

RANDOLPH WOODS NATURE PRESERVE

MASTER SITE PLAN



June 2020 - **Draft**



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19065





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PECO Green Region Open Space Program.

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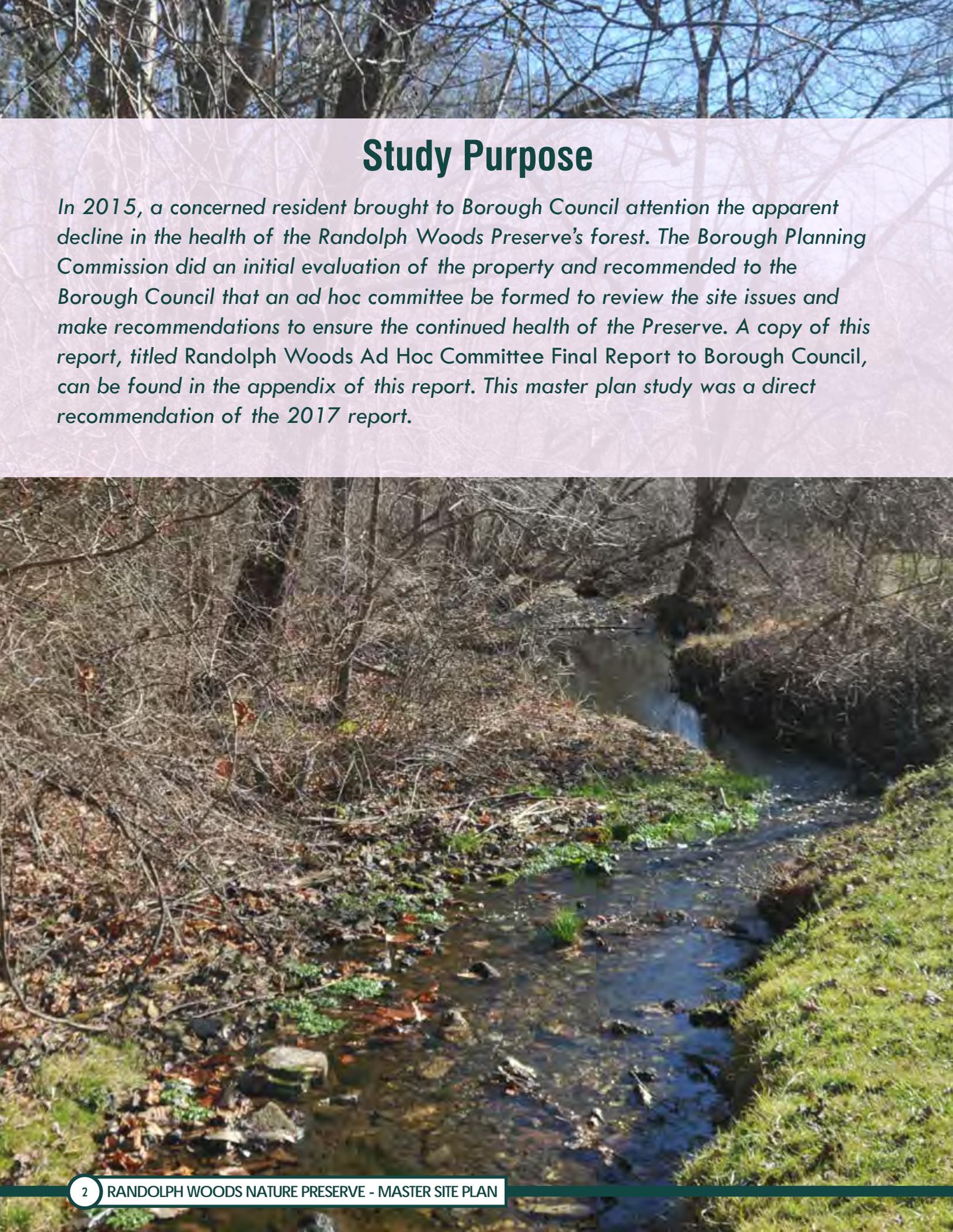
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Introduction





Study Purpose

In 2015, a concerned resident brought to Borough Council attention the apparent decline in the health of the Randolph Woods Preserve's forest. The Borough Planning Commission did an initial evaluation of the property and recommended to the Borough Council that an ad hoc committee be formed to review the site issues and make recommendations to ensure the continued health of the Preserve. A copy of this report, titled Randolph Woods Ad Hoc Committee Final Report to Borough Council, can be found in the appendix of this report. This master plan study was a direct recommendation of the 2017 report.



Project Team

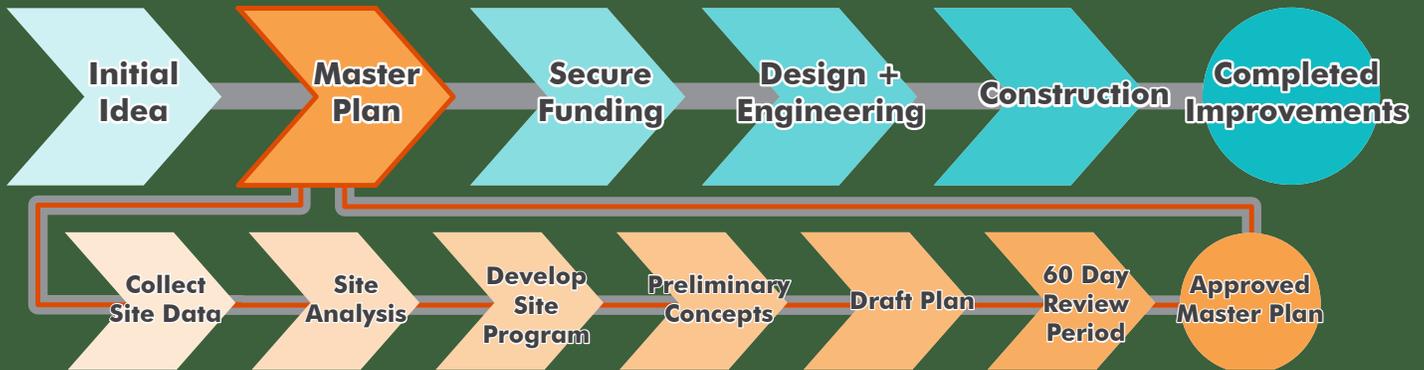
A project team composed of the Randolph Woods Ad Hoc Committee, Township Staff, Willistown Conservancy, and consultants was formed to guide the public through the master plan process. The Committee is diverse and offers varied expertise and experience. Committee insights informed and guided the team throughout the process. Andrew Kirkpatrick, Director of Stewardship at the Willistown Conservation Trust, provided professional guidance to the committee throughout the process. Willistown Borough staff, led by Borough Manager Christopher Bashore, helped to coordinate the process and provided input and comment on the plan.

The consultant team included many disciplines. Simone Collins Landscape Architecture (SC), a planning and design firm with expertise in parks, trails, greenways, and recreational facilities, served as the prime consultant. SC was responsible for overall facility design, public participation, and overall coordination with the Committee and project team.

Applied Ecological Services, Inc. (AES) is a leading ecological consulting firm dedicated to bringing the science of ecology to land-use decisions. AES's knowledge of ecological systems provides a solid foundation for creating balanced ecological designs and solutions that are sustainable, cost-effective, and enduring. AES plan components include baseline habitat and wildlife analysis, and stewardship / restoration recommendations.

Comprehensive Land Services (CLS) is a forestry and wildlife consulting firm with many years of experience in the Commonwealth. Sole proprietor / forester Patrick Fasano was responsible for the analysis of the existing park woodlands and the formulation of the Forest Management Plan.

Project Schedule



The master plan is an early step in the improvement process that seeks to develop public consensus for improvements to be implemented in the Preserve. The master plan provides estimates of probable costs of development, and it outlines a strategy for phasing improvements and securing funding from a variety of potential sources. The master plan is a guidance document and is intended to be flexible enough to adapt to the future desires and needs of the community.

Following the completion of this master plan, the next step toward implementation is to identify and acquire funding for improvements. Once funding is obtained, detailed design and engineering will commence to develop construction documents. Construction documents will be publicly bid, and a contract awarded for construction.

A master plan is typically implemented through a series of phases, dependent on funding, over a period of years. In the case of Randolph Woods Nature Preserve, five (5) to seven (7) phases spanning ten (10) to fifteen (15) years is a realistic time frame for the implementation of the plan recommendations.

Public Participation

Meeting Date	Meeting Purpose	
December 16th, 2019	Committee Meeting 1	Project Kickoff Meeting
January 22th, 2020	Public Meeting 1	Brainstorming
May 6th, 2020	Public Meeting 2	Concept Review
June 24th, 2020	Public Meeting 3	Draft Plan Presentation
Date To Be Determined	Public Meeting 4	Final Plan Presentation

Community input is a critical component to any successful master plan. Meetings with the public and Malvern Borough staff were held throughout the planning process. The public helped identify important existing conditions and community needs, and provided critical feedback on desired Preserve elements and proposed solutions.

The consultant team worked with Malvern Borough to ensure that the public had adequate opportunity to voice their opinions for Randolph Woods, and they endeavored to incorporate ideas generated through public discussion wherever appropriate.

Public meetings served as critical benchmarks during the project process; they informed the public on project progress and provided an opportunity for feedback and discussion. Attendance lists and meeting minutes can be found in the appendix of this study.

A 20-question public opinion survey was created by the consultant team to gather valuable information from the residents of the community. This survey gathered important background data, current recreation habits, and desired facilities within the Preserve. A total of 465 responses were received during the master plan process.

Plan Goal

The goal of the Master Plan was set by the Ad Hoc Committee in their 2007 report:

“The Randolph Woods Nature Preserve aspires to be a vital part of Malvern’s park system, provide nature based passive recreation and community activity, while promoting natural resource conservation, land stewardship, and related education.”



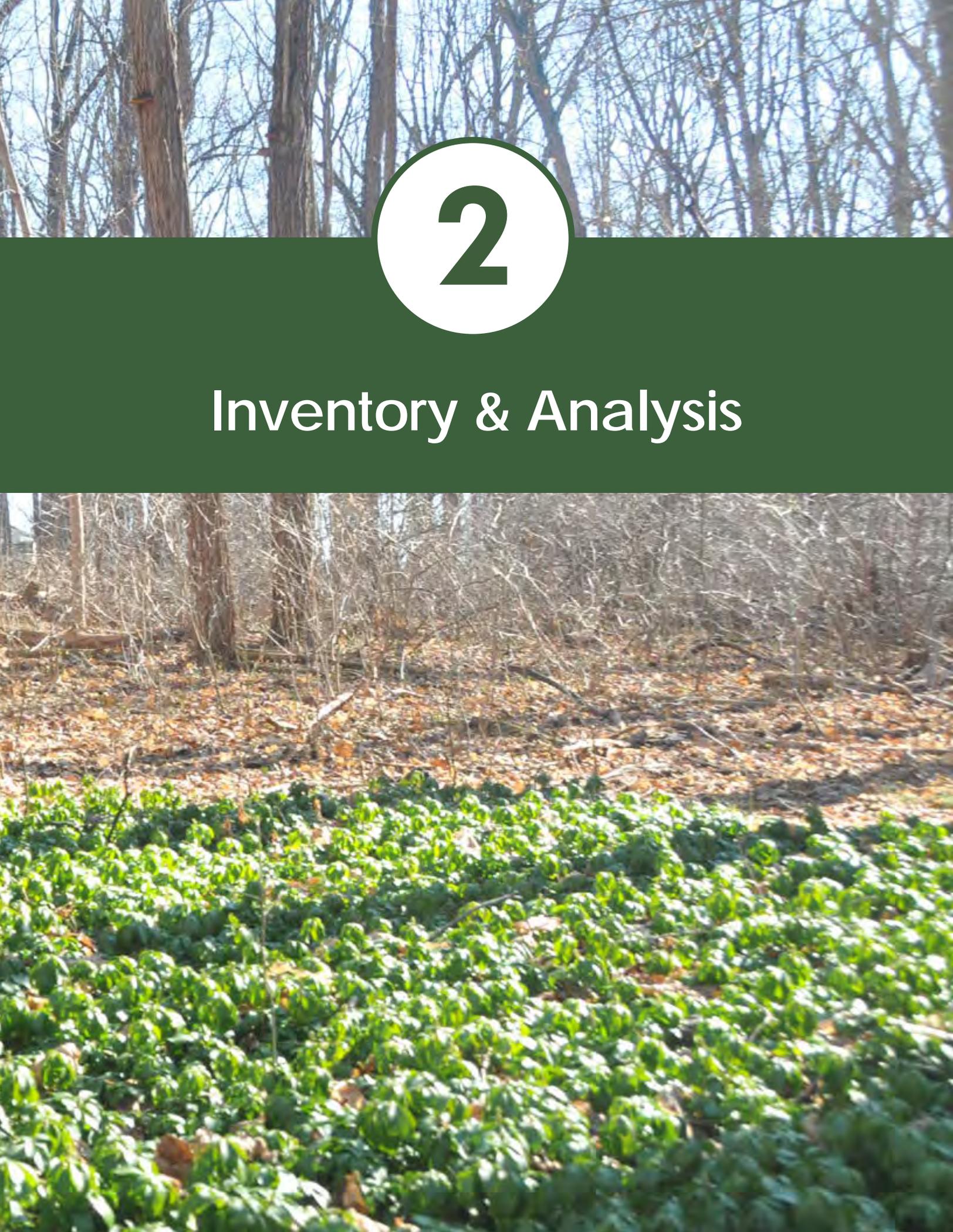


Data Collection & Methodology

The data of this report was compiled from various sources, including the Malvern Borough, publicly available GIS mapping, previous planning studies, previous surveys of the site, and field reconnaissance data obtained by the consultant.

Field maps and planning documents were created using Geographic Information System (GIS) base mapping. This information was combined with base aerial photography, Municipal boundaries, roadways, sidewalks, parcels, and other identifying land use features.



A photograph of a forest with bare trees, overlaid with a dark green horizontal bar at the bottom. A white circle with a dark green border is centered on the bar, containing the number 2.

2

Inventory & Analysis



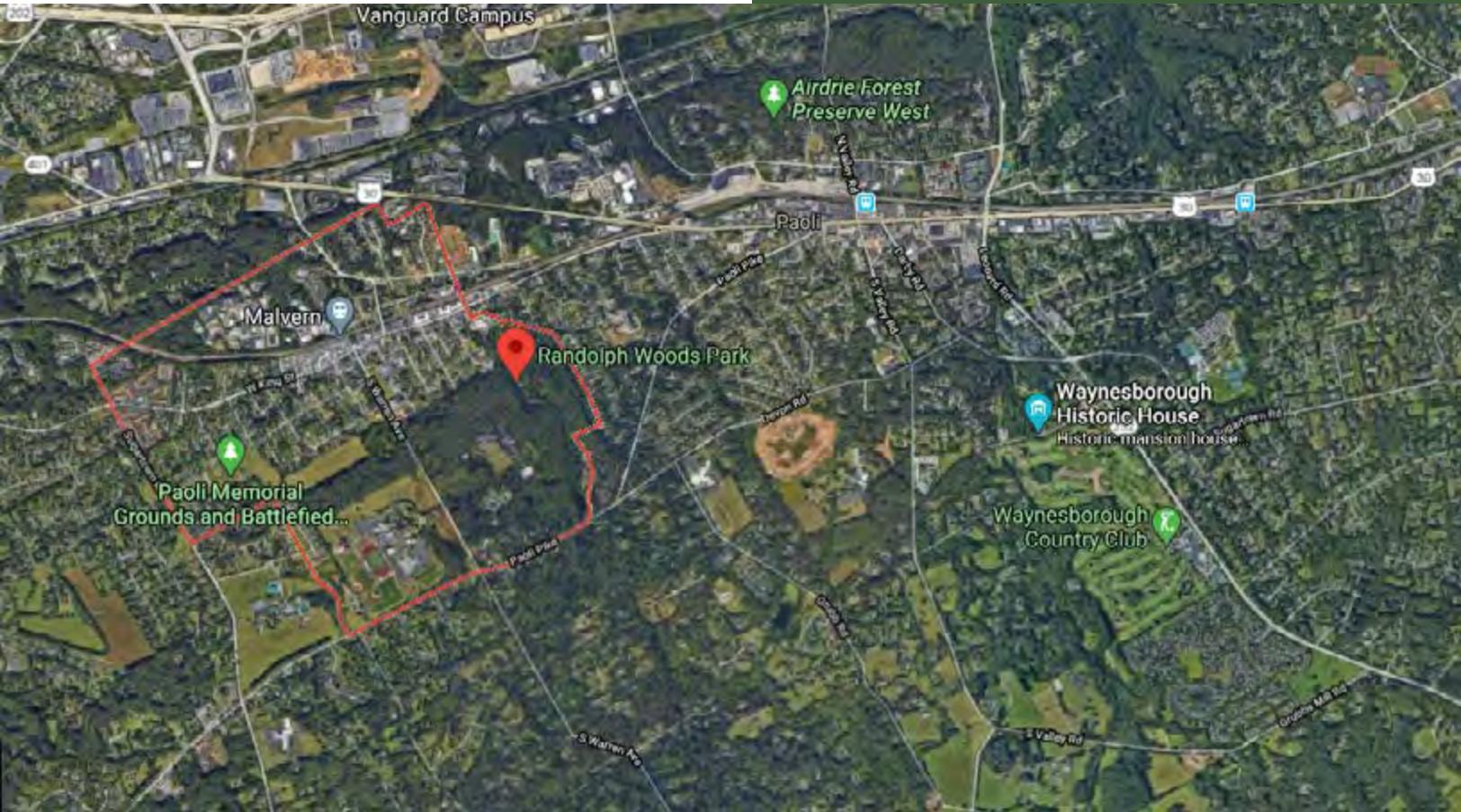


Site Description

Randolph Woods Nature Preserve is the largest park in the Malvern Borough park system. The Preserve is 43 acres in size. The Preserve is in the southeastern portion of the Borough along the border with Willistown Township. The site is characterized by steep wooded slopes and a gently flowing creek, the Ruth Run. The headwaters of the Ruth Run start within the northern portion of the site and the stream valley traverses the central portion of the site. In 2001 Randolph Woods was identified as an important regional resource for water quality and the land was preserved from development via a Conservation Easement held by Willistown Conservancy; the Easement covers 38 acres within the 43 acre Preserve.

Regional Context

Malvern Borough is located in Chester County 25 miles west of Philadelphia. The Borough is located south of Rt 30, with easy access to S.R 202 a regional highway corridor. The Borough is also home to a SEPTA regional rail station located on the Paoli/Thorndale Line. The station is located on King Street the town's 'Main Street' home to shopping, restaurants, office, and homes. Randolph Woods is located one-quarter of a mile south of King Street. The Borough is a truly walkable community and the central location of the Randolph Woods lends itself to be a premier recreational amenity for the Borough community.

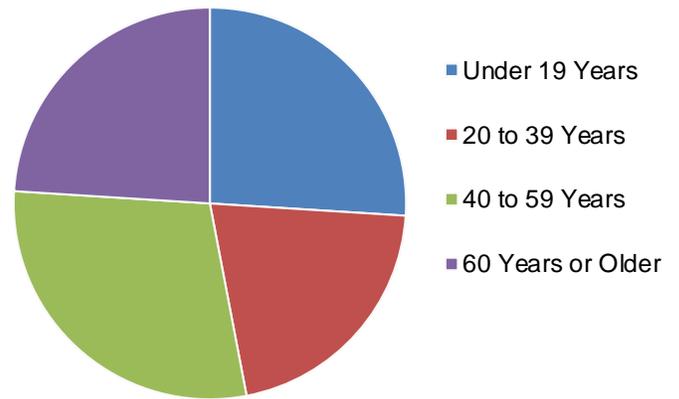


Demographics

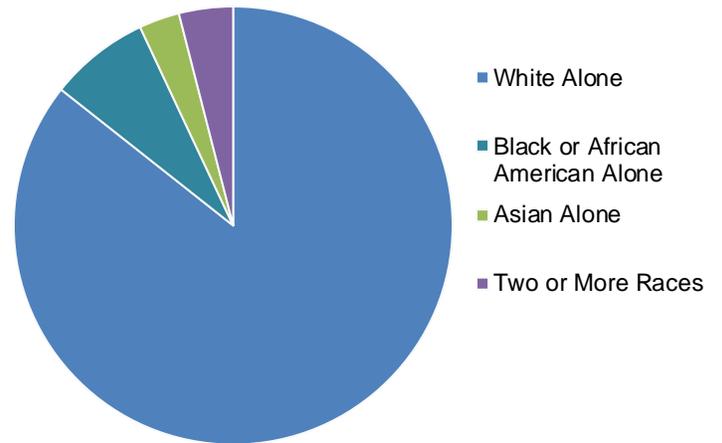
The 2010 US census estimated the Borough population at 2,998 inhabitants. Recent 2018 population estimates of 3,440 indicate a 14.9% growth in Borough residents. This growth in population has coincided with new development within the Borough, both in the housing and commercial sectors.

The Borough population has a median age of 42.5 and the population is spread fairly evenly across age groups with 23% under the age of 18, 9% from 18 to 24, 23% from 25 to 44, 27% from 45 to 64, and 19% who were 65 years of age or older. The Borough has a median household income of \$93,906, 1.4 times above the metropolitan area. The Borough residents are well educated with 95.7% having graduated high school . 63% hold a bachelor's degree or higher. The Borough race is predominantly white at 86.2% with 7.4% black or African American, 2.4% Asian, and 3.8% being two or more races.

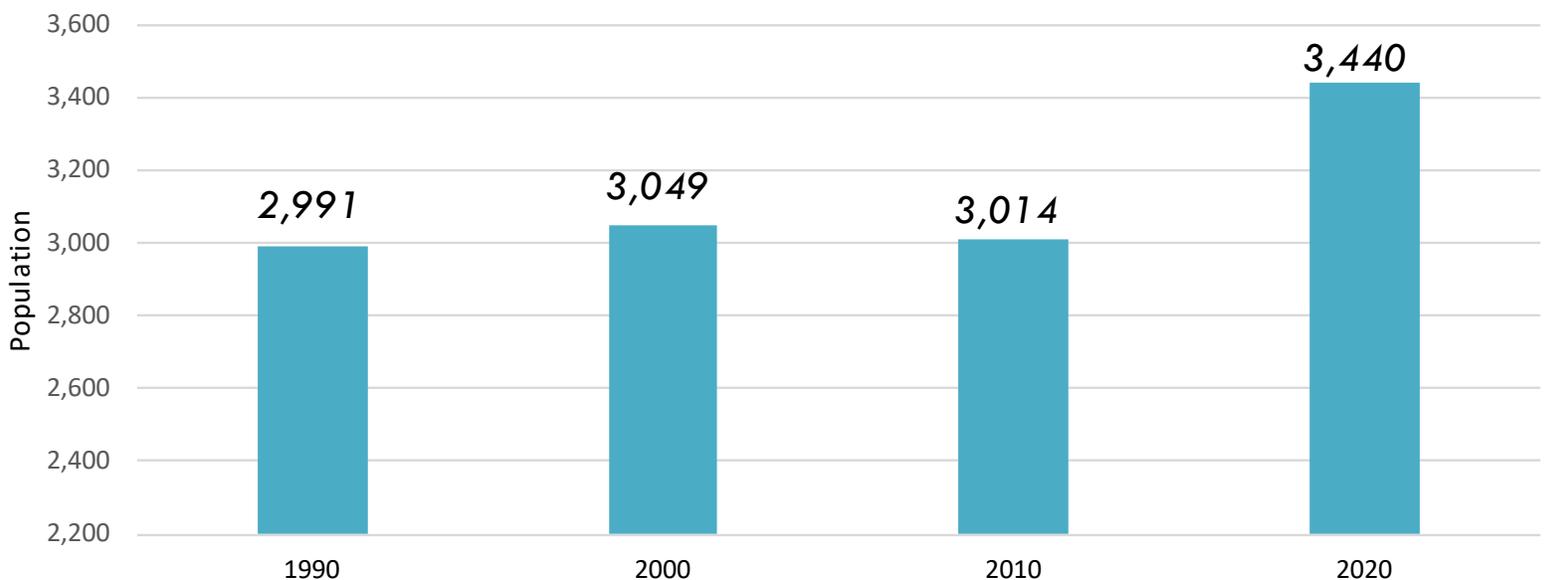
Age



Race



Malvern Borough Population 1990-2020



History

Like much of Chester County the Borough and the surrounding land was predominantly used for agriculture throughout the 1800's and into the early 1900's. Historical aerials of the site from 1932 depicts the area as pasture with few mature trees.

The sole site structure is a pump house built around 1890. This was purchased by the Borough from David Evans in

1945. The site's springs served as a water source for the Borough. Historical aerials from 1958 and 1971 depict the pump house and water tower. In 1996, the Borough water system was sold to Aqua. Today, the remnants of the water tower are gone however the pump house is still on site. A full explanation of the Borough water system can be found in the Ad Hoc Committee Dec 2017 report in the master plan report appendix.



1931



1958



1971



2017

Zoning & Land Use

Randolph Woods Nature Preserve is zoned POSC - Public Open Space and Conservation - and identified on the Borough Official Map as Open Space. Permitted uses are limited to passive recreation; active recreation can be permitted only upon the grant of conditional uses approval by the Borough Council. It should be noted that the Conservation Easement restricts some of the passive recreation activities that are listed in the Borough zoning.

Rules and Regulations for Borough Parks are laid out in Chapter 139. Parks and Recreation of the Borough Code.

Planning Documents & Easements

Randolph Tract Master Plan, 1992

Prior to the sale of the water system, the Borough conducted a master plan study to determine the public desires for facilities and activities on the site. The plan drew the following conclusions:

- There is a strong desire from the Borough and the community that the property remain in its natural state.
- The Borough should act to protect the public water resources on the site.
- Establish greater accessibility for hiking, walking, and environmental education.

The master plan recommended the improvement and development of the site trail system, along with the incorporation of basic site amenities such as parking, picnic grove, and seating area.

Willistown Conservation Trust Site Easement, 2001

In a follow-up to the 1992 master plan, the Borough entered into a conservation easement with Willistown Conservation Trust in 2001 (a full copy of the easement can be found in the appendix of this report). Among the reasons for entering into the easement it states:

"...protection of the Conservation Easement Area will enhance the purpose of preserving and protecting open space, water resources, sensitive natural areas."

The easement agreement defines the terms of site access, recreational uses and activities, and site improvements. As per the terms of the easement, the site is to be open to public access; recreational activities are to be passive in nature, as defined by the conservation easement; and site improvements are to be limited to:

- Fencing,
- 400 square foot picnic shelter,
- Birdwatching Platform,
- Bridges, and
- Unpaved trails.

Malvern Borough Comprehensive Plan, 2012

The Borough Comprehensive Plan was adopted by Borough Council June 19, 2012. The plan serves as a guiding document for development in the Borough, with the objective, *“to retain and enhance our small-town character, which makes the Borough a special place to live and work.”* Chapter 11 of the plan addresses Parks, Recreation, and Open Space Plan. It recommends the following for Randolph Woods Nature Preserve:

“Pursue the design set forth in Map 11-2 (see appendix). Complete improvements to existing trails and the trail network as well to the small picnic grove that have been partially completed, and construct the second of the two recommended bridges. Pursue installing interpretive signs to highlight tree species, wetlands, and other natural features.”

Available at: <http://www.malvern.org/plans-and-studies/2012-comprehensive-plan/>

Malvern Willistown Greenway Master Plan, 2013

This multi-municipal plan aims to connect Willistown Township’s and Malvern Borough’s multiple public resources by a safe and well-marked trail system. With the primary objective to, *“encourage walking or non-motorized means of transportation with healthy benefits to both the users and the environment.”* The plan proposed a trail network made up of sidewalks to hard surface trails, mown paths, and soft surface paths for use by pedestrians, bicycles (where permitted), and strollers. The Preserve falls within the central portion of the greenway and serves as the major connector between Borough hall and Greentree Park in Willistown. The proposed route is as follows:

“...It will follow the north side of Second Avenue to Church Street where it will cross to the south side. It will continue just inside (south of) the property line of the Malvern

Retreat property to the Borough’s Randolph Woods. A trail easement has been discussed and found to be acceptable to the Retreat Board with proper signage and new or relocated fencing to direct trail users. The Greenway will connect to an existing soft trail network in Randolph Woods, including a link through this large Preserved open space to an existing trail. Randolph Woods is connected to the Duffryn Trail Corridor and the trail will link to Duffryn Avenue at 2nd Avenue...”

The Malvern Borough portion of the above route is documented on the Borough’s Official Map.

Available at: <http://www.malvern.org/plans-and-studies/malvern-willistown-greenway/>

Malvern Borough Walkability Study, 2015

Completed in 2015 by the Borough Planning Commission, the study’s primary objective is to provide pedestrian access to parks, the battlefield, and places of interest. The Study identifies the lack of sidewalks surrounding the Preserve. However, it did not recommend sidewalk or wayfinding signage around the Preserve.

Available at: <http://www.malvern.org/plans-and-studies/2015-malvern-planning-commission-walkability-study/>

Circulation & Access

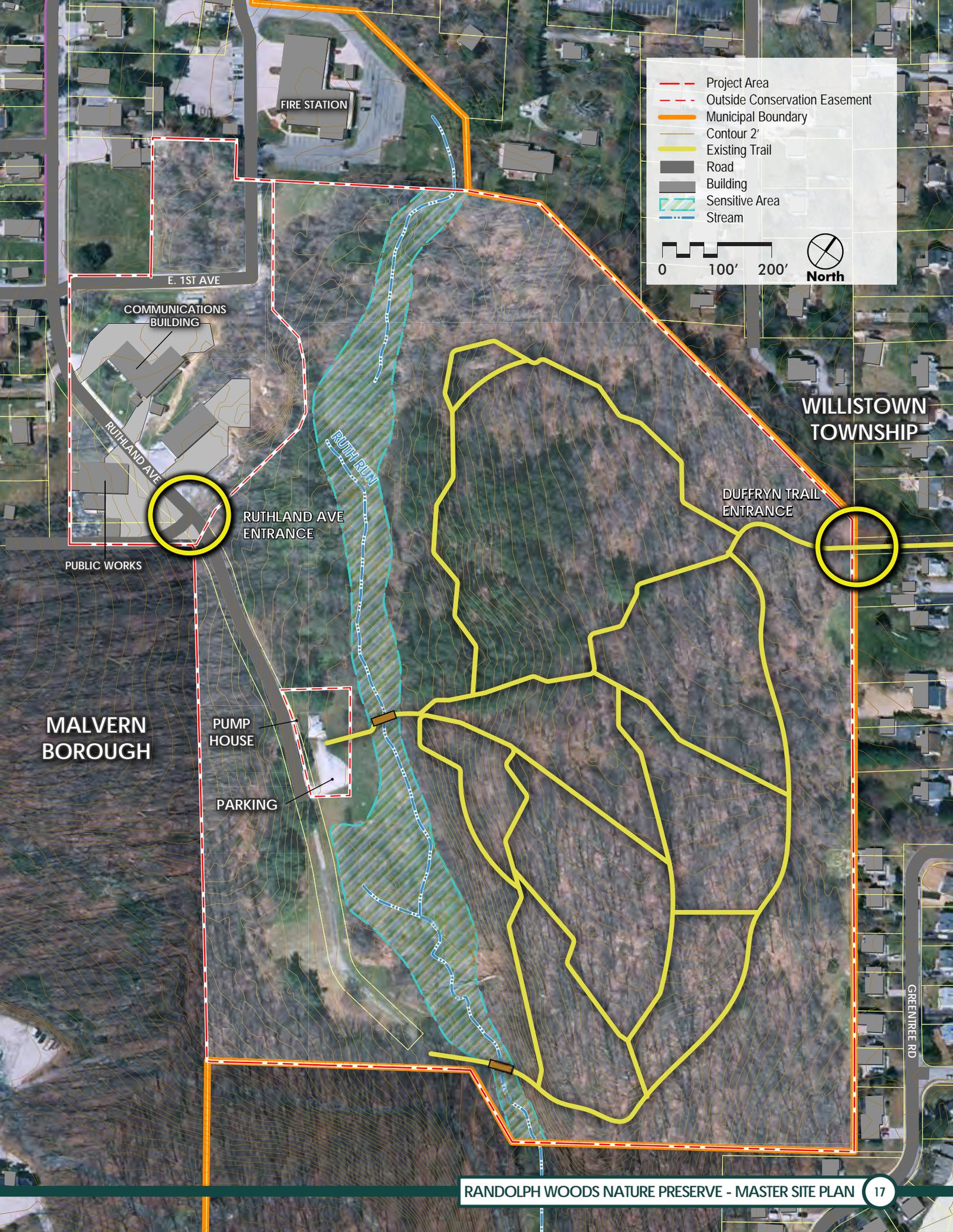
The site has both pedestrian and vehicular access.

Pedestrian Access is via the Duffryn Trailhead, located along the central portion of the eastern property border. A 30-foot wide easement conveys a soft trail path from Duffryn Ave to the Preserve. The trail extends into the central part of the Preserve, crossing the Ruth Run via a footbridge and delivering pedestrians to the pump house parking area.



Vehicular access into the Preserve is provided via Ruthland Ave. Ruthland is part of the surrounding neighborhood grid of streets. Prior to reaching the Preserve, Ruthland Ave passes through the Borough Public Works area. The last block of Ruthland Ave approaching the Preserve deviates from the residential grid and lacks sidewalks. The change in streetscape and lack of definition between road and Public Works leaves newcomers to the Preserve wondering if they are in the right place. As Ruthland Ave enters the Preserve, it narrows to 16-18 feet in width. The paved portion of the road terminates at the Pump House parking area. A gravel road extends south through the Preserve prior to terminating in the area near Ruth Run. Historically, the road had extended south into the neighboring Malvern Retreat Property.





- Project Area
- Outside Conservation Easement
- Municipal Boundary
- Contour 2'
- Existing Trail
- Road
- Building
- Sensitive Area
- Stream

0 100' 200' North

Existing Facilities & Structures

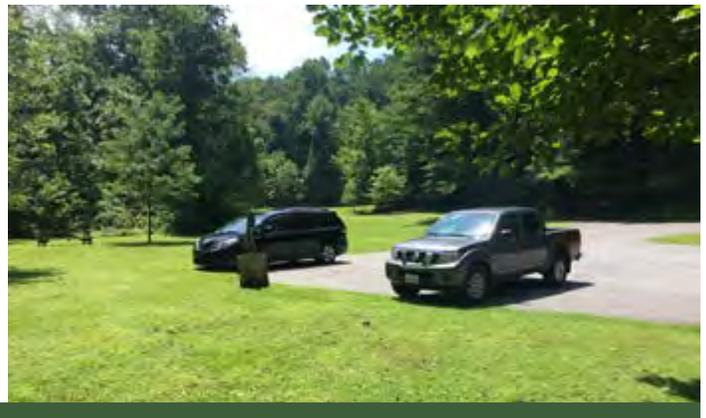
The only building in the Preserve is the historic Pump House. The structure presents opportunities for historic interpretation.



Two wooden foot bridges have been constructed across Ruth Run, the first central to the site at the Pump House and the second near the southern boundary. The bridges are sited low in the floodplain and their approaches are not all ADA accessible. Located near the southern bridge are remnants of a former crossing in the form of concrete abutments on both sides of the stream.



A small asphalt parking area approximately 76 feet by 55 feet in size can accommodate 8-12 cars. The parking area is located along the south facade of the Pump House and the paving extends to the concrete landing of the Pump House door. The paving is within 75 feet of the stream's edge and the vegetation between is mown lawn.



A network of earthen hiking trails traverses the woods in the eastern side of Ruth Run. There is a total of approximately 1.4-miles of trails in this area. Due to improper location in the landscape, some trails are showing signs of severe erosion. There are additional foot trails that enter the Preserve from adjoining private residential homes located along Duffryn Ave. Unofficial mountain bike trail elements have been constructed within the Preserve, without the permission of the Borough.





FIRE STATION

E. 1ST AVE

COMMUNICATIONS BUILDING

RUTHLAND AVE

PUBLIC WORKS

MALVERN BOROUGH

PUMP HOUSE

PARKING

FOOT BRIDGE

FOOT BRIDGE

WILLISTOWN TOWNSHIP

GREENTREE RD

- Project Area
- Outside Conservation Easement
- Municipal Boundary
- Contour 2'
- Existing Trail
- Road
- Building
- Sensitive Area
- Stream

0 100' 200'

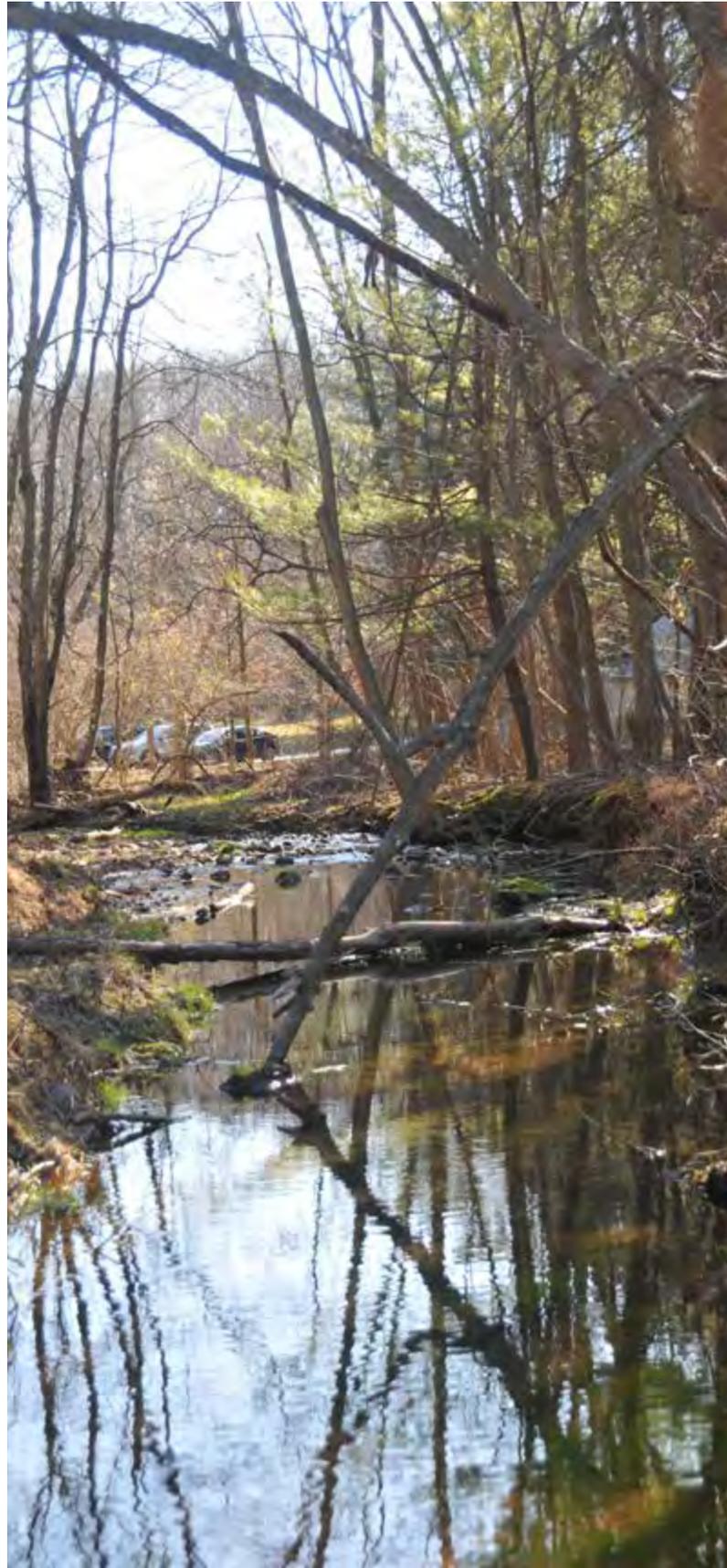
North

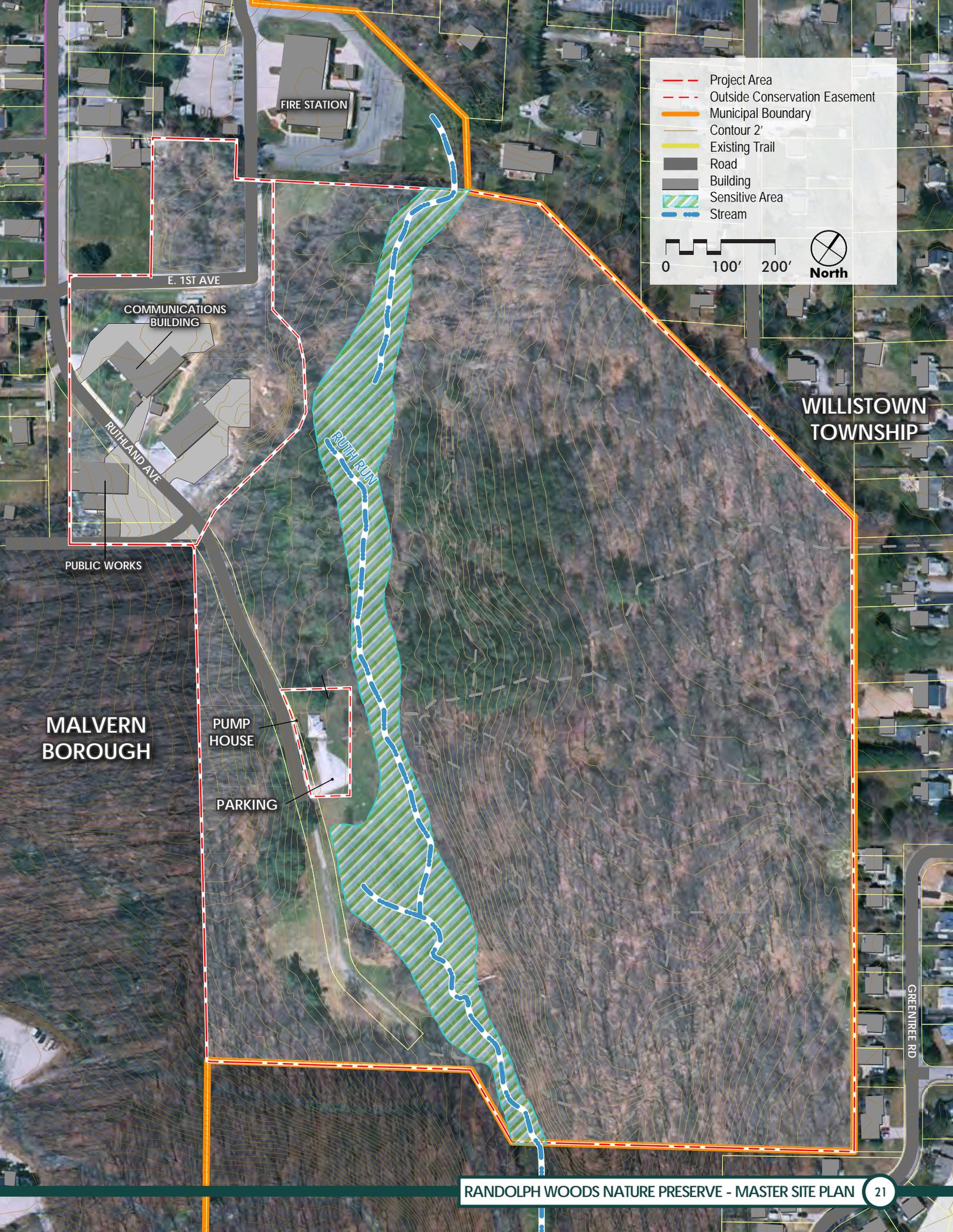
Hydrology

Site Hydrology is dominated by area seeps and springs that form Ruth Run. Ruth Run runs north to south through the central part of the Preserve. Ruth Run is a tributary to the East Branch of Crum Creek, located about three-quarters of a mile south of the site. Crum Creek is classified by the Pennsylvania Department of Environmental Protection (PaDEP) as a High Quality (HQ) water way stream. Crum Creek is the largest drinking water source for area residents. Two reservoirs, the Lower Crum Reservoir and the 391-acre Springton Lake Reservoir, supply drinking water for 200,000 area residents.

The Crum Creek and its tributaries are classified as Impaired Streams by PaDEP, and as such their host municipalities are subject to the requirements of MS-4 (Municipal Separate Storm Sewer System) planning and permitting.

There are mapped wetlands within the site. However, additional existing wetland vegetation and habitat found around the stream headwaters and along the stream corridor indicate the presence of added site wetland.





- Project Area
- Outside Conservation Easement
- Municipal Boundary
- Contour 2'
- Existing Trail
- Road
- Building
- Sensitive Area
- Stream

0 100' 200'

North

FIRE STATION

E. 1ST AVE

COMMUNICATIONS BUILDING

RUTLAND AVE

PUBLIC WORKS

MALVERN BOROUGH

PUMP HOUSE

PARKING

RUTLAND RUN

WILLISTOWN TOWNSHIP

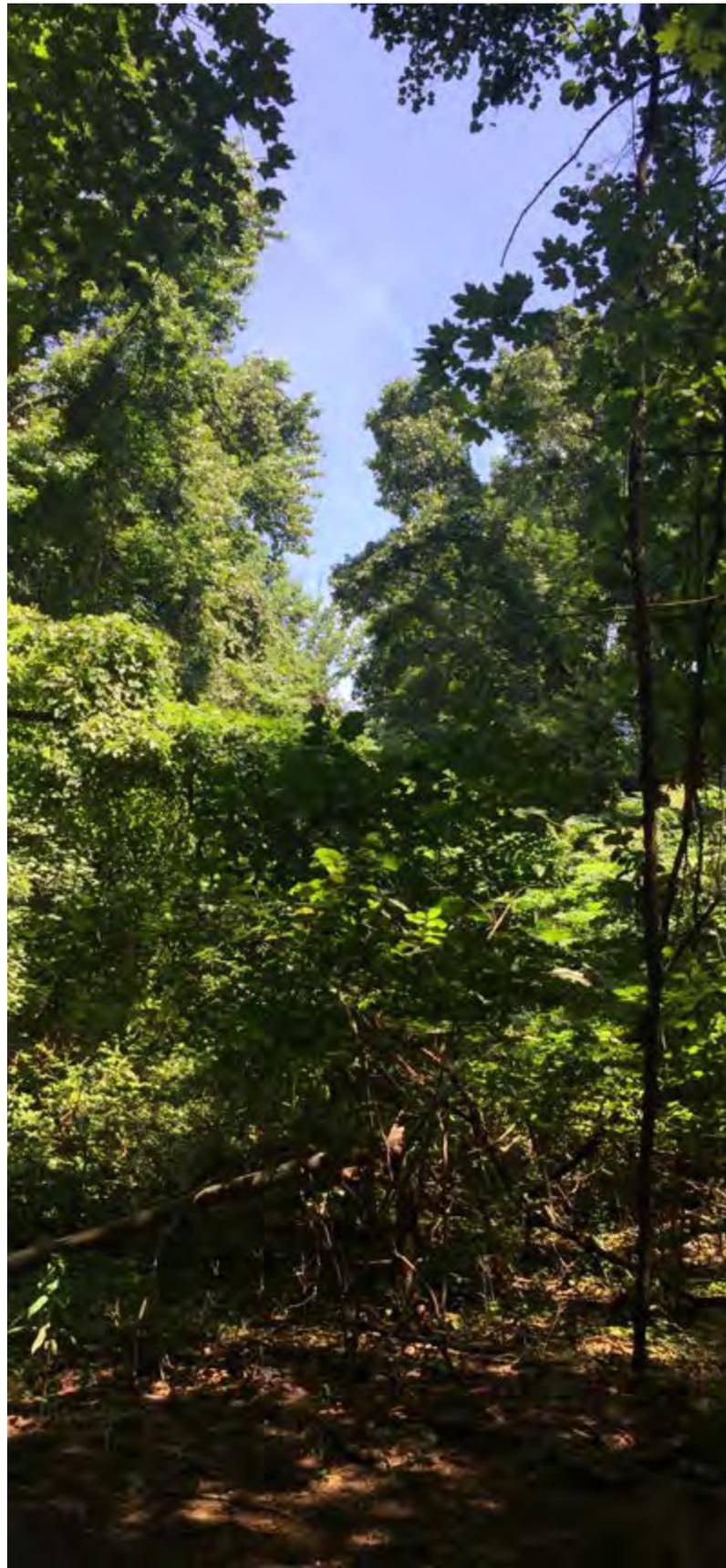
GREENTREE RD

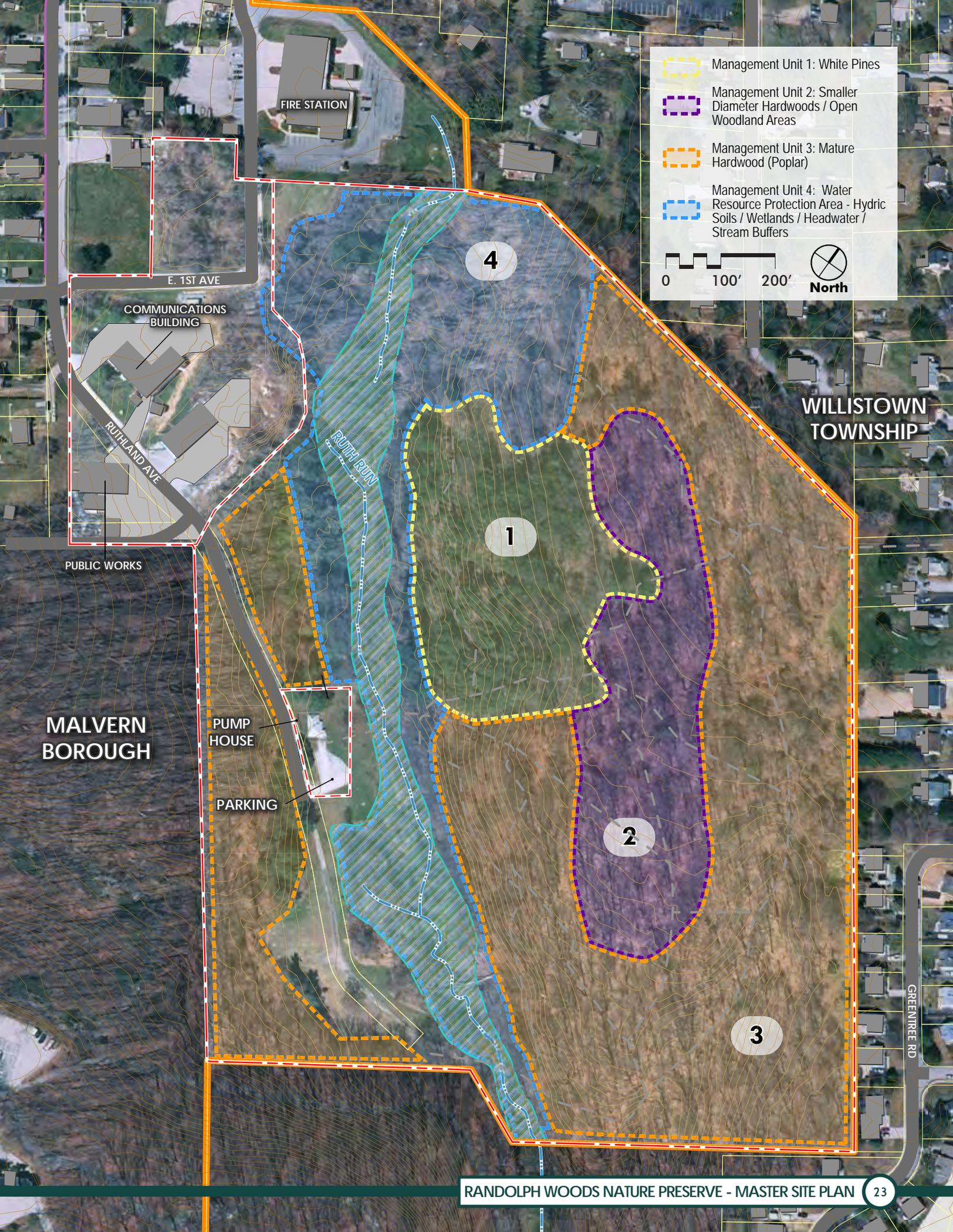
Site Forest

The Forestry Management Report divides the site into four management units:

- Management Area 1: White Pine Plantation
- Management Area 2: Smaller Hardwood / Open Woodland Forest
- Management Area 3: Mature Hardwood Forest
- Management Area 4: Water Resource Protection

There is a total of 35.7 acres of forest canopy within the Preserve. In general, the forest is in severe decline. Intense deer browsing has eliminated the natural forest floor vegetation. This lack of native vegetation allows for invasive plant species to thrive. This can be seen happening both at the edges of the Preserve and within the forest where trees have died, allowing sunlight to hit the forest floor. Due to their ability to adapt to poor conditions, invasive species can quickly spread, often casting dense shade, and eliminating the possibility of native tree seedlings or understory plants from growing. If left unchecked, this cycle will lead to the elimination of the forest canopy.



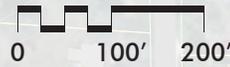


Management Unit 1: White Pines

Management Unit 2: Smaller Diameter Hardwoods / Open Woodland Areas

Management Unit 3: Mature Hardwood (Poplar)

Management Unit 4: Water Resource Protection Area - Hydric Soils / Wetlands / Headwater / Stream Buffers



WILLISTOWN TOWNSHIP

4

1

2

3

FIRE STATION

E. 1ST AVE

COMMUNICATIONS BUILDING

RUTHLAND AVE

PUBLIC WORKS

MALVERN BOROUGH

PUMP HOUSE

PARKING

RUTH RUN

GREENTREE RD

Flora & Fauna

Applied Ecological Services (AES) conducted a series of site visits throughout the spring of 2020 to identify site flora and fauna. AES ecological assessment reinforces the forestry assessment. Intense deer browsing pressure is very evident. Dense deer herds were observed in the pine plantation management unit. Very little healthy native understory remains. Native understory species observed include plants deer tend to avoid, such as spice bush, American holly, and arrowwood viburnum. Many invasives were identified throughout the site, including:

- Bush honeysuckle (*Lonicera mackii*),
- Multiflora rose (*Rosa multiflora*),
- Japanese Angelica tree (*Aralia elata*),
- Lesser celandine (*Ficaria verna*),
- Garlic mustard (*Alliaria petiolata*),
- Vine honeysuckle (*Lonicera japonica*), and
- Wineberry (*Rubus phoenicolasius*)

Areas of the forest do offer a glimpse of healthy ecosystems; a bullfrog and a spring ephemeral plant, bloodroot (*Sanguinaria canadensis*), were observed at vernal pools in MU #3.

AES identified MU #4, the headwaters area, as a critical habitat area. There are National Wetland Inventory mapped wetlands in this area. It was noted that the existing site wetlands exceed what is currently mapped and will likely need to be delineated moving forward. The upper half of the MU is comprised of wetland complex habitat that is suitable bog turtle habitat.

The area does receive stormwater inputs via pipes, lawn sheet flow, and pavement sheet flow. Aggressive invasive species such as common reed (*Phragmites australis*), Japanese hops (*Humulus japonicus*), and reed canary grass (*Phalaris arundinaceae*) were identified on site. These species should be a top priority to remove and these areas restored.

The map to the right identifies AES's key observations. Their full report can be found in the master plan appendix.





Earl, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, source: Earl, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

type

- Conifer Stand
- Erosion
- Invasive
- Meadow
- Restoration Recommendation

- SAV
- Storm Water
- Stream
- Vernal Pool
- Well

- Well
- Wetland
- Wildflowers

Soil Type

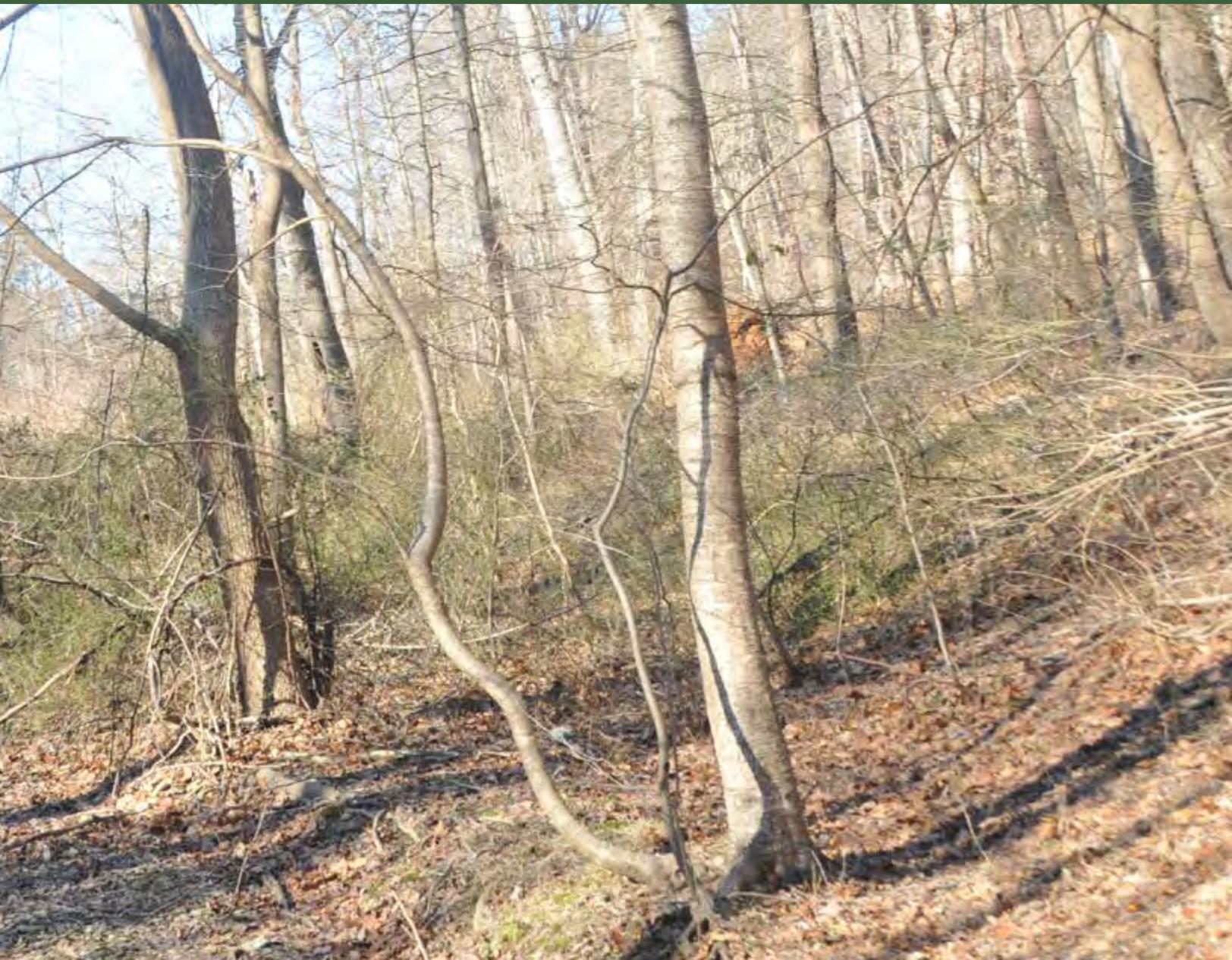
- GgB
- UugB
- GIA
- MaC
- MaD
- MaE
- Wetlands





3

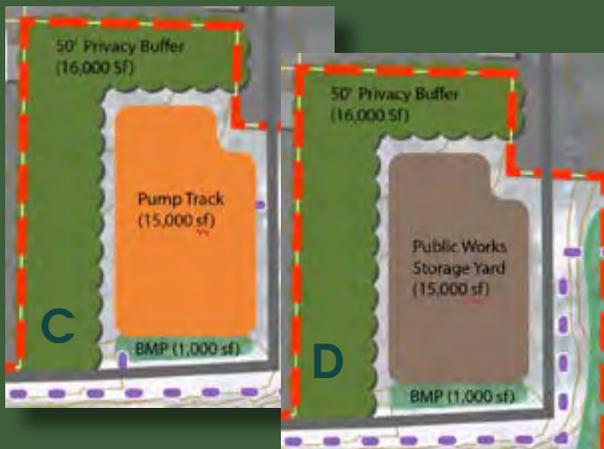
Recommendations



Preliminary Concept Plans

Two preliminary plans were presented for public feedback. Each plan included a picnic area and nature-based play area as well as an ADA compliant loop trail. Concept A limited intrusions into the proposed restored interior forest habitat. The concept A trail network was limited to a single loop trail and the Duffryn Trail. Concept A proposed 2 miles of trails and pedestrian facilities, while Concept B expanded upon the existing trail network and proposed 3.3 miles of trails and pedestrian facilities.

Alternatives for the 'First Avenue Parcel' were presented and explored through four bubble diagrams (see below), each diagram depicting a different use for the current unused space. Option A depicted a 15,000 square foot playground. Option B depicted a 10,000 square foot pump track and 5,000 square foot playground. Option C depicted a 15,000 square foot pump track. Option D depicted a 15,000 square foot public storage yard. All options included a 50' privacy buffer.



Concept A



Concept B



Public Consensus

The intent and goals for the Randolph Woods Preserve were established during the original master plan and solidified in 2001 when the Borough entered a Conservation Easement with Willistown Conservation Trust. During the master plan process, there was a strong public desire to incorporate mountain biking as a permitted activity within the Preserve. After much consideration of the easement's stipulations, the Master Plan Committee determined that it was their responsibility to work within the framework of the existing Randolph Woods Preserve Conservation Easement as developed by the Willistown Conservation Trust. However, in understanding the public desire for recreational amenities for community tweens and teens (an age that can be difficult to engage) - the committee determined that, although mountain biking would not be allowed within the Preserve, there is an opportunity for a pump track geared towards mountain biking; this would be recommended for the First Ave parcel (an unused area of the Preserve outside of the conservation easement).

Trail development priorities should focus on eliminating and rerouting trails with erosion issues. The future trail system should strike a balance between habitat and public access. A larger perimeter trail with smaller interior hiking loops (which accommodate varied user experiences and unique interpretive opportunities) is more desirable than a single perimeter loop trail.

Site Stewardship

Forestry Management Recommendations

Site forestry recommendations for the next 10 years are laid out in the Forestry Management Plan (see appendix). The plan focuses on controlling deer and invasive plants for the first 1-5 years. Years 5-10 focus on selective tree removal to create canopy openings paired with understory restoration and seedling plantings. The goal of the forest plan is to create a healthy and sustainable forest capable of self-regeneration.

The master plan recommends deer fencing around most of the forest in the Preserve. This deer fencing would encompass the forest on the eastern side of Ruth Run, but not cross the stream. Fence stream crossings often collect trash and debris during floods, which can lead to openings in the fence and permit deer into the enclosure area. The fence is a substantial capital improvement; steady growth of deer populations in Southeastern Pennsylvania over the past 30 years justify the investment as a long-term insurance policy for restoration efforts within the Preserve. Smaller, temporary deer enclosures will be required for restoration plantings if a perimeter deer fence is not installed.

Ecological Restoration Improvements

Ecological restoration recommendations are laid out in the Randolph Woods Ecological Condition Assessment (see appendix). The assessment makes recommendations for each management unit.

Management Area 1: White Pine Plantation

Very limited removal of select pines is recommended to eliminate overcrowding and allow for the inclusion of some hardwoods into the forest canopy. Restoration understory plantings should focus on creating a blended ecotone understory between the white pine forest and adjacent forested wetland habitat. This focus on the transition between the two different habitats will lead to a diversity of habitat and animal species.

Management Area 2: Smaller Hardwoods / Open Woodland Forest

Select canopy thinning and removal of invasive tree stands is paired with pocket planting of native shrubs and warm season grasses. These savanna habitat pockets within the forest will improve nesting bird habitat.

Management Area 3: Mature Hardwood Forest

The selective removal of trees that crowd mature canopy trees is recommended. The rerouting of the southernmost trail should be a trail improvement priority. The implementation of interim measures such as the placement of water bars should be considered.

Management Area 4: Water Resource Protection

This area has been identified as the most sensitive habitat on site. Recommendations for invasive removal in this area are a priority. Additional BMPs should be implemented in areas that directly contribute to the headwater areas. This includes the conversion of lawn to meadow along First Ave; this area could be expanded via partnering with the adjacent fire house, adding their lawn to the meadow area. Installation of a vegetated swale/diversion berm in the eastern public works yard is recommended, as well as installation of a vegetative swale at the First Ave parcel.

There is an area of dense spruce planting that has eliminated forest floor planting, leading to rilling and erosion. The spruce should be removed, and a restoration planting of a successional meadow and hardwood tree saplings should be implemented.

Pipe inputs to this area should be properly dissipated and further exploration up watershed should be performed to determine if additional water quality BMPs can be implemented at the inlet source.



MALVERN
BOROUGH

WILLISTOWN
TOWNSHIP

GREENTREE RD

Stormwater Best Management Practices (BMPs)

Developed by the Pennsylvania Department of Environmental Protection (PADEP), *The Pennsylvania Handbook of Best Management Practices for Developing Areas* offers solutions for handling on-site stormwater. Best Management Practices (BMPs) that might be implemented within the Preserve include:

- Protect and restore riparian/forest buffers;
- Habitat restoration;
- Soil amendments to help infiltrate stormwater;
- Native tree planting;
- Native warm season grass planting;
- Rain gardens/bio-swales; and
- Diversion berms that help detain and infiltrate stormwater.

These facilities require site-specific soil tests to determine site suitability and the infiltration rates of the existing soils.

These BMPs can have a direct positive impact on preserving and enhancing water quality in the Preserve. The opportunity for education exists through the placement of interpretive signage to educate Preserve visitors about watershed water quality and how BMPs can positively impact all sites. These improvements and educational signage could help fulfill Borough MS-4 requirements.





Existing

- Contour 2'
- Stream
- Sensitive Area
- Parcel Line
- Sidewalk
- Trail
- Road
- Building
- Project Area
- Outside Conservation Easement
- Municipal Boundary

Proposed

- Hiking Trail 3-5'
- Stone Dust Trail 5'
- Sidewalk 4'
- Deer Fence
- Meadow
- Stormwater BMP
- Trailhead Improvements



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- Meadow
- Stormwater BMP
- Trailhead Improvements

MALVERN BOROUGH

WILLISTOWN TOWNSHIP

Design Elements

ADA Stone Dust Trail

A 5-foot wide compacted stone dust trail is proposed to provide an ADA-compliant trail option within the Preserve. The material provides a level and stable walkway while maintaining a rustic character. In key locations, the placement of boulders or logs along the edge can help prevent the migration of stone dust material. Benches should be located along the trail to allow users to stop and rest.

Hiking Trail

Hiking trails are the least expensive type of trail to install; however, they limit the types and number of trail users. Compacted earthen surfaces are primarily used for hiking and are often used to navigate the site in environmentally sensitive areas. Hiking trails do not meet strict ADA requirements; however, ADA trail guidelines should be referenced when determining final trail alignments.

Hiking trails will be 3-5 feet wide and composed of compacted earthen surfaces. A series of hiking trails currently exists throughout the site; the plan recommends the removal and realignment of some of these trails to eliminate stormwater erosion issues. Additional new trails are proposed. Hiking trails in the Preserve will be limited to pedestrian use.

Final trail alignments should minimize impacts to slopes and limit erosion. Trail design should follow best management practices:

- Improved/proposed trails to follow a curvilinear route that matches the terrain. Trails should be designed so that water will flow across and not along the trail (which would lead to erosion).
- Outsloping or cross slope: An outsloped tread is one that is lower on the outside or downhill side of the trail than it is on the inside or bankside. Outsloping lets water sheet across the trail naturally. The tread should be outsloped at least 5 percent. For ADA compliant trails, maximum cross slope should be 2%.

- Grade reversals or water dips: These are short sections of trail that change from climbing to descending, and then return to climbing. This reversal shortens the water flow along a path and enhances trail drainage.
- Waterbars: A waterbar is a built rock, log, and/or earthen structure placed perpendicular to the trail. Waterbars will intercept water flows along a trail and divert them. Waterbars do require the most maintenance and upkeep compared to other trail design devices and should be implemented as a last resort to alleviate trail erosion.

Sidewalks

Sidewalk design should conform to the Borough standard of a 4-foot wide brick and concrete surface. ADA curb cuts and crosswalks should be included. Though it is not required to include crosswalks at driveways, it is recommended that they be included at the two driveway crossings to define a clear pedestrian route through the Public Works area.

Footbridges & Boardwalk

The two existing bridges are constrictive to stream hydrology, which leads to bank erosion. These bridge approaches are not within ADA accessible slopes. New bridges should have a clear deck width of 5 to 6 feet with railings and should be located high enough to allow for high storm flows to pass beneath without significant obstruction. Wood structures would be in keeping with the rustic design vocabulary of the Preserve. The new bridges will require a "general" permit from PADEP.

There are areas along the stream corridor that have adjoining wetlands or sensitive habitat. A boardwalk is proposed in these areas. The boardwalk should have a clear deck width of 5-feet with toe railing. Wood or recycled plastic would be appropriate.

Restrooms

A restroom structure is proposed near the parking area, within the area not covered by the conservation easement. The structure should be connected to public water, sewer, and electric. The restroom should be located so that it is easily surveilled from the main driveway. The new restroom design should be economical and durable while offering a quality of design that can reinforce a cohesive Preserve identity. Two (2) unisex toilets are proposed.

Pavilion

A new pavilion can provide a place for people to gather while simultaneously functioning as a small event space. The new pavilion design should be economical and durable while offering a quality of design that helps to reinforce a cohesive park identity. As per the easement regulations, the pavilion should be no greater than 400 square feet in size. The pavilion is to be rustic in nature. Utilities services should include electrical, but water service is not anticipated. Picnic tables should be durable, easily cleaned, and accommodate wheelchairs.

Nature-Based Playground

Nature-based playgrounds use natural features such as boulders, landforms, tree trunks, and other natural elements in combination with manufactured equipment to create unique play environments, challenging children to use their imaginations and athletic skills. A 3,000 square foot nature-based play area with Fibar (manufactured wood product) safety surface is proposed.

Deer Fencing

Due to the site topography, a deer fence 10-12 feet in height is recommended. The fence material should be composed of heavy gauge, woven, and knotted galvanized metal mesh to hold up to the pressure of deer while maintaining an upright and taught fence line. To limit visual noise and allow for other wildlife to pass through, openings of 6 inches to 8 inches in size are appropriate. A 3-inch gap along the ground should be maintained near the wetland area to permit the free movement of turtles. Rot resistant wooden posts (such as black locust) should be used, and corner and gate posts should be reinforced. Gates should be self-closing and latching.





Interpretive Signage

The Master Plan offers opportunities for interpretive signage to educate the public on the history and natural processes of the site. These can vary in size, and should be designed to fit appropriately within the natural setting of the Preserve. The plan recommends 4-5 interpretative panels throughout the Preserve which can focus on the following topics:

- The importance of protecting stream headwaters;
- Stormwater Best Management Practices;
- Wildlife and habitat; and
- Site History.



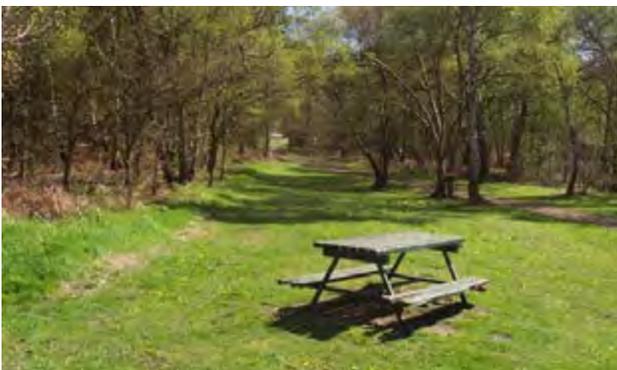
Rules, Trail, & Educational Signage

Trailhead signage clearly noting the Preserve purpose and goal, rules for use, importance of deer control, and trail types and difficulties should be located at all preserve entry points. Trails should be well blazed for wayfinding with the inclusion of key trail markers so trail users can provide their general location in the Preserve in an emergency. It is recommended that dog owners secure a no-fee dog waking (on leash only) permit to use the Preserve. This will allow the Borough to track dog walkers, require dog owners to sign an agreement about pet control and waste pick up. Permit holder could have a bright badge to signify they have their permits.



Habitat Boxes

Man-made fauna habitats in the form of wildlife boxes are proposed to encourage habitats for bats, native birds, and native bees. Wildlife boxes can be potential projects for local boy scouts, girl scouts, and volunteer groups.



Site Furnishings

Site furnishings provide additional amenities and create a sense of uniformity in the Preserve landscape. Some of these improvements include benches, trash receptacles, signage, bike racks, and dog waste stations. In high-use areas, such as the picnic grove and parking area, these amenities should be chosen to be durable, blend seamlessly into the natural landscape of the Preserve, and meet ADA standards. In other areas, such as along hiking trails, these amenities may be as simple as a log bench.

Draft Master Plan

First Avenue Area

New sidewalks along the northern edge of First Avenue would connect the existing Borough sidewalk system to the First Ave Parcel and deliver pedestrians to a new secondary entrance into Randolph Woods. A new Randolph Woods Nature Preserve sign is proposed on the southeast corner of First Ave and Ruthland Ave to create better awareness of the Preserve within the neighborhood.

A new pedestrian crossing of First Ave connects to a proposed ADA stone dust trail, leading into the northern portion of the preserve. The trail passes through a new meadow, a riparian planting area, and wetland restoration plantings. As restoration in this area is undertaken, it will take on a new more natural look while creating a gradual visual transition of habitat from Borough infrastructure to the Preserve forest. This area will be a prime location for public education, meeting requirements of the Borough's MS-4 permit.

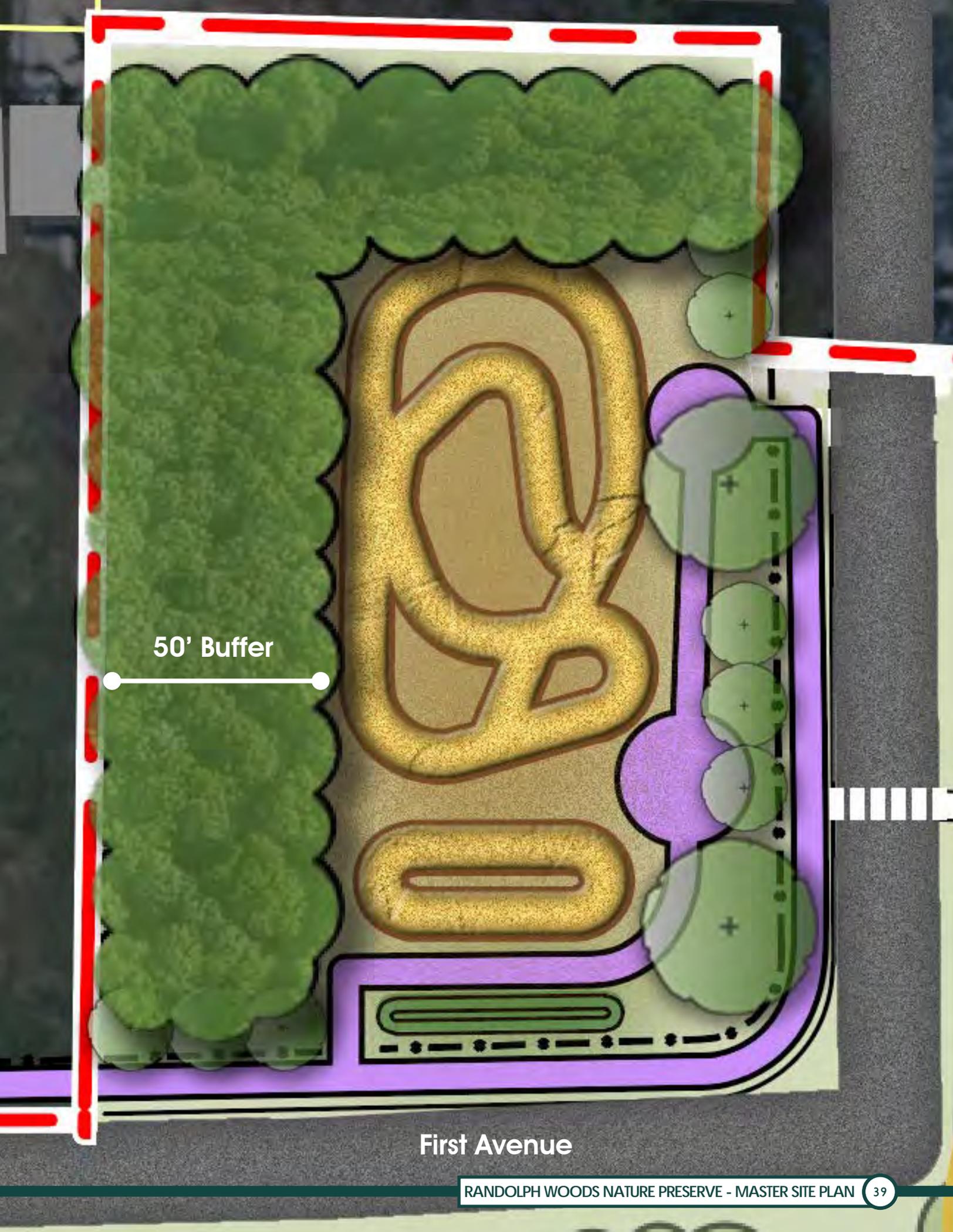
The First Ave Parcel has been identified as an appropriate location for a neighborhood scale pump track. Pump tracks are training facilities geared towards mountain bikers to develop skills and upper body strength. They can vary in size: 5,000-10,000 square feet for a neighborhood

scale park to 10,000-20,000 square feet for a regional park. A 5,000-10,000 square feet size pump track is proposed to meet the needs of the Borough's mountain biking community.

Street trees, fencing along the road, internal walkways, and a small sitting plaza can create a user-friendly space while also defining a safe separation between the roadway and park. A 50-foot wide site setback from adjoining residential properties will be maintained and include an evergreen buffer planting. At the southern end of the parcel, a vegetated swale or rain garden BMP will collect and treat stormwater prior to passing under First Ave and being dissipated into MU#4.

The close proximity of the new pump track to the new pedestrian entrance will require consideration of both educational and physical design elements to reinforce the no biking policy of the Preserve. Clear signage concerning rules, educational signage, incorporation of bike racks, and placement of entrances and fencing can all help to reinforce Preserve policies. Additionally, developing a working relationship with the mountain biking community as a potential volunteer group for Preserve projects in conjunction with the development of the pump track could help to foster a long-term understanding of the goals of the Preserve.





50' Buffer

First Avenue

50' BUFFER

ENTRY SIGN

E. 1ST AVE

COMMUNICATIONS BUILDING

RUTHLAND AVE

RUTH RUN

PUBLIC WORKS

WIDEN TO 20'

Pump House & Parking Area

It is recommended that the parking area be striped to clearly define parking areas and designate two ADA parking spaces with a shared van unloading zone. The asphalt extension of the parking leading to the Pump House should be removed. Along the northern and eastern edge of the parking a proposed vegetative swale BMP will collect stormwater runoff from the parking area and filter it prior to being dissipated within the Ruth Run riparian buffer area. Additional meadow planting in the open area between the parking and stream edge will provide water quality and habitat benefits.

The industrial chain link fencing surrounding the pump house should be removed and a security level estate style (metal picket) fence should replace it in closer proximity to the building. The fence layout should interact with the building to ensure access to the low rooflines are secure. The utility pole next to the pump house formerly had a large electrical transformer on the pole. It is recommended that soil testing be conducted in the vicinity of the pole to test for the presence of any PCBs and appropriate soil remediation actions taken if warranted.

The Pump House is not suitable for adaptive reuse for a bathroom due to the extensive cost to retrofit an ADA facility within the building. It is recommended that a separate standalone bathroom be built as a more economical and easier to maintain solution. The bathroom is sited in the area outside the conservation easement with clear sight lines from both the driveway and parking area. A small 225 square foot structure with two single user occupancy restrooms and an exterior drinking / bottle filler fountain is recommended. The restrooms will require public water and electricity. They could function as composting toilets or connect into Boroughs. If composting toilets are pursued the depth to water table will need to be explored to ensure the feasibility. Sewered toilets will require a grinder pump to connect to Borough Sewer.

ADA stone dust trails originate from the van unloading area connecting to the pumphouse, restrooms, and preserve trails to the east, south, and along Ruthland Ave. A new trail head is proposed at the intersection of the trails in proximity of the parking area. A few assessable benches should be included near the trail head along with a bike rack.

Regarding the future of the Pump House four options exist:

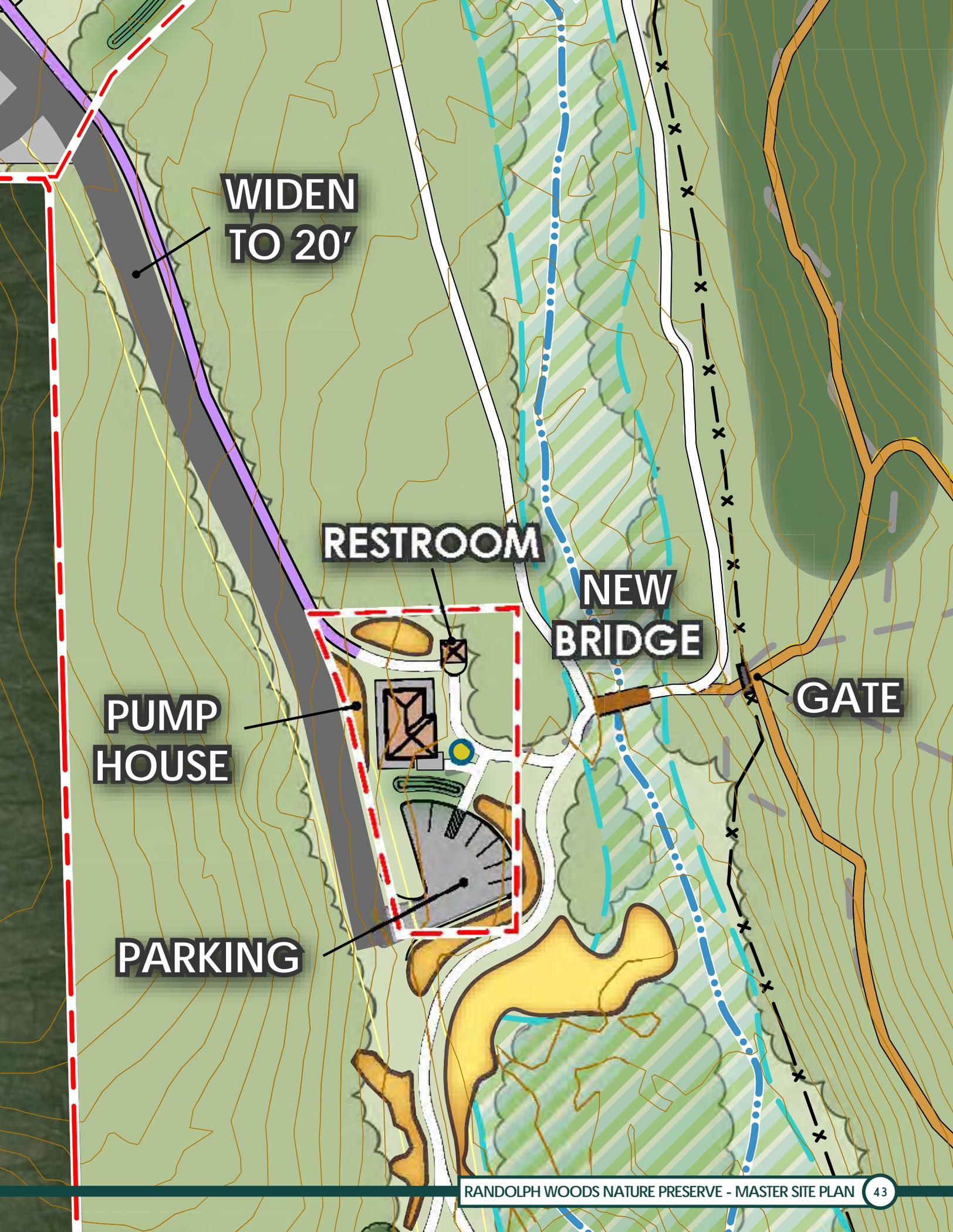
Renovate. Renovate so that it is usable building for historic interpretation and displays. The structure is 1150 square feet, with restoration costs estimated at a conservative \$350/SF, total renovation costs are estimated to be \$400,000. The cost of restoration to the building would need to be weighed against more critical preserve habitat restoration projects as well as be justified by the end use of the building. A feasibility plan should be developed for the structure restoration prior to a fundraising effort should this be the preferred option.

Modify. Explore options to partially demolish the walls and maintain the roof to create an open-air pavilion structure with an interpretive display centering around the spring box.

Interpretive Partial Demolition. Demolish most of the structure and leave the foundation walls up to a height of about 3 feet. Interpret the historic use and spring box that remains in the building. Precedent example of a similar historic building interpretation is Franklin Court which uses an analogous technique to display the home of Benjamin Franklin. This master plan suggests that this is the most realistic option.

Wait. Continue to use the building for maintenance storage, taking precautions to ensure the roof and walls are weather tight. The “Mothballing” of the structure for the time being, will preserve the structure allowing the potential use and interpretation to be revisited in the future.





**WIDEN
TO 20'**

RESTROOM

**NEW
BRIDGE**

GATE

**PUMP
HOUSE**

PARKING

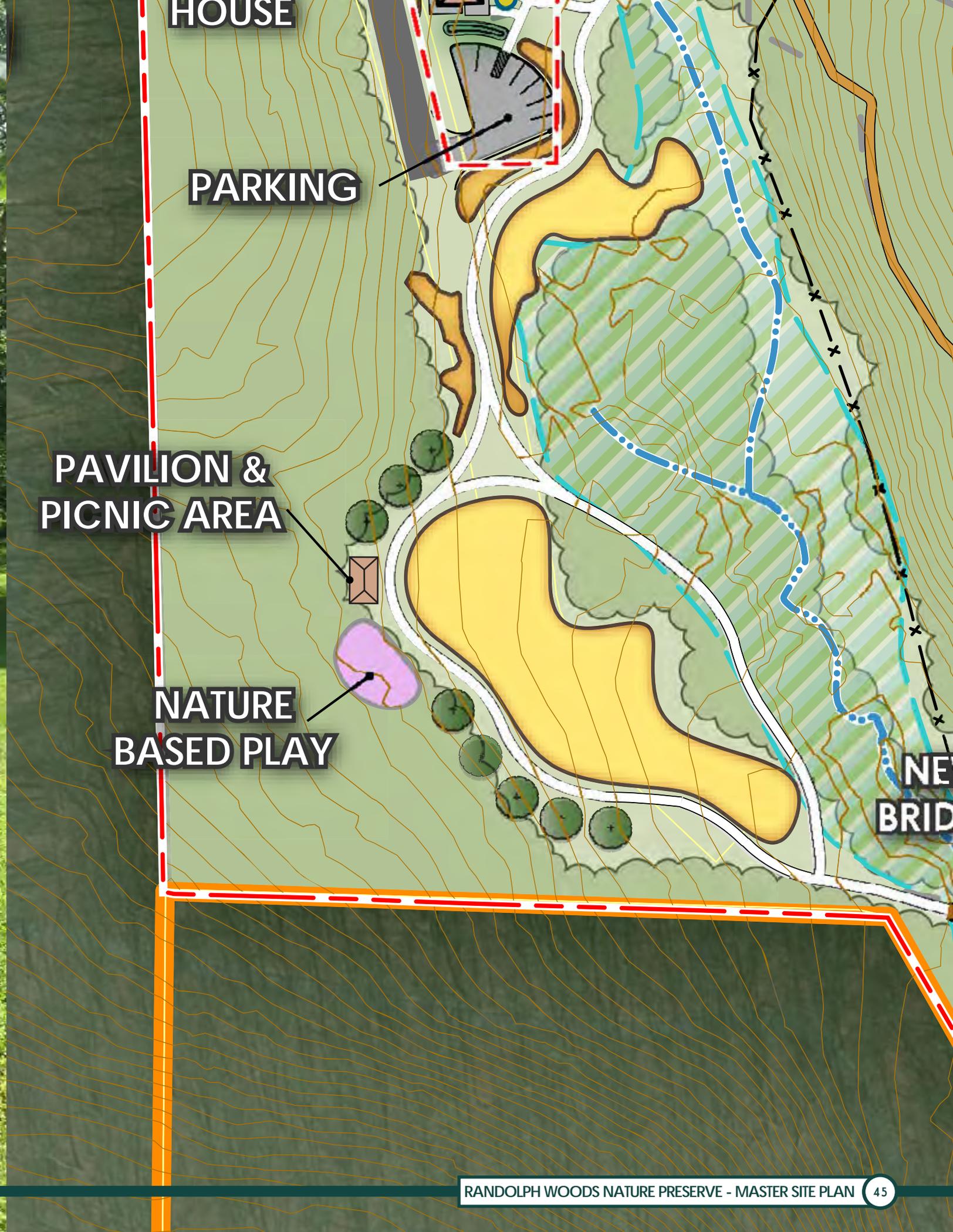
HOUSE

PARKING

**PAVILION &
PICNIC AREA**

**NATURE
BASED PLAY**

**NE
BRID**



Themed Loop Trails

Duffryn Trail

The Duffryn Trail runs through the central portion of the eastern forest and has been identified as a major trail connection in the Malvern Borough Willistown Greenway plan. As identified in the plan, this trail is to remain a dirt hiking trail. Though this section of the Greenway will not be truly ADA accessible, the master plan does recommend trail improvements to the Duffryn Trail to make it more accessible and address stormwater runoff. An improved footbridge near the parking area will meet ADA standards. The inclusion of switchbacks and level resting areas will address stormwater concerns while making trails more user friendly to a greater population.

Located along the trail is an outdoor classroom. Placed within a naturally level portion of the woods at the intersection of two major trail loops the classroom will offer a place for small groups to gather (10-15 people) and as a wayfinding landmark within the Preserve.

Trailhead amenities should be included at the Duffryn Ave entrance into the preserve along with plantings to denote a sense of arrival. Amenities should include Preserve map and rules, bike racks, and 1-2 benches.

ADA Headwaters Loop

A 5' wide ADA stone dust trail 0.36-mile loop trail is proposed for the northern area of the site along both the east and west banks of the Ruth Run. As the area passes through sensitive habitat and wetlands portions of the trail would be 5-foot wide boardwalk. A portion of the boardwalk will incorporate a 10x10-foot deck area with a bench at a key view area for educational interpretation and wildlife viewing. Interpretive Signage in this area can focus on the importance of headwater protection. Additionally, the trail would connect the new northern Preserve entrance to the pump house trailhead and picnic meadow areas. A new stream crossing at Ruth Run will be required at the northern limits of the trail. Due to its high location in the watershed and limited stream width it is

anticipated that a boardwalk structure can be used in this location. This trail would be outside the recommended deer fencing area so that there are no barriers (gates) that would impede trail users.

Pine Plantation Bird of Prey Loop

A 3' wide dirt trail is proposed for the pine plantation area east of the Ruth Run. The loop trail takes uses the existing trail network and incorporates new switch backs where former trails had steep slopes. This loop also includes a new trail along the northern edge of the pine plantation. The entire loop trail is 0.42-mile in length. Interpretive signage in this area focuses on the history of White Pine in Pennsylvania and this tree's importance as habitat particularly for nesting hawks and owls.

Hardwood Birders Loop

A 3' wide dirt trail is proposed for the mixed hard wood portion of the forest. The double loop trail incorporates the existing trail network, with a new trail switch back where former trails had steep slopes and erosion, and a trail realignment to intersect with the outdoor classroom. The upper loop trail is 0.50 miles long; the lower loop is 0.42 miles long and the full outer loop is 0.63 miles long. This trail system would connect into the Picnic meadow loop trail via an improved footbridge over Ruth Run. The trails system interacts with all areas of the forest from stream edge, to understory restoration openings, to mature canopy trees, and provides an opportunity for bird and wildlife viewing. Interpretive Signage focuses on the decline in viable bird habitat in typical suburban forests and highlights the importance of restoration measures taken to improve Randolph Woods habitat.

Full Loop Trail

This loop trail is a 3-5' earthen hiking trail that is 0.88 miles in length. This trail forms a perimeter loop around the central forested area of the Preserve.

- Pine Plantation Birds of Prey Trail
- ADA Headwaters Loop
- Hardwood Forest Birders Loop
- Full Loop Trail
- Duffryn Trail

ADA Accessibility

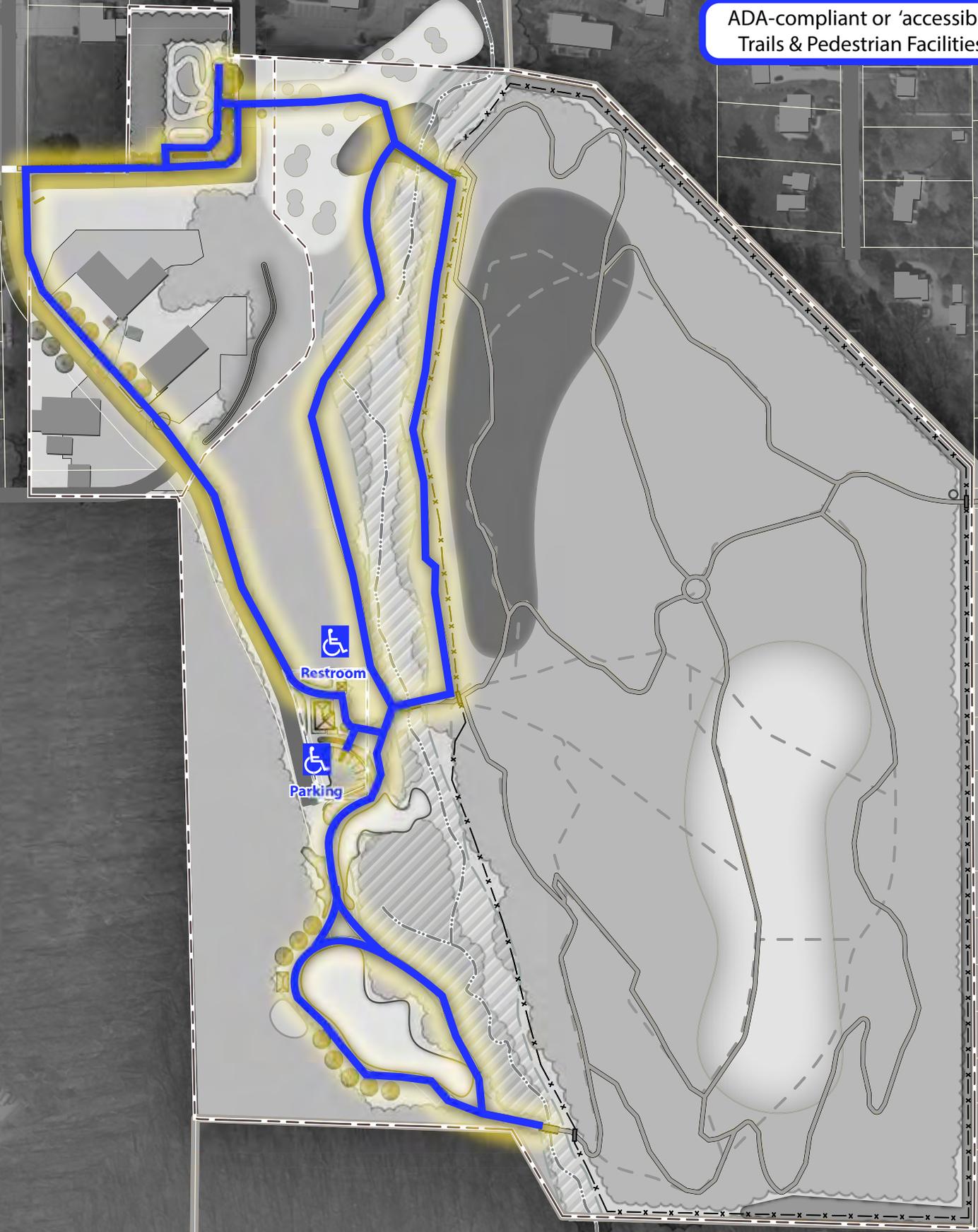
All improvements must be designed in accordance with the most recent version of the ADA Accessibility Guidelines for Buildings and Facilities. The most updated information can be found at <http://www.ada.gov>. The map to the right depicts improvements that conform to ADA Accessibility Guidelines.

In addition to the above guidelines, consideration should be given to the Final Accessibility Guidelines for Outdoor Developed Areas 2013 (<https://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas/final-guidelines-for-outdoor-developed-areas>). Preserve hiking trails should meet these guidelines when feasible - below is a list of requirements:

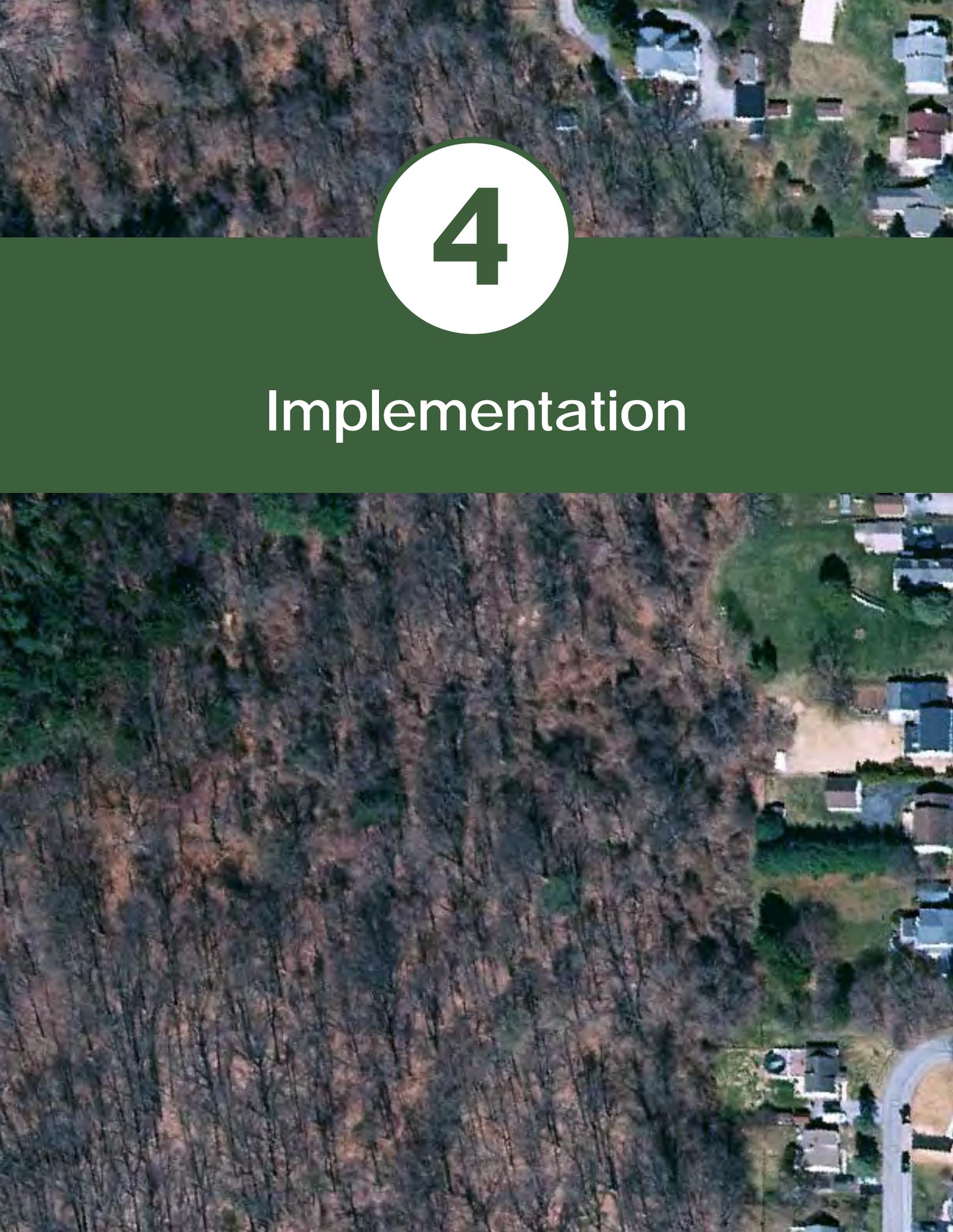
- Surface: firm and stable
- Clear tread width: 36" minimum
- Tread Obstacles: 2" high maximum (permitted on earthen trails)
- Cross Slope: 5% max.
- Running slope (trail grade) meets one or more of the following: (5% or less for any distance; up to 8.33% for 200' max. Resting intervals no more than 200' apart; up to 10% for 30' max. Resting intervals 30'; up to 12.5% for 10' max. Resting intervals 10'; No more than 30% of the total trail length may exceed a running slope of 8.33%;
- Passing Space: provided at least every 1000' where trail width is less than 60"
- Signs: shall be provided indicating the Length of the trail or trail segment: (Surface type; Typical and minimum tread width; Typical and maximum running slope; and Typical and maximum cross slope.)



ADA-compliant or 'accessible'
Trails & Pedestrian Facilities





An aerial photograph of a residential neighborhood with a large green circle containing the number 4 overlaid on the image. The circle is centered in the upper half of the frame. The background shows a mix of green trees and brown, leafless trees, suggesting a late autumn or winter setting. Several houses with different roof colors (blue, grey, brown) are visible, along with a paved road and a driveway. The overall scene is a typical suburban residential area.

4

Implementation

Estimated Costs of Development Summary	
1. Ruthland Ave Entrance	\$ 198,000
Total Proposed Site Improvements	\$ 158,200
Design and Engineering (10%)	\$ 15,900
Construction Cost Total	\$ 23,900
2. First Ave Entrance	\$ 173,000
Total Proposed Site Improvements	\$ 138,200
Design and Engineering (10%)	\$ 13,900
Construction Cost Total	\$ 20,900
3. Pump House Area	\$ 262,100
Total Proposed Site Improvements	\$ 209,600
Design and Engineering (10%)	\$ 21,000
Construction Cost Total	\$ 31,500
4. Picnic & Play Meadow	\$ 217,600
Total Proposed Site Improvements	\$ 174,000
Design and Engineering (10%)	\$ 17,400
Construction Cost Total	\$ 26,200
5. Trail Improvements	\$ 259,900
Total Proposed Site Improvements	\$ 207,800
Design and Engineering (10%)	\$ 20,800
Construction Cost Total	\$ 31,300
Forest Management and Restoration	\$ 553,300
Total Proposed Site Improvements	\$ 481,000
Design and Engineering (10%)	\$ 48,100
Construction Cost Total	\$ 24,200
Preserve Wide Improvements Total:	\$ 1,663,900
Total Proposed Park Wide Site Improvements	\$ 1,368,800
Design and Engineering (10%)	\$ 137,100
Construction Cost Total	\$ 158,000

* Construction Cost Include are estimated as a percentage of the total improvement cost. They include: Mobilization 3%, Erosion & Sedimentation Control 2%, and Construction Contingency 10%

Probable Costs of Proposed Improvements

Probable cost for improvements at Randolph Woods Preserve were established based on unit cost from construction projects of similar scope and scale; and reflect prevailing wage rates that are required for publicly bid construction projects. The probable cost of development for the improvements at Randolph Woods Preserve are

estimated at \$ 1,663,900 (see figure 4.1). Included in the total estimated cost are: design and engineering fees of \$ 137,100, estimated at 10% of the total project cost; and a construction cost of \$ 158,000. Construction Cost are estimated as a percentage of the total improvement cost; they include: Mobilization at 3%, Erosion & Sedimentation Control at 2%, and a Construction Contingency of 10%. A detailed cost estimate of proposed improvements is provided in the appendix of this report.

Phase A

- Deer Fencing & Educational Signage
- Pump Track

Phase B

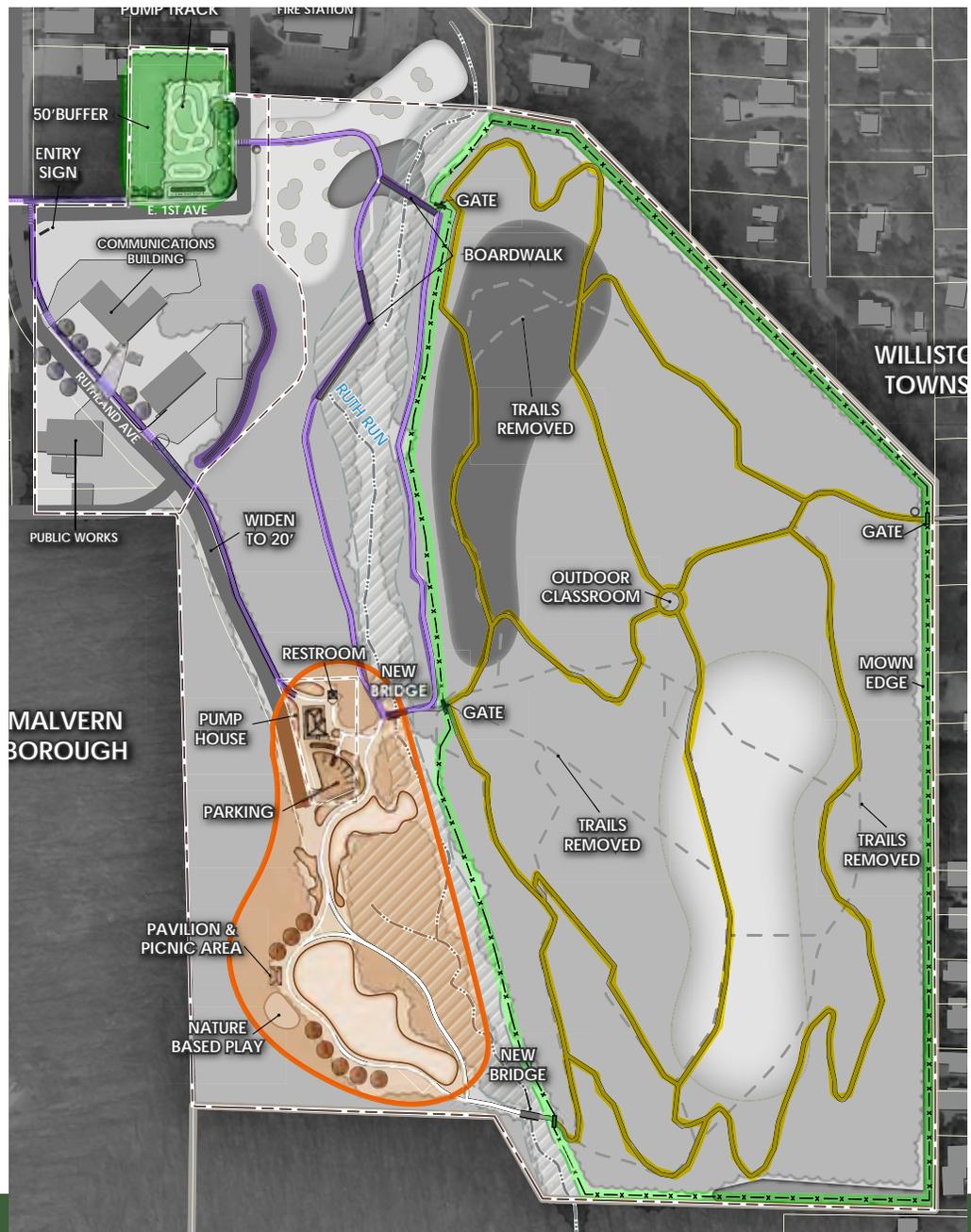
- Sidewalk Improvements
- Entry Signage
- BMP
- First Ave Connection
- ADA Headwaters Loop Trail

Phase C

- Picnic Pavilion
- Nature Play
- Meadow Loop Trail
- Restrooms
- Parking Improvements

Phase D

- Interior Hiking Trail Improvements



Project Phasing

Improvements to Randolph Woods Preserve will be implemented in phases as funding becomes available. Discussions with the Borough on project priorities resulted in the phasing plan and chart (see figure 4.2). The phasing plan is strategic depicting the desired approach toward implementation. If funding opportunities for

specific projects become available before others, the phasing plan can be changed. The estimated 10-year management and forest restoration plan should be implemented and phased separately from additional site improvements A through D detailed above.

Design, Engineering & Permitting

Improvements to Randolph Woods Preserve will be implemented in phases as funding becomes available. Discussions with the Borough on project priorities resulted in the phasing plan and chart (see figure 4.2). The phasing plan is strategic depicting the desired approach toward implementation. If funding opportunities for specific projects become available before others, the phasing plan can be changed.

Chapter 105/106 General Permit

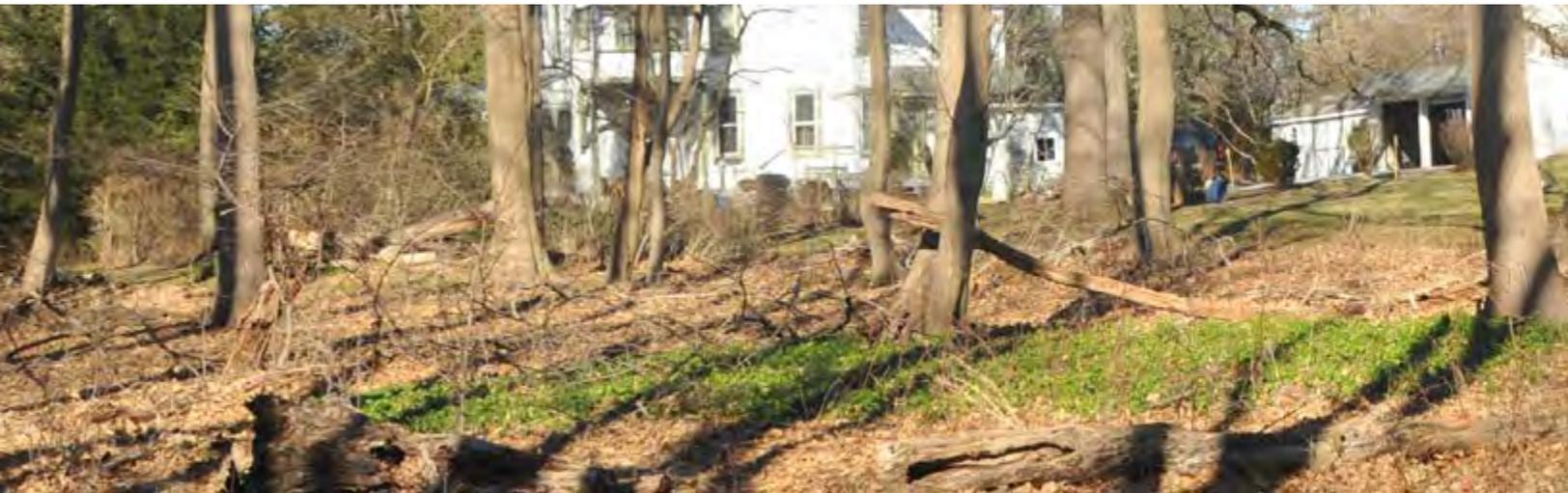
The constructions of bridges, boardwalks, and restoration plantings will require a PaDEP chapter 105/106 general permit. To complete the permit application the delineation of wetlands will be required. During the permit process it may be determined that a survey for bog turtle habitat be conducted and a follow up bog turtle survey could be required.

NPDES Permits

Construction projects that involve the disturbance of more than one acre of earth will require a National Pollutant Discharge Elimination System (NPDES) permit. The permit is a federal requirement that is administered at the state level with the overall goal to improve water quality.

The permit plans are divided into two (2) parts. First, all project phases must comply with the stipulations of PA Code Chapter 102, Erosion and Sediment Control and are reviewed and approved by the local Conservation District. The Erosion & Sedimentation Pollution Control plans (ESPC) are to be implemented by the contractor throughout construction until the site is stabilized by permanent plant growth. A second part of the NPDES permitting process is proposed stormwater management areas. The Post Construction Stormwater Control Plans (PCSC) are designed to manage stormwater for the 2-year storm event with the goal of infiltrating it into the ground. BMP facilities are to be constructed during the project, recorded as part of the property deed, and maintained by the site owner for the life of the improvement.

In some cases, local conservation districts will waive NPDES requirements for trail projects that disturb slightly more than 1 acre of land. Conservation districts usually wish to review the project development plan, even if it will be constructed in phases. The master plan identifies general types and locations of BMP facilities that may be required to secure required permits.



Maintenance Recommendations & Responsibilities

The Borough should develop and fund a formalized maintenance program based on information in this master plan as well as from other sources. The Preserve’s design minimizes maintenance cost while focusing on safe access and habitat restoration to the Preserve. Management of the Preserve are based on the needs associated with re-establishing and enhancing habitat and providing safe public access and trails. Habitat management requires maintenance at key times during the year. Proposed meadows should be mowed one a year in the early spring. This deters woody plant species from establishing while maintaining winter animal habitat. Shrubland and reforestation areas will require periodic removal of invasive plant species. As the primary improvement to the Preserve, trail maintenance should not be deferred. The regular review and maintenance of trails will maintain a safe user environment while identifying any necessary repairs. Maintenance of the Preserve restroom and regular removal of trash will be required. Restroom should also be locked at night to deter vandalism. Periodic repairs may be necessary to maintain the quality of facilities at Randolph Wood Preserve.

The following is a monthly outline of basic maintenance tasks that should be completed. The frequency (by month) of these maintenance tasks is indicated in parentheses.

January

Inspect trails, bridges & culverts / make repairs (1)

February

Inspect trails, bridges & culverts / make repairs (1)

Signage inspection and repairs (1)

Inspect and mechanically remove invasive plants

March

Open Restrooms (1)

Clean restroom Bi-weekly (2)

Inspect trails, bridges & culverts / make repairs (1)

Mow warm season meadows (1)

First mowing of trails shoulders (1)

Inspect site trees for winter damage / perform work (1)

Inspect and mechanically remove invasive plants

Inspect BMPs and remove debris as required (1)



April

Clean restrooms twice weekly (8)
First mowing of trails shoulders (1)
Plant / replant (re-vegetate target areas) (1)
Inspect trails, bridges, and culverts / make repairs weekly (4)

May

Clean restrooms twice weekly (8)
Mow trails shoulders bi-weekly (2)
Inspect trails, bridges, and culverts / make repairs weekly (4)

June

Clean restrooms twice weekly (8)
Mow trails shoulders bi-weekly (2)
Inspect trails, bridges, and culverts / make repairs weekly (4)

July

Clean restroom twice weekly (8)
Mow trails shoulders bi-weekly (2)
Inspect trails, bridges, and culverts / make repairs weekly (4)
Inspect meadows for invasive plants – Mow ½ of meadow if required (1)

August

Clean restrooms twice weekly (8)
Mow trails shoulders bi-weekly (2)
Inspect trails, bridges, and culverts / make repairs weekly (4)

September

Clean restrooms weekly (4)
Mow trails shoulders (1)
Signage inspection (1)
Inspect trails, bridges, and culverts / make repairs weekly (4)

October

Clean restroom weekly (2)
Mow trails shoulders (1)
Inspect trails, bridges, and culverts / make repairs weekly (4)
Inspect BMPs and remove debris as required (1)

November

Winterize Restrooms Mid-Month (1)
Inspect trees / prune as required (1)
Inspect trails, bridges, and culverts / make repairs biweekly (2)

December

Inspect trails, bridges, and culverts / make repairs biweekly (2)

Funding Sources

The following is a resource of grants, programs, funds, and other sources that can assist with the funding of the Preserve design and construction. Various sources can be pursued during various phases, based on availability of funds and priorities for each year.

Pennsylvania Department of Conservation & Natural Resources (Pa DCNR) - Community

Community Conservation Partnership Program (C2P2)

The Community Recreation and Conservation Program through the Pa DCNR Community Conservation Partnership Program (C2P2) provides funding to municipalities and authorized nonprofit organizations for recreation, park, trail, and conservation projects. These include planning for feasibility studies, trail studies, conservation plans, master site development plans, and comprehensive recreation park and open space and greenway plans. In addition to planning efforts, the program provides funding for land acquisition for active or passive parks, trails and conservation purposes, and construction and rehabilitation of parks, trails, and recreation facilities. Most of these projects require a 50% match, which can include a combination of cash and/or non-cash values. This master plan was funded via a C2P2 grant from DCNR. An implementation or construction grant is the next stage grant from DCNR. Grant applications for the C2P2 program are accepted annually—usually in April.

More information can be found at: <http://www.dcnr.state.pa.us/brc/grants/grantpolicies/index.htm>

DCNR Forest Buffer Program

The Riparian Forest Buffer Program through PA DCNR provides funding for organizations implementing a variety of forest buffers including conventional riparian forest buffers and multi functional buffers. The state of



Pennsylvania has a goal of planting 95,000 acres of riparian buffers by 2025 to improve state waterways and the Chesapeake Bay. There is no match required to be eligible for this grant.

Grant applications are usually accepted October to late December. More information is available on the PA DCNR website: <https://www.dcnr.pa.gov/Conservation/Water/RiparianBuffers/Pages/default.aspx>

DCNR has provided funding to County Conservation Offices. Grants awards are made by the local conservation office for the planting of multifunctional buffers. These grants do not require match.

Pennsylvania Department of Environmental Protection (PADEP)

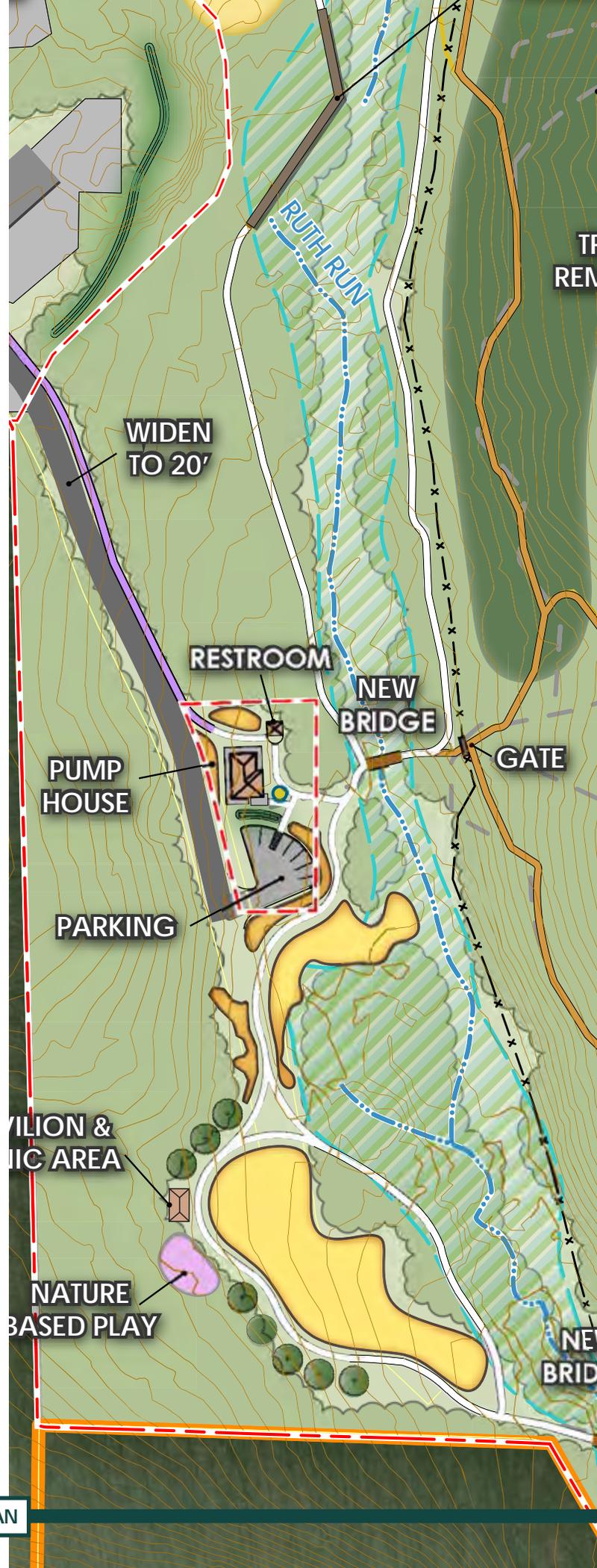
DEP Growing Greener Watershed Protection Program

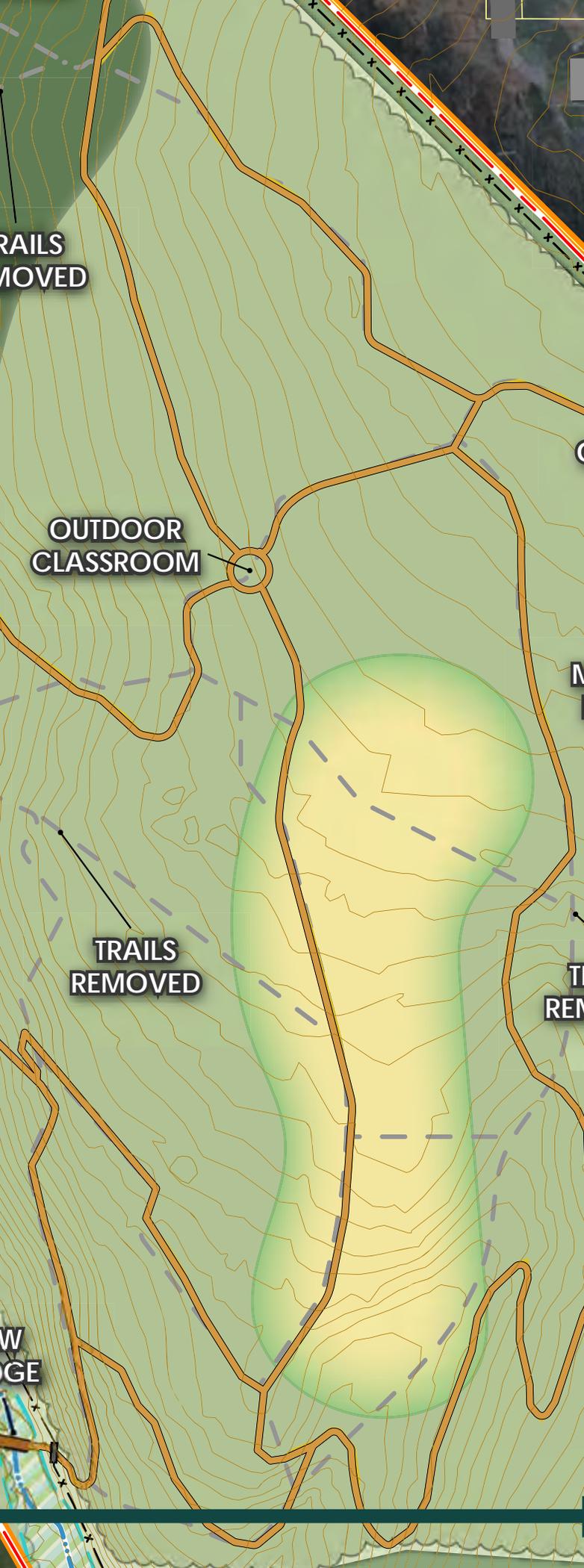
Funded through the state Growing Greener Environment Stewardship Funds applications should be targeted towards clean-up of non-point source pollution. The grant will fund local watershed-based conservation projects with the average award is \$150,000 and requires a 15% match from a non-DEP fund source. The next application period is due in January.

More information on this program can be found at the DEP website: <http://www.dep.pa.gov/Citizens/GrantsLoansRebates/Growing-Greener/Pages/default.aspx>

Dep Non-Point Source Implementation Programs Grant

Provides funding assistance for projects aimed at implementing Pennsylvania's Non-point Source Management Program. Targeted projects include control of urban runoff, and natural channel design/stream bank stabilization projects. The grant will fund local projects with the average award is \$200,000. The application period is typically in July.





More information on this program can be found at the DEP website: <http://www.dep.pa.gov/Business/Water/PlanningConservation/NonpointSource/Pages/default.aspx>

Department of Community and Economic Development (DCED)

Commonwealth Financing Agency (CFA) - Greenways, Trails and Recreation Program (GTRP)

The Greenways, Trails, and Recreation Program (GTRP) provides funding for: public park and recreation area projects, greenway and trail projects, and river or creek conservation projects. The program requires a 15% local cash match of the total project cost and projects must not exceed \$250,000. The application period is typically in June. More information can be found at: <https://dced.pa.gov/programs/greenways-trails-and-recreation-program-grp/>

Watershed Restoration and Protection Program (WRPP)

DCED Watershed Restoration and Protection Program is a funding program to restore, and maintain restored stream reaches impaired by the uncontrolled discharge of nonpoint source polluted runoff. Funds may be used for construction, improvement, expansion, repair, maintenance, or rehabilitation of new or existing watershed protection BMPs; stream bank bio-engineering; and design services. Grant applications cannot exceed \$300,000 and require a 15% matching funds. Applications are typically due in June for consideration in September. More information can be found at: <https://dced.pa.gov/programs/watershed-restoration-protection-program-wrpp/>

PennVest (Pennsylvania Infrastructure Investment Authority)

PennVEST offers both grants and low interest loans for projects that help to manage stormwater and improve water quality. Several of the proposed recommendations will be of interest to PennVEST since they include stormwater BMPs.

More information can be found at: <https://www.pennvest.pa.gov/Information/Funding-Programs/Pages/default.aspx>

Environmental Education

The Pennsylvania Environmental Education Grants Program awards funding to schools, nonprofit groups, and county conservation districts to develop new or expanded current environmental education programming. The funds are administered through the Pennsylvania Department

of Environmental Protection for projects ranging from creative, hands-on lessons for students and teacher training programs to ecological education for community residents. Educational Resources, including exhibits, educational signage, and demonstration projects, also qualify for funding. Grant applications cannot exceed \$3,000 and require no match, however it is recommended. Applications are due in December and awarded in April.

More information can be found at: <http://www.dep.pa.gov/citizens/environmentaleducation/grants/pages/default.aspx>

Legislative Funding

State and federal elected officials can sometimes include items into legislation for worthy projects in their districts. A conversation between county and municipal officials and legislators is the way to begin this process. This type of funding should be targeted toward capital improvement projects.





Private Foundations

There may be regional corporations and foundations that support public works such as park development. Competition for these funds is usually brisk, but opportunities should be researched. Funding is often to non-profit organizations.

Foundations and institutions represent another potential source of funding for education-related site improvements and programming. Grants are available to support student field trips, provide teacher training in science, and provide other educational opportunities. Education tied to research can increase the pool of potential funds. The science community and research institutions are the logical starting points for solicitation foundation funds.

Schools and Local Organizations

Local schools and local organizations may also be of assistance in several ways. Local scout groups and

mountain bike community are two such examples. These groups might get involved with club, fundraising events, and park cleanup days. The school faculty might incorporate the Preserve, especially the proposed environmental education areas and nature trails, into various curricula with students helping to develop and volunteer time to maintain the Preserve as part of a classroom assignment or after school club. While the amount of funds raised may be relatively small, this process builds constituents and support that is critical to the long-term success of the Preserve.

Friends of Randolph Woods Nonprofit

Similar to participation by school groups, the establishment of a non-profit (501(C)3) Friends-of-the-Park group can help raise grass roots funding for the park and be a conduit for tax-deductible donations and foundation funding. For more detailed guidelines for establishing a (501(C)3) non-profit charitable organization in Pennsylvania: <https://pano.org/starting-a-nonprofit-organization-in-pennsylvania/>

