



Manor Woods Park Master Plan

Abington Township, Montgomery County, PA

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May 2012

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Manor Woods Park Master Plan

Prepared for:

Abington Township, Montgomery County, PA

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Introduction

The former Somerford Property was purchased by Abington Township as municipal open space in 2008. Eighty percent of the purchase was provided by the Montgomery County Green Fields/Green Towns Program. The balance of the funding was provided by Abington Township. The 5.28-acre Somerford Property was formerly owned by Manor College who retains property to the east of the parcel. This planning project explores the potential uses of the property that will be compatible with the natural characteristics of the site and comply with the conditions of the Green Fields/Green Towns grant program. The master plan creates a vision for the property as an open space asset for Abington Township residents and defines improvements for public access and strategies for ongoing conservation. Abington Township named the property Manor Woods Park.

The Planning Process

The master planning for Manor Woods Park included:

- Inventory and analysis of existing conditions.
- Consideration of property context and regional setting.
- Development of alternative designs for the park. One design must explore the feasibility of developing a football field on the property for league use.
- Exploration of connections to Alverthorpe Park, McKinley Elementary School, and other local destinations.
- Finalization of the master plan and documentation of findings and recommendations.

Three key objectives for the Manor Woods Park Master Plan were defined by Abington Township:

- Protect the natural resources of the tract as possible and minimize tree removal.
- Comply with the conditions of the Green Fields/Green Towns Program.
- Target the recreation interests of the neighborhood.

Montgomery County Green Fields/Green Towns Program

The following provisions of the Montgomery County Green Fields/Green Towns Program were incorporated into the planning process for the Manor Woods Park Master Plan:

- Abington Township shall place a restriction on the deed to the 5.28 acre property for use as open space.
- A sign shall be placed on the property after it is purchased indicating the source of grant funds for the land acquisition and the public use status of the land.
- The Township will preserve a majority of the property as a forest.
- An environmental survey shall be performed to ensure that the site does not contain environment impairments that would limit its use as open space.



Public Participation and Key Person Interviews

General Information

Insights and ideas from the general public and key stakeholders were gathered as part of the park planning process to create a relevant plan for Manor Woods Park. Input was gained through public meetings and interviews with local organizations and individuals. The findings of this outreach are summarized below.

Public Meetings

A total of four meetings, open to the general public, were held to discuss the future for Manor Woods Park. An initial meeting held by the Abington Township Parks Department developed a detailed scope of work to focus the planning effort. The scope of work generated was used as the basis for a Request for Proposals to solicit bids and select a planning consultant to complete the master plan. YSM Landscape Architects was selected to prepare the master plan.

A second public meeting was held on January 11, 2012 at the McKinley Fire House. The meeting was well attended with over 100 citizens mostly representing the local landowners and

residents. The consultants presented two conceptual alternatives plans for the parcel. The input received at the meeting was used to refine one alternative into a Pre-Final Design for the park. The Pre-final design was presented at a third public meeting held on February 23, 2012. The master plan was revised to address the comments and concerns raised at these meeting.

The fourth and final meeting presented the final master plan for Manor Woods Park to the Abington Township Public Affairs Committee at their regularly scheduled meeting on April 4, 2012.

Input received at the public meetings includes:

- The development of a football field at the park site is strongly opposed.
- Residents questioned why the park is being developed at all. Why is it needed?
- The site should be maintained as is, with minimal improvements.
- The Sisters of Saint Basil, who own and maintain the adjacent Manor College, want to be part of the planning process.
- The existing vegetation should remain.
- Wildlife, such as red tailed hawks, turtles, etc., has been seen on site.
- Costs for development should be made transparent.
- Site security and maintenance is a concern.
- If trails are developed, they should be unpaved.
- Parking on Douglass Avenue is an existing problem.
- Parking on site is not favored. If provided, it should be designed to prohibit unauthorized vehicular access into the site. Access should be gated.
- A concern was expressed regarding traffic turning into Alverthorpe Park. Residents expressed concern that a new parking area on Manor Woods would complicate the issue.
- Lighting in the park is not desired.
- The Manor College property should be identified as private. The Sisters of Saint Basil requested that a fence be developed to define the property. Additionally, the Sisters of Saint Basil requested that trails not extend to the college property.

- Provisions for an outdoor classroom should be explored.
- The park should be handicap accessible.
- Emergency access for first responders should be developed.
- Pedestrian connections to Alverthorpe Park should be provided. A flashing yellow warning light should be considered at the crossing to alert drivers.

Key Person Interviews

Key interviews were conducted with the Abington Township Recreation Department, Abington Township Engineer, and representatives of the Tookany-Tacony Frankfort Watershed Partnership (TTFWP). The following summarizes the key findings of the interviews.

- The Township has received interest from a community youth sports organization regarding the development of an athletic field dedicated to youth football. The specified scope of work included exploration of the feasibility of a football field at Manor Woods Park.
- Plan should explore pedestrian connections to McKinley Elementary School and Alverthorpe Park.
- Investigate the “paper street” between Douglass Avenue and the Manor College Property and define potential for pedestrian connections.
- Sanitary sewer in this portion of the Township flows to the Cheltenham Township sanitary sewer system. At the time of the study, there is a moratorium on new sewer connections.
- The TTFWP is the voice of stormwater management in the area. The partnership encourages innovative stormwater management on each site to properly treat and manage stormwater before it leaves the site. Special attention should be paid to the first inch of rainfall. Educational components should be highlighted in the design so residents can learn and appreciate the benefits of best management practices.

Park Description and Resources

General Information

Location: Manor Woods Park is located on Forrest Avenue, across from Alverthorpe Park. Douglass Avenue is the closest intersection to the south and Fox Chase Road is the closest intersection to the north.

Size: The park parcel contains 5.28 acres, gross area. Net area of the property (excluding street right-of-way) is 5.036 acres, more or less.

Zoning: The property is within the Community Services District. Community Services District is located to the north and east, R-4 Residential District is located to the south, and Recreation/Conservation District is located to the west.

Surrounding Land Use: Institutional land use with Manor Junior College located adjacent to the park on the north and east property boundaries. Residential land use is located south of the property. Park use is located to the west.



Natural Resources

Water Resources:

General: Streams, springs, wetlands and other water resources are not present on the property. Runoff generally sheet flows from the highpoint along Forrest Avenue and exits the site to the east. The East Branch Jenkintown Creek is located on the adjacent Manor Junior College property to the northeast. There is one closed depression found on the property that was holding water at the time of the site visit. This depression should be investigated for the presence of wetlands.

Floodplain: No portion of the subject property is within the 100 year floodplain of the tributary to the Jenkintown Creek as mapped on Flood Insurance Rate Map No. 42091C0403 E, dated



December 19, 1996, prepared by the Federal Emergency Management Agency.

Watershed: The property lies within the Tookany/Tacony-Frankford Watershed (TTF Watershed). The watershed is regulated by management plans specific to each watershed. Oversight of development within the TTF Watershed is provided by the Tookany/Tacony-Frankford Watershed Partnership, Inc. Their mission is to enhance the health and vitality of the watershed. The Partnership stresses the need to control accelerated runoff on each site targeted for development and to manage stormwater flows prior to discharge off site.

Land Resources:

Vegetation: The property is wooded, with mostly native species. Beech, Oak, and Tulip Tree are well represented. A grove of Cedar and a few White Pine can be found along the sites northeast border. A letter from Lou Giroud Tree Service dated April 1, 2008 provided the following information about the forest resources:

- Many of the larger deciduous species are within a size range of 36-42" diameter at breast height.
- There are Tulip trees with height range of 80+ feet.
- The forested section has not reached its full, final climax stage, the undergrowth is not overly thick. Young Beech seedlings and saplings are in abundance,
- The forest floor is thickly carpeted with leaf litter that is constantly decomposing to form a layer of rich humus.
- The overall condition of the forest canopy is fair to good.
- Minimal introduction of invasive species.
- Storm damage is evident in fallen trees/debris.
- If properly maintained and preserved, this forest would continue to be a viable and evolving entity.



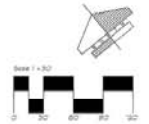


Manor Woods Park

Site Analysis Map

Abington Township, Montgomery County, Pennsylvania
January 2012

Prepared by:



Topography: The highpoint of the property is located at the northeast portion of Forrest Avenue and falls to the southeast approximately 18 feet. Slopes throughout the site are uniform and range from 1 to 5 percent.

Soils:

- GnB2 – Glenelg Silt Loam (3-8%)
- MdB – Made Land
- MhC2 – Manor Channery Silt Loam

Site soils pose few limitations to development. Generally, soils are well drained and deep to bedrock and water table.

Man-made Resources:

Utilities: Electric service is available within overhead electric lines on Forrest Avenue. Gas and water are available in close proximity to the intersection of Forrest Avenue and Douglass Avenue and in Douglass Avenue. Sanitary sewer exists at the intersection of Forrest Avenue and Douglass Avenue. Sanitary sewers in this portion of the township flow to the Cheltenham Township sewer system. At the time of this study, a moratorium is in effect for the Cheltenham system and no new sewer flows are permitted to discharge to the existing system.

Access: Access to the property is from Forrest Avenue. Preferred alignment is at the high point in Forrest Avenue, opposite the Alverthorpe Park vehicular entrance, due to sight distance. Parking is prohibited, by sign, along Forrest Avenue. A concrete sidewalk is located along the west side (Alverthorpe Park side) of Forrest Avenue. The posted speed limit on Forrest Avenue is 25 miles per hour.

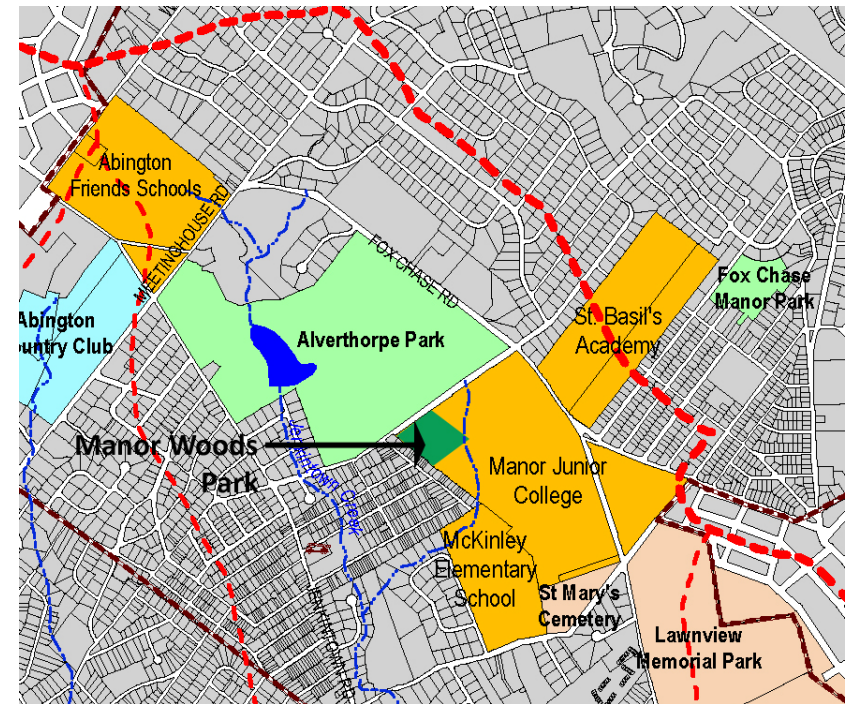
Physical Improvements: The base mapping provided as part of this planning project was an unnamed survey which showed a six-foot chain link fence somewhat parallel to the west property line separating the park property from the homes that front along Douglass Avenue and along Forrest Avenue. Beyond the western fence, several sheds were noted as possible encroachments onto the park property. Other physical improvements are limited to utility poles and traffic signs along Forrest Avenue.



Linkages and Connections:

There are community destinations in the area of Manor Woods Park. The potential to link Manor Woods Park to other community destinations was considered as part of the planning process.

- McKinley Elementary School – McKinley Elementary School property is located south of the park site within 900 feet of Manor Woods Park and the school building is within a half mile radius of the park. Direct access from Manor Woods Park is most convenient from Douglass Avenue. A 50-foot wide, undeveloped property exists between Manor College and Douglass Avenue, south of the park site. The southern end of Douglass Avenue terminates in residential properties. South of the residence is a concrete sidewalk connecting to and traversing the school grounds. Access easements from Manor College and the residential property separating the school from the Douglass Avenue right of way would be required for connection.
- Manor College – Manor College directly borders the site on the northeast and southeast sides. The College property, immediately adjacent to the Manor Woods parcel is undeveloped and wooded.
- Alverthorpe Park – Alverthorpe Park, Abington Township’s 116 acre community park is located northwest of Manor Woods Park, directly across Forrest Avenue. Alverthorpe Park is well developed with a variety of athletic fields, game courts, walking trails and natural areas.



Site Analysis Conclusions

- The terms of the Montgomery County Green Fields / Green Towns Program require that the property be used “as open space” and maintain the “majority of the property as a forest”.
- Proposed improvements should align with the goals of the Tookany-Tacony Frankfort Integrated Watershed Management Plan.

- The mature trees should be preserved and protected as possible.
- The small pockets of non native invasive plant species should be eradicated from the site before they gain a foothold on the property. Native canopy vegetation should be planted in the existing clearings to shade out undesirable species.
- The existing openings in tree cover should be utilized as possible for proposed improvements.
- A vegetative buffer should be established along the west property line to buffer the residences along Douglass Avenue.
- Access to the park property should align with the entrance to Alverthorpe Park which is situated at the highpoint elevation along Forrest Avenue.
- The topography is not a limiting factor with consideration of recreation development of the site.
- The closed depression should be respected in the design. A further evaluation should be undertaken to determine if wetlands are present on the site.
- Parking and other improvements should be located within the existing clearings, close to the park entrance, as possible to minimize impact on the site's natural resources.
- A safe pedestrian connection should be developed at the high point across Forrest Avenue to connect Alverthorpe Park and Manor Woods Park.
- The paper street from Douglass Avenue to Manor College is undeveloped and provides the best opportunity for connecting the park to the McKinley Elementary School. An easement for access should be explored with Manor College.
- Site soils contain no development restrictions.
- The existing sewer moratorium placed on the Cheltenham Township Sewer System prohibits a connection to the public system. Should restrooms be desired, alternative on site sewer systems would be required.

Manor Woods Park Master Plan

Two preliminary alternative plans were developed for Manor Woods Park as follows:

Alternative Master Plan A – Football Field Option

Prior to initiation of this planning project it was recognized that there was a need for a youth football field in Abington Township. The acquisition of the park property spurred discussion as to the appropriateness and possibility of developing a football field and associated improvements on the property.

Alternative Master Plan A locates a full size (300' x 160') football field on the property. The preferred solar orientation (long axis = north-south) could not be achieved with the field layout due to the property configuration. The long axis of the field is positioned southwest-northeast. Parking is located parallel to the field in a two, double bay configuration. Ninety-two spaces are provided including three handicap spaces. The parking area is located close to the entrance from Forrest Avenue. Between the parking and field a plaza area is developed with a small concession stand/restroom building and two bleachers. The plaza area is centered on the parking area creating a vehicular drop-off zone and providing accessible access to the facilities and accessible viewing areas to the field. A stormwater management BMP is located at the northwest corner of the parking area.

This development alternative was not preferred for the following reasons:

- Development of facilities and necessary grading and stormwater management facilities would necessitate the removal of a majority of trees from the park property.
- The preferred orientation for a football field cannot be achieved.
- There is no additional room on the site to develop additional complementary facilities such as a walking trail, practice areas, or a playground.
- Restrooms are prohibited by the current sewer moratorium.

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Master Plan

Abington Township, Montgomery County, Pennsylvania
January 2012

Football Field Option



Alternative Master Plan B – Nature Trail Option

Alternative B develops the site for passive, low impact recreation. The primary facility in the park is a 6-foot wide aggregate walking trail that encircles the property, creating a 0.25 mile loop trail. A mid-loop trail and trail connections to a new sidewalk on the east side of Forrest Avenue complete the trail system. Future trail connections to the Manor Junior College property are suggested. A small, 15 car parking area is developed in close proximity to the park entrance, within the existing clearing. A trailhead plaza is located adjacent to the parking area with a low seat wall and sign panel as a convenient location for walkers to meet prior to fitness activities. Amenities include benches along the trails and stone walls and piers to aesthetically enhance the entrances to the park. Decorative fence and sidewalk, similar to the frontage of Alverthore Park are proposed along Forrest Avenue. Fortified vegetation and decorative fence are suggested along the southwest property line to buffer the existing residential properties. A stormwater management BMP is located east of the parking area.

This Alternative Master Plan B was presented as the Pre -Final Master Plan for the park at the February public meeting. The plan was revised based on input from the meeting to develop the Final Master Plan for Manor Woods Park.

Manor Woods Park

Master Plan

Abington Township, Montgomery County, Pennsylvania
January 2012

Nature Trail Option



Prepared by:



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Scale 1" = 30'



Manor Woods Park Master Plan

The master plan for Manor Woods Park responds to the findings of the planning process, protects and preserves the natural features, provides passive recreation amenities, and addresses safety concerns. Input from the public was integrated into the design. The functional aspects of access and long-term maintenance and operations were considered. The master plan design defines physical solutions that support the Township's objectives and the documentation needed to pursue development funding and partnerships. The following pages describe the Manor Woods Master Plan illustrated on page 20.

Proposed Improvements

The Manor Woods Park Master Plan develops a vision for a passive park which serves walkers and nature lovers and provides a tranquil setting for passive recreation. Proposed park features are described below:

Trails

An aggregate trail tread is proposed to encircle the park perimeter. Compacted aggregate was considered a preferred surfacing material to align with the natural park setting and the material allows stormwater to infiltrate and will accommodate strollers and wheelchairs. The trail tread is designed to be 6-foot wide with cleared two-foot shoulders, where possible. The trail should be field located to preserve the existing vegetation. The trail must be developed to meet the requirements of the Americans with Disabilities Act and will readily accommodate persons with disabilities. Motorized vehicles will not be permitted on the trail except for maintenance, emergency, and security purposes.

A five foot wide concrete sidewalk is proposed along the Forrest Avenue, similar to the frontage of Alverthorpe Park.

Connections

A pedestrian crosswalk is proposed to cross Forrest Avenue to Alverthorpe Park near the existing high point of the road. The crosswalk should visually designate the crossing through pavement color and texture and be provided with signs to alert drivers and pedestrians to the crossing. The design of the crosswalk and warning devices should be completed by a professional versed in traffic safety.

Pedestrian connections are promoted to the south and east of the site. A pedestrian trail is suggested in the southeast corner of the site to provide access to the 50 wide lot with frontage on Douglass Avenue which is owned by the Sisters of Saint Basil. This potential connection to the existing sidewalk on Douglass Avenue would provide the most direct access to McKinley Elementary School. A pedestrian connection is suggested to the east to connect the park site with the Manor College and its students. Both suggested pedestrian connections are proposed across private property and will require an access easement or agreement from the adjacent landowner (N/F The Sisters of Saint Basil).

Gathering Area

An informal outdoor classroom is proposed near the park entrance. The classroom is envisioned as a stone seat wall, oriented to a small plaza. The improvements provide a location where a small group could gather and hold a discussion. The size and scale of the gathering area should be intimate to blend with the site and could be used as a general seating area.

Site Amenities

Amenities should be introduced to make the park site convenient to use and enhance the enjoyment of the visitors' experiences. Benches are provided along the trail in shaded locations and at the parking area entry to provide resting areas.

A decorative fence, similar to the frontage of Alverthorpe Park, is proposed along the north and west border of the property to tie the park site to the adjacent municipal park and provide separation from the adjacent residential properties. Natural stone fence columns and low walls are provided to define the park entrance and provide aesthetics to the landscape.

A split rail fence is proposed along the south and east boundary lines to define the property and alert park users to privately held land. A split rail fence is suggested to provide a visual definition to the property but still allow wildlife the opportunity to migrate between the park and the contiguous woodland beyond the boundary line.

Amenities such as bollards, guide rails, and gates should be located to enhance safety and control access. A timber guide rail is proposed around the parking area. Traffic control bollards or gates should be placed at access points to prohibit unauthorized vehicles entering the park. Where authorized access must be accommodated, removable bollards or traffic control gates should be used.

Amenities should be similar model and design throughout the park to unify the facility and facilitate coordinated maintenance. Consideration should be given to models that are designed to be vandal resistant.

Vehicular Access and Parking

A small five car parking area is proposed in the existing clearing along Forrest Avenue. The entry drive will align with the entrance to Alverthorpe Park. The parking area is designed with an accessible parking space. The entry drive is proposed with a gate, to allow the Township to secure the park at night. The perimeter of the parking area is developed with a timber guiderail to restrict unauthorized vehicular access into the park. A gate or removable bollards should be developed to allow emergency and maintenance vehicles to enter the park site and trail system. The small parking area will provide for school bus parking for organized events in the park.

Signage

Signage should be developed at the site entrance to identify the park site from Forrest Avenue. An informational sign should be provided at the entrance to the trail system from the parking area. The sign should identify the trail length and promote health and fitness activities.

Interpretive signage could also be developed in the park. Interpretive sign opportunities include discussion of the local wildlife, native vegetation, and watershed. Interpretive signs could also highlight best management practices to promote pervious pavements, rain gardens, vegetative swales, naturalized infiltration basins, reforestation, and native grass meadows. The signs could be geared to highlight the benefits and encourage homeowners to use these practices in their own back yard, to promote water quality and environmental stewardship.

Drainage

Drainage improvements will be required throughout the project area to capture and treat stormwater runoff. The use of pervious pavements for the trail and parking area is encouraged to promote infiltration. Rain gardens or infiltration basins are proposed down slope of the proposed improvements to filter pollutants from these surfaces and promote groundwater recharge. All proposed stormwater management systems shall be designed to align with the goals and objectives outlined for the Tookany-Tacony Frankfort Watershed.

Landscaping

Extensive landscaping is not necessary within the park and should be introduced primarily to address functional considerations. Landscaping is recommended in the following locations:

- Native plantings along the western border to buffer the residential properties along Douglass Avenue.
- The park should be monitored for invasive species. Any invasive species that currently inhabit the site should be removed and native vegetation planted in its place.
- Native plants and groundcover to replace non-native, invasive species and fill in the voids of the existing tree canopy.
- Plantings in low lying and engineered depressions (rain gardens) to absorb water and filter pollutants. Water loving plants should be introduced to eliminate surface water.
- Colorful perennials and shrubs at the park entrance to enhance the aesthetics of the setting and buffer the parking area from Forrest Avenue.
- Fortify deciduous trees around the parking area to provide shade for parked cars and reduce the effects of heat islands.

A well-designed landscape can lower maintenance requirements and long-term maintenance costs. Low maintenance, drought resistant plant material should be used. Plant material should be native species as they are adapted to the geographic location and, as a result, will require less maintenance, withstand the extremes in climate change, be less susceptible to disease and pests, and propagate naturally.

Best Management Practices:

The site's natural resources are valuable assets and should be protected. Development of the park as conceived in this master plan will involve earthwork and construction activities. Best Management Practices (BMP's) are encouraged throughout the construction process to protect the resources and stabilize them through creative design. BMP's will promote a stable future for the site. Examples of BMP's are noted in the following table.

Best Management Practices		
BMP	Purpose	Application
Recharge Garden / Rain Garden / Bioretention Garden	Excavated shallow surface depression planted with specifically selected native vegetation to treat and capture runoff typically underlain by a sand or gravel infiltration bed	Method of treating stormwater runoff by pooling water on the surface and allowing filtering and settling of suspended solids and sediment at the mulch layer. Used to manage stormwater on a lot-by-lot basis for the infiltration of relatively small volumes of stormwater runoff.
Critical Area Planting	Stabilize slope, improve wildlife habitat, slow storm water run-off.	Areas of erodable soils and/or steep slope and at the edge of the stream and perimeter of pond.
Filter Strip	To trap sediment and convey run-off from paved surfaces to storm water channels and reduce run-off velocity.	Adjacent to impervious surfaces and on gentle slopes with sheet flow. Adjacent to springs, streams, and ponds to filter sediment.
Grass Swales	Run-off conveyance, pollution, and sediment filtering device and increased ground water infiltration.	Where natural drainage ways can be incorporated into the storm water design in lieu of piped conveyance.
Level Spreader	To reduce the erosion effects of concentrated run-off and promote infiltration.	Adjacent to paved surfaces and at pipe and channel discharge points.
Minimize Site Clearing	Minimize disruption to the site’s natural systems and preserve the natural stabilizing and filtering vegetation of the site.	Where development is proposed.
Reduce Impervious Infrastructure	Reduce storm water run-off and promote infiltration.	Where development is proposed. Reduce driveway width, parking area dimensions, and paved areas to minimum dimensions. Utilize coarse aggregate porous surface in lieu of impervious pavement. Utilize stabilized turf for overflow parking.
Best Management Plan for Construction Activities	To prevent soil erosion, sediment, and other pollutants from entering springs, streams, ponds, etc.	Where development is proposed. Utilize during construction and post- construction period.

Green Design – The development of Manor Woods Park provides an opportunity to incorporate green design techniques. Integration of green design principals and techniques for future construction /improvements is encouraged to minimize the impact of park development on the natural resources.

Green Design Considerations		
Consideration	Intent	Application
Erosion and sedimentation control	Reduce negative impact on air and water quality.	Provide erosion control measures and best management practices (BMP's) during new construction activities.
Reduce site disturbance	Limit development to appropriate sites to reduce the impact on the landscape and habitat.	Construct improvements within existing clearings or developed areas.
Develop sustainable trails	Limit erosion attributed to inappropriate trail placement.	Develop trails that follow the contour of the land. Eliminate highly eroded trails.
Stormwater management	Limit disruption and pollution of natural water courses, reduce increased runoff and promote infiltration.	Minimize crossings at water courses. Where crossings are necessary, provide measures for efficient passage of water. Utilize porous pavement to promote infiltration.
Reduce light pollution	Improve night sky visibility and reduce impact on nocturnal environments.	Limit lighting within the park. Where night lighting is necessary for safety and security, provide shields and only the necessary lumens.
Use recycled building materials	Limit the use of consumptive building materials.	Utilize recycled plastic and building materials in new construction
Use local materials and suppliers	Support the local economy and reduce the environmental impact resulting from transportation.	Purchase products locally produced.

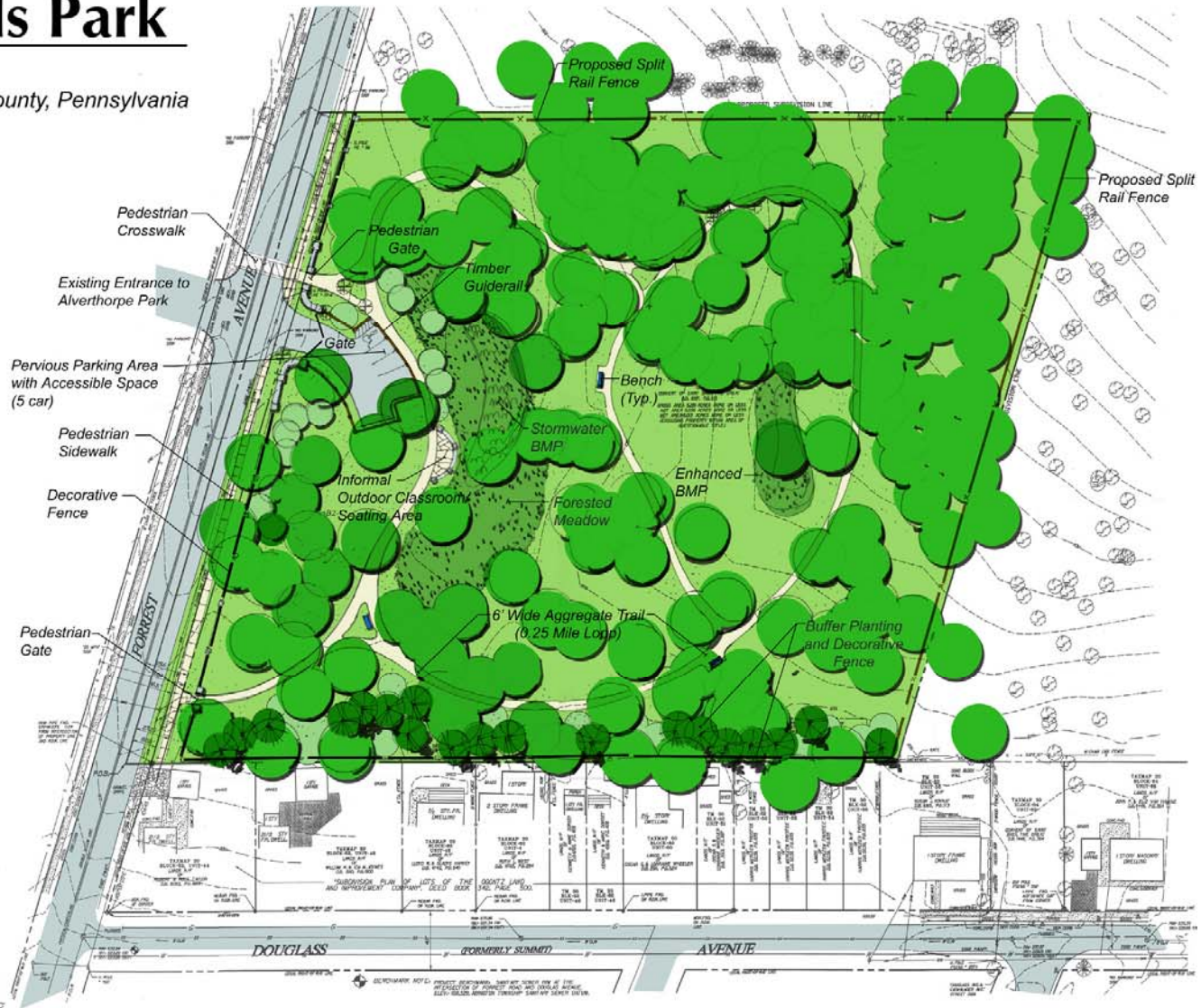
Manor Woods Park

Master Plan

Abington Township, Montgomery County, Pennsylvania
 April 2012

Recommended BMP's

- Rain Garden
- Pervious Pavements
- Vegetated Swales
- Naturalized Infiltration Basin
- Reforestation
- Native Grass Meadows



Cost Analysis and Implementation

The development of the Manor Woods Park will be an investment in the recreation, and preservation opportunities offered to Abington Township residents. These opportunities will require the investment of significant capital expenditures. To guide the development of the park, a probable construction cost opinion has been prepared to correspond to the proposed park features. The cost estimate is provided on the following page.

All costs provided in this plan are estimates based on the findings of field work and knowledge of park facility development. Detailed grading and engineering studies have not been completed. Numerous assumptions regarding construction methods, materials, and site conditions were necessary to complete the cost opinions. The cost opinions should be used as a planning tool to guide funding initiatives and implementation considerations.

The cost estimates reflect 2012 construction costs. Implementation of the master plan may occur over several years and several phases of construction. Consideration should be given to escalating costs and inflation over the base cost provided herein as construction phases are undertaken. Priority of phased construction will ultimately depend on available funding and partnerships.

Exclusions and Assumptions

The probable construction cost opinions do not include:

- Improvements to Forrest and Douglass Avenues, or any public road
- Crosswalk signalization
- Utility location and/or relocation
- Off site trail extensions
- Mitigation of unstable soils and soil amendments
- Rock removal
- Import of topsoil
- Construction management
- Construction inspection fees
- Dumping/hauling fees
- Interpretative signage design
- Off site improvements
- Invasive species removal
- Utility service upgrades, distribution, connection fees

YSM is not a construction contractor and therefore probable constructions cost opinions are based solely upon our experience with construction. This requires YSM to make a number of assumptions as to actual conditions which will be encountered on the site; the specific decisions of other design professionals engaged; the means and methods of construction the contractor will employ; contractors' techniques in determining prices and market conditions at the time, and other factors over which YSM has no control. Assumptions were made based on our visits to the site and the review of available information. Stormwater management and erosion and sedimentation control costs are provided on lump sum cost basis and specific strategies for this work can not be defined until the design and engineering phase.

DEVELOPMENT APPLICATION ESTIMATE OF PROBABLE COST				
Manor Woods Park				
Applicant <u>Abington Township</u>		Date Prepared <u>3/28/2012</u>		
YSM Project No. 11ABT-01				
Item No.	Work Item	No. of Units	Unit Cost	Total Cost
1	Site Preparation			\$6,750
	A. Individual Tree Removal	3 EA	400.00	\$1,200
	B. Fence Removal	910 LF	5.00	\$4,550
	C. Miscellaneous Site Preparation	1 LS	1,000.00	\$1,000
2	Earthwork			\$3,800
	A. Strip/Stockpile/Replace Topsoil	400 CY	3.50	\$1,400
	B. Grading Operations	800 CY	3.00	\$2,400
3	Erosion Control Measures			\$3,050
	A. Silt Fence/Silt Sock	700 LF	2.00	\$1,400
	B. Diversion Swale	150 LF	5.00	\$750
	C. Stabilized Construction Entrance	1 EA	900.00	\$900
4	Stormwater Management			\$12,000
	A. BMP Facility	2 EA	6,000.00	\$12,000
5	6' Aggregate Trail (1,800 LF)			\$21,600
	A. Excavation	400 CY	3.00	\$1,200
	B. 2A Coarse aggregate 6" Deep	1200 SY	8.50	\$10,200
	C. Stone Dust, 1" Choked In	1,200 SY	1.50	\$1,800
	D. Fine Grade and Compact Shoulders	1200 SY	7.00	\$8,400
6	Access Drive and Parking Area			\$9,150
	A. Strip/Stockpile/Replace Topsoil	150 CY	4.00	\$600
	B. Excavation	150 CY	4.00	\$600
	C. 2.5" Pervious Pavement	400 SY	8.00	\$3,200
	D. 8" 2A Coarse Aggregate	400 SY	10.00	\$4,000
	E. Handicap parking striping and signage	1 SP	750.00	\$750
7	Concrete Pavement			\$15,050
	A. Pervious Concrete Pavement at Classroom	300 SF	8.00	\$2,400
	B. 5' Wide Concrete Walk on Forrest Ave	2,300 SF	5.50	\$12,650
8	Site Amenities			\$151,100
	A. Stone Fence Pillars	11 EA	2,800.00	\$30,800
	B. Stone Wall/Seatwall	120 LF	200.00	\$24,000
	C. 6' High Decorative Fence	920 LF	75.00	\$69,000
	D. Split Rail Fence	920 LF	15.00	\$13,800
	E. Bench	4 EA	1,500.00	\$6,000
	F. Traffic Control Device (Gate)	1 LS	2,500.00	\$2,500
	G. Pedestrian Crosswalk and Signage	1 LS	5,000.00	\$5,000
9	Landscaping			\$23,500
	A. Tree/Shrub Buffer Allowance	1 LS	10,000.00	\$10,000
	B. Permanent Seeding (Lawn)	10,000 SF	0.15	\$1,500
	C. Natural Grass and Wildflower	30,000 SF	0.20	\$6,000
	D. Rain Garden and Retention Area Plantings	1 LS	6,000.00	\$6,000
10	Utilities			\$14,000
	A. Security Lighting	1 LS	14,000.00	\$14,000
11	Contingency			\$39,000
	A. 15% Contingency	1 LS	39,000.00	\$39,000
12	Bond Mobilization and Layout			\$35,880
	A. Bond and Mobilization (12%)	1 LS	35,880.00	\$35,880
13	Professional Fees			\$33,488
	A. Survey, Design, Engineering and Permitting (10%)	1 LS	33,488.00	\$33,488
Total				\$368,368