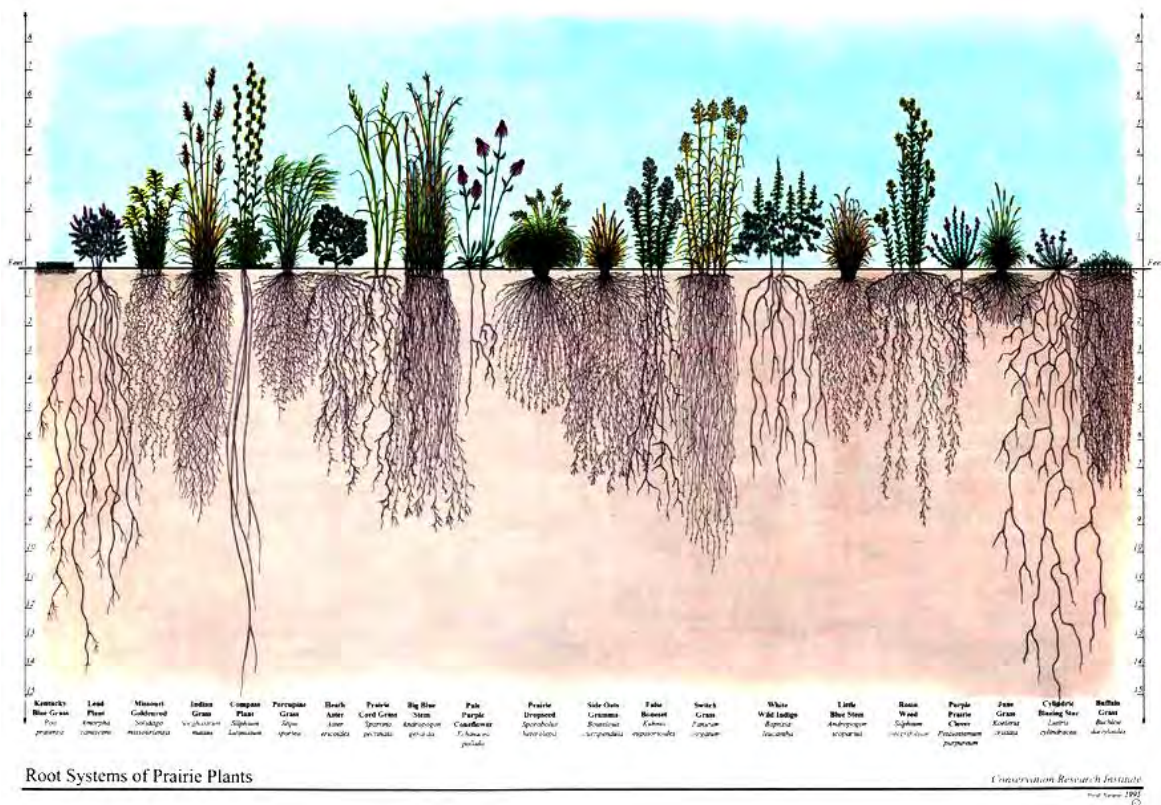


Landscape Restoration involves the careful selection and use of vegetation that does not require significant chemical maintenance by fertilizers, herbicides and pesticides. Implicit in this BMP is the assumption that native species have the greatest tolerance and resistance to pests and require less fertilization and chemical application than do nonnative species. Furthermore, since native grasses and other herbaceous materials often require less intensive maintenance efforts (i.e. mowing or trimming), their implementation on a site results in less biomass produced.

Native species are customarily strong growers with stronger and denser root and stem systems, thereby generating less runoff. If the objective is revegetation with woodland species, the longer-term effect is a significant reduction in runoff volumes, with increases in infiltration, evapotranspiration, and recharge, when contrasted with a conventional lawn planting. Peak rate reduction also is achieved. Similarly, meadow reestablishment is also more beneficial than a conventional lawn planting, although not so much as the woodland landscape. Again, these benefits are long term in nature and will not be forthcoming until the species have had an opportunity to grow and mature (one advantage of the meadow is that this maturation process requires considerably less time than a woodland area). Native grasses also tend to have substantially deeper roots and more root mass than turf grasses, which results in:

- A greater volume of water uptake (evapotranspiration)
- Improved soil conditions through organic material and macropore formation
- Provide for greater infiltration

Landscape architects specializing in the local plant community are usually able to identify a variety of species that meet these criteria. Other sources of advice may be county conservation districts, watershed associations and other conservation groups. As the selection of such materials begins at the conceptual design stage, where lawns are eliminated or avoided altogether and landscaping species selected, Landscape Restoration can generally result in a site with reduced runoff volume and rate, as well as significant nonpoint source load reduction/prevention.



Landscape Restoration can improve water quality by minimizing application of fertilizers and pesticides/herbicides. Given the high rates of chemical application which have been documented at newly created lawns for both residential and nonresidential land uses, eliminating the need for chemical application is important for water quality. Of special importance here is the reduction in fertilization and nitrate loadings. For example, Delaware's *Conservation Design for Stormwater Management* lists multiple studies that document high fertilizer application rates, including both nitrogen and phosphorus, in newly created landscapes in residential and nonresidential land developments. Expansive lawn areas in low density single-family residential subdivisions as well as large office parks typically receives intensive chemical application, both fertilization and pest control, which can exceed application rates being applied to agricultural fields. Avoidance of this nonpoint pollutant source is an important water quality objective.

Variations

- Meadow
- No-mow lawn area
- Woodland restoration
- Removal of existing lawn to reduce runoff volume
- Buffers between lawn areas and wetlands or stream corridors
- Replacement of "wet" lawn areas difficult to mow
- Replacement of hard to maintain lawns under mature trees

Applications

- Forested Landscape/Restoration
- Suburban / Developing Landscape
- Urban Landscape
- Meadow Restoration
- Conversion of Turf to Meadow

Design Considerations

1. The recommended guidelines for Landscape Restoration are very closely related to those of Riparian Buffer Restoration (RBR) (BMP 6.7.1). Specifically, Landscape Restoration overlaps with the guidelines for Zones 2 and 3 in typical RBR. As with RBR, it is essential for successful Landscape Restoration that site conditions be well understood, objectives of the landowner considered, and the appropriate plants chosen for the site. These are all tasks that should be completed in the early planning stages of a project. For a summary of the nine steps recommended for the planning stages of a restoration project, see BMP 6.7.1- Riparian Buffer Restoration. Included in this nine-step process are: analysis of site soils/natural vegetative features/habitat significance/topography/etc., determination of restoration suitability, and site preparation.
2. In those sites where soils have been disturbed or determined inadequate for restoration (based on analysis), soil amendments are needed. Soil amendment and restoration is the process of restoring compromised soils by subsoiling and/or adding a soil amendment, such as compost, for the purpose of reestablishing its long-term capacity for infiltration and pollution removal. For more information on restoring soils, see BMP 6.7.3 Soil Amendments and Restoration.
3. "Native species" is a broad term. Different types of native species landscapes may be created, from meadow to woodland areas, obviously requiring different approaches to planting. A native landscape may take several forms in Pennsylvania, ranging from reestablishment of woodlands with understory plantings to reestablishment of meadow. It should be noted that as native landscapes grow and mature, the positive stormwater benefits relating to volume control and peak rate control increase. So, unlike highly maintained turf lawns, these landscapes become much more effective in reducing runoff volumes and nonpoint source pollutants over time.
4. Minimizing the extent of lawn is one of the easiest and most effective ways of improving water quality. Typical (i.e. compacted) lawns on gentle slopes can produce almost as much runoff as pavement. In contrast to turf, "natural forest soils with similar overall slopes can store up to 50 times more precipitation than neatly graded turf." (Arendt, Growing Greener, pg. 81)
The first step in sustainable site design is to limit the development footprint as much as possible, preserving natural site features, such as vegetation and topography. If lawn areas are desired in certain areas of a site, they should be confined to those areas with slopes less than 6%.



5. Meadow restoration may be used alone or in combination with a forest restoration. The native meadow landscape provides a land management alternative that benefits stormwater management by reducing runoff volume and nonpoint source pollutant transport. Furthermore, meadow landscapes vastly reduce the need for maintenance, as they do not require frequent mowing during the growing season. Because native grasses and flowers are almost exclusively perennials, properly installed meadows are a self-sustaining plant community that will return year after year.

Meadows can be constructed as a substitute to turf on the landscape, or they can be created as a buffer between turf and forest. In either situation, the meadow restoration acts to reduce runoff as well as reduce erosion and sedimentation. Meadow buffers along forests also help reduce off-trail pedestrian traffic in order to avoid creating paths which can further concentrate stormwater.

The challenge in restoring meadow landscapes is a lack of effective establishment and maintenance methods. Native grasses and flowers establish more slowly than weeds and turf grass. Therefore, care must be taken when creating meadow on sites where weed or other vegetative communities are well established. It may take a year or more to prepare the site and to get weeds under control before planting. Erosion prone sites should be planted with a nurse crop (such as annual rye) for quick vegetation establishment to prevent seed and soil loss. Steep slopes and intermittent water courses should be stabilized with erosion blankets, selected to mitigate expected runoff volumes and velocities. Additionally, seed quality is extremely important to successful establishment. There is tremendous variation among seed suppliers, seeds should be chosen with a minimum percent of non-seed plant parts.

6. Conversion of turf grass areas to meadow is relatively simple and has enormous benefits for stormwater management. Though turf is inexpensive to install, the cost of maintenance to promote an attractive healthy lawn is high (requiring mowing, irrigation, fertilizer, lime and



herbicides) and its effects are detrimental to water quality. Turf areas are good candidates for conversion to meadow as they typically have lower density of weed species. The conversion of turf to meadow requires that all turf be eliminated before planting, and care must be taken to control weed establishment prior to planting.

7. Forest restoration includes planting of appropriate tree species (small saplings) with quick establishment of an appropriate ground cover around the trees in order to stabilize the soil and prevent colonization of invasive species. Reforestation can be combined with other volume control BMPs such as retentive berming, vegetated filter strips and swales.

Plant selection should mimic the surrounding native vegetation and expand on the native species composition already found on the site. A mixture of native trees and shrubs is recommended and should be planted once a ground cover is established.

8. In terms of woodland areas, DCNR's *Conservation Design for Stormwater Management* states, "...a mixture of young trees and shrubs is recommended.... Tree seedlings from 12 to 18 inches in height can be used, with shrubs at 18 to 24 inches. Once a ground cover crop is established (to offset the need for mowing), trees and shrubs should be planted on 8-foot centers, with a total of approximately 430 trees per acre. Trees should be planted with tree shelters to avoid browse damage in areas with high deer populations, and to encourage more rapid growth." (p.3-50).



Initial watering and weekly watering during dry periods may be necessary during the first growing season. As tree species grow larger, both shrubs and ground covers recede and yield to the more dominant tree species. The native tree species mix of small inexpensive saplings should be picked for variety and should reflect the local forest communities. Annual mowing to control invasives may be necessary, although the quick establishment of a strong-growing ground cover can be effective in providing invasive control. Native meadow planting mixes also are available. A variety of site design factors may influence the type of vegetative community that is to be planned and implemented. In so many cases, the "natural" vegetation of Pennsylvania's communities is, of course, woodland.

9. Ensure adequate stabilization. Adequate stabilization is extremely important as native grasses, meadow flowers, and woodlands establish more slowly than turf. Stabilization can be achieved for forest restoration by establishing a ground cover before planting of trees and shrubs. When creating meadows, it may be necessary to plant a fast growing nurse crop with meadow seeds for quick stabilization. Annual rye can be planted in the fall or spring with meadow seeds and will establish quickly and usually will not present a competitive problem. Erosion prone sites should be planted with a nurse crop and covered with weed-free straw mulch, while steep slopes and areas subject to runoff should be stabilized with erosion control blankets suitable for the expected volume and velocity of runoff.

Volume Reduction Calculations and Peak Rate Mitigation

Areas designated for landscape restoration should be considered as “Meadow, good condition” in stormwater calculations.

Water Quality Improvement

See Section 8 for Water Quality Improvement methodology, which addresses pollutant removal effectiveness of this BMP.

Construction Sequence

Forest restoration installation follows closely the procedure outlined in BMP 6.7.1- Riparian Buffer Restoration. Refer to BMP 6.7.1 for detailed information, with the understanding that species selection for upland forest restoration will differ from that for riparian restoration.

Meadow installation should proceed as follows:

1. SELECT SITE

- Confirm site is suitable for restoration, should be sunny, open and well-ventilated. Meadow plants require at least a half a day of full sun.
- Obtain landowner permission

2. ANALYZE SITE

- Evaluate site's physical conditions (soil attributes, geology, terrain)
- Evaluate site's vegetative features (desirable and undesirable species, native species, sensitive habitats). Good candidates for meadow plantings include areas presently in turf, cornfields, soybean fields, alfalfa fields and bare soils from new construction.
- Areas with a history of heavy weed growth may require a full year or longer to prepare for planting.
- Beware of residual herbicides that may have been applied to agricultural fields. Always check the herbicide history of the past 2-3 years and test the soils if in doubt.

3. PLANT SELECTION

- Select plants that are well adapted to the specific site conditions. Meadow plants must be able to out compete weed species in the first few years as they become established.

4. PREPARE SITE

- All weeds or existing vegetation must be eliminated prior to seeding.
- Perennial weeds may require year long smothering, repeated sprayings with herbicides, or repeated tillage with equipment that can uproot and kill perennial weeds.

5. PLANTING DAY

- Planting can take place from Spring thaw through June 30 or from September 1 through soil freeze-up (“dormant seeding”)
- Planting in July and August is generally not recommended due to the frequency of drought during this time.
- Seeding can be accomplished by a variety of methods: no-till seeder for multi-acre planting; broadcast seeder; hand broadcast for small areas of one acre or less.
- Seed quality is critical and a seed mix should be used with a minimum percentage of non-seed plant parts.

6. SITE MAINTENANCE (additional information below)

- Assign responsibilities for watering, weeding, mowing, and maintenance
- Monitor site regularly for growth and potential problems

Maintenance Issues

Meadows and Forests are low maintenance but not “no maintenance”. They usually require more frequent maintenance in the first few years immediately following installation.

Forest restoration areas planted with a proper cover crop can be expected to require annual mowing in order to control invasives. Application of a carefully selected herbicide (Roundup or similar glyphosate herbicide) around the protective tree shelters/tubes may be necessary, reinforced by selective cutting/manual removal, if necessary. This initial maintenance routine is necessary for the initial 2 to 3 years of growth and may be necessary for up to 5 years until tree growth and tree canopy begins to form, naturally inhibiting weed growth (once shading is adequate, growth of invasives and other weeds will be naturally prevented, and the woodland becomes self-maintaining). Review of the new woodland should be undertaken intermittently to determine if replacement trees should be provided (some modest rate of planting failure is usual).

Meadow management is somewhat more straightforward; a seasonal mowing or burning may be required, although care must be taken to make sure that any management is coordinated with essential reseeding and other important aspects of meadow reestablishment. In the first year weeds must be carefully controlled and consistently mowed back to 4-6 inches tall when they reach 12 inches in height. In the second year, weeds should continue to be monitored and mowed and rhizomatous weeds should be hand treated with herbicide. Weeds should not be sprayed with herbicide as the drift from the spray may kill large patches of desirable plants, allowing weeds to move in to these new open areas. In the beginning of the third season, the young meadow should be burned off in mid-spring. If burning is not possible, the meadow should be mowed very closely to the ground instead. The mowed material should be removed from the site to expose the soil to the sun. This helps encourage rapid soil warming which favors the establishment of “warm season” plants over “cool season” weeds.

Cost Issues

Landscape restoration cost implications are minimal during construction. Seeding for installation of a conventional lawn is likely to be less expensive than planting of a “cover” of native species, although when contrasted with a non-lawn landscape, “natives” often are not more costly than other nonnative landscape species. In terms of woodland creation, somewhat dated (1997) costs have been provided by the *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers*:

\$860/acre trees with installation
\$1,600/acre tree shelters/tubes and stakes
\$300/acre for four waterings on average

In current dollars, these values would be considerably higher, well over \$3,000/acre for installation costs. Costs for meadow reestablishment are lower than those for woodland, in part due to the

elimination of the need for shelters/tubes. Again, such costs can be expected to be greater than installation of conventional lawn (seeding and mulching), although the installation cost differences diminish when conventional lawn seeding is redefined in terms of conventional planting beds.

Cost differentials grow greater when longer term operating and maintenance costs are taken into consideration. If lawn mowing can be eliminated, or even reduced significantly to a once per year requirement, substantial maintenance cost savings result, often in excess of \$1,500 per acre per year. If chemical application (fertilization, pesticides, etc.) can be eliminated, substantial additional savings result with use of native species. These reductions in annual maintenance costs resulting from a native landscape reestablishment very quickly outweigh any increased installation costs that are required at project initiation. Unfortunately, because developers pay for the installation costs and longer term reduced maintenance costs are enjoyed by future owners, there is reluctance to embrace native landscaping concepts.

Specifications

The following specifications are provided for information purposes only. These specifications include information on acceptable materials for typical applications, but are by no means exclusive or limiting. The designer is responsible for developing detailed specifications for individual design projects in accordance with the project conditions.

Vegetation – See Appendix B

References

Bowman's Hill Wildflower Preserve, Washington Crossing Historic Park, PO Box 685, New Hope, PA 18938-0685, Tel (215) 862-2924, Fax (215) 862-1846, Native plant reserve, plant sales, native seed, educational programs, www.bhwp.org

Morris Arboretum of the University of Pennsylvania; 9414 Meadowbrook Avenue, Philadelphia, PA 19118, Tel (215) 247-5777, www.upenn.edu/morris, PA Flora Project Website: Arboretum and gardens (some natives), educational programs, PA Flora Project, www.upenn.edu/paflora

Pennsylvania Department of Conservation and Natural Resources; Bureau of Forestry; PO Box 8552, Harrisburg, PA 17105-8552, Tel (717)787-3444, Fax (717)783-5109, Invasive plant brochure; list of native plant and seed suppliers in PA; list of rare, endangered, threatened species.

Pennsylvania Native Plant Society, 1001 East College Avenue, State College, PA 16801
www.pawildflower.org

Western Pennsylvania Conservancy; 209 Fourth Avenue, Pittsburgh, PA 15222, Tel (412) 288-2777, Fax (412) 281-1792, www.paconserve.org

Conservation Design for Stormwater Management (DNREC and EMC)

Stream ReLeaf Plan and Toolkits

The Once and Future Forest – Leslie Sauer

Forestry Best Management Practices for Water Quality – Virginia Department of Forestry

Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers (1997)

Arendt, R. *Growing Greener*. Island Press, November 1999.

Diboll, Neil. Five Steps to Successful Prairie Meadow Establishment. Windstar Wildlife Institute.













Penn State College of Agricultural Sciences, Agricultural Research and Cooperation Extension. “Pennsylvania Wildlife No. 12: Warm-season Grasses and Wildlife” and “Pennsylvania Wildlife No. 5: Meadows and Prairies: Wildlife-friendly Alternatives to Lawn”

Appendix 3.H - Bird Blind












Example Bird Blind – Doylestown Township Central Park

TREES

	Ecological Benefits	Description/Habitat	Site Conditions	Characteristics
Black Willow <i>Salix nigra</i> 	Supports native pollinators, twigs eaten by larger mammals Fibrous root system and tolerance of wet conditions prevent stream banks from eroding	Deciduous lowland tree, grows in moist and saturated soils along streams, rivers and other floodplain or wetland areas. Easy to establish from cuttings.	Soil pH: 5.0-8.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Male and Female greenish catkins, Apr-Jun Fruit: Seeds, after 10 yrs Fall Color: Insignificant Height: 10'-40'
Red Maple <i>Acer rubrum</i>  	Early flowering time supports native pollinators in the spring and the seeds and twigs are eaten by birds and mammals. It is often used in site rehabilitation	Maples are very adaptable, living in swamps and drier upland areas. The bright-red fall color is aesthetically pleasing.	Soil pH: 5.5-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Red rarely yellow, Mar-May Fruit: Red, winged seeds, May-Jul Fall Color: True to its name, leaves turn bright red Height: 20'-40'
Silver Maple <i>Acer saccharinum</i>  	Provide seeds and nesting sites for birds, early pollen producer. Rapid growth makes it beneficial in reclamation areas, but may shade out other species.	Lowland riparian tree, lives in well-drained, moist soils in floodplains and along water sources. Feathery canopy appearance. Subject to breakage.	Soil pH: 5.5-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Greenish/reddish, short clusters, Feb-May Fruit: Winged seeds Apr-Jun Fall Color: Pale yellow Height: 40'-60'
American Sycamore <i>Platanus occidentalis</i>  	Animals eat twigs, cavities provide shelter, shade Good for rehabilitating sites with saturated soils, may shade out smaller species	Large, fast growing trees, with an open, irregular crown and distinguishing bark. They tolerate a range of conditions, mainly growing around rivers and lakes	Soil pH: 5.0-6.5 Type: Loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Small, brown globose heads Apr-Jun Fruit: Small, hairy, Oct-winter, available for animals Fall Color: Yellowish brown Height: 50'-130'
Tulip Poplar <i>Liriodendron tulipifera</i>  	Provides pollen for native insects and fruits and twigs for mammals Often planted in restoration but shouldn't be overused since rapid growth pushes out other plants	Known for its fast, straight growth and the attractive, tulip-like flowers. It grows best in lowland areas with well-drained, loose texture soils.	Soil pH: 4.5-7.5 Type: Loam, sand Moisture: Moist Light: ☀️🌑🌑	Flowers: Orange/green, tulip-like, very show and fragrant, May-Jun. Fruit: Slim, Sept-Oct Fall Color: Golden yellow Height: 70'-100'
Swamp White Oak <i>Quercus bicolor</i>  	Provides shelter and shade, as well as food (acorns) for animals, very valuable for wildlife	Swamp white oaks are large deciduous trees. Leaves feature two-toned color on the top and bottom*. They live in swamps and along stream edges.	Soil pH: 4.3-6.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Catkins, male(red) ,female (green/yellow), Mar-May Fruit: Acorns, fall Fall Color: Gold brown/red Height: 60'-70'
Yellow Birch <i>Betula alleghaniensis</i> 	Provides food and shelter for songbirds Commonly used riparian tree enjoy wetter conditions and grow fairly rapidly	Displaying beautiful fall color, yellow birch is a tree with attractive, papery bark and open canopy. Lives along streams, ponds, rivers, and swamps	Soil pH: 4.0-8.0 Type: Clay, loam Moisture: Moist-Wet Light: 🌑🌑	Flowers: Yellow Green, Apr-May Fruit: Green to tan, cone-like, July-Oct Fall Color: Yellow Height: 60'-80'

☀️ 🌑 🌑
Full sun Partial sun Full shade

SHRUBS

	Ecological Benefits	Description/Habitat	Site Conditions	Characteristics
Buttonbush <i>Cephalanthus occidentalis</i>  	Provides for native insects and pollinators. They are good for erosion control along stream banks.	Button bush is a small to medium-sized shrub, growing in marshes, forest wetlands, and along bodies of fresh water. Can grow in shade but needs sun to flower	Soil pH: 6.1-8.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Distinctive dense, round clusters of white flowers, Jul-Aug Fruit: Green/brown, Sep-Jan Fall Color: Insignificant Height: 3'-10'
Northern Spicebush <i>Lindera benzoin</i>  	Food for birds and butterflies, all parts are edible and aromatic leaves and berries can be used to make tea	The spicebush grows in forested areas, along streams and in floodplains	Soil pH: 4.5-6.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: 🌑🌑	Flowers: Small and yellow, before leaves, Mar-May Fruit: Bright red berries, Sep-Oct Fall Color: Golden-yellow Height: 3'-15'
Red-Osier Dogwood <i>Cornus sericea</i> 	Wildlife eat twigs and the fruit are eaten by birds. The shrubby, multi-stemmed structure provides great nesting sites for birds and small mammals. (Can also be used in Zone 3)	Red Osier dogwoods are shrubby lowland plants know for their bright red stems	Soil pH: 4.5-6.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: White, flat-topped clusters May-Aug Fruit: White, Jul-Oct Fall Color: Reddish green with bright red stems that add color in winter Height: To 10'
Silky Dogwood <i>Cornus amomum</i> 	Provides for songbirds, waterfowl, and mammals. (Can also be used in Zone 3)	Shrubby dogwood that likes forested wetlands, stream and pond banks	Soil pH: 4.5-6.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: White, flat-topped clusters May-Aug Fruit: White, Jul-Oct Fall Color: Reddish green with bright red stems that add color in winter Height: To 10'
Swamp Rose <i>Rosa palustris</i> 	Edible fruit provides for song birds, small mammals and insects	This thorny plant tolerates flooding. Its showy flowers are aesthetically pleasing.	Soil pH: 4.0-7.0 Type: Clay, loam Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Pink, Jun-Aug Fruit: Red berry, Jul-Mar Fall Color: Height: 8'
Southern Arrowwood <i>Viburnum dentatum</i> (V. <i>recognitum</i>) 	Dark berries attract birds and small mammals like chipmunks	Densely leaved and often used in landscaping, due to it's form. Straight stems, nice structure in winter. Likes wooded floodplains and stream banks with loamy soil.	Soil pH: 5.1-6.5 Type: Clay, loam, sand Moisture: Dry-Wet Light: ☀️🌑🌑	Flowers: White, May-Jun Fruit: Blue/black berry, Sep-Nov Fall Color: Reddish purple Height: 10'-15'
Winterberry Holly <i>Ilex verticillata</i> 	Although poisonous to humans, berries provide food for birds and mammals in winter	Thrive in fresh tidal and shrub swamps and forested wetlands	Soil pH: 4.3-6.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️🌑🌑	Flowers: Greenish white, Jun-Jul Fruit: Red berries, Aug-Feb, persist into winter Fall Color: Yellow, brown Height: 6'-12'

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Information Sources:

<http://www.wildflower.org/plants>
<http://plants.usda.gov/>
 Trees and shrubs George A. Petrides
 DEP riparian buffer guide 2010
 Native Plants for Wildlife Habitat and Conservation Landscaping:
 Chesapeake Bay Watershed

These are also great places to find more information on the listed native species!

Photo Sources

(a is top or left picture, b is bottom or right picture)

Black Willow

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b <http://www.messiah.edu/sustainability/map/tree-info/american-sycamore.html>

Tulip Poplar

a http://www.ncwildflower.org/plant_galleries/details/liriodendron-tulipifera

b <http://www.landscapeofus.com/garden/tulip-poplar-liriodendron-tulipifera/>

Swamp White Oak

a <http://www.xavier.edu/green/Native-Plants.cfm>

b <http://americannativeliners.com/quercus-bicolor-swamp-white-oak/>

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a <http://www.motherearthliving.com/gardening/7-herbs-that-grow-in-shade-spicebush.aspx>

b <http://www.discoverlife.org/20/q?search=Lindera+benzoin>

Red Osier Dogwood

a <http://www.plantstoyou.ca/red-osier-dogwood.html>

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Swamp Rose

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b <http://viburnum.com/viburnum-dentatum-arrowwood-viburnum/>

Winterberry Holly

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b <http://www.crosscreeknursery.com/winterberry-holly.html>

A SHORT LIST OF SUGGESTED BUFFER PLANTS

ZONE 1

A native riparian forested area planted with trees and shrubs offers long-term stream and watershed health



Of course, some maintenance is involved (like removing invasives). However, **there's no harvesting of products in this zone since it's crucial in providing for your growing ecosystem!** Functions of this zone include bank stabilization, slowing down runoff, encouraging more infiltration, and providing food, shelter, and shade for the local wildlife, fish, and beneficial insects. This zone is also a future source of large woody material for stream habitat.

If you need to use chemicals such as herbicide or pesticides, be purposeful in selection and application. **Use “aquatic rated” kinds to prevent damaging aquatic life.**



ZONE 1

From water's edge to about 15 feet in
Keep it native!










ZONE 2

Native fruit and nut trees for you and wildlife

ZONE 3









Herbaceous perennials that can be mechanically harvested. “Well-behaved” non-natives allowed here

TREES

	Ecological/ Human Benefits	Potential Products/Income	Habitat/ Site Conditions	Description/ Characteristics
Black Walnut <i>Juglans nigra</i>  	The black walnut provides edible nuts for human and animals as well as lumber as a long-term product.	Nutmeats, shells, oils, syrup In shell-\$9.25/lb, Shelled-\$12/lb, Mature trees produce 6,000 lb nuts/acre/year x 10\$/lb=\$60,000/acre/year)	Soil pH: 5.5-8.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 Wet, riparian soils and should be planted near species that are juglone tolerant*	Coarse, sharp-looking branches, spreading head Flowers: Catkins, Apr-Jun Fruit: Nut, large spherical husk, Oct-Nov Fall Color: First to drop leaves and last to leaf out Height: 70'-100'
Sweet Crab Apple <i>Malus coronaria</i>  	Fleshy fruits are too sour for people to eat raw but provide food for wildlife and attracts pollinators. The tangling branches provide nesting sites for birds.	Varied production, 6bushels of apples/tree and 100 trees/acre, \$30/bushel, \$18,000 per acre	Soil pH: 6.0-7.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 Forest edges, rock streams and fields	Broad, irregular crown, occasionally multi-trunked Flowers: Pink, highly fragrant April to May Fruit: Yellow/green Sep-Nov Fall Color: Yellow/red Height: 15'-30'
Pawpaw <i>Asimina triloba</i>  	Fruit eaten by mammals. Although native, it tastes “tropical” with a custard-y texture, and is eaten fresh or used in desserts.	Fresh fruit: \$2/lb wholesale, \$3+/lb retail Frozen Pulp: \$6/lb retail Jam: \$6/6oz jar retail	Soil pH: 5.0-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Grows in depressional areas with rich, moist soil	Tree with large leaves and a full, egg-shaped head Flowers: Purplish, Apr-May Fruit: Yellow/green stubby bananas, Aug-Oct Fall Color: Yellow-red Height: to 10'
Persimmon <i>Diospyros virginiana</i>  	Fruit eaten by almost all birds and mammals, as well as humans	Fresh-\$2.75/lb retail, frozen-\$8+/lb retail, dried-\$11+/lb retail, \$4,125/acre estimate using \$2.75/lb	Soil pH: 5.0-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Grows in dry to moist soils and prefers drier, open areas	Small tree Flowers: Yellowish, May-Jun Fruit: Orange, size of a large cherry, Aug-Oct Fall Color: Orange/yellow Height: 30'-50'
Downy Service Berry <i>Amelanchier arborea</i> 	Food for birds and mammals, fruits are eaten by over 50 species of wildlife. Berries can also be used for making jam if the birds haven't eaten them all.	Est. \$15,000/acre for berries	Soil pH: 4.5-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Wooded areas with moist, well-drained soils, tolerates drier conditions	Medium-sized tree or multi-trunked shrub, open canopy Flowers: White clusters, Mar-June Fruit: Red berries, June Fall Color: orange/gold and red/green Height: 15'-25'

☀️ 🌑 🌒
Full sun Partial sun Full shade

SHRUBS

	Ecological/ Human Benefits	Potential Products/Income	Habitat/ Site Conditions	Description/ Characteristics
Black Raspberry <i>Rubus occidentalis</i> 	A brambly, native shrub that produces black raspberry fruits for people to eat, as well as the wildlife. The brambles also provides nesting sites for small mammals and birds.	Harvested: \$1.50-3.50/pint; Pick-your-own-\$3-\$5/lb; Net return varies widely, up to \$27,000/acre depending on yield and price/acre	Soil pH: 6.8 or less Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Likes sandy, moist or dry soils that are slightly acidic, along stream banks	Brambly, stemming shrub with purplish stems and thorns Flowers: , March to June Fruit: Black berries, June to August Fall Color: Insignificant Height: To 6’
Common Elderberry <i>Sambucus canadensis</i>  	A native shrub provides fruit for wildlife and helps with erosion control along stream banks. Considered “Nature’s Medicine Chest”	Juice: \$15-\$17/11oz jar Syrup: \$18/4oz jar retail Wine \$10-\$13/bottle retail Cough Drops: \$2.50/15 retail	Soil pH: 5.0-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Tolerant of a range of conditions, prune heavily in winter to maintain thick form	Large, dense, and fast-growing, attractive flowers Flowers: White, flat-topped, June-July Fruit: Purple/black, Aug-Oct Fall Color: Insignificant Height: 3’-13’
Black Chokeberry <i>Aronia melanocarpa</i> 	Small tree or shrub that provides food for birds and mammals	Possible \$10-\$12/lb (mid-west Iowa markets) \$0.50-\$1.25/lb shipping to value-added producers	Soil pH: 6.5-8.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Lowland woods, swamps, bogs, moist thickets	Upright, spreading deciduous shrub, attractive flowers Flowers: White, flat-topped, May Fruit: Berries, black, summer/fall Fall Color: Crimson Height: 3’-6’
Highbush Blueberry <i>Vaccinium corymbosum</i> 	A native shrub that provides fruit for birds and mammals. Potential products are raw fruit and jams.	\$2-\$5/pint (\$3,000-\$18,000/acre, depending on pints/acre) \$.65-\$1.50/lb to processor	Soil pH: 4.5-7.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Forested wetlands, swamps, bogs, rock outcroppings	Twiggy, thicket- forming shrub with nice fall color Flowers: May-June Fruit: Blue/black berries Jun-Sept Fall Color: Bright red Height: To 12’
American Hazelnut <i>Corylus americana</i>  	Nuts are great source of income. Provide a great source of fiber, sold in the shell or shelled, or made into flours, candies, butters, and oils	In-shell: \$3/lb wholesale Shelled: \$6/8oz retail Oils \$8/8oz jar retail	Soil pH: 5.5-7.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️ 🌑 🌒 🌒 Rich, well-drained soils, forests, disturbed areas	Dense, deciduous shrub with one main stem, thicket-forming Flowers: May-June Fruit: Nuts, ragged husk, Jul-Sept Fall Color: Bright yellow to deep red Height: To 10’
Beach Plum <i>Prunus maritima</i> Marsh 	Require cross-pollination, used in jams and sold at farmers markets	Frozen or whole: \$6/lb Fruit must be cleaned	Soil pH: 6.0-6.5 Type: Loam, sand Moisture: Dry-Moist Light: ☀️ 🌑 🌒 Sandy, well-drained, nutrient-poor soils	Low, spreading, and scraggly shrub or tree Flowers: White, May Fruit: Purple, Aug-Sep Fall Color: Red/orange Height: To 5’



SOURCES

Information Sources:

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<http://plants.usda.gov/>
Trees and shrubs George A. Petrides
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Native Plans for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed. US Fish and Wildlife Service & Chesapeake Bay Foundation office
<http://www.missouribotanicalgarden.org/PlantFinder>
<https://www.arborday.org/TREES/treeguide>

These are also great places to find more information on the listed native species!

Picture Sources:

(a is top picture, b us bottom picture)

Black Walnut

a http://herbarium.desu.edu/arboretum/scientific_names/Juglans_nigra/index.html

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Highbush Blueberry

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Beach Plum

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A SHORT LIST OF SUGGESTED BUFFER PLANTS

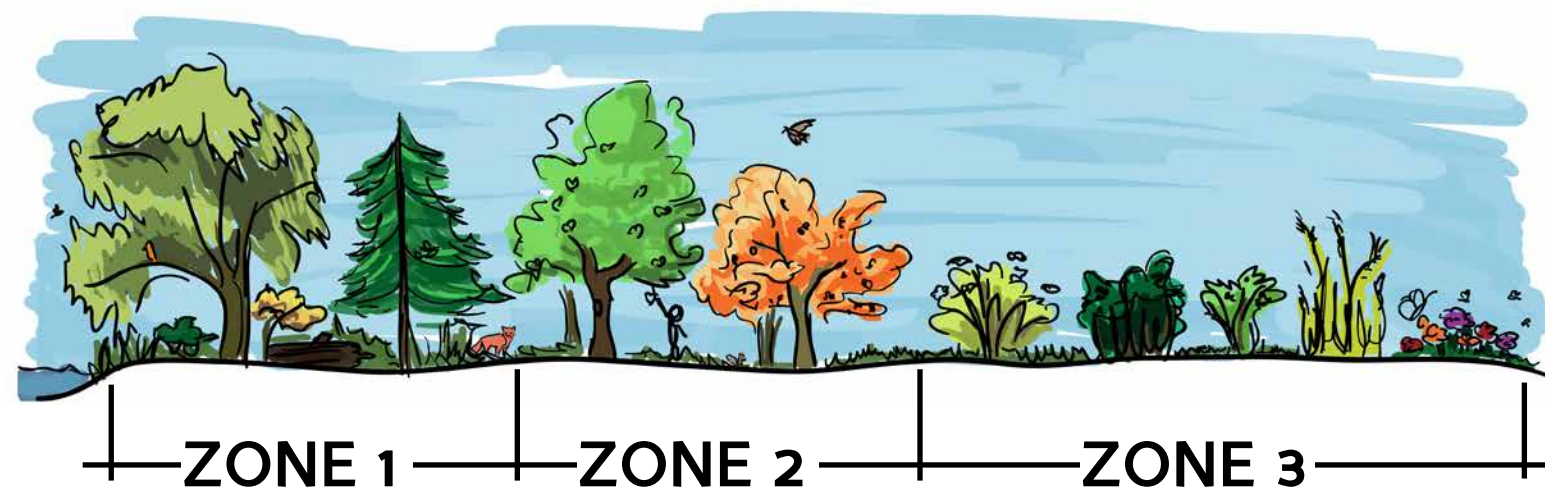
ZONE 2

An an area planted with native fruit and nut trees for harvesting, selling, and personal consumption



Incorporating edibles into your buffer really increases the benefits of planting one. Not only do fruit and nut trees provide people with home-grown food, but these lovely natives will attract plenty of wildlife. Using these suggested plant species and others, **you can customize your buffer to fit your needs AND improve water quality and wildlife habitat!**

Of course, maintenance is essential to ensuring your trees are yielding maximumly so the use of aquatic and environmentally safe pesticides, herbicides, and fertilizers may be used. Using chemicals that pollute the waterways counteracts the purpose of the buffer, so **think before you apply.**



ZONE 1

From water's edge to about 15 feet in
Keep it native!









ZONE 2

Native fruit and nut trees for you and wildlife

ZONE 3


Herbaceous perennials that can be mechanically harvested. "Well-behaved" non-natives allowed here

TREES&SHRUBS

	Ecological Benefits/ Potential products	Description/Habitat	Site Conditions	Characteristics
Witch Hazel <i>Hamamelis virginiana</i> 	A small tree or shrub. Game birds and mammals eat the twigs, buds and leaves. Has medicinal purposes. Woody floral*	Noted for fall/winter bloom. Witch hazel is shade tolerant, growing in rich, well-drained acidic soils. It is often multi-trunked with an open crown.	Soil pH: 5.5-6.5 Type: Clay, loam, sand Moisture: Dry-Moist Light: ☀️-☾️●	Flowers: Yellow, Sept-Dec Fruit: Tan capsule, Oct-Nov Fall Color: Golden Height: 15’-30’
Pussy Willow <i>Salix discolor</i>  	Eaten by wildlife, but is well-know for its fuzzy catkins which are often cut and sold on the floral market. Woody floral*	Small ornamental tree or shrub with upright, spreading stems. Grows in full sun in damp lowlands, short-lived but fast growing.	Soil pH: Acidic Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️-☾️●	Flowers: Fuzzy catkins, aesthetically pleasing, Feb-May Fruit: Brown Fall Color: Not notable Height: 15’-25’
Curly Willow <i>Salix mastudana</i> 	The curly willow provides twigs for animals to eat, “curled” branches are aesthetically pleasing and can cut and sold. Woody floral*	Small ornamental with interesting branching tree grows in wetter conditions	Soil pH: Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️-☾️●	Flowers: Yellow Fruit: Fall Color: Golden Height: To 30’
Hops (Hoptree) <i>Ptelea trifoliata</i> 	The Hoptree provides sweet nectar for native bees and butterflies and seeds for birds and mammals. It’s fruit is available through the winter. The Seed can be used to replace hops in beer.	The tree tolerate a range of soil conditions, ofter growing in gravelly or sandy soils with a near neutral pH in full sun to full shade.	Soil pH: Type: Clay, loam, sand Moisture: Dry-Moist Light: ☀️-☾️●	Flowers: Small, green clusters, may-Jun Fruit: Flat, circular, papery, Sept-spring Fall Color: Yellow Height: 10’-20’
Flowering Quince <i>Chaenomeles speciosa</i> 	A non-native flowering shrub that attracts wildlife like rabbits and humming birds. Woody floral.	Small, multi-stemmed shrub with showy flowers, very aesthetically pleasing in a hedge row. Is not picky about soil but requires full sun	Soil pH: Wide range Type: Wide range Moisture: Wide range Light: ☀️	Flowers: Showy, red, March (before leaves) Fruit: Yellow/green, fall Fall Color: Height: 6’-10’
Chinese Chestnut <i>Castanea mollissima</i> 	Provides nuts and shelter for wildlife, as well as shade Potential, unidentified market for nuts which can also be eaten by humans	A medium-sized, wide spreading tree with dense shade. Grows in moist, well-drained soils. Resistant to the Chestnut blight	Soil pH: Slightly acidic Type: Clay, loam, sand Moisture: Dry-Moist Light: ☀️	Flowers: yellow/white catkins Fruit: Nut in husk, Sep-Oct Fall Color: Height: 40’-60’
American Holly <i>Ilex opaca</i> 	This iconic evergreen tree provides winter berries that are mostly eaten by song birds Woody floral*	The aesthetically pleasing tree has notable, prickly leaves. It enjoys growing in sandy wooded areas.	Soil pH: 4.0-7.5 Type: Clay, loam Moisture: Moist Light: ☀️-☾️●	Flowers: White, May-Jun Fruit: Red berries Fall Color: Evergreen Height: 15’-50’

☀️ ☾️ ●
Full sun Partial sun Full shade

TREES&SHRUBS

	Ecological Benefits/ Potential products	Description/Habitat	Site Conditions	Characteristics
Wild Hydrangea <i>Hydrangea arborescens</i> 	A plant grown for aroma and aesthetics, but is also beneficial for pollinators and insects Woody floral*	Wild hydrangeas are a fast-growing, short-lived understory shrub with showy flowers. Its natural habitat is on rocky banks and ravines	Soil pH: 6.1-8.5 Type: Loam, sand Moisture: Moist Light: ☀️-☾️●	Flowers: Green/white, Jun-Aug Fruit: Brown, late summer Fall Color: insignificant Height: 3’-6’
Red-Osier Dogwood <i>Cornus sericea</i> 	Wildlife eat twigs and the fruit are eaten by birds. Attracts pollinators. The shrubby, nesting Woody floral*	Shrubby, multi-stemmed lowland plants with showy flowers and fruit Yellow Twig Dogwood <i>Cornus sercia</i> “Flaviramea” Similar to Red-Osier but with bright yellow stems	Soil pH: 4.5-6.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️-☾️	Flowers: White, flat-topped clusters May-Aug Fruit: White, Jul-Oct Fall Color: Reddish green, bright red stems add color in winter Height: To 10’
Silky Dogwood <i>Cornus amomum</i> 	Provides for songbirds, waterfowl, and mammals. (Can also be used in Zone 1)	Shrubby dogwood that likes forested wetlands, stream and pond banks	Soil pH: 4.5-6.0 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️-☾️	Flowers: White, flat-topped clusters May-Aug Fruit: White, Jul-Oct Fall Color: Reddish green with bright red stems that add color in winter Height: To 10’
Highbush Blueberry <i>Vaccinium corymbosum</i> 	A native shrub that provides fruit for birds and mammals. Potential products are raw fruit and jams.	\$2-\$5/pint (\$3,000-\$18,000/acre, depending on pints/acre) \$.65-\$1.50/lb to processor	Soil pH: 4.5-7.5 Type: Clay, loam, sand Moisture: Moist-Wet Light: ☀️	Twiggy, thicket- forming shrub with nice fall color Flowers: May-June Fruit: Blue/black berries Jun-Sept Fall Color: Bright red Height: To 12’
*Woody florals Cuttings can be taken every 2-3 years and sold to the floral/crafts industry Cuttings: \$0.37-\$0.45/stem retail Wreaths: \$45+ each retail				
HERBACEOUS PLANTS				
Canada Mayflower <i>Maianthemum canadense</i> 	A small, perennial understory plant that grows in northern forests	Flowers: White clusters, Spring-Summer Fruit: Red berries Height: 2-6”		
Cardinal Flower <i>Lobelia cardinalis</i> 	Aesthetic plant that grown on stream banks and damp meadows, attracts pollinators and hummingbirds, biennial must be reseeded	Flowers: Scarlet, Jul-Oct Fruit: Height: 2-5’		
Native Wildflowers and Grasses  Common Milkweed <i>Asclepias syriaca</i>	A band of native flowers and grasses can be a first line of defense in “buffering” the effects of runoff. They can be planted for aesthetics and to attract wildlife and pollinators. Native Milkweed varieties (pictured), in particular, provide food and shelter for Monarch butterflies.			

SOURCES

Information Sources:

<http://www.wildflower.org/plants>
<http://plants.usda.gov/>
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These are also great places to find more information on the listed native species!

Picture Sources:

(a is top or left picture, bi is bottom or right)

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A SHORT LIST OF SUGGESTED BUFFER PLANTS

ZONE 3

The “working” part of your buffer, allowing mechanical harvesting and planting of your crops



This zone offers the most flexibility in what you want to plant and how you want to maintain and harvest your crops. **Species planted here can be edibles, biomass crops, plants providing wildlife benefits, industrial uses, or just for aesthetic beauty.** Lower-growing grasses and wildflowers can attract a variety of native pollinators.

As always, **use chemicals carefully and don't use anything that will pollute the water.** Planting non-native species may be considered but have a plan to control its spread and prevent it from becoming invasive.



ZONE 1

From water's edge to about 15 feet in
Keep it native!

ZONE 2

Native fruit and nut trees for you and wildlife

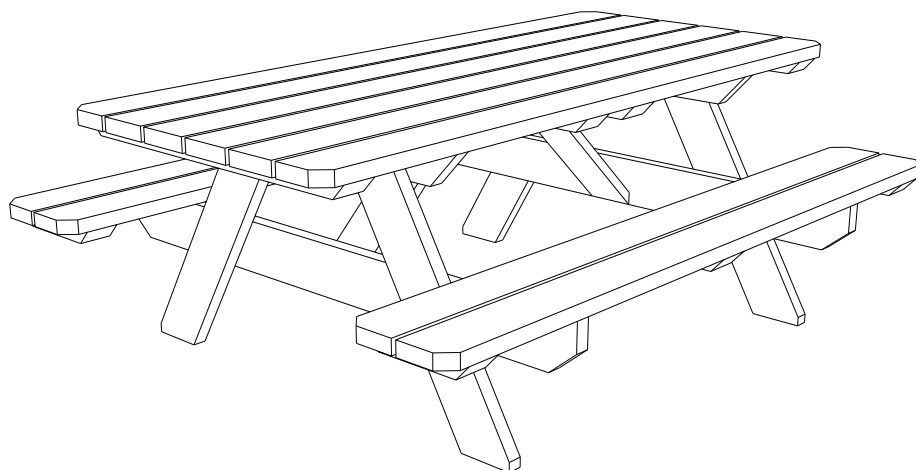
ZONE 3

Herbaceous perennials that can be mechanically harvested. “Well-behaved” non-natives allowed here



TRADITIONAL PICNIC TABLE

This classic picnic table is the perfect setup for casual outdoor dining. Plus, it's easy to build and built to last. Real Cedar is inherently resistant to rot, decay and insects, which means you can let it weather naturally without any chemical finishes. But if you would like to stain or paint this table, Real Cedar recommends cutting the wood first and then coating all six sides of each piece before you begin building. Either way, you're going to have yourself a fun and functional outdoor table, and let's face it – nothing says summertime quite like backyard cookouts!



DESIGN: REAL CEDAR ORIGINAL

CEDAR PRO TIP:

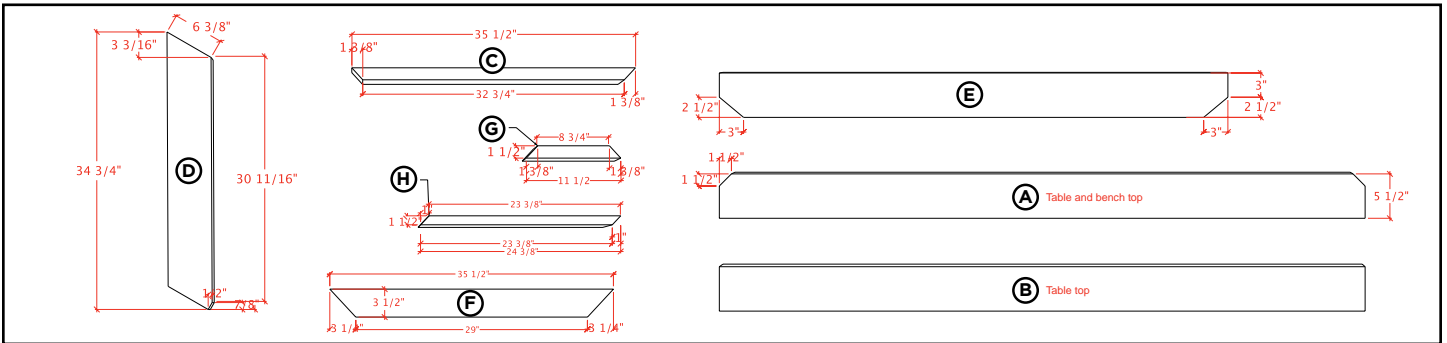
For all outdoor work, you should use rust-resistant hot-dipped galvanized or stainless steel nails. Other fasteners and hardware such as bolts, screws and hinges should also be made from similar corrosion resistant materials.

WHAT YOU'LL NEED

PART #	DESCRIPTION	FINISHED SIZE			SIZES	MATERIAL	QTY
		T	W	L			
A	TABLE/BENCH TOP	1 1/2"	5 1/2"	80"	2X6X8	WR CEDAR	6
B	TABLE TOP	1 1/2"	5 1/2"	80"	2X6X8	WR CEDAR	4
C	TABLE CLEAT	1 1/2"	3 1/2"	35 1/2"	2X4X3	WR CEDAR	4
D	LEGS	1 1/2"	5 1/2"	34 3/4"	2X6X3	WR CEDAR	4
E	BENCH SUPPORT	1 1/2"	5 1/2"	63"	2X6X6	WR CEDAR	2
F	TABLE SUPPORT	1 1/2"	3 1/2"	35 1/2"	3 1/2"	WR CEDAR	2
G	BENCH CLEAT	1 1/2"	3 1/2"	11 1/2"	2X4X1	WR CEDAR	6
H	BRACE	1 1/2"	5 1/2"	24 3/8"	2X6X3	WR CEDAR	2

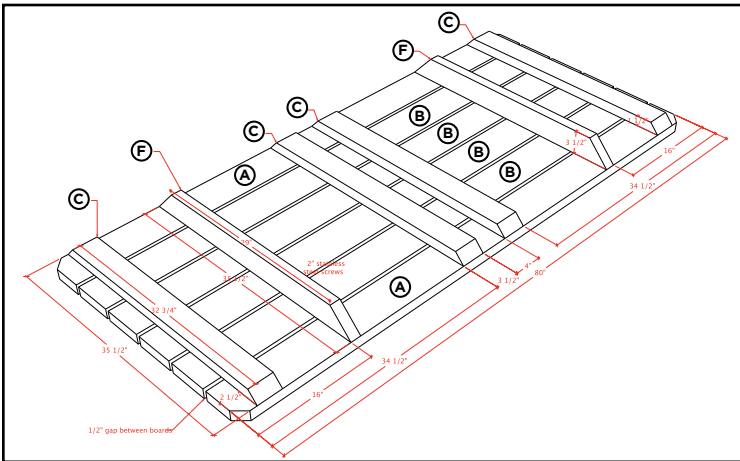
STEP 1 - Customize Wood

Cut all tabletop boards, legs, supports, bracing and cleats to the specified lengths and angles



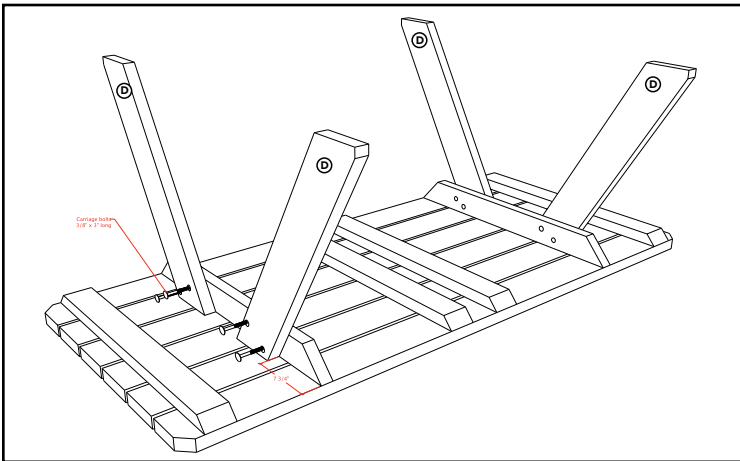
STEP 2 - Build Tabletop

Working on a clean level surface, clamp four (B) tabletops in between two (A) tabletops. Separate each board with 1/2" spacers. Position two (F) tabletop supports across the boards, drill holes with a combination countersink bit, and attach with screws. Then attach four (C) table cleats to the tabletop.



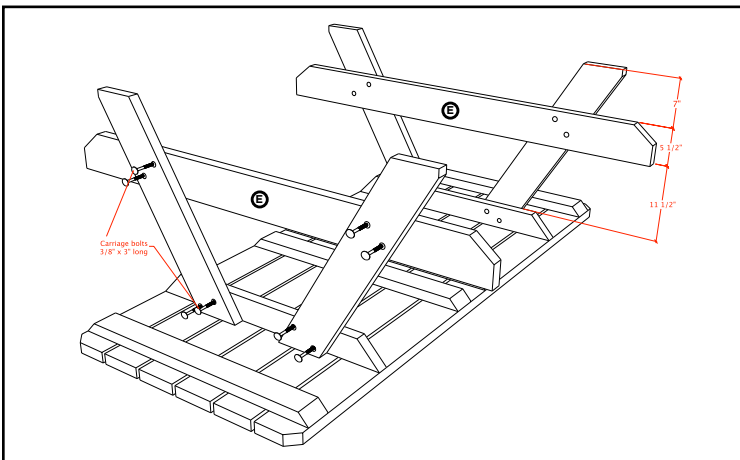
STEP 3 - Install Legs

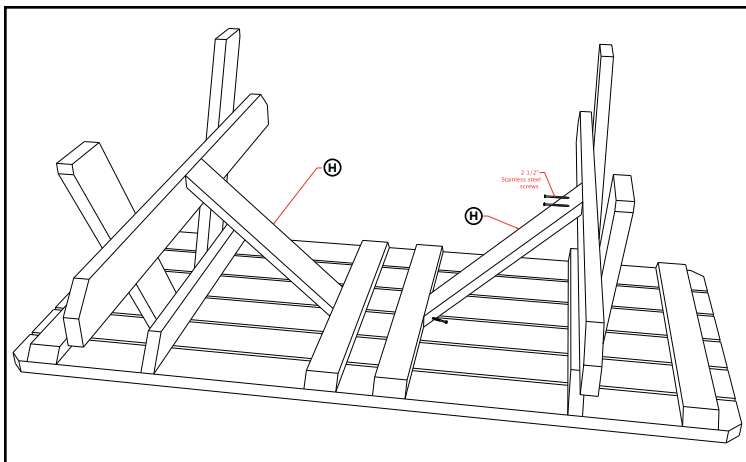
Position and clamp (D) legs to outside of table supports. Countersink and drill holes for two 3" inch carriage bolts, nuts and washers on each leg. Attach and tighten bolts.



STEP 4 - Add Bench Support

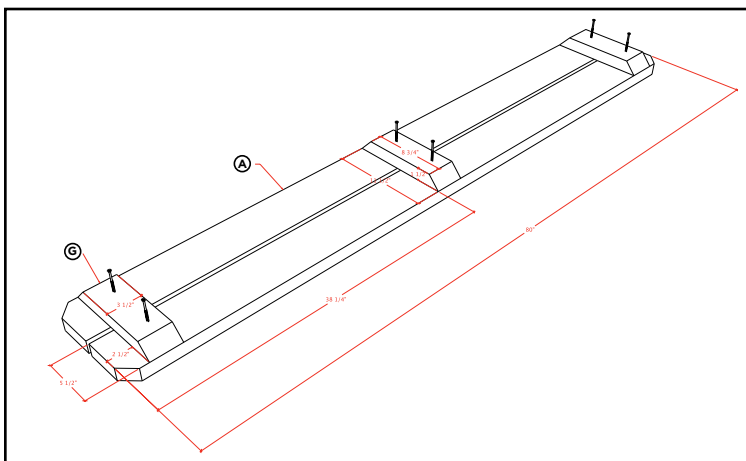
Position and clamp on the (E) bench supports onto the legs. Countersink and drill holes for two 3" inch carriage bolts, nuts and washers on each leg. Attach and tighten bolts.





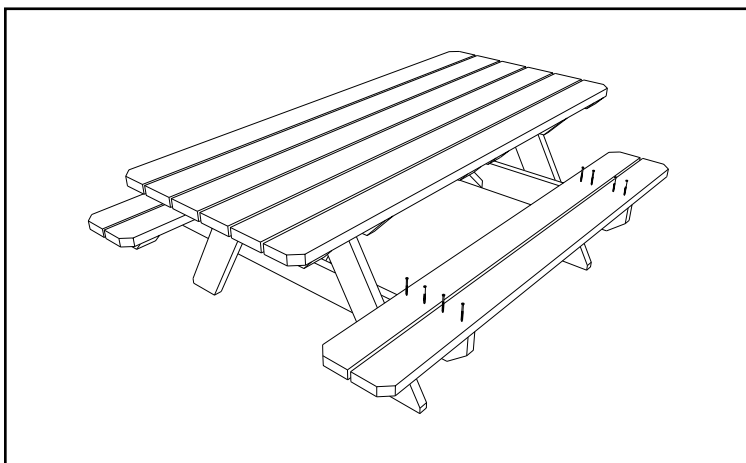
STEP 5 - Secure Bench Support

Attach (H) bracing to bench supports with screws.



STEP 6 - Assemble Seating

Working on a clean and level surface, clamp two (A) bench boards together separated by $\frac{1}{2}$ \" spacers. Position and screw on (G) bench cleats.



STEP 7 - Attach Seating to Table

Position the benches onto the bench supports and attach with screws.

NOTE:

Real Cedar is not responsible for any personal injury or property damage sustained in connection to these guidelines.

A photograph of two dogs running on a gravel path in a park. In the foreground, a black and white dog is running towards the right. In the background, a golden retriever is running towards the right. The background is slightly blurred, suggesting motion.

Establishing a **Dog Park** in Your Community



AMERICAN
KENNEL CLUB®

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What Is a Dog Park and How Does It Benefit the Community?

With cities becoming more and more crowded and leash laws becoming more restrictive, many concerned dog owners are looking to the creation of dog parks as a solution to their need for a place to spend quality time with their pets. But just what is a “dog park,” and what benefits can one bring to your city or town?

A dog park is a public park, typically fenced, where people and their dogs can play together. Similarly, a dog run is a smaller fenced area, created for the same use, that is often located within an existing park. As the names imply, these places offer dogs off-leash play areas where their owners can enjoy a park-like setting and the chance to socialize with other canines and their owners. Dog parks, which are sometimes managed by park users in conjunction with city or town officials, are being established all over the country and offer a wealth of benefits to dogs, dog owners and the community as a whole.



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More than just “room to roam,” the creation of a dog park . . .

Allows dogs to exercise and socialize safely. Puppies and adult dogs need room to run, and enclosed play areas permit them to do so while preventing them from endangering themselves and others (for example, by running into the path of an oncoming vehicle). In addition, dogs who are accustomed to playing with animals and people other than their owners are more likely to be well-socialized and react well toward strangers.

Promotes responsible dog ownership. Dog parks prevent off-leash animals from infringing on the rights of other community residents and park users such as joggers, small children, and those who may be fearful of dogs. Parks also make it easier for a city to enforce its leash laws, as resident dog owners with



Enclosed play areas for exercise make dogs better-adjusted neighbors.

park access have no reason to allow their canine companions off-leash when outside of the park.

Provides an outlet for dog owners to socialize. Dog parks are a great place for owners to meet other people with common interests. The love people share for their dogs reaches beyond economic and social barriers and helps foster a sense of community. Park users also benefit from the opportunity to ask questions of other owners and find solutions to problems they might be having with their pet.

Makes for a better community by promoting public health and safety. Well-exercised dogs are better neighbors who are less likely to create a nuisance, bark excessively, and destroy property. Their presence in the park, along with their owners, also may help deter crime.



How to **Build** a Dog Park in Your Community

By now you've recognized the need for a dog park in your area, and you're eager to see one established. But how do you get started? The following are some strategies for a successful campaign:

The First Steps . . .

Start with a core group of committed dog park activists. Talk with a half dozen other individuals who are concerned about the lack of off-leash spaces. These may be people you already know, or you may want to put a notice in the local paper. This group may form a park association and will be responsible for meeting with public officials, making presentations, maintaining the park and defusing any problems that arise.

Hold a public meeting. Once the core group is in place, a larger community meeting will help you get the word out to supporters and solicit input and suggestions. Contact other dog owners, dog-related clubs, veterinarians, and humane society and animal control officials to gather interest and support. Do so by posting, mailing, or distributing notices in areas such as neighborhood bulletin boards, pet supply stores, animals hospitals, and shelters. Encourage people to write letters of support to public officials and the media, and to make presentations to community groups whose backing would be valuable.

Educate your fellow dog owners on the need to be responsible. The owner who neglects to pick up after his dog or who allows an aggressive or unsocialized dog to run loose can do a lot of damage to your cause and undermine your chances of success.

Write a clear mission statement that details the need and purpose of the park, stressing the benefits to dog owners, their canine companions, and the greater community. The Redwood City [California] Responsible Dog Owners' statement says it all: "To establish a fenced-in, off-leash dog park where well-behaved canine citizens can exercise in a clean, safe environment without endangering or annoying people, property or wildlife. To



Dog owners who neglect to pick up after their dogs can damage your cause.



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develop a beautiful, well-maintained space open to all dog lovers and friends who are willing to uphold the park's rules and restrictions. To view this park as a community project, in partnership with the City of Redwood City, designed to satisfy the needs of dog-owners and non-dog owners alike."

Choose a site. The ideal area will be a safe, accessible location that takes into account the needs of park users as well as the effect the park will have on neighbors and the environment. Please refer to "Dog Park Design" on page 15 for additional recommendations.

Create a budget. Determine how much it will cost to construct and maintain the park – costs for grass, fences, garbage removal, lawn maintenance, drinking water, field drainage, lighting, benches, and a pooper-scooper station. Some cities are willing and able to finance a dog park; others would rather share the cost with a group committed to maintaining the park and ensuring that park rules are followed. Keep in mind that, if it is within your budget to do so,

SUCCESS STORY #1

Monmouth County, New Jersey

In the summer of 1999, a newly organized group of Monmouth County dog owners petitioned the county park system and several local municipalities to establish an off-leash dog park. The Bay Shore Companion Dog Club and New Jersey D. O. G. (Dog Owners Group) helped recruit members and collect signatures from owners of the nearly 40,000 licensed dogs living in the county.

After collecting 12,000 signatures, the group presented its proposal to the county park system's Board of Recreation Commissioners and municipal park system officials. Officials agreed that a dog park would offer many benefits to residents. They talked to other counties with successful parks about liability issues, rules, and regulations, before voting to approve funding for the estab-

lishment of an off-leash area in Monmouth County. The Thompson Park Dog Run opened on October 30, 1999, to enormous popularity.

Now that the park has opened, area dog owners will concentrate on forming a core group to help keep up the site and prevent potential problems. Just because dogs are allowed to run free does not mean that owners will not be responsible for their animals' actions. There are rules to be followed, guidelines to be maintained. "Public education for dog owners will be critical to the park's success," notes one of the organizers. The park itself provides a terrific venue for teaching people to be responsible dog owners. Members of the local dog community have already held a "Park Do's and Don'ts" seminar and plan to host future programs there.



sharing expenses with the city can be a great public relations tool. It shows officials that you are committed to the project, will help foster good community relations and may increase your chance for the park's approval.

Depending on your situation, you will have to determine how you will generate revenue for your budget. One possibility to consider is user fees – requiring all park users to pay an annual or daily fee. Permits could be obtained from the city or town or through the park association. Fund-raisers such as a dog wash or concession sale at a local dog show can also help to generate money to cover expenses and maintenance costs. Finally, consider soliciting town and city sources. By convincing elected officials that there is wide support for a dog park among taxpayers and voters, you may help encourage funding for the park.

Solicit the input and seek the approval of significant organizations in your community. Meet with the proposed park's neighbors before talking to city hall. As soon as someone brings up a concern, address it and try to come up with a solution. With a little good will and cooperation, neighborhood differences can usually be resolved.



OK, you’ve gathered your resources. Where do you go from here?

Create a proposal. Your well-prepared presentation will include your mission statement and goals, and should address issues such as location, funding, maintenance and enforcement. Committee members will be expected to establish and enforce reasonable health and safety rules for the park, and these should be included in the proposal as well. Suggestions for these guidelines can be found in the “Rules and Regulations” section of this brochure. A good proposal will also do the following:

Demonstrate need. Do this by gathering statistics on the dogs and the people in your community.

- How many dogs would use a dog park?
- What are the demographics of the people in your city?
- Who currently uses city parks – and who doesn’t? Downplay the “dog factor” and emphasize people issues. Dogs don’t pay taxes or vote.





Demonstrate support. In many communities, organizers found that a simply worded request, circulated on a petition, helped convince city officials that there was indeed both a need and widespread public support for a responsibly run dog park.

- Place petition gatherers at supermarkets, pet-supply stores and other high-traffic areas.

SUCCESS STORY #2

Sarasota County, Florida

Sarasota County is the proud home to two successful “paw parks,” thanks in part to some active AKC®-affiliated dog club members.

One long-time club member chaired the Animal Welfare Advisory Committee that approved the opening of the 17th Street Paw Park last year. The chairman and his rescued Greyhound participated in a ribbon-cutting ceremony that attracted the attention of enthusiastic dog owners, media and city officials alike. The overwhelming success of the 17th Street Paw Park led to the creation of a second

off-leash area at Woodmere Park in Venice, Florida. In support of the move, the Greater Venice Florida Dog Club donated a decorative sign to mark the new paw park’s location.

In the last year, county officials from across the nation have contacted the Sarasota County Parks and Recreation Department regarding their success in developing and maintaining paw parks. Based on the positive response community residents have had to the parks, both off-leash areas will continue to serve as models for dog groups in the future.



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- Enlist the support of local veterinarians, groomers, dog walkers, and others who have a real interest in seeing a community filled with healthy, well-socialized dogs. Involve them in gathering petitions, writing letters to the editor of local papers and generally spreading the word.
- Organize local residents to contact their community representatives, parks department officials, and media in the form of letters, e-mails, and phone calls, asking for their support.
- Consider sending press releases to local media, explaining how the community will benefit from a dog park and providing information about the success of existing parks in other areas.
- You'll need to get the neighbors' approval, too. Explain your proposal to them, as well as the ways that a dog park will benefit them, and ask them to sign a separate petition stating that they are willing to have the park in their neighborhood.

Get to know local officials – your city council members and the director of your department of parks and recreation. Attend meetings, join them at fund-raisers. Find out what they need from you to move the dog park forward. To help you get started, the AKC's Government Relations Department can provide you with brochures offering tips on working with government officials.



When you're ready, request a hearing with city government to discuss your proposal. Have two or three carefully selected, knowledgeable and articulate members of your group present your plan, clearly expressing its many benefits to the community and calmly addressing any concerns. Be prepared to deal with a range of concerns, including the risk of dog fights, dog bites, noise level, parking and traffic needs, liability issues, and maintenance. Explain why some of these are nonissues – the park's dogs, for example, will be well-socialized and therefore less likely to fight, bite, and cause accidents in the community. Have a plan to address legitimate issues, like traffic and noise.

Be patient and flexible. Dealing with city government is rarely a quick process, but don't give up! Follow through with continued letters and e-mails, and be willing to work toward compromise.

SUCCESS STORY #3

Sausalito, California

In early 1991, the City of Sausalito passed a law requiring dogs to be leashed at all times within the city limits. After receiving a citation and fine for walking her dog Remington without a leash, one owner led a citizen group that worked with the city council, the parks and recreation department and the Marin Humane Society to establish a dedicated enclosed area where the dogs of Sausalito could be off leash.

During that summer volunteers raised funds to fence a 1.3 acre area in the Martin Luther King School area, located on the north side of Sausalito, to be used as a dedicated dog park. In November 1991, the "Remington Dog Park" was officially opened with a gala ribbon cutting attended by city council members, local citizens, and their dog companions.

Although the city provides utilities, including water, electricity, and garbage removal, the park has been maintained by its users since the opening. Regularly scheduled work parties cut the grass as

well as maintain and improve the grounds.

Improvements to the park in excess of \$36,000 to date have been made through donations solely from park users. In addition to original fencing the park now has lighting, a storage shed, a riding lawnmower, picnic tables, benches, a dog drinking-water area, and a "scooper" cleaning station.

The park is the home of champion show dogs as well as mixed breeds. Dog owners have adopted over 30 "rescue" dogs. Many owners now have two dogs as a result of this program.

Having received the highest rating of "4 Paws" in The California Dog Lover's Companion, the Sausalito Dog Park is now used by over 300 dogs per day. From sunup to sundown, dogs of all ages, sizes, and types can be seen romping in the park, chasing a never ending supply of tennis balls, simply lying at their masters' feet under a picnic table or on top of the picnic table demanding face-to-face attention.

(See also www.dogpark-sausalito.com.)



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SUCCESS STORY #4

Tallahassee, Florida

Members of the Ochlockonee River Kennel Club are always looking for ways to give back to their community, so when the opportunity came to help with the establishment of a dog park in Tallahassee, they jumped at the chance.

The group had long realized how important it was for dog owners to have a place where they could socialize with others and let their dogs run or play Frisbee. At the same time, their community was facing problems at a nearby city park where owners were permitting their dogs to illegally roam off-leash. The solution seemed simple -build a dog park! A public committee was formed, and an ORKC board member volunteered to serve on behalf of the dog community.

While the city of Tallahassee was

receptive to the idea, it was clear that little could be done without funds for fencing, pooper-scoopers, and the like. ORKC, which donates to various organizations every year, soon agreed to give the city the \$4,000 that would be needed to fence the two-acre park. Other clubs and fanciers followed suit, donating money for watering holes, cleanup facilities, shade trees, and benches. The city even donated old fire hydrants to add to the fun.

The park has been extremely popular since its opening in the summer of 1999, and city officials, who originally agreed to open the park on a trial basis only, are now enthusiastic about developing more. Members of the ORKC are pleased to have had a helping hand in the park's establishment and see it as a great opportunity to increase awareness of responsible dog ownership.

Congratulations – they approved it! Now what?

Your efforts have been successful, and development of the dog park is moving forward. Now is the time to thank everyone who helped bring the park to fruition, including volunteers, government officials, and community residents. As a result of everyone's hard work, many dog owners will soon have a new opportunity to enjoy their canine companions! Be sure to share this good news with the AKC's Government Relations Department so we can pass it on to others.

The key to future and continued success of the dog park will lie in responsible park-association members and park users who strictly enforce the rules. For the most part, this will mean getting people to clean up after their dogs, quiet excessive barking and curtail any aggressive behavior. Occasionally larger issues may arise, and it will be up to you to help settle disputes in a responsive, flexible manner.

Maintenance will be another important consideration. In some areas, park associations work in conjunction with local kennel clubs and parks department officials to organize volunteer "park cleanup" days. Kennel clubs and other dog organizations may also be willing to donate funds for future supplies of scoopers, trash bags, and cans.

The development of a successful dog park requires a great deal of planning and effort. But your involvement and dedication will hopefully lead to the ultimate reward – the joy of creating and maintaining a special place where dogs and their families can run, romp and socialize.



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REMINGTON DOG PARK

HOURS

6:30AM–8PM

DAYLIGHT SAVINGS TIME 6:30AM–9PM

BARK–FREE ZONE

PLEASE BE CONSIDERATE. NOISE FROM THE PARK IS A NUISANCE TO OUR NEIGHBORS. DOGS THAT BARK PERSISTENTLY MUST BE REMOVED FROM THE PREMISES.

UNATTENDED DOGS WILL BE IMPOUNDED

DO NOT LEAVE YOUR PET IN THE DOG PARK WITHOUT SUPERVISION.

CALL THE
MARIN HUMANE SOCIETY
883–4621

TO REPORT A DOG PROBLEM
OR LOST PET.

Dog Park Design:

The Ideal Dog Park Should Include . . .

- One acre or more of land surrounded by a four- to six-foot high chain-link fence. Preferably, the fence should be equipped with a double-gated entry to keep dogs from escaping and to facilitate wheelchair access.
- Cleaning supplies, including covered garbage cans, waste bags, and pooper-scooper stations.
- Shade and water for both dogs and owners, along with benches and tables.
- A safe, accessible location with adequate drainage and a grassy area that is mowed routinely.
- If space allows, it is preferable to provide separate areas for small and large dogs. This will enable large dog owners to allow their pets to run more freely, while protecting smaller dogs who may not be suited to the enthusiastic play of larger breeds.
- Signs that specify park hours and rules.
- Parking close to the site.



A double-gated entry prevents dogs from escaping.



Rules and Regulations

Members of a dog park committee should establish and enforce reasonable health and safety rules for the park, such as the following:

- Owners are legally responsible for their dogs and any injuries caused by them.
- Puppies and dogs must be properly licensed, inoculated, and healthy.
- Animals should wear a collar and ID tags at all times.
- Owners must clean up after their dogs.
- Dogs showing aggression toward people or other animals will be removed from the park. Animals who exhibit a history of aggressive behavior will not be permitted to enter.
- Puppies using the park must be at least four months old.
- Owners should not leave their dogs unattended or allowed out of sight. If young children are permitted in the dog park, they too should be under constant supervision.
- Dogs in heat will not be allowed inside the park.
- Owners must carry a leash at all times. Dogs should be leashed before entering and prior to leaving the park.
- Violators will be subject to removal from the park and suspension of park privileges.

REMINGTON DOG PARK *RULES*

1. Dogs must NEVER be left unattended.
2. All dogs must wear a current license.
3. Owners are required to clean up after their dogs.
4. Unruly dogs are not allowed.
5. Female dogs "in heat" are not allowed in the Dog Park area.

Marin Humane Society 883-4621



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AKC® Web Site: www.akc.org

For more information, contact
the Government Relations Department

Phone: 919-816-3720

Fax: 919-816-4275

E-Mail: doglaw@akc.org

Photos of Remington Dog Park, Sausalito, CA, by Vicky Cook

Appendix 3.L - Trail and Park Directional and Wayfinding Signage

Polk Valley Park – Wayfinding Signage







Polk Valley Park – Natural Areas Signage



Interpretative Education Signage Example – Hart’s Woods, Doylestown Central Park

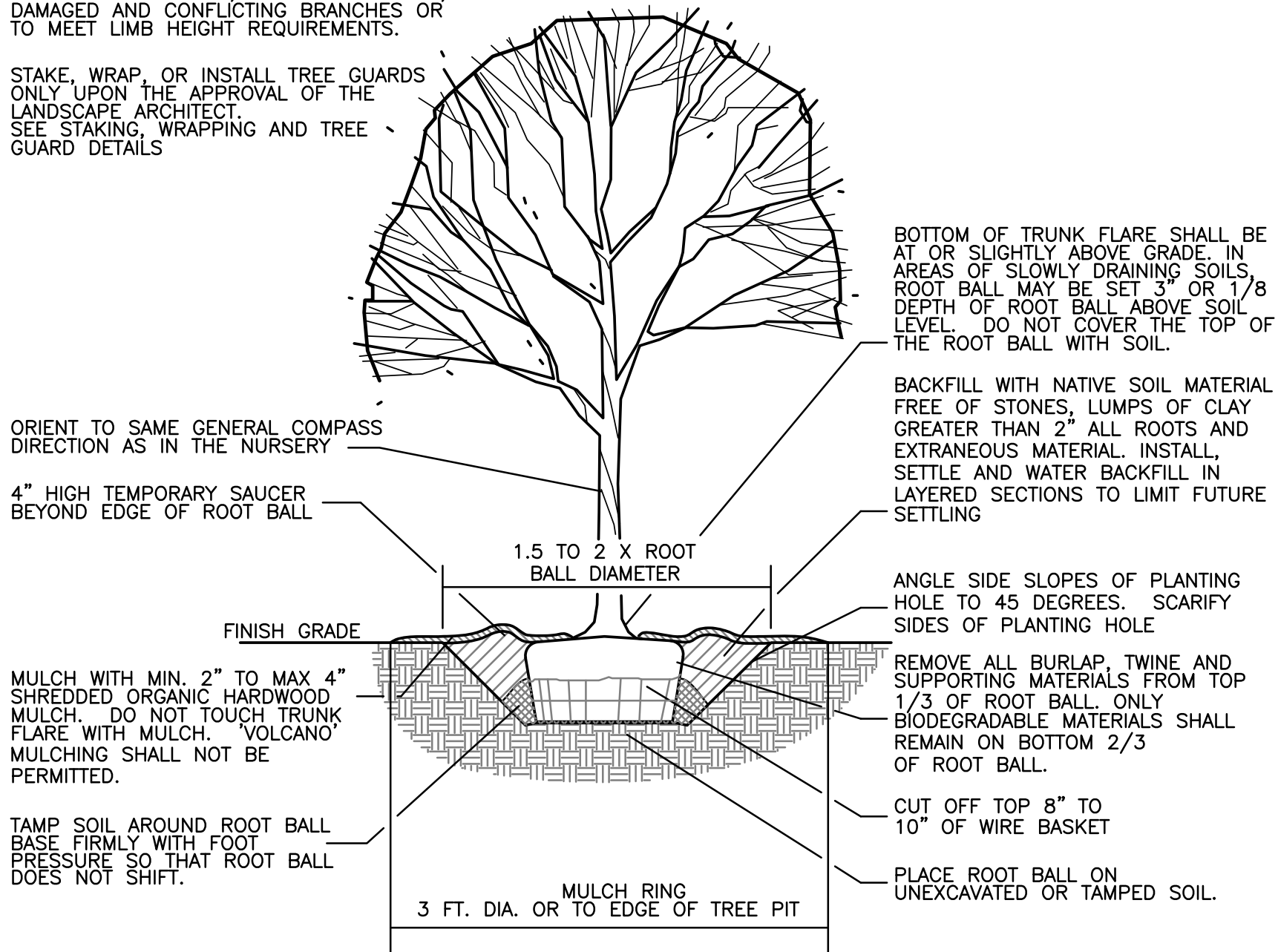
False Solomon's Seal
(*Ailanthum racemosum*)
2001-2002

Appendix 3.N - Tree Planting Detail

NOTES:

AT TIME OF PLANTING, PRUNE ONLY DEAD, DAMAGED AND CONFLICTING BRANCHES OR TO MEET LIMB HEIGHT REQUIREMENTS.

STAKE, WRAP, OR INSTALL TREE GUARDS ONLY UPON THE APPROVAL OF THE LANDSCAPE ARCHITECT. SEE STAKING, WRAPPING AND TREE GUARD DETAILS



TYPICAL B&B TREE PLANTING DETAIL

NOT TO SCALE

Appendix 3.O - Environmental Interpretation Area Examples

Environmental Interpretation Area Examples – Doylestown Central Park



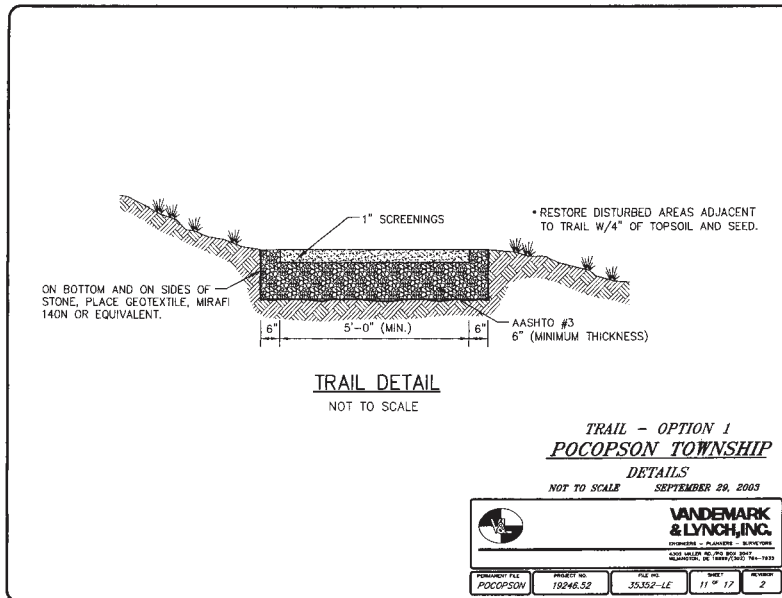
Access to Wetlands/ Habitats



Outdoor Classroom

ARTICLE 10—APPENDICES

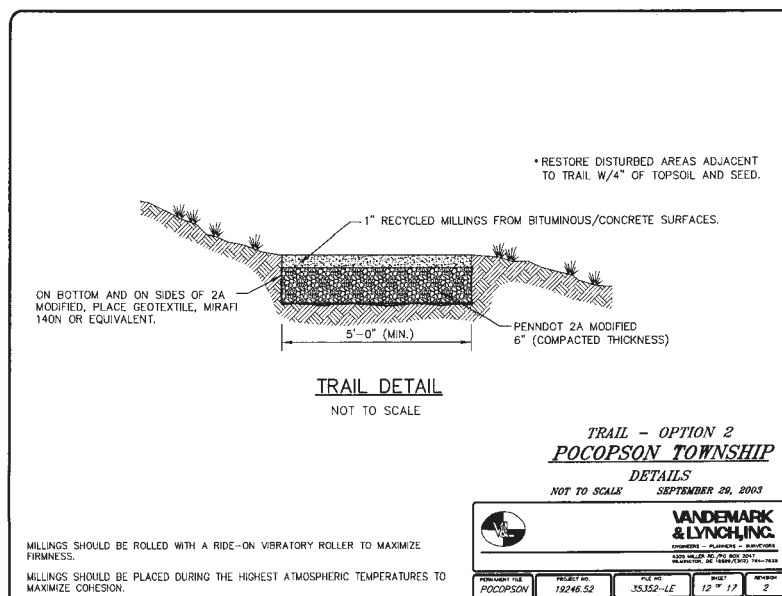
Sheet 11, Trail Detail (Option 1)



Note:

Article 10 is an appendix that presents multiple options for trail pavement and width because trails may extend through areas with varying topography or changes in right-of-way width. This approach gives specific illustrated construction guidelines rather than text only descriptions that can sometimes be vague. This regulation is flexible, and it provides homebuilders with reasonable options that they can use to suit the different types of developments they may build.

Sheet 12, Trail Detail (Option 2)



Plan 14 Nest Box For:

American Kestrel
Screech-Owl
Northern Saw-whet Owl
Flying Squirrels
Red Squirrels

SUPPLIES NEEDED:

Use raw pine or cedar. Do not paint or treat with a wood preservative.

An outside perch is not necessary and may attract other species to the box.

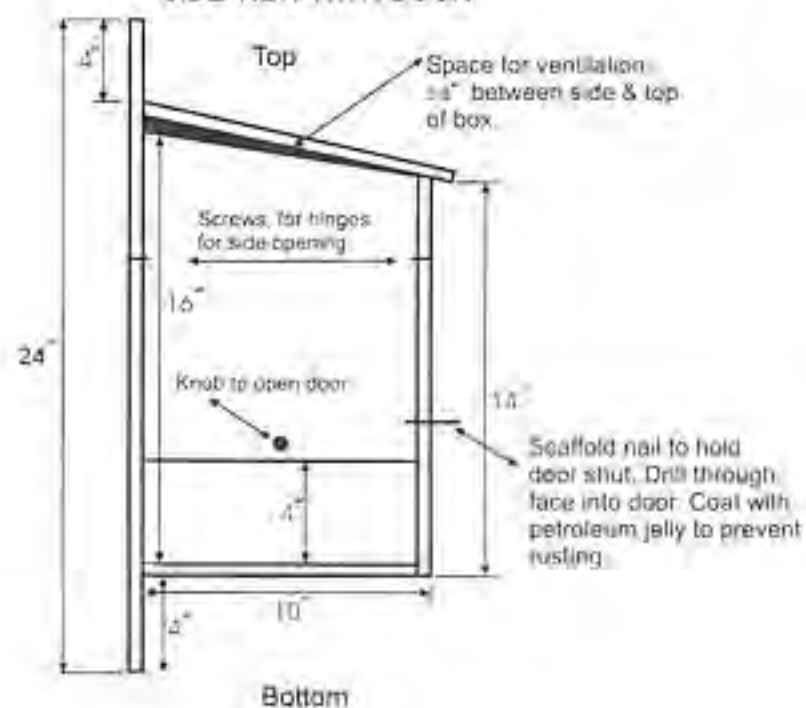
Use 1-5/8" galvanized deck screws for the box.

You can place a perch inside (using cutout from entrance) about three inches below entrance hole.

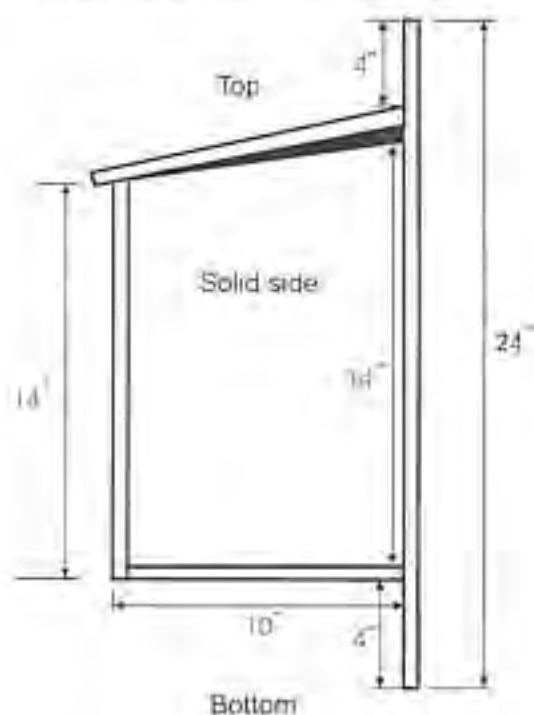
Place 2" of coarse wood shavings (not sawdust) in bottom of box, each year before nesting season.



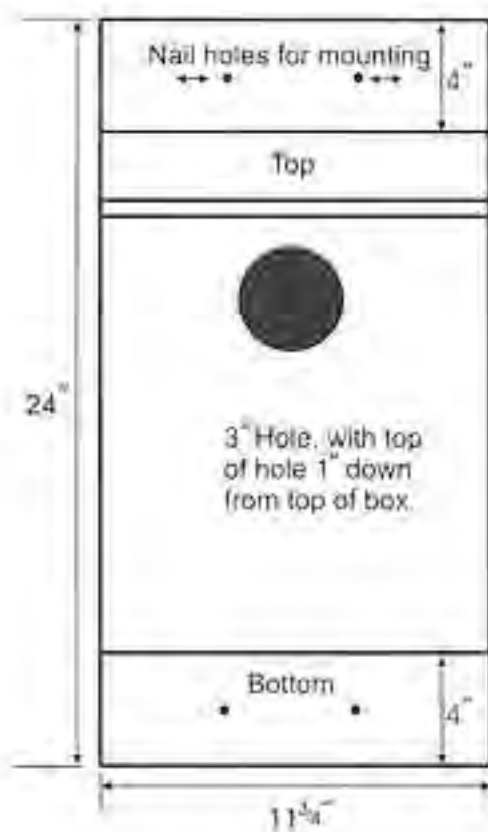
SIDE VIEW WITH DOOR



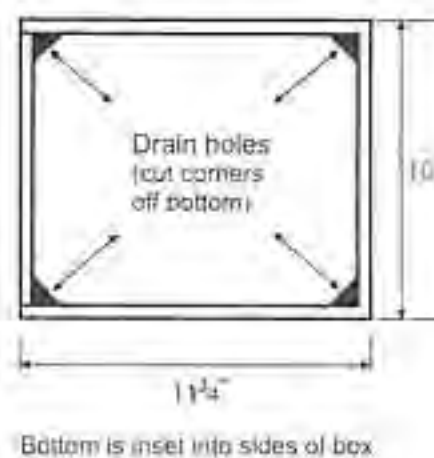
SIDE VIEW OTHER SIDE OF BOX



FRONT VIEW OF BOX



BOTTOM OF BOX



Appendix I – Grant Application Form

Applicant Information

Organization Name: Lower Nazareth Township

Project Manager Name and Title: Lori A. Stauffer, Township Manager

Mailing Address: 623 Municipal Drive, Nazareth, PA 18064

Telephone Number: 610-759-7434 Email: lstauffer@lowernazareth.com



Project & Site Information

Project Name: Surrey Glen Park Development Phase I

Site Address or Location: Georgetown Road, Nazareth, PA 18064

Owner of Property: Lower Nazareth Township

Tax Parcel ID Number: L7SW1-1-31 Municipality: Lower Nazareth Twp.

Type of Project

Check the eligible project that best fits your project:

- ☐ Land Preservation
- ☐ Ecological Restoration
- ☐ Planning, Education & Outreach
- ☒ Municipal Park Acquisition, Development, & Rehabilitation

Project Finances (list all local match amounts, sources, cash and in-kind contributions)

Sources of Funding	Cash	In-kind	Total	%
Lower Nazareth Township	\$131,950.85		131,950.85	57 %
				%
				%
				%
				%
<i>Northampton County Grant Request</i>	\$100,000	N/A	100,000	43 %
Total Project Costs	\$231,950.85		231,950.85	100%

Fair Market Value – Appraisal #1: _____

Anticipated Project Completion Date: December 2021

PROJECT NARRATIVE

The Board of Supervisors of Lower Nazareth Township desires to create a network of parks offering usual, popular as well as unique opportunities for recreation. The Township currently owns five parks, including Surrey Glen Park. Lower Nazareth Township is proposing to install Phase I of park development by constructing a 1,700-foot perimeter walking trail and a stream aquatic nature themed playground at Surrey Glen Park. The total project cost is \$ 231,950.85. Therefore, the Township is seeking a grant in the amount of \$100,000 through the 2020 Livable Landscapes grant under the Park Development criteria. The project will commence upon notice of award of grant monies and it will be completed no later than December 2021.

Surrey Glen Park is a 14-acre neighborhood park located on Georgetown Road near the intersection of Hanoverville Road and Georgetown Road. The park currently consists of a small gravel parking lot and open fields. It is adjacent to residential homes (Sterling Crossings) as well as the Lower Nazareth Township Rod & Gun Club. The park is located partially in the floodplain due to its close proximity to the Monocacy Creek.

The Township is proposing to install an ADA-compliant playground and walking trail at Surrey Glen Park. Currently, the park lacks any amenities to encourage residents to utilize the park. Therefore, it is the Township's desire to develop the park in a manner that will encourage the public to utilize the park, which will provide a safe place for families to congregate, walk and play. Public recreation leads to happier and healthier residents!

The walking trail will be 1,700 linear feet that will loop from one side of the parking lot, around the perimeter of the property and ending at the other side of the parking lot. The trail will be six feet wide and it will be paved macadam. The trail will also contain a small stub at the northeastern corner of the park. This stub will be for future expansion of the trail through the adjacent wooded area to link with Stafford Road in the Sterlings Crossing neighborhood. This neighborhood link will provide residents with an easy access to the park. The adjacent wooded parcel is earmarked for future acquisition.

Within Lower Nazareth's own park system, there is one walking trail currently in development at the community park located at Newburg and Greemar Roads. The Township parks lack any meaningful trail systems or ability to connect with regional trails. The addition of this second trail will assist the Township in creating a network of walking trails throughout the community. It is the Township's goal to provide high-quality recreational opportunities for the public, including a system of walking trails.

The new playground will pay homage to the nearby Monocacy Creek by featuring a stream aquatic theme. Logs, rocks and aquatic creatures such as frogs, turtles and a beaver will be primary attractions to the playground as well as the traditional large play structure and swing sets. (See attached renderings). The playground base will be composed of certified playground mulch, which is ADA-compliant as well. The hope is that the proposed playground will spark children's imaginations in a way that traditional playgrounds do not inspire, and it creates a connection to nature that traditional playgrounds fail to do.

The playground will be located at the rear of the park and it will be accessible by an ADA-compliant walkway between the walking trail and the playground. The playground equipment is all deemed ADA-compliant. The Township maintains an overall goal of providing recreational opportunities for the public regardless of age or ability. All Lower Nazareth Township parks are available for use by surrounding municipal residents.

The proposed project is consistent with local, county, regional and state recreation plans as follows:

1. **Lower Nazareth Township Recreation, Parks, & Open Space Preservation Plan**

The draft 2020 Lower Nazareth Recreation, Parks and Open Space Preservation plan provides recommendations for the development of Surrey Glen Park to include additional amenities including, but not limited to a walking trail, playground, and pavilion. The completion of the proposed project will initiate Phase I development that will encourage the public to utilize the park.

2. **Northampton County Livable Landscapes Plan**

The Livable Landscapes Plan lays out six goals, including Goal #2, which envisions providing and maintaining an exemplary park, trail and recreation system. Implementation strategies include the cooperation of Northampton County and municipalities to acquire, develop and maintain parks and to improve existing and designing new outdoor recreation facilities compliant with the Americans With Disabilities Act. (Page 132).

Once completed, the proposed project will meet this goal by initiating the development of an existing 14-acre park to improve the recreation opportunities to the public.

3. **Lehigh Valley Planning Commission Regional Comprehensive Plan**

The LVPC Regional comprehensive plan establishes a policy for municipalities to be responsible for providing mini-parks, neighborhood parks and playgrounds and community parks that also take the needs of the handicapped into consideration. The plan's proposed implementation of this policy is to promote the acquisition, development and maintenance of parks and outdoor recreation facilities. This can be accomplished by taking advantage of grant programs. (Page 100).

Currently, Lower Nazareth Township has five parks. The park on Butztown Road is over-utilized while the other parks are under-utilized. The Township's goal is to develop amenities within the other four parks, including Surrey Glen, to encourage the utilization of the other parks. The development of parks will meet the challenge to provide parks for the public.

It is the desire of Lower Nazareth Township to improve the recreational offerings to the public by offering a variety of park amenities that will appeal to a diverse population, including individuals with disabilities. The paved trail provides a firm surface that will allow individuals with disabilities to easily use. The playground will be ADA-compliant as well, which provides inclusivity for children of all abilities.

4. PA Statewide Comprehensive Outdoor Recreation Plan (2014-2019)

Research conducted for the purpose of preparing the plan determined Pennsylvanians like to walk and they spend a lot of time in local parks and recreation areas. (Page 29). The provider survey found that playgrounds are a top priority for future investment . . . with nearly 60 percent giving them a high priority rating. (Page 46).

The overall development of Surrey Glen Park is consistent with the recommendations and research in the plan. The construction of a walking trail and playground are deemed high-value amenities that are desired by the public when using local parks.

This proposal is consistent in furthering the Livable Landscapes Grant Priority for Municipal Park Development and Rehabilitation as it seeks to begin development on a recreational park. Furthermore, this project is consistent with numerous recreational planning documents. It is the Township's conclusion that the development of Surrey Glen Park should commence in late 2020 and be completed no later than December 2021. The Township is prepared to immediately move forward with Phase I of the development upon award of the grant contract. The Township has the requisite match funding available immediately in the amount of \$131,950.85. The match commitment funding is secured through our Recreation Fund, which is derived from developer's in-lieu-of fees.

Therefore, the Township humbly requests the approval of its grant application in the amount of \$100,000 for the construction of a 1,700-foot walking trail and the purchase and installation of a nature-based playground.

PROJECT BUDGET

1,700 Linear Feet Walking Trail	\$ 59,244.00
Nature-Based Playground	<u>\$ 172,706.85</u>
Total Phase I Costs	<u>\$ 231,950.85</u>

Northampton County Livable Landscapes	\$ 100,000.00
Lower Nazareth Township	<u>\$ 131,950.85</u>
	<u>\$ 231,950.85</u>

PROJECT TIMELINE

Preparation of Bid Specifications for Trail	November 2020
Placement of Order with Lyons Recreation	November 2020
Pre-Bid Meeting for Trail and Award of Project	January 2021
Commence Trail Construction / Installation of Playground	April 2021
Grant Closeout	May 2021

**CIVIL ENGINEERS & SURVEYORS**

2870 Emrick Boulevard, Bethlehem, PA 18020 • 610-865-4555 • FAX 610-758-9009

East Office: Bethlehem, West Office: Wescosville, North Office: Kresgeville

LNT-18-009

March 10, 2020

**SURREY GLEN PARK
PAVED WALKING PATH
CONSTRUCTION COST ESTIMATE**

<u>ITEM</u>	<u>QUANTITY</u>		<u>UNIT PRICE</u>	<u>AMOUNT</u>
1. <u>MOBILIZATION</u>	1	L.S.	\$3,000.00	\$3,000.00
2. <u>PAVED PATH (1,700 ft long- 6 ft wide</u>				
Strip and Stockpile Topsoil (8")	350	C.Y.	\$4.00	\$1,400.00
Shape and Fine Grade	1,400	S.Y.	\$2.00	\$2,800.00
6" - 2A Aggregate Stone Base	1,400	S.Y.	\$9.00	\$12,600.00
3" - 19mm Superpave Wearing Course	1,140	S.Y.	\$18.00	\$20,520.00
Lawn Restoration (topsoil, seed and mulch)	1,500	S.Y.	\$2.50	\$3,750.00
3. <u>MISCELLANEOUS</u>				
18" Silt Soxx	300	L.F.	\$7.00	\$2,100.00
8" Steel Bollards	4	Ea.	\$800.00	\$3,200.00
CONSTRUCTION SUBTOTAL				\$49,370.00
Engineering, Construction Administration, Inspection - 10% of Subtotal				\$4,937.00
Survey Stakeout - 5% of Subtotal				\$2,468.50
Contingencies - 5% of Subtotal				<u>\$2,468.50</u>
TOTAL				\$59,244.00

Engineering firm of choice since 1972

Visit us at: www.KCEinc.com



PO Box 53
 Stratford, NJ 08084
 877.808.PLAY (7529)
 888.324.3929
www.lyonsrecreation.com
info@lyonsrecreation.com
 FEIN: 46-2203321

PROPOSAL

To: Lower Nazareth Township
 Lori Stauffer
 623 Municipal Drive
 Nazareth, PA 18064
 610-759-7434
stauffer@lowernazareth.com

Re: Miracle Recreation
 Reference: R0095205075
 Design 1

Date: April 17, 2020

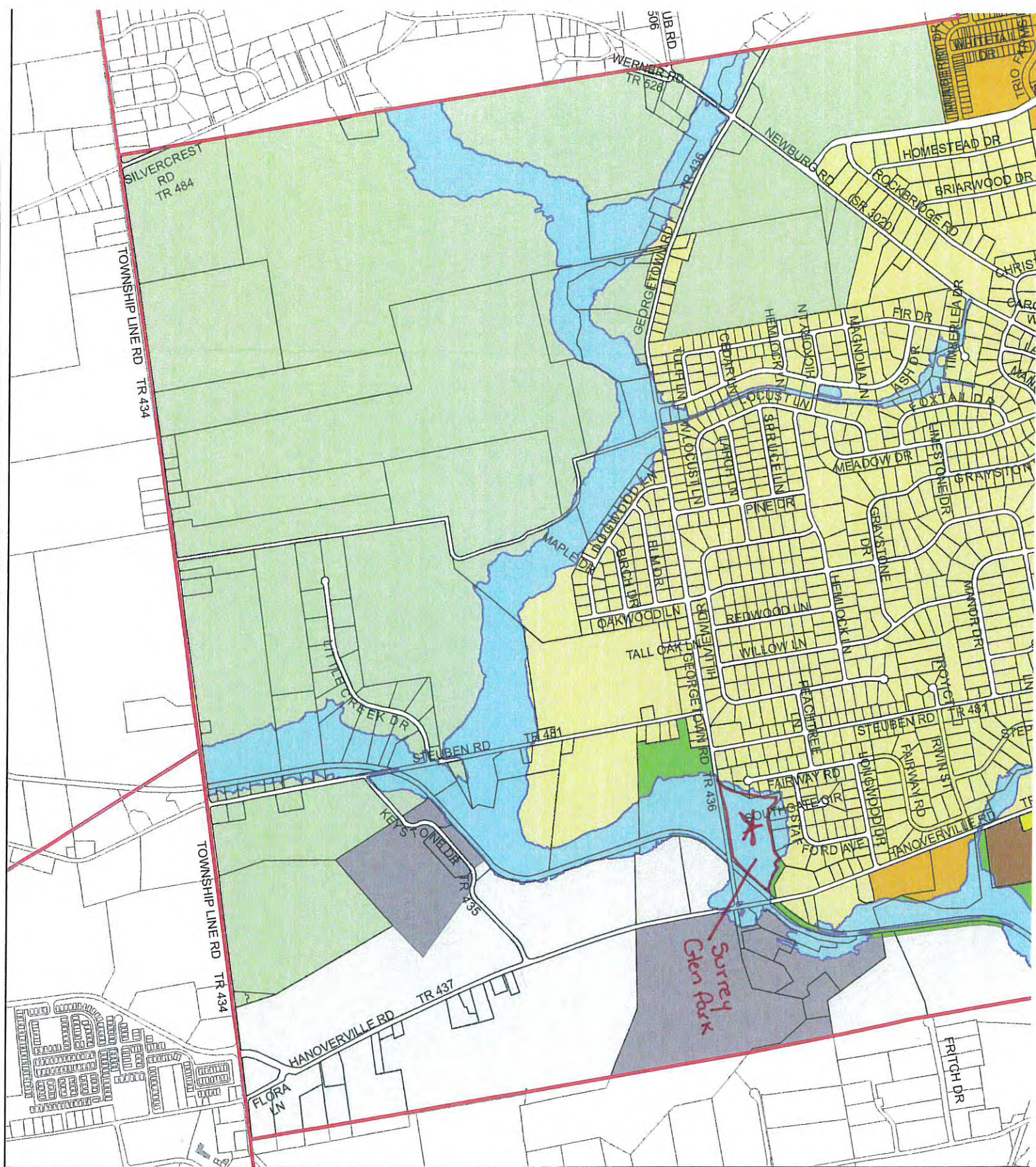
Item	Qty	Description	Price
Miracle Recreation Equipment			
1	1	Miracle Recreation Hextagon Mega Tower 2-Levels (8' & End 12' Deck); 714-S616	\$65,814.00
2	1	Miracle Recreation Mini City Community Helpers; MR0880	\$14,945.00
3	1	Miracle Recreation 3 1/2" OD Arch Swing Frame (3 Bay) Only, 6 Seats Required MC; 718-852-6	\$2,522.00
4	4	Miracle Recreation Swg Part Slash Proof Seat w/Chain (8' TR); 2840	\$476.00
5	2	Miracle Recreation Swg Part Tot Seat 360 Deg w/Chain (8' TR); 2990	\$366.00
6	51	Miracle Recreation 6' Miracle Timber 12" High w/2 30" Stakes-RB; 44012R	\$3,672.00
7	1	Miracle Recreation Timber Opening Kit-Recycled Black	\$266.00
8	1	Miracle Recreation Welcome Sign Ages 2-5, Freestanding; 787001	\$579.00
9	1	Miracle Recreation Welcome Sign Ages 5-12, Freestanding; 787003	\$579.00
Discount			(\$7,377.52)
Freight			\$5,382.12
Subtotal			<u>\$90,223.60</u>

UPC PARKS EQUIPMENT FOR AGES 2-12

10	1	UPC Parks North American Beaver; 14510	\$3,889.00
11	1	UPC Parks North Oak Branch and Leaves; 15532	\$6,209.00
12	1	UPC Parks Iguana Rock; 12201	\$5,444.00
13	1	UPC Parks Pair of Floating Frogs; 14513	\$3,488.00
14	1	UPC Parks Raccoon Log; 12306	\$5,451.00
15	1	UPC Parks Angle Log; 12302	\$3,254.00
16	1	UPC Parks Stump Stepper Large (19"); 12508	\$550.00
17	2	UPC Parks Stump Stepper Small (9"); 12507	\$900.00
18	1	UPC Parks Turtle Shell Stepper; 12507	\$850.00
			Discount (\$1,501.75)
			Freight \$1,450.00
			Subtotal <u>\$29,983.25</u>
19	1	Installation of above line items 1 - 18. Pricing includes a stone base for UPC Items. Pricing does not include installation of timbers, line items 6 & 7.	\$52,500.00
			Grand Total <u>\$172,706.85</u>

Pricing conforms to COSTARS contract 014-183. To place this order, please sign and return this quotation to us via fax at 888-324-3929 or email to info@lyonsrecreation.com. Thank you!

QUOTE VALID FOR 30 DAYS



Sources:
 Roads: County of Northampton, 2014
 Parcels: County of Northampton, 2014
 Municipal Boundaries: Lehigh Valley Planning Commission, 2012

0 1,500 3,000 4,500 6,000

1 inch = 1,500 feet

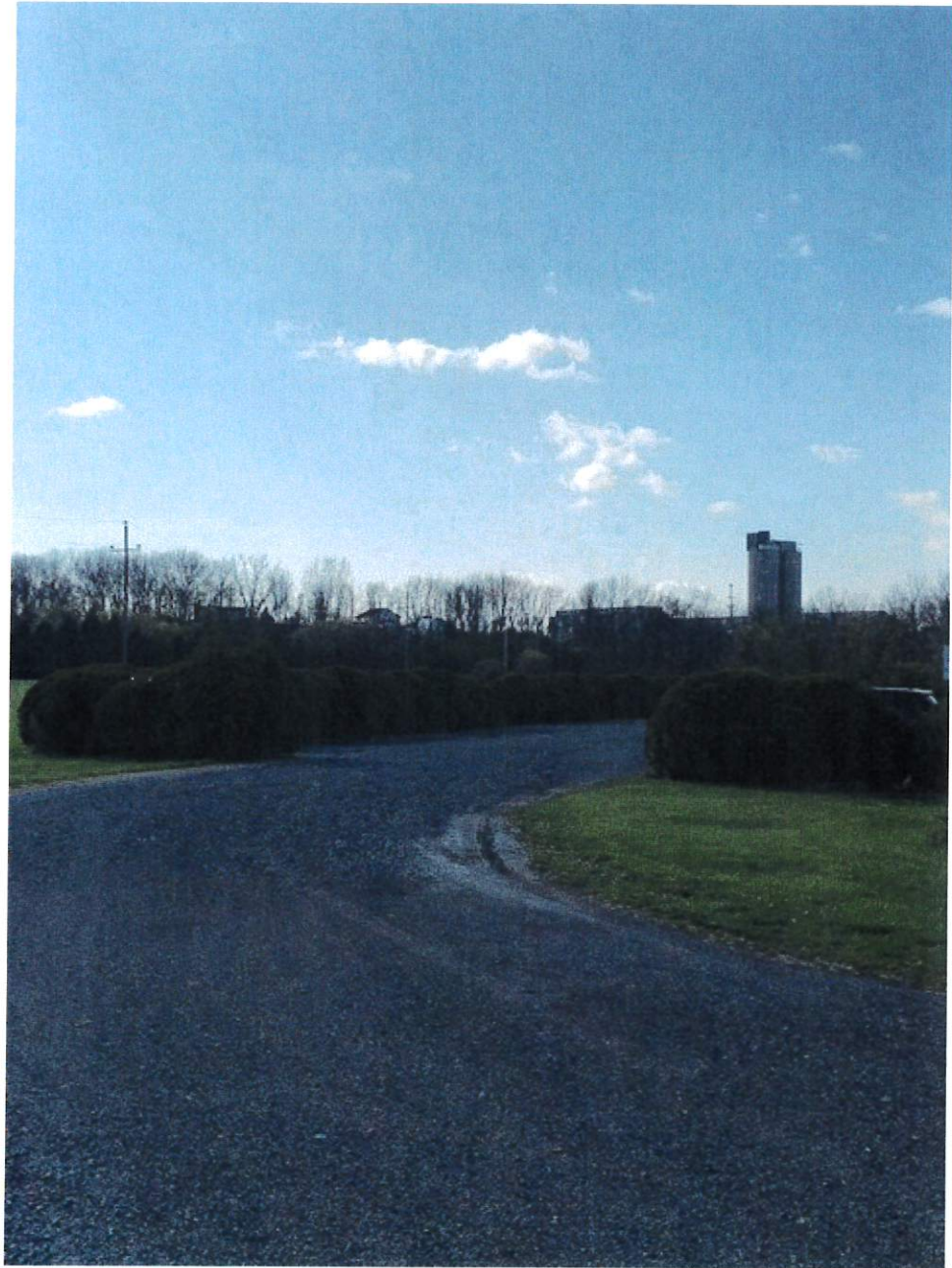




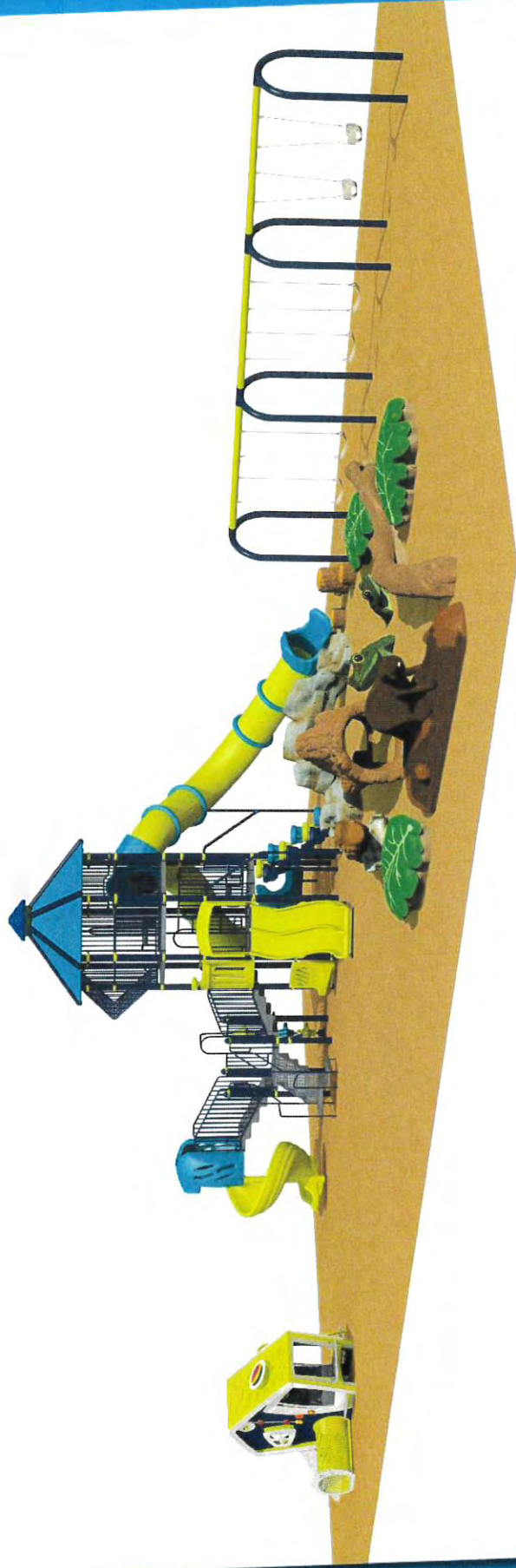






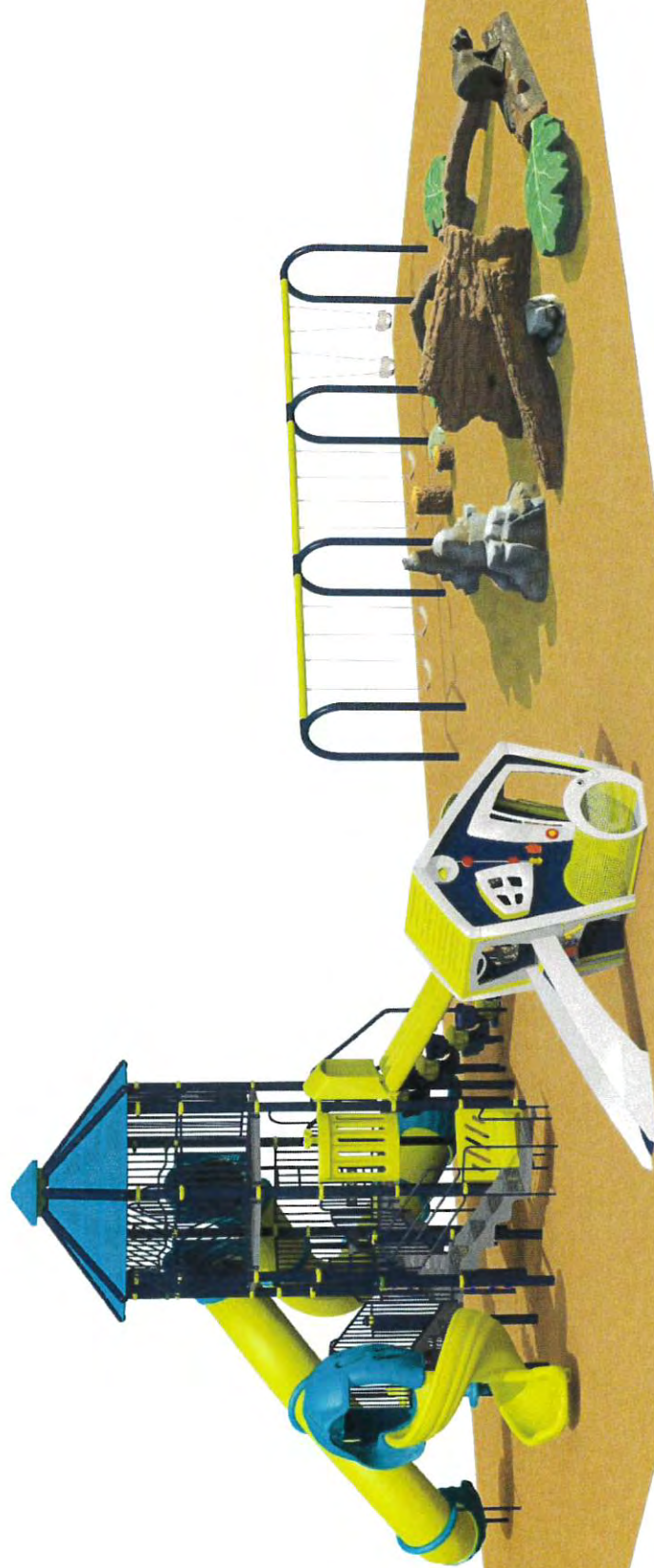






Surrey Glen Park Lower Nazareth Twp

www.miracle-recreation.com

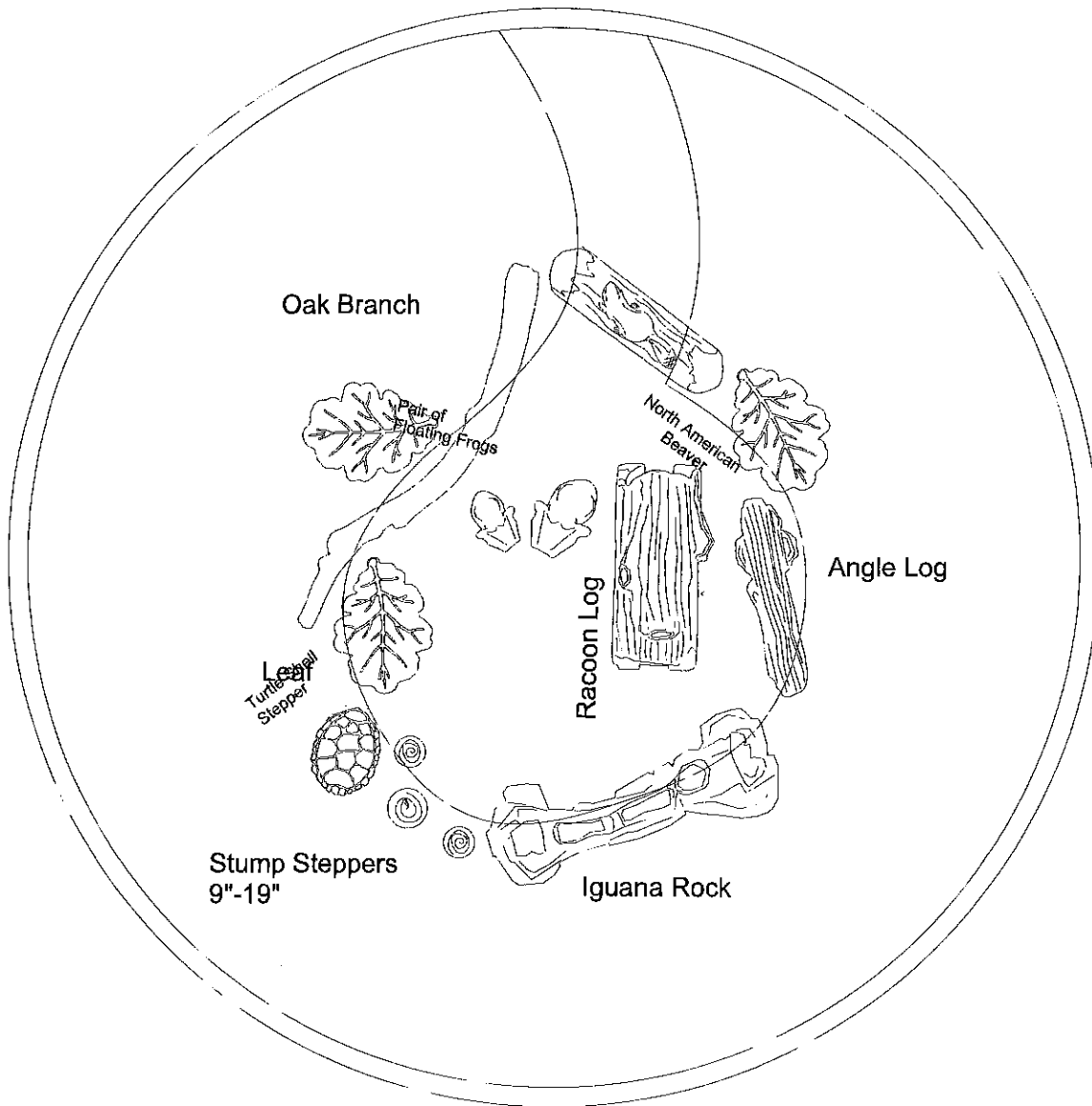


Surrey Glen Park Lower Nazareth Twp





Surrey Glen Park Lower Nazareth Twp





Surrey Glen Park

Write a description for your map.

Legend

 Surrey Glen Park

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MARCIA M. HAHN
138TH LEGISLATIVE DISTRICT

PO Box 202138
Harrisburg, PA 17120-2138
Phone: (717) 783-8573

196 W. Moorestown Road
(Rt. 512)
Wind Gap, PA 18091
Phone: (610) 746-2100



House of Representatives
Commonwealth of Pennsylvania
Harrisburg

COMMITTEES

Agriculture and Rural Affairs
Appropriations
Chair, Appropriations Subcommittee on
Health and Human Services
Health
Tourism and Recreational Development
Chair, Travel Promotion,
History and Heritage Subcommittee
Transportation

APPOINTMENTS

Co-Chair, Community College Caucus
Board Member, Ben Franklin Technology
Development Authority

April 17, 2020

Ms. Sherry L. Acevedo, Conservation Coordinator
Northampton County Division of Parks and Recreation
Louise Moore Park
151 Country Club Road
Easton, PA 18045

RE: Lower Nazareth Township
Northampton County Livable Landscapes 2020
Surrey Glen Park Development Phase I

Ms. Acevedo:

I am writing to give my support to Lower Nazareth Township's application to the 2020 Northampton County Livable Landscapes Grant Program for funding for the construction of a 1,700-foot walking trail and the purchase and installation of a nature-themed playground.

The improvement of park facilities is a crucial service to township constituents. As Lower Nazareth Township continues to develop their recreational facilities, the inclusion of highly coveted amenities such as walking paths and play areas provide families with opportunities to get outdoors. Surrey Glen is a 14-acre neighborhood park that is currently under-utilized due to the lack of amenities. Development of this park will be a tremendous asset to Lower Nazareth Township's public recreational offerings.

I wholeheartedly support the township's grant application and I am very interested in seeing it fulfilled. I strongly feel this project would benefit the residents of Lower Nazareth Township and the surrounding communities. This is a very worthwhile use of the funds provided from this grant program.

Sincerely Yours,

A handwritten signature in black ink that reads "Marcia M. Hahn".

MARCIA M. HAHN
State Representative
138th Legislative District

MMH/lla

**40TH SENATORIAL DISTRICT
MONROE & NORTHAMPTON COUNTIES**

ROOM 20 EAST WING
P.O. BOX 203040
HARRISBURG, PA 17120
PHONE: 717-787-6123
FAX: 717-772-3695

2398 RT. 611, STE. 201
SCOTRUN, PA 18355
PHONE: 570-620-4326
FAX: 570-620-4379

2 NORTH ROBINSON AVENUE
PEN ARGYL, PA 18072
PHONE: 610-863-1200
FAX: 610-863-1214

MSCAVELLO@PASEN.GOV
MARIOSCAVELLO.COM



Senate of Pennsylvania
MARIO M. SCAVELLO
STATE SENATOR

COMMITTEES

BANKING & INSURANCE, CHAIR
TRANSPORTATION, VICE CHAIR
APPROPRIATIONS
COMMUNITY, ECONOMIC &
RECREATIONAL DEVELOPMENT
CONSUMER PROTECTION &
PROFESSIONAL LICENSURE
URBAN AFFAIRS & HOUSING

April 14, 2020

Northampton County Livable Landscapes Grant Program
Attn: Sherry Acevedo
151 Country Club Road
Easton, PA 18045

**RE: Lower Nazareth Township
Northampton County Livable Landscapes 2020
Surrey Glen Park Development Phase I**

Dear Ms. Acevedo:

Please accept this letter as evidence of my support for Lower Nazareth Township's application to the 2020 Northampton County Livable Landscapes grant program for the construction of a 1,700-foot walking trail and the purchase and installation of a nature-themed playground.

The improvement of park facilities is a crucial service to Township constituents. As Lower Nazareth Township continues to develop their recreational facilities, the inclusion of highly coveted amenities such as walking paths and play areas provide families with opportunities to get outdoors. Surrey Glen is a 14-acre neighborhood park that is currently under-utilized due to the lack of amenities. Development of this park will be a tremendous asset to Lower Nazareth Township's public recreational offerings.

Therefore, I urge you to consider funding this worthwhile project in the amount of \$100,000 for the construction of the walking trail and the nature-themed playground.

Sincerely,

A handwritten signature in cursive script that reads "Mario M. Scavello".

Mario M. Scavello
State Senator
40th Senate District



TOWNSHIP OF PALMER • NORTHAMPTON COUNTY, PA

Municipal Building, 3 Weller Place, Palmer, PA 18045-1975, Tel. 610-253-7191, Fax 610-253-9957

Website: palmertwp.com

April 14, 2020

Northampton County Livable Landscapes Grant Program
Attn: Sherry Acevedo
151 Country Club Road
Easton, PA 18045

RE: Lower Nazareth Township
Northampton County Livable Landscapes 2020
Surrey Glen Park Development Phase I

Dear Ms. Acevedo:

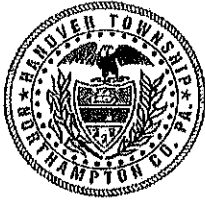
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Therefore, I urge you to consider funding this worthwhile project in the amount of \$100,000 for the construction of the walking trail and the nature-themed playground.

Sincerely,

Robert A. Williams
Township Manager



BOARD OF SUPERVISORS
Hanover Township Northampton County
3630 Jacksonville Road
Bethlehem, Pennsylvania 18017-9302
610.866.1140
Fax 610.758.9116

John N. Diacogiannis, Chairman
610.865.4410

Michael J. Prendeville, Vice Chairman
610.861.2956

Susan A. Lawless, Esq.
908.963.6085

John D. Nagle
610.737.4431

Jeffrey M. Warren
610.554.2594

John J. Finnigan, Jr.
Township Manager

Beth A. Bucko
Township Treasurer

Elizabeth D. Ritter
Township Secretary

<http://www.hanovertwp-nc.org>

hanover@hanovertwp-nc.org

April 15, 2020

Northampton County Livable Landscapes Grant Program
Attn: Sherry Acevedo
151 Country Club Road
Easton, PA 18045

RE: Lower Nazareth Township
Northampton County Livable Landscapes 2020
Surrey Glen Park Development Phase I

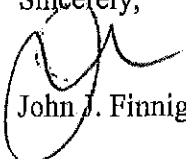
Dear Ms. Acevedo:

Please accept this letter as evidence of my support for Lower Nazareth Township's application to the 2020 Northampton County Livable Landscapes grant program for the construction of a 1,700-foot walking trail and the purchase and installation of a nature-themed playground.

The improvement of park facilities is a crucial service to Township constituents. As Lower Nazareth Township continues to develop their recreational facilities, the inclusion of highly coveted amenities such as walking paths and play areas provide families with opportunities to get outdoors. Surrey Glen is a 14-acre neighborhood park that is currently under-utilized due to the lack of amenities. Development of this park will be a tremendous asset to Lower Nazareth Township's public recreational offerings.

Therefore, I urge you to consider funding this worthwhile project in the amount of \$100,000 for the construction of the walking trail and the nature-themed playground.

Sincerely,



John J. Finnigan, Jr.

**LOWER NAZARETH TOWNSHIP
NORTHAMPTON COUNTY, PENNSYLVANIA**

RESOLUTION NO. LNT-14-20

**A RESOLUTION AUTHORIZING THE TOWNSHIP
MANAGER TO MAKE APPLICATION TO THE
NORTHAMPTON COUNTY OPEN SPACE INITIATIVE
LIVABLE LANDSCAPES GRANT PROGRAM ON BEHALF
OF LOWER NAZARETH TOWNSHIP FOR THE PURPOSE
OF FUNDING RECREATIONAL IMPROVEMENTS TO
SURREY GLEN PARK INCLUDING A WALKING TRAIL
AND PLAYGROUND.**

WHEREAS, the Board of Supervisors of Lower Nazareth Township recognizes that the Township contains natural areas that contribute to the quality of life and economic health of our community which are worth for preservation;

WHEREAS, the Northampton County Council adopted Ordinance #603-2015, titled "AN ORDINANCE ESTABLISHING "THE LIVABLE LANDSCAPES – AN OPEN SPACE PLAN PROGRAM FOR NORTHAMPTON COUNTY AND FURTHER PROVIDING FOR THE ADMINISTRATION OF THE 21st CENTURY OPEN SPACE INITIATIVE" on January 7, 2016; and

WHEREAS, the program provides for funding grants that may be used by the municipality to acquire land, protect significant natural areas and rehabilitate degraded and underutilized lands that are important examples of Northampton County's natural heritage; and

WHEREAS, the Board of Supervisors of Lower Nazareth Township desires to fully develop the recreational property known as Surrey Glen for the benefit and enjoyment of community; and

WHEREAS, as part of the development of Surrey Glen, The Board of Supervisors of Lower Nazareth Township desires to develop a neighborhood park that will be utilized by people of all ages and abilities; and

WHEREAS, the Township of Lower Nazareth wishes to participate in the 2020 Livable Landscapes Grant Program; and

WHEREAS, the Board of Supervisors of Lower Nazareth Township proposes to construct a playground and a playground and a perimeter walking trail; and

WHEREAS, Lower Nazareth Township will have the required match of
\$ 131,950.85.


BE IT RESOLVED, that the Board of Supervisors of Lower Nazareth Township, Northampton County, Pennsylvania approves the filing of an application for funds under the Livable Landscapes Grant Program and hereby requests a Livable Landscapes grant of \$ 100,000.00 from Northampton County to be used for the purpose of installing a playground and a walking trail at Surrey Glen Park.


BE IT FURTHER RESOLVED, that the Applicant does hereby designate Lori A. Stauffer, Township Manager, as the official to execute all documents and agreements between Lower Nazareth Township, Northampton County, Pennsylvania and Northampton County to facilitate and assist in obtaining the requested grant.

DULY ADOPTED, this 8th day of April, 2020, by a majority of the Board of Supervisors of the Township of Lower Nazareth, Northampton County, Pennsylvania.

**LOWER NAZARETH TOWNSHIP
BOARD OF SUPERVISORS**

ATTEST:


James Pennington, Chairman

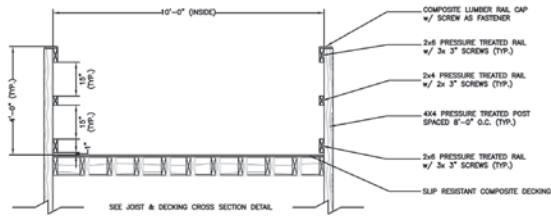

Tammi Dravecz, Secretary/Treasurer

Appendix 3.S - Bridges

Wooden Pedestrian Bridges – Enwood Structures

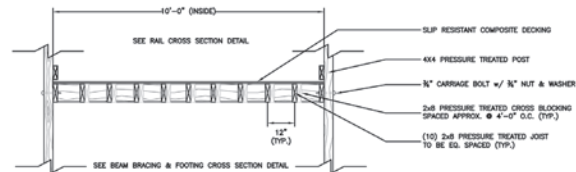


Appendix 3.T - Creek Access/Viewing Platform Details



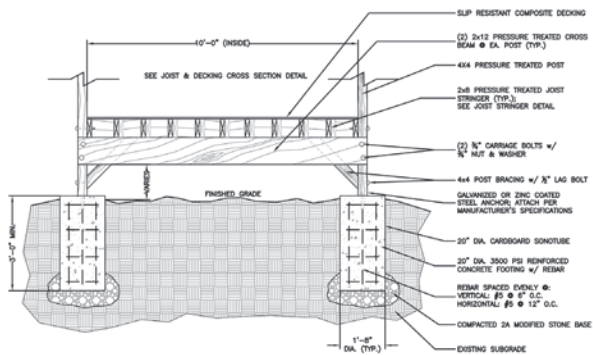
RAILING CROSS SECTION DETAIL

SCALE: $1/2" = 1'-0"$



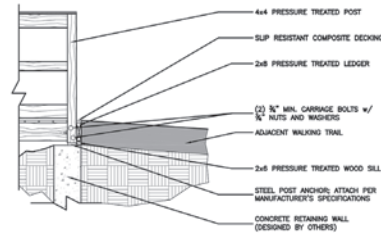
JOIST & DECKING CROSS SECTION DETAIL

SCALE: 1/2" = 1'-0"



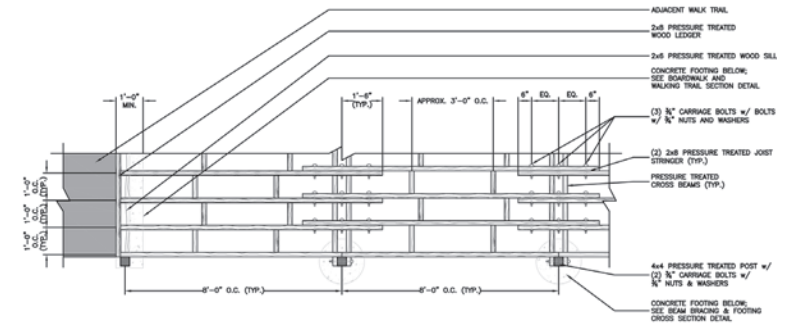
BEAM BRACING & FOOTING CROSS SECTION DETAIL

SCALE: 1/2" = 1'-0"



BOARDWALK & WALKING TRIAL SECTION DETAIL

SCALE: 1/2" = 1'-0"

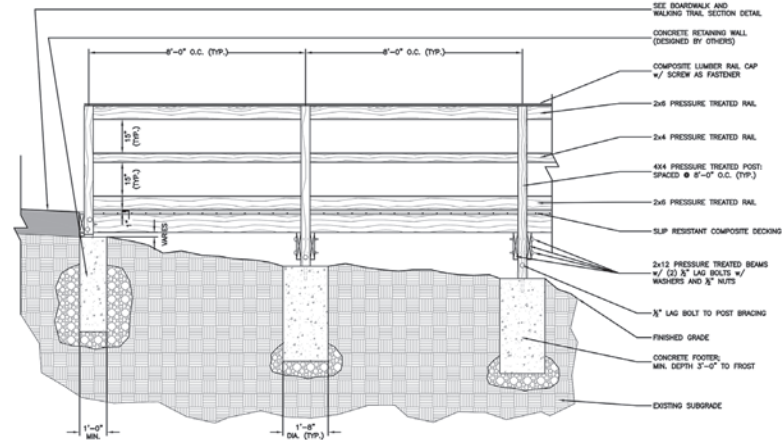


JOIST STRINGER DETAIL

SCALE: 1/2" = 1'-0"

GENERAL NOTES:

1. ALL FASTENERS & HARDWARE TO BE HOT DIPPED GALVANIZED, STAINLESS STEEL, OR CORROSION RESISTANT POLYMER COATING.
2. ALL DECKING SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.



RAILING ELEVATION DETAIL

SCALE: 1/2" = 1'-0"

Plan 4 Nest Box For:

Tree Swallow Eastern Bluebird Great Crested Flycatcher

ASSEMBLY INSTRUCTIONS:

The nesting box pictured has been carefully designed to meet bluebirds requirements, to last for years, and to provide for easy mounting and easy access for observation and cleaning. It cannot be entered by starlings and, if properly located, sparrow interference will be somewhat minimized.

PAINTING

Nesting boxes made of cedar, cypress, redwood or exterior grade plywood need not be painted. Boxes made of other woods will last longer if painted with exterior type latex paint. Use light colors only to prevent overheating. Paint the outside of the box. Do not use paints that contain lead or toxic wood preservatives such as pentachlorophenol. Exterior plywood is recommended for the top board since it will not warp.

MOUNTING

By using the small holes shown in the top and bottom extensions of the backboard, the box may be nailed or screwed to the top or side of a wooden post, or it may be bolted or wired to the top or side of a metal post. A smooth metal post such as a galvanized pipe is preferred to a wooden post since it offers better protection against climbing predators, particularly if the post is coated with soft grease while the bluebirds are occupying the box. A 1/2 or 3/4 inch galvanized pipe threaded at one end can be neatly and firmly attached to the bottom of the box by means of pipe flange which may be obtained at any hardware store. When mounting wires (see plan) are used to mount the box on the side of a metal post the two ends of the upper wire are inserted through the 1/8" holes near the top of the backboard. This must be done with the side wide open. If the box is mounted on the side of a wooden post or tree trunk a round-headed screw may be used in the 3/16" hole in the backboard. A long-handled screw driver is inserted through the entrance hole of the box. A metal washer should be used on the screw.

RACCOONS

A raccoon guard made of a small board 1 1/2" thick with a 1 1/2" hole helps to control raccoons and other large predators. This guard is attached firmly to the front of the box so that the hole coincides exactly with the entrance hole in the box. Extra deep nesting boxes are also helpful.

MAINTENANCE

Bluebirds nests should be removed from the boxes as soon as the young have left since this will increase the chances of second or third broods being raised in the same boxes. The boxes should be inspected, cleaned, and repaired if necessary in late winter each year, making sure that the drain holes in the floors are open.

Plan for Side-opening Nesting Box With 5" X 5" Floor

Dimensions shown are for boards 3/4" thick.

Use 1 3/4" galvanized siding nails or aluminum nails.

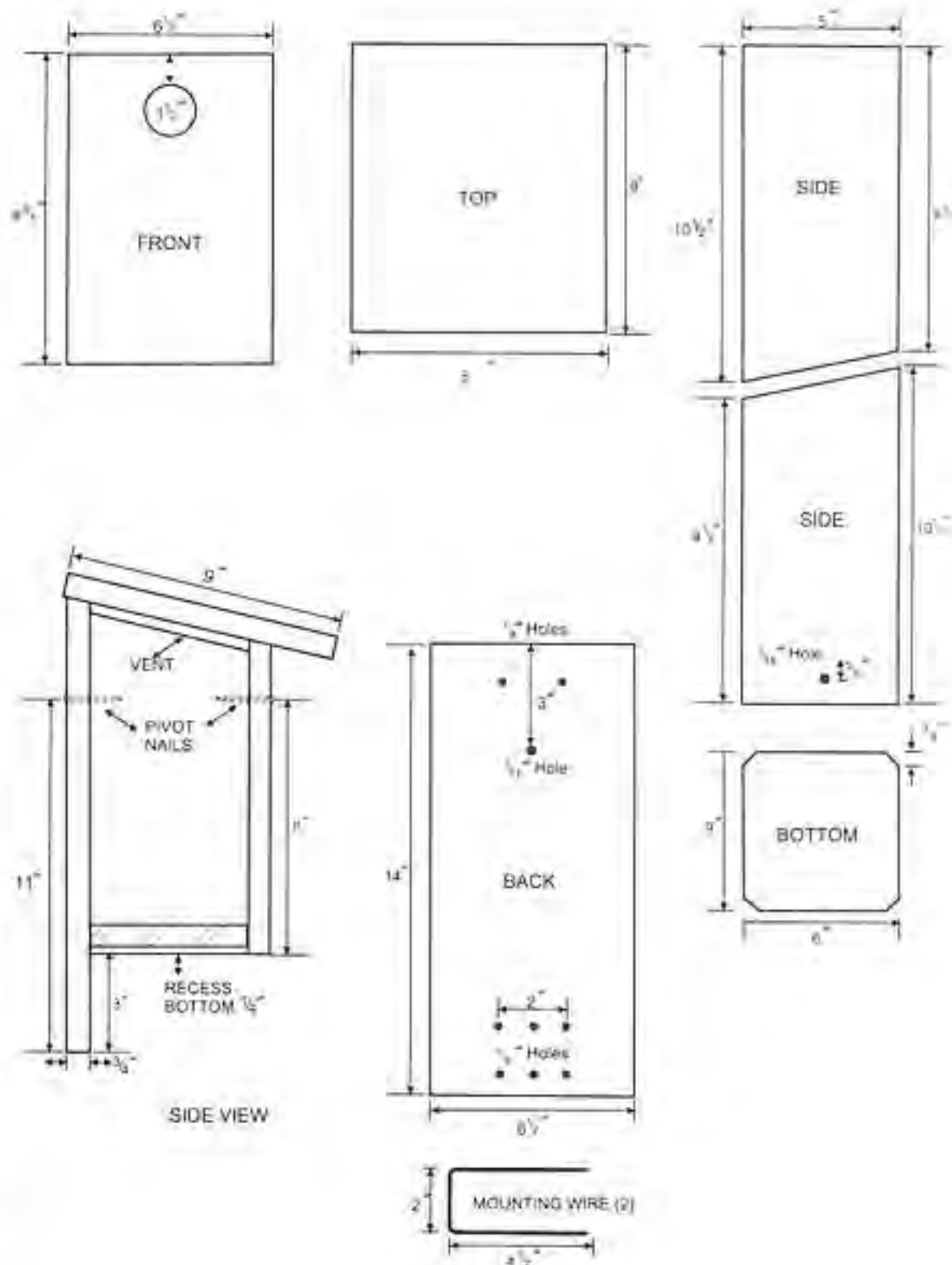
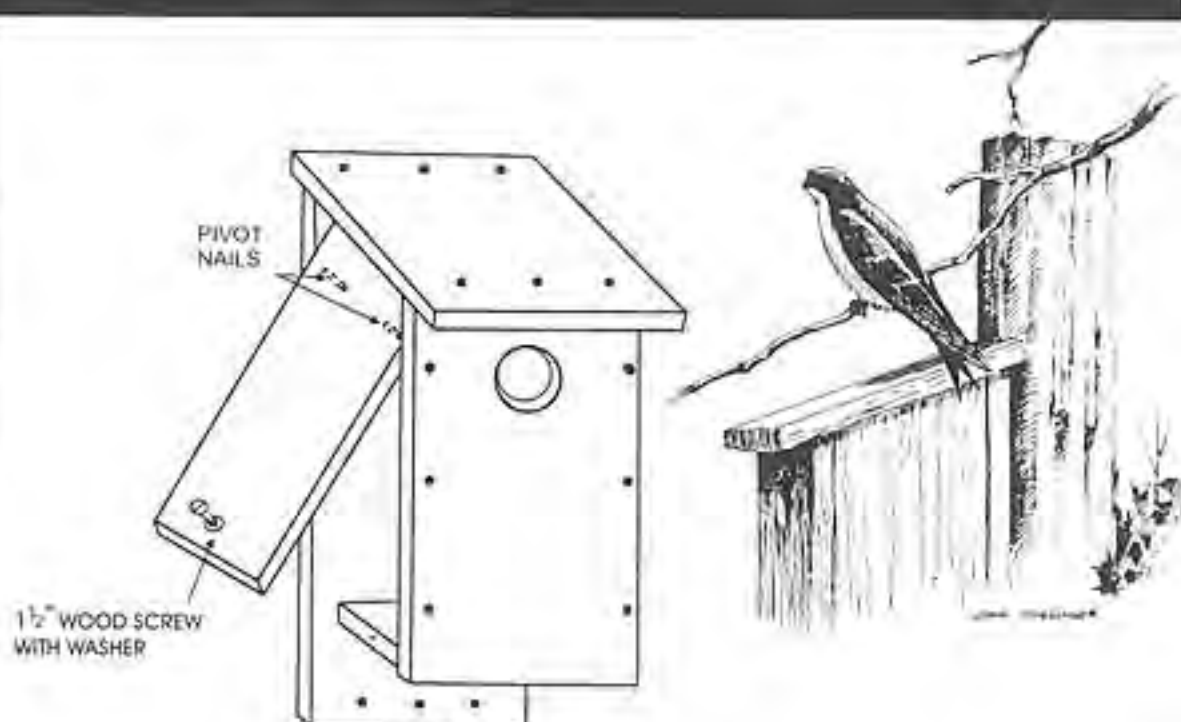
Pivot nails must be located exactly opposite each other as shown for proper opening of side board.

Cut top edges of front and back boards at slight angle to fit flush with top board.

Cut 3/8" off each corner of bottom board as shown.

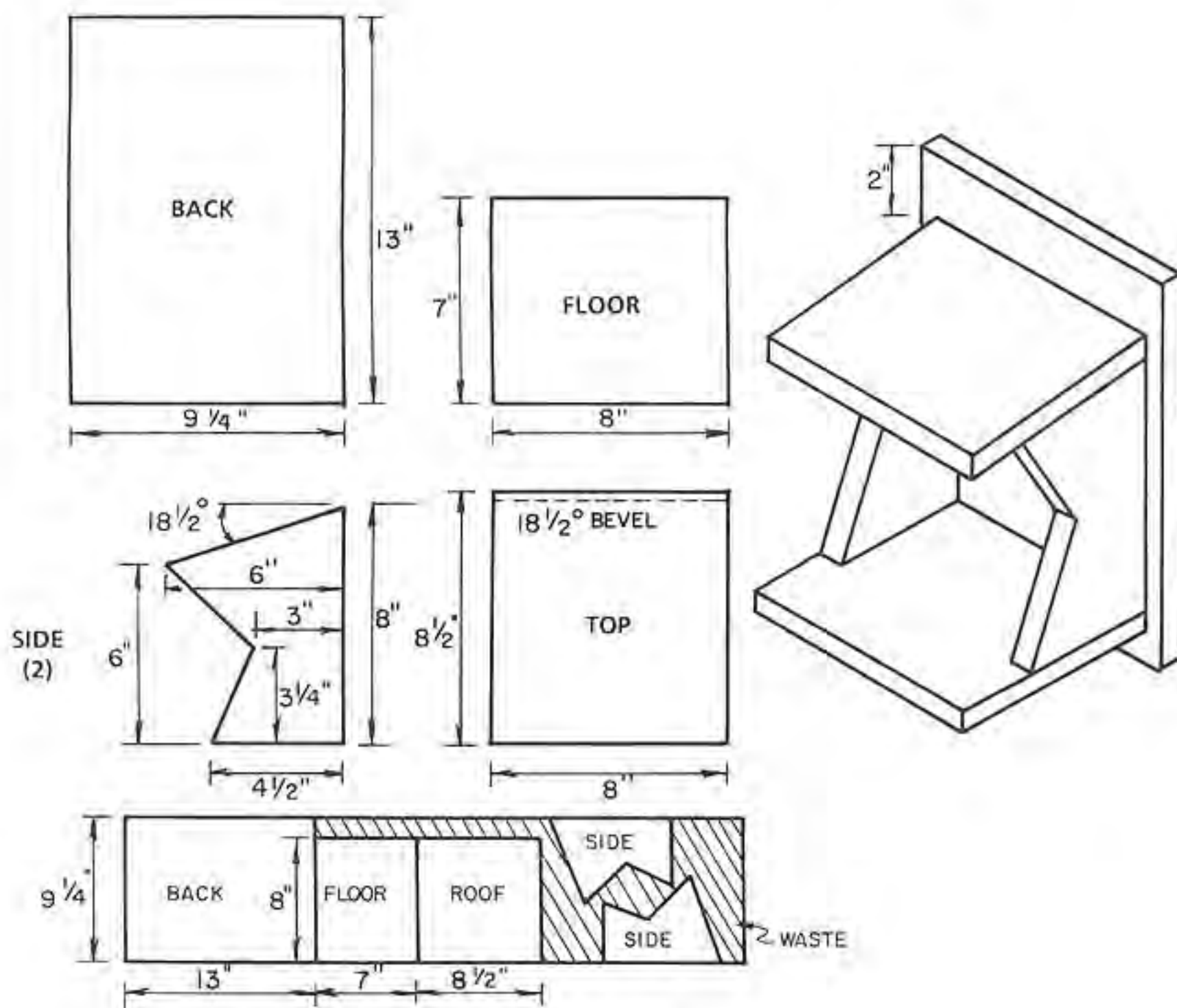
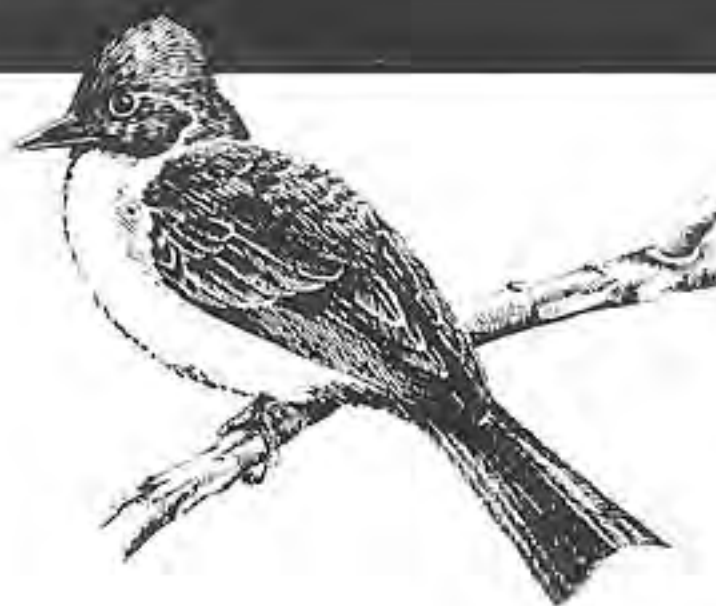
Insert bottom board so that the grain of the wood runs from the front to the rear of box.

Nest box plans reprinted with permission from the North American Bluebird Society, Inc.



Plan 6 Nest Shelf For:

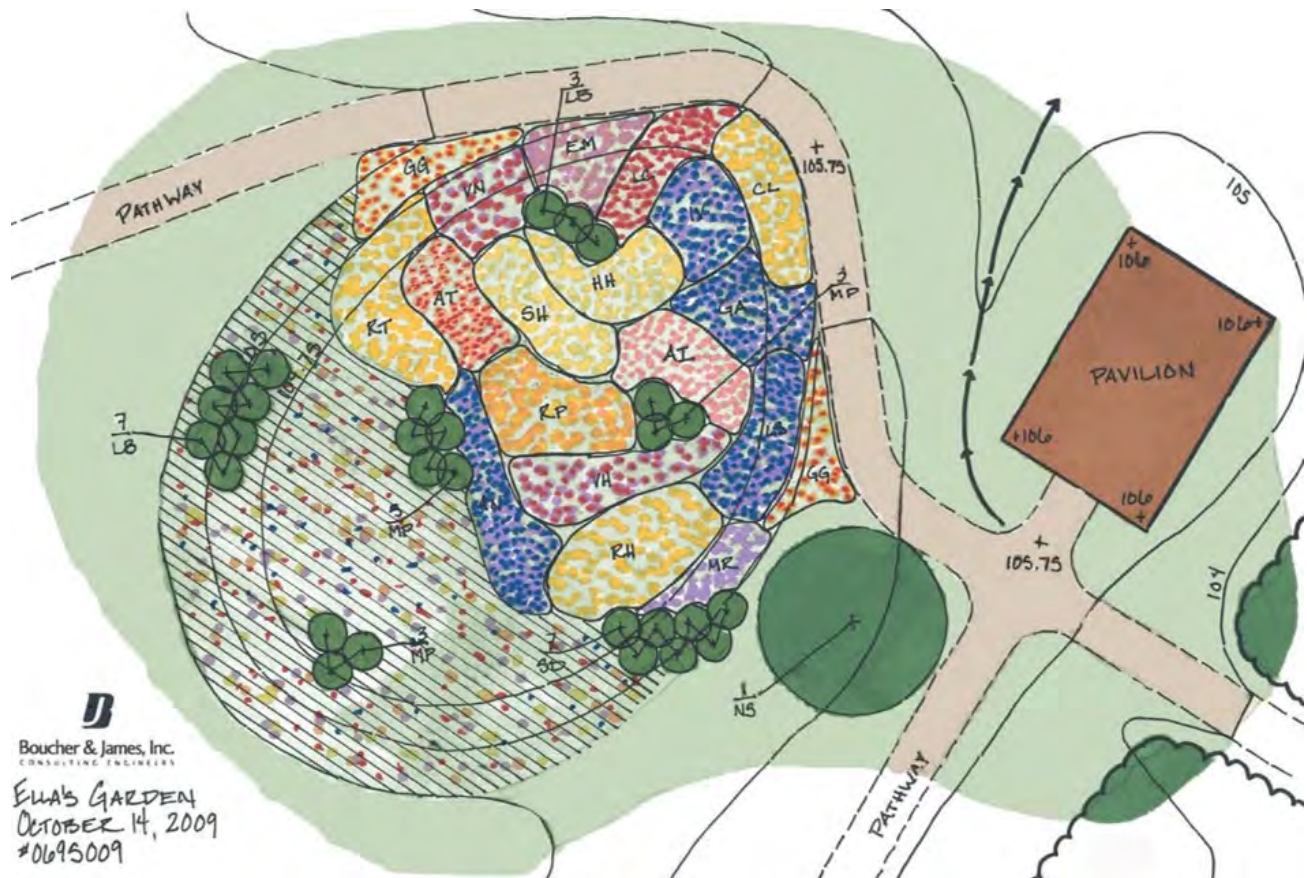
Eastern Phoebe
Barn Swallow
American Robin



LUMBER:
ONE 1" X 10" X 4'0"

Appendix 3.V - Rain Garden

Rain Garden Example – Ella's Garden, Kingston Park, Lower Saucon Township



Appendix 3.W - Invasive Plants - DCNR

DCNR Invasive Exotic Plant Tutorial for Natural Lands Managers



Home

Introduction to the Tutorial

Introduction to the Problem

Invasive Plants in PA - List &

Fact Sheets

[Text only navigation and tutorial
guidance questions](#)

Introduction to Management

Management Philosophy
and Goal Setting

Inventory, Mapping and
Ranking (Assessment)

Management Tools

Species Management &
Control

Prevention & Early Detection

Management Planning

Monitoring & Evaluation

Restoration

Resources

Suggestions

Invasive Exotic Plants In Pennsylvania List

➤ The basis for this list was the [DCNR Invasive Plants in Pennsylvania](#) list created as a brochure in 2000. The list was expanded to include species that were identified by the [DCNR Land Managers Survey on Invasive Plants](#) that was conducted in 2004, as well as species that were recommended for inclusion by experienced field botanists and ecologists working in PA. The list includes noxious weeds that are problematic for natural areas and those that are problematic for agricultural situations only were omitted.

➤ An important note about this list is that it has been developed strictly for education and information purposes. It is neither intended nor approved for use as a regulatory tool. Some plants on this list are important to agriculture, horticulture, and other commercial purposes. They are included on this list because they have been identified as having established in natural areas or have been identified as Watch List species (see below).

➤ The primary purpose of this list is to identify those plants that are invasive and cause damage to native plant communities. The intention is to foster [early detection](#) so that land managers can implement management actions to prevent exotics from becoming established. It is also intended to educate land managers and the public in an effort to eliminate the use of invasives in landscaping, restoration and enhancement projects.

➤ **Clicking the Fact Sheet or Management & Control link will open more information for each species.**



Trees (6)

Norway maple	<i>Acer platanoides</i>	Fact Sheet	Management & Control
Sycamore maple	<i>Acer pseudoplatanus</i>	Fact Sheet	Management & Control
Tree-of-heaven	<i>Ailanthus altissima</i>	Fact Sheet	Management & Control
Princess tree	<i>Paulownia tomentosa</i>	Fact Sheet	Management & Control
Callery pear	<i>Pyrus calleryana</i> (and all cultivars)	Fact Sheet	Management & Control
Siberian elm	<i>Ulmus pumila</i>	Fact Sheet	Management & Control

Shrubs (19)

European black alder	<i>Alnus glutinosa</i>	Fact Sheet	Management & Control
Japanese barberry	<i>Berberis thunbergii</i>	Fact Sheet	Management & Control
European barberry	<i>Berberis vulgaris</i>	Fact Sheet	Management & Control
Russian olive	<i>Elaeagnus angustifolia</i>	Fact Sheet	Management & Control
Autumn olive	<i>Elaeagnus umbellata</i>	Fact Sheet	Management & Control
Winged Euonymus	<i>Euonymus alatus</i>	Fact Sheet	Management & Control
Border privet	<i>Ligustrum obtusifolium</i>	Fact Sheet	Management & Control
Common privet	<i>Ligustrum vulgare</i>	Fact Sheet	Management & Control
Amur honeysuckle	<i>Lonicera maackii</i>	Fact Sheet	Management & Control
Morrow's honeysuckle	<i>Lonicera morrowii</i>	Fact Sheet	Management & Control
Bell's honeysuckle	<i>Lonicera morrowii</i> x <i>tatarica</i>	Fact Sheet	Management & Control
Standish honeysuckle	<i>Lonicera standishii</i>	Fact Sheet	Management & Control
Tartarian honeysuckle	<i>Lonicera tatarica</i>	Fact Sheet	Management & Control
Common buckthorn	<i>Rhamnus cathartica</i>	Fact Sheet	Management & Control
Glossy buckthorn	<i>Rhamnus frangula</i>	Fact Sheet	Management & Control
Multiflora rose	<i>Rosa multiflora</i>	Fact Sheet	Management & Control
Wineberry	<i>Rubus phoenicolasius</i>	Fact Sheet	Management & Control

Japanese spiraea	<i>Spiraea japonica</i>	Fact Sheet	Management & Control
Guelder rose	<i>Viburnum opulus</i> var. <i>opulus</i>	Fact Sheet	Management & Control

Forbs/Grasses (25)

Goutweed	<i>Aegopodium podagraria</i>	Fact Sheet	Management & Control
Garlic mustard	<i>Alliaria petiolata</i>	Fact Sheet	Management & Control
Cheatgrass	<i>Bromus tectorum</i>	Fact Sheet	Management & Control
Spotted knapweed	<i>Centaurea maculosa</i> (syn. <i>C. biebersteinii</i>)	Fact Sheet	Management & Control
Greater celandine	<i>Chelidonium majus</i>	Fact Sheet	Management & Control
Canada thistle	<i>Cirsium arvense</i>	Fact Sheet	Management & Control
Poison hemlock	<i>Conium maculatum</i>	Fact Sheet	Management & Control
Crown vetch	<i>Coronilla varia</i>	Fact Sheet	Management & Control
Hairy willow herb	<i>Epilobium hirsutum</i>	Fact Sheet	Management & Control
Tall fescue	<i>Festuca elatior</i>	Fact Sheet	Management & Control
English ivy	<i>Hedera helix</i>	Fact Sheet	Management & Control
Orange day-lily	<i>Hemerocallis fulva</i>	Fact Sheet	Management & Control
Giant hogweed	<i>Heracleum mantegazzianum</i>	Fact Sheet	Management & Control
Dame's rocket	<i>Hesperis matronalis</i>	Fact Sheet	Management & Control
Purple loosestrife	<i>Lythrum salicaria</i> , <i>L. virgatum</i>	Fact Sheet	Management & Control
Japanese stilt grass	<i>Microstegium vimineum</i>	Fact Sheet	Management & Control
Star-of-Bethlehem	<i>Ornithogalum nutans</i> , <i>O. umbellatum</i>	Fact Sheet	Management & Control
Wild parsnip	<i>Pastinaca sativa</i>	Fact Sheet	Management & Control
Beefsteak plant	<i>Perilla frutescens</i>	Fact Sheet	Management & Control
Reed canary grass	<i>Phalaris arundinacea</i>	Fact Sheet	Management & Control
Common reed	<i>Phragmites australis</i> ssp. <i>australis</i>	Fact Sheet	Management & Control
Japanese knotweed	<i>Polygonum cuspidatum</i> , <i>P. sachalinense</i>	Fact Sheet	Management & Control
Lesser celandine	<i>Ranunculus ficaria</i>	Fact Sheet	Management & Control
Narrow-leaved cattail	<i>Typha angustifolia</i>	Fact Sheet	Management & Control
Hybrid cattail	<i>T. x glauca</i> (<i>T. ang.</i> x <i>T. latifolia</i>)	Fact Sheet	Management & Control

Vines (7)

Fiveleaf akebia	<i>Akebia quinata</i>	Fact Sheet	Management & Control
Porcelain-berry	<i>Ampelopsis brevipedunculata</i>	Fact Sheet	Management & Control
Oriental bittersweet	<i>Celastrus orbiculatus</i>	Fact Sheet	Management & Control
Japanese honeysuckle	<i>Lonicera japonica</i>	Fact Sheet	Management & Control
Mile-a-minute weed	<i>Polygonum perfoliatum</i>	Fact Sheet	Management & Control
Kudzu	<i>Pueraria lobata</i>	Fact Sheet	Management & Control
Periwinkle	<i>Vinca minor</i>	Fact Sheet	Management & Control

Aquatics (3)

Eurasian water-milfoil	<i>Myriophyllum spicatum</i>	Fact Sheet	Management & Control
Curly pondweed	<i>Potamogeton crispus</i>	Fact Sheet	Management & Control
Water chestnut	<i>Trapa natans</i>	Fact Sheet	Management & Control

Total = 60

Watch List (16)

These are species that are known to be widespread problems in other Mid-Atlantic states and have recently been reported, by experienced field botanists and a recent DCNR Survey conducted for State Parks and State Forests, as being established in some natural areas in PA. In addition, some of these species are significant problems in adjacent states and appear to be 'on the move' towards PA. Contact DCNR - Bureau of Forestry for assistance if you are dealing with a species that we have not included in this list.

Butterfly bush	<i>Buddleja davidii</i>	Fact Sheet	Management & Control
Climbing euonymus	<i>Euonymus fortunei</i>	Fact Sheet	Management & Control
Japanese hops	<i>Humulus japonica</i>	Fact Sheet	Management & Control
Hydrilla	<i>Hydrilla verticillata</i>	Fact Sheet	Management & Control
Miscanthus	<i>Miscanthus sinensis</i>	Fact Sheet	Management & Control
Japanese pachysandra	<i>Pachysandra terminalis</i>	Fact Sheet	Management & Control
Corktrees	<i>Phellodendron</i> spp.	Fact Sheet	Management & Control
Rough bluegrass	<i>Poa trivialis</i> L.	Fact Sheet	Management & Control

Bee-bee tree	<i>Tetradium daniellii</i>	Fact Sheet	Management & Control
Siebold viburnum	<i>Viburnum sieboldii</i>	Fact Sheet	Management & Control
Linden viburnum	<i>Viburnum dilatatum</i>	Fact Sheet	Management & Control
Doublefile viburnum	<i>Viburnum plicatum</i>	Fact Sheet	Management & Control
Black swallow-wort	<i>Vincetoxicum nigrum</i>	Fact Sheet	Management & Control
Japanese wisteria	<i>Wisteria floribunda</i>	Fact Sheet	Management & Control
Chinese wisteria	<i>Wisteria sinensis</i>	Fact Sheet	Management & Control
Yucca	<i>Yucca flaccida</i>	Fact Sheet	Management & Control

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A pressing problem

Recognition of the problem of invasive plants is growing, at the same time as damage to native ecosystems is mounting. Identifying invasive plants and understanding the potential damage they can cause is essential to stopping their spread and protecting native vegetation. Recent publications and websites specifically about invasive plants and a good field guide can help you identify and manage invasive plants. Try to learn as much as possible about this issue. The Internet is an excellent way to access the rapidly growing body of information on this topic.

For more information

Contacts

PA Department of Agriculture,
www.agriculture.state.pa.us/agriculture/cwp/view.asp?a=3&q=127347&agricultureNav=1

Penn State University Cooperative Extension Office
Directory, www.extension.psu.edu/extmap.html

Sea Grant Pennsylvania,
www.pserie.psu.edu/seagrant/seagindex.htm

Control

Alliance for the Chesapeake Bay - *Citizens Guide to the Control of Invasive Plants in Wetland and Riparian Areas*, <http://www.acb-online.org/pubs/projects/deliverables-251-1-2005.pdf>

PA DCNR - *Invasive Exotic Plant Tutorial for Natural Land Managers*,
www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm

Maryland Native Plant Society *Control of Invasive Non-Native Plants: A Guide for Gardeners and Homeowners in the Mid-Atlantic Region*,
<http://mdflora.org/publications/invasives.htm>

Identification of Invasive and Native Plants

Alliance for the Chesapeake Bay *Common Invasive Plants in Riparian Areas*,
www.dep.state.pa.us/dep/deputate/watermgt/wc/subjects/streamreleaf/Docs/Invasive%20Plants.pdf

Borman, S., R. Korth and J. Temte. 1997. *Through the Looking Glass: A Field Guide to Aquatic Plants*. Wisconsin Lakes Partnership. 248 pp.

Bowman's Hill Wildflower Preserve *Fact Sheets*,
www.bhwp.org/native/invasive_plants.htm

Brown, Lauren. 1979. *Grasses, An Identification Guide*. Boston: Houghton Mifflin. ISBN# 0-395-27624-1.

National Park Service, and U.S. Fish and Wildlife Service. 2002. *Plant Invaders of Mid-Atlantic Natural Areas*.
www.nps.gov/plants/alien/pubs/midatlantic/

National Wildlife Federation *Native Gardening and Invasive Plants Guide*,
http://enature.com/native_invasive/invasives.asp

Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide*. Boston: Little, Brown, and Co. ISBN# 0-316-60441-0.

PA DCNR - *Invasive Exotic Plant Tutorial for Natural Land Managers*,
www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm

Petrides, G.A. 1988. *A Field Guide to Eastern Trees*. Boston: Houghton Mifflin; Petersen Field Guide Series, No. 11. ISBN# 0-395-90455-2.

Rhoads, A.F. and T.A. Block. 2000. *The Plants of Pennsylvania, An Illustrated Manual*. University of Pennsylvania Press, Philadelphia. ISBN#0-8122-3535-5

Rhoads, A.F. and T.A. Block. 2004. *Trees of Pennsylvania: A Complete Reference Guide*. University of Pennsylvania Press, Philadelphia.

USDA Forest Service *Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of Forests and Woodlands*,
www.fs.fed.us/r9/wildlife/nnis/invasive-species-field-guide.pdf

Westbrooks, R.G. 1998. *Invasive Plants: Changing the Landscape of America, Factbook*. Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW); Washington, CD.C. 109 pp., U.S. Government Printing Office, Washington, D.C. 20402

Management

Federal Interagency Committee for the Management of Noxious and Exotic Weeds, www.fws.gov/ficmnew

Invasive Plants in Pennsylvania



Commonwealth of Pennsylvania
Edward G. Rendell, Governor
Department of Conservation & Natural Resources
Michael DiBerardinis, Secretary

What is an invasive plant?

“Invasive plant” is a name for a species that has become a weed pest, a plant which grows aggressively, spreads, and displaces other plants. Invasive plants tend to appear on disturbed ground, and the most aggressive can actually invade existing ecosystems. Invasive plants are generally undesirable because they are difficult to control, can escape from cultivation, and can dominate whole areas. In short, invasive plant infestations can be extremely expensive to control, as well as environmentally destructive.

A small number of invasives are “native,” meaning they occurred in Pennsylvania before settlement by Europeans but became aggressive after the landscape was altered. However, most invasive plants arrived from other continents and are often referred to as “exotic,” “alien,” “introduced,” or “non-native” invasives. An aggressive plant freed from its environmental, pest, and disease limits, can become an invader of other ecosystems. This brochure lists the most troublesome invasive plants that occur in Pennsylvania and impact native plant communities.

Characteristics of invasive plants

Invasive plants are noted for their ability to grow and spread aggressively. Invasive plants can be trees, shrubs, vines, grasses, or flowers, and they can reproduce rapidly by roots, seeds, shoots, or all three. Invasive plants tend to:

- not be native to North America;
- spread, reproducing by roots or shoots;
- mature quickly;
- if spread by seed, produce numerous seeds that disperse and sprout easily;
- be generalists that can grow in many different conditions; and
- be exploiters and colonizers of disturbed ground.

Impact of invasive plants

The primary reason to *not* landscape with invasives is that they are degrading our native environments. In fact, second only to habitat loss, invasives are a major factor in the decline of native plants. Plants like Kudzu, Purple Loosestrife, and Garlic Mustard are displacing native plants and degrading habitat for native insects, birds, and animals. Endangered, rare, and threatened native species of plants and animals are especially at risk because they often

occur in such small populations that make them particularly vulnerable.

Another reason to avoid invasives is that invasive plants, even when grown in a cultivated yard, can spread, escape, and cause landscape maintenance weeding problems for years to come. In urban and suburban areas there is a good chance that the worst weeds on your property are escaped plants, like Japanese Honeysuckle, Multiflora Rose, Japanese Knotweed, and Oriental Bittersweet. In yards, gardens, fields, and parks these plants are very expensive to control.

What can I do?

The best insurance against future problems is to **avoid the use of known invasive plants** and educate others about the problems of invasives. This brochure lists many of the plants that are invasive in Pennsylvania. Plants on this list should be avoided because they can escape cultivation and aggressively move into surrounding ecosystems. One way to avoid invasives is to choose plants that are native to your area. Natives often are adapted to a specific environmental niche, and have natural controls that keep them in balance.

Minimize landscape disturbance. Invasive plants thrive on bare soil and disturbed ground where the native plant community has been displaced. The key to controlling invasives is to **protect healthy native plant communities**.

Use fertilizers wisely. Proper site preparation begins with a soil test before applying fertilizer. High nitrogen levels sometimes give an advantage to invasive species that are better adapted to using plentiful nutrients for explosive growth. For soil fertility, try using organic, slow-decomposing compost and mulches.

Have a land management plan for maintenance over time. Lawns, gardens, meadows and woodlands are maintained using vastly different techniques, but they all will need to be monitored and invasive plants removed. Land management plans provide guidelines on monitoring, assist in prioritizing removal and prevention goals and help track the progress of control work.

Scout your property annually for invasives or other problems. The best way to control invasive species populations is to prevent their spread. Prevention includes preventing them from going to seed, preventing them from spreading

vegetatively and preventing soil disturbance or other factors that would promote their growth. Listed in this brochure are further resources to help property owners.

Early detection of invasive plant populations minimizes the cost and effort needed to control them. Effective scouting or monitoring ensures problems are found while they are still small and easily controllable. Remove invasives when their densities are low or they still cover a small area. Invasive plant control works best where there is a functioning native plant community still in place, which can move back into the empty niche. Control options should be taken before invasive plants go to seed. They include mechanical removal by cutting or hand pulling, and herbicide control by trained individuals or homeowners carefully following label directions.

Replace invasive plants with native or non-invasive species. Invasives are good at exploiting bare soil and empty niches. When you remove an invasive plant, unless there is another plant substituted, the invasive will tend to come back (either by seed or resprouting). What grows at a site in the future depends largely on what is planted there now. It is important to fill that niche with a desirable plant that will provide seed for the future.

Remove invasives first when their densities are low. This gives the most immediate success because invasive plant control works best where there is a functioning native plant community still in place which can move right into the empty niche.

- Avoid using known invasive plants
- Minimize landscape disturbance
- Protect healthy native plant communities
- Use fertilizers wisely
- Have a land management plan for maintenance over time
- Scout regularly
- Remove invasive plants when they are present in low numbers or when they are confined to a small area before they become a problem
- Dispose of removed invasive plants wisely
- Replace invasive plants with native or noninvasive species
- Clean equipment that has been used in an area having invasive plants



Invasive Plants in Pennsylvania

SCIENTIFIC NAME	COMMON NAME	PLANT FORM	NOTES
The species below are serious threats to our native ecosystems. Many have been designed as "Noxious Weeds" by the PA Department of Agriculture and are also a major concern to our agricultural community.			
<i>Aegopodium podagraria</i>	Goutweed	Flower	Commonly planted in the past and escaped; spreads aggressively by roots
<i>Alliaria petiolata</i>	Garlic mustard	Flower	Invasive in many states; spreading aggressively in woodlands by seed
<i>Carduus nutans</i>	Musk thistle	Flower	PA Noxious Weed
<i>Cirsium arvense</i>	Canada thistle	Flower	PA Noxious Weed
<i>Cirsium vulgare</i>	Bull thistle	Flower	PA Noxious Weed
<i>Datura stramonium</i>	Jimsonweed	Flower	Sometimes cultivated; spreads by seed, PA Noxious Weed
<i>Galega officinalis</i>	Goatsrue	Flower	PA and Federal Noxious Weed
<i>Heracleum mantegazzianum</i>	Giant hogweed	Flower	PA and Federal Noxious Weed; sap can cause burning blisters
<i>Hesperis matronalis</i>	Dame's rocket	Flower	Planted in gardens; escaped and naturalized along roads; spreads by seed
<i>Lythrum salicaria</i> , <i>L. virgatum</i>	Purple loosestrife	Flower	Garden escape which has become invasive in many states; PA Noxious weed
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	Flower	Invasive in many states; aquatic
<i>Ornithogallum nutans, umbellatum</i>	Star-of-Bethlehem	Flower	Common garden plant which has widely escaped
<i>Pastinaca sativa</i>	Wild parsnip	Flower	Found commonly along roadsides; widespread and abundant; spread by seed
<i>Perilla frutescens</i>	Beefsteak plant	Flower	Garden escape; widespread mostly along roadsides; spreads by seed
<i>Polygonum (Falopia) cuspidatum</i>	Japanese knotweed	Flower	Invasive in many states; difficult to control; spreads by roots and seeds
<i>Ranunculus ficaria</i>	Lesser celandine	Flower	Spreads by roots and shoots; can be very aggressive in wetlands
<i>Trapa natans</i>	Water chestnut	Flower	Wetland plant; should not be introduced as it will escape, spread, and naturalize
<i>Bromus tectorum</i>	Cheatgrass	Grass	Annual grass; very invasive throughout the west; spreads by seed
<i>Microstegium vimineum</i>	Japanese stilt grass	Grass	Annual grass; invasive in many states; spreading through woodlands by seed
<i>*Miscanthus sinensis</i>	Maiden grass	Grass	Commonly planted ornamental grass which can escape and spread by seed
<i>Phalaris arundinacea</i>	Reed canary grass	Grass	Aggressive wetland grass; native and introduced strains; widespread and abundant
<i>Phragmites australis</i>	Common reed	Grass	Native and introduced strains; wetland grass which can form huge colonies
<i>Sorghum bicolor ssp. drummondii</i>	Shattercane	Grass	Grass; PA noxious weed
<i>Sorghum halepense</i>	Johnson grass	Grass	Grass; PA noxious weed; spreads by roots and seeds
<i>*Berberis thunbergii</i>	Japanese barberry	Shrub	Escaped from cultivation and invasive in many states; spread by birds
<i>Berberis vulgaris</i>	European barberry	Shrub	Escaped from cultivation; spread by birds
<i>Elaeagnus angustifolia</i>	Russian olive	Shrub	Escaped from plantings and invasive in many states; spread by birds
<i>Elaeagnus umbellata</i>	Autumn olive	Shrub	Escaped from plantings and invasive in many states; rapidly spread by birds
<i>*Euonymus alatus</i>	Winged Euonymus	Shrub	Escaped from plantings; invasive in moist forests
<i>Ligustrum obtusifolium</i>	Border privet	Shrub	Escaped from cultivation; seeds spread by birds
<i>Ligustrum vulgare</i>	Common privet	Shrub	Planted very commonly in the past and escaped; invasive in many states
<i>Lonicera maackii</i>	Amur honeysuckle	Shrub	Escaped from plantings; seeds spread by birds
<i>Lonicera morrowii</i>	Morrow's honeysuckle	Shrub	Escaped from plantings and invasive in many states; seeds spread by birds
<i>Lonicera morrowii x tatarica</i>	Bell's honeysuckle	Shrub	Escaped from cultivation
<i>Lonicera standishii</i>	Standish honeysuckle	Shrub	Escaped from plantings; seeds spread by birds
<i>Lonicera tatarica</i>	Tartarian honeysuckle	Shrub	Escaped from plantings; seeds spread by birds
<i>Rhamnus catharticus</i>	Common buckthorn	Shrub	Becoming a problem in PA
<i>Rhamnus frangula</i>	Glossy buckthorn	Shrub	Becoming a problem in PA
<i>Rosa multiflora</i>	Multiflora rose	Shrub	Invasive in many states; seeds spread by birds; PA noxious weed
<i>Rubus phoenicolasius</i>	Wineberry	Shrub	Common bramble; not cultivated; spreads by seed
<i>*Spiraea japonica</i>	Japanese spiraea	Shrub	Frequently planted; escaped in some areas
<i>*Viburnum opulus var. opulus</i>	Guelder rose	Shrub	Resembles native <i>Viburnum trilobum</i> which it replaces; both are cultivated and planted
<i>*Acer platanoides</i>	Norway maple	Tree	Commonly planted and escaped; invasive in many states; wind spreads prolific seeds
<i>Acer pseudoplatanus</i>	Sycamore maple	Tree	Escaped from cultivation ; wind spreads prolific seeds
<i>Ailanthus altissima</i>	Tree-of-heaven	Tree	Invasive in many states; wind spreads prolific seeds
<i>Paulownia tomentosa</i>	Empress tree	Tree	Prolific seeds fall to start new seedlings
<i>*Pyrus calleryana</i>	Callery pear	Tree	Commonly planted street tree; becoming a problem as an escape
<i>Ulmus pumila</i>	Siberian elm	Tree	Escaped from cultivation
<i>Akebia quinata</i>	Fiveleaf akebia	Vine	Escaped from cultivation and becoming a major problem in the Philadelphia area
<i>Ampelopsis brevipedunculata</i>	Porcelain-berry	Vine	Escaped from cultivation; spread by birds
<i>Celastrus orbiculatus</i>	Oriental bittersweet	Vine	Escaped from cultivation and invasive in many states; spreading rapidly (by birds)
<i>Lonicera japonica</i>	Japanese honeysuckle	Vine	Invasive in many states
<i>Polygonum perfoliatum</i>	Mile-a-minute vine	Vine	Range expanding, PA Noxious weed
<i>Pueraria lobata</i>	Kudzu	Vine	Invasive in many states; PA Noxious weed

This list of invasive species is not meant to be definitive, but rather a guideline to some of the most troublesome species that degrade native plant communities in Pennsylvania. These species were chosen from a more extensive list compiled from adjacent state or regional lists of invasive plant species. Input was sought from experienced individuals familiar with Pennsylvania’s flora from a field perspective. For a more extensive list of invasive species, please contact DCNR, Bureau of Forestry, P.O. Box 8552, Harrisburg, PA 17105-8552.

SITUATIONAL INVASIVES: Some plants become problematic invasive species to a given area. For example, some species are commonly planted for quick groundcover but can be a serious problem when planted, seeded or discarded near native herbaceous communities. These situational invasives require greater care and monitoring when planted near native plant communities. These species include: *Crown-Vetch*, *Coronilla varia*; *English Ivy*, *Hedera heli*; **Tall fescue*, *Festuca elatior*; **Orange day-lily*, *Heemerocallis fulva*, *Periwinkle*, *Vinca minor*; and *Chinese and Japanese wisteria*, *Wisteria sinemsis* and *W. floridbunda*.

(ASTERIX): An asterix (*) denotes that the species has cultivars that are not known to be invasive. Cultivars are cultivated varieties of plant species bred for predictable attributes like shorter height, showier flowers, or colored foliage. An example is Norway Maple ‘Crimson King’ grown for its reddish leaves; this cultivar is not known to be invasive. Another example are the day lilies which have a host of cultivars that are not known as invasives. If you choose to plant a cultivar of an invasive species, ask a PA certified horticulturalist (PCH), your Penn State extension agent, or a professional horticulturalist about the cultivar’s potential to be invasive.



Invasive Plants in Pennsylvania



Invasive plants are plants which grow quickly and aggressively, spreading and displacing other plants. Invasives are usually introduced by people either accidentally or on purpose, into a region far from their native habitat.

[What is an Invasive Plant?](#)

[What Can I Do?](#)

[Moderate Threats](#)

[Serious Threats](#)

[Threats to Southeastern Pennsylvania](#)

[Other Sources](#)



What is an Invasive Plant?

"Invasive plant" is a name for a species that has become a weed pest, a plant which grows aggressively, spreads, and displaces other plants. Invasive plants tend to appear on disturbed ground, and the most aggressive can actually invade existing ecosystems. Invasive plants are generally undesirable because they are difficult to control, can escape from cultivation, and can dominate whole areas. In short, invasive plant infestations can be extremely expensive to control, as well as environmentally destructive. A small number of invasives are "native," meaning they occurred in Pennsylvania before settlement by Europeans but became aggressive after the landscape was altered. However, most invasive plants arrived from other continents and are often referred to as "exotic," "alien," introduced," or "nonnative" invasives. An aggressive plant freed from its environmental, pest, and disease limits, can become an invader of other ecosystems.



Characteristics of Invasive Plants

Invasive plants are noted for their ability to grow and spread aggressively. Invasive plants can be trees, shrubs, vines, grasses, or flowers, and they can reproduce rapidly by roots, seeds, shoots, or all three. Invasive plants tend to:

- not be native to North America;
- spread, reproducing by roots or shoots;
- mature quickly; if spread by seed, produce numerous seeds that disperse and sprout easily;
- be generalists that can grow in many different conditions;
- and be exploiters and colonizers of disturbed ground.

Impact of Invasive Plants

The primary reason to **not** landscape with invasives is that they are degrading our native environments. In fact, second only to habitat loss, invasives are a major factor in the decline of native plants. Plants like Kudzu, Purple Loosestrife, and Garlic Mustard are displacing native plants and degrading habitat for native insects, birds, and animals. Endangered, rare,

and threatened native species of plant and animals are especially at risk because they often occur in such small populations that make them particularly vulnerable.

Another reason to avoid invasives is that invasive plants, even when grown in a cultivated yard, can spread, escape, and cause landscape maintenance weeding problems for years to come. In urban and suburban areas there is a good chance that the worst weeds on your property are escaped plants, like Japanese Honeysuckle, Multiflora Rose, Japanese Knotweed, and Oriental Bittersweet. In yards, gardens, fields, and parks these plants are very expensive to control.



What Can I Do about Invasive Plants?

The best insurance against future problems is to avoid the use of known invasive plants and educate others about the problems of invasives. This web site lists many of the plants that are invasive in Pennsylvania. Plants on this list should be avoided because they can escape cultivation and aggressively move into surrounding ecosystems. One way to avoid invasives is to choose plants that are native to your area. Natives often are adapted to a specific environmental niche, and have natural controls that keep them in balance.

Minimize landscape disturbance. Invasive plants thrive on bare soil and disturbed ground where the native plant community has been displaced. The key to controlling invasives is to protect healthy native plant communities.

Use fertilizers wisely. Proper site preparation begins with a soil test before applying fertilizer. High nitrogen levels sometimes give an advantage to invasive species that are better adapted to using plentiful nutrients for explosive growth. For soil fertility, try using organic, slow-decomposing compost and mulches

Have a land management plan for maintenance over time. It makes sense when designing a property to plan for future maintenance. Lawns are maintained by weekly mowing, while gardens are often hand-weeded. Meadows in Pennsylvania may need to be mowed every year. Woodlands are probably the lowest-maintenance landscape, but they too will need to be monitored and invasive plants removed.

Scout your property annually for invasives or other problems. The best way to control invasives is prevention, and prevention can only happen through vigilance. Listed on this web site are resources to help property owners.

Remove invasives before they are a problem. Effective scouting or monitoring means that problems are found while they are still small and easily controllable. For instance, do not let invasive plants go to seed. Mechanical removal through digging or cutting is preferred. Large populations of invasives may need to be stopped chemically with spot applications of herbicide by trained individuals or by homeowners carefully following label instructions.

Replace invasive plants with native or noninvasive species. Invasives are good at exploiting bare soil and empty niches. When you remove an invasive plant, unless there is another plant substituted, the invasive will tend to come right back. What grows in the future depends largely on what is there now; so it is important to fill that niche with a desirable plant that will provide seed for the future.

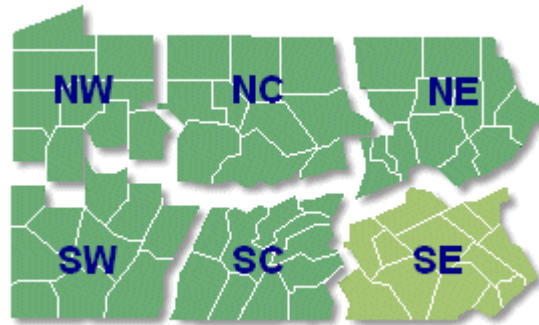
Remove invasives first when their densities are low. This gives the most immediate success because invasive plant control works best where there is a functioning native plant community still in place which can move right into the empty niche.

- Avoid using known invasive plants
- Minimize landscape disturbance
- Protect healthy native plant communities
- Use fertilizers wisely
- Have a land management plan for maintenance over time
- Scout (and keep scouting)

- Remove invasives before they become a problem
- Replace invasive plants with native or noninvasive species
- Remove invasives first when their densities are low

Moderate Threats

The following species are invasive plants that are known to invade our native plant communities and are deserving of our vigilance.



Pennsylvania Regions

Six Pennsylvania Regions were used to show state distribution:

SE = Southeast **SC** = Southcentral **SW** = Southwest

NE = Northeast **NC** = Northcentral **NW** = Northwest

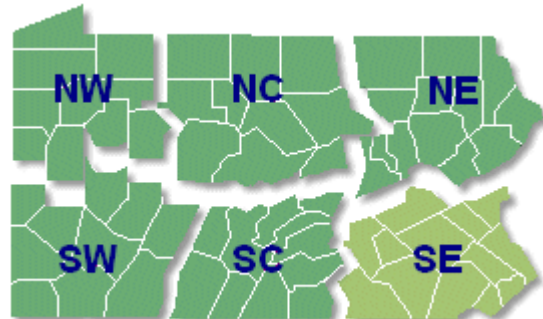
Freq. = Frequent Occ. = Occasional Rare

Scientific Name	Common Name	Plant Form	Pennsylvania Distribution
<i>Aegopodium podagraria</i>	Goutweed	Flower	Freq: SE; Occ: SC, SW, NE, NC, NW Notes: Commonly planted in the past and escaped; spreads aggressively by roots
<i>Bromus tectorum</i>	Cheatgrass	Grass	Freq: SE, SC; Occ: SW, NE, NW; Rare: NC Notes: Annual grass; very invasive throughout the west; spreads by seed
<i>Hesperis matronalis</i>	Dame's rocket	Flower	Freq: SE, SC, SW, NE; Occ: NC, NW Notes: Planted in gardens; escaped and naturalized along roads; spreads by seed
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	Flower	Freq: SE, NW; Occ: NE; Rare: SC, SW Notes: Invasive in many states; aquatic
<i>Ornithogallum nutans, umbellatum</i>	Star-of-Bethlehem	Flower	Freq: SE, SC, SW Notes: Common garden plant which has widely escaped
<i>Pastinaca sativa</i>	Wild parsnip	Flower	Freq: SE, SC, SW; Occ: NE, NC, NW Notes: Found commonly along roadsides; widespread and abundant; spread by seed
<i>Perilla frutescens</i>	Beefsteak plant	Flower	Freq: SE, SC Notes: Garden escape; widespread mostly along roadsides; spread by seed
<i>Phalaris arundinacea</i>	Reed canary grass	Grass	Freq: SE, SC, SW; Occ: NE, NC, NW Notes: Aggressive wetland grass; native and introduced strains; widespread and abundant
<i>Ranunculus ficaria</i>	Lesser celandine	Flower	Freq: SE; Rare: SC, SW Notes: Spreads by roots and shoots; can be very aggressive in wetlands
<i>Berberis thunbergii</i>	Japanese barberry	Shrub	Freq: SE, SC, NE; Occ: SW, NC, NW Notes: Escaped from cultivation and invasive in many states; spread by birds
<i>Berberis vulgaris</i>	European barberry	Shrub	Freq: SE; Occ: SC, SW, NE, NC, NW Notes: Escaped from cultivation; spread by birds
<i>Elaeagnus angustifolia</i>	Russian olive	Shrub	Occ: SE, SC, SW Notes: Escaped from plantings and invasive in many states; spread by birds
<i>Ligustrum obtusifolium</i>	Border privet	Shrub	Freq: SE, SC; Occ: SW, NE, NW; Rare: NC Notes: Escaped from cultivation; seeds spread by birds
<i>Ligustrum vulgare</i>	Common privet	Shrub	Freq: SE, SC; Occ: SW, NE Notes: Planted very commonly in the past and escaped; invasive in many states
<i>Lonicera morrowii x tatarica</i>	Bell's honeysuckle	Shrub	Occ: SE, SC, NW Notes: Escaped from cultivation
<i>Rhamnus catharticus</i>	Common buckthorn	Shrub	Freq: SE, SC; Occ: SW Notes: Becoming a problem in PA

<i>Rhamnus frangula</i>	Glossy buckthorn	Shrub	Occ: SE, SC, SW, NE, NC, NW
Notes: Becoming a problem in PA			
<i>Rubus phoenicolasius</i>	Wineberry	Shrub	Freq: SE, SC; Occ: SW
Notes: Common bramble; not cultivated; spread by seed			
<i>Ulmus pumila</i>	Siberian elm	Tree	Occ: SE, SC; Rare: SW
Notes: Escaped from cultivation			
<i>Akebia quinata</i>	Fiveleaf akebia	Vine	Occ: SE; Rare: SC
Notes: Escaped from cultivation			
<i>Ampelopsis brevipedunculata</i>	Porcelain-berry	Vine	Occ: SE, SW
Notes: Escaped from cultivation			

Serious Threats

The species below are the most serious threats or worst offenders to our native ecosystems. Many have been designed as "Noxious Weeds" by the Pennsylvania Department of Agriculture and are also a major concern to our agricultural community.



Pennsylvania Regions

Six Pennsylvania Regions were used to show state distribution:

SE = Southeast **SC** = Southcentral **SW** = Southwest

NE = Northeast **NC** = Northcentral **NW** = Northwest

Freq. = Frequent Occ. = Occasional Rare

Scientific Name	Common Name	Plant Form	Pennsylvania Distribution
<i>Alliaria petiolata</i>	Garlic mustard	Flower	Freq: SE, SC, SW, NW; Occ: NE
Notes: Invasive in many states; spreading aggressively in woodlands by seed			
<i>Carduus nutans</i>	Musk thistle	Flower	Freq: SE, SC, SW, NE, NC, NW
Notes: PA noxious Weed			
<i>Cirsium arvense</i>	Canada thistle	Flower	Freq: SE, SC, SW, NE, NC, NW
Notes: PA noxious Weed			
<i>Cirsium vulgare</i>	Bull thistle	Flower	Freq: SE, SC, SW, NE, NC, NW
Notes: PA noxious Weed			
<i>Datura stramonium</i>	Jimsonweed	Flower	Freq: SE, SC, SW; Occ: NE
Notes: Sometimes cultivated; spreads by seed, PA Noxious Weed			
<i>Galega officinalis</i>	Goatsrue	Flower	Rare: SE
Notes: PA and Federal Noxious Weed, on location in SE PA			
<i>Heracleum mantegazzianum</i>	Giant hogweed	Flower	Rare: NW
Notes: PA and Federal Noxious Weed, sap can cause burning blisters			
<i>Lythrum salicaria</i> , <i>L. virgatum</i>	Purple loosestife	Flower	Freq: SE; Occ: SC, SW, NE, NC, NW
Notes: Garden escape which has become invasive in many states; PA noxious Weed			
<i>Microstegium vimineum</i>	Japanese stilt grass	Grass	Freq: SE; Occ: SC
Notes: Annual grass; invasive in many states; spreading through woodlands by seed			
<i>Phragmites australis</i>	Common reed	Grass	Freq: SE; Occ: SC, SW, NE, NW
Notes: Native and introduced strains; wetland grass which can form huge colonies			
<i>Polygonum (Falopia) cuspidatum</i>	Japanese knotweed	Flower	Freq: SE; Occ: SC, SW, NE, NW; Rare: NC
Notes: Invasive in many states; difficult to control; spreads by roots and seeds			
<i>Sorghum bicolor ssp. drummondii</i>	Shattercane	Grass	Freq: SE; Occ: SC, NC

Notes: Grass; PA noxious Weed			
<i>Sorghum halepense</i>	Johnson grass	Grass	Freq: SE; Occ: SC, SW, NE, NW
Notes: Grass; PA noxious Weed; spreads by roots and seeds			
<i>Elaeagnus umbellata</i>	Autumn olive	Shrub	Freq: SE, SC; Occ: SW; Rare: NE, NW
Notes: Escaped from plantings and invasive in many states; rapidly spread by birds			
<i>Lonicera maackii</i>	Amur honeysuckle	Shrub	Occ: SE, SC, NW
Notes: Escaped from plantings; seeds spread by birds			
<i>Lonicera morrowii</i>	Morrow's honeysuckle	Shrub	Freq: SE, SC, SW; Occ: NE, NC, NW
Notes: Escaped from plantings and invasive in many states; seeds spread by birds			
<i>Lonicera standishii</i>	Standish honeysuckle	Shrub	Occ: SE
Notes: Escaped from plantings; seeds spread by birds			
<i>Lonicera tartarica</i>	Tartarian honeysuckle	Shrub	Freq: SE, SC, SW; Occ: NE, NW
Notes: Escaped from plantings; seeds spread by birds			
<i>Rosa multiflora</i>	Multiflora rose	Shrub	Freq: SE, SC, SW; Occ: NE, NC, NW
Notes: Invasive in many states; seeds spread by birds; PA noxious Weed			
<i>Acer platanoides</i>	Norway maple	Tree	Freq: SE; Occ: SE, SW
Notes: Commonly planted and escaped; invasive in many states; wind spreads prolific seeds			
<i>Ailanthus altissima</i>	Tree-of-heaven	Tree	Freq: SE, SC; Occ: SW
Notes: Invasive in many states; wind spreads prolific seeds			
<i>Celastrus orbiculatus</i>	Oriental bittersweet	Vine	Freq: SE, SC, SW; Rare: NE, NW
Notes: Escaped from cultivation and invasive in many states; spreading rapidly (by birds)			
<i>Lonicera japonica</i>	Japanese honeysuckle	Vine	Freq: SE, SC; Occ: SW, NE
Notes: Invasive in many states			
<i>Polygonum perfoliatum</i>	Mile-a-minute vine	Vine	Freq: SE; Rare: SW
Notes: Range expanding; PA Noxious Weed			
<i>Pueraria lobata</i>	Kudzu	Vine	Freq: SE; Rare: SW
Notes: Invasive in many states; PA Noxious Weed			

Other Sources

Recognition of the problem of invasive plants is growing, at the same time as damage to native ecosystems is mounting. Identifying invasive plants and understanding the potential damage they can cause is essential to stopping their spread and protecting native vegetation. Recent publications specifically on invasive plant control and a good field guide can help identify and avoid planting invasive plants. Try to learn as much as possible about this issue. The Internet is an excellent way to access the rapidly growing body of information on this topic.

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Natural Areas Association www.naturalarea.org

New England Wild Flower Society www.newfs.org/invasive/invasive.htm

U.S. Department of Agriculture, Invaders Database System Noxious Weeds in the U.S. & Canada
invader.dbs.umt.edu/noxious_weeds

VA Dept. of Conservation and Recreation, Invasive Alien Plant Species of Virginia
www.dcr.state.va.us/dnh/invproj.htm



Appendix 3.X - Constructed Wetlands

BMP 6.6.1: Constructed Wetland



Constructed Wetlands are shallow marsh systems planted with emergent vegetation that are designed to treat stormwater runoff.

<p style="text-align: center;"><u>Key Design Elements</u></p> <ul style="list-style-type: none"> ▪ Adequate drainage area (usually 5 to 10 acres minimum) or proof of sustained base flow <ul style="list-style-type: none"> May require investigation of water supply to ensure a sustained baseflow to maintain the wetland ▪ Maintenance of permanent water surface ▪ Multiple vegetative growth zones through varying depths ▪ Robust and diverse vegetation ▪ Relatively impermeable soils or engineered liner ▪ Sediment collection and removal ▪ Adjustable permanent pool and dewatering mechanism <ul style="list-style-type: none"> Maintenance - periodic sediment removal from the forebay and vegetation maintenance 	<p style="text-align: center;"><u>Potential Applications</u></p> <p>Residential: Yes Commercial: Yes Ultra Urban: Limited Industrial: Yes Retrofit: Yes Highway/Road: Yes</p> <hr/> <p style="text-align: center;"><u>Stormwater Functions</u></p> <p>Volume Reduction: Low Recharge: Low Peak Rate Control: High Water Quality: High</p> <hr/> <p style="text-align: center;"><u>Water Quality Functions</u></p> <p>TSS: 85% TP: 85% NO3: 30%</p>
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Description

Constructed Wetlands are shallow marsh systems planted with emergent vegetation that are designed to treat stormwater runoff. While they are one of the best BMPs for pollutant removal, Constructed Wetlands (CWs) can also mitigate peak rates and even reduce runoff volume to a certain degree. They also can provide considerable aesthetic and wildlife benefits. CWs use a relatively large amount of space and require an adequate source of inflow to maintain the permanent water surface.

Variations

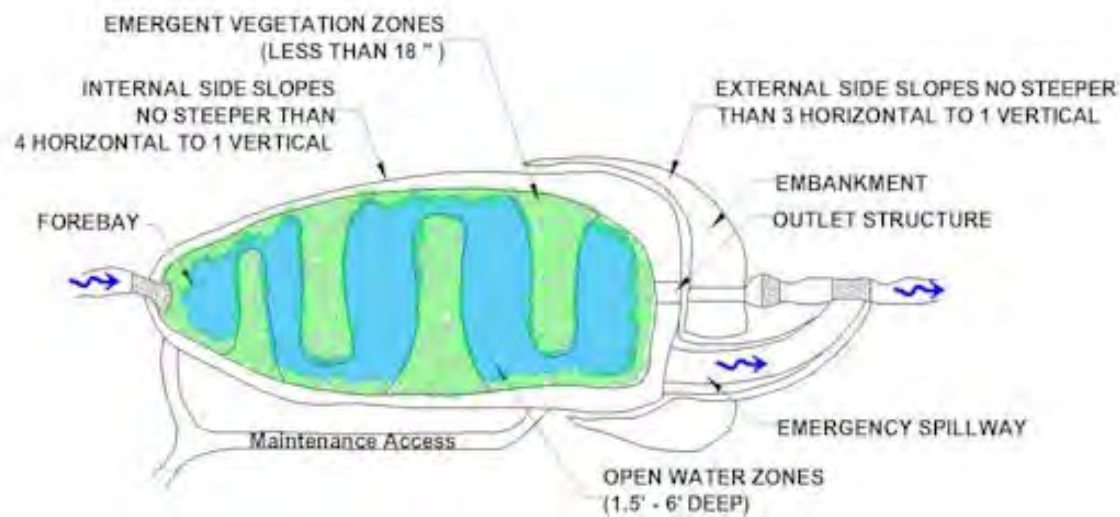
Constructed Wetlands can be designed as either an online or offline facilities. They can also be used effectively in series with other flow/sediment reducing BMPs that reduce the sediment load and equalize incoming flows to the CWs. Constructed Wetlands are a good option for retrofitting existing detention basins. CWs are often organized into four groups:

- Shallow Wetlands are large surface area CWs that primarily accomplish water quality improvement through displacement of the permanent pool.
- Extended Detention Shallow Wetlands are similar to Shallow Wetlands but use extended detention as another mechanism for water quality and peak rate control.
- Pocket Wetlands are smaller CWs that serve drainage areas between approximately 5 and 10 acres and are constructed near the water table.
- Pond/Wetland systems are a combination of a wet pond and a constructed wetland.

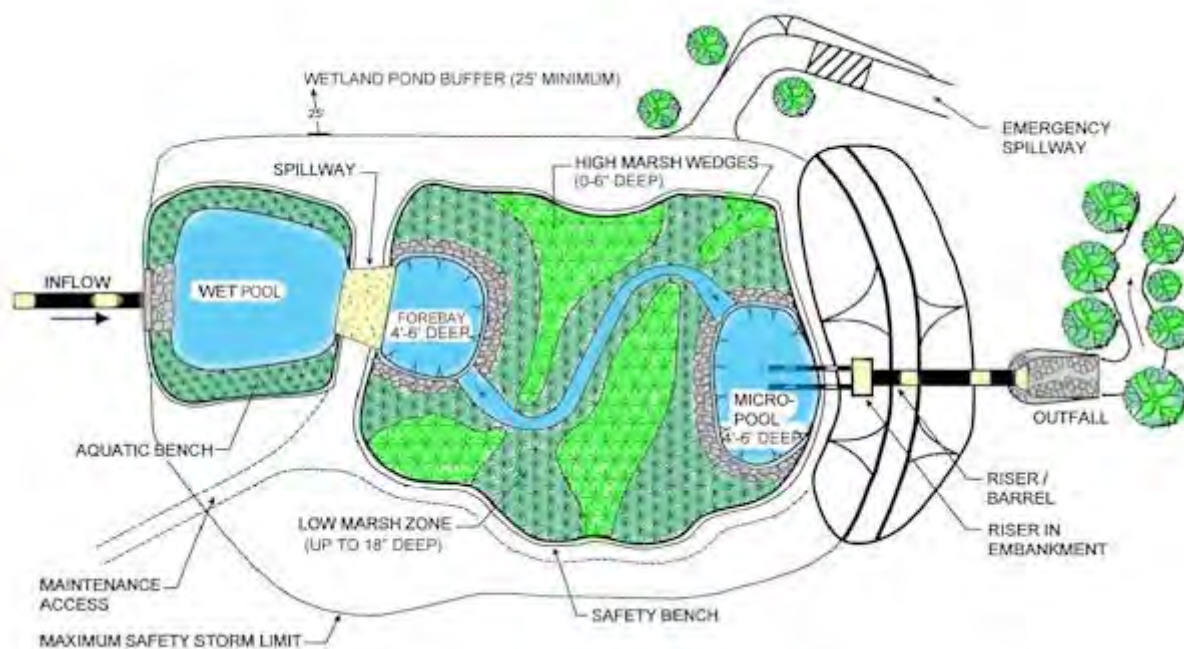
Although this BMP focuses on surface flow Constructed Wetlands as described above, subsurface flow CWs can also be used to treat stormwater runoff. While typically used for wastewater treatment, subsurface flow CWs for stormwater may offer some advantages over surface flow wetlands, such as improved reduction of total suspended solids and oxygen demand. They also can reduce the risk of vectors (especially mosquitoes) and safety risks associated with open water. However, nitrogen removal may be deficient (Campbell and Ogden, 1999). Perhaps the biggest disadvantage is the relatively low treatment capacities of subsurface flow CWs – they are generally only able to treat small flows. For more information, please consult the “References and Additional Resources” list.

Applications

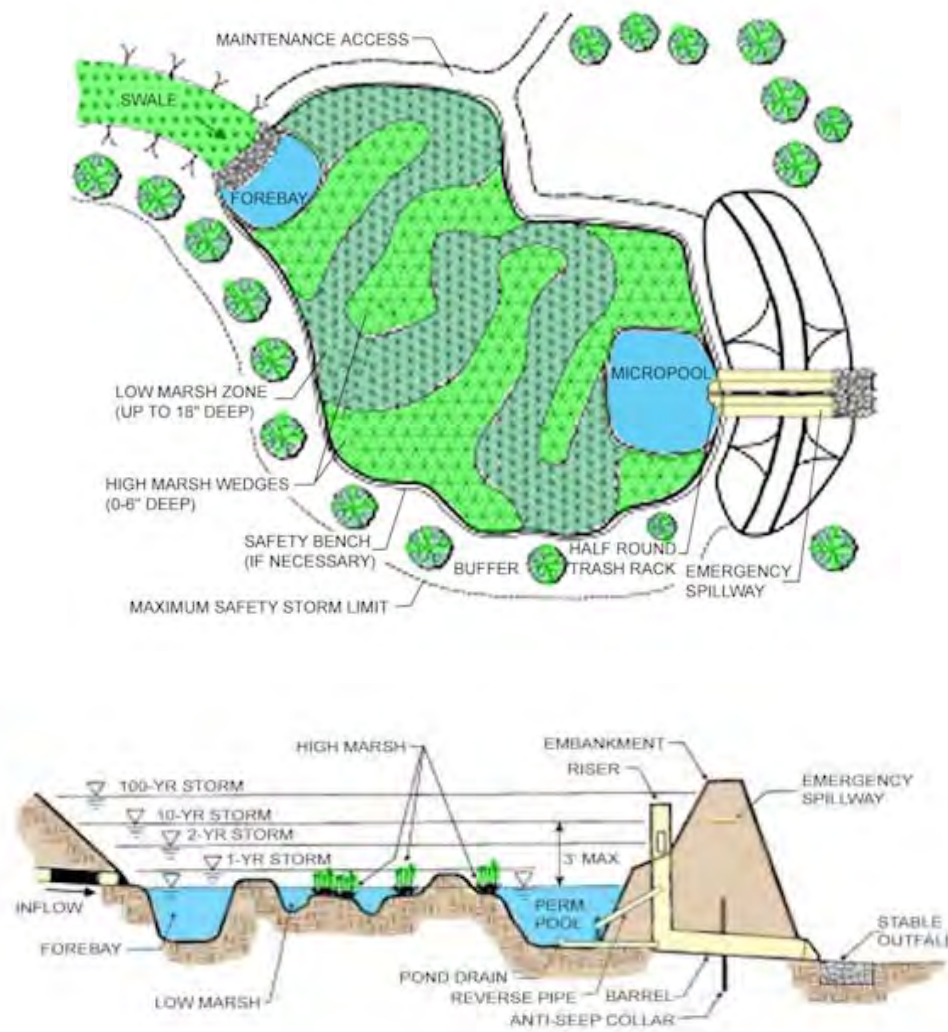
- Alternating bands of deeper water and shallow marsh.



- Wet Pond/Wetland System



- **Pocket Wetland**



- **Offline Constructed Wetland**
- **Retrofit of existing detention basins**



Design Considerations

1. **HYDROLOGY.** Constructed Wetlands must be able to receive and retain enough flow from rain, runoff, and groundwater to ensure long-term viability. Hydrologic calculations (or a water balance) should be performed to verify this. Shallow marsh areas can become dry at the surface but not for greater than one month, even in the most severe drought. A permanent water surface in the deeper areas of the CWs should be maintained during all but the driest periods. A relatively stable normal water surface elevation will reduce the stress on wetland vegetation. A CWs must have a drainage area of at least 10 acres (5 acres for “pocket” wetlands) or some means of sustaining constant inflow. Even with a large drainage area, a constant source of inflow can improve the biological health and effectiveness of a Constructed Wetland. Pennsylvania’s precipitation is generally well distributed throughout the year and is therefore suited for CWs.
2. **UNDERLYING SOILS.** Underlying soils must be identified and tested. Generally hydrologic soil groups “C” and “D” are suitable without modification, “A” and “B” soils may require a clay or synthetic liner. Soil permeability must be tested in the proposed Constructed Wetland location to ensure that excessive infiltration will not cause the CWs to dry out. If necessary, CWs should have a highly- compacted subsoil or an impermeable liner to minimize infiltration.
3. **PLANTING SOIL.** Organic soils should be used for Constructed Wetlands. Organic soils can serve as a sink for pollutants and generally have high water holding capacities. They will also facilitate plant growth and propagation and may hinder invasion of undesirable species.
4. **SIZE AND VOLUME.** The area required for a CWs is generally 3 to 5 percent of its drainage area. CWs should be sized to treat the water quality volume and, if necessary, to mitigate the peak rates for larger events.
5. **VEGETATION.** Vegetation is an integral part of a Wetland system. Vegetation may help to reduce flow velocities, promote settling, provide growth surfaces for beneficial microbes, uptake pollutants, prevent resuspension, provide filtering, limit erosion, prevent short-circuiting, and maintain healthy bottom sediments (Braskerud, 2001). Constructed Wetlands should have several different zones of vegetation as described in Table 6.6.1-1. The emergent vegetation zone (areas not more than 18” deep) should comprise about 60 to 65 percent of the normal water surface area, although recommendations in recent literature range from less than 50 to over 80 percent. Robust, non-invasive, perennial plants that establish quickly are ideal for CWs. The designer should select species that are tolerant of a range of depths, inundation periods, etc. Monoculture planting must be avoided due to the risk from pests and disease. Use local recommended plant lists.

Table 6.6.1-1

Vegetation Zone	Description
Open Water	Areas between 18 inches and 6 feet deep
Emergent	Areas up to 18 inches deep
Low Marsh	Portion of Emergent Zone between 6 and 18 inches deep
High Marsh	Portion of Emergent Zone up to 6 inches deep
Ephemeral Storage	Area periodically inundated during runoff events
Buffer	Area outside of maximum water surface elevation



6. CONFIGURATION.

- a. General. Constructed Wetlands should be designed with a length to width ratio of at least 2:1 wherever possible. If the length to width ratio is lower, the flow pathway through the CWs should be maximized. CWs should not be constructed within 10 feet of the property line or within 50 feet of a private well or septic system. CWs should be designed so that the 10-year water surface elevation does not exceed the normal water surface elevation by more than 3 feet. Slopes in and around Constructed Wetlands should be 4:1 to 5:1 (H:V) wherever possible. Constructed wetlands should be located outside of any natural watercourse.
- b. Forebay/Inflows. Constructed Wetlands should have a forebay at all major inflow points to capture coarse sediment, prevent excessive sediment accumulation in the remainder of the CWs, and minimize erosion by inflow. The forebays should contain 10 to 15 percent of the total permanent pool volume and should be 4 to 6 feet deep (at least as deep as other open water areas). They should be physically separated from the rest of the wetland by a berm, gabion wall, etc. Flows exiting the forebay should be non-erosive to the newly constructed CWs. Vegetation within forebays can increase sedimentation and reduce resuspension/erosion. The forebay bottom can be hardened to facilitate sediment removal. Forebays should be installed with permanent vertical markers that indicate sediment depth. Inflow channels should be fully stabilized. Inflow pipes can discharge to the surface or be partially submerged. CWs should be protected from the erosive force of the inflow to prevent the resuspension of previously collected sediment during large flows.
- c. Vegetation and Open Water Zones. About half of the emergent vegetation zone should be high marsh (up to 6" deep) and half should be low marsh (6" to 18" deep). Varying depths throughout the CWs can improve plant diversity and health. The open water zone (approx. 35 to 40% of the total surface area) should be between 18 inches and 6 feet deep. Allowing a limited 5-foot deep area can prevent short-circuiting by encouraging mixing, enhance aeration of water, prevent resuspension, minimize thermal



- impacts, and limit mosquito growth. Alternating areas of emergent vegetation zone (up to 18 inches deep) and open water zone – as shown in Figures 6.13-2 and 6.13-4 – can also minimize short-circuiting and hinder mosquito propagation.
- d. **Outlet.** Outlet control devices should be in open water areas 4 to 6 feet deep comprising about 5 percent of the total surface area to prevent clogging and allow the CWs to be drained for maintenance. Outlet devices are generally multistage structures with pipes, orifices, or weirs for flow control. Orifices should be at least 2.5 inches in diameter and should be protected from clogging. Outlet devices should be installed in the embankment for accessibility. It is recommended that outlet devices enable the normal water surface to be varied. This allows the water level to be adjusted (if necessary) seasonally, as the CWs accumulates sediment over time, if desired grades are not achieved, or for mosquito control. The outlet pipe should generally be fitted with an anti-seep collar. Online facilities should have an emergency spillway that can safely pass the 100-year storm with 1 foot of freeboard. All outflows should be conveyed downstream in a safe and stable manner.
 - e. **Safety Benches.** All areas that are deeper than 4 feet should have two safety benches, each 4 to 6 feet wide. One should be situated about 1 to 1.5 feet above the normal water elevation and the other 2 to 2.5 feet below the water surface.
7. **CONSTRUCTED WETLAND BUFFER.** To enhance habitat value, visual aesthetics, and wetland health, a 25-foot buffer should be added from the maximum water surface elevation. The buffer should be planted with trees, shrubs, and native ground covers. Existing trees within the buffer should be preserved. If soils in the buffer will become compacted during construction, soil restoration should take place to aid buffer vegetation.
 8. **MAINTENANCE ACCESS.** Permanent access must be provided to the forebay, outlet, and embankment areas. It should be at least 9 feet wide, have a maximum slope of 15%, and be stabilized for vehicles.
 9. **PLAN ELEMENTS.** The plans detailing the Constructed Wetlands should clearly show the CWs configuration, elevations and grades, depth/vegetation zones, and the location, quantity, and propagation methods of wetland/buffer vegetation. Plans should also include site preparation techniques, construction sequence, as well as maintenance schedules and requirements.
 10. **REGULATION.** Constructed Wetlands that have drainage areas over 100 acres, embankments greater than 15 feet high, or a capacity greater than 50 acre-feet may be regulated as a dam by PADEP (see Title 25, Chapter 105 of the Pennsylvania Code).

Detailed Stormwater Functions

Volume Reduction Calculations

Although not typically considered a volume-reducing BMP, Constructed Wetlands can achieve some volume reduction through evapotranspiration, especially during small storms. An evapotranspiration study could be done to account for potential volume reduction credit. Hydrologic calculations that should be performed to verify that the CWs will have a viable amount of inflow can also predict the water surface elevation under varying conditions. The volume stored between the predicted water level and the lowest outlet elevation will be removed from the storm that occurs under those conditions.

Peak Rate Mitigation Calculations

Peak rate is primarily controlled in Constructed Wetlands through the transient storage above the normal water surface. See in Section 8 for Peak Rate Mitigation methodology.

Water Quality Improvement

Constructed Wetlands improve runoff quality through settling, filtration, uptake, chemical and biological decomposition, volatilization, and adsorption. Constructed Wetlands are effective at removing many common stormwater pollutants including suspended solids, heavy metals, total phosphorus, total nitrogen, toxic organics, and petroleum products. The pollutant removal effectiveness varies by season and may be affected by the age of the wetland. It has been suggested that Constructed wetlands do not remove nutrients in the long term unless vegetation is harvested because captured nutrients are released back into the water by decaying plant material. Even if this is true, nutrients are generally released gradually and during the non-growing season when downstream susceptibility is generally low (Hammer, 1990). See in Section 8 for Water Quality Improvement methodology which addresses pollutant removal effectiveness of this BMP.

Construction Sequence

1. Separate wetland area from contributing drainage area:
 - a. All channels/pipes conveying flows to the Constructed Wetland must be routed away from the wetland area until it is completed and stabilized.
 - b. The area immediately adjacent to the Constructed Wetland must be stabilized in accordance with the PADEP's Erosion and Sediment Pollution Control Program Manual (2000 or latest edition) prior to construction of the wetland.
2. Clearing and Grubbing:
 - a. Clear the area to be excavated of all vegetation.
 - b. Remove all tree roots, rocks, and boulders.
 - c. Fill all stump holes, crevices and similar areas with impermeable materials.
3. Excavate bottom of Constructed Wetland to desired elevation (Rough Grading).
4. Install surrounding embankments and inlet and outlet control structures.
5. Grade and compact subsoil.
6. Apply and grade planting soil.
 - a. Matching design grades is crucial because aquatic plants can be very sensitive to depth.
7. Apply geo-textiles and other erosion-control measures.
8. Seed, plant and mulch according to Planting Plan
9. Install any anti-grazing measures, if necessary.
10. Follow required maintenance and monitoring guidelines.



Maintenance Issues

Constructed Wetlands must have a maintenance plan and privately owned facilities should have an easement, deed restriction, or other legal measure to prevent neglect or removal. During the first growing season, vegetation should be inspected every 2 to 3 weeks. During the first 2 years, CWs should be inspected at least 4 times per year and after major storms (greater than 2 inches in 24 hours). Inspections should assess the vegetation, erosion, flow channelization, bank stability, inlet/outlet conditions, and sediment/debris accumulation. Problems should be corrected as soon as possible. Wetland and buffer vegetation may require support – watering, weeding, mulching, replanting, etc. – during the first 3 years. Undesirable species should be removed and desirable replacements planted if necessary.

Once established, properly designed and installed Constructed Wetlands should require little maintenance. They should be inspected at least semiannually and after major storms as well as rapid ice breakup. Vegetation should maintain at least an 85 percent cover of the emergent vegetation zone. Annual harvesting of vegetation may increase the nutrient removal of CWs; it should generally be done in the summer so that there is adequate regrowth before winter. Care should be taken to minimize disturbance, especially of bottom sediments, during harvesting. The potential disturbance from harvesting may outweigh its benefits unless the CWs receives a particularly high nutrient load or discharges to a nutrient sensitive waterbody. Sediment should be removed from the forebay before it occupies 50 percent of the forebay, typically every 3 to 7 years.

Cost Issues

The construction cost of Constructed Wetlands can vary greatly depending on the configuration, location, site-specific conditions, etc. Typical construction costs in 2004 dollars range from approximately \$30,000 to \$65,000 per acre (USEPA Wetlands Fact Sheet, 1999). Costs are generally most dependent on the amount of earthwork and the planting. Annual maintenance costs have been reported to be approximately 2 to 5 percent of the capital costs although there is very little data available to support this.

Specifications:

The following specifications are provided for information purposes only. These specifications include information on acceptable materials for typical applications, but are by no means exclusive or limiting.

The designer is responsible for developing detailed specifications for individual design projects in accordance with the project conditions.

1. **Excavation**

- a. The area to be used for the CWs should be excavated to the required depth below the desired bottom elevation to accommodate any required impermeable liner, organic matter, and/or planting soil.
- b. The compaction of the subgrade and/or the installation of any impermeable liners will follow immediately.

2. **Subsoil Preparation**

- a. Subsoil shall be free from hard clods, stiff clay, hardpan, ashes, slag, construction debris, petroleum hydrocarbons, or other undesirable material. Subsoil must not be delivered in a frozen or muddy state.
- b. Scarify the subsoil to a depth of 8 to 10 inches with a disk, rototiller, or similar equipment.
- c. Roll the subsoil under optimum moisture conditions to a dense seal layer with four to six passes of a sheepsfoot roller or equivalent. The compacted seal layer shall be at least 8 inches thick.

3. **Impermeable Liner**

- a. If necessary, install impermeable liner in accordance with manufacturer's guidelines.
- b. Place a minimum 12 inches of subsoil on top of impermeable liner in addition to planting soil.

4. **Planting Soil (Topsoil)**

- a. See Local Specifications for general Planting Soil requirements.
- b. Use a minimum of 12 inches of topsoil in marsh areas of the Wetland. If natural topsoil from the site is to be used it must have at least 8 percent organic carbon content (by weight) in the A-horizon for sandy soils and 12% for other soil types.
- c. If planting soil is being imported it should be made up of equivalent proportions of organic and mineral materials.
- d. Lime should not be added to planting soil unless absolutely necessary as it may encourage the propagation of invasive species.
- e. The final elevations and hydrology of the wetland zones should be evaluated prior to planting to determine if grading or planting changes are required.

5. **Vegetation**

- a. Plant Lists for Constructed Wetlands can be found in Appendix B. No substitutions of specified plants will be accepted without prior approval of the designer. Planting locations shall be based on the Planting Plan and directed in the field by a qualified wetland ecologist.
- b. All wetland plant stock shall exhibit live buds or shoots. All plant stock shall be turgid, firm, and resilient. Internodes of rhizomes may be flexible and not necessarily rigid. Soft or mushy stock shall be rejected. The stock shall be free of deleterious insect infestation, disease and defects such as knots, sun-scald, injuries, abrasions, or disfigurement that could adversely affect the survival or performance of the plants.
- c. All stock shall be free from invasive or nuisance plants or seeds such as those listed in Appendix B.
- d. During all phases of the work, including transport and onsite handling, the plant materials shall be carefully handled and packed to prevent injuries and desiccation. During transit and onsite handling, the plant material shall be kept from freezing and shall be kept covered, moist, cool, out of the weather, and out of the wind and sun. Plants shall be watered to maintain moist soil and/or plant conditions until accepted.
- e. Plants not meeting these specifications or damaged during handling, loading, and unloading will be rejected.

f. Detailed planting specifications can be found in Appendix B.

6. Outlet Control Structure

- a. Outlet control structures shall be constructed of non-corrodible material.
- b. Outlets shall be resistant to clogging by debris, sediment, floatables, plant material, or ice.
- c. Materials shall comply with applicable specifications (PennDOT or AASHTO, latest edition)

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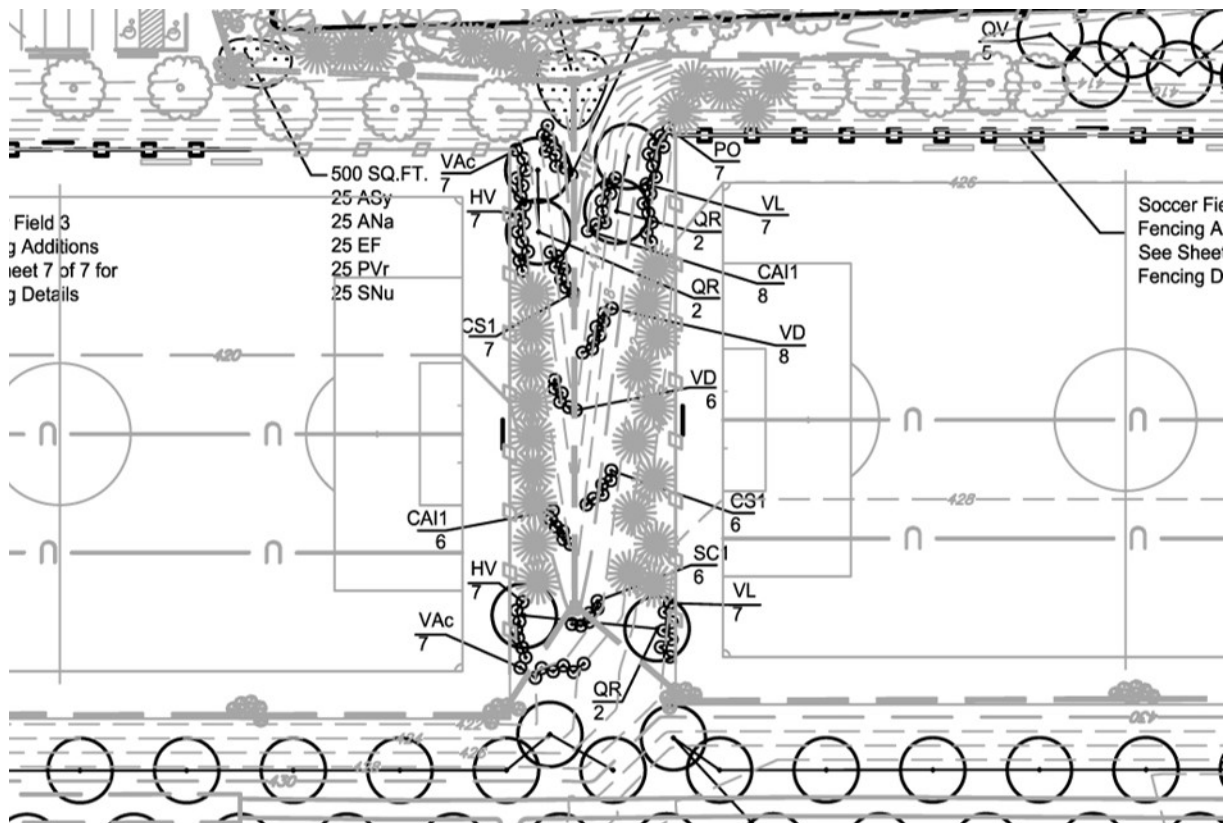
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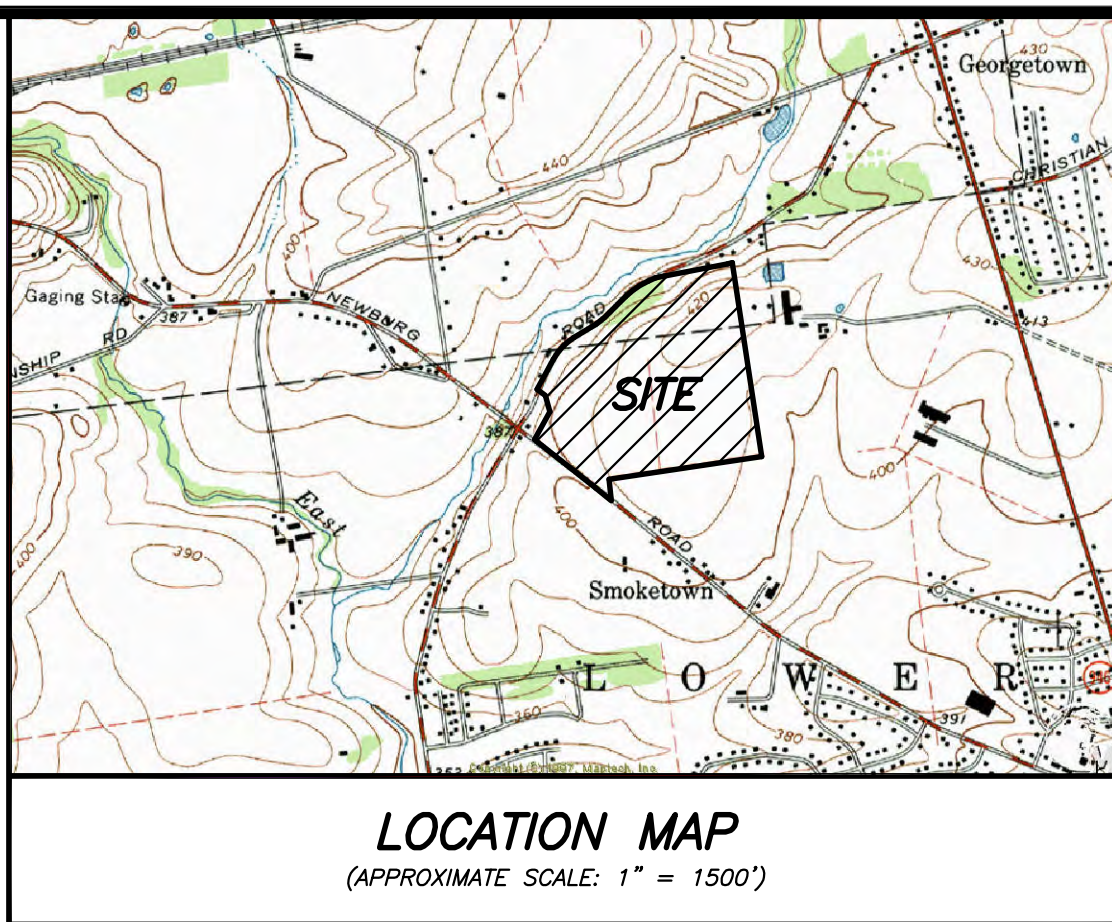
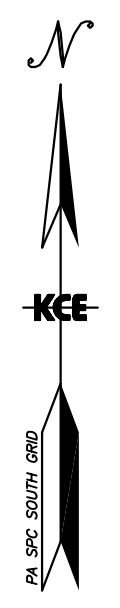
City of Portland Environmental Services, 2002. *City of Portland Stormwater Management Manual: Revision #2*.

Wetlands: Characteristics and Boundaries. Committee on Characterization of Wetlands, National Research Council (1995)

Appendix 3.Y - Swale Naturalization

Swale Naturalization Examples – Polk Valley Park, Lower Nazareth Township





LOCATION MAP
(APPROXIMATE SCALE: 1" = 1500')

EXISTING FEATURES LEGEND

These standard symbols will be found in the drawing

- SET MONUMENTATION
- STONE PILE FOUND
- POSTED SIGN FOUND
- CONCRETE MONUMENT FOUND
- METAL FENCE POST FOUND
- ANGLE IRON FOUND
- SIGNIFICANT TREE FOUND
- PAVEMENT EDGE
- ROAD RIGHT-OF-WAY
- PROPERTY LINE
- ADJOINING PROPERTY
- ROAD CENTERLINE
- TRACT LINES

SITE DATA
DEED BOOK REFERENCE: DBV 2002-1, PG 103706
TAX PARCEL: K7-19-25
AREA: 88,705 ACRES
ZONING: AGRICULTURAL (A) - LOWER NAZARETH TOWNSHIP
RURAL RESIDENTIAL (R-2) - UPPER NAZARETH TOWNSHIP

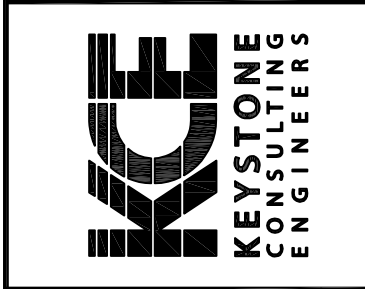
PHASE 3 PARKING:
340 - 9' X 18' SPACES
12 - ADA HANDICAP PARKING
TOTAL = 352 SPACES (ITEM #2)
(111,150.00 SQ.FT.)

TOTAL PARKING: 685 SPACES
LENGTH OF WALKING PATH CENTERLINE:
TOTAL: 10,297.24' = 1.95 MI
OUTER PATH: 6,779.50' = 1.28 MI
SOUTHERN INSIDE PATH: 1,410.37'
NORTHERN INSIDE PATH: 831.01'
ADA COMPLIANT PATH: 1,276.36'

PROPOSED FEATURES

- PHASE 2
- PHASE 3
- PAVED PERIMETER WALKING PATH
- ADA COMPLIANT PATH
- HANDICAP PARKING AREA
- FENCE AND LANDSCAPE BUFFER
- BLEACHERS
- FIELD LIGHTS
- TREES/LANDSCAPING AREAS

KEYSTONE CONSULTING ENGINEERS, INC.
2870 EMRICK BOULEVARD, BETHLEHEM, PA 18020 610-865-4555
6235 HAMILTON BOULEVARD, WESCOVILLE, PA 18106 610-395-0971
P.O. BOX 639 RR 209, KRESEGEVILLE, PA 18333 610-681-5233



MASTER SITE PLAN
WITH TOPOGRAPHY - ON LANDS NOW OR FORMERLY OF
LOWER NAZARETH TOWNSHIP
GEORGETOWN & NEWBURG RDS., LOWER & UPPER NAZARETH TWP.
NORTHAMPTON COUNTY, PENNSYLVANIA

REV. NO.	DATE	BY	COMMENTS
1	10/27/03	LMK	CONCEPTUAL PLAN
2	3/10/04	LMK	CONCEPTUAL PLAN
3	11/13/13	MPS	REVISIONS PER TOWNSHIP
4	3/6/18	MPS	REVISIONS PER TOWNSHIP

DWG. NO. LNT-03-038
SCALE: 1" = 100'
DWN. BY: GCN & RFW
DATE: DECEMBER 12, 2002
SHEET 1 OF 1

Animals & Insects

Educational Signage Topics

- Insects
- Pollinators
- Native Birds
- Native Animals

Potential Custom Climbers

- Eastern coyote
- White-tailed deer
- Monarch Butterfly
- Bumble Bee



Color Palette

Bright, bold colors

Safety Surfacing

Embed animal tracks leading to the matching animal climber or into the woods



Butterfly Climbers
Play categories: physical, sensory
Sensory input: vestibular (balance), proprioceptive (hanging, push/pull)



Spring Riders
Play categories: physical, sensory, social
Sensory input: vestibular (self-propulsion), proprioceptive (rocking)

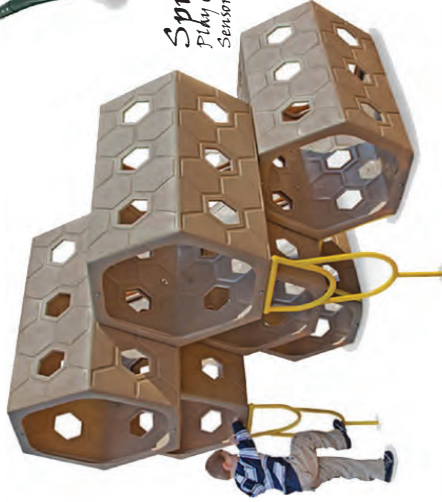


Ant and Anthill Climbers
Play categories: physical, sensory, social
Sensory input: tactile, vestibular (climbing), proprioceptive (jumping)

Spiderweb Climber
Play categories: physical, sensory
Sensory input: vestibular (climbing), proprioceptive (hanging)



Whirlin' Robin
Play categories: physical, sensory
Sensory input: cozy place for seclusion, vestibular (spinning)



6 Cell Honeycomb Climber
Play categories: physical, sensory, social
Sensory input: cozy place for seclusion, tactile, vestibular (climbing), proprioceptive (hanging, jumping)



Flower Talk Tubes
Play categories: sensory, social
Sensory input: sound



Chrysalis Spinner
Play categories: physical, sensory
Sensory input: vestibular (spinning), proprioceptive (push/pull)

Telescope

Play categories: sensory
Sensory input: visual

Earth

Educational Signage Topics

Geology Tree Roots Soils Dinosaurs
 Underground Animals & Insects

Color Palette



Tree Roots

Leave unrooted tree or position to accompany
 interpretive signage discussing tree roots



Safety Surfacing

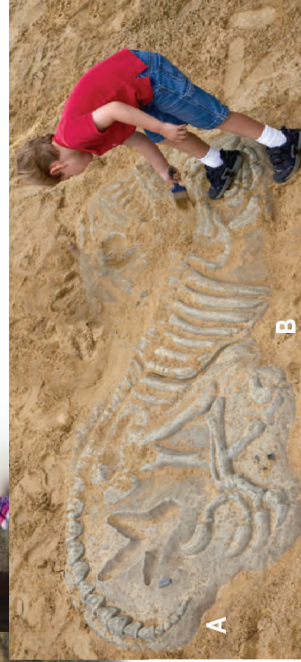
Stripes representing geologic age mapping



Dinosaur Dig

Sand Pit and/or Table

Play categories: physical, sensory and social
 Sensory input: tactile



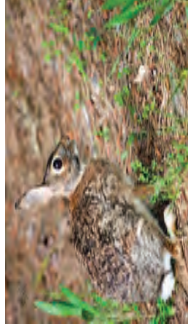
Potential Custom Climbers

Star-nosed mole
 Eastern cottontail
 Earthworm



Boulders & Ropes

Play categories: physical, sensory, social
 Sensory input: tactile, vestibular (climbing, balance), proprioceptive (jumping, push/pull, hanging)



Fossil Details on Boulders
 Sensory: Tactile

Dinosaur Egg

Play categories: physical, sensory, social
 Sensory input: tactile, cozy place for
 seclusion, vestibular (climbing),
 proprioceptive (jumping)



Music

Educational Signage Topics
Animal Sounds



Musical Instruments
Play categories: sensory, social
Sensory input: tactile, sound

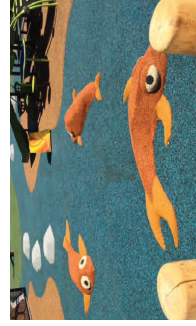
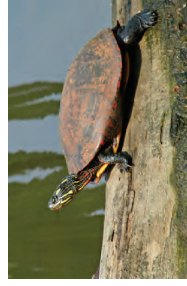
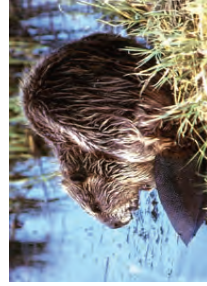
Water

Color Palette



Potential Custom Climbers

Beaver American Mink Rainbow Trout Eastern Painted Turtle Skunk Cabbage Great Blue Heron



Safety Surfacing

Stream, fish, and plant graphics

Sensory Panels

Play categories: sensory and social
Sensory input: sight, sound/tactile, proprioceptive (push/pull)



Rock-n-Ship Glider

Play categories: physical, sensory and social
Sensory input: vestibular (rocking) and proprioceptive (push/pull, jumping)



Dragonfly Springrider

Play categories: physical, sensory and social
Sensory input: vestibular (self-propulsion) and proprioceptive (rocking)



Cattail Spinners

Play categories: physical, sensory
Sensory input: vestibular (spinning, balance), proprioceptive (hanging)

Educational Signage Topics

Township History Watersheds Riparian Animals & Insects
Hydrologic Cycle Riparian Corridors

Spray Park Example – Warwick Township Spray Pole



Appendix 3.AC - Amphitheater



Amphitheater Example – Lake Placid, NY



OUTDOOR ADULT FITNESS PARKS

Best Practice Guidelines

Best Practices for Promoting Community Health by Increasing Physical Activity

The purpose of the *Outdoor Adult Fitness Parks* guidebook is to inspire communities to advocate for and utilize Outdoor Adult Fitness Parks as critical health solutions for increasing physical activity and social engagement. PlayCore, along with a variety of industry professionals, fitness experts, organizational advocates, and local champions across a variety of communities, offers an educational and design resource to help promote community health and capital through innovative outdoor fitness settings.

Partnership Advisory Network:



Michael Suk,
M.D., J.D.

Chairman of
Orthopaedic Surgery,
Geisinger Health
System, Danville, PA



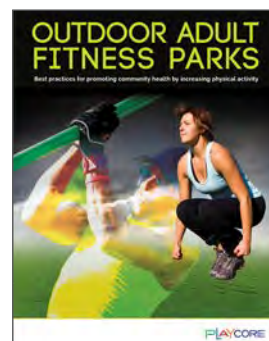
Gary Liguori,
Ph.D.

Dean of the College
of Health and
Sciences, University
of Rhode Island



Thom McKenzie,
Ph.D.

Emeritus Professor
of Exercise and
Nutritional Sciences,
San Diego State
University



Comprehensive program includes:

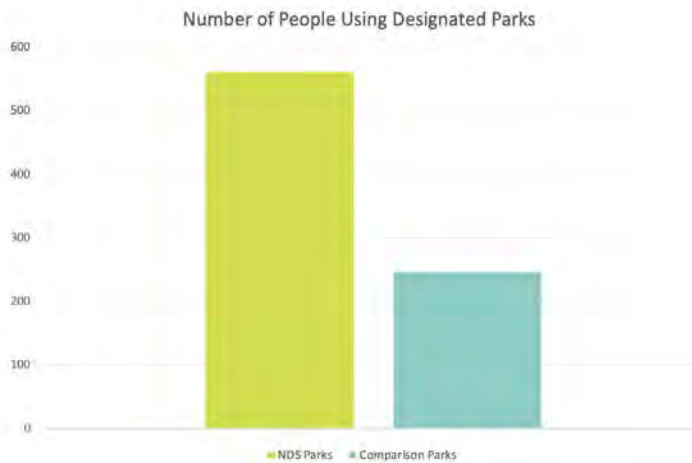
- ▶ 88 page educational/design resource, including:
 - History and benefits of outdoor fitness parks
 - Aligning equipment to total body fitness
 - Selecting an appropriate environment, design considerations, and standards
 - Marketing to user groups and diverse populations
 - Maintenance and sustainability
 - Programming to expand utilization
 - Evaluating and reporting outcomes
 - Ten best practice case study examples
- ▶ Professional development training module
- ▶ The Outdoor Adult Fitness Parks National Demonstration Site program, national recognition and data collection opportunities for sites that follow the best practice design guidelines and establish outdoor adult fitness parks in their community

"Outdoor Adult Fitness Parks can play a vital role in motivating people of all ages and levels of fitness toward achieving a healthier, more active and more productive life."

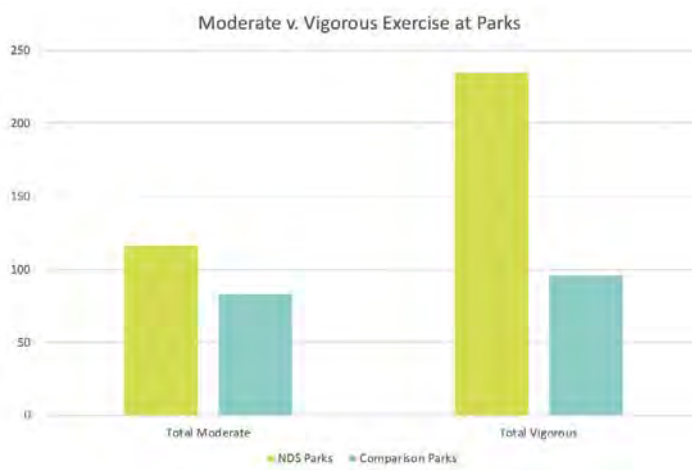
- Michael Suk

Chairman of Orthopaedic Surgery,
Geisinger Health System Danville, PA

RESEARCH



There were over twice as many park users at the NDS parks relative to the comparison parks.



The number of park users engaged in physical activities at each intensity level were observed through SOPARC scans. Within the NDS parks, 63% of park users were performing physical activities at a moderate or vigorous intensity during the SOPARC scans.

A study on six National Demonstration Sites conducted by the University of Tennessee at Chattanooga demonstrated additional benefits. The purpose of this study was to examine the impact of outdoor adult fitness parks (OFPs) within local parks by:

- Comparing the number of people using OFP's to the number who used comparable local parks without OFPs
- Comparing the physical activity level of park users in OFP and comparison parks
- Examine overall usage of OFPs in the OFP parks
- Examine intensity levels of exercise and user feedback

As a result, the research team discovered that there were over twice as many park users at the OFP parks relative to the comparison parks, and that the number of park users engaged in moderate to vigorous level activities there was 63%. Most importantly, the results show that maximum intensity levels can be achieved using either standard equipment found in an indoor fitness facility or outdoor fitness equipment for a variety of exercises. User reported data included, all users felt safe at the OFPs, and the majority used the equipment 15 minutes to one hour, daily to biweekly, to reduce stress and/or lose weight.

"As an orthopaedic surgeon, I have seen the benefits of physical exercise. The patients I see who exercise regularly are generally more happy and able to enjoy a more active lifestyle."

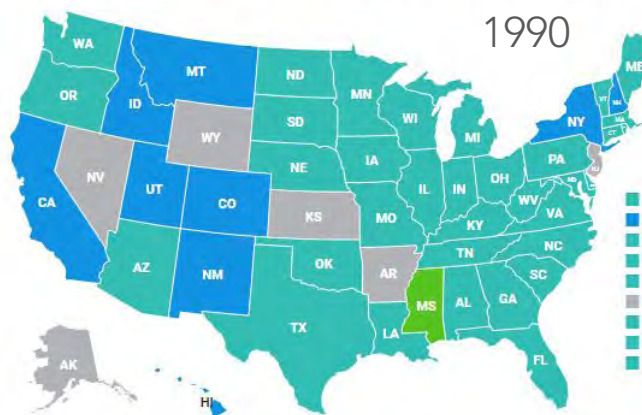
- Adam S. Bright, M.D.
Board Certified, Orthopaedic Surgery

An Innovative Way to “Provide Critical Health Solutions”

Research is proving that Outdoor Adult Fitness Parks are providing a variety of meaningful outcomes to communities including engaging participants in substantially more moderate to vigorous physical activity. Together we can effectively promote the benefits of parks and outdoor fitness spaces as critical health solutions, by reducing sedentary-related illnesses and removing the barriers to a life of fitness.

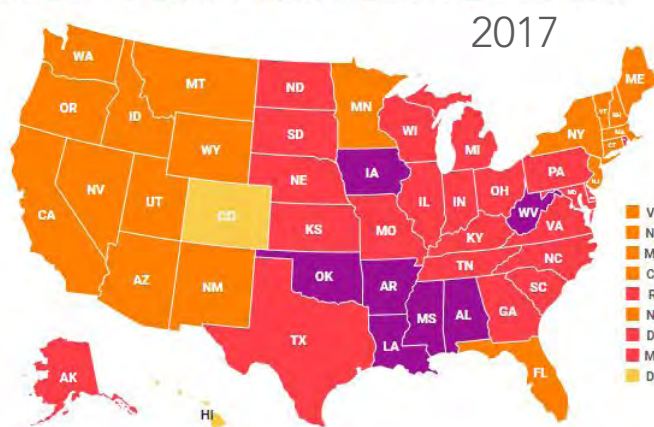
Percent of obese adults (Body Mass Index of 30+)

0 - 9.9% 10 - 14.9% 15 - 19.9% 20 - 24.9% 25 - 29.9% 30 - 34.9% 35%+



Percent of obese adults (Body Mass Index of 30+)

0 - 9.9% 10 - 14.9% 15 - 19.9% 20 - 24.9% 25 - 29.9% 30 - 34.9% 35%+



These two maps depict adult obesity trends in the U.S. from 1990 (left) to the 2017 (right) period, as reported by the Robert Wood Johnson Foundation.

Unique Benefits of Outdoor Adult Fitness Parks:

- Free to users, providing needed resources especially in underserved communities
- People who exercise outdoors are more likely to repeat the behavior
- People who exercise outdoors are more likely to engage in the activity longer than those who exercise indoors
- Provides a social outlet for exercise
- Can be enjoyed by people of all abilities and fitness levels
- Provides exposure to fresh air, nature, and sunlight, which increases important levels of vitamin D
- May encourage a greater number of people to exercise regularly than indoor options
- Offers Outdoor Adult Fitness Park owners an outlet for revenue generation through program agreements with certified personal trainers
- Acts as a catalyst to encourage the non-exercising population to engage
- Increases interest in related community services, such as nutrition education and health screenings
- Outdoor Adult Fitness Parks located within sight lines of a playground promote active behavior in adult family members, increase the time spent at the playground, and help promote the importance of lifelong fitness on children
- Promotes pride of place among neighborhoods where Outdoor Adult Fitness Parks are located
- May qualify for increased grant funding related to obesity prevention/reduction
- Increases community capital
- Promotes healthy behavior for families in age-appropriate settings

PROGRAM HIGHLIGHTS

Design Considerations

Outdoor Fitness Park Typologies

Fitness Cluster

- Arranged in circular or collaborative pattern
- Designed within a "use zone"
- Designed to avoid pass through traffic
- Encourages communication among users
- Accommodates exercise classes led by certified trainers



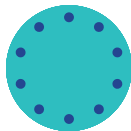
Semi Circle



Training Zones



Collaborative Cluster



Social Circles



Trail Cluster

Fitness Trails

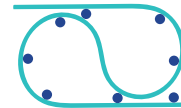
- Along a pathway network
- Incorporates additional cardiovascular exercise
- Measured space between equipment offers easy distance tracking for the user
- Focus: single or multiple exercises



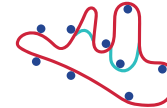
Challenge Course



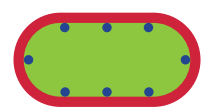
Straight Path



Double Loop



Freeform Trail



Running Track

Equipment Configuration

Spacing Within the overall typology, configuring the individual pieces of equipment is an important consideration in promoting participation, and will also depend on the ways you wish to engage the community for maximum usage.

Placement Users may bring friends to the Outdoor Adult Fitness Park, so configuring equipment to promote communication between them is an important consideration for use.

Sight Lines For Outdoor Adult Fitness Parks placed within sight of a playground, communication and sight lines are crucial.

Equipment and Signage Consider what fitness elements to include in order to support a well-rounded workout for the diverse users.

Standards to Help Ensure Safety and Usability There are standards in place that should be followed regarding safety, surfacing, and inclusion.

Designing for Diverse User Groups

In order to ensure your outdoor adult fitness park is useable by the greatest number of participants, it is important to consider the many user groups who may use the space.

Meeting with potential users in the community prior to design will help ensure the space is designed to promote highest use.

User Groups may include:

- Beginners
- Fitness enthusiasts
- Seniors
- Teens
- Users with disabilities
- Multilinguals
- Class groups
- Solo users

Total Body Fitness

Aligning Equipment and Exercises to Health Benefits and Total Body Fitness

In order to reap maximum health benefits, a fitness routine must contain a variety of elements, each offering specific results for overall health. By including equipment that offers a variety of aerobic, muscle/strength, core, balance, and flexibility elements, you can ensure your Outdoor Adult Fitness park provides a well-rounded fitness routine that promotes health improvement and wellness.



AEROBIC FITNESS

via cardio endurance activities



MUSCLE FITNESS

via strength, resistance, and endurance training



CORE FITNESS

via abdomen, lower back, and pelvic exercises





















BALANCE TRAINING























































to promote kinesthetic awareness











































































































FLEXIBILITY TRAINING

to promote stability, coordination, range of motion

EQUIPMENT MATRIX			Aerobic	Muscle	Core	Balance	Flexibility
Cardio Walker/Elliptical   <p>Strengthen lower body muscles while promoting muscular endurance & cardiovascular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Cycle   <p>Strengthen lower body muscles while promoting muscular endurance & cardiovascular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Hand Cycle   <p>Strengthen upper body muscles</p> <ul style="list-style-type: none"> Blends: - Strength Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 					
High Jump   <p>Strengthen lower body muscles while promoting muscular endurance & cardiovascular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Hurdles   <p>Strengthen lower body muscles while promoting muscular endurance & cardiovascular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Log Jump   <p>Strengthen lower body & core muscles, while promoting muscular endurance & cardiovascular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 					
Step Up   <p>Strengthen lower body muscles and core while promoting muscular endurance & cardiovascular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Bench Dips   <p>Strengthen upper body & core muscles while promoting muscular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Leg Extension   <p>Strengthen lower body muscles & muscular endurance</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 					

EQUIPMENT MATRIX			Aerobic	Muscle	Core	Balance	Flexibility
Cardio Walker/Elliptical       <p>Strengthens lower body muscles, promotes muscular endurance & cardiovascular endurance.</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Cycle       <p>Strengthens lower body muscles, promotes muscular endurance & cardiovascular endurance.</p> <ul style="list-style-type: none"> Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 	Hand Cycle       <p>Strengthens upper body muscles.</p> <ul style="list-style-type: none"> Blends: - Strength Adaptability: - Heart Rate Gradability: - Resistance Customizable: - Custom Machine 					
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EQUIPMENT MATRIX			 Aerobic	 Muscle	 Core	 Balance	 Flexibility
Cardio Walker/Elliptical	Cycle	Hand Cycle	    	    	    		
Strengthens lower body muscles while promoting muscular endurance & cardiovascular endurance Adaptability: - Interval sets Gradability: - Resistance Customizable: - Machine	Strengthens lower body muscles while promoting muscular endurance & cardiovascular endurance Adaptability: - Gears Gradability: - Resistance Customizable: - Machine	Strengthens upper body muscles Blends: - Strength Adaptability: - Resistance Customizable: - Machine					
High Jump	Hurdles	Log Jump	    	    	    		
Strengthens small body muscles, promotes muscular endurance & improves power Adaptability: - Custom Machine Gradability: - Custom Machine	Strengthens lower body muscles, promotes muscular endurance & improves power Adaptability: - Interval sets Gradability: - Resistance Customizable: - Machine	Strengthens lower body & core muscles while promoting muscular endurance & cardiovascular endurance Adaptability: - Interval sets Gradability: - Resistance Customizable: - Machine					
Step Up	Bench Dips	Leg Extension	    	    	    		
Strengthens lower body muscles and core while promoting muscular endurance, cardiovascular endurance, and improves power Adaptability: - Interval sets Gradability: - Resistance Customizable: - Machine	Strengthens upper body & core muscles while promoting muscular endurance & cardiovascular endurance Adaptability: - Interval sets Gradability: - Resistance Customizable: - Machine	Strengthens lower body muscles while promoting muscular endurance & cardiovascular endurance Adaptability: - Interval sets Gradability: - Resistance Customizable: - Machine					

EQUIPMENT MATRIX			Aerobic	Muscle	Core	Balance	Flexibility
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Join the Movement!

Become a National Demonstration Site

- **Promote your leadership** through best practice principles that integrate outdoor adult fitness and healthy choices into your community
- Utilize available tools to **document and demonstrate outcomes** and community vitality
- Create **positive attention** and attract partners/funds that support healthy lifestyle initiatives
- Gain **national awareness** through various media outlets, press releases, collateral materials, and nationwide presentations
- Receive **award and signage** for serving as a model demonstration site

To learn more about creating Outdoor Adult Fitness Parks in your community, request a full copy of the *Outdoor Adult Fitness Parks* guidebook, or become a National Demonstration Site, please visit:

playcore.com/solutions/outdoor-adult-fitness

"Everyone who has had the opportunity to use the fitness stations has remarked that they utilize the park more because of the opportunity to exercise more parts of their body".

- Sandy Jenkins
Project Manager
City of San Antonio Parks

Planting Pollinator-Friendly Gardens

One of the most important ways you can help pollinators is by provisioning your yard with many different kinds of plants that provide pollen and nectar. If you want to attract butterflies, you will also need to include a variety of larval host plants for butterfly caterpillars to eat.

Choose plants native to your region. Native plants share a long evolutionary history with their pollinators, so including a wide variety of natives will make your garden a favorite destination for pollinators. Choose carefully to match the site conditions; natives will flourish without the addition of fertilizers and pesticides.

Choose nectar- and pollen-rich flowers with a range of shapes, sizes, and colors. Diversity is the key to a good pollinator garden. Because each pollinator has its own techniques for sourcing nectar and pollen, flowers should be as varied as the pollinators that visit them.

Generalist pollinators can visit a wide variety of flowers. Others, referred to as specialists, need a very different diet and may only be able to feed from one or two kinds of plants. Gardeners should strive to provide plants for both generalists and specialists. Choose plants with large, compound inflorescences of flowers, such as Joe Pyes, goldenrods, and milkweeds, to attract the most diversity of pollinators.

Avoid modern hybrids. Many garden plants have been manipulated for larger blooms and a show of color and may have lost their ability to produce nectar and pollen. In the breeding process, some flowers may become so complex that pollinators can't locate the nectar. When buying annuals, purchase older heirloom varieties known to have nectar and pollen.

Have several different plants in bloom from early spring through late fall. Some pollinators emerge in early spring, while others don't appear until mid-summer, but they all need pollen and nectar while they are active and rearing their young. To maximize



A successful pollinator garden includes a diversity of plants.

the effectiveness of your pollinator habitat, have a variety of plants in bloom throughout the season. Overlapping bloom times will ensure there is always something in your garden to provide nutrition for pollinators.

Plant in drifts. Pollinators are more likely to find plants in gardens that provide larger drifts of color. When you purchase plants, get at least three or more of one kind—more if you have the room—and plant them near one another.

Avoid landscape fabric and mulch. Instead, place plants closer together. Plants of varying heights planted close together will form a weed barrier far superior to a bed of mulch. The bonus is that you will have room for many more blooms for pollinators.

Save perennial garden cleanup for spring. Pollinators overwinter in different life stages: eggs, larvae, pupae, and adults. Some overwinter in hollow stems, while others attach to plants or overwinter in the leaf litter. To protect overwintering pollinators, don't cut down your perennial gardens until spring (early April), and keep beds of leaves intact through the winter.



Plants with compound inflorescences of small flowers attract a diversity of insects



Larval Host Plants for Butterflies and Moths

Without host plants for butterfly larvae (caterpillars) to eat, there will be no butterflies! So don't forget to provide this vital food source. Many butterfly larvae can only feed on one or two specific host plants—particularly native trees, shrubs, and perennials—that are vital to their survival. Here are some examples:

- Monarch caterpillars only eat milkweed.
- Spicebush swallowtail caterpillars feed mainly on spicebush and sassafras.
- Black swallowtail caterpillars depend on plants in the parsley family.



Spicebush swallowtail caterpillar feeding on spicebush.



Monarch caterpillar feeding on milkweed.



Black swallowtail caterpillar on native Zizia, a member of the parsley family.

These caterpillars will eat the leaves of their host plants, so don't panic when you see some holes. It just means the plants are doing their job.

Many lists of larval host plant are available online. Dr. Douglas Tallamy of the University of Delaware has compiled a list of plants that support the most butterflies and moths. Go to **www.bringingnaturehome.net**.

Purchasing Native Plants

Because the majority of plants sold at garden centers come from Europe and Asia, you may have to do a little searching to purchase native host plants for butterflies. Call the Master Gardeners at your local Penn State Extension office or go to the Pennsylvania Native Plant Society website for a resource list.

All photos taken by: Connie Schmotzer

extension.psu.edu

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Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

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Appendix 4.A – Shared Use Trail Width Cross Sections

PA DCNR's Two-Way Shared Use Path



PA DCNR's Two-Way Hiking Trail



Appendix 4.B – Sample Trail Surface Materials



Macadam



Crushed Stone



Natural



Boardwalk



Bike Lane



Sharrow



Sidewalk



Country Road

Appendix 4.C - Trail – Separated from Major Roadway Examples:



US-202 Parkway Trail – Large Grass Median Between Trail and Roadway



US-202 Parkway Trail – Fence Between Roadway & Trail



US-202 Parkway Trail – Grass Median Between Trail & Roadway



US-202 Parkway Trail – Planted/Rain Garden Median Between Trail & Roadway

*Image from Google Streetview 2020.

Appendix 4.D – Sample Trail Easement Information

Many private landowners can be reluctant at first to allow the public to use their land for a trail connection. Even those who are subject to existing road rights of way for sidewalks. This has to do with the liability of the person exposed to another person's injury on their property. A proper definition includes: the extent to which an owner is liable for any person that sustains an injury when on their property, where it is understood that the owner owes that person a duty of care. In public access situations, like trails and greenways, liability can be reduced through government acts, insurance, agreements and releases.

Legal tools, like State Statutes, exist to limit exposure to liability for entities providing public recreation opportunities, like trails, when used with solid risk management practices. Statutes are enacted to adjust the legal principles governing liability, and to alter common law principles for landowners that allow free public use of their land for recreation by limiting landowner liability. Statutes are often limited to unimproved land, and if the facility requires regular maintenance, like the clearing and repair of trails, then the manager/owner must continue to maintain the facility. Liability can also be shifted from the landowner to another party (ex. Trail Group/Municipality) that utilizes liability insurance to cover the risks. Release agreements and indemnity agreements can help further protect the owner and shift any claims to the liable party.

Examples of Pennsylvania statutes limiting 'trail manager' liability:

- Recreation Use of Land and Water Act (RULWA), 68 P.S. §§ 477-1 to 477-8
Protects owners, possessors, trail managers, and lessors from liability
- Rails to Trails Act, 32 P.S. § 5611
Limits liability similarly to RULWA
- Equine Immunity Act, Act 93
Limits liability through safety/warning signage
- Sovereign Immunity Act
Provides a level of immunity for commonwealth & local government
- Political Subdivision Tort Claims
Provides a level of immunity similarly to Sovereign Immunity Act

*Most statutes are nullified if a fee is charged

The best tool for establishing a trail connection is a trail easement. A trail easement is a document recorded with the deed of the landowner and when signed by a qualified non-profit or municipal entity, can relieve the landowner of management and maintenance and stewardship and even certain liability. The easement allows another person/entity to develop, open, and maintain land for a distinct purpose, without giving up ownership or access to the land. They govern the proposed use and memorialize the rights of the owner. Easements used to preserve open space, are often used to develop trails, in addition to their conservation purpose.

Fig.4. PALTA – Model Grant of Trail Easement

Prepared by:

Name:

Address:

Telephone:

Return to:

Name:

Address:

Tax parcel(s):

Model Grant of Trail Easement

2nd edition (v. 2018.01.19)

Published by the Pennsylvania Land Trust Association

This and an alternative model, the *Model Trail Easement Agreement* (which addresses easement matters in greater detail), are available at ConservationTools.org.

GRANT OF TRAIL EASEMENT

THIS GRANT OF TRAIL EASEMENT dated _____ is made by _____
(the "Owners") in favor of _____
(the "Holder") with respect to the following parcel(s) of land (the "Property")
more fully described in exhibit A.

Street address:

Municipality:

Parcel identifier:

County:

State: Pennsylvania

1. Trail Easement

Owners grant to Holder an easement in perpetuity to establish and make available for public use a trail, approximately ____ feet in clear tread width, in the location within the Property shown on the easement plan attached as exhibit B. If there is no easement plan attached to this grant, Holder may determine the location in its reasonable discretion. The easement includes the right to install footbridges, retaining walls, and other structures as necessary to prevent erosion and facilitate passage through wet areas; and install markers and other signs related to the trail.

2. Public Enters at Own Risk

Persons using the trail do so at their own risk. Neither Owners nor Holder may charge for access, nor do they assume any duty to inspect or maintain the trail or warn of any defects or dangerous conditions.

3. Recorded Document

This grant is to be recorded against the Property so as to be perpetually binding upon the undersigned Owners and their successors and assigns.

4. Exhibits

Each exhibit referred to in this grant is made a part of this grant by this reference.

5. Entire Agreement

This grant is the entire agreement of Owners and Holder pertaining to the trail and supersedes any other agreements or understandings whether or not in writing.

6. Defense of Claims

If a trail user asserts a claim for bodily injury or property damage caused by an unsafe condition on the trail, and the unsafe condition was not the fault of Owners or anyone on the Property at the invitation of Owners, then Holder agrees to defend such claim on behalf of both Owners and Holder and, if such defense is not successful, to hold Owners harmless from any judgment entered against Owners on account of such claim. To qualify for the protection offered by Holder under this paragraph, Owners must abide by the requirements for immunity developed under, or with respect to, the Recreational Use of Land and Water Act.

7. Consideration

The Owners acknowledge receipt of the sum of \$1.00 in consideration of this grant.

INTENDING TO BE LEGALLY BOUND, Owners have signed and delivered this grant to Holder as of the date set forth above.

Owner's name: (Seal)

Owner's name: (Seal)

The Holder joins in this grant to evidence its intention to be legally bound by its terms:

[Name of Holder]

By: _____ (Seal)
Name of signatory:
Title of signatory:

This document is based on the
Model Grant of Trail Easement
(v. 2018.01.19) provided by the
Pennsylvania Land Trust Association
and published at ConservationTools.org.

The model on which this document is based should not be construed or relied upon as legal advice or legal opinion on any specific facts or circumstances. It should be revised under the guidance of legal counsel to reflect the specific situation.

COMMONWEALTH OF PENNSYLVANIA:

COUNTY OF _____ :

ON THIS DAY _____, before me, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged that he/she/they executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

_____, Notary Public

Print Name:

COMMONWEALTH OF PENNSYLVANIA _____ :

SS

COUNTY OF _____ :

ON THIS DAY _____ before me, the undersigned officer, personally appeared _____, who acknowledged him/herself to be the _____ of _____ a Pennsylvania non-profit corporation, and that he/she as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by her/himself as such officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

_____, Notary Public

Print Name:

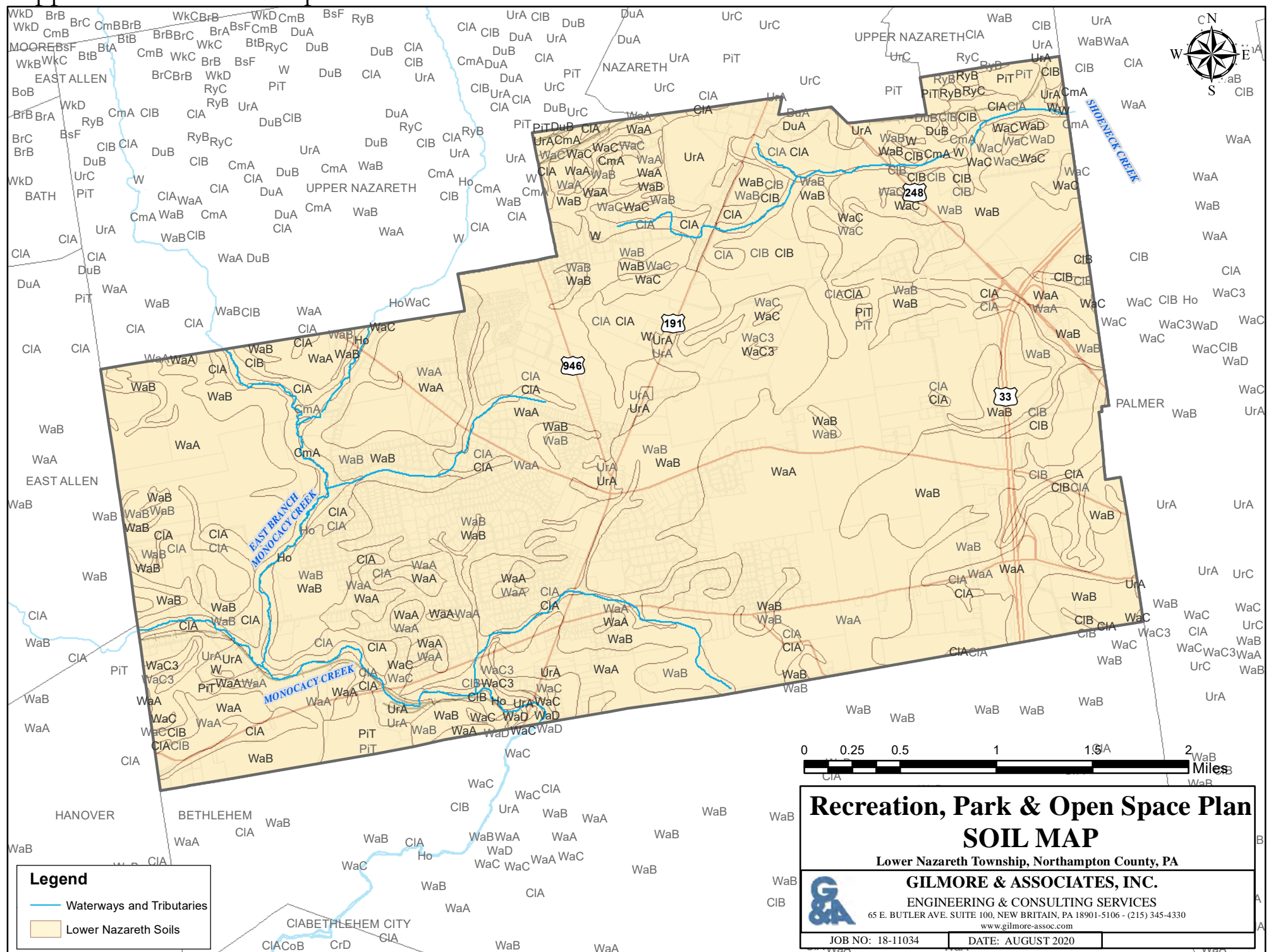
Appendix 4.E - Sample Ranking System

How to Use the Ranking Method:

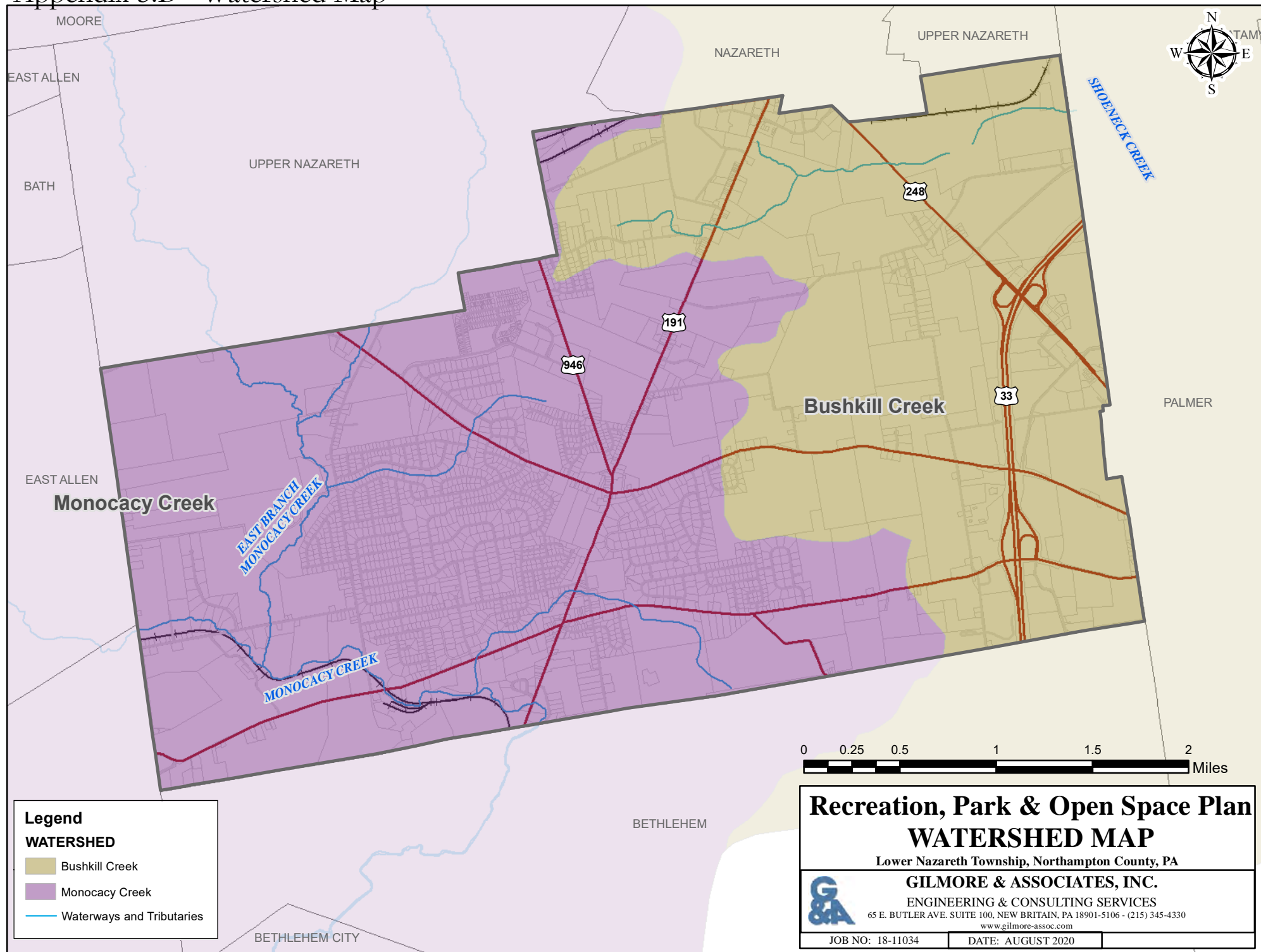
With the input of stakeholders and user groups, trail opportunities should be identified within the Township. Each potential segment of trail should then receive a site inspection and an initial review by engineers in order to prepare a preliminary ranking table. Each alignment should be evaluated based on its general characteristics, including: where it begins and ends; the availability of existing facilities, including existing trails, sidewalks and road crossings; the number of street crossings needed; the ADA potential of each segment; and the surrounding land uses. The segments should then be ranked in seven (7) categories on a scale of 0-5, with 0 being the lowest score and 5 being the highest. These categories help describe trail complexity, cost, and eligibility for financial support. Categories that contribute to trail complexity and cost include the number of landowners involved, availability of rights-of-way, and connections to existing and planned trails. Greenways, neighborhood connections, partnership potential, and grant worthiness each contribute to opportunities to gain public support, local partnerships, and grant funding. Suggested Total Rankings can be seen in the table.

Table 1. Trail Ranking System (0-5)		
Greenway Included	<i>Does the trail lie within, or connect to, a greenway</i>	<i>0 (No), 5 (Yes)</i>
Connect to Existing/Planned Trail	<i>Potential to connect with an existing trail (within the Township or neighboring municipality) and/or regional trail network</i>	<i>0 (No potential), 1-3 (for Upper Moreland-Hatboro Links), 4 (Neighboring Municipality Links), 5 (Regional Trail Network Link)</i>
Landowner Negotiation	<i>Number of landowners that need negotiations and easements</i>	<i>0 (20+ Landowners), 1 (15-20), 2 (10-15), 3 (5-10), 4 (2-5), 5 (1)</i>
Available ROW	<i>Available rights-of-way that reduce landowner negotiations</i>	<i>0 (No ROW/Easements Needed), 3 (ROW for some trail/Easement needed for some of trail), 5 (ROW for whole trail/No Easement Needed)</i>
Neighborhood Connections	<i>Number of people and places physically connected by a trail segment</i>	<i>0 (None), 1 (neighborhood link), 2 (multiple neighborhoods), 3 (neighborhoods/downtown/park), 4 (neighborhoods, downtown, and parks), 5 (Regional connection)</i>
Partnership Potential	<i>Potential to partner with neighboring municipalities and/or non-profit groups</i>	<i>0 (None), 3 (Local/Non-Profits), 4 (Neighboring Municipalities), 5 (Regional Partnerships)</i>
Grant Worthy	<i>Likely grant eligibility and potential to be funded</i>	<i>0 (None), (no 1), 2 (streetscape grant), 3 (trail grants), 4 (trail & school or community resource grants), 5 (trail & greenway/natural habitats)</i>

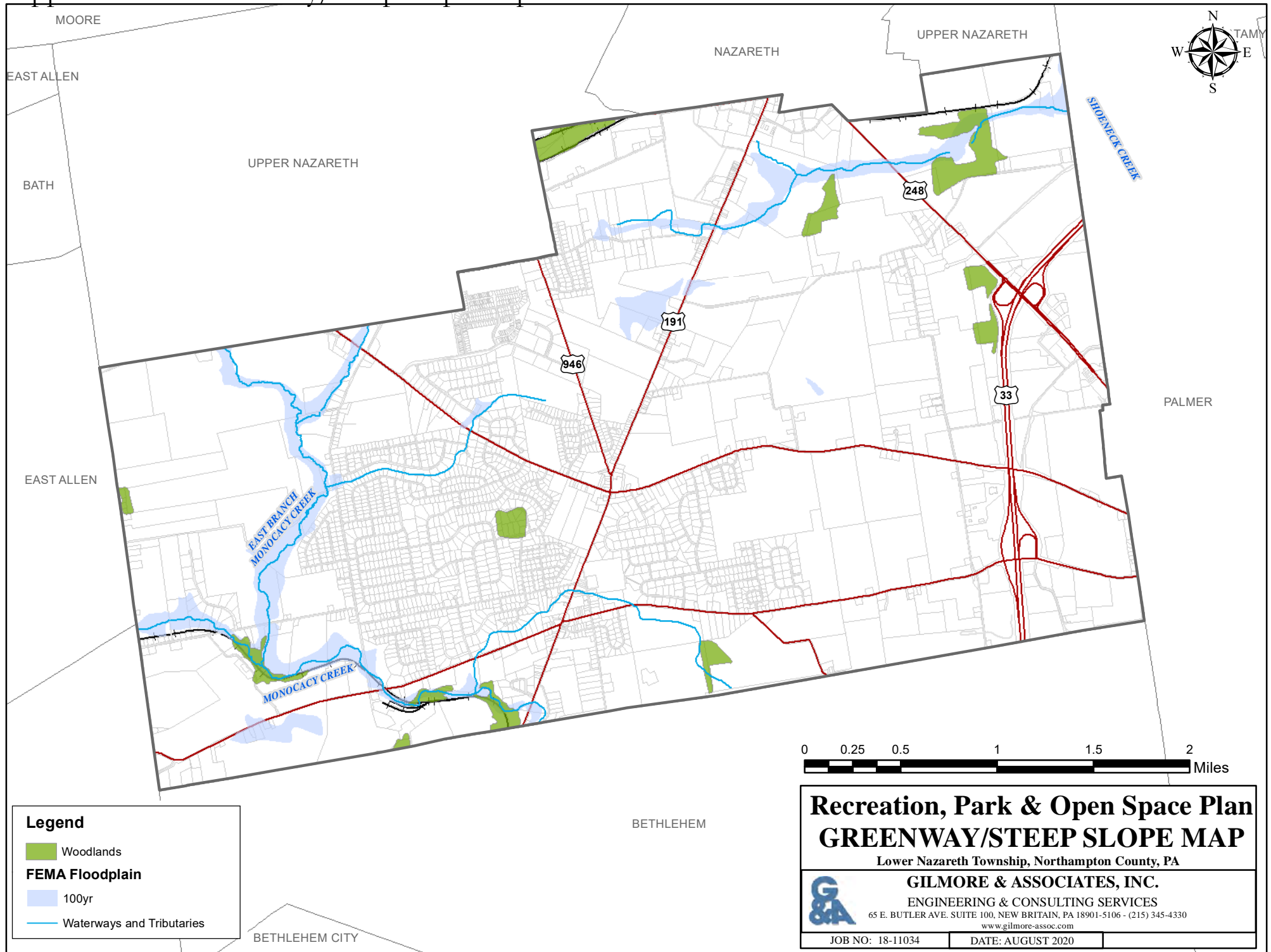
Appendix 5.A - Soils Map



Appendix 5.B - Watershed Map



Appendix 5.C - Greenway/Steep Slope Map



Baseline Data Report

for

Lower Nazareth Township Open Space Program

[XXXX] Property

Lower Nazareth Township, Northampton County, PA

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Appendices

Appendix A	Baseline Maps
Appendix B	Baseline Photographs
Appendix C	PNDI Project Environmental Review Receipt
Appendix D	List of Invasive Plants (Include only if invasive plants are restricted in the Conservation Easement)

This report constitutes the Baseline Documentation prepared by Lower Nazareth Township referred to in the “Conservation Easement” by [XXXX] and between (Grantors) and [XXXX] (Grantees).

I. General Easement Information

A. Grantor(s)

Grantor:
Mailing Address:

Co-Grantor:
Mailing Address:

Phone #:

Phone #:

B. Grantee(s)

Grantee:
Mailing Address:

Co-Grantee:
Mailing Address:

Phone #:

Phone #:

C. Current Owner (if not original Grantor)

Current Owner:
Mailing Address:

Phone #:

Current Owner:
Mailing Address:

Phone #:

Current Owner:
Mailing Address:

Phone #:

D. Property Information

Property Address:

Lower Nazareth
Township Tax
Parcel #(s):
Existing Zoning:

Total Parcel Area: _____ acres, which is divided into the following sections.

Easement Area: _____ acres (subject to the Conservation Easement)

- Agricultural use: _____ acres as cropland

- Natural area: _____ acres as non-cropland

Reserve Area: _____ acres (not subject to the Conservation Easement)

Other Easement: _____ acres (not subject to the Conservation Easement) (e.g., Utility Co.)

Acreages derived from Exhibit C of the Conservation Easement

Modify as need be to reflect Conservation Easement and specific property

E. Baseline Property Visit

Investigator:

Inventory Date:

Accompanied by:

F. Current Use(s) of Property

- | | | |
|---|--|--|
| <input type="checkbox"/> Residence | <input type="checkbox"/> Preservation | <input type="checkbox"/> Development |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Wildlife/Gameland | <input type="checkbox"/> Commercial/Retail |
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Pasture | <input type="checkbox"/> Industrial |
| <input type="checkbox"/> Municipal/Government | <input type="checkbox"/> Other: _____ | |

G. Conservation Values of the Property

- | | |
|--|---|
| <input type="checkbox"/> Prime Agricultural Soils: Classes 1-5; Prime Farmland and/or Farmland of Statewide Importance | |
| <input type="checkbox"/> Agricultural use (cropland - _____ acres/non-cropland - _____ acres) | |
| <input type="checkbox"/> Historical/Archaeological | <input type="checkbox"/> Natural resources |
| <input type="checkbox"/> Rural character | <input type="checkbox"/> Significant ecosystem (consistent with PNDI) |
| <input type="checkbox"/> Public education/recreation/trails | <input type="checkbox"/> Wildlife/Gameland |
| <input type="checkbox"/> Open space | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Scenic views | |

The following Conservation Values, observed on the property at the time the conservation easement was placed, are documented and described in this Baseline Documentation report:

(The CE Conservation Values and Baseline should say the same thing. It is important to write what is present and protected by the CE. Do not include values that are present, but not protected by CE.)

- Permanently preserve [XXXX] acres of open space and rural character in Lower Nazareth Township;
- Protect approximately [XXXX] acres of farmland, of which approximately [XXXX] acres consists of prime agricultural soils;
- Preserve approximately [XXXX] acres of steep slope soils (over 15% grade);
- Protect approximately [XXXX] acres of forested and emergent riparian buffer, "description of" springs and streams, totaling approximately [XXXX] linear feet, and groundwater recharge areas;
- Preserve local groundwater reserves and protect water quality; and,
- Permanently preserve [XXXX] feet of scenic view along [XXXX] Road for the enjoyment of the general public traveling this thoroughfare.
- Preservation of land areas for passive outdoor recreation by, or the education of, the general public,
- Protection of a relatively natural habitat of fish, wildlife or plants, or similar ecosystem,
- Preservation of a historically important land area or a certified historic structure
- Preservation of open space (including farmland and forestland) where such preservation is:
 - a) for the scenic enjoyment of the general public and will yield a significant public benefit, or
 - b) pursuant to a clearly delineated federal, state, or local governmental conservation policy and will yield a significant public benefit.
- Preservation and/or protection of land (including wetlands and waters) within a watershed supporting "Chapter 93 designation" waterways and Exceptional Value wetlands (if connected to local streams) (Source: *Pennsylvania Code* Chapter 93 Water Quality Standards (Title 25 Pa. Code)).²

(Lower Nazareth Township refrains from giving specific legal, financial, and tax advice and recommends that each party to a conservation easement transaction obtain independent legal advice. Lower Nazareth Township does not make assurances to whether a conservation easement donation will be deductible, what monetary gift the IRS and/or state will accept, what the resulting tax benefits of the deduction will be, or whether the donor's appraisal is accurate. Furthermore, this Baseline Documentation is not a Phase I Environmental Site Assessment.)

II. Supporting Documentation

A. Baseline Information on File

	On File at "the office of the Holder"	Recommend Acquiring
<input type="checkbox"/>	Surveyed site plan: entitled Conservation Easement Plan, Sheet [X of X], dated [DATE], last revised [DATE], created by [NAME OF SURVEYOR] (Exhibit B of the Easement)	<input type="checkbox"/>

B. Baseline Maps

	Included in Appendix A of this Baseline Documentation	Recommend Acquiring
<input type="checkbox"/>	Location Map: Data Sources: Parcels – [SOURCE]; Municipal Boundaries – [SOURCE]; Local Roads Names – [SOURCE]	<input type="checkbox"/>
<input type="checkbox"/>	Reduced Map of Exhibit B of the Easement: entitled Conservation Easement Plan, Sheet [X of X], dated [DATE], last revised [DATE], created by [NAME OF SURVEYOR] <i>(full-scale maps are available at Lower Nazareth Township or the County Courthouse, Recorder of Deeds. Please use full scale map for land planning and compliance with the easement restrictions.)</i>	<input type="checkbox"/>
<input type="checkbox"/>	Aerial Photo: Data Sources: Parcels – [SOURCE]; Aerial Photo - [SOURCE]	<input type="checkbox"/>
<input type="checkbox"/>	Topographic Map: Data Sources: Parcels – [SOURCE]; Topographic Basemap - [SOURCE]; Slopes derived from 10 meter USGS digital elevation model	<input type="checkbox"/>
<input type="checkbox"/>	Soil Map: Data Sources: Parcels – [SOURCE]; Soils -USDA/Natural Resource Conservation Service 2004	<input type="checkbox"/>
<input type="checkbox"/>	Natural Features Map: Data Sources: Parcels – [SOURCE]; Roads – derived from [SOURCE] parcel data; Streams and Floodplains -PADEP; Wetlands – USFWS; Geology - DCNR/PA Geologic Survey; Natural Areas – [SOURCE]	<input type="checkbox"/>
<input type="checkbox"/>	Land Cover Map: Data Sources: Parcels – [SOURCE]; Aerial Photo – [SOURCE]; Land Cover – [SOURCE]	<input type="checkbox"/>
<input type="checkbox"/>	Photograph Location Map: Data Sources: Parcels – [SOURCE]; Aerial Photo – [SOURCE]; Photograph Location and Direction – [SOURCE]. Photographs were taken from fixed points on property & numbered 1-[XXX]. These unaltered, digital photographs accurately represent the condition of the property as of "Baseline Survey Date."	<input type="checkbox"/>

The data displayed on these maps are regional in nature and are not suited for use in site-specific studies. Parcel lines, property boundaries, floodplains, roads, and other data were obtained from third party sources. These data are only approximate and are shown for illustrative purposes, only. Lower Nazareth Township makes no representation about the accuracy or validity of these data. The user shall hold Lower Nazareth Township harmless from any suits, claims, or actions arising out of the use of these maps or accompanying documentation.

C. Baseline Photographs

Photographic Documentation

See Appendix B for color photographs taken during the baseline property visit, with Photograph Location Map showing the approximate location and direction of these photographs.

D. Other (known) significant information

(if relevant to document existing conditions and support Conservation Values)

Natural Resources

Yes No

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Other deed restrictions, covenants, and/or easements:
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Forest Management Plan:
If yes, <input type="checkbox"/> not available <input type="checkbox"/> reviewed, if so: compliant w/ CE? <input type="checkbox"/> yes <input type="checkbox"/> no
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Audubon tree registry program / Historic Tree
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Within a county or local Natural Area or Natural Resource Inventory site:
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Within an Audubon Important Bird Area:
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Within an Important Mammal Area:
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Within a National Registry of Natural Landmarks:
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | National Wetlands Inventory on property:
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | Within vicinity of Pennsylvania Natural Diversity Index (PNDI) site
If yes, list regulatory agencies:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | <i>Pennsylvania Code</i> Chapter 93 Water Quality Standards (25 Pa. Code §93.a-z.):
If yes:
Streams/waters <input type="checkbox"/> EV <input type="checkbox"/> HQ <input type="checkbox"/> CWF <input type="checkbox"/> MF
Wetlands <input type="checkbox"/> EV <input type="checkbox"/> HQ <input type="checkbox"/> CWF <input type="checkbox"/> MF
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | PFBC Class A Wild Trout Stream
If yes, list:
Comments: |
| <input type="checkbox"/> | <input type="checkbox"/> | PFBC Wilderness Trout Stream
If yes, list:
Comments: |

- ☐ ☐ PFBC Special Regulation Areas
If yes, list:
Comments:
- ☐ ☐ Stream sections that support natural reproduction of trout
If yes, list:
Comments:
- ☐ ☐ Within or in proximity to National or State Wild or Scenic River site
If yes, list:
Comments:
- ☐ ☐ Physically or ecologically connected to a local, state, national park; nature preserve; wildlife refuge; state gamelands; wilderness area or similar conservation area
If yes, list:
Comments:

Agricultural Resources

Yes No

- ☐ ☐ Act 319/515 enrollment with Agricultural Reserve (Northampton County)
- ☐ ☐ Agricultural Security Area (Northampton County Planning Commission, 2001)

Forest Resources

Yes No

- ☐ ☐ Act 319/515 enrollment with Forest Reserve (Northampton County)

Historic Resources

Yes No

- ☐ ☐ National Register of Historic Places:
If yes, ☐ potentially eligible ☐ eligible ☐ registered
- ☐ ☐ Pennsylvania Inventory of Historic Places:
If yes, ☐ potentially eligible ☐ eligible ☐ registered
- ☐ ☐ Locally recognized historic site:
If yes, ☐ potentially eligible ☐ eligible ☐ registered
- ☐ ☐ Located within an Historic District

Other

Yes No

- ☐ ☐ Other:

III. Existing Property Conditions

(be sure to include those things that are mentioned in the Conservation Easement and that support Conservation Purposes/Values)

A. Property Boundaries

Describe whether or not boundaries of the easement area were observed to be marked.

If so, which ones and how (posted signs, fences, flagging, etc.)?

Describe whether or not corners of the easement area were observed to be marked.

If so, which ones and how (concrete monuments, wooden stakes, iron pins/pipes, etc.)

Refer to any survey plans showing the corners found

Boundaries of easement:

- **are** clearly posted with signage or marked with other objects
- **are not** clearly posted with signage or marked with other objects:

Corners of easement:

- **are indicated** with iron pins, concrete monuments, or other fixed objects
- **are not indicated** with iron pins, concrete monuments, or other fixed objects

B. Man-Made Elements

Based on the baseline inventory, the following improvements/structures were observed on the property:

(If Impervious Coverage is restricted then we need to some how document or have the surveyor document the location and size of all necessary improvements).

(Depending on the Easement we may only have to document what is outside an Excluded Area.

Building Envelopes, even with limited restrictions need to be documented even if there are only 1 or 2 restrictions.)

In Building Envelope: (use language used in CE)

- 1.
- 2.

In Easement Area: (use language used in CE)

- 1.
- 2.

Utilities: (above or below ground, private or public septic and water, etc.)

abandoned man-made materials (further discussed in Section IV A)

- 1.
- 2.

List livestock, domestic animal breeding/boarding on site:

- 1.
- 2.

C. General Parcel Description

(include general description of the parcels, including anything that further supports conservation if not supported in CE language)

Property location:

Surrounding land use:

Relevant property history:

Special features, if not relevant in following subsections:

NAI description, if not in another relevant section:

Topography and elevations of the property are depicted in the Topographic Map in Appendix A.

D. Natural Resources

Geology

The property is underlain with [XXXXXX] geologic formation as shown in the Natural Features Map in Appendix A. (Discuss further any geology protected in CE if applicable)

Soils

The property contains important soils for preservation, such as Prime Farmland, Farmland of Statewide Importance, hydric soils, and steep slope soils with 15% slope or greater. The location and extent of all soil types mapped on the property by the Natural Resource Conservation Service (NRCS) are shown on the Soils Map in Appendix A.

These soil types can be used to predict the suitability of a particular area for various land uses, such as cropland, forestry, septic, groundwater recharge and can be used to guide management strategies for the proper care of this valuable resource. A full description of each soil type can be obtained from your local Natural Resource Conservation Service office.

Hydrology

The property contains [DESCRIBE WETLANDS AND WATER RESOURCES WITHIN THE CONSERVATION EASEMENT AREA]

(List the Pennsylvania Code Chapter 93 Water Quality Standards (25 Pa. Code §93.a-z., including the separate Existing Use List designations) classifications for wetlands and any streams or waterbodies on the property (e.g., EV, HQ, CWF, MF). Consult with the Pennsylvania Department of Environmental Protection and the United States Army Corps of Engineers as necessary to make determinations.)

See the Orthophoto Maps, Topographic Map, Soil Map, Natural Features Map and Land Cover Map (list all applicable maps) in Appendix A for the location and extent of hydrologic features on the property. Note that all regulated features are not necessarily shown on all source maps.

Vegetation

The property consists of [DESCRIBE THE VEGETATION SPECIES AND COVERAGE WITHIN THE CONSERVATION EASEMENT AREA] Examples include upland forest, riparian forest, forested wetlands, wet meadow, coniferous forest, etc. Listing acreages for each is optional.)

The natural vegetative communities contain a mixture of native and non-native species. Invasive Plants, as listed in Appendix C, were not observed (were observed) to be planted on the property. Invasive Plants and other non-native species appear to have become naturalized in the..... As referred to in Paragraph XX of the Easement, Invasive Plants may include other species not listed in Appendix C of this Baseline Documentation. Please see the Orthophoto Maps and Land Cover Map in Appendix A for the location and extent of the vegetative communities observed on the property.

Wildlife

The property contains [DESCRIBE WILDLIFE AND HABITATS PRESENT WITHIN THE CONSERVATION EASEMENT AREA] (include vegetative communities, spring seeps, headwaters, Exceptional Value stream, (use NAI and PA Ch 93 info), unfragmented deciduous forest, vernal/seasonal pool(s), naturalized meadows, several springs, soft and hard mast trees, coniferous and evergreen trees, fruiting shrubs and vines, boulder outcropping and surface rock, stone berms, and downed or standing dead trees and living snags., trees with exfoliating bark for bat summer habitatrocky outcroppings, surface bouldering and trees with exfoliating bark, offer specialized habitat features required for the survival of a variety of Pennsylvania's wildlife. Surface boulders and rock outcrops provide snakes, small mammals and other wildlife with protective cover. These features may also lead to underground chambers providing snakes with winter habitat, especially those facing south, which are warmed by the sun. Furthermore, these areas and the surrounding trees with exfoliating bark offer bats summer roosting and nursery habitat, as well. Also note if the property contained bird houses or other manmade nesting boxes.)

A formal wildlife survey was not conducted for the property. However, with the above-listed habitat features, a variety of wildlife likely inhabits the property. Some examples of these species are listed below:

- Mammals: whitetail deer, red fox, coyote, skunks, opossum, raccoon, ground hog, eastern cottontail, squirrels, eastern chipmunk, voles, mice, bats
- Reptiles: box turtle, black rat snake, eastern garter snake
- Amphibians: red-backed salamanders, two-lined salamander, spring peepers, wood frog, green frog, American toad
- Birds: red-tailed hawk, Cooper's hawk, American kestrel, black vulture, turkey vulture, great horned owl, eastern screech owl, wild turkey, king bird, woodpeckers, eastern bluebird, nuthatches, chickadee, blue jay, American robin, crows, mourning dove, swallows, wrens, various sparrows and finches.

Presence of specific plant, animal or habitat, threatened, rare or protected

Using the Pennsylvania Natural Heritage Program website (<http://www.naturalheritage.state.pa.us>) a search of the Pennsylvania Natural Diversity Index (PNDI) was conducted to determine whether any species of special concern are currently or historically extant within the vicinity of this property. The results of the search reported one potential impact. The agency reported with jurisdiction over

this species was listed as the Pennsylvania Department of Conservation and Natural Resources (PA DCNR). Because of the sensitive nature of this species, identification was not revealed. However, we do know that the PA DCNR is responsible for state threatened or endangered plant species.

E. Scenic Values

The property contained [DESCRIBE ANY SCENIC VALUES FROM OR ASSOCIATED WITH THE CONSERVATION EASEMENT AREA]

(if applicable Relate the scenic view in support of the Easement should also be protected in CE)

F. Historic Values

The property contained [DESCRIBE ANY HISTORIC FEATURES/STRUCTURES WITHIN THE CONSERVATION EASEMENT AREA] (if applicable as a conservation value in CE, should also be protected in CE)

G. Proximity to Other Preserved Lands

The property is located [DESCRIBE THE EXISTING OR POTENTIAL LINKAGE TO OTHER OPEN SPACE OR PRESERVED LANDS ASSOCIATED WITH THE CONSERVATION EASEMENT AREA] (To support Conservation Values, note critical links to other open space and public use properties)

H. Resource Protection and Permanent Open Space

(Only if for IRS or Conservation Value documentation)

The preservation of the property is consistent with Lower Nazareth Township's Park, Recreation, and Open Space Plan.

IV. Provisions and Restrictions of the Easement

A. Conflicting Pre-existing Conditions

(For CE that has yet to be signed)

The following is a list of conditions observed on the property during the baseline property visit, prior to the signing of the Conservation Easement, which may conflict with the provisions and restrictions listed in the Conservation Easement.

- 1.
- 2.

-OR-

(for retroactive baseline, use A and B below to replace A above)

A. Potential Conflicting Conditions

(For retroactive baselines, only)

(with Paragraph #, Place under A. Potential Conflicting Conditions or B. Non-Compliance, as necessary. This section, A. Potential Conflicting Conditions, is for use when unsure of a violation.)

As of [DATE OF PROPERTY VISIT], the following is a list of conditions observed on the [NAME OF PROPERTY] property during the baseline property visit that require follow-up to determine their compliance with the Conservation Easement:

- 1.
- 2.

It is unknown whether these conditions were present prior to the placement of the Conservation Easement on the property.

B. Non-Compliance

(For retroactive baselines, only)

As of [DATE OF PROPERTY VISIT], the following is a list of conditions observed on the [NAME OF PROPERTY] property during the baseline property visit that are not compliant with the Conservation Easement:

- 1.
- 2.

It is unknown whether these conditions were present prior to the placement of the Conservation Easement on the property.

No other non-compliance issues were observed during the baseline property visit.

V. Signature Page

This report constitutes the “Baseline Documentation” referred to in the “Conservation Easement” between the “Grantor(s)/Owner(s)” and the “Grantee(s)” dated_____.

This Baseline Documentation inventories the existing conditions and relevant features of the property. By signing below, the parties agree that this Baseline Documentation provides, collectively, an accurate representation of the property at the time the Conservation Easement is placed OR the time the baseline inventory was conducted, which is intended to serve as an objective information baseline for monitoring compliance with the terms of the Conservation Easement.

Signature of Grantor

Date

Printed Name of Grantor

Signature of Grantee

Date

Printed Name of Grantee

Baseline Documentation completed by: _____

[AUTHOR'S NAME]

[TITLE],

Lower Nazareth Township

[REPORT DATE]

Appendix 5.E - Sample Open Space Criteria Evaluation

Lower Nazareth Township Open Space Criteria Evaluation

Property Name:

TMP #:

Conducted By:

Date:

	Acres	Percentage
Total Easement Area:		100%
Farmland:		
Natural Area:		

Farmland Preservation

Total Resource Values (Rate only farmed portion of property)

200 Max. Points

TOTAL

1. Resource Values for Farmland Preservation - Select all that apply

Prime Farmland Soils Class 1 and/or 2

Statewide Important Soils Class 3 and/or 4

Other:

- Actively Farmed

- Enrolled in Lower Nazareth Township's Agricultural Security Area

- Current Soil Conservation Plan

Acres

100 Max. Points

Y/N

Then Add -

2. Additional Resource Values for Farmland Preservation

100 Max. Points

***Note that some attributes cannot be determined at initial evaluation

Linkages & Connectivity

Adjacent to permanently protected farmland, open space, and parkland or trails

Identified within LNT's Official Map as Lands Proposed for Development

Rights Acquisition or Lands to be Required for Parks

Y/N

40 Max. Points

Ecologically Significant Habitat

Evidence or presence of animal or plant listed on PNDI or similar generally accepted study

Identified in the Lehigh and Northampton Counties Natural Area Inventory

(Bushkill Creek Watershed or Dutch Springs Natural Heritage Area)

Y/N

20 Max. Points

Other Factors to Consider

Property are to be preserved is >35 Acres

Township acquisition of conservation easement or restriction of future development is below market value

Availability of state and county funds to leverage township funding

Property area to be preserved will have access for hiking, hunting, fishing, or low-impact recreation and education

Property has notable views or scenic qualities

Y/N

40 Max. Points

Project Feasibility

Current or past uses have seriously diminished conservation values

(invasive species, debris, erosion, contamination, zoning that is preferential to development etc.)

Challenging easement enforcement (multiple ownership, restricted access, frequent trespassing etc.)

Existing issues or surrounding uses that may pose risks to conservation values

Requested provisions/retained rights diminish conservation values

Managing the property is likely to be financially challenging/unfeasible

Project timeframe is unworkable

Y/N

-90 Points

Farmland Preservation

Total Points:

Natural Areas Preservation		
Total Resource Values (Rate Only Natural Portions of the Property):	200 Max. Points	TOTAL
1. Resource Values for Natural Area Preservation (Select all that Apply)	Y/N	100 Max. Points
Woodlands		
Streams		
Wetlands		
Steep Slopes (Greater than 15%)		
Floodplains		
Within 100' of a Stream or Body of Water		
Then Add -		
2. Additional Resource Values for Farmland Preservation		100 Max. Points
***Note that some attributes cannot be determined at initial evaluation		
Linkages & Connectivity	Y/N	40 Max. Points
Adjacent to permanently protected farmland, open space, and parkland or trails		
Identified within LNT's Official Map as Lands Proposed for Development		
Rights Acquisition or Lands to be Required for Parks		
Ecologically Significant Habitat	Y/N	20 Max. Points
Evidence or presence of animal or plant listed on PNDI or similar generally accepted study		
Identified in the Lehigh and Northampton Counties Natural Area Inventory (Bushkill Creek Watershed or Dutch Springs Natural Heritage Area)		
Other Factors to Consider		
Property are to be preserved is >35 Acres	Y/N	40 Max. Points
Township acquisition of conservation easement or restriciton of future developmen is below market value		
Availability of state and county funds to leverage township funding		
Property area to be preserved will have access for hiking, hunting, fishing, or low-impact recreation and education		
Property has notable views or scenic qualities		
Project Feasibility	Y/N	-90 Points
Current or past uses have seriously diminished conservation values (invasive species, debris, erosion, contamination, zoning that is preferential to development etc.)		
Challenging easement enforcement (multiple ownership, restricted access, frequent trespassing etc.)		
Existing issues or surrounding uses that may pose risks to conservation values		
Requested provisions/retained rights diminish conservation values		
Managing the property is likely to be financially challenging/unfeasabile		
Project timeframe is unworkable		
Natural Areas Preservation		
	Total Points:	### maximum points
FARMLAND PRESERVATION - TOTAL POINTS		
		### maximum points
WEIGHTED RANKING		
NATURAL AREAS PRESERVATION - TOTAL POINTS		
		### Maximum points
WEIGHTED RANKING		
WEIGHTED FINAL RANKING		
		### Maximum points

Appendix 6.A – Recreation Facilities in Neighboring Townships

Nazareth Borough Parks	Existing Facilities	
Nazareth Borough Park	9,000 square foot Pool with water features Baseball Field & Softball Field Tennis Courts Basketball Courts Beach Volleyball Facility Bandstand Natural amphitheater	Swings Slides Other Playground Equipment Two Pavilions Gazebo Log Cabins Walking Areas
Nazareth Dog Park	Area for Small Dogs & Large Dogs Water Service for Dogs	View of Eastern Northampton County Grassy areas for playing
Nazareth Skate Park	Ramps	Other apparatus Strictly for Skateboarders
West End Walking Trails	Scenic Shorter, flatter loop measuring just un 1/4 mile	Two loops for walkers and/or runners Crushed and compacted stone base
Paul Kokolus Sr. Park (formerly Washington Park)	Full sized Basketball Court Picnic Tables Swings	Extensive Playground area with a "jungle gym" Playground Equipment Several Benches
Fairview Park	Basketball Courts Playground Equipment	Picnic Tables
Kiwanis Park/Playground	Pavilion Grills Picnic Benches	Basketball Hoop Playground Equipment
Kim Donald Kromer Park	Yard Waste Recycling Open Field/Space	Essroc Soccer Field Complex
Veterans Memorial Square	Baseball Diamond	Greenspace
William H. Gold Field	Softball Field	Regular Baseball Diamond
August "Gus" F. Sauerzopf Park	Baseball/Softball Field Playground Equipment	Spectator Seating

Upper Nazareth Township Parks	Existing Facilities	
Tuskes Community Park of Upper Nazareth Baseball Fields	Baseball Fields Parking Soccer Fields	Basketball Courts Playground Multi-purpose Fields
Leibert Park		
Creekside Park		
Hillside Farms Playground		
Sycamore St. Park		
Gacedale Open Space Lands	Birdwatching Hunting	Hiking
Kurt Dr. & Newport Ave. Playground		

Bethlehem Township Parks	Existing Facilities	
Municipal Park	Four Lighted Tennis Courts Two Lighted Basketball Courts Public Restroom facilities Play equipment One Hardball Field	One Softball Field One-mile paved trail with exercise stations Picnic Pavilions Volleyball Courts Horseshoe Pits
Municipal Park North	Three Softball Fields Football/Soccer Field Pavilion Walking path through the wildflower meadow and pond	Play equipment Volleyball Court Horseshoe Pit
The Janet Johnston Housenick & William D. Housenick Memorial Park	Passive Recreation Activities	
Birchwood Park	Play equipment Half Court Basketball Court Pavilion Lawn Swings	Other Play Courts located under forest canopy Soft-surface walking trail Tree identification signs Butterfly Garden
Comer Park	Play equipment Gazebo Picnic Tables Park Benches	Play Courts Split rail fencing Mature Sycamore Trees
Chetwyn Terrace Park	Play equipment Pavilion Play Courts	Access to the Palmer/Bethlehem Rail Trail Several Very Large Silver Maple Trees
14th Street Park	Tennis Court Multi-purpose Court	Street Hockey Court Basketball Court
Towpath/Canal Trail	Hikers Equestrians Scenic Overlooks	Mountain Bikers Cross-Country Skiing Nature Viewing
Palmer/Bethlehem Rail Trail	Trail	
Highland Greenway	Currently Under Design	
Emerald Hills Greenway	Paved Recreation Trail	Storm Water Management
Louise W. Moore Park	Two Playgrounds Six Tennis Courts One Multi-purpose Field	Three Volleyball Courts One Softball Field Walking paths and trails
Monocacy Meadow	Picnicking Fishing	Birdwatching

Palmer Township Parks	Existing Facilities	
Briarcliffe Park & Municipal Pool	Swimming Pool Children's Play area with equipment Picnic Tables Three Softball Fields	Two Pavilions Restrooms in Pool area One Tennis Court One Basketball Court
Fairview Park	One Softball Field One Hardball Field Two Lighted Basketball Courts Four Lighted Tennis Courts Four Shuffleboard Courts	Children's Play area with equipment Picnic Tables Two Pavilions Restrooms Bike/Walking Path passes through park
Keystone Park	Three Softball Fields Three Soccer Fields Two Lighted Volleyball Courts	Children's Play area (part of Tracy School Playground) Restrooms
LaBarre Park	One Softball Field One Basketball Court Sledding Mound	Children's Play area with equipment Pavilion Restrooms
Mill Race Park	Four Soccer/Lacrosse Fields Children's Play area with equipment Picnic Tables Large Pavilion Area	Restrooms Bike/Walking Path passes through park Environmental Area Large Paved Area
Newburg Park	One Basketball Court One Tennis Court	Children's Play area with equipment Picnic Tables
Old Orchard Park	One Softball Field One Multi-Purpose Field One and one-half Basketball Courts	One Tennis Court Children's Play area with equipment
Palmer School Park	One Lighted Football Field Six Baseball/Softball Fields	Children's Play area (part of Palmer School Complex) Restrooms
Penn Pump Park	One Softball Field Children's Play area with equipment Picnic Tables Pavilion	Bushkill Creek Fishing Bike/Walking Path passes through park Restrooms
Riverview Park	Two Lighted Softball Fields Children's Play area with equipment Picnic Tables Pavilion	Handicap accessible fishing pier Chain Dam Fish Ladder Bike/Walking Path passes through park Restrooms
Stephens Street Park	One Basketball Court Children's Play area with equipment	Small Pavilion
Wolf's Run Park	Two Tennis Courts Children's Play area with equipment Picnic Tables	Small Pavilion Walking Path Free Play area - open field

East Allen Township Parks	Existing Facilities	
Bicentennial Park West	Baseball Fields (3) Soccer Field Double Regulation Basketball Courts	Flag Pole & Memorial Park Exercise Walking Park Childrens Play Park
Bicentennial Park East	Baseball Field Softball & Little League Fields (2) Soccer Fields (2) Double Reg. Basketball Courts (2), Benches & Lights Double Reg. Tennis Courts (2) with Lights Regulation Sand Volleyball Courts	Roller Hockey / Ice Skating Rink (enclosed) 5k & 7k Cross Country Course Flag Pole & Memorial Park Exercise Walking Park Childrens Play Park
Jacksonville Park	Baseball Field Soccer Field Lacrosse Field Basketball Court	Pavilion Exercise Walking Park Childrens Play Park
East Bath Rod & Gun Club	Shooting Hunting Fishing	Recreational Activities Tree Stands
Nor-Bath Trail	Open Fields Woodlands	Small Bridges Streams

Appendix 6.B - Township Grants Awarded or in Progress

LOWER NAZARETH TOWNSHIP GRANTS				
Grantor	Amount of Grant	Application Status	Project	Status of Project
PA DCED GTR ¹	\$ 145,000	Awarded	Walking Trail/Playground	Walking trail construction has commenced; playground installed
DEP Act 902	\$ 267,789	Awarded	Recycling Center Improvements	Equipment purchased; Fencing and paving will be completed this year
Northampton County ESA ²	\$ 27,500	Awarded	Recreation, Parks and Open Space	Ongoing
Northampton County CDBG	\$ 25,000	Awarded	Plan Newburg Park Playground	Completed
Northampton County CIPP	\$ 25,000	Awarded	Newburg Park Playground Official	Completed
Lehigh Valley Greenways	\$ 8,400	Awarded	Map	Ongoing; Waiting for final draft for adoption
PA DCED GTR	\$ 50,000	Awarded	Newburg Park Bathroom Newburg	Bids are due June 5 th ; Results will be presented at BOS 06/10 Mtg
Northampton County CDBG	\$ 10,000	Awarded	Park Bathroom	Bids are due June 5 th , Results will be presented at BOS 06/10 Mtg
NC / Lehigh County LSA ³	\$ 42,900	Awarded	HVFC Airpacks	Completed
Northampton County LL ⁴	\$ 150,000	Awarded	Walking Trail / Bathroom	Walking trail construction has commenced; Bathroom bids are in
Northampton County LL 2020	\$ 100,000	Pending	Surrey Glen Park Improvements	Application is submitted and pending review
DEP Act 902	\$ 200,000	Pending	Recycling Center Improvements	Application is submitted and pending review
PA DCED GTR	\$ 100,000	Pending	Surrey Glen Park Improvements	Application is submitted and pending review
Northampton County CDBG	\$ 22,704	Pending	Senior Center Parking Lot Repave	Application is submitted and pending review
NC EMS Grant	\$ 10,000	Pending	HFVC Training Equipment	Application is submitted and pending review
Northampton County LL ⁴	\$ 123,974	Awarded	Newburg Park Initial Infrastructure, Parking Lot, and Field Installation	Completed

¹ DCED Greenways, Trails and Recreation Program
² Northampton County Environmental Services Assistance Grant
³ Northampton County / Lehigh County Local Share Assessment
⁴ Northampton County Livable Landscapes

Appendix 8.A - Stakeholder Interview Form



Lower Nazareth Township Recreation, Park & Open Space Plan Stakeholder Interview

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of the township? Would you like to see more? If so, Lower Nazareth Township needs your help with the evaluation and improvement of our park, recreation and open space facilities. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (*circle one*):

Gov't/Non-Profit

Business

Name & Title: _____ Date & Time: _____

Your Organization: _____ Interviewer: _____

How many people do you represent? _____

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?

Do you use Lower Nazareth's recreation and open space facilities (*check one*)?

Yes

No

(which do you frequent most? _____)

How happy are you with the facilities (*check one*)?

Very Satisfied

Somewhat Satisfied

Not Satisfied

Comments: _____

What activities do you prefer (*check all that apply*)?

Walking

Hiking

Jogging

Bicycling

Basketball

Baseball

Softball

Soccer

Frisbee Golf

Nature Viewing

Birding

Playgrounds

Fitness Stations

Camping

Canoeing/ Kayaking

Other _____

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources

What is your relationship to these spaces? _____

What do you feel about the condition of these resources today?

Are there elements you would like to change?

Are there elements you would like to maintain or preserve?



Photo Source: Kent Baird

What kind of park, recreation and open space facilities do you feel the Township needs (*check all that apply*)?

Benches
Bathrooms
Ample lighting
Universal Play Areas

Educational Signs and Kiosks
Natural Habitats
Pavilion/ Picnic areas
ADA access

Trails
Water Access
Other _____

What opportunities exist?

What challenges are there?



Photo Source: Kent Baird

Would you like more information on the health benefits of outdoor recreation and open space (*check one*)?

Yes **No**

Do you have any other comments, ideas, or thoughts regarding Lower Nazareth’s park, recreation and/or open space areas?



Photo Source: Kent Baird

Please contact Lori Stauffer or Kent Baird with any questions:

Lori Stauffer, Esq.
Township Manager
Lower Nazareth Township
623 Municipal Drive, Nazareth, PA 18064

Kent Baird, AICP
Community Planner
Gilmore & Associates, Inc.
kbaird@gilmore-assoc.com / 215-345-4330

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of this township? Would you like to see more of it? If so, Lower Nazareth Township invites your help with the evaluation and improvement of our park, recreation and open space facilities. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☒ Gov./Non-Profit ☐ Business

Name & Title: Hugh Harris Planning Date & Time: July 5 2019

Your Organization: Two Planning Interviewer: _____

How many people do you represent? 1

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?

Do you use Lower Nazareth's recreation and open space facilities (check one)? ☒ Yes ☐ No

(which do you frequent most?) Baseball tennis basketball

How happy are you with the facilities (check one)? ☒ Very Satisfied ☐ Somewhat Satisfied ☐ Not Satisfied

Comments: _____

What activities do you prefer (check all that apply)?

<input type="checkbox"/> Walking	<input type="checkbox"/> Softball	<input type="checkbox"/> Fitness Stations
<input type="checkbox"/> Jogging	<input type="checkbox"/> Fishing	<input type="checkbox"/> Archery
<input type="checkbox"/> Bicycling	<input type="checkbox"/> Frisbee Golf	<input type="checkbox"/> Canoeing/Kayaking
<input type="checkbox"/> Basketball	<input type="checkbox"/> Nature Viewing	<input type="checkbox"/> Other: <u>Tennis</u>
<input type="checkbox"/> Birding	<input type="checkbox"/> Picnicking	
<input type="checkbox"/> Baseball	<input type="checkbox"/> Playgrounds	

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources

What is your relationship to these spaces? Neighbor

What do you feel about the condition of these resources today?

In good shape

Are there elements you would like to change?

No

Are there elements you would like to maintain or preserve?

Maintenance of facilities



Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of this township? Would you like to see more of it? If so, Lower Nazareth Township invites your help with the evaluation and improvement of our park, recreation and open space facilities. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☒ Gov./Non-Profit ☐ Business

Name & Title: Christopher Stoffer - Senior Conservation Planner Date & Time: 8/30/2019 - 4:00 PM

Your Organization: Wildlands Conservancy Interviewer: _____

How many people do you represent? 1

Step 2: How do you feel about Lower Nazareth's Park and Open Space facilities?

Do you use Lower Nazareth's recreation and open space facilities (check one)? ☐ Yes ☒ No

(which do you frequent most?) _____

How happy are you with the facilities (check one)? ☒ Very Satisfied ☐ Somewhat Satisfied ☐ Not Satisfied

Comments: I have only been to Louise W. Moore Park

What activities do you prefer (check all that apply)?

<input type="checkbox"/> Walking	<input type="checkbox"/> Softball	<input type="checkbox"/> Fitness Stations
<input type="checkbox"/> Jogging	<input type="checkbox"/> Fishing	<input type="checkbox"/> Archery
<input type="checkbox"/> Bicycling	<input type="checkbox"/> Frisbee Golf	<input type="checkbox"/> Canoeing/Kayaking
<input type="checkbox"/> Basketball	<input type="checkbox"/> Nature Viewing	<input type="checkbox"/> Other
<input type="checkbox"/> Birding	<input type="checkbox"/> Picnicking	
<input type="checkbox"/> Baseball	<input type="checkbox"/> Playgrounds	

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources

What is your relationship to these spaces? Don't know/Recreation Advocate

What do you feel about the condition of these resources today?

N/A I have not been to many of them

Are there elements you would like to change?

N/A

Are there elements you would like to maintain or preserve?

N/A



Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of this township? Would you like to see more of it? If so, Lower Nazareth Township invites your help with the evaluation and improvement of our park, recreation and open space facilities. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☐ Gov./Non-Profit ☐ Business

Name & Title: Beverly Hoyer Date & Time: 10/1/19

Your Organization: _____ Interviewer: _____

How many people do you represent? Residents of Lower Nazareth

Step 2: How do you feel about Lower Nazareth's Park and Open Space facilities?

Do you use Lower Nazareth's recreation and open space facilities (check one)? ☐ Yes ☐ No

(which do you frequent most?) 309 Buzztown Road

How happy are you with the facilities (check one)? ☐ Very Satisfied ☒ Somewhat Satisfied ☐ Not Satisfied

Comments: _____

What activities do you prefer (check all that apply)?

<input type="checkbox"/> Walking	<input type="checkbox"/> Softball	<input type="checkbox"/> Fitness Stations
<input type="checkbox"/> Jogging	<input type="checkbox"/> Fishing	<input type="checkbox"/> Archery
<input type="checkbox"/> Bicycling	<input type="checkbox"/> Frisbee Golf	<input type="checkbox"/> Canoeing/Kayaking
<input type="checkbox"/> Basketball	<input type="checkbox"/> Nature Viewing	<input type="checkbox"/> Other
<input type="checkbox"/> Birding	<input type="checkbox"/> Picnicking	
<input type="checkbox"/> Baseball	<input type="checkbox"/> Playgrounds	

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources

What is your relationship to these spaces? Have to drive to access them

What do you feel about the condition of these resources today?

Are there elements you would like to change?

Yes

Are there elements you would like to maintain or preserve?

Yes



What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?

<input checked="" type="checkbox"/> Benches	<input type="checkbox"/> Educational Signs and Kiosks	<input type="checkbox"/> Trails
<input type="checkbox"/> Bathrooms	<input type="checkbox"/> Natural Habitats	<input type="checkbox"/> Water Access
<input type="checkbox"/> Ample lighting	<input type="checkbox"/> Pasture/Picnic areas	<input type="checkbox"/> Other: <u>Fishing access</u>
<input type="checkbox"/> Universal Pay Area	<input type="checkbox"/> ADA Access	



What opportunities exist?

What challenges are there?

Place signs on tennis courts to prohibit any use other than tennis.

Would you like more information on the health benefits of outdoor recreation and open space (check one)?

☐ Yes ☒ No

Do you have any other comments, ideas, or thoughts regarding Lower Nazareth's park, recreation and/or open space areas?

Please contact Lori Stauffer or Kent Baird with any questions:

Lori Stauffer, Esq.
Township Manager
Lower Nazareth Township
623 Municipal Drive, Nazareth, PA 18064
lstauffer@nazareth-twp.com / 717-345-4330

Kent Baird, ACP
Community Planner
Gimmore & Associates, Inc.
kbaird@gimmoreandassociates.com / 717-345-4330

What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?

<input type="checkbox"/> Benches	<input type="checkbox"/> Educational Signs and Kiosks	<input type="checkbox"/> Trails
<input type="checkbox"/> Bathrooms	<input type="checkbox"/> Natural Habitats	<input type="checkbox"/> Water Access
<input type="checkbox"/> Ample lighting	<input type="checkbox"/> Pasture/Picnic areas	<input type="checkbox"/> Other: <u>Fishing access</u>
<input type="checkbox"/> Universal Pay Area	<input type="checkbox"/> ADA Access	



What opportunities exist?

What challenges are there?

Trail connections between existing parks and trail

Access/land acquisition

Would you like more information on the health benefits of outdoor recreation and open space (check one)?

☐ Yes ☒ No

Do you have any other comments, ideas, or thoughts regarding Lower Nazareth's park, recreation and/or open space areas?

Lower Nazareth Township has a lot of potential to improve its park, recreation and open space resources and retain the rural character of the Township. Recreational facilities should be looked at with multi-municipal considerations. Different types of facilities should be considered in the future. Lower Nazareth, and East Allen Township should be able to support a variety of needs in these municipalities.

Please contact Lori Stauffer or Kent Baird with any questions:

Lori Stauffer, Esq.
Township Manager
Lower Nazareth Township
623 Municipal Drive, Nazareth, PA 18064
lstauffer@nazareth-twp.com / 717-345-4330

Kent Baird, ACP
Community Planner
Gimmore & Associates, Inc.
kbaird@gimmoreandassociates.com / 717-345-4330

What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?

<input type="checkbox"/> Benches	<input type="checkbox"/> Educational Signs and Kiosks	<input type="checkbox"/> Trails
<input type="checkbox"/> Bathrooms	<input type="checkbox"/> Natural Habitats	<input type="checkbox"/> Water Access
<input type="checkbox"/> Ample lighting	<input type="checkbox"/> Pasture/Picnic areas	<input type="checkbox"/> Other: <u>Fishing</u>
<input type="checkbox"/> Universal Pay Area	<input type="checkbox"/> ADA Access	



What opportunities exist?

What challenges are there?

ATV Vehicles

Would you like more information on the health benefits of outdoor recreation and open space (check one)?

☐ Yes ☒ No

Do you have any other comments, ideas, or thoughts regarding Lower Nazareth's park, recreation and/or open space areas?

More connections are needed between parks. The township has a lot of potential to improve its park, recreation and open space resources and retain the rural character of the Township. Recreational facilities should be looked at with multi-municipal considerations. Different types of facilities should be considered in the future. Lower Nazareth, and East Allen Township should be able to support a variety of needs in these municipalities.

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Lower Nazareth Township Recreation, Park & Open Space Plan Stakeholder Interview

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of the township? Would you like to see more of it? If so, Lower Nazareth Township needs your help with the evaluation and improvement of our park, recreation and natural resources priorities! Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☒ Gov't/Non-Profit ☐ Business
Name & Title: Linda Crook, Chair Date & Time: 8/9/19
Your Organization: Lower Nazareth Planning Committee Interviewer:
How many people do you represent? 1

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?
Do you use Lower Nazareth's recreation and open space facilities (check one)? ☐ Yes ☐ No
(which do you frequent most?) Playgrounds and sports fields
How happy are you with the facilities (check one)? ☒ Very Satisfied ☐ Somewhat Satisfied ☐ Not Satisfied
Comments: My activities are really as a spectator my Grandsons, sports

What activities do you prefer (check all that apply)?
☐ Walking ☐ Softball ☐ Fitness Stations ☐ Bicycling ☐ Soccer ☐ Canoeing/Kayaking ☐ Fishing ☐ Fishing Golf ☐ Nature Viewing ☐ Birding ☐ Basketball ☐ Baseball ☐ Playgrounds

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources
What is your relationship to these spaces? I rarely use the open spaces except as a spectator
What do you feel about the condition of these resources today?
Are there elements you would like to change? I would like to see garden plots installed to township residents
Are there elements you would like to maintain or preserve? I like the live bush barriers around parking lots



What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?
☐ Benches ☐ Educational Signs and Icons ☐ Trails ☐ Bathrooms ☐ Natural Habitats ☐ Water Access ☐ Ample Lighting ☐ Pasture/ Picnic areas ☐ Other: public gardens ☐ Universal Pay Areas ☐ Ash access



What opportunities exist?
I would love to see biking/walking trails. Garden p

What challenges are there?
Narrow road or not seen businesses to bike lanes



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Step 1: Tell us about yourself (circle one): ☐ Gov't/Non-Profit ☐ Business
Name & Title: Kay K. Bazzanski Date & Time: 10/18/19
Your Organization: Interviewer:
How many people do you represent? 2000 township

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?
Do you use Lower Nazareth's recreation and open space facilities (check one)? ☐ Yes ☒ No
(which do you frequent most?)
How happy are you with the facilities (check one)? ☐ Very Satisfied ☐ Somewhat Satisfied ☐ Not Satisfied
Comments: Since I don't use existing facilities, I can't comment re: happiness

What activities do you prefer (check all that apply)?
☐ Walking ☐ Softball ☐ Fitness Stations ☐ Bicycling ☐ Soccer ☐ Canoeing/Kayaking ☐ Fishing ☐ Fishing Golf ☐ Nature Viewing ☐ Birding ☐ Basketball ☐ Baseball ☐ Playgrounds

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources
What is your relationship to these spaces? N/A
What do you feel about the condition of these resources today?
Are there elements you would like to change? N/A
Are there elements you would like to maintain or preserve? N/A



What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?
☐ Benches ☐ Educational Signs and Icons ☐ Trails ☐ Bathrooms ☐ Natural Habitats ☐ Water Access ☐ Ample Lighting ☐ Pasture/ Picnic areas ☐ Other: ☐ Universal Pay Areas ☐ Ash access



What opportunities exist?
Spar routes when they become available.

What challenges are there?
Impact to tax bases. Facilities taken over by out of township residents. Township already struggle with this issue.



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Lower Nazareth Township Recreation, Park & Open Space Plan Stakeholder Interview

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of the township? Would you like to see more of it? If so, Lower Nazareth Township needs your help with the evaluation and improvement of our park, recreation and natural resources priorities! Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☐ Gov't/Non-Profit ☐ Business
Name & Title: Lisa Pennington / Scott Vior Date & Time: 7/10/17
Your Organization: Lower Nazareth Township Interviewer:
How many people do you represent?

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?
Do you use Lower Nazareth's recreation and open space facilities (check one)? ☐ Yes ☒ No
(which do you frequent most?)
How happy are you with the facilities (check one)? ☐ Very Satisfied ☐ Somewhat Satisfied ☐ Not Satisfied
Comments: Most facilities presently are for youth sports

What activities do you prefer (check all that apply)?
☐ Walking ☐ Softball ☐ Fitness Stations ☐ Bicycling ☐ Soccer ☐ Canoeing/Kayaking ☐ Fishing ☐ Fishing Golf ☐ Nature Viewing ☐ Birding ☐ Basketball ☐ Baseball ☐ Playgrounds

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources
What is your relationship to these spaces? Supervisor in the township
What do you feel about the condition of these resources today?
Are there elements you would like to change? Only one usable park which are either in flood areas or overgrown
Are there elements you would like to maintain or preserve? Various of activities for all residents
Urbon sr Hwy



What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?
☐ Benches ☐ Educational Signs and Icons ☐ Trails ☐ Bathrooms ☐ Natural Habitats ☐ Water Access ☐ Ample Lighting ☐ Pasture/ Picnic areas ☐ Other: Campsites for youth ☐ Universal Pay Areas ☐ Ash access



What opportunities exist?
Development of new community park could open opportunities for uses not currently available

What challenges are there?
Funding for construction + maintenance of new facilities



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Lower Nazareth Township
Recreation, Park & Open Space Plan
Stakeholder Interview

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of the township? Would you like to see more of it? If so, Lower Nazareth Township needs your help with the evaluation and improvement of our park, recreation and open space resources. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☒ Gov/Non-Profit ☐ Business
Name & Title: TRAVIS GERBULA Date & Time: 7/7/19
Your Organization: HEBER-UNION-NATURALIST CLUB Interviewer: _____
How many people do you represent? NA

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?
Do you use Lower Nazareth's recreation and open space facilities (check one)? ☒ Yes ☐ No
(which do you frequent most?) BUTZ TRAIL
How happy are you with the facilities (check one)? ☒ Very Satisfied ☐ Somewhat Satisfied ☐ Not Satisfied
Comments: _____

What activities do you prefer (check all that apply)?
☒ Walking ☐ Softball ☐ Fitness Stations
☐ Jogging ☐ Soccer ☐ Fishing ☐ Hunting ☐ Canoeing/Kayaking
☐ Bicycling ☐ Frisbee Golf ☐ Nature Viewing ☐ Other _____
☐ Basketball ☐ Birding ☐ Picnicking ☐ Playgrounds

Step 3: Help us elevate Lower Nazareth's park and Open Space resources
What is your relationship to these spaces? REHABIST OF LOWER NAZ
What do you feel about the condition of these resources today? GOOD
Are there elements you would like to change? NO
Are there elements you would like to maintain or preserve? ALL



What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?

☒ Benches ☐ Educational Signs and Icons ☒ Trails ☐ Toilets
☐ Bathrooms ☐ Natural Habitats ☐ Water Access
☐ Ample Lighting ☐ Pasture/Fence areas ☐ Other _____
☐ Universal Pay Areas ☐ ADA Access

What opportunities exist?
GRADY RD, GERBULA RD
What challenges are there?
WATER FLOODING

Would you like more information on the health benefits of outdoor recreation and open space (check one)?

☐ Yes ☒ No



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Lower Nazareth Township
Recreation, Park & Open Space Plan
Stakeholder Interview

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of the township? Would you like to see more of it? If so, Lower Nazareth Township needs your help with the evaluation and improvement of our park, recreation and open space resources. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☐ Gov/Non-Profit ☐ Business
Name & Title: Michael Gaul, 288 Longwood Dr Date & Time: 8/14/19
Your Organization: ZHB Member / Attorney Interviewer: GA
How many people do you represent? Myself

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?
Do you use Lower Nazareth's recreation and open space facilities (check one)? ☐ Yes ☒ No
(which do you frequent most?) would like to use, but no walking access to a park
How happy are you with the facilities (check one)? ☐ Very Satisfied ☐ Somewhat Satisfied ☒ Not Satisfied
Comments: would prefer that my development have walking access to park

What activities do you prefer (check all that apply)?
☐ Walking ☐ Softball ☐ Fitness Stations
☐ Jogging ☐ Soccer ☐ Fishing ☐ Hunting ☐ Canoeing/Kayaking
☐ Bicycling ☐ Frisbee Golf ☐ Nature Viewing ☐ Other _____
☐ Basketball ☐ Birding ☐ Picnicking ☐ Playgrounds

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources
What is your relationship to these spaces? tend to use state, county or other trails to trails parks, rather
What do you feel about the condition of these resources today?
There needs to be a better way to get from developments to parks, more walkable, maintained, trail
Are there elements you would like to change?
better pedestrian/bike access: example, Sunny Glen park. Impossible to get to without driving
Are there elements you would like to maintain or preserve?



What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?

☐ Benches ☐ Educational Signs and Icons ☐ Trails ☐ Toilets
☐ Bathrooms ☐ Natural Habitats ☐ Water Access
☐ Ample Lighting ☐ Pasture/Fence areas ☐ Other _____
☐ Universal Pay Areas ☐ ADA Access

What opportunities exist?
somehow create pedestrian/bike access from Sun
What challenges are there?

Would you like more information on the health benefits of outdoor recreation and open space (check one)?

☐ Yes ☒ No



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Lower Nazareth Township
Recreation, Park & Open Space Plan
Stakeholder Interview

Do you enjoy the natural and scenic beauty of Lower Nazareth Township? Would you like to see more of it permanently preserved? Do you enjoy the recreation opportunities of the township? Would you like to see more of it? If so, Lower Nazareth Township needs your help with the evaluation and improvement of our park, recreation and open space resources. Please complete the following questionnaire and let us know your recreation and natural resource priorities!

Step 1: Tell us about yourself (circle one): ☐ Gov/Non-Profit ☐ Business
Name & Title: Manouche Changal, LNZoning Board Date & Time: 7/23/19
Your Organization: Private Citizen Interviewer: _____
How many people do you represent? _____

Step 2: How do you feel about Lower Nazareth's Park and Open Space Facilities?
Do you use Lower Nazareth's recreation and open space facilities (check one)? ☒ Yes ☐ No
(which do you frequent most?) LNZ Two Baseball / Soccer fields
How happy are you with the facilities (check one)? ☐ Very Satisfied ☒ Somewhat Satisfied ☐ Not Satisfied
Comments: Seem crowded

What activities do you prefer (check all that apply)?
☐ Walking ☐ Softball ☐ Fitness Stations
☐ Jogging ☐ Soccer ☐ Fishing ☐ Hunting ☐ Canoeing/Kayaking
☐ Bicycling ☐ Frisbee Golf ☐ Nature Viewing ☐ Other _____
☐ Basketball ☐ Birding ☐ Picnicking ☐ Playgrounds

Step 3: Help us elevate Lower Nazareth's Park and Open Space resources
What is your relationship to these spaces? Don't understand the question???
What do you feel about the condition of these resources today?
Seem in good condition but crowded
Add more space with walking, nature trails and picnic areas.
Are there elements you would like to change?
Are there elements you would like to maintain or preserve?
Existing are good.



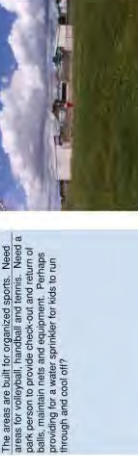
What kind of park, recreation and open space facilities do you feel the Township needs (check all that apply)?

☐ Benches ☐ Educational Signs and Icons ☐ Trails ☐ Toilets
☐ Bathrooms ☐ Natural Habitats ☐ Water Access
☐ Ample Lighting ☐ Pasture/Fence areas ☐ Other _____
☐ Universal Pay Areas ☐ ADA Access

What opportunities exist?
Farm land before it is developed.
What challenges are there?
Budget for obtaining land.

Would you like more information on the health benefits of outdoor recreation and open space (check one)?

☐ Yes ☒ No



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Lower Nazareth Township

Recreation, Park, and Open Space Master Plan

Full Stakeholder Open Ended Responses

What Opportunity Exists

Trail connections between existing parks and residential areas.
 Monocacy Creek is a great location for fishing if better access is developed.
 Development of new community park could open opportunities for uses not currently available
 I would love to see biking/walking trails. Garden plots...
 Farm land before it is developed.
 Greemar Rd; Georgetown Rd.
 Spur routes when they become available

What challenges are there?

Access/land acquisition
 Funding for construction + maintenance of new facilities
 Narrow road do not lend themselves to bike lanes
 Budgt for obtaining land.
 Water Flooding
 Impact to tax base. Facilities taken over by out of area groups. Palmer Township and Hanover Township already struggle with this issue
 ATV Vehicles

Do you have any other comments, ideas, or thoughts regarding Lower Nazareth's park, recreation and/or open space areas?

Place signs on Tennis Courts to prohibit any use other then tennis.
 the access between older developments and the parks should be improved/coordinated.
 Should reduce the need to get in a car in order to access a park
 Lower Nazareth Township has a lot of potential to not only preserve their open space areas but also retain the rural character of the Township
 Recreational Facilities should be looked at with multi-municipal consideration.
 Different types of facilities spread across Lower Nazareth, Upper Nazareth, and East Allen Township should be able to support a variety of needs in these municipalities.
 Bike trails & garden plots
 The areas are built for organized sports. Need areas for volleyball, handball, and tennis
 Need a park person to provide check-out and return of balls, maintain nets and equipment.
 Perhaps providing for a water sprinkler for kids to run through and cool off?
 No
 Be mindful of 'rail to trail' opportunities and government grants that can be used to fund future projects.
 More connections are needed between parks. I believe these and other ideas are the function of this committee to be discussed further in detail.

Appendix 10.A – Funding Opportunities

Funding in the form of grants and loans are provided through local, state and national organizations year round. Below is a list of potential funding sources that should be pursued for the planning, design and construction of the recommendations made in the Lower Nazareth Township Recreation, Park, and Open Space Master Plan.

- **Automated Red Light Enforcement Program (ARLE)**

The *Pennsylvania Department of Transportation* provides funds through ARLE revenues to improve highway safety and reduce congestion through a wide range of projects that aim to reduce the number of violations and crashes at implementation sites, as well as provide benefits to highway users. Funded projects upgrade, improve, or install traffic-control signs and other forms of roadway markings and structures to increase road capacity and/or further pedestrian safety and mobility, and projects that work to enhance visibility or drainage, etc.

- Request Amount: Dependent upon available yearly revenues
- Match: None required

- **Better Utilizing Investments to Leverage Development (BUILD)**

The *Pennsylvania Department of Transportation* administers funds from National Infrastructure Investments to support capital projects for surface transportation infrastructure that improve, repair, and develop transportation frameworks, economic revitalization, community connections and safety. FY2018 BUILD will administer a greater share of the awards to rural areas.

- Request Amount: Not to exceed \$25 Million; Minimum \$1 Million in rural area
- Match: Minimum 20% in Urban; Minimum 0% in Rural

- **Transportation Alternatives Set-Aside Program (TA Set-Aside)**

The *Pennsylvania Department of Transportation* administers funding assistance for alternative transportation programs and projects that improve accessibility and mobility, public transportation and school links, recreation and environmental mitigation.

- Request Amount: \$50,000 minimum construction cost; Not to exceed \$1 Million unless regional or of statewide significance
- Match: None required

- **Multimodal Transportation Funds Program**

The *Pennsylvania Department of Transportation* and the *Department of Community & Economic Development* provides grants for projects that support safe and reliable transportation systems and encourage economic development. Supported projects develop or rehabilitate transportation assets for communities including but not limited to lighting, sidewalks, pedestrian safety, and streetscapes, as well as improving connectivity and/or utilization of existing assets.

- Request Amount: \$100,000 - \$3,000,000
- Match: 30% Cash

- **Greenways, Trails, and Recreation Program (GTRP)**

The *Pennsylvania Department of Community & Economic Development* administers funds from the Marcellus Legacy Fund for the planning, acquisition, development, rehabilitation, and repair of greenways, recreational trails, open space, park and beautification projects.

- Request Amount: Not to exceed \$250,000
- Match: 15% Cash/Equivalent
- \$100 application fee

- **Municipal Assistance Program (MAP)**

The *Department of Community & Economic Development* provides funds for local governments to the planning and implementation of multiple services including shared service activities, community planning, and floodplain management.

- Request Amount: Dependent upon available funds
- Match: 50%; 25% of which must be non-state funded

- **Keystone Communities Program (KCP)**

The *Commonwealth Financing Authority* provides a grant and designation program for community and economic development by encouraging public and private partnerships to support local initiatives and target focus areas or regions. Funded projects include planning, façade, accessible housing, and development projects, which can incorporate streetscape and roadway improvements.

- Request Amount: Dependent upon designation
- Match: 50%

- **Community Conservation Partnership Program (C2P2) *Trails***

The *Pennsylvania Department of Conservation & Natural Resources* presently offers matching grants for the planning, acquisition, construction, enhancement, and maintenance of multi-use trails and trail-related facilities. This can include, but is not limited to, interpretive signs, trail amenities, access roads and parking areas, and equipment required to build and maintain trails.

- Request Amount: Reasonable requests
- Match: 50%

- **Community Conservation Partnership Program (C2P2) *Community Recreation and Conservation Planning***

The *Pennsylvania Department of Conservation & Natural Resources* presently offers matching grants to prepare for future planning, acquisition, development, and management of parks, recreation facilities, critical habitat, open space, natural areas, greenways, and river/watershed passageways.

- Request Amount: Reasonable requests
- Match: 50%

- **Community Conservation Partnership Program (C2P2) *Land Acquisition and Conservation***

The *Pennsylvania Department of Conservation & Natural Resources* presently offers matching grants for the purchase and/or donation of land for the purpose of recreation and park areas, critical habitat areas, greenways, and open space.

- Request Amount: Reasonable requests
- Match: 50%

- **Community Conservation Partnership Program (C2P2) *Park Rehabilitation and Development***
 The *Pennsylvania Department of Conservation & Natural Resources* presently offers matching grants for the rehabilitation and development of public parks, both indoor and outdoor recreation facilities, small communities, greenways, and river conservation and restoration projects.

 - Request Amount: Reasonable requests
 - Match: 50%

- **Community Conservation Partnership Program (C2P2) *Peer Circuit Rider Program***
 The *Pennsylvania Department of Conservation & Natural Resources* presently offers matching grants for expanding the local capacity for parks, recreation, and conservation through the partnership of municipalities, counties, and government councils and the hiring of a shared professional who is jointly funded by the formal partnership, commission, or authority.

 - Request Amount: Reasonable requests
 - Match: 10%

- **Community Conservation Partnership Program (C2P2) *State and Regional Partnerships Funds***
 The *Pennsylvania Department of Conservation & Natural Resources* presently offers matching grants for the formation of collaborative initiatives that improve the capacity to develop and manage park and recreation facilities and advance conservation of resources through education, training, and implementation.

 - Request Amount: Reasonable requests
 - Match: Varies

- **Lehigh Valley Greenways Mini-Grant Program**
 Funded by the *PA Department of Conservation & Natural Resources*, and administered by *Delaware & Lehigh National Heritage Corridor*, this program provides mini grants for municipalities, non-profits, and educational institutions for strategic planning efforts and ready-to-go implementation projects. Key focuses include the Lehigh Valley Greenways Conservation Landscape Goals: 1) Land Conservation & Restoration including ecological restoration projects, 2) Outdoor Recreation & Trail Connections including improvements to the LINK Trail Network, 3) Community Revitalization including municipal ordinances, and 4) Local Education & Outreach including educational events and workshops.

 - Request Amount: Min: \$1,000 Max: \$10,000
 - Match: Minimum 50% Cash

- **Northampton County-Livable Landscapes Grant Program**
 Administered by *Northampton County*, this program aims to protect the County's natural features by providing grant funds under the Open Space Initiative to support projects focused on municipal parks, land preservation, and environmental services. Projects can include acquisition, conservation easements, park rehabilitation and development, and environmental restoration.

 - Request Amount: Maximum grant request is up to \$300,000
 - Match: 50% match required of the total project cost; up to 35% allowed to be in-kind for restoration, rehabilitation, and development projects.

- **Northampton County-Farmland Preservation Easement Purchase Program**

Administered by *Northampton County*, this Commonwealth Program supports the preservation of farmland by purchasing agricultural conservation easements within Northampton County to prevent changes or development of the land for purposes other than farming. Program objectives include: encourage long-term commitment to agriculture, protect farming operations, conserve viable farmland, and purchase agricultural conservation easements.

- Request Amount: N/A
- Match: N/A

- **PECO Green Region Open Space Program**

Administered by *Natural Lands*, this program provides grants for municipalities in SE PA to preserve, protect, and improve open spaces. Eligible projects include: the acquisition of conservation easements or land for open space; habitat or capital improvements for passive recreation; and developing or updating open space plans.

- Request Amount: Not to exceed \$10,000; can fund up to 50% of eligible activities
- Match: Minimum 50% Cash

- **Redevelopment Assistance Capital Program (RACP)**

The *Pennsylvania Office of the Budget* administers funds from the Commonwealth for regional economic development, civic, cultural, recreational, and historical improvements through acquisition and construction projects.

- Request Amount: \$100,000 minimum total project cost
- Match: 50% non-stat

- **Rivers, Trails, and Conservation Assistance Program**

The *National Park Services* provides funding assistance to support resource conservation and recreation projects throughout the United States of America. The program links national conservation and recreation planning professionals with applicants to design, conserve and improve natural and recreational opportunities and connect the public to these resources.

- Request Amount: N/A
- Match: N/A

- **Doppelt Family Trail Development Fund**

Rails to Trails Conservancy administers funds from the Doppelt Family Trail Development Fund to support the implementation and improvement of multi-use trails. Originally established in 2015 from an initial grant donation from the Doppelt Family, RTC awards around \$85,000 to 4-6 trail projects via a competitive grant round.

- Request Amount: \$5,000 - \$50,000
- Match: N/A

A lush green landscape featuring a river or stream flowing through dense foliage. On the left, there are large, vibrant green ferns. On the right, tall, thin grasses with light-colored seed heads dominate the foreground. The background is filled with a thick canopy of green trees. The water in the river is a murky, brownish-green color.

TABLES, FIGURES, AND MAPS

Tables, Figures, & Maps

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- Table 2.4 - Median Per Capita Income, 2018
- Table 2.5 - Educational Attainment of People 25 Years and Older, 2018
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- Table 3.2. Public Parkland Resources in Lower Nazareth (Owned by Other Entities)
- Table 3.3. Private Parkland Resources in Lower Nazareth Township
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- Table 5.1. Permanently Preserved Open Space in Lower Nazareth Township
- Table 5.2. Township Agricultural Security Areas Not Currently Protected by an Easement
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- Table 6.2. Public Recreation Facilities (Not Township-Owned)
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- Map 7 – Regional Trail Network Map
- Map 8 – Draft Township Official Map
- Map 9 – Regional Open Space Map
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