



A GREEN INFRASTRUCTURE APPROACH TO LEVERAGING LOCAL PRIORITIES IN WARRINGTON TOWNSHIP, PENNSYLVANIA

A GREEN INFRASTRUCTURE APPROACH TO LEVERAGING LOCAL PRIORITIES IN WARRINGTON TOWNSHIP, PENNSYLVANIA

September 2014

Prepared for

Warrington Township
852 Easton Road
Warrington, PA 18976
<http://www.warringtontownship.org/>



Prepared by

Environmental Finance Center
University of Maryland
1210 Preinkert Fieldhouse
College Park, MD 20742
www.efc.umd.edu



Sponsored by

U.S. Environmental Protection Agency
Region 3
1650 Arch St #2,
Philadelphia, PA 19103
<http://www2.epa.gov/aboutepa/epa-region-3-mid-atlantic>



Table of Contents

Executive Summary.....	3
Background	6
Warrington Township	6
Open Space Commitment.....	7
EFC’s Involvement.....	7
Introducing an Opportunity	8
Approach.....	8
Leveraging Outside Funding Sources	9
Developing Strategic Partnerships.....	9
Integrating Green Infrastructure into Land Conservation Planning and Project Design	9
Recommendations	10
Leveraging Outside Funding Sources	11
Priority Ranking System	11
Tier I Opportunities.....	14
Tier II Opportunities.....	15
Tier III Opportunities.....	15
Developing Strategic Partnerships.....	19
Integrating Green Infrastructure into Project Design.....	20
Looking Ahead.....	26
Ensuring Success	26
Conclusion.....	26
Project Team	28
Acknowledgements.....	29
Appendix 1: Meeting List	31
Appendix 2: Tier I Funding Opportunity Tables	32
Appendix 3: Tier II Funding Opportunity Tables	35
Appendix 4: Tier III Funding Opportunity Tables	38
Appendix 5: Case Story Examples for Warrington Township’s Consideration	41

Executive Summary

Background

In 2012, the citizens of Warrington Township passed an Open Space Referendum, authorizing the Board of Supervisors to borrow up to \$3 million over 20 years to purchase and protect open space. This commitment demonstrated a clear demand for protecting the remaining open space and natural areas that, like many suburban communities outside major cities, have been increasingly impacted by development activities.

Since the Township passed its referendum, the Environmental Protection Agency (EPA) Region 3 Office has provided resource mapping and prioritization support to help Warrington identify the parcels of land with the most ecological and environmental benefit to the community. Beyond this support, the EPA saw an opportunity to bring additional technical assistance to the Township and, in this vein, enlisted the University of Maryland's Environmental Finance Center (EFC) to work with Warrington to identify overlapping priorities within the Township, potential local partnership opportunities, and additional financing mechanisms that could be leveraged to stretch these funds further.

While the Township already serves as a local and regional model for preserving open space, and the current commitment to invest \$3 million to preserve open space by acquiring and improving public lands, trails, parks, and historic sites is significant, both EPA and EFC saw an opportunity to identify strategies that will help stretch the dollars committed by taking a green infrastructure approach to open space protection.

Approach

The EFC recognizes the need to adapt our approach to fit within the local context because each community is driven by its own identity and priorities and operates within its own political, social, and cultural landscape. This creates a need to develop financing

recommendations that reflect a sensitivity to the local landscape.

After the initial information gathering phase of the project, where the EFC Project Team learned firsthand the open space priorities of the Township, the Project Team quickly discovered many opportunities to integrate long-term goals into the open space decision-making process. Coupling these goals enables the Township to achieve more with less duplication of effort, improving the cost efficiency and effectiveness of the Township's investments.

The EFC Project Team focused on three core opportunities for the Township to leverage its open space dollars:

1. **Identify and prioritize funding sources.** The EFC Project Team identified and prioritized a host of federal, state, foundation and private sector funding opportunities that would be appropriate for various components of the community's established open space priorities.
2. **Develop partnerships with existing local organizations.** The EFC Project Team conducted independent research to identify viable partners, and narrowed the field to two well-established land trusts whose service area includes Warrington. The Project Team facilitated initial communications and provided the Township decision-making support.
3. **Integrate green infrastructure into land conservation planning and project site design.** The EFC provided financing recommendations based on the availability of Township-wide green infrastructure assessment information, and enlisted the assistance of a team from the University of Maryland's Plant Science & Landscape Architecture Department (PSLA) to develop concept-scale site designs for two sites that are already being planned in the Township.

The Project Team worked closely with Township staff and members of the Open Space Task

Force (OSTF) and Environmental Advisory Council (EAC) to ensure the specific opportunities were aligned with the Township's goals and needs.

Recommendations

As an organization that advocates for the efficient use of limited resources, the EFC often suggests a green infrastructure approach to both natural and financial resource management decisions. Because of its holistic vision, green infrastructure can create efficiencies and opportunities that contribute to the resilience of a local economy, environment, and way of life in a powerful way. It can also connect local efforts to resources and potential partners previously unavailable.

More specifically, the EFC identified three opportunities for Warrington to do this, which serve as the core of our recommendations: leveraging additional funding opportunities, developing strategic partnerships, and coordinating open space decision-making with other community priorities through the integration of green infrastructure practices.

Leveraging Outside Funding Sources

The Township is in a unique position to leverage the \$3 million commitment to open space, enabling the community to accomplish more with these dollars, and to do so in a way that delivers additional benefits and reduces the burden to the municipality. The EFC Project Team developed a ranking system which helped prioritize funding opportunities in order to make Warrington attractive and competitive.

Developing Strategic Partnerships

In an effort to expand the scale and reach of what the Township can accomplish with the voter approved open space funds, the EFC recommends the Township develop strategic partnerships with entities and organizations with a similar set of priorities that might be interested in working jointly on these efforts. Given the core desire to preserve open space, the most immediate opportunity seemed to lie with the land trust community, specifically with

two land trusts whose service area included the Township: Heritage Conservancy and Natural Lands Trust (NLT).

The EFC Project Team facilitated initial discussions with the land trusts and the Township, and each entity submitted a proposal to the Township. Warrington's decision to work with one of the land trusts was ultimately determined by careful review by the Open Space Task Force, and a recommendation was made and approved by the Board of Supervisors to work with the Natural Lands Trust to help facilitate the open space protection program.

Looking longer term, there are additional opportunities to partner with neighboring municipalities that the Township should consider. This includes engaging Doylestown Township, as Doylestown has been a leader in trail connections, stormwater management, wildlife habitat, and other priorities that align with Warrington's priorities.

Integrating Green Infrastructure into Land Conservation Planning and Project Design

Ultimately, the EFC Project Team recommends the Township develop a robust green infrastructure network and incorporate a green infrastructure approach into its long-term planning. The benefits of this approach are that it allows for strategic and technically defensible decision-making that puts site-based activities in a broader context and incorporates the values of the community.

While this will take time, in the near-term, there are opportunities for the Township to integrate green infrastructure into its planning, from Township-wide to project-by-project scale. The EFC Project Team recommends that Warrington invest in demonstration projects that will generate awareness and show the community the benefits of using green infrastructure as a means of moving toward a holistic green infrastructure approach in the long term.

The approach that the EFC is recommending for Warrington can be difficult to envision. In order

to demonstrate how the proposed green infrastructure approach could play out on parcels in the Township, the team of landscape architects developed a set of concept drawings that provide a visualization of the potential for two sites under open space protection consideration, the first site focusing on the initial section of the 202-Bradford Dam Connector trail and the second site focusing on the Barnes Park (Phase II) recreation site. The final designs reflect the landscape architect team's depiction of what it could look like to integrate green infrastructure, stormwater management, and quality of life improvements into an existing project, creating a sense of place for Warrington residents and visitors, and helping to meet multiple community priorities.

Looking Ahead

Warrington has a unique opportunity to take its \$3 million open space funds and leverage with many other opportunities to ensure greater success for the Township. Two attributes that the EFC has seen in communities leading the way in dovetailing natural resource protection and economic development, and that the

Township should consider as it moves forward in its open space protection efforts, include a holistic, green infrastructure approach and strong champions that pave the way.

Adopting any of the recommendations contained in this report will help the Township optimize its return on investment. By leveraging the identified funding opportunities, partnerships, and community priorities, Warrington will increase the dollars available for open space, potentially by an order of magnitude. This funding can be the catalyst for simultaneously tackling several long term challenges with one cohesive solution. In addition, Warrington can strategically create a network of trails, parks, and natural areas that can turn the community into a shining example of resilience and sustainability. Through strategic conservation that promotes planning, protection, restoration and management for the long term, Warrington can use the open space funding to build lasting partnerships that will transform the Township and improve the quality of life and enjoyment of all its residents.

Background

Warrington Township

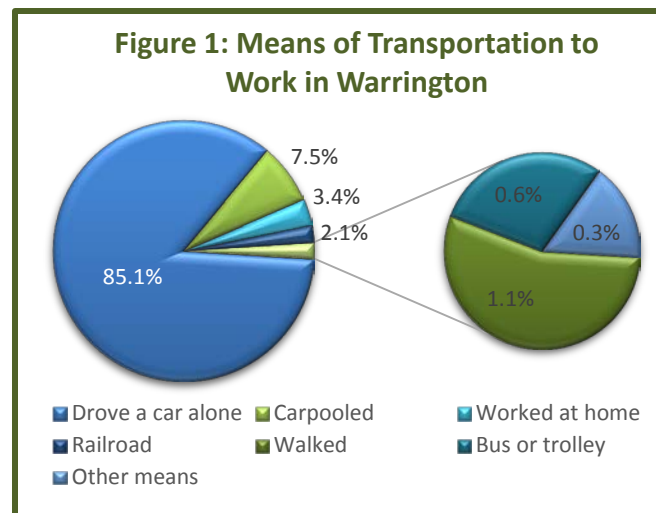
Founded in 1734, Warrington Township was originally comprised of four villages -- Warrington, Neshaminy, Tradesville, and Pleasantville. These villages have since merged into a single Township called Warrington, and is now known as 'The Gateway to Bucks County.' The once naturally wild landscape has evolved over time into a bustling community. Today, the Township is home to approximately 25,000 people.¹ There are 375 businesses and around 700 acres of open space within Warrington's 13.8 square miles.²

Warrington Township is fortunate in a number of ways. The median income and household value is well above the state average, and only 2.6% of the population is below the poverty level, as compared to the state average of 11%.³ The residents tend to be single family homeowners, half of whom have lived in the same home since 2004.⁴

The recent resurgence of development activity in the Township stands to impact the remaining open space in Warrington. Like so many communities across the country located outside of major cities, continued development pressures from Philadelphia is threatening the historic character, community charm, and unique sense of place that makes townships like Warrington so special. At the same time, the asphalt, concrete, and other impervious surfaces associated with continued

development create stormwater runoff that are laden with oil, dirt and chemicals and ultimately end up in local waterways.

Warrington, in many ways, might be considered 'Ecologically Underserved.' The U.S. Forest service defines this as an area lacking sustainable ecosystem services due to inadequate urban forest structure, inadequate green infrastructure, lack of transit oriented development, and management that diminishes environmental, socioeconomic, and health benefits.⁵



By example, according to the 2009 commuting census, about three quarters of Americans on average commute alone to work,⁶ while over 85% commute in Warrington (see Figure 1).⁷ People in Warrington are also less than half as likely to walk, and there are hardly any records of residents regularly biking to work. This may seem paradoxical because Warrington is an

¹ Warrington Township Website, *Township History*. <http://www.warringtontownship.org/townshiphistory.cfm>

² Ibid

³ City-Data.com, *Warrington township, Bucks County, Pennsylvania (PA)*, <http://www.city-data.com/township/Warrington-Bucks-PA.html>

⁴ Delaware River Keeper, PA DCNR, *Upper and Middle Neshaminy Creek Watershed River Conservation Plan*, http://www.dcnr.state.pa.us/cs/groups/public/documents/document/D_001905.pdf

⁵ U.S. Forest Service, *2015 U.S. Forest Service National Urban and Community Forestry Challenge Cost-Share Grant Program, Request for Pre-Proposals (RFP)*, <http://goo.gl/XF5Bv9>

⁶ U.S. Census Bureau, *American Community Survey Reports, Commuting in the United States: 2009*

⁷ U.S. Census Bureau, *Table DP-1. Profile of General Demographic Characteristics: 2000 Geographic area: Warrington township, Bucks County, Pennsylvania* <http://censtats.census.gov/data/PA/0604201781048.pdf>

active commercial center, as well as a major residential area; however, there is currently limited ability to travel safely to places of work or play without the use of an automobile.

Open Space Commitment

On November 6th 2012, the citizens of Warrington Township demonstrated a clear demand for the protection of open space and natural areas, passing the Township's Open Space Referendum during the general election.

This referendum authorized the Board of Supervisors to borrow up to \$3 million over 20 years to purchase and protect open space. According to the referendum, the Board is authorized to use these funds "...for the purpose of financing the acquisition and/or improvement of interest in real property and to protect and preserve open space including farm land, water resources and watershed, forests, new and existing parks, recreation or conservation sites, natural or scenic resources, sites of historic, geologic or botanic interests, and open space between communities..."⁸

In other words, the citizens' commitment to a modest property tax increase – an approximate additional \$27 per year for a residential household with an approximate assessed value of \$35,000⁹ – vastly expands the Township's ability to buy and conserve land and natural resources. The fund can be used to improve current open space and parks. It can also be used to lease or acquire historic buildings and preserve historic integrity on parcels of land identified that meet the Township's open space priorities.

Warrington identified four priorities for these funds:

1. Finance, acquire, and improve open space by purchasing undeveloped land and farmland;
2. Improve the trail system by acquiring trail linkages and expanding the trail system;
3. Improve infrastructure in existing parks; and
4. Acquire and preserve historic lands.

At the heart of the language of the referendum is open space financing and acquisition, which for Warrington will come in many forms. The Township's open space network will include trails and parks that provide active recreational opportunities, as well as natural areas and nature preserves that enable residents to appreciate local ecological and historical resources.

In addition to the Township's open space commitment through the referendum, it has approximately \$350,000 of additional funds to leverage on open space initiatives through the Bucks County Municipal Open Space Program.¹⁰

EFC's Involvement

Originally founded by U.S. Environmental Protection Agency (EPA) Headquarters 20 years ago, and with a portion of the Center's core funding still managed by EPA's Region 3 Office, the University of Maryland Environmental Finance Center (EFC) has built a strong relationship with EPA. One of EFC's strengths has been to work closely with EPA and other federal and state agencies to advance environmental goals, providing communities

⁸ Warrington Township Website, *Voting Information Open Space Referendum For November Ballot*

<http://www.warringtontownship.org/votinginfo.cfm>
⁹ Open Space Referendum, *Informational Brochure, FAQs*,
http://www.egovlink.com/public_documents300/warrington/published_documents/Advisory%20Boards/Open%20Space%20Task%20Force/Open%20Space%20Info%20Brochure%208%2015%2012.pdf

¹⁰ In 2007, Bucks County passed an open space referendum, committing \$26 million in government bonds to support municipalities in the County preserve open space. (BucksCounty.org, Community Services, *Municipal Open Space Program*, <http://www.buckscounty.org/government/CommunityServices/PlanningCommission/OS/MunicipalOpenSpace>)

on-the-ground technical support to identify cost-effective, innovative financing strategies.

As green infrastructure becomes the go-to resource management strategy for communities across the country, the EFC is working to help communities implement this approach in a way that meets local resource management goals, reduces implementation costs, and leverages available resources. In 2013, the EFC received financial support from EPA to work directly with pilot communities to identify opportunities to leverage investments by incorporating a green infrastructure approach to existing strategic plans and local efforts.

Having worked with the Township for some time providing resource mapping and prioritization support, the Region 3 Office of EPA recognized an opportunity to apply EFC's skills to the open space preservation effort in Warrington. While the Township already serves as a local and regional model for preserving open space, and the current commitment to invest \$3 million to preserve open space by acquiring and improving public lands, trails, parks, and historic sites is significant, EPA hoped to see the EFC work with Warrington to identify overlapping priorities within the Township, potential local partnership opportunities, and additional financing mechanisms that could be leveraged to stretch these funds further.

Introducing an Opportunity

Warrington has an emerging opportunity only beginning to grow to its full potential. The existing financial commitment to open space initiatives through the voter referendum is significant; however, if Warrington invests this seed funding in a reactive, site-specific, or uncoordinated effort, the Township will limit the success it could have achieving larger goals and priorities. While additional acres of open space would be preserved, or additional options for recreational activities would be created, the Township would miss its golden opportunity to address open space goals simultaneously with

other local priorities in a way that could transform the community.

If Warrington takes advantage of its unique opportunity, it can balance the diverse needs of the community while continuing to evolve into an economically vibrant, natural and attractive place to live, work, and visit. This report provides the Township with a set of recommendations that suggest that a prosperous economy does not have to occur at the expense of green open space, lush forests, or livable communities. The following section outlines the EFC Project Team's approach to identifying opportunities for Warrington to take full advantage of its open space dollars.

Approach

Because each community is driven by its own identity and priorities and operates within its own political, social, and cultural landscape, the EFC attempts to craft its approach to each project to fit within the local context. With Warrington, the EFC Project Team first sought to fully understand the existing open space priorities, goals, and values within the Township. This was done through extensive independent research; collection of relevant materials readily available on the Township's website; 1:1 and group meetings, phone calls and email communications with various stakeholders; and participation in site-visits. See Appendix 1 for a comprehensive list of all formal meetings held throughout the duration of the project.

The EFC quickly discovered many opportunities to integrate long-term goals into the open space decision-making process, while continuing to pursue the four main priorities identified in the referendum. Coupling these goals enable the Township to achieve more with less duplication of effort, improving the cost efficiency and effectiveness of the Township's investments.

The EFC Project Team focused on three core opportunities for the Township to leverage its open space dollars. The first was to identify and

prioritize funding sources, which the Township had defined as an urgent need. The second was to develop partnerships with existing local organizations to help implement Warrington's open space plan in the long-term. The last approach was to engage landscape architects at the University of Maryland to incorporate concept-scale designs to help visualize and communicate what a green infrastructure approach looks like at the project scale.

The Project Team worked closely with Township staff and members of the Open Space Task Force (OSTF) and Environmental Advisory Council (EAC) to ensure the specific opportunities were aligned with the Township's goals and needs. Each opportunity is outlined below and should be considered as a first step in moving toward a comprehensive, long-term framework for preserving open space and addressing multiple community priorities.

Leveraging Outside Funding Sources

While many municipalities struggle in their pursuit of grant funding because of the common requirements for matching funds, the \$3 million open space bond gives Warrington the rare opportunity to fulfill and exceed these requirements and make the Township a strong and competitive candidate for additional funding. The EFC Project Team identified a host of federal, state, foundation and private sector funding opportunities that would be appropriate for various components of the community's established open space priorities. Each funding source was cataloged and prioritized for Warrington based on a variety of factors, including alignment with existing priorities and goals, eligibility, competitiveness, timing, and partners to help the community narrow their focus and concentrate on the opportunities with the greatest chance for success.

Developing Strategic Partnerships

In addition to leveraging additional sources of funding, the EFC Project Team sought to identify opportunities for the Township to

collaborate with other open space stakeholders. Perhaps the greatest opportunity for this lies with the land trust community. There is a good deal of overlap between the land conservation priorities of a land trust and the established goals of Warrington's open space bond referendum. The EFC Project Team conducted independent research to identify viable partners, and narrowed the field of land trusts to two whose service area includes Warrington Township. Both are well-established organizations, effective fundraisers, and eager to discuss opportunities to leverage their expertise and reduce the burden to the municipality. The EFC Project Team has connected each entity with the Township and facilitated an initial meeting. Each land trust has submitted a proposal to the Township for their services, and the EFC Project Team continues to provide guidance to the Township; however, this decision solely lies within the Township since they will be working closely with whichever entity they choose into the future.

Integrating Green Infrastructure into Land Conservation Planning and Project Design

While pursuing the Township's open space priorities, Warrington can consider how integrating the following goals can contribute to making the Township more resilient, livable, and vibrant:

- Building a **green infrastructure network** through trail and natural area connections, preserving areas with environmental and recreational value.
- Addressing **stormwater management (SWM)** through integration of enhanced SWM best management practices (BMPs) to meet the Township's Phase II Municipal Separate Storm Sewer System (MS4) Permit and water quality requirements (total maximum daily load (TMDL) allocations).

- Improving the **quality of life** of the Township by making the community more walkable with thriving opportunities for active living, wellness, and outdoor recreation.

EFC’s work with communities throughout the years has given the Project Team firsthand knowledge of the challenge of envisioning what incorporating multiple community priorities looks like. The EFC enlisted the assistance of a team from the University of Maryland’s Plant Science & Landscape Architecture Department (PSLA) to develop concept-scale site designs for two sites that are already being planned in the Township.

Ultimately, the Township would benefit from taking a green infrastructure approach into its long-term planning due to the multiple benefits this can provide (see Figure 2). Visualizing these two parcels is simply the first step to communicating the value of taking a green infrastructure approach to open space planning and project implementation.

Recommendations

As an organization that advocates for the efficient use of limited resources, the EFC often suggests a green infrastructure approach to both natural and financial resource management decisions. Because of its holistic vision, green infrastructure can create efficiencies and opportunities that contribute to the resilience of a local economy, environment, and way of life in a powerful way. It can also connect local efforts to resources and potential partners previously unavailable.

Using this type of strategic approach to investing the Township’s \$3 million commitment to open space will enable the community to accomplish more with these dollars, and to do so in a way that delivers additional benefits and reduces the burden to the municipality. More specifically, the EFC identified three opportunities for Warrington to do this, which serve as the core of our recommendations: leveraging additional funding opportunities, developing strategic

Figure 2: Importance of a Green Infrastructure Approach for Financing

A green infrastructure (GI) approach to land conservation, restoration and site design considers the interaction between natural areas and the built environment, looking to use natural systems to address environmental and social priorities. And while the body of research is still emerging, this approach appears to have the potential to address economic needs as well.

GI can yield a number of benefits, so the reason communities turn to this approach is varied. At the regional scale, green infrastructure tends to refer to the network of natural areas that provides habitat, flood protection, cleaner air, cleaner water, recreational opportunities, and community character. At the local or site scale, GI often refers to stormwater management systems that mimic nature by soaking up and storing water. Regardless of the driver behind why a community chooses this approach, because of its holistic nature, a GI network functions at its highest level when the full collection of practices and activities are considered in their entirety.

Outside of the “*How do we pay for this?*” question, the connection between GI and finance may not be readily recognizable. However, GI has the capacity to serve as a great integrator across community goals, jurisdictional boundaries, and landscape needs. Considering the costs associated with protecting functioning natural systems versus restoring them, and GI’s ability to address multiple community priorities tied to water and air quality, recreation, public health and safety, and local economies and character, it becomes quite clear that this is an approach to resource decision-making with the capacity to be highly efficient, reduce costs, leverage priorities, and harness the power of markets to encourage behavior change.

partnerships, and coordinating open space decision-making with other community priorities through the integration of green infrastructure practices and strategies.

Throughout the recommendations section, the EFC references examples provided in Appendix 5 that highlight how other communities have accomplished this. The Warrington community may want to consider these, and the inherent lessons learned, while developing their own long-term program.

Leveraging Outside Funding Sources

Early on in this project, Township staff expressed a desire to identify additional funding sources and to better understand how to position their proposals as competitive. The Project Team identified *and prioritized* funding sources that align with the Township's priorities, as well as those identified by the Project Team. The matrices developed in this section include specific federal, state, local, regional and private funding opportunities divided into three tiers of applicability to Warrington. Within these tiers, opportunities are further categorized into the open space priorities defined by the Township (open space planning and acquisition, trail system improvements, and improving infrastructure in existing parks and the opportunities identified by the EFC Project Team (building a green infrastructure network, stormwater resilience by addressing the MS4 Phase II Permit and TMDL requirements, and improving the general quality of life for the community).¹¹ The

¹¹ Preserving historic lands is also a priority of the Township, and was specifically included in the referendum. However, because efforts to identify the nexus between historic preservation priorities and open space priorities were still in the very early stages, historic properties were not a consideration in the prioritization of funding. Should a historic property be located on a parcel where funding could be pursued, and/or the parcel is a high priority based on its ecological and environmental value, this could provide additional reasoning for Township investment.

following highlights the most immediate, relevant, and viable opportunities Warrington should pursue. It should be noted that it was not the Project Team's intention to develop a comprehensive catalogue of all available programs, but rather to focus on those with the greatest applicability to this community.

Priority Ranking System

Open space planning and acquisition

In passing their referendum, Warrington defined the financing, acquisition, and improvement of open space, particularly by purchase of land, to be a local priority. The Township has several opportunities to strengthen its ability to improve open space and strategically purchase the highest priority undeveloped land and farmland for open space.

Trail system improvements

As previously discussed, trail system improvements, specifically acquiring trail linkages and expanding the trail system, has been identified as a priority by the Warrington community. Focusing on trails and framing the acquisition of open space in this way opens up a host of outside funding opportunities for the Township. In fact, [Pennsylvania Outdoor Recreation Plan](#)¹² has outlined [an area in Warrington](#)¹³ as a high priority for a planned trail and an interest in funding trails connected to [The Circuit](#),¹⁴ Greater Philadelphia's Regional Trail Network, which opens the door to a number of trail funding opportunities.

Improving infrastructure in existing parks

Several grant opportunities focus on recreation plans, facilities, and maintenance to improve existing parks. Acquired areas can quickly fall into disrepair unless managed properly. By

¹² PA DCNR, *2009-2013 Pennsylvania Outdoor Recreation Plan*, <http://www.paoutdoorrecplan.com/>

¹³ PA DCNR, *Pennsylvania Outdoor Recreation Plan, Map of Major Trail Gaps of Pennsylvania*, http://www.paoutdoorrecplan.com/cs/groups/public/documents/document/dcnr_20028522.pdf

¹⁴ The Circuit, *Greater Philadelphia's Regional Trail Network*, <http://connectthecircuit.org/>

leveraging these types of additional funding, Warrington can ensure it maintains facilities and a quality level of service for its residents over the long-term.

Building a green infrastructure network

Many communities across the country have employed a strategic approach to identifying, prioritizing and implementing conservation and restoration actions known as “Green Infrastructure”. A key piece of this approach is the identification of a green infrastructure network, which is a connected system of natural lands important to the community. In general, the steps in building a landscape scale green infrastructure approach are:

1. Identify what environmental, social and/or economic values the community wants to protect or enhance;
2. Identify the natural resources or landscape features that represent those values;
3. Assess their condition and potential future threats (if possible);
4. Prioritize the resources or features for action (protection, restoration, and management); and
5. Develop a financing and implementation strategy.

There are many ways to complete each step, some of which have been described in this report. Every community develops its own approach based on the local needs and context. For Warrington Township, Step 1 was accomplished through the Township’s citizens voting to pass the Open Space referendum in 2012. An approach to carrying out steps 2, 3 and 4 was offered by the US EPA’s Region 3 office (see Figure 3). The EFC Project Team’s recommendations provide a solid foundation for Step 5. By taking these initial steps, the Township is in a much more competitive position to leverage its open space dollars and gain access to the additional funding needed to initiate the creation of a green infrastructure network.

Building this network through trail and natural area connections will aid in preserving spaces with the greatest opportunity for ecological and environmental impact. Warrington can construct these trails and acquire open space in a way that conserves and restores natural area pathways between parklands and protects and prioritizes contiguous natural open space areas. This approach can provide a critical pathway for forest dwelling wildlife species to travel safely and discreetly between larger habitats. By incorporating natural green areas into trail projects, Warrington becomes eligible for a greater variety of funding opportunities. When acquiring open space, restoring large contiguous natural areas connected to other natural park areas will be much more beneficial to wildlife than small fragmented areas and will most likely result in fewer wildlife conflicts, such as wildlife vehicle collisions. If open space is planned with this in mind, the green infrastructure network would be created with little additional investment, and would make Warrington much more attractive to funders looking for municipalities to integrate green infrastructure into existing projects and plans.

Addressing the MS4 Phase II Permit

Oftentimes green infrastructure networks aid in relieving stormwater runoff from the decrease in impervious surface and increase in natural systems that absorb stormwater during rain events. By acquiring and protecting land in floodplains and developing a robust green infrastructure network, the Township will decrease the strain on its MS4, which will minimize flooding impacts and help the Township address its MS4 Phase II Permit. For example, according to the EPA, one acre of natural wetland can abate about one million gallons or one foot of flood water.¹⁵

¹⁵ U.S. EPA, *Wetlands: Protecting Life and Property from Flooding*, <http://water.epa.gov/type/wetlands/outreach/upload/Flooding.pdf>

Addressing TMDL Requirements

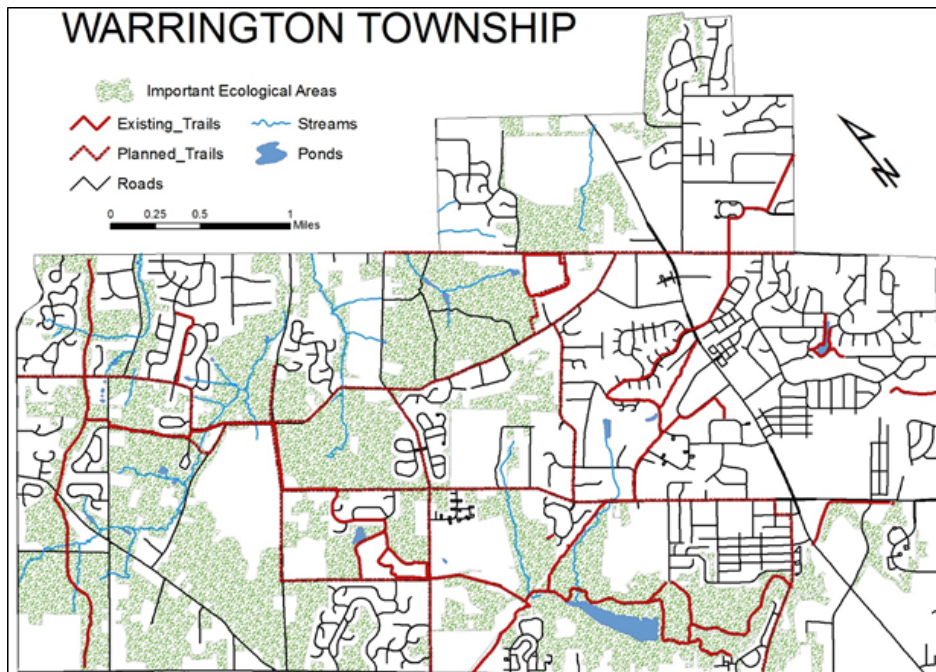
By acquiring land, restoring natural areas along trails, and protecting natural areas in parks and open space, particularly those near streams and wetlands, Warrington can significantly reduce pollutants entering the Little Neshaminy and Neshaminy watersheds. Depending on which SWM BMPs (wetlands, stream buffers, stream erosion mitigation, etc.) and how many become integrated into projects prioritized for open

space, Warrington may even be able to meet its part of the TMDL requirements.

Improving the quality of life

Improving the general quality of life of the Township by making the community more walkable with expanded opportunities for active living, wellness, and outdoor recreation will aid in changing behaviors associated with environmental and social wellbeing.

Figure 3: Warrington's Green Infrastructure Strategy



Green infrastructure is the interconnected network of natural and “undeveloped” lands and waters necessary to maintain ecosystem functions, sustain clean water and air, and provide a wide array of benefits to people and wildlife. Green infrastructure networks are essentially composed of large blocks of ecologically important natural and semi-natural lands. In Warrington, important ecological areas were defined as all forest patches at least 25 acres in size and any contiguous undeveloped land. Based on discussions in the Township and an examination of scientific literature, the most important green infrastructure patches are larger, composed of relatively more natural (as opposed to semi-natural) land, shared a smaller boundary with developed land uses, contained wetland soils, and were found along river and stream flood plains. These characteristics help ensure that the areas identified as the “best” provide more ecological goods and services that are valued by the community and are essential for sustaining natural systems. Now that important areas have been identified, this can serve as the foundation of a protected green infrastructure network of open space. The Township has agreed to use the map above to help prioritize parcels for inclusion in this network; therefore, those parcels that contain more ecologically important areas will have a higher priority for inclusion in the protected network. Additionally, those parcels that contain more forest and stream habitats and are adjacent to protected open space and trails will have higher priority.

Tier I Opportunities

Tier I opportunities are those EFC recommends Warrington focus on first. These were chosen based on their applicability to the priorities and goals of the Township, the eligibility of the Township to apply, their funding level, their likelihood of reoccurring or pertinent deadlines, and their utility in providing not just funding, but useful technical assistance, networks, and partnerships. Potential Tier I funding totals \$10,019,850 – enough to more than quadruple current funding levels.

Open space planning and acquisition

Up to \$3,173,000 out of the \$10+ million available grant opportunities are available to aid in open space acquisition and improvement. Nine grant opportunities in this tier focus on open space. The top five of these identified by the EFC Project Team are:

1. **Planning & Partnering:**

- a. PA DEP’s Coastal Zone Management Grant Program
- b. PA DCNR’s Community Recreation & Conservation Program

2. **Acquisition:**

- a. Natural Lands Trust’s PECO Green Region Program
- b. Open Space Institute’s Bayshore-Highlands Fund
- c. PA DCNR’s Rivers Conservation Program

Trail system improvements

There are up to \$7,896,850 worth of grant opportunities from five programs focusing on trail system improvements. The top trail system improvement grant opportunities identified by the EFC Project Team are:

- a. William Penn Foundation’s Watershed Protection Grant
- b. PA DECD’s Greenways Trails and Recreation Grant
- c. PA DECD’s Multimodal Transportation Fund

- d. PA DCNR’s Recreational Trails Program
- e. Penn DOT’s Transportation Alternatives Program

Improving infrastructure in existing parks

There are up to \$2,413,000 worth of grant funding from six opportunities focusing on improvement of existing parks. The top opportunities for improving existing parks and maintaining open space identified by EFC are:

- a. National Park Service’s Land and Water Conservation Fund State Grants
- b. PA DCED’s Watershed Restoration & Protection Program

Building a green infrastructure network

As the priority index shows, three quarters of the Tier I funding require a green infrastructure network as an overarching goal. Focusing on green infrastructure will also align with the priorities of many of the potential land trusts and other partners Warrington hopes to work with, and will make Warrington more competitive when applying for grants, particularly PA DCNR grants that provide additional points for the greening elements of parks and recreation projects.

Addressing the MS4 Phase II Permit

While many grants will aid the MS4 indirectly by steering resources toward building resilient communities, the PA DCED’s Watershed Restoration & Protection Program and the PA DEP’s Coastal Zone Management Grant Program more directly aid Warrington in reaching its MS4 permit goals.

Addressing TMDL requirements

By focusing priorities to meet the goals of sediment and nutrient reductions for local and regional waterways, Warrington will become better positioned to receive funding from half of the Tier I grants and simultaneously makes significant progress on becoming compliant with the EPA standards.

Improving the quality of life

While acquiring natural areas, building trails, and improving parks will undoubtedly improve

the quality of life of Warrington residents, showing how Warrington's projects will do so is important for several of the Tier I options. All of these opportunities will improve the quality of life of the citizens of Warrington. The opportunities checked below are ones where attention should be paid during the application process.

Tier II Opportunities

When Tier I opportunities are exhausted, there are several other programs that also seemed appropriate for Warrington to consider. These opportunities are viable options, but are at a lower priority either because the applications are closed with unknown renewal dates or there are concerns about Warrington being able to make a competitive application. The total of all Tier II funding equals more than \$150 million.

Open space planning and acquisition

Only prequalified land trusts are eligible for some of these Tier II acquisition grants. Warrington would be eligible if partnering with a prequalified land trust as an intermediary.

1. Planning & Partnering:

- a. PA DCNR's Partnership Program

2. Acquisition:

- a. PA DCNR Land Trust Program

Trail system improvements

Most lucrative grants available focus on trail networks, but are ambitious for projects with Warrington's limited scope.

- a. U.S. DOT TIGER IV grants

Improving infrastructure in existing parks

The majority of Tier II grants focus on improving existing parks directly or indirectly. Many are for wetland and watershed related restoration projects, which the municipality would have authority to use on its publicly owned land. The most applicable grant for improving parks is PA DEP's Growing Greener Watershed Protection Grant.

Tier III Opportunities

Tier III opportunities are the lowest priority and should only be pursued after exhausting all other options. They have been categorized in this tier due to their low level of funding, their focus on education which although important not the highest goal of open space dollars, or the challenge for Warrington to be a competitive candidate. They are still included, however, because of their applicability to the general goals and priorities of Warrington.

For the sake of brevity, each of the tiered funding opportunities is shown in the Tables 1-3 below. For more detailed information on the funding opportunities presented below, see Appendices 2-4.

Table 1: Tier I Funding Opportunities

Organization	Program	Open space	Trails	Existing parks	GI network	MS4 Permit	TMDL	Quality of life
National Park Service	Land & Water Conservation Fund State Grants			E	✓			✓
Natural Lands Trust	PECO Green Region	A			✓			
Open Space Institute	Bayshore-Highlands	A			✓		✓	
PA DCNR	Community Recreation & Conservation	P	✓	✓				✓
	River Conservation	A			✓		✓	
	Recreational Trails		T	✓	✓			
PA DEP	Coastal Zone Management Grant Program	P				✓	✓	
PA DCED	Greenways, Trails & Recreation Grant	✓	T	✓	✓			✓
	Multimodal Transportation Fund		T		✓			✓
	Watershed Restoration & Protection Program	✓		E		✓	✓	
PennDOT	Transportation Alternatives Program	✓	T	✓	✓		✓	✓
William Penn Foundation	Watershed Protection Program	✓	T		✓		✓	✓

Color Key:

Federal Funding	State Funding	Local and/or NGO Funding
-----------------	---------------	--------------------------

Priority Type Key:

- A = Top priority is open space acquisition
- P = Top priority is open space planning & partnering
- T = Top priority is trail system improvements
- E = Top priority is existing parks
- ✓ = Tributary priority

Agency Acronyms:

- PA = Pennsylvania
- DCNR = Department of Conservation and Natural Resources
- DEP = Department of Environmental Protection
- PECO = the company formally known as Philadelphia Electric Company
- PennDOT = Pennsylvania Department of Transportation
- DCED = Department of Community & Economic Development

Table 2: Tier II Funding Opportunities

Organization	Program	Open space	Trails	Existing parks	GI network	MS4 permit	TMDL	Quality of life
NFWF	Five Star & Urban Waters Restoration Program			✓	✓		✓	
PENNVEST	Green Initiatives				✓	✓	✓	
PA DCNR	Land Trust Program	A			✓			
	Peer to Peer Program			E	✓			
	Partnerships Program	P	✓		✓	✓	✓	✓
PA DEP	Growing Greener Watershed Protection	P		E		✓	✓	
	Nonpoint Source Implementation Program			E		✓	✓	
USDA-RD	Community Facility Grants		✓	✓				✓
USDOT	TIGER IV grants		T					

Color Key:

Federal Funding	State Funding	Local and/or NGO Funding
-----------------	---------------	--------------------------

Priority Type Key:
 A = Top priority is open space acquisition
 P = Top priority is open space planning & partnering
 T = Top priority is trial system improvements
 E = Top priority is existing parks
 ✓ = Tributary priority

Agency Acronyms:
 PA = Pennsylvania
 NFWF = National Fish & Wildlife Foundation
 PENNVEST = Pennsylvania Infrastructure Investment Authority
 DCNR = Department of Conservation and Natural Resources
 DEP = Department of Environmental Protection
 USDA-RD = U.S. Department of Agriculture Rural Development
 USDOT = U.S. Department of Transportation

Table 3: Tier III Funding Opportunities

Organization	Program	Open space	Trails	Existing parks	GI network	MS4 permit	TMDLs	Quality of life
Dominion Foundation	Environmental Stewardship Grant		✓	✓				
EDA Department of Commerce	Economic Development Assistance							✓
Heinz Foundation	Environmental Grant program							✓
NFWF	America's Great Outdoors Land Conservation Program		✓	✓	✓			✓
PA DCNR	Circuit Rider Program					✓	✓	
PA DEP	Environmental Ed.							✓
	Stormwater Mgmt. Plan Assistance					✓	✓	
PA CD	Nonpoint Source Educational Mini-Grants						✓	
PA WREN	Watershed Education Grants						✓	
Philadelphia Foundation	Discretionary Grant Making	P						

Color Key:

Federal Funding	State Funding	Local and/or NGO Funding
-----------------	---------------	--------------------------

Priority Type Key:

- P = Top priority is open space planning & partnering
- ✓ = Tributary priority

Agency Acronyms:

- PA = Pennsylvania
- EDA = Economic Development Administration
- NFWF = National Fish & Wildlife Foundation
- DCNR = Department of Conservation and Natural Resources
- DEP = Department of Environmental Protection
- CD = Conservation District
- WREN = Watershed Resource Education Network

Developing Strategic Partnerships

Warrington's devotion and local commitment to open space preservation is important. In an effort to expand the scale and reach of what the Township can accomplish with the voter approved open space funds, the EFC looked to identify other entities and organizations with a similar set of priorities that might be interested in working jointly on these efforts.

Land Trusts

Given the core desire to preserve open space, the most immediate opportunity seemed to lie with the land trust community. Upon further investigation, the EFC Project Team determined that there were two primary land trusts whose service area included the Township: **Heritage Conservancy** and **Natural Lands Trust (NLT)**.¹⁶

Both Heritage Conservancy and NLT are well-established and have a long history of effectively assisting communities in implementing their conservation priorities. In addition, both have been extremely successful in identifying and securing state and other funding sources for local land protection goals. With Warrington's open space fund as potential match for grant programs, the EFC would expect that either entity could be even more effective in pursuing outside funding sources. And, as both entities have proven highly effective at obtaining grant dollars in the past and are very familiar with the programs available, there would likely be significant efficiencies gained over the Township attempting to clear the learning curve and pursue these grants on its own.

In addition, both land trusts are skilled and experienced with a host of different types of

easements and land transactions. Partnering with either would enable the Township to explore land transaction scenarios that they might otherwise not be knowledgeable of, comfortable with, or willing to accept liability for.

The EFC Project Team initiated discussion with each of the land trusts, and both proved to be highly interested in working with the Township and worthy of further discussion based on past performance and potential to help the community leverage the local open space initiative. After confirming a shared interest on the part of the community, the EFC facilitated an initial discussion for each with a group of local representatives of Township government, elected officials, and citizens. It is the EFC's opinion that either organization would be a good fit for Warrington and could provide valuable leverage and expertise to local efforts.¹⁷

Neighboring Municipalities

Once the Township moves forward in addressing some of its open space priorities, it should reach out to neighboring municipalities to help achieve its goals and connect its green infrastructure network past Township borders. Although not a focus of this project, the EFC Project Team recommends the Township meet with Doylestown Township as a first step in partnering with neighboring municipalities, since Doylestown has been a leader in trail connections, stormwater management, wildlife habitat, and other priorities that align with Warrington's priorities. See Appendix 5 for an example of Doylestown's efforts to develop an integrated trail network, something that the Township should consider linking to in the long-term.

¹⁶ According to the National Conservation Easement Database, neither land trust holds any easements in Warrington Township or had worked with the community to this point. The only National Conservation Easement Database easement in Warrington is [Winding Brook Farm](http://windingbrookfarm.com) managed by Bucks County. (*The National Conservation Easement Database*, <http://conservationeasement.us/>.)

¹⁷ On September 23rd, 2014, the Board of Supervisors voted to approve working with the Natural Lands Trust, a decision recommended by the Open Space Task Force after meeting with both land trusts and going through an iterative process to review each proposal.

Integrating Green Infrastructure into Project Design

The EFC Project Team initially became involved with Warrington as a result of EPA Region 3's work with the Township to prioritize parcels in order to maximize ecological and environmental benefit to the community through green hubs and corridors, creating a more robust green infrastructure network. The EFC Project Team strongly encourages the Township to continue utilizing the mapping and other resources to ensure open space is acquired and preserved in the best and most efficient way possible.

In order to protect and preserve forests and conservation sites, open space will need to consist of a contiguous natural area that is not encroached with development or fragmented into smaller habitats. Large, connected open space is important for interior dwelling forest species that are of particular concern in Pennsylvania. In order to protect watersheds and water resources, open space in the forms of wetlands and vegetated forest buffers can be acquired along waterways to act as a natural filter for stormwater running off the ground.

By planning open space on a holistic scale, creating contiguous habitats, and connecting open spaces to each other, Warrington can better fulfill the priority of the people. Although Warrington has some open space areas and several parks and natural areas in the surrounding region, more can be done to connect the trails and fragmented natural areas in and around the Township. Warrington is currently nestled between parks, preserved and agricultural lands with trail systems, but is in many ways isolated from them. A main priority of Warrington is to connect these trails through Warrington to develop a robust trail network for the community and visitors.

Improving existing parks will aid in preserving natural or scenic resources, and sites of historic, geologic or botanic interests to the community. Neglected open spaces, parks, and natural areas

can quickly fall into disrepair if not properly maintained. Maintenance of natural areas includes watering vegetation until established, maintaining no-mow areas to allow it to naturalize, protecting areas from invasive species, deer browse protection, etc. See Appendix 5 for an example of good maintenance at the Binky Lee Preserve.

Developing a robust green infrastructure network will take time, but there are steps the Township can take in the near-term. The EFC Project Team recommends that Warrington first invest in demonstration projects that will generate awareness and show the community the benefits of using green infrastructure.

The green infrastructure approach that the EFC is recommending for Warrington can be difficult to envision – exactly what does “incorporating other community priorities” into open space protection plans look like?

In order to demonstrate how the proposed green infrastructure approach could play out on parcels in the Township, the team of landscape architects developed a set of concept drawings that provide a visualization of the potential for two sites under open space protection consideration, the first site focusing on the initial section of the 202-Bradford Dam Connector trail (which the team referred to as the Mill Creek Nature Trail Preserve) and the second site focusing on the Barnes Park (Phase II) recreation site (which the team referred to as North Barnes Park).¹⁸

Ultimately, the Township will want to incorporate a green infrastructure approach into its long-term planning due to the multiple benefits it can provide. Visualizing two parcels is simply the first step to communicating the value of taking a green infrastructure approach

¹⁸ The landscape architect team gave the names of each design as a placeholder. They, as well as the EFC Project Team, believe that the name of the trail site and recreation site should be determined by the citizenry to be a true reflection of the community and to foster the site's use and appreciation.

to open space planning and project implementation.

The designs on the following pages reflect the landscape architect team's depiction of what it could look like to integrate green infrastructure, stormwater management, and quality of life improvements into an existing project, creating a sense of place for Warrington residents and visitors, and helping to meet multiple community priorities. See Appendix 5 for an example of a local project that displays similar components to these designs at Stony Creek Park in neighboring Lansdale Borough.

Mill Creek Nature Trail Preserve

Warrington Township

Greening Infrastructure for Open Space and Trail Connectivity

Introduction & Goals

Mill Creek Nature Trail Preserve creates an opportunity to celebrate a commitment to a sustainable future for Warrington Township. The goals of the Mill Creek Nature Trail Preserve project are to 1) create trail connectivity, 2) incorporate green infrastructure, and 3) provide opportunities for environmental interpretation and education. The proposed master plan provides for a variety of spaces, design elements and uses while making a commitment to provide for animal and plant diversity representing the local flora and fauna of the area.

Conditions & Concepts



Existing Site Conditions

Proposed Mill Creek Trail Preserve will play an important role in linking Warrington Township parks and trails. The trail preserve has a wonderful opportunity to expand and connect Warrington Township to the 202 Trail System.



Proposed Concepts

The Mill Creek Trail Preserve vision creates multiple loops, winding through a variety of habitats. These loops and site features engage a variety of activities, from leisurely afternoon strolls for empty nesters, star gazing with children, and interesting bike routes for the avid biker.



Focused User Groups



Local and Non Local Bikers

will be drawn from US 202 to Mill Creek Nature Trail Preserve by the opportunities afforded by the proposed features: the overlook, winding trails to Mill Creek and ultimately continued access to Warrington Township Parks and the Bradford Reservoir Recreation Area.



Warrington Township Citizens

will take pride in the establishment of Mill Creek Nature Trail Preserve knowing that they have created a landscape that affords greater wildlife and forest protection while providing future generations access to nature. The proposed uses are compatible to creating both healthy citizens - walking, biking, and nature - and a healthy environment for a variety of upland forest, meadows and lowland-water oriented organisms.



Local Neighbors

will likely be the most frequent users of the Mill Creek Nature Trail Preserve and likely stewards of the preserve. Approaching from Billingsley Drive or King's Court, walkers can take evening strolls through Stump Meadow or enjoy the opportunity for nighttime stargazing. Residents from just a bit farther will have a convenient walk or bike ride to a destination that affords beautiful views and a variety of interesting seasonal habitats.



Students and Teachers

alike will find opportunities to learn about a rich variety of ecological habitats. A variety of meadows provide the ideal setting for groups of students from a science class to learn about restoration habitats in progress: forest restoration, emergent upland wetland restoration, and the development and maintenance of meadows that foster habitats for endangered pollinators.



Wildlife

will find additional improved habitat in the restoration of Mill Creek Nature Trail Preserve. Reforested area, managed for invasives, will provide additional forest habitat. Proposed meadows will provide habitat for pollinators. Upon forest establishment, meadows may be reduced to meet additional forest area goals. Stream, pond and constructed wetland habitats provide water-centric habitats to support a diversity of plants and animals.

Concept Features

- 1 **Trailhead Parking and Entry at Stump Road**
This trailhead is integrated with the improved existing parking lot on the west side of Stump Road. Design and way-finding elements provide a clear and safe identity for local and non-local users.
- 2 **Primary Trail - Pennington Trail Extension**
This proposed trail segment provides a critical first link from US 202 multi-use trail to Twin Oaks Park, Lower Nike Park, and Bradford Reservoir Recreation Area.
- 3 **Nature Play Meadow**
This meadow provides an opportunity for natural play based focused activities. It is conveniently located between two subdivisions.
- 4 **Middle Meadow**
The Middle Meadow is the central non-forested open space. Users arriving to this meadow experience a clear sense that they are in the middle of Mill Creek Nature Trail Preserve.
- 5 **The Overlook at Middle Meadow**
The overlook at Middle Meadow provides an opportunity for commanding views to the east looking towards Mill Creek. The proposed feature is an intermediate destination identifiable to users of the sites.
- 6 **Stump Meadow Wetland**
The smaller of the proposed meadows, Stump Meadow Wetland provides a more intimate space that serves primarily users from the adjacent neighborhood. The proposed small wetland feature provides an opportunity to showcase a wetland restoration habitat and adds both habitat diversity and creates an opportunity for interpretive education.
- 7 **Secret Pond**
The existing pond is integrated into the proposed trail network. The pond becomes a destination along the trail and can serve to demonstrate improved riparian buffers to protect water quality and enhance animal habitats.
- 8 **Mill Creek Trace Trail**
This proposed trail section provides a more secluded woods experience. The trail also provides opportunities for interpretive education.
- 9 **The Bridge at Mill Creek**
The bridge serves as an opportunity to celebrate the central water feature of the preserve: Mill Creek.

Conceptual Master Plan



Mill Creek Nature Trail Preserve

Warrington Township

Greening Infrastructure for Open Space and Trail Connectivity



Parking Lot and Trail Entrance Concept

The proposed parking lot, designed using green infrastructure stormwater techniques, is conveniently located close to the existing 202 Parkway Trail providing an ease of access to the proposed trail-head. Local residents, distant travelers, and school groups can easily park and explore the Mill Creek Nature Trail as well as accessing neighboring townships via the existing 202 Parkway Trail.



Primary Trail Entrance at Stump Road Concept

The entrance at Stump Road is the starting point of the Mill Creek Nature Trail and the first point connecting Warrington Township to the existing 202 Parkway Trail. This 10 foot wide paved trail complete with way-finding elements and multiple places to stop and rest, smoothly winds through reforested farmlands eventually connecting to Pinkertown Road.



Stump Meadow Wetland Concept

The Stump Meadow Wetland creates a beautiful additional habitat with opportunities for interpretive learning. Families can walk and view birds nesting nearby and aquatic wildlife. Bikers can take a brief break from the main trail and enjoy the peaceful and more secluded environment of the wetland.

Introduction & Goals

North Barnes Park provides an opportunity to use green stormwater infrastructure to provide multiple benefits. The goals of this project are to 1) integrate green infrastructure stormwater practices into the site, 2) develop a range of recreational activities, and 3) create a landscape that is connected to the township. Bioretention will allow for infiltration of water from smaller rain events. Integrated tree plantings in the parking lot and as buffers along the edge of the property will enhance the overall quality of the site, provide cooling and shade, and create a model for a well designed parking lot. The proposed master plan provides for a variety of spaces, design elements and uses, while providing for environmental, recreational, and community needs.

Conditions & Concepts



Existing Site Conditions

North Barnes Park's close proximity to existing ball fields and residential neighborhoods creates an opportunity to make strong recreational connections that are easily walkable for local residents. The most exciting opportunity for the site is its commanding views of the countryside. The existing South Barnes Park is an additional opportunity to improve pedestrian safety while connecting the two parks.



Proposed Concepts

The proposed concept transforms North Barnes Park to a park that connects to the existing sports fields across from Bristol Road and communities. The site proposes Low Impact Development (LID) techniques to address the stormwater conditions as well as develop a strong plan for tree canopy development. Incorporating the aviatric history of the site, the building takes advantage of the commanding views of the beautiful countryside of Warrington.

Concept Features

- 1 Park Entry at Kelly Road and Bristol Road**

A proposed park gateway at the intersection of Kelly Road and Bristol Road is located on the southwestern corner of the park. This designated gateway provides access to local neighborhoods - such as local neighbors coming from homes along Cadwallader Road. In addition, this park entry provides a clear destination for walkers and bikers coming from King and Turk Parks located north of North Barnes Park.
- 2 Proposed Ball Fields**

Four sports fields are proposed for the park. The soccer fields and softball fields are separated by a central parking area and small landscape area that accommodates the park's building facility.
- 3 Green Stormwater Infrastructure Parking Lot**

Bioretention units in selected bays capture stormwater that route sheetflow westward with overflow directed to proposed storm facilities in the east and west locations of the park. These features allow for integrated green stormwater infrastructure, tree plantings, and additional shrub and annual plantings to provide for exemplary design implementation in the township.
- 4 North Barnes Park Green Airport Tower**

The proposed airport tower celebrates the unique history of the site while providing needed for interior space for a restroom and other requirements for the park. In addition, a second story lookout provides an iconic feature that celebrates the site. The tower has the potential to also serve important civic functions for community events. In addition, for the growing sport of model planes and drone enthusiasts, the tower and facility could serve as an economic engine and encourage social community engagement and promote this exciting recreational activity.
- 5 Wildlife Walk and Rest Gazebo**

A wildlife walk located to the east connects to the sports fields. This artful feature promotes environmental habitats by redirecting stormwater from the parking lot to the retention pond. Nearby a gazebo provides shelter and a viewing post for bird watching.
- 6 North and South Barnes Parks Connector**

The North Barnes Park connects to the existing South Barnes Park recreational fields by a proposed designated pedestrian crossing at Bristol Road. This connector includes traffic calming devices to improve pedestrian safety, an important element to promote the safety and welfare of visitors to the parks.

Focused User Groups



Local Neighbors

will likely be some of the most frequent users of the North Barnes Park. Local neighbors biking and walking will be drawn from neighborhoods west of the park. Approaching from Kelly Road, the neighbors in these subdivisions have the closest walkable / bikeable access to the park.



Active Recreation Users

will take pride in the establishment of an exemplary recreational park that utilizes green infrastructure practices for stormwater. Playing, running, and other athletic activities provide the core experiences afforded by the addition of the sports fields. In addition, the landscape features of the park will provide an opportunity for daily enjoyment and interpretation that will add both stormwater value and overall beauty to the park.



Model Plane Enthusiasts

might be a new group of users to consider. The celebration of the historical land use of the site that was a small airstrip allows for the consideration for accommodating and celebrating the new and growing sport of flying model airplanes and autonomous vehicles.



Warrington Township Citizens

will be active users. The circular path surrounding the park will provide opportunities for jogging and strolling in a clear route. In addition, the path around the stormwater facility on the eastern side of the park allows for birdwatching, strolling and viewing of plantings.

Conceptual Master Plan



North Barness Park

Warrington Township

Greening Infrastructure for Open Space and Stormwater



Wildlife Walk and Rest Gazebo Concept

The proposed detention or retention facility is encircled by a paved path to allow for casual walking and strolling activities. A small structure provides for sitting and a place for interpretive information to communicate information about the landscape and reforested areas.



North Barness Park Airport Tower Concept

The proposed structure provides needed interior space to meet the needs of a recreation facility including temporary concessions, storage, and restrooms. Stair access is afforded to a deck on the second story level. Here users have a view of the remaining roof planted in a green roof. In addition, users also have commanding views of the ball field and of the surrounding countryside. This feature takes advantage of one of the most valuable assets of the site - a high elevation. Interpretive information could be included that communicates the forest cover in adjacent neighborhoods and helps communicate the value of green infrastructure.



Playfield Sitting Wall and Bioretention Concept

This feature integrates parking, bioretention, and the path adjacent to the ball field as an integrated design element. Water sheetflows from parking into planted bioretention areas. Overflows from larger rain events are routed to retention or detention areas. The seating walls provide for spectator viewing and resting and provide a buffer separation between parking and ball fields.

Looking Ahead

Ensuring Success

If successful, Warrington will join the municipalities who are leading the way in dovetailing natural resource protection and economic development. These communities have a number of attributes in common, including a holistic approach and strong champions that pave the way.

The first key to success is incorporating a holistic approach to open space protection. Rather than looking at each parcel of open space as an isolated unit in and of itself, Warrington should see open space potential across an entire region or landscape. When purchasing land, building new parks, or restoring and protecting open spaces, decision makers should assess the land use of surrounding parcels and strive for the most contiguous natural area possible. As discussed in this report, a green infrastructure approach provides one avenue for the Township to accomplish this.

The Township should consider its open space referendum, and the implementation of projects that align with the community's priorities as the first phase in advancing open space protection. In its next phase, the Township will likely want to develop a comprehensive, long-term plan that identifies a consensus-driven vision for the future and prioritizes investment opportunities that uses the EPA's mapping resources for the Township, as well as develop and maintain partnerships with land trusts to move the community toward a more holistic approach. This plan should also identify areas where green infrastructure can be used to reduce or otherwise manage stormwater runoff, further incorporating green infrastructure into the overarching plan for the Township.

The next key to success is to cultivate a local champion, as the most successful open space and green infrastructure initiatives in the nation have a passionate champion that is leading the

way. Local leadership can take many different forms, and it is important for local champions to work with all stakeholders, most importantly local decision makers and the general public.

Many members of the EAC and OSTF have begun to foster a culture of environmental stewards through their efforts in the community, which include naturalizing detention basins, hosting native tree planting days, developing educational signage for existing trails and parks, and the like.¹⁹ These activities are a positive start, and should continue being nourished alongside open space efforts. Regardless of how passionate or tireless the community's champion(s) is, decision makers must be engaged routinely, from attending volunteer events to being informed of the committee's initiatives with consultants as they occur. How open space dollars are invested will ultimately be the decision of local elected officials, and the better informed they are, the more likely these decisions will reflect the goals of the broader community.

The Township should continue building momentum from its open space efforts and fostering a culture of innovation and sustainability. Launching a more coordinated education and outreach campaign as a part of the green infrastructure plan would enable the Township to explore ways to incentivize private residential and corporate involvement and installation of green infrastructure as open space efforts progress. This would serve to help fulfill the community's stormwater permit requirements as well.

Conclusion

Should Warrington adopt some, if not all of the recommendations contained in this report, the Township will optimize its return on investment

¹⁹ *Warrington Environmental Advisory Council Annual Report, 2013*, http://www.egovlink.com/public_documents300/warrington/published_documents/Advisory%20Boards/Environmental/2013%20Annual%20Report.pdf

and have the opportunity to enhance the community on a number of levels.

By leveraging the identified funding opportunities, Warrington will increase the dollars available for open space, potentially by an order of magnitude. This funding can be the catalyst for simultaneously tackling several long term challenges with one cohesive solution.

Warrington can strategically create a network of trails, parks, and natural areas that can turn the Township into a shining example of resilience and sustainability. Through strategic conservation that promotes planning, protection, restoration and management for the long term, Warrington can use the open space funding to build lasting partnerships that will transform the Township and improve the quality of life and enjoyment of all its residents.

Project Team



Environmental Finance Center

Monica Billig
Program Manager, Pennsylvania Satellite Office
mbillig@umd.edu

Jen Cotting
Research Associate, Green Infrastructure
jcotting@umd.edu

Ben Alexandro
Graduate Assistant, Green Infrastructure
balexan2@umd.edu



Department of Plant Science & Landscape Architecture

David Myers, Ph.D., PLA, ASLA
Associate Professor & Coordinator
dnmyers@umd.edu

Amina Mohamed
PSLA Graduate Student
amohamed.designs@gmail.com

Nathan Allen
PSLA Graduate Student
allen.nathan@gmail.com

Acknowledgements

This project would not have been possible without the help of the many Warrington Township representatives who participated in meetings throughout the project and who provided invaluable local context and candid feedback.

A special thanks to Ivy Ross, EAC and OSTF member, for her dedication and commitment throughout the project to serve as the EFC Project Team's main point of contact. Her thoughtfulness, coordination, and flexibility helped ensure the project's success.

Thanks as well to Timothy Tieperman, Township Manager, and Roy Reider, Township Planner, for their collaboration, support, and willingness to participate in this study and for providing the Project Team with relevant materials and data. A special thanks to the members of the Warrington [Environmental Advisory Council](#) and [Open Space Task Force](#) for their support and ideas throughout the project. Their commitment to the community was valued by the Project Team.

Lastly, thank you to Bill Jenkins, Matt Nicholson, and Christine Mazzarella at U.S. EPA Region 3's [Office of Environmental Information & Analysis](#) for their sponsorship of EFC's work with Warrington Township and continued guidance. They deliver vital technical and financial resources to enable communities to act as local stewards of the environment.

**A GREEN INFRASTRUCTURE APPROACH TO LEVERAGING
LOCAL PRIORITIES IN WARRINGTON TOWNSHIP, PA**

APPENDICES

Appendix 1: Meeting List

The following is a list of all formal phone and in-person meetings held during the project timeline. In addition to this list, the EFC Project Team met weekly, held informal phone meetings with the Warrington Township main point of contact (POC)²⁰ periodically, and communicated via phone and email with multiple Warrington Township representatives²¹ and external project partners throughout the project timeline.

January 29th, 2014 – Kickoff meeting with the EFC Project Team and Warrington Township representatives

February 24th, 2014 – 1:1 in-person meetings with Warrington Township Planner and Warrington Township Chief Financial Officer

March 26th, 2014– Phone meeting with Warrington Township Engineer

April 1st, 2014 – 1:1 phone meetings with Warrington Township main POC and Warrington Township elected official

April 23rd, 2014 – Initial phone meeting with the Natural Lands Trust

April 30th, 2014 – In-person meeting with Warrington Township representatives

May 7th, 2014 – Initial phone meeting with the Heritage Conservancy

June 2nd, 2014 – Site visits with the EFC Project Team, PSLA Project Team, and Warrington Township representatives

June 11th, 2014 – In-person meeting with Warrington Township representatives²²

June 26th, 2014 – In-person meeting facilitated by the EFC Project Team with the Heritage Conservancy and Warrington Township representatives

July 10th, 2014 – In-person meeting facilitated by the EFC Project Team with the Natural Lands Trust and Warrington Township representatives

September, 23rd 2014 – Final presentation by the EFC Project Team and PSLA Department Professor to the Board of Supervisors

²⁰ Warrington Environmental Advisory Council (EAC) and Open Space Task Force (OSTF) member Ivy Ross served as the main point of contact (POC) from the Township.

²¹ The EFC Project Team was fortunate to have a set of Township representatives that were engaged in all aspects of the project. This included Township staff and an elected official, as well as members of the EAC and OSTF. For the purposes of this list, this group is referred to as “*Warrington Township representatives*”.

²² This meeting was a formal gathering of the EAC and OSTF. Its purpose was for the EFC Project Team and EPA Region 3 representative to present initial findings and receive feedback from the joint committee.

Appendix 2: Tier I Funding Opportunity Tables

Table 1.1

Organization	Program	Description	Eligibility	Funding	Deadline	Contact Info	Priority	Match	Website	Notes
National Park Service	Land and Water Conservation Fund State Grants	Supports outdoor recreation uses and related infrastructure such as restrooms. Areas must be open to the general public for public outdoor recreation use forever.	States, tribes, counties, cities, local governments. Need a state agency to be lead on application	\$5,000 - \$1.5 million, but overall average about \$100,000	Annual: 22-Aug-14	Elisabeth Fondriest 202-354-6916 elisabeth_fondriest@nps.gov	Existing parks	1:1 match	http://go.o.g/Pl3BeH	More info: http://www.nps.gov/lwcf/index.htm
Natural Lands Trust	PECO Green Region Program	Open space protection by municipalities as a means to encourage the wisest use of scarce resources.	Municipality in Southeast PA (i.e. Bucks County)	up to \$10,000	End of every year	Holly Harper, PECO Green Region Open Space Program Administrator c/o Natural Lands Trust, 1031 Palmers Mill Road, Media, PA 19063 610-353-5587 info@natlands.org	Open space acquisition	1:1 match	http://go.o.g/k5V6Sk	Great match for acquiring open space
Open Space Institute	Bayshore-Highlands Fund	Provides grants and loans for land conservation projects that conserve wildlife habitat, provide outdoor recreational access, protect clean water, or preserve farm and forestland. Will achieve one or more of the following: -Protect significant habitat by creating or expanding parks & wildlife preserves - Protect key watershed lands - Conserve working farms - Create and expand greenways and trails	Land must be at least 30 acres, preference if contiguous with existing preserved land, corridors, rare species, significant scale. Farmland preservation must contain 50% important soils and mechanism to ensure permanent BMPs and environmental stewardship	typically \$50,000-\$200,000	Annual, Last due date October 18, 2013	Open Space Institute 62 Hampton Road, Pittstown, NJ 08867 Bill Rawlyk, Mid Atlantic Coordinator Office: 908-628-4299 Cell: 908-642-4747 brawlyk@osiny.org General Information & Application Help Yasemin Unal-Rodriguez yunal-rodriquez@osiny.org 212-290-8200 x 311	Open space acquisition - GI Network	Will fund up to 1/6 (or 16.66%) of the total project cost.	http://go.o.g/HxdvHL	Heritage Conservancy has won multiple times in Bucks County

Table 1.2

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Priority	Match	Website	Notes
PA DCNR	Community Recreation and Conservation Program	Funds projects that plan for, acquire, develop, and/or rehabilitate public park, recreation, open space, greenway, trail and conservation areas and facilities	County or municipal government educational institution Non-profit with 501(c)3 IRS Status Non-profit with PA Bureau of Charitable Organizations status	Depends on source. Cash, noncash, land donation Playgrounds: \$60,000 other awards range: \$15,000-\$300,000	Annually around April 16 th	PADCNR Bureau of Recreation and Conservation Attn: Grants Customer Service Center, 400 Market Street, RC SOB 5th Floor, P.O. Box 8475 Harrisburg, PA 17105 Grants Customer Service 800-326-7734 dcnr-grants@pa.gov	1) Open space 2) Trails 3) Existing parks	Most are 50% match, combine Cash / Non-Cash	http://google.com/benYDg PDF: http://google.com/mJQEOR	Great for creating parks
	Rivers Conservation Program	Funds projects that help develop watershed/river-corridor conservation plans, assist with land acquisition and development projects contained and recommended within a registered River Conservation Plans	County or Municipality Priority given to plan recommendation implementation in PA River Registry watersheds	previous range from \$12,000-\$63,000	Annually around April 16 th	<u>Southeast Region 1:</u> 801 Market Street, Suite 6020 Philadelphia, PA 197107 Drew Gilchrist, Environmental Planner 215-560-1183 agilchrist@pa.gov	1) Open space - GI Network	Minimum 50% cash or non-cash value	http://google.com/JIZMoX	The acquisition assistance for river areas is most intriguing.
	Recreational Trails Program	Assists with the construction, renovation and maintenance of trails and trail related facilities for both motorized and non-motorized recreational trail use, the purchase or lease of equipment for trail maintenance and construction and the development of educational materials and programs	Federal & state agencies, local governments, non-profit and for-profit organizations	Grant- Cash and noncash (in 2007 Heritage Conservancy awarded \$65,000)	Annually around April 16 th	Jeffrey Knowles, Environmental Planner 215-560-1182 jeknowles@pa.gov	2) Trails 3) Existing parks - GI Network	80/20 match, except for land acquisition: 50/50	http://google.com/vDm9wM	Perfect for creating trails
PA DEP	Coastal Zone Management Grant Program	Typical projects funded include studies, planning, design, research, land acquisition, and minor construction projects for hazards, wetlands, public access, intergovernmental coordination, ocean resources, and nonpoint pollution.	Any coastal municipality, county government entity, public authority, state government agency, incorporated nonprofit organization, school district or institution of higher learning. Activities must take place within the Coastal Zone boundaries of Pennsylvania.	\$50,000 max	Most likely October	P.O. Box 8465, 400 Market Street, Harrisburg, PA 17105 717-783-4690 (fax) Amy Miller, Delaware Valley Regional Planning Commission 215-238-2930 amiller@dvrpc.org Stacey Box, CRM Central Office 717-772-5622 e-mail: sbox@pa.gov	1) open space planning -MS4 -TMDL	1:1 match	http://google.com/T7HO2D . http://google.com/f4YIW1	Warrington is in the DE Estuary Coastal Zone PDF: http://google.com/f4YIW1

Table 1.3

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Priority	Match	Website	Notes
PA DCED	Greenways, Trails and Recreation	Planning, acquisition, development, rehabilitation and repair of greenways, recreational trails, open space, parks & beautification projects.	Municipalities, authorized organization, higher education, watershed organization, businesses	Grant \$250,000 max	Annual: last in 21-Jul-14	PA Department of Community and Economic Development Center for Business Financing, Site Development Division, Greenways, Trails and Recreation Program 400 North Street, 4th Floor Commonwealth Keystone Building, Harrisburg, PA 17120 717-787-6245 717-772-3581 (fax) ra-dcedcbf@state.pa.us	Open space Trails Existing parks	1:1 match	http://go.o.gi/zRjqfQ	High priority for creating greenways.
	Multimodal Transportation Fund	Funds projects for trails including: Sidewalk/crosswalk safety, improvements, bicycle lanes/route designation, highway noise and sound barriers, lighting, bridges, etc. which will benefit state system and local economic development, greenways, etc. Focus on projects connecting existing trails.	Municipalities, councils of governments, businesses, economic development organization, railroad	\$100,000-\$3,000,000	Annual: last in 20-June-14		Trails GI Network Quality of life	30% local match	http://go.o.gi/Lgi3qz	Strong applications are part of state plans, connect trails. Can be used for bridges
	Watershed Restoration & Protection Program	Restore, and maintain streams impaired by nonpoint source pollution to remove these streams from DEP's Impaired Waters list.	Municipalities, councils of governments, authorized organization, higher education institutions, watershed organization, businesses	Grant \$300,000 max	Annual: last in 21-Jul-14		Open space Existing parks TMDL	Must provide 15% cash match	http://go.o.gi/Kp4f5u	Great choice for riparian buffers and BMPs
PennDOT	Transportation Alternatives Program	Trail and open space improvement projects: Bicycle & pedestrian facilities, construct overlooks, vegetation management, reforestation, re-vegetation, stormwater management and stream improvements, wildlife mortality mitigation, wetland acquisition restoration.	Local and regional governments. The organization is considered a "local or regional governmental entity with responsibility for oversight of transportation or recreational trails"	Average grant \$600,000 Minimum \$50,000 for regional project, otherwise \$50,000 Soft max: \$1,000,000	Biannual Next cycle April 2016	PA DOT Center for Program Development & Management 400 North Street, 6th Floor Harrisburg PA 17120 717-787-8065 717-787.5247 (fax) cmetka@pa.gov Ryan Gallagher, Planning 215-238-2881 rgallagher@dvrpc.org	Open space Trails Existing parks GI network MS4 TMDL Quality of life	Reimburse grant, encouraged but no percent listed	http://go.o.gi/3G9Awm	
William Penn Foundation	Watershed Protection	Grants for 5 key goals: (1) Watershed research, policy, (2) Protect and restore places of ecological significance, (3) Complete "The Circuit," regional trail network, (4) Coordinated outreach, (5) Aid outdoorsmen	Delaware Watershed only	Varies, others in area: \$20,000-\$500,000	Rolling: next deadline 12-Sep-2014	Two Logan Square, 11th Floor 100 North 18th Street Philadelphia, PA 19103 215-988-1830 grants@williampennfoundation.org	Open space Trails Quality of life	None listed	http://www.wpennfdn.org/	Total annual giving: \$81,719,258

Appendix 3: Tier II Funding Opportunity Tables

Table 2.1

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Match	Website	Notes
NFWF	Five Star & Urban Waters Restoration Program	Stewardship and restoration of coastal, wetland and riparian ecosystems. Strong applications include: meaningful education and training activities, integration with K-12 environmental curriculum, measurable ecological, educational and community benefits. At least 5 partners needed.	Any public or private entity that can receive grants. 5 partners needed. (Preference given to projects benefiting public land)	\$20,000-\$50,000 (1 year grants \$20,000-\$30,000. 2 year grants up to \$50,000)	Last due Feb 5, 2014	Carrie Clingan Northeast, Mid-Atlantic, South 202-595-2471 carrie.clingan@nfwf.org	1:1 match in funds or in-kind	http://www.nfwf.org/fivestar/Pages/2014rfp.aspx	More partnership needed. A greater focus on education would make a stronger application.

Table 2.2

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Match	Website	Notes
PENNVEST	Green Initiatives	Grants and low interest loans available for water infrastructure including green solutions to water quality management	Varies depending on applicant	Varies	8 weeks prior to quarterly board meetings	Tess Schlupp PV Region 3 717-783-8618 tschlupp@pa.gov	N/A	http://www.portals.state.pa.us/portals/server.pt/community/funding_programs/9322/green_initiatives/541807	Planning consultation meeting highly recommended
PA DCNR	Land Trust Program	Funds projects that plan for and acquire critical habitat and open space and natural areas.	Prequalified land trust and conservancies	Grant varies year to year \$10,000 to \$380,000	Annually around April 16 th	Grants Customer Service Center 400 Market Street, RCOB 5th Floor P.O. Box 8475 Harrisburg, PA 17105 Drew Gilchrist, Environmental Planner 215-560-1183 agilchrist@pa.gov	1:1 cash and/or land donation	https://www.grants.dcnr.state.pa.us/LearnMore.aspx?GrantProgramId=90	Must team up with a conservancy. Warrington itself is not eligible.
	Partnerships Program	Funds projects that help build professional capacity & provide plan implementation, education and training. Used to advance: - DCNR's Strategic Plan - Greenway Plan - Statewide Outdoor Recreation Plan - Heritage Areas - Conservation Landscape Initiatives	County or municipal government, educational Institution, non-profit with 501(c)3 IRS Status non-profit with PA Bureau of Charitable Organizations status	Depends on what plan eligible for	Annually around April 16 th		Match is based upon the funding source and level of available funding.	PDF: http://goo.gl/MXeUHT http://goo.gl/gwhWh9	Useful for advancing green infrastructure and green space as part of their plan.
	Peer to Peer Program	Funds projects that help municipalities improve their park, recreation, and conservation services through a collaboration. Contracts with experienced park, recreation & conservation professionals from nearby communities & work closely with local leaders.	County or municipal government	\$10,000 max	Rolling		10% local cash match.	http://goo.gl/4bf8dA	Could help create partnerships with helpful park experts

Table 2.3

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Match	Website	Notes
PADEP	Growing Greener Watershed Protection Grants	Provides funding to clean up non-point sources of pollution throughout Pennsylvania. Includes local watershed-based conservation projects. The grants were established by the Environmental Stewardship and Watershed Protection Act.	Counties, municipalities, county conservation districts; watershed organizations; other organizations involved in PA restoration and protection	About \$2 million available per year for all grants. Individual grants ranged from \$25,000-\$900,000	July 11 th 2014	Rachel Carson State Office Building, 15th Floor, 400 Market St., PO Box 8776 Harrisburg, PA 17105 717-705-5400 GrowingGreener@pa.gov	Must match 15% costs at a minimum	http://www.portal.state.pa.us/portal/server.pt/community/growing_greener/13958	
	Nonpoint Source Implementation Program Grants	Similar to the Growing Greener grant: Provides funding to assist in implementing Pennsylvania's Nonpoint Source Management Program. This includes funding for managing agricultural and urban runoff, and natural channel design/stream bank stabilization projects.	Counties, municipalities, school districts, nonprofits, conservation districts and watershed groups	Over \$13 million in total funds, (In 2012, Bucks Conservation District won \$293,900)	July 11 th	DEP Nonpoint Source Section, Location Code 35CONREST, PO Box 69183, Harrisburg, PA 17106 717-772-5807	Not listed	http://www.portal.state.pa.us/portal/server.pt/community/nonpoint_source_management/10615	
USDA-RD	Community Facility Grants	Community Programs provides grants to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population.	Municipalities, counties, non-profit corporations and tribal governments. (Warrington has 17,580 people.)	Depends on median household income	Contact local Field Office	Cumberland Area Office 401 E. Louthier Street, Suite 304 Carlisle, PA 17013 855-813-2863 Chester Pogorzelski Area Specialist 717-237-2277 chester.pogorzelski@pa.usda.gov	Grant will cover up to 75% of project costs	http://www.rurdev.usda.gov/HAD-CF_Grants.html	Only applies if it counts as a "development of essential community facilities."
USDOT	TIGER IV grants	Grants for infrastructure improvements, including bike trails.	State and local governments	\$10 million-\$150 million	April 28 th 2014	Office of the Secretary of Transportation Infrastructure, Finance & Innovation 1200 New Jersey Ave, SE Washington, DC 20590 202-366-0301 TTY/Assistive Device: 800-877-8339 TIGERgrants@dot.gov	80% paid by DOT	http://www.dot.gov/tiger/nofa	May be a bit ambitious for this limited project scope. Tiger IV grant recently won by Memphis for a bike trail.

Appendix 4: Tier III Funding Opportunity Tables

Table 3.1

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Match	Website	Notes
PA DCNR	Circuit Rider Program	To initiate new programs and services for governments that do not have the financial resources to hire a professional full-time staff person.	County or municipal government	Grant for circuit rider's salary only & Bureau-approved technical assistance & training expenses.	Rolling	Bureau of Recreation and Conservation Attn: Grants Customer Service Center 400 Market Street, RCSOB 5th Floor P.O. Box 8475, Harrisburg, PA 17105 Drew Gilchrist, Environmental Planner 215-560-1183 agilchrist@pa.gov	Cash only. yr. 1: up to 100% salary. yr. 2: up to 75% yr. 3: up to 50% yr. 4: up to 25%	https://www.grants.dcnr.state.pa.us/GrantPrograms.aspx	It would be difficult to show Warrington is lacking in such resources
PA DEP	Enactment of Ordinances and Implementation of Stormwater Management Plans	Reimburses municipalities for adoption or revision of ordinances, regulations, enforcement, and implementation costs for complying with the PA Stormwater Act	Municipalities	Approximately \$1.2 million is allocated for the development of plans	There is currently no appropriation for this program.	Applications submitted to the DEP will be held in the event funding is made available.	In theory pays up to 75% of plan cost	http://goo.gl/2sZxU5	Funding unknown
	Environmental Education Grants	Promote environmental education and resource management to encourage a healthy environment.	Municipalities, schools, conservation districts, nonprofits, conservation organizations, businesses	Up to \$3,000	Beginning of the year (Last open 6-Jan-2014)	PA DEP, EE Grants Program, EE Center, First Floor, RCSOB, P.O. Box 2063, Harrisburg, PA 17105 717-772-1828 717-705-4093 (fax)	Strongly encouraged, but not required	http://tinyurl.com/9l2v4oa	Low funding level for education programs
PACD	Nonpoint Source Pollution Educational Mini-Grants (PACD)	To inform and educate people about the causes, consequences, and clean-up of nonpoint source water pollution	Conservation districts	\$100-\$2500	2014 already awarded	Robert B. Maiden 25 North Front Street Harrisburg, PA 17101 717-238-7223 robert-maiden@pacd.org	None listed	http://tinyurl.com/mzz73wu	Low funding level for education programs

Table 3.2

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Match	Website	Notes
Pennsylvania Water Resources Education Network (WREN)	Watershed Education Grants	Projects should be designed to encourage individual or collective action that will protect and improve local water resources. The League of Women Voters of Pennsylvania Citizen Education Fund accepts proposals for watershed education projects sponsored by community based partnerships that educate, build awareness, and promote water-sustaining public policies and/or behavior change.	Counties, municipalities, authorities, school districts, nonprofits, conservation districts and other entities are eligible	Up to \$5,000 for local communities, up to \$7,000 for regional or county level collaborative	Last Open 21-March-2014	League of Women Voters of PA Citizen Education Fund WREN Watershed Ed Grant Application 226 Forster Street Harrisburg, PA 17102 Julie Kollar, WREN Project Director juliekwren@verizon.net	Not listed	http://wren.palwv.org/grants/grants_wren.html	Focus on education
Dominion Foundation	Environmental Stewardship Grant	Grants in the following fields: -Putting energy to work for environment - Project Plant It! - Conserving land - Protecting water resources - Making nature accessible	501C3 Nonprofits	Usually \$1,000 to \$15,000	Rolling: Requests are considered quarterly	projectplantit@dom.com Contact: https://www.dom.com/about/community/foundation/contact-us.jsp	Not listed	http://tinyurl.com/mpy67t8	Mostly service Virginia and areas outside Bucks. For nonprofits only.
NFWF	America's Great Outdoors Land Conservation Stewardship Program	Develop community-based partnerships that further conservation in distinct landscapes. The initiative brings together public and private partners to replicate successful community-driven regional landscape conservation coalitions.	Non-profit organizations, tribal groups	Grants \$25,000-\$150,000 depending on category	Unknown. Last open July 2012	Teal Edelen teal.edelen@nfwf.org	None required, but will make application more competitive	http://www.nfwf.org/agolandscape/Pages/home.aspx	Long elapsed. For nonprofits only

Table 3.3

Organization	Program	Description	Eligibility	Funding level	Deadline	Contact Info	Match	Website	Notes
The Heinz Foundation	Environmental Grant program	Various environmental causes can apply. - Promote & support sustainable community - Prevent environmental health problems - Environmental education & engagement	Most winners in southwestern PA, but will fund elsewhere in PA. 501(c)(3) organizations. (The Clean Water Fund wins regularly)	Varies (60 million given annually)	Rolling, large proposals reviewed spring & fall. Proposals \$50,000 or less in interim.	Vira I. Heinz Endowment 30 Dominion Tower 625 Liberty Avenue Pittsburgh, PA 15222 412-281-5777 412-281-5788 (fax)	Not listed	http://www.heinz.org/Interior.aspx?id=57	Total annual giving, \$57,724,243
The Philadelphia Foundation	Discretionary Grant making	Foundation invests in strengthening nonprofit organizations and provides general operating support to improve organizational effectiveness through investment in business and management practices. (With some exceptions, The Philadelphia Foundation does not fund specific programs or projects.)	Nonprofit 501(c)(3) organizations in Bucks area with budgets under \$5 million where at least 33% will assist underprivileged communities	General Operating Support, max 7% nonprofit budget (\$35,000 max) Organizational Effectiveness Grants: max 10% nonprofit budget. (\$40,000 max)	Rolling until mid-October, no grants accepted at the end of the year	The Philadelphia Foundation 1234 Market Street, Suite 1800 Philadelphia, PA 19107 215-563-6417 215-563-6882 (fax) Libby Walsh lwalsh@philafound.org	Not listed	http://go.gl/F36z2E	Warrington is not very underprivileged. Nonprofits only
Economic Development Administration Department of Commerce	Economic Development Assistance	EDA's programs provide economically distressed communities and regions with comprehensive and flexible resources to address a wide variety of economic needs, and are designed to lead to the creation and retention of jobs and increased private investment.	Nonprofit or government	\$100,000 to \$1,250,000 investment (Average \$820,000)	Different cycles, 2014	Philadelphia Regional Office, Curtis Center, Suite 140 South 601 Walnut Street, Philadelphia, PA 19106 Phone:(215) 597-4603 Fax:(215) 597-1063 Willie C. Taylor, Regional Director New York, Pennsylvania: Andrew Reid 267-687-4317 areid@eda.gov	50% of costs plus extra 30% under certain circumstances	http://www.grants.gov/web/grants/view-opportunity.html?oppId=248297	Need to claim economic development in underserved area. Median income in Warrington is about twice that of PA

Appendix 5: Case Story Examples for Warrington Township’s Consideration

The EFC Project Team identified local and regional examples for Warrington Township to utilize as models when developing project proposals and a larger green infrastructure plan.

Example 1: Destination Peace Valley, an Integrated Trail Network²³



PHOTO FROM THE BAKER FEASIBILITY STUDY FOR THE DESTINATION PEACE VALLEY TRAIL

Townships often partner for integrated projects that will help all involved. The Destination Peace Valley plan is a great example of how Doylestown Township is leveraging the long term goals and priorities of neighboring municipalities, Bucks County, the greater Philadelphia region, and the PA DCNR to magnify their impact in trail construction. Partnering municipalities include Doylestown Borough, New Britain Borough, Chalfont, and New Britain Township. This trail will connect the 1,500 acres of rural and natural open space areas. It will connect the Nature Center to 14 miles of nature trails at Peace Valley Park to the Doylestown’s 15 miles of existing trails. It will also connect to the planed Tri-municipal Trail Network in New Britain Township, New

Britain Borough and Chalfont Borough. Although quite large, this project is a small piece of ‘The Circuit,’²⁴ the greater Philadelphia region trail network. The Circuit is spearheaded by a large coalition of non-profit organizations, foundations, and agencies called ‘[Connect the Circuit](#)’ which has the vision of joining the 750 miles of existing trails in this region. Connect the Circuit creates maps, aids in funding opportunities and circulates petitions to generate public support.

The Destination Peace Valley partner municipalities hired a consultant to complete [a feasibility study](#) in 2011 to identify different linkage options, demand, potential users, and design options. The study outlined two different options for five sections of trails to be constructed at a cost ranging from half a million to one and a half million dollars. It also gave recommendations for trail funding options.



PHOTOS FROM THE BAKER FEASIBILITY STUDY FOR THE DESTINATION PEACE VALLEY TRAIL

²³ Michael Baker Jr., Inc., *Feasibility Study for the Destination Peace Valley Trail*, January 2011, <http://www.doylestownpa.org/wp-content/uploads/2013/09/Destination-Peace-Valley-Feasibility-Study-final-1-2011.pdf>

²⁴ The Circuit, *Greater Philadelphia’s Regional Trail Network*, <http://connectthecircuit.org/>

Destination Peace Valley is now moving forward and according to the [Doylestown-Buckingham-NewBritain Patch](#), there is a good chance of the plan being fund by the state.²⁵

This trail connection plan is similar to what Warrington is proposing. The main difference is Destination Peace Valley has the commitments and partnerships of a steering committee from several municipalities. Warrington does not have to go it alone. Coalitions are a valuable resource for sharing expertise and creating a strong united front on funding opportunities.

Example 2: Binky Lee Preserve, *Demonstrating Good Maintenance*²⁶

The Natural Lands Trust (NLT) procured a 20-acre former agricultural field in West Pikeland Township, Chester County, PA in 1989. The field area created several edge effects which were attracting many common and generalist animals such as the parasitic nesting cowbird and an overabundance of white tailed deer. Many forest interior dwelling species such as wood thrushes and other song birds are declining throughout Pennsylvania and the nation.

NLT not only replanted the site with 10,000 native trees, but monitored and maintained the area to ensure a healthy forest would regrow. The staff mowed areas around the trees for 5-8 years, used tree shelters, and annually sprayed herbicides in areas between the trees to reduce invasive competition. This maintenance let the trees grow big enough to thrive on their own. Although 95% of the maintained and sheltered seedlings survived, none of the unprotected trees did due to heavy deer browsing. Once the canopy trees matured, NLT planted shrubs and understory trees to increase forest diversity and habitat. Today, the site is not only a thriving habitat, but a producer of clean water and protected soils.



PHOTO FROM A TASTE FOR THE WOODS WITH NEIL BRENNEN, BINKY LEE PRESERVE, SEPTEMBER 2013, [HTTP://ATASTEFORTHEWOODS.COM/?P=114](http://ATASTEFORTHEWOODS.COM/?P=114)



PHOTO FROM A TASTE FOR THE WOODS WITH NEIL BRENNEN, BINKY LEE PRESERVE, SEPTEMBER 2013, [HTTP://ATASTEFORTHEWOODS.COM/?P=114](http://ATASTEFORTHEWOODS.COM/?P=114)

The initial planting cost was \$32,000 including the stakes and shelters. The project also wisely included a maintenance budget of \$500 to \$2,000 per year which ensured a beautiful forest preserve which is now thriving in Chester County. The funding from this project came largely from the USDA Conservation Reserve Program.

The thoughtful planning and maintenance is a wise lesson for Warrington, particularly on the nature trail site project. Deer damage is an element Warrington may well have to take into account. Proper tree shelters, maintenance, and avoiding habitat fragmentation all can ensure a park that will thrive in perpetuity.

²⁵ Larson, Sarah, *Bike and Hike Trail Project Advances*, Doylestown-Buckingham-New Britain Patch, August 7, 2012, http://patch.com/pennsylvania/doylestown/bike-and-hike-trail-project-advances#.U_4jQfldWJ4

²⁶ *Afforestation, Converting a farm field to forest*, Natural Lands Trust, September 2008, <http://www.natlands.org/wp-content/uploads/downloads/2013/01/AfforestationBLee2008-09.pdf>

Example 3: Stony Creek Park, *an Exemplary Park Construction Project*²⁷

As Warrington procures parcels of land, the next step is to transform them into beautiful park and open space. When looking for models of successful park construction, Warrington need to look no further than Stony Creek Park. Stony Creek Park is a 21-acre parcel acquired by Lansdale Borough, PA from Ford Electronic with the help of the Montgomery County open space program. This former industrial site was transformed into a community park that earned the 2008 Land Development Award from The Montgomery Excellence in Planning and Design thanks to its innovative active and passive recreational activities that appeal to residents of all ages. Several features made it an exemplary community park and a popular destination:

- 18 acres of forest
- Variety of habitats
- Walking trails
- Interpretive signage
- Low impact parking lot to help stormwater infiltration
- Environmentally sensitive design and techniques
- Native vegetation maintenance
- Creative site design and amenities
- Native plantings:
 - 90 trees
 - 45 shrubs
 - Hundreds of perennials and grasses
- Maintained natural meadows

Warrington has the opportunity to create exemplary parks that will truly be an eternal asset to the community.



PHOTOS FROM THE MONTGOMERY COUNTY PLANNING COMMISSION, MODIFIED BY THE EFC PROJECT TEAM

²⁷ *Stony Creek Park, Lansdale Borough, The Montgomery Awards, Excellence in Planning and Design, 2008 Land Development Award, The Montgomery County Planning Commission, <http://www.montcopa.org/DocumentCenter/View/3847>*

Example 4: Aldie Manor, Historic Preservation through Innovative Financing²⁸

Warrington is interested in using the Old Mill Farm property as a venue for wedding and other events to act as a potential revenue stream. In the heart of Bucks County, the Heritage Conservancy succeeded in making a similar venture quite lucrative. HC purchased the dilapidated Aldie Manor for one dollar provided that they could raise the money to restore it to its former beauty of an English Tudor style manor. Twenty-five years later, it is now the base of operations for Heritage Conservancy and a beautiful venue for weddings, parties, conferences and much more. Thanks to the beautiful natural areas restored around the grounds as well as the mansion itself, the area is a coveted spot for venue

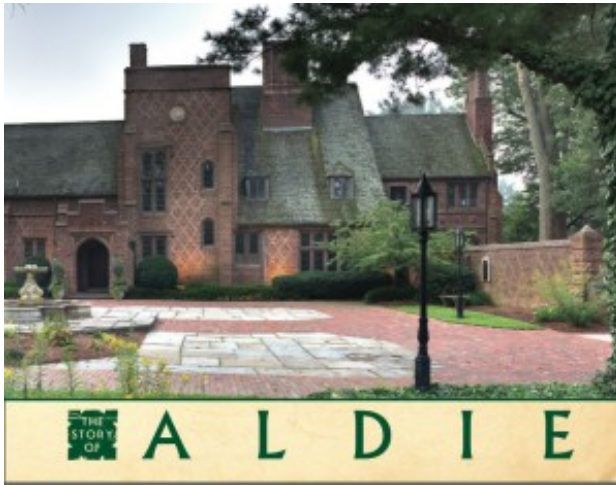


PHOTO FROM THE STORY OF ALDIE, LIMITED EDITION BOOK CELEBRATING HERITAGE CONSERVANCY'S 25TH ANNIVERSARY OF RESTORATION AND OCCUPATION OF HISTORIC ALDIE MANSION

rentals. It has capacity for 230 guests in its 2,400 square foot atrium. The architecture and natural grounds are surrounded by a native forest that gives the area a secluded and historic feel. It was even voted "Best of Weddings" by the Knot in 2011. In 2012 it took in \$267,138 from renting the venue and over \$81,000 in catering commissions according to [HC's 990](#).²⁹

By restoring Old Mill Farm and the natural forest and vegetation around it, Warrington could create a similar experience. The Aldie Mansion books up quickly despite its high premium rates. Warrington potentially could transform Old Mill Farm into a similar venue that could be an affordable alternative to the Mansion, and generate revenue for the Township's open space priorities.

²⁸ *The Story of Aldie*, Heritage Conservancy, Limited edition book, <http://www.heritageconservancy.org/book-the-story-of-aldie/>

²⁹ Bee, Bergvall & Co. P.C., *Heritage Conservancy, Inc. 2012 Tax Return*, <http://www.heritageconservancy.org/wp-content/uploads/2012/02/2012-990-AMENDED.pdf>