2006 OPEN SPACE PLAN

WORCESTER TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA

WORCESTER TOWNSHIP OFFICIALS

MONTGOMERY COUNTY, PENNSYLVANIA

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Special thanks to Worcester artist Bill Bourne for permission to reproduce his original watercolors of Peter Wentz Farmstead, Fairview Village, Center Point and Cedars

Cover Background: The Methacton Oak
Credit: Susan Caughlan

Cover Inset: Peter Wentz Farmstead
Credit: Susan Caughlan

WORCESTER TOWNSHIP

OPEN SPACE PLAN

2006

Prepared by MCPC with funding through
The Montgomery County Green Fields/Green Towns Program

Montgomery County Planning Commission

WORCESTER TOWNSHIP
BOARD OF SUPERVISORS

MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA

ADOPTION OF THE MUNICIPAL OPEN SPACE PLAN

RESOLUTION 06-09

WHEREAS, On December 18, 2003, the Commissioners of Montgomery County established the Green Fields/ Green Towns Program which provides grant funds for green infrastructure improvements and open space preservation; and

WHEREAS, the Green Fields/ Green Towns Program requires the preparation of municipal open space plans and provides grants which may be used by any municipality in Montgomery County for the preparation of an open space plan; and

WHEREAS, the township of Worcester has prepared an open space plan in accordance with guidelines established by the county; and

WHEREAS, the open space plan has been reviewed by the Montgomery County Open Space Board in accordance with guidelines established by the county; and

WHEREAS, copies of the draft open space plan were distributed to all the adjacent municipalities and the Methacton School District on April 28, 2006; and

WHEREAS, the Open Space Plan Committee conducted a public meeting on the plan on June 21, 2006 and received comments on the plan; and

WHEREAS, a duly advertised public hearing on the Open Space Plan was held on June 21, 2006.

NOW THEREFORE BE IT RESOLVED by the Board of Supervisors of Worcester Township hereby adopt the Open Space Plan in accordance with Section 302 of the Municipalities Planning Code and authorize its submission to the Montgomery County Open Space Board.

Duly presented and adopted by the Board of Supervisors in public meeting held this June 21, 2006.

Township of Worcester

Montgomery County, Pennsylvania

By: _____
John R. Harris, Chairman

Attest: _____
Arthur C. Bustard, Secretary

The Methacton Oak in Fall — Photo: Donald C. Atkinson

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Cows and Horses in Neighboring Pastures in Worcester — Photo: Scott Rothenberger

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Hay Rake in Snow

Photo: Scott Rothenberger

PREFACE

Worcester's Open Space Committee started work on this plan in the spring of 2004, as soon as the Montgomery County Planning Commission authorized municipalities to begin revising their open space plans. The committee includes representatives of several township organizations that are active in the community and are committed to the future of Worcester as a rural community: the Farmers Union Horse Company, the Friends of Worcester, the Peter Wentz Farmstead Society, the Worcester Historical Society, the Township Planning Commission, and the Board of Supervisors. We were also fortunate to have the assistance of The Natural Lands Trust, under a grant from the Pennsylvania Department of Conservation of Natural Resources, working with our Montgomery County planners to prepare GIS-based resource maps that include data from the entire Piedmont region as well as from our township and county. Our purpose in combining these perspectives – the Worcester microcosm and the Piedmont region macrocosm – was to craft an Open Space Plan that will help preserve open space in Worcester and will also benefit our regional community.

Virginia Bluebells in Evansburg State Park Photo: David Brooks

Executive Summary

This plan sets forth an ambitious agenda for the preservation and enhancement of open space, natural and historic resources, and cultural features in Worcester Township. The plan updates the township's 1995 Open Space Plan and complies with the requirements of the Montgomery County Open Space Program. In addition to the assistance of the Montgomery County Planning Commission, the township also secured the expertise of the Natural Lands Trust (NLT) to prepare maps of its natural resources. NLT's SmartConservation™ mapping, which was provided through a grant from DCNR, enabled the township to analyze its natural resources in combination and to prioritize them for preservation, and also gave the township the benefit of a 15-county regional perspective in analyzing and prioritizing natural resources. As a result, Worcester can make resource protection decisions from a region-wide viewpoint as well as a local one.

This planning process began in March 2004, when Worcester, with the county's permission, became one of the first municipalities to begin updating its Open Space Plan. The committee was composed of representatives of several community groups that

are active in the township: the Worcester Historical Society, the Friends of Worcester, the Farmers Union Horse Company, the Peter Wentz Farmstead Society, the Township Planning Commission, and the Board of Supervisors. One of the committee's first actions, after considering preliminary goals and objectives, was to hold a public meeting to present these goals to the residents and to solicit their input concerning what resources they felt were most important to protect and preserve in the township.

With this information in hand, the committee began a review of the resource maps generated by the county planning commission as well as NLT's Smart-Conservation™ maps. Analyzing the information from these two sets of maps and determining how to prioritize it was by far the committee's most challenging task, but the result is that the township can "zoom in" on the microcosm of township-specific resources or "zoom out" to consider the macrocosm of resources over the 15-county area. The committee feels that this dual perspective will enable the township to act to protect natural resources for the maximum effect both within and beyond its borders. The basic resource maps are shown and explained in Chapter 4, and the unprotected resources are analyzed and prioritized in Chapter 6. These maps are intended to be working sources of information as the township's elected and appointed officials work with preservation and development strategies.

The committee also analyzed agricultural, historic, recreational, and scenic resources. Existing open space was cataloged and its protection status noted. Destinations within and outside the township were identified, and linkages to those destinations were plotted. The trail systems of neighboring municipalities and the county were included in this review. Members of the committee met with planners and officials from adjacent municipalities and Evansburg State Park to review possibilities for cross-municipal linkages. Green infrastructure, the connection of natural habitat for the benefit of plants and animals, was also considered.

The result was a list of action items to implement each of the identified goals. Both acquisition and non-acquisition strategies were considered and included. Some recommendations were retained from the 1995 Open Space Plan, but many of the implementation strategies are ideas that have developed or been refined since that plan was written. The township has always supported applicants to the state/county farmland preservation program and will continue to do so, but in addition, the township will consider establishing additional sources of funding that can preserve smaller farms and other critical parcels. Particular acquisition needs that were identified include expansion and buffering of Peter Wentz Farmstead, establishment of a neighborhood park in Fairview Village, and continued preservation of farmland in the township's "supercluster" of farms in the eastern quadrant of Center Point. The township intends to construct the first segments of a township-wide trail system by connecting Evansburg State Park, Heebner Park, and Peter Wentz Farmstead. Ordinance changes, such as the adoption of conservation subdivision for much of the township, will preserve natural resource lands and open space in the process of development as well as provide for trail connections in developed areas of the township. Other ordinances can strengthen the viability of small farms, help preserve our historic structures, and provide parkland in residential neighborhoods.

Although there are many strategies available to protect and preserve important resources and create new open space, none of these is possible without the commitment and vision of those who implement these techniques. Worcester is fortunate to have elected and appointed officials who envision a township that can maintain and even improve its rural character while meeting the challenges of growth and development over the coming years.

Peter Wentz Farmstead — Watercolor by Bill Bourne

CHAPTER 1

COMMUNITY PROFILE

COMMUNITY CONTEXT

The Community Profile Chapter of the Worcester Township Open Space Preservation Plan is designed to provide residents, planners, and officials with the necessary background information to make well-informed decisions regarding the future preservation of natural and cultural resources within their community. It consists of three parts: 1) the Community Context section, which examines the community's historical background and regional setting, 2) the Existing Land Use Analysis, which details the use of each property in the township, and 3) the Community Demographic Analysis, a study of the demographic trends in Worcester.

HISTORICAL BACKGROUND

Before the establishment of Worcester Township in 1733, the locality was designated on maps as New Briton Township. The name "Worcester" came from a city and county in England, and it is supposed to be derived from the Saxon word "caester," signifying a station or camp. The present township boundaries resulted from limits of the private properties of 25 landholders who banded together in 1733 to petition the Court of the Quarter Session for the formation of Worcester Township.

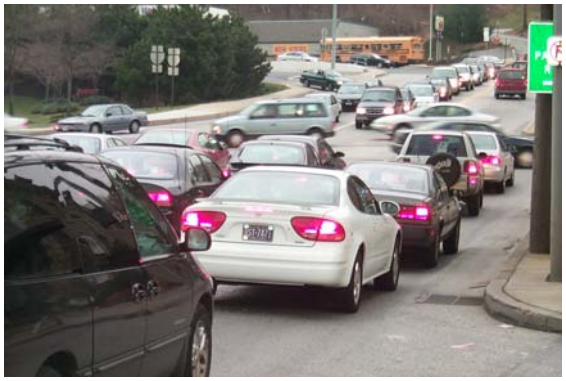
Worcester Township has a large number of historic properties and sites, including Lenni-Lenape Indian sites, mills, inns, churches, farms, schools, homes, villages, and cemeteries. George Washington planned the Battle of Germantown in 1777 while staying at Peter Wentz Farmstead, which is now a county park and is listed on the National Register of Historic Places. Some of the more notable historic sites are the Old Mill Farm, the Wentz United Church of Christ, the Bean House, the Rittenhouse farm, the Heebner farm, and the Anthony Morris House. The Anthony Morris House is the second nationally registered historic site in the township. A more comprehensive history of the township, as well as its buildings and landscapes, is provided in *Worcester*, published by the Worcester Historical Society in 1976.

A number of significant historic sites are shown in Figure 4 - 13 and listed in Figure 4 - 14.

Early in the county's history, Worcester Township established a reputation for superior farming. Today, Worcester contains the largest expanse of the best farming land in the county. Worcester's agricultural security district, which is only a portion of all the agricultural land, has about 1,360 acres and encompasses 37 farms.

REGIONAL SETTING

Worcester Township encompasses 16 square miles of land and is located at the geographic center of Montgomery County in southeastern Pennsylvania (see Figure 1 - 1). Montgomery County is the third most populated county in Pennsylvania, exceeded only by Allegheny (Pittsburgh) and Philadelphia Counties. Worcester has remained remarkably rural even though its neighboring townships have seen tremendous population growth over the last 30 years. However, despite the fact that Worcester is not a big employment center, development from surrounding townships is spilling into Worcester, and increasing regional development pressure has resulted in more housing and traffic. This development threatens to forever change the township, an area filled with history as well as agriculture, large open spaces, expansive views, pristine riparian corridors, and recreation opportunities.



Regional Traffic Photo: MCPC

Served by three major transportation routes, State Routes 73 and 363 and Germantown Pike, Worcester is well connected to nearby employment centers in Lansdale, Fort Washington, Plymouth Meeting, Upper Providence Township, King of Prussia, and Norristown.

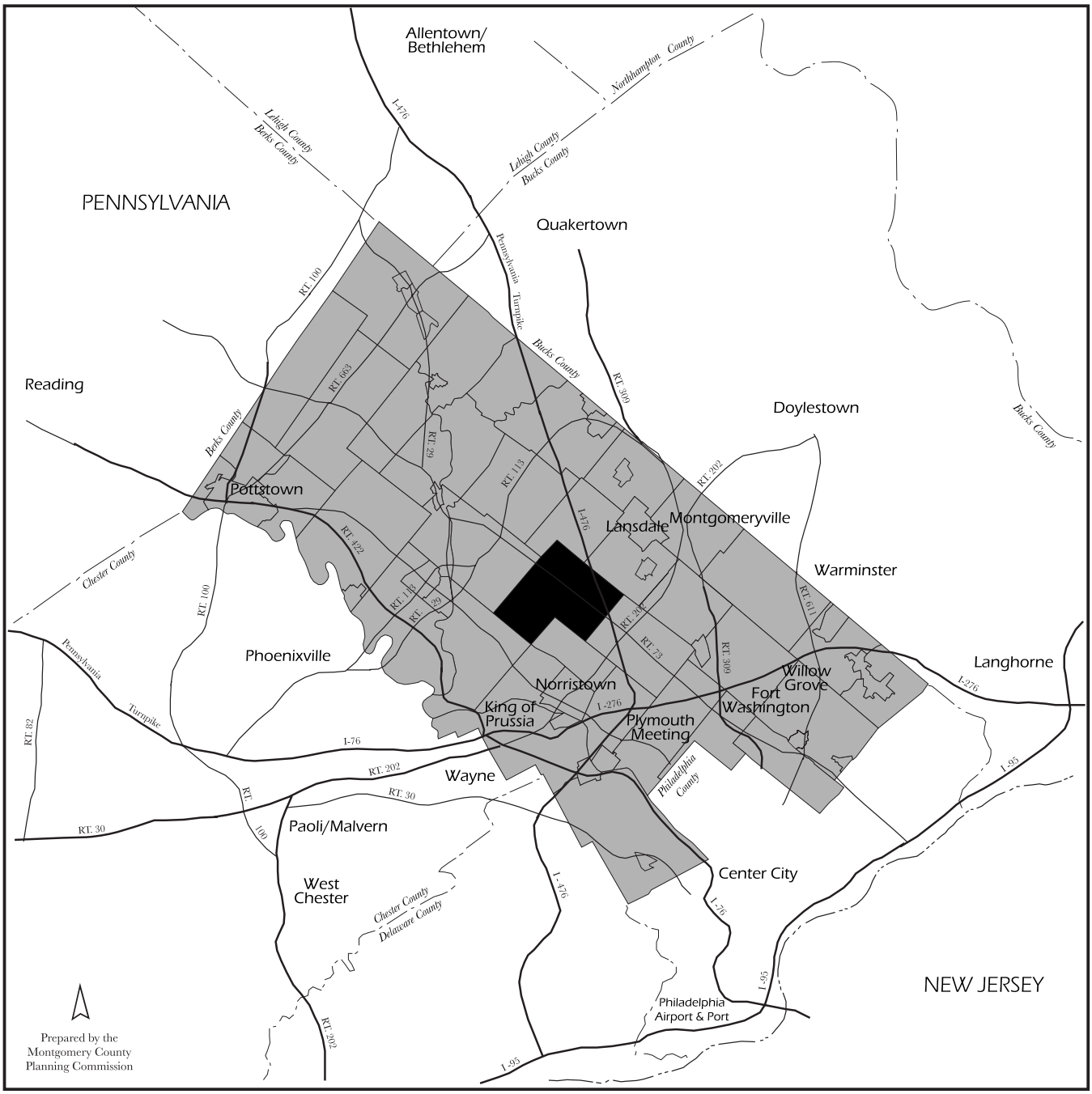
As a result of its convenient location and rich rural landscapes, Worcester is a highly attractive area for new residential development. As the demand for houses in the countryside increases, large tracts of land previously held in private ownership are becoming available for residential development.

REGIONAL GROWTH

Growth around major cities, such as Philadelphia, often occurs along corridors, with fingers of growth and development traveling along these corridors to

A Worcester farm Photo: MCPC

Figure 1 - 1
Worcester Township - Regional Position Map



the central city and suburbs immediately adjacent to the city. Worcester falls outside the central city and its ring of development and is between two of these fingers of growth and development. One finger follows the Doylestown train line and Route 309 through the Lansdale area towards Allentown/ Bethlehem. Another much more prominent finger follows Route 76 and the Main Line railroad line and includes King of Prussia. A new finger of development is forming along Route 422 between King of Prussia and Pottstown. Worcester does not fall directly into any of these growth corridors. However, Worcester is located close enough to all three corridors to feel the impact of traffic and development pressure.

REGIONAL PARKS AND OPEN SPACE

Worcester is close to five regional park facilities. Evansburg State Park follows much of the western

boundary of the township, with a few pieces of the park lying in Worcester. Peter Wentz Farmstead, a county historical site, is located in the center of Worcester Township. The county-operated Norristown Farm Park is also close by, to the south. Valley Forge National Historical Park and Fort Washington State Park are further away, although still quite accessible by car to township residents.

The Perkiomen Trail is a 19-mile county trail that is located along the Perkiomen Creek and connects the Schuylkill River southwest of Worcester to the Green Lane county park north of Worcester. This trail passes near Worcester on the other side of neighboring Skippack Township.

Private efforts have also resulted in at least two major open space facilities near Worcester. The Natural Lands Trust has a large preserve, Gwynedd Wildlife Preserve, near the northeast corner of the township, and a nonprofit group has preserved and built a large segment of the Wissahickon Trail in this area.

WORKING TO PRESERVE OPEN SPACE AND RURAL CHARACTER

Anticipating development pressure, Worcester's Board of Supervisors has taken a number of steps to control development. These steps include updating the Township's Comprehensive Plan (1995), preparing the 1994 Open Space Plan, preparing a plan titled "Creating an Open Space System" (2000), preparing the Community Greenway Plan (2003) and amending its Zoning Ordinance and Subdivision and Land Development Ordinance to preserve open space and significant natural features. Worcester continues to amend its ordinances to maintain the township's rural character.

A Worcester horse pasture Photo: MCPC

EXISTING LAND USE ANALYSIS

The Existing Land Use Analysis is the second part of the Community Profile Chapter for the Worcester Open Space Plan. This analysis focuses on the current land uses within the municipality, enabling a more in-depth analysis of municipal land use patterns. In addition to the Existing Land Use Map (Figure 1 - 2), Figure 1 - 3 details the acreage in each category and the change from 1992 to 2005.

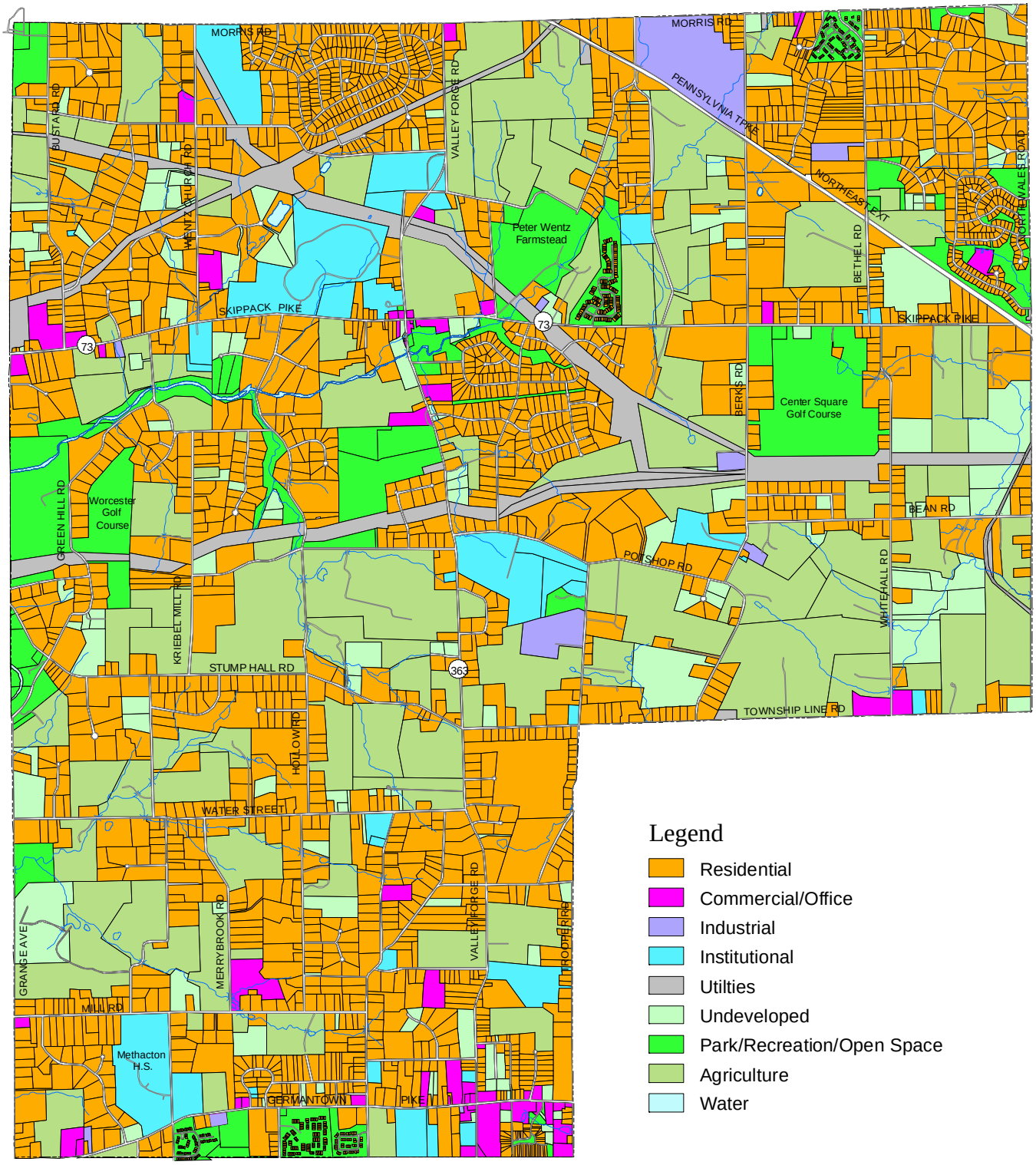
As development spread across the region during the past several hundred years, it established the framework on which zoning and land use planning standards are applied. As development continues, it changes that framework. Therefore, when reviewing the Township's Open Space Plan of 1994, it is critical to classify the types and identify the amounts and locations of existing land uses within the community. This chapter uses a "snapshot" of existing characteristics to compare current conditions to previous conditions. It should also be used to consider how changes in existing land use affect future land use goals and objectives. These numbers are useful in understanding changes in land use patterns and help to identify potential open space and/or recreational needs.

The inventory of existing land uses outlined in Figure 1 - 3 shows that since 1992 the developed portions of the township have increased substantially while the underdeveloped portions have contracted, which is typical of a rural community in a growing region. These changes are discussed below.

RESIDENTIAL

Residential types are defined according to the number and arrangement of dwelling units. A dwelling unit is generally defined as one or more rooms intended to be occupied as separate living quarters, with cooking, sleeping, and sanitary facilities in the unit for the exclusive use of a single family maintaining a household. Residential categories include all parcels that have been developed solely for residential purposes.

Figure 1 - 2
Existing Land Uses



Most of the development that occurred between 1992 and 2005 was residential, increasing by about 1,200 acres, and most of this residential land was developed for single-family detached homes. Generally, single-family detached development is scattered across the township and lotted out along the township's roads, although major concentrations are located in the Locust Corner, Center Point, Fairview Village, and Cold Spring areas. Figure 1 - 2, the Existing Land Use Map, shows the location of residential development.

All of the township's two-family, townhouse, and multifamily units are located in the Bethel Grant and Wister Mews developments at Morris and Bethel Roads, at Berwick Place and Chadwick Place in Fairview Village, and at Center Point Farms in Center Point.

COMMERCIAL / OFFICE

Stores, restaurants, repair shops and garages, and a variety of other commercial uses frequented by the general public make up the category of Commercial. Retail businesses that share a building with offices or dwelling units, sometimes called mixed use, are included in this category. This category also includes properties that are developed exclusively for office purposes, as well as some miscellaneous uses including animal hospitals, funeral homes, and banks.

For the most part, Worcester's retail development has grown up in the historic villages, changing those villages over time. Fairview Village has perhaps the most commercial business, with Center Point and Cedars following close behind. All three of these villages date from the time of the settlement of Worcester.

Other businesses have also established themselves throughout the township, either along the major roads or dispersed singularly along the farm roads.

Small-scale retail development has expanded in Fairview Village, Center Point, and Cedars, but because of its scale and careful review by the Township, this retail development has not yet dramatically altered the character of Worcester.

Overall, the amount of land occupied by commercial and office uses increased by 51 acres, which is 41 percent more than in 1992.

A Worcester industry Photo: MCPC

INDUSTRIAL

The amount of land devoted to industrial uses also increased. Industrial uses in the township include manufacturing uses and contractors' shops. Land categorized as industrial increased from 126 to 192 acres in the past 13 years (66 acres, 53 percent).

INSTITUTIONAL

Schools, churches, cemeteries, and fire companies are the most common and noticeable institutional uses. Meadowood, the Variety Club, and the two tennis clubs are also included in this category. There was a 163-acre increase in institutional lands (58 percent) during the past 13 years.

PARKS / RECREATION / OPEN SPACE

This category of land uses includes park, recreation, and open space parcels owned by the Township, Montgomery County, the State, or private landowners. Public open space is not always permanently preserved open space.

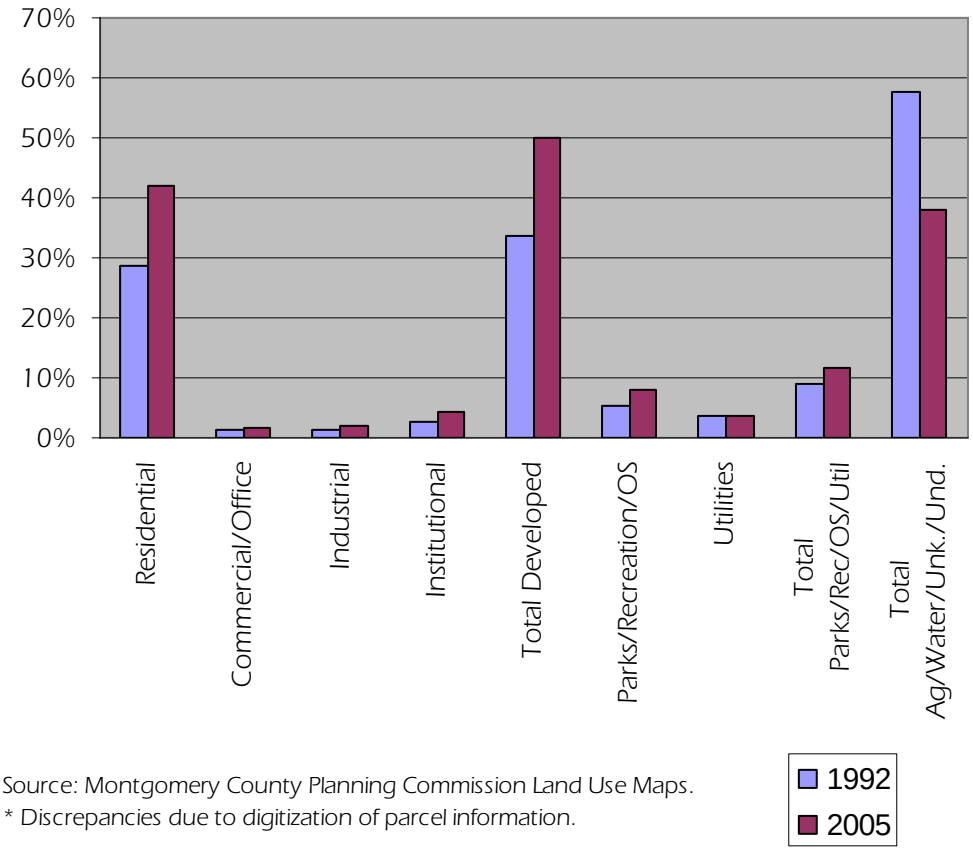
Private open space land includes golf courses, privately preserved parcels, and open space within residential land developments. Some of the private open space can be sold by the landowner and/or used for development otherwise permitted by the zoning districts in which these parcels are located. This has happened to golf courses in other parts of the county. Some private open space lands are deed-restricted from any future development.

UTILITIES

Utility properties consist primarily of sewer and water company properties and gas and electric transmission lines. Some sections of the electric com-

Figure 1 - 3
Existing Land Use Comparison: 1992 & 2005

Land Use	1992		2005		% Change
	Acres	% Total	Acres	% Total	1992-2004
Residential	2,984	28.5%	4,230	42.1%	41.8%
Commercial/Office	123	1.2%	174	1.7%	41.5%
Industrial	126	1.2%	192	1.9%	52.7%
Institutional	282	2.7%	445	4.4%	57.9%
Total Developed	**3,515**	**33.6%**	**5,042**	**50.1%**	**43.4%**
Parks/Recreation/OS	551	5.3%	806	8.0%	46.3%
Utilities	377	3.6%	379	3.8%	0.6%
Total Parks/Rec/OS/Util	**928**	**8.9%**	**1,185**	**11.8%**	**27.7%**
Agriculture	in Undev.		3,021	30.0%	
Water	in Undev.		17	0.2%	
Unknown	in Undev.		127	1.3%	
Undeveloped	6,021	57.5%	666	6.6%	-88.9%
Total Ag/Water/Unk./Und.	**6,021**	**57.5%**	**3,831**	**38.1%**	**-36.4%**
Total Acreage*	**10,464**	**100%**	**10,058**	**100%**	-3.9%



Source: Montgomery County Planning Commission Land Use Maps.
* Discrepancies due to digitization of parcel information.

pany's transmission lines may be within easements on lands in other categories and are therefore not accounted for under "utilities." Likewise, lands owned by utilities, particularly the power company, may also be used for other uses, in many cases for farming, but are not counted as agricultural land. The current total of 379 acres includes land both owned and used by the utilities, according to Board of Assessment records.

AGRICULTURE / WATER / UNKNOWN / UNDEVELOPED

The only land use category that has declined significantly has been the agriculture/water/unknown/undeveloped land, which includes vacant land, water, farmland, and some parcels for which the uses are currently unknown or undetermined. The parcels with undetermined uses are often part of a larger property, but assessment records list them separately and give no information about their uses.

In 1992 approximately 58% of the township was agricultural/water/unknown/undeveloped land, but by 2005 the number had dropped to 38%, a decrease of 20 percentage points, or 36% of the original amount, in just 13 years.

AGRICULTURE

In Figure 1 - 2, agricultural lands include parcels larger than 20 acres which are covenanted under Act 319, plus other farmlands identified from aerial photography and input from municipal officials. Many parcels contain a house, but agriculture is the dominant use.

WATER

In Worcester this category primarily includes ponds, although some wider parts of streams are also included.

UNDEVELOPED

Undeveloped parcels are designated as vacant land under the Board of Assessments' land use classifications. They all have individual tax parcel numbers and are capable of being transferred to new owners as vacant lots. However, the smaller parcels may not all be large enough for independent development.

LAND USE ANALYSIS CONCLUSION

The Existing Land Use map in Figure 1 - 2 provides a picture of the geographical distribution of existing land uses throughout the township. It is not surprising to see that the large concentrations of higher density residential and nonresidential uses occur along major roads, generally at or near major intersections. The geographical distribution of existing land uses, road network, extent of public sewer and water systems, and planning for open space, recreation, and preservation of natural features are all important elements for determining a reasonable Open Space Plan for the township. When existing land use data and charts are updated, the existing land use map also should be updated to show where the changes in land use have occurred.

Overall, Worcester remains a rural community, but it is facing growth pressure. Development along the township's borders is changing the landscape of the region in which Worcester is located.

Typical Worcester farmhouse and barn

Photo by MCPC

COMMUNITY DEMOGRAPHIC ANALYSIS

The Community Demographic Analysis consists of information relating to population, housing, existing land uses, and economics. With few exceptions, the source of the information is the decennial U.S. Census and other reports of the Census Bureau.

Demographic characteristics provide insight when planning for open space preservation and recreational development. They can assist in determining not only how much land should be preserved but also where. This information can also be used in determining what type of recreational facilities, if any, should be planned and developed.

The size and nature of Worcester's population has changed considerably during the past decades. Nevertheless, the township has experienced many of the same trends that have been seen regionally and nationally, such as a declining average household size, an increase in the number and percent of elderly, a mini baby boom, and fewer family households. These and other trends are discussed in detail below.

POPULATION

The rate of municipal population change (relative population increase or decrease) is an important measure of the magnitude of population change that has occurred over time. Figure 1 - 4 shows population trends in the township.

During the 1950s and 1960s, Worcester Township experienced a significant amount of growth, which resulted in a 1970 population of approximately 4,243 residents. During the next two decades, Worcester had less dramatic growth at 10% and 1%, resulting in a total of 4,686 persons in 1990. The 1% growth was less than that for Montgomery County, the Philadelphia region, and Worcester's neighboring townships at the time.

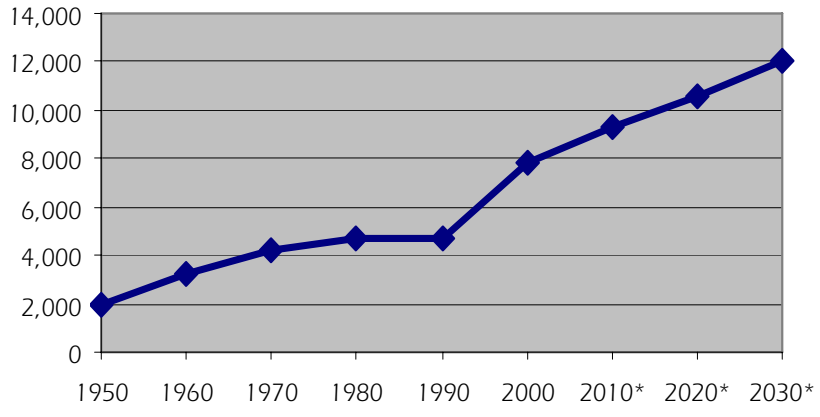
More recently, Worcester's population increased dramatically between 1990 (4,686) and 2000 (7,789). The population grew more in this decade than in the 40 years between 1950 and 1990 (3,103 versus 2,747). This significant increase of 66.2% was extremely high when compared to Montgomery County (10.6%), the Philadelphia region (10.9%), and the United States (12.7%). Worcester's increase of approximately 3,103 persons was slightly less than Towamencin's 3,430, but more than Lower Providence's growth figure of 3,039. This large increase in population was due to a boom in residential development in the township over the last ten-year period.

POPULATION PROJECTIONS

Based on Delaware Valley Regional Planning Commission (DVRPC) and Montgomery County Planning Commission (MCPC) forecasts, the population of Worcester Township is projected to reach 12,000 by 2030 (see Figure 1 - 4). Although substantially less drastic than the 1990s, this is still a significant increase in population over the next 20 years (58%, or 4,211more people than in 2000). At an average of 2.5 to 2.7 persons per household (see below), that

Figure 1 - 4
Population Projection

Year	Population	% Change
1950	1,939	
1960	3,250	68%
1970	4,243	31%
1980	4,661	10%
1990	4,686	1%
2000	7,789	66%
2010*	9,340	20%
2020*	10,530	13%
2030*	12,000	14%



Source: U.S. Census Bureau; Census of Population and Housing, 2000; DVRPC projections.
* Projected population

means 1,500 to 1,700 new homes would be needed in Worcester between 2000 and 2030. These projections, however, are based on certain assumptions about the area in and around the township, such as current growth trends, job creation, the pressure for new housing, the existence or absence of buildable land, and transportation conditions.

This projection poses a considerable challenge to a township that would like to retain its rural character and open space as much as possible.

Because Worcester is underdeveloped relative to its neighbors yet close to growth centers around Norristown and Lansdale, the township has high residential development potential.

In comparison, the surrounding townships to the south and west are also expected to have similar growth rates: Lower Providence, 32%; Skippack, 60%; Lower Salford, 49%. The other surrounding townships are mostly built out and so have less opportunity to expand their populations: Towamencin, 19%; Upper Gwynedd, 16%; Whitpain, 13%; and West Norriton, 12%, see Figure 1 - 5.

Montgomery County and the Philadelphia region are projected to have a slower growth rate by 2030, averaging about 17% for the county and 12% for the whole Philadelphia region.

The following demographics of the township, such as household types, education, age, and income, will shed more light on current and future open space needs.

HOUSEHOLD TYPES

A household profile is defined by the Census Bureau as a person or persons occupying a single housing unit. A household can be broken down into two categories: family and nonfamily households. A family household is two or more related persons living in a single housing unit, and a nonfamily household is occupied by a single person or a group of unrelated persons. Nationally, as well as locally, households are changing. There has been

Figure 1 - 5
Regional Population Projections: Percent Change from 2000 to 2030

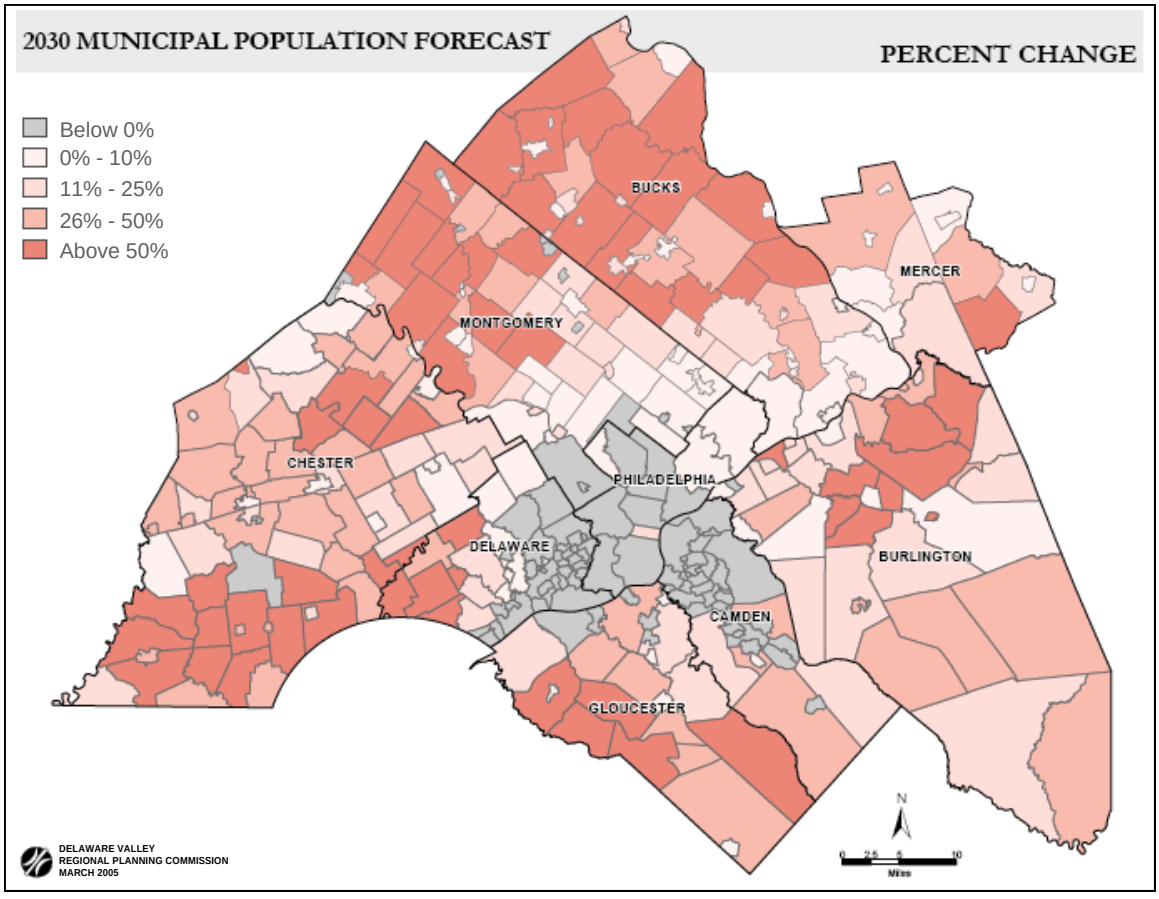


Figure 1 - 6
Household Types

Household Types	1990		2000		% Change
	Number	% Total	Number	% Total	1990 to 2000
Married Couples with Children	499	28.8%	930	32.1%	86.4%
Married Couples with No Children	676	39.0%	976	33.7%	44.4%
Single Parent	43	2.5%	115	4.0%	167.4%
Other Family	77	4.4%	124	4.3%	61.0%
1 Person Nonfamily Households	393	22.7%	669	23.1%	70.2%
2+ Person Nonfamily Household	47	2.7%	82	2.8%	74.5%
Total No. of Households	1,735	100%	2,896	100%	66.9%
Average People per Household	**2.67**		**2.69**		**0.9%**

Sources: U.S. Census Bureau; Census of Population and Housing, 1990, 2000.

an overall increase in nonfamily and single-person households since the 1970s. Fragmentation of the family unit through divorce, death of a spouse, or children leaving home to form their own households has contributed to an increase in the number of households and a decrease in the size of households. The average household size is the number of persons in households divided by the number of occupied housing units. This too has seen a national decline as households continue to diversify.

The household profile, Figure 1 - 6, shows that Worcester has experienced a stable yet increasing household size. Looking at the individual household categories, however, the real growth can be detected as primarily married couples with children, which increased by 431 households, and married couples with no children, which increased by 300 households. Out of the 1,161 new households, married couples accounted for 731, or 63%.

Photo: www.pedbikeimages.org / Dan Burden

Montgomery County children at play Photo: MCPC

The other big jump was in single-person households, which increased by 276. The Meadowood senior housing development may account for most of this increase.

There is one other group of people who are not represented in this profile — the people who do not live in households, such as those living in prisons, dorms or group quarters. In 2000, only 0.1% of Worcester's population lived in group quarters, primarily in institutional residences.

Figure 1 - 7
Education Level

Educational Level, Worcester	1990		2000		% Change
	Number	% Total	Number	% Total	1990-2000
Less than 9th grade	134	4.0%	124	2.5%	-7.5%
9th through 12th grade, no diploma	278	8.3%	214	4.3%	-23.0%
High school graduate (includes equivalency)	966	29.0%	1,151	23.0%	19.2%
Some college, no degree	547	16.4%	614	12.3%	12.2%
Associate degree	240	7.2%	317	6.3%	32.1%
Bachelor's degree	817	24.5%	1,618	32.4%	98.0%
Graduate or Professional degree	352	10.6%	957	19.2%	171.9%
Total Pop. 25 years and older	**3,334**	**100%**	**4,995**	**100%**	**49.8%**

Sources: U.S. Census Bureau; Census of Population and Housing, 1990, 2000.

Educational Level, 2000	County		Worcester		% Difference
	Number	% Total	Number	% Total	
Less than 9th grade	15,649	3.0%	124	2.5%	-0.6%
9th through 12th grade, no diploma	43,658	8.5%	214	4.3%	-4.2%
High school graduate (includes equivalency)	140,839	27.3%	1,151	23.0%	-4.3%
Some college, no degree	85,342	16.5%	614	12.3%	-4.3%
Associate degree	30,596	5.9%	317	6.3%	0.4%
Bachelor's degree	118,910	23.1%	1,618	32.4%	9.3%
Graduate or Professional degree	80,877	15.7%	957	19.2%	3.5%
Total Pop. 25 years and older	**515,871**	**100%**	**4,995**	**100%**	

Sources: U.S. Census Bureau; Census of Population and Housing, 2000.

EDUCATION

Worcester has a higher than average proportion of residents with high educational attainment. As represented in Figure 1 - 7, in 2000, 70.2 % of the township's population had gone on to attend college or obtain a college degree, compared to 61.2 % for the county. In fact, Worcester's higher educational attainment becomes more apparent when looking at the number of people 25 and older with college degrees (57.9%, versus 44.7% for the county as a whole).

AGE

The age profile shown in Figure 1 - 8 reveals that in 2000 over 45% of Worcester's population consisted of 30- to 60-year-olds. The most notable changes since 1990 are the 40-49 and the 10-19 age groups, each of which doubled or more than doubled. Also notable are the increases in the 0-9, the 50-59, and the 30-39 year olds. These five age groups generally represent families with children.

The other age groups, while increasing in absolute numbers, actually became smaller segments of the overall population, further indicating a shift to more families with children.

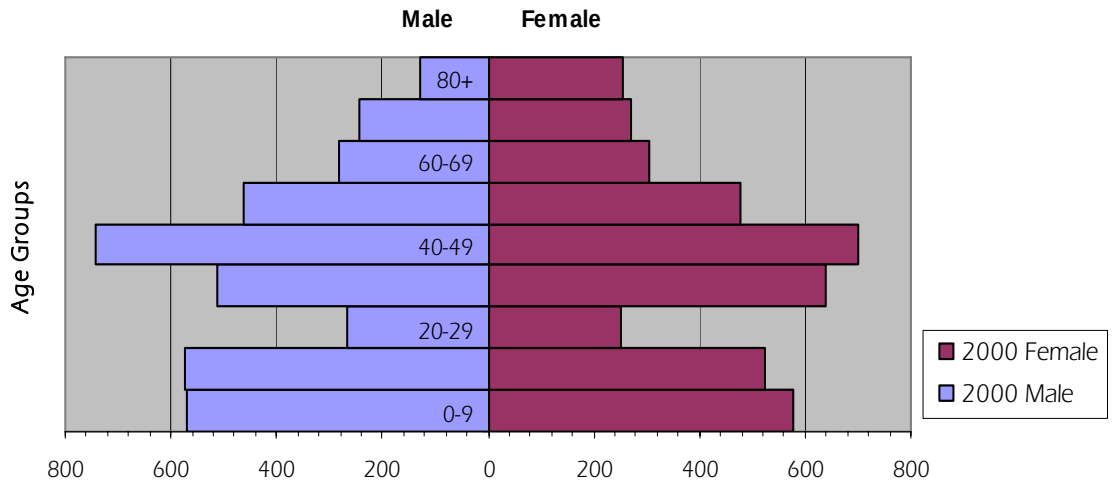
The 20-29 age group actually declined slightly in the 1990s. Meanwhile, the slowest growing group was the 60-69 age group. The younger of these groups perhaps had difficulty locating in this township due to the high housing prices and the distance to college-level education. The slow growth of the 60-69 age group is somewhat more perplexing. It may reflect an age at which people are less mobile and are not moving into newer, larger homes in Worcester or are downsizing and moving out of Worcester after their children have left home.

Interestingly, the 70-79 and the over-80 population groups grew, but slower than the township average of 66%. These groups had been gradually

Figure 1 - 8
Age Profile & Age Pyramid

Age	1990		2000		%Change
	Number	% Total	Number	% Total	1990-2000
0-9	606	12.9%	1,149	14.8%	89.6%
10-19	504	10.8%	1,097	14.1%	117.7%
20-29	532	11.4%	519	6.7%	-2.4%
30-39	728	15.5%	1,153	14.8%	58.4%
40-49	652	13.9%	1,442	18.5%	121.2%
50-59	519	11.1%	943	12.1%	81.7%
60-69	510	10.9%	589	7.6%	15.5%
70-79	369	7.9%	513	6.6%	39.0%
80+	266	5.7%	384	4.9%	44.4%
Total	**4,686**	**100%**	**7,789**	**100%**	**66.2%**
Median Age	**42.3**		**43.9**		

Sources: U.S. Census Bureau; Census of Population and Housing, 1990, 2000.



taking a larger proportion of the population since 1970, but now they have lost about 15% of their former share of the population, down to 11.5%

While it seems that an increasing number of families with children and a decreasing number of those over 70 would produce a younger average age, the median age shows the opposite. An older median age with these characteristics could indicate that the families with children might have older parents than previous decades, which might also help explain why the 40-49 age group showed the largest increase.

The age pyramid is used to show the distribution of the population by gender and age. The pyramid for Worcester is not entirely pyramidal in shape. It is almost symmetrical, but the large deficit of 20-29 year-olds and the overabundance of 40-49 year-olds skew the pyramid. This is actually typical for an affluent suburb.

In this pyramid the age groups can be easily compared since they all have 10-year spreads. Except for the 20-29 and the 40-49 age groups, they all conform relatively closely to the pyramid shape.

Figure 1 - 9
Income Levels (in 1999 $)

Income	1989	1999	% Change
Per Capita	$30,386	$34,264	12.8%
Median Household	$63,377	$77,200	21.8%

Sources: U.S. Census Bureau; Census of Population and Housing, 1990, 2000.

MEDIAN HOUSEHOLD & PER CAPITA INCOME

Figure 1 - 9 shows median household and per capita income. Worcester's median household income (stated in 1999 dollars for both 1989 and 1999) grew 21.8 % between 1989 and 1999, rising from $63,377 to $77,200. Worcester's median income exceeds that for both the county and the state. Compared to its neighbors, only Whitpain had a higher median household income level — almost $89,000.

Worcester's 1999 per capita income of $34,264 also exceeded that of the surrounding municipalities, the county and the state, with the exception again of Whitpain Township. Lower Salford, Skippack, and Towamencin increased their per capita incomes faster than Worcester.

Building on the previous demographic information, the township's population is becoming increasingly comprised of families with and without children and of residents who have attained higher education, are slightly older than before, and have some of the highest incomes in the area.

SPECIAL NEEDS GROUPS

Special needs can be defined in many ways. One way is to look at age. Both the young and the elderly may have special needs, especially concerning transportation, recreation, and exercise. These are relevant factors to consider when making decisions about the kinds and locations of open space in the township. In 2000 there were 2,127 children under the age of 18 in Worcester. These children comprised 27.3% of the township's population. In addition, there were 1,191 people 65 and older in 2000, making up 15.3% of the population.

Special needs also can include those with disabilities. In 2000 there were approximately 328 people in Worcester aged 16 to 64 years old who had a disability due to physical, mental, sensory, mobility or self-care conditions and did not live in an institution. About 88 of these individuals were disabled due to mobility or self-care limitations, which means they could not move around the community without assistance or they needed assistance with tasks such as bathing, cooking, dressing, etc.

Numbers for these groups are shown together in Figure 1-10, but these numbers cannot be compared to each other because the Census Bureau combined these groups so that some of them overlap, and a direct comparison should not be made. The numbers from decade to decade and the individual numbers themselves, however, are still meaningful.

The age-defined special needs groups and the working-age disabled comprise almost half of the township's population.

Figure 1 - 10
Special Needs Groups

Special Needs Group	1990		2000		% Change
	Number	% Total	Number	% Total	1990-2000
Persons 16-64 with Disabilities*	107	2.3%	328	4.2%	*
Persons 16-64 with Mobility and Self Care Limitations**	35	0.7%	88	1.1%	**
Over 65 Years of Age	844	18.0%	1,191	15.3%	41.1%
Under 18 Years of Age	1,029	22.0%	2,127	27.3%	106.7%
Income Below Poverty Level	115	2.5%	130	1.7%	13.0%
Total Population	**4,686**		**7,789**		**66.2%**

Sources: U.S. Census Bureau; Census of Population and Housing, 1990, 2000.

* 1990 figure includes work, mobility and self-care disabilities; 2000 figure also includes physical, sensory and mental disabilities.

** 2000 figure includes some persons with multiple mobility and employment disabilities, not mobility combined with other disabilities.

A Worcester farm Photo: MCPC

Finally, special needs groups may include the poor. In 2000, the income of 130 Worcester residents fell below the poverty level. This represents 1.7% of the township's population. Poverty level was determined by the Census Bureau based on national figures for food costs, food purchases as a percentage of total income, number of persons in a household, and number of children in a household. The weighted-average poverty threshold for a family of four was $17,029 in 1999. For a single elderly person, or any adult living alone, it was $8,501 in 1999. In this case, Worcester had a slight increase in the number of people under the poverty level, but that increase did not keep pace with the overall increase in population, so while there were more people in Worcester below the poverty level, there was proportionately less poverty in the township in early 2000 than there was in early1990.

These groups as a whole have needs for special access and facilities which must be considered in locating and developing public spaces.

IMPLICATIONS OF RESIDENT DEMOGRAPHICS

The major implication of these demographics is that Worcester's population is expected to continue to increase considerably through 2030. These new people will move into new homes and will add to the township's open space needs. These needs will tend more toward families with or without children and toward higher income and higher education lifestyles. The demographics also show that a large segment of the existing population, primarily the children and elderly (together, 42.6% of the population), have special needs. The type, size, and location of new open space should consider all these needs.

This population will also likely consume a large amount of land. If the projection of 1,500 to 1,700 new homes between 2000 and 2030 is accurate, 2-acre lotting means that these homes will use up more than 3,000 to 3,400 acres. Currently only about 3,700 acres are either undeveloped or are farms. This indicates a great urgency to preserve farmland and natural, scenic and historic resources and to acquire parkland before it is gone. As space begins to get tighter, the township may also need to consider more compact and efficient forms of open space, such as trails and stream corridors, which can make use of areas that are often overlooked for open space. Perhaps more importantly, the township needs to look at development options that preserve open space as land is developed.

HOUSING TYPES

Figure 1 - 11 shows Worcester had 3,007 housing units in 2000, an increase of 64% over 1990. Two thirds of homes in 2000 (66.6%) were single-family detached residences, which is actually a decrease in this type's share of overall housing, which was over 75% in 1990. Most of the major residential devel-

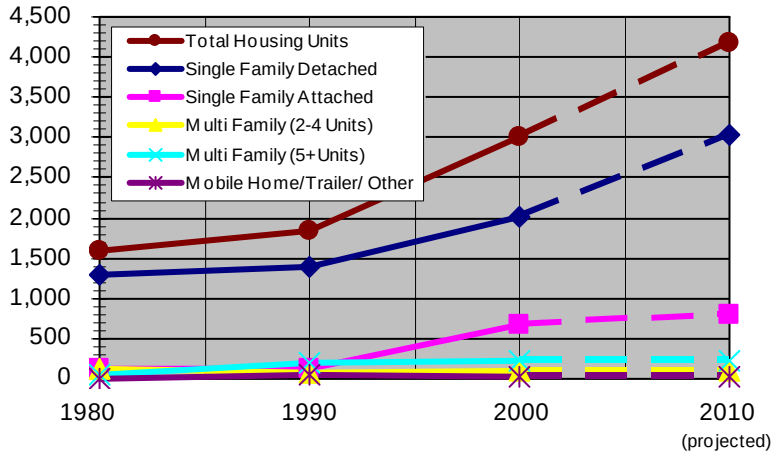
opments in the township are single-family detached houses. Multifamily housing, which includes all apartments, comprised 10.5% of the total housing units in 2000. Most of this figure is likely attributable to the Meadowood Life Care Facility. Single-family attached housing, predominantly located in the Bethel Grant, Wister Mews, Berwick Place, Chadwick Place, and Center Point Farms townhouse developments, comprised 22.1%, growing a significant 478% in 10 years. This mostly is due to the small number of units that existed in 1990, but the addition of 550 single-family attached units cannot be ignored. In the ensuing 4 years, through 2004, another 21% (52 units) of single-family attached units were also built.

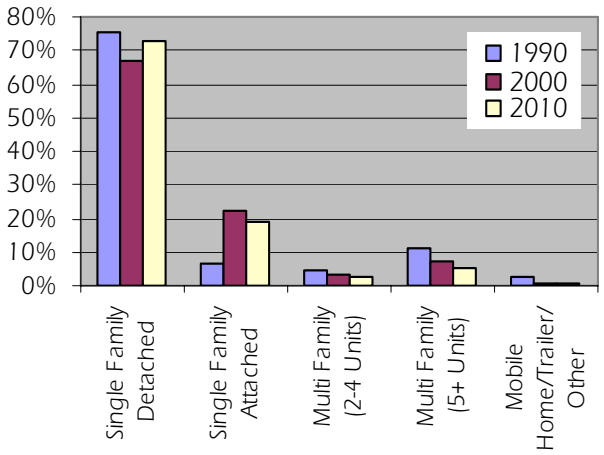
Figure 1 - 11 includes a table that shows a rough projection of the number of units of each housing type for the year 2010 by using the rate of change from 2000 to 2004, prorating that change per year, and projecting that change forward 6 more years to 2010. This projection is susceptible to considerable uncertainty since the existence or absence of one large housing project in the 4 years between 2000 and 2004 could significantly affect the projection. With this projection, it seems there could be more than 4,100 housing units in Worcester by 2010, adding about 740 new units in the 6 years between 2004 and 2010. The first of two charts in Figure 1 - 11 shows the absolute growth in the number of units of the various housing types since 1980 and projected forward to 2010. The second chart

Figure 1 - 11
Table of Housing Types and Projection

Housing Types	1990		Change 1980-1990	2000		Change 1990-2000	2004		Change 2000-2004	2010 (projected)		Change 2000-2010
	Units	% Total		Units	% Total		Units	% Total		Units	% Total	
Single-Family Detached	1,384	75.5%	6.9%	2,004	66.6%	44.8%	2,373	69.2%	18.4%	3,028	72.7%	51.1%
Single-Family Attached	115	6.3%	-5.7%	665	22.1%	478.3%	717	20.9%	7.8%	801	19.2%	20.5%
Multifamily (2-4 Units)	81	4.4%	-30.2%	101	3.4%	24.7%	101	2.9%	0.0%	101	2.4%	0.0%
Multifamily (5+ Units)	205	11.2%	302.0%	213	7.1%	3.9%	213	6.2%	0.0%	213	5.1%	0.0%
Mobile Home/ Trailer/Other	47	2.6%	291.7%	24	0.8%	-48.9%	24	0.7%	0.0%	24	0.6%	0.0%
Total Housing Units	**1,832**	**100%**	**14.8%**	**3,007**	**100%**	**64.1%**	**3,428**	**100%**	**14.0%**	**4,168**	**100%**	**38.6%**

Sources: U.S. Census Bureau; Census of Population and Housing, 1990, 2000; MCPC records and projection calculation





A new Worcester home

Photo: Laura Caughlan

shows the changes in the percentage of each housing type for 1990 and 2000, and the projections for 2010.

EMPLOYMENT

As used here, employment figures refer to the number of jobs in a given area, not the number of workers, and can serve a variety of purposes. The figures inform the public of current and anticipated future economic conditions and may serve as decision-making input for current and potential employers and investors in the region. Because an area's growth and activity are related to its economy, employment data can also be tied to land use and transportation planning.

In recent years, Montgomery County has experienced a significant change as it has gone from being principally a bedroom suburb for Philadelphia commuters to an area that is a major source of jobs. The county's central location in the region and its major road network that permits direct access from surrounding counties are major reasons for this transformation.

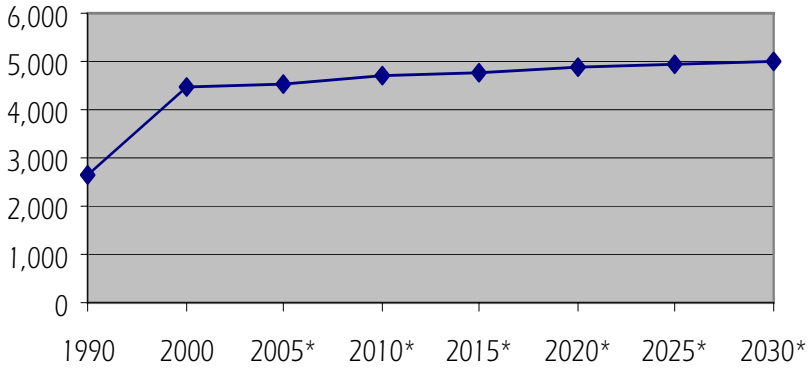
JOBS LOCATED IN WORCESTER

According to Delaware Valley Regional Planning Commission (DVRPC) estimates, Worcester Township had 4,468 employees in 2000. This is relatively small for municipalities in the area. Among its neighbors, only Skippack Township had fewer em-

Figure 1 - 12
Employment Forecast

Year	Total Employment
1990	2,649
2000	4,468
2005*	4,517
2010*	4,705
2015*	4,782
2020*	4,854
2025*	4,928
2030*	5,000

*Source: DVRPC Forecasts



ployees. Worcester is not a major commuter destination, which means it is often used as a residence for these workers and as a through-route for commuters. This factor contributes to development pressure and increases open space needs in Worcester.

According to the estimates shown in Figure 1 - 12, Worcester has almost doubled the number of jobs since 1990. One new major employer, Ford Electronics (now Visteon), accounted for about 1,500 new jobs created in the early 1990s. Construction and expansion of the Meadowood senior housing development and expansions to the high school created additional jobs.

In 2005 the Township's tax collector, Berkheimer Associates, indicated that 5,939 individuals were reported by employers located in Worcester Township. However, some of these individuals do not work in the township but are reported because their company's main office is located in Worcester. This number also includes part-time and seasonal workers, further reducing the number of workers in Worcester at any one time.

MAJOR EMPLOYERS IN WORCESTER

Worcester has two or three major employers and many medium and small employers (see Figure 1 - 13). The "largest" employer in the township, American Infrastructure, is a construction company, so almost all of the employees work outside the township at various construction sites. For human resources and payroll purposes they may count as Worcester jobs, but for traffic, housing and recreation purposes, many of them might not count. Methacton School District and Visteon account for at least 1,200 jobs in the township. The school district has been expanding its buildings and adding jobs as the population of its district continues to grow. The jobs listed for the Visteon plant, Meadowood, Techni-Tool, Variety Club, Kinetix, Merrymead Farm, and the Nazarene church are all likely to be located in Worcester.

As of the time of the writing of this plan, the Township administration is not aware of plans for any new major places of employment, nor of any major expansions to existing employers.

EMPLOYMENT FORECAST

DVRPC develops employment forecasts based on census data, past trends, the job market, and available land. These are shown in Figure 1 - 12. Employment opportunities in the township are expected to increase almost 12% from 2000 to 2030, reaching a total of 5,000 jobs located in Worcester. This is due in large part to the general regional eco-

Figure 1 - 13
Major Employers in 2005

	Employer	Industry	Employees
1	American Infrastructure (Alan Myers)	Construction	1,396 *
2	Visteon Systems, LLC	Electronics Manufacturing	746
3	Methacton School District	Education	465 ***
4	Meadowood Corporation	Healthcare Facilities	320** ***
5	Techni-Tool	Tool Manufacturing	167
6	Philadelphia Variety Club Camp	Education / Recreation	164**
7	Worcester Racquet & Fitness (Kinetix)	Recreation	78
8	Merrymead Farm, Inc.	Farming and Retail	69**
9	Fairview Village Church of the Nazarene	Religious Institution	50** ***

* Many of these employees may not work in the township, but Worcester is the location of their employer.
** Some of these employees may be seasonal or part-time workers.
*** Jobs located in Worcester, from employer.

Sources: Berkheimer Associates, 2005; employers

Figure 1 - 14
Labor Force by Occupation

Occupation	1990		2000		% Change 1990-2000
	Number	% Total	Number	% Total	
Management	479	21.3%	873	23.1%	82.3%
Professional	439	19.5%	1,015	26.9%	131.2%
Sales	300	13.3%	529	14.0%	76.3%
Clerical/Office	362	16.1%	579	15.3%	59.9%
Construction	276	12.3%	242	6.4%	-12.3%
Production/Transportation	154	6.8%	201	5.3%	30.5%
Farming	76	3.4%	32	0.8%	-57.9%
Services	165	7.3%	302	8.0%	83.0%
Total	**2,251**	**100.0%**	**3,773**	**100%**	**67.6%**

Sources: U.S. Census Bureau; Census of Population and Housing, 2000.

nomic pressure of a large portion of the younger workforce moving into large suburban employment complexes, and industrial parks and office campuses making use of less expensive land in communities with large areas of undeveloped land. The ease of access to transportation amenities, new residential developments, and new nonresidential redevelopment in Worcester all enable this trend of projected employment growth. The township is able to control the type, location and size of this growth with zoning and other land use policies, whereas the timing of such development is often a result of the cycles of the economy and land development opportunities.

OCCUPATION

Of the working people who lived in the township in 2000, almost 27% of them were working in jobs that are categorized by the Census Bureau as professionals (see Figure 1 - 14). This is a dramatic increase (131%) since 1990 and puts this category ahead of the previously dominant category of workers in management jobs. Meanwhile, the most drastic decreases in jobs held by Worcester residents were in farming (58%) and construction (12%). The other occupations with major increases were sales, clerical and office, and service jobs.

STATUS OF RELEVANT PLANS

The update of the Township's Comprehensive Plan is complete except for the addition of information from this Open Space Plan. Until the update is complete and adopted by the Township Supervisors, the 1995 Comprehensive Plan remains the primary planning document for the Township.

This Open Space Plan, when adopted, will replace the 1994 Open Space Plan, adopted by the Township Supervisors in 1995.

The Community Greenway Plan, adopted in 2004, outlines the potentials for greenways throughout the township.

The County Comprehensive Plan was adopted by the County Commissioners in 2005 and includes sections on open space planning which are generally consistent with Worcester's plans.

These and other plans are discussed in more detail in Chapter 9, Evaluation of County and Abutting Municipal Plans.

SUMMARY

This analysis of land use and demographics shows that under the current trends, Worcester is becoming a more typical suburban residential community, with farming declining and population, especially families with children, increasing rapidly.

Cedars — Watercolor by Bill Bourne

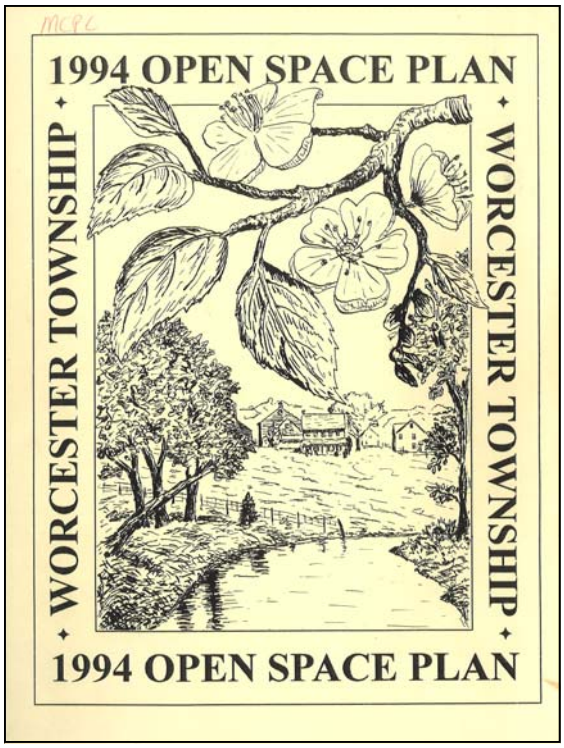
CHAPTER 2

GOALS & OBJECTIVES

The goals and objectives outlined below provide the basic framework for Worcester's 2006 Open Space Plan. These goals are intended to guide township decision-making on rural preservation, natural resource protection, open space and farmland preservation, historic resources, and parklands to the year 2025. However, the township recognizes that these goals will need to be revised and reviewed about every ten years.

To establish the goals for this new plan, the township reviewed the goals and objectives of the previous plan in 1994. The township applied what was learned from that review to the development of its new goals and objectives. A summary of this review constitutes the first part of this chapter. The new goals and objectives follow in the second part.

The new goals and objectives reflect the desires of the township to preserve open space and the township's rural character. Each goal is listed and followed by several objectives that will help the township reach that particular goal.



THE 1994 OPEN SPACE PLAN GOALS AND OBJECTIVES

Worcester completed its Open Space and Environmental Resource Plan in 1994. At that time, goals and objectives were developed to address issues regarding the preservation of open space and the protection of environmental resources. As a part of the update process required by the Montgomery County Open Space Program, Worcester has evaluated its previous goals and objectives to address whether the goals are still valid and to evaluate the implementation of these goals. Below are listed the previous goals and objectives, followed by an evaluation of their implementation.

- Maintain the Rural Character of the Majority of the Township.
  - Direct growth to specific areas by concentrating higher density zoning in these growth areas and providing sewers to these areas.

    Status: The Township's zoning is devised with higher density and public sewers allowed in the growth areas, but significant development has also occurred outside the growth areas.
  - Ensure rural preservation areas have low density zoning.

    Status: Done.
  - Permit clustering within these low density areas so that critical resources on the land can be preserved.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments have been approved under the first ordinance.
  - Possibly create a transfer of development rights ordinance which will transfer development from some of the most important rural areas.

    Status: A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.
  - Enact natural resource protection ordinances.

    Status: The Township enacted ordinances restricting development in riparian corridors and floodplains, and on steep slopes.
- Concentrate Development in Villages
  - Allow high density residential, medium density residential, and commercial zoning in the township's four growth areas. Fairview Village and Center Point will have high density residential, medium density residential, and commercial uses; Locust Corner will only have medium density residential uses; and Cold Spring will have high density residential and medium density residential uses.

    Status: The current zoning reflects this.
  - Provide public sewers to these growth areas while not providing public sewers, within the time frame of this plan, to rural preservation areas, except for sewers needed to serve specific cluster projects in the rural preserve areas.

    Status: The Township's 537 Plan reflects this goal; however, decisions by other agencies occasionally have forced sewers to be extended outside the growth areas.
- Provide for Fair Share of Housing and Non-Residential Uses
  - Provide the proper zoning within sufficient areas for Worcester to meet its fair share needs for homes, stores, offices, and industrial buildings and provide the public sewers needed to serve them.

    Status: Done.

- Preserve Farmland
  - Encourage farmers to join the township's agricultural security district and sell their development rights to the county.

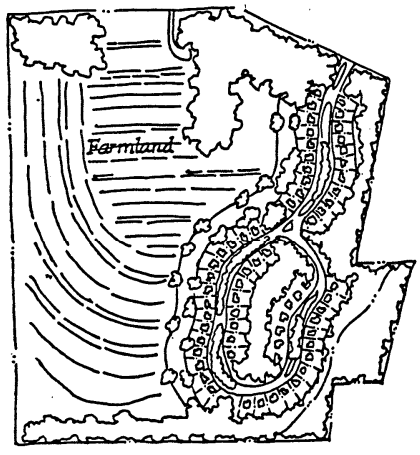
    Status: On-going.
  - Permit clustering on farms so that the majority of the farmland may be maintained while the farmer also receives the development potential from the land.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments have been approved under the first ordinance.
  - Possibly create a transfer of development rights ordinance which will transfer development from the township's most important rural areas.

    Status: A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.

- Preserve Scenic Views and Roads
  - Permit clustering that could move homes away from roads, or behind ridgelines and woodlands so that views are preserved.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. One of these cluster districts requires a greater setback distance along previously defined scenic roads. Two developments have been approved under the first ordinance.



An illustration from the 1995 Open Space Plan

  - Possibly create a transfer of development rights ordinance which will transfer development from some of the most important rural areas.

    Status: A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.
  - Encourage donations of land, development rights, and scenic easements to the township or land conservation groups.

    Status: On-going.
  - Require tree protection, buffering between incompatible uses, and street trees.

    Status: Street trees and buffering are now required throughout the township. Some tree protection is now required for land development.

- Preserve Historic Sites and Landscapes
  - Create a village commercial zoning district for the township's commercial areas which still have historic character.

    Status: Not done.
  - Permit clustering that could be used to preserve buildings within their context, instead of placing historic homes, farm buildings, or mills within the middle of a suburban subdivision.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments have been approved under the first ordinance. Neither of these cluster options includes a historic preservation element.
  - Encourage the county to continue acquiring land around Peter Wentz farmstead, so that this grouping of historic farm buildings continues to evoke Worcester as it existed 200 years ago.

    Status: On-going.
  - Possibly create a transfer of development rights ordinance which will transfer development from areas with historic sites or landscapes, provided theses areas are located in the township's most important rural areas.

    Status: A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.

- Use landscaping, buffering, and tree preservation to screen new development from the view of historic sites.

  Status: Buffering is required for much new development, but not specifically for historic properties.

- Preserve Steep Slope Areas
  - Create a steep slope ordinance which will prohibit development on slopes in excess of 25%.

    Status: Done.

  - Subtract steep slopes from the township's definition of lot area.

    Status: Done.

  - Create a cluster ordinance and consider a transfer of development rights ordinance, which may be used to keep steep slopes open and undeveloped.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments have been approved under the first ordinance. A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.

- Preserve Stream Corridors and Floodplains
  - Establish setbacks from stream corridors which will protect the riparian woodlands along any streams.

    Status: Done.

  - Continue to enforce the township's floodplain ordinance.

    Status: On-going.

  - Create a cluster ordinance and consider a transfer of development rights ordinance, which may be used to keep stream corridors and floodplains open and undeveloped.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments have been approved under the first ordinance. A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.

- Preserve Wetlands
  - Require wetlands to be shown on subdivision and land development plans.

    Status: Done.

  - Prohibit development of wetlands and require a 25 foot setback from any wetlands.

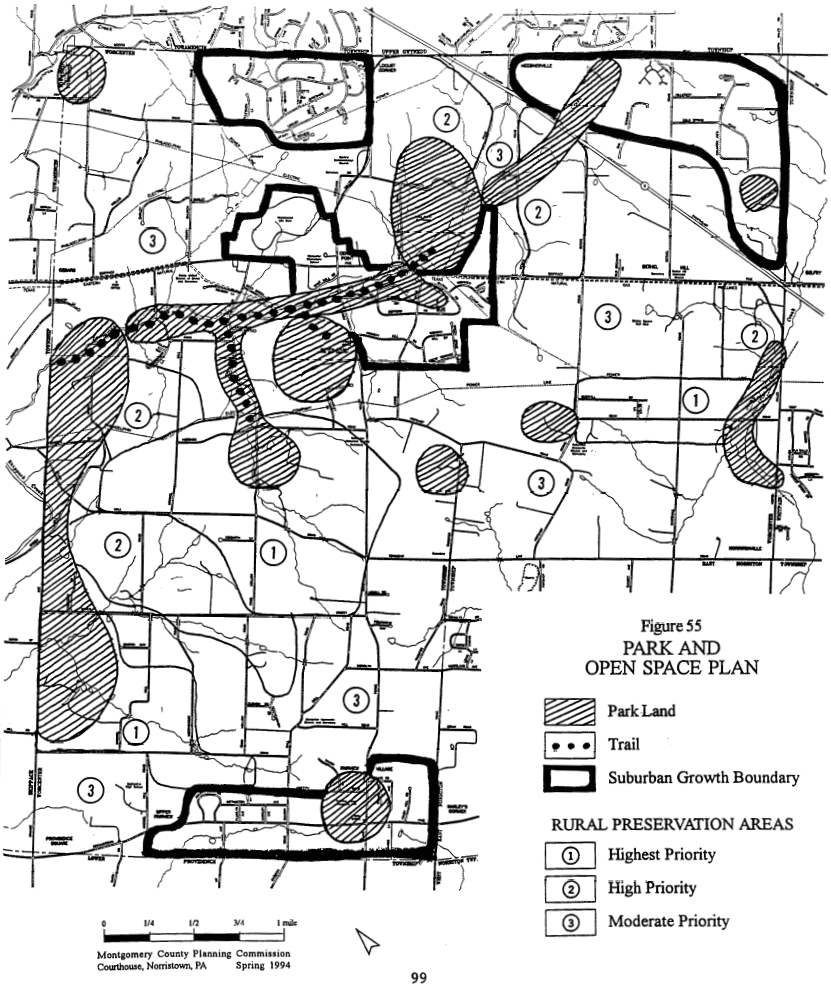
    Status: Done.

  - Subtract wetlands from the township's definition of lot area.

    Status: Done.

  - Create a cluster ordinance and consider a transfer of development rights ordinance, which may be used to keep wetlands open and undeveloped.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments



An illustration from the 1995 Open Space Plan

have been approved under the first ordinance. A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.

- Preserve Woodlands
  - Create a cluster ordinance and consider a transfer of development rights ordinance, which may be used to keep woodlands open and undeveloped.

    Status: The Township enacted two ordinances permitting clustered development in about half of the township, one requiring 35% open space, the other requiring 70% open space. Two developments have been approved under the first ordinance. A TDR program was investigated but not adopted. The township is continuing to pursue TDRs with some larger developers with multiple land holdings and is now considering an ordinance that includes some TDR provisions.
  - Amend the township's landscape ordinance, to encourage tree preservation and require tree replacement.

    Status: Done.
  - Encourage the state to expand Evansburg State Park into wooded areas which adjoin this park.

    Status: On-going.

- Provide Community Level Parks
  - Develop Nike Park with playing fields, hard courts, and a tot lot.

    Status: Not done.
  - Develop a large, central community park near the township building.

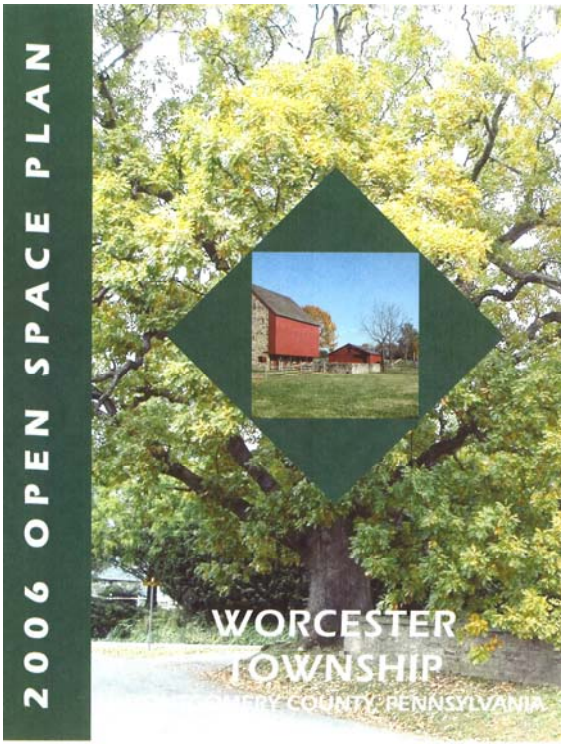
    Status: Done.

- Meet the Township's Neighborhood Park needs
  - Require developments to provide open space or pay fee in lieu of such open space.

    Status: Open space is required with optional cluster developments. A fee in lieu of required open space is being considered.
  - Provide neighborhood parks in the Cold Spring and Fairview Village growth areas.

    Status: Under consideration.

2006 OPEN SPACE PLAN GOALS AND OBJECTIVES



The Open Space Committee evaluated the goals and objectives of the previous plan and revised them to reflect discussions during the audit process, input from a public meeting regarding important township resources, and input from stakeholder meetings. This chapter will serve as the framework for Worcester's plan for open space preservation and protection of natural resources.

1. PRESERVE HIGH-PRIORITY OPEN SPACE LANDS

OBJECTIVES:

Preserve high-priority open space lands in the township in order to:

- protect sensitive natural resources
- preserve important agricultural lands and working farms
- conserve historic and heritage resources
- buffer important historic and natural resource areas
- protect scenic views and roads
- provide high-quality passive recreation opportunities

Flax in bloom on the Peter Wentz Farmstead

Photo: Morgan McMillan / PWF

Peter Wentz Farmstead in fog Photo: Morgan McMillan / PWF

2. PROTECT THE RURAL CHARACTER OF THE TOWNSHIP

OBJECTIVES:

When new development occurs:

- protect the natural and cultural features that give Worcester its rural character
- prevent the degradation of that character by guiding the design of new development
- Minimize the impacts of new development

3. DEVELOP A NETWORK OF PARKS AND RECREATIONAL TRAILS

OBJECTIVES:

Develop a network of parks and recreational trails:

- to connect the passive and active open space within the township
- to connect to other trail systems throughout the county

Montgomery County park and trail Photo: MCPC

A municipal trail in Montgomery County Photo: MCPC

4. CONNECT AREAS OF PRESERVED OPEN SPACE WITH NATURAL GREENWAY LINKAGES

OBJECTIVES:

Connect areas of preserved open space with natural greenway linkages:

- to enhance and protect the township's potential as important natural habitat

Zacharias Creek at Hollow Road Photo: MCPC

Protected land along Schultz and Shearer Roads in Worcester Photo: Pictometry

CHAPTER 3

EXISTING PROTECTED LAND

A key component of the open space plan is a review of existing protected land. An inventory of existing conditions, along with an assessment of future needs, is necessary for formulating many of the plan's goals and objectives. Existing protected land refers to land used for active or passive recreational purposes as well as land preserved for environmental and agricultural conservation purposes.

This chapter identifies existing open and recreational land in Worcester and separates it into two categories of protection - permanently protected land and unprotected open space. The latter category makes an important contribution to the overall quality of life of a community by providing additional open space, conserving significant natural features, and/or providing recreation opportunities. However, this unprotected open space can easily be lost. In evaluating open space needs, this distinction is important, as is the goal of increasing the amount of permanently protected land so that future generations can also benefit from open space.

INVENTORY OF OPEN SPACE LAND

As of 2004, the township had 418 acres of land that were permanently protected from development. Information on the breakdown of ownership and form of protection is shown in Figure 3 - 1. The forms of protection range from conservation and agricultural easements to deed-restricted open space in a residential development.

An additional 415 acres are owned by local, county, and state governments and are currently undeveloped or used as parks and historic sites. Although these lands are now devoted to public use and function as open space, they are not permanently protected and could theoretically someday be sold and developed. Figure 3 - 2 shows the location of protected and publicly owned lands in the township.

In addition, 3,831 acres of land in the township are largely undeveloped, including farms, water areas and vacant lands. Of this, 3,209 acres are enrolled in Act 319. Figure 3 - 2 shows the locations of these currently undeveloped lands. In addition, 107 acres are devoted to schools, 222 acres to private recreation facilities, 445 acres to institutional use, and 192 acres to an industrial park. These lands provide Worcester with a considerable amount of open space, but it is only temporary. Each of these categories is discussed below.

Land can be protected from development in several ways. The most permanent form of protection consists of an easement that restricts certain activities, including development, on the land and provides for monitoring and enforcement by a third party, such as a land trust or a governmental unit. Conservation easements protect land from development and require it to be managed to conserve existing natural resources. Agricultural easements require the land to be farmed or used for pasture, but prohibit residential development.

Spring scene on a Worcester farm Photo: Dee Dee McGrane

Land can also be restricted from further development by a covenant in the deed or site plan. These devices usually simply restrict further development on the land; they do not protect the natural resources on the land or dictate how the land should be managed.

Worcester fields in the winter Photo: Morgan McMillan / PWF

PERMANENTLY PROTECTED LAND

PRIVATELY OWNED LAND

Of the 418 acres of protected land and 133 acres of homeowner association open space land in the township, most is in private ownership. Some of this land has been protected by easement through the purchase of development rights under the state farmland preservation program or the county open space program.

Other lands are protected by a conservation easement donated by the landowner to a conservation organization, such as the Montgomery County Lands Trust (MCLT). Organizations like MCLT work very hard to be constructive partners with municipalities and to further both local and regional goals. MCLT holds easements on 223 acres in Worcester Township. That means they are responsible for monitoring and enforcing those easements forever. That is a big responsibility for keeping Worcester green.

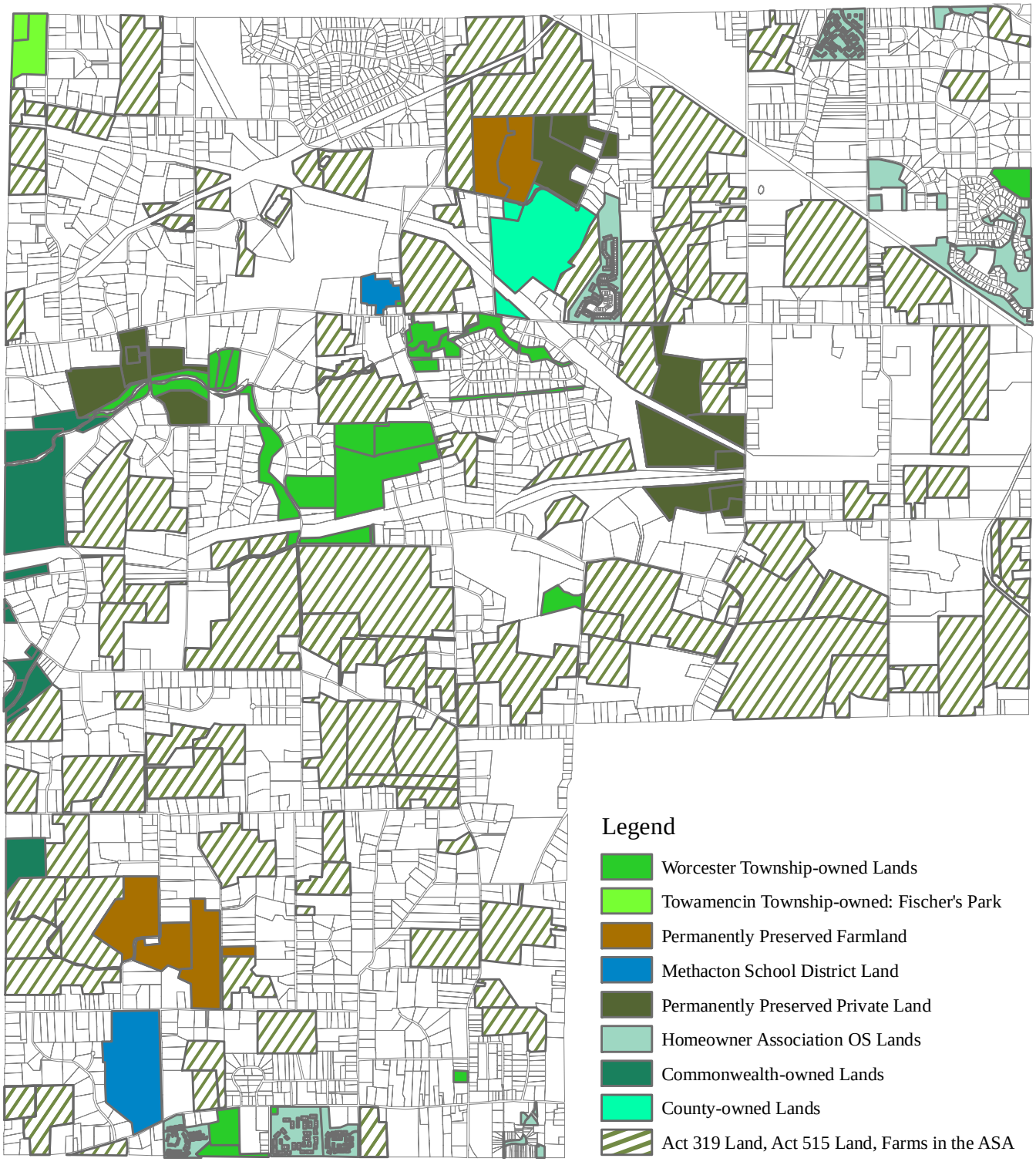
Figure 3 - 1
Existing Public and Private Open Space Lands

	B	C	D	E
	Form of Permanent Preservation		Form of Ownership	
Owner	**Agricultural Easement**	**Conservation Easement**	**Private Lands**	**Public Lands**
Publicly owned land				
Commonwealth of PA (Evansburg State Park)				143.59
Montgomery County (Peter Wentz Farmstead)				82.2
Towamencin Twp (Fischer's Park)				27
Worcester Twp (Heebner Park)		46		46
Worcester Twp (other protected land)		22.44		22.44
Worcester Twp (other park land)				43.72
Worcester Twp (unprotected)				100.45
Worcester Twp (buildings)				18.15
TOTAL	**0**	**68.44**		**483.55**
Privately owned protected land				
Harris	54		54	
Markley	38.7		38.7	
Scarlett	50.1		50.1	
Med-O-View LLC (Gerstemeier)		32.5	32.5	
Markel		67	67	
Myers		89.95	89.95	
Schlotterer		17.3	17.3	
TOTAL	**142.8**	**206.75**	**349.55**	
Homeowner assoc. open space				
Sunnybrook			43.97	
Heritage			4.22	
Berwick			26.5	
Chadwick			16.9	
Wheatsheaf			13.8	
Acorn La.			5	
Deep Meadow La.			22.8	
TOTAL	**0**	**0**	**133.19**	
Column totals	**142.8**	**275.19**	**482.74**	**483.55**

Total protected lands (acreage under easement) (B+C) = 417.99

Total publicly and privately owned open space lands (protected and unprotected acreage) (D+E) = 966.29

Figure 3 - 2
Existing Protected Land



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This map is based on 2000 ortho photography and official sources. Property lines were compiled from individual block maps from the Montgomery County Board of Assessment Appeals, with no verification from the deed. This map is not meant to be used as a legal definition of properties or for engineering purposes.

Protected Land along the Zacharias Creek at Green Hill Road

Photo: Pictometry

Land that is required open space as part of a residential development is protected only by deed or plan restriction. This land is usually owned by a homeowners association.

Privately owned open space lands total 483 acres and are shown on Figure 3 - 2. Land protected by a conservation easement is shown in dark green, land protected by an agricultural easement is shown in brown, and land that is protected only by deed or plan restriction is shown in light blue.

PUBLICLY OWNED LAND

An additional 68 acres of permanently protected lands are owned by the township in the form of Heebner Park and some of the other township lands. Heebner Park was purchased with county open space funding and is permanently preserved for public use. This land is shown in a medium green on Figure 3 - 2.

UNPROTECTED OPEN SPACE

TOWNSHIP-OWNED LAND

Worcester Township owns 162 acres of unprotected land, most of which is undeveloped. This includes several parcels surrounding Heebner Park which are intended to buffer the park and connect it to the township-owned corridor along the south branch of the Zacharias Creek along Hollow Road. The township also owns approximately 27 acres in the Valley Greene residential development in Center Point. Several small township-owned parcels are developed or planned as neighborhood parks, including Mt. Kirk Park, Nike Park, and Fischer's Park (owned by Towamencin Township). The portion of Fischer's Park in Worcester consists of about 27 acres of land. The township-owned lands are shown in Figure 3 - 2.

COMMONWEALTH OF PENNSYLVANIA LANDS

The Commonwealth of Pennsylvania owns the largest amount of publicly owned unprotected land in the township, 144 acres, as part of Evansburg State Park. None of this land is improved for park purposes, with the exception of a small piece of the well-used equestrian trails. Currently, all of it is either farmed or wooded. It is important to note, however, that these Commonwealth lands are not permanently protected from sale or development. This land is also shown in Figure 3 - 2.

MONTGOMERY COUNTY LANDS

Peter Wentz Farmstead, an 82-acre property owned by Montgomery County, is a historic farm site that is listed on the National Register of Historic Places. With its strategic location to Philadelphia during the American Revolution, the Peter Wentz Farmstead was chosen by General George Washington for his headquarters. At the farmstead, Washington planned the Battle of Germantown, which took place on October 4, 1777.

Today, the restored farmstead is managed by Montgomery County as an eighteenth-century working farm. The reconstructed barn houses farm animals typical of the period. The gardens, orchards and fields are cultivated as they would have been in the period. Various informational programs, events, and demonstrations are presented throughout the year at the farmstead.

In addition to its designation as a historic site, Peter Wentz Farmstead is within the Schuylkill River Heritage Corridor. The corridor was designated a State Heritage Park in April 1995. The designation helps to preserve and promote the unique cultural heritage of the Schuylkill River corridor and its contribution to the anthracite coal industry. Peter Wentz Farmstead is included in the corridor as an agricultural reach. The farmstead helps to tell the story of agriculture as it defined settlements and culture. The Schuylkill River corridor has also been designated a National Heritage Area.

Hand plowing at Peter Wentz Farmstead Photo: Morgan McMillan / PWF

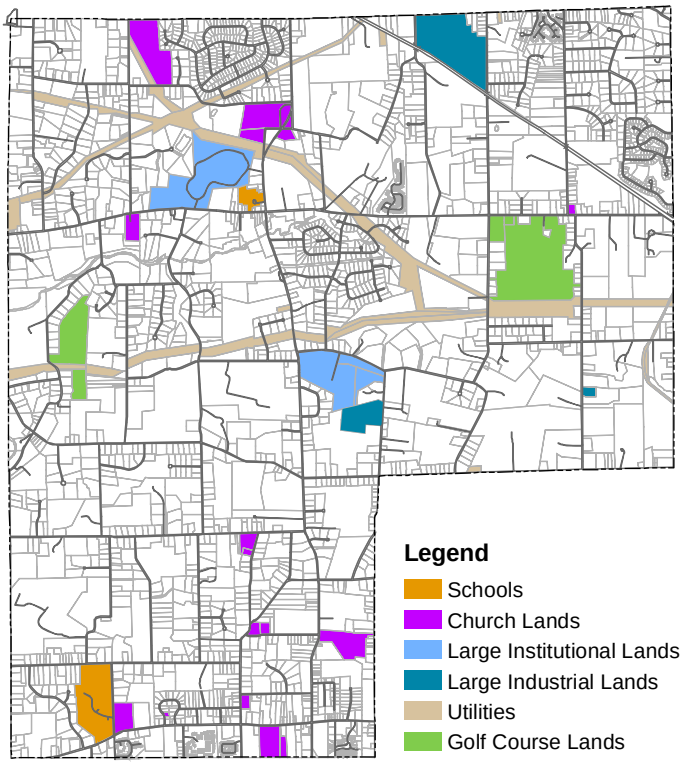
Winter view of Peter Wentz Farmstead Photo: Morgan McMillan /

The historic farm buildings at Peter Wentz Farmstead are surrounded by significant farmed and open land. The views surrounding this site are largely undisturbed, and the visual impact of the site is enhanced by long views toward surrounding private farmland. As residential development pressure in this area increases, protecting the quality of the Peter Wentz Farmstead lands will become even more important. The farmstead is part of a "supercluster" of working farms which includes Merrymead Farm and Gwyn Meadows riding stable. Approximately 100 acres of adjacent or nearby farmland are now permanently protected. For this reason, adjoining properties that can preserve or buffer the site's rural character are extremely important. This land is shown in Figure 3 - 2.

SCHOOLS

Worcester has two properties that are used for schools: 12 acres in Center Point for Worcester Elementary School and 95 acres west of Fairview Village for Methacton High School (see Figure 3 - 3). While much of the land is covered with buildings and parking, the acreage surrounding these facilities functions as open space that buffers the schools from neighboring residential development and may contribute to habitat corridors in the area. How-

Figure 3 - 3
Unprotected Open Space Lands



ever, this land is not protected from further development for school purposes or for eventual sale to other users, who could increase the amount of institutional development on a site or redevelop a site for the residential uses for which it is currently zoned.

Methacton High School Photo: Pictometry

Worcester Elementary School Photo: Pictometry

PRIVATELY OWNED OPEN SPACE LAND

Privately owned land that is currently undeveloped but not protected from development includes land that is enrolled in the state's Act 319 and Act 515 programs as well as institutional and industrial properties.

Land in the Act 319 and 515 programs is assessed at a preferential rate that reflects the farmland value of the property rather than its potential value if it were sold for development. Landowners who participate in these programs can sell their land for development at any time; however, they must then pay rollback taxes for up to 7 years, plus simple interest at the current state rate. This tax penalty provides some incentive to keep land open once it is enrolled in either of these programs, but it is not a real deterrent to development. Developers who purchase these lands simply factor the rollback tax penalty into the price they offer for the land. Land enrolled under Act 319 is required to be in some form of agricultural production or woodland. Land enrolled under Act 515 includes Worcester's two golf courses. These lands are shown in Figure 3 - 2 and Figure 3 - 3.

Worcester also has 11 churches that comprise 162 acres of largely undeveloped land. This acreage is functional open space that contributes to the rural atmosphere and wildlife habitat of the township. Although some churches have been part of the township for centuries and seem unlikely to disappear or relocate, others with a smaller congregation or a shorter history may be more vulnerable. If these properties, or portions of them, are sold for development, this functional open space will be lost. These churches are shown in purple in Figure 3 - 3.

Several other institutional properties in Worcester provide large tracts of temporary open space. The Philadelphia Variety Club facility on Potshop Road and the Meadowood Life Care facility on Skippack Pike include areas of open space surrounding their developed cores. This open space, which contributes to the rural atmosphere of Worcester and can also provide significant wildlife habitat, is unprotected from further development by its current and subsequent owners. These large institutional properties are shown in light blue in Figure 3 - 3.

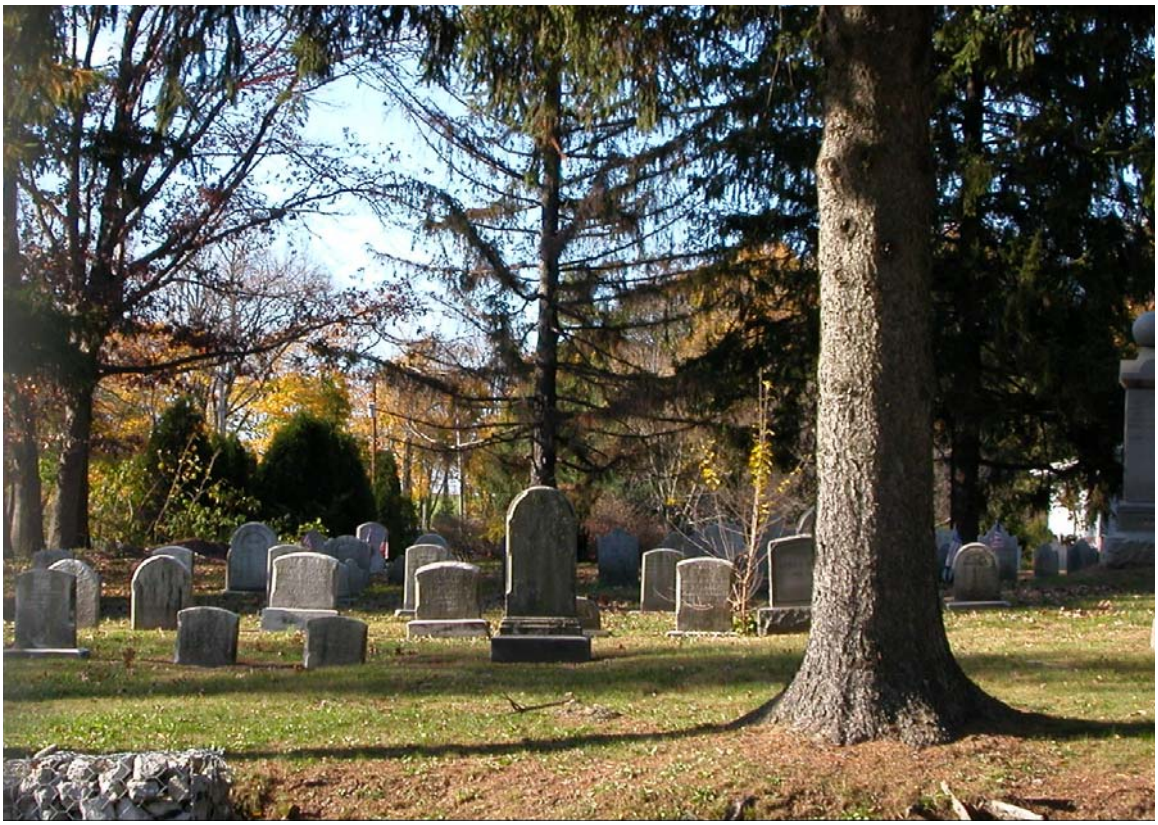
Several industrial properties in Worcester also provide large tracts of temporary open space. The Technitool facility on Trooper Road and the Visteon electronics plant on Morris Road include areas of open space surrounding their developed cores. However, again, this open space is unprotected from further development by current and subsequent owners. These large industrial properties are shown in dark blue in Figure 3 - 3.

Lands used for utilities, especially overhead high-tension power lines, are also often open spaces. In addition, they criss-cross the township, creating corridors of open space that are quite valuable as connections. While housing development is not allowed under such wires, non-residential development is. In Worcester, many of these utility corridors are currently leased for crop farming or horse pastures. The utility lands in Worcester are also shown on Figure 3 - 3.

Horse pasture under power lines in Worcester Photo: Susan Caughlan

SUMMARY

Worcester has almost 1,000 acres of protected and publicly owned land (almost ten 10 percent of the total land in the township) that function as an important part of the township's current open space. However, of Worcester's roughly 5,000 acres of open land, the vast majority (all but 418 acres) is unprotected from development. Some of these unprotected lands, such as parks, schools, churches, golf courses, institutional and industrial facilities, seem relatively stable and can continue to function as additional open space and wildlife habitat without immediate need for protection. Other land, such as farmland currently enrolled in Act 319, is unprotected from development and can be lost as quickly as a contract of sale can be finalized. It is this vulnerable land – more than 4,500 acres — that is the focus of the open space planning efforts in this document.



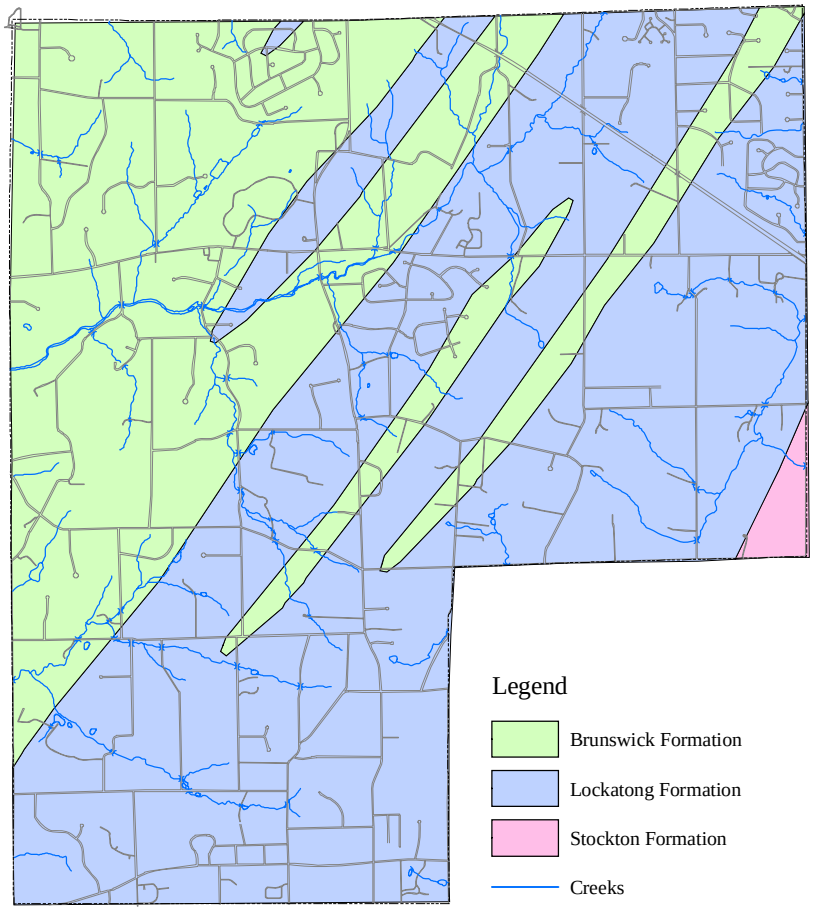
Bethel Hill United Methodist Church cemetery Photo: Susan Caughlan

CHAPTER 4

INVENTORY OF POTENTIALLY VULNERABLE RESOURCES

From its founding in 1733 until just 30 years ago, Worcester remained a community dominated and defined by farming. Despite a 136% growth in residential development over the past 30 years, Worcester still retains a significant rural character, as exemplified by its scenic roads, large and small farms, and many historic buildings. This chapter provides an inventory of the township's natural and man-made resources. The locations and geographic extent of these resources are mapped and briefly described, and their significance is explained in this chapter. Some of these resources are important individually, while others are important as part of a group. Together they contribute significantly to the rural and agricultural character that Worcester is determined to preserve.

Figure 4 - 1
Geology



GEOLOGY

Except for surface outcrops, bedrock geology is unseen, and as a result its influence on natural features is not always acknowledged. However, the influence is both strong and pervasive, for bedrock geology is the foundation of an area. Bedrock, along with the hydrologic cycle, is responsible for the changes in elevation, steep slopes, location of watercourses, and orientation. Orientation, in turn, will influence vegetative communities, soils, and availability of sunlight. The bedrock or parent material has a great influence on the type of soil formed. For example, hard, igneous bedrock has resulted in soils with a high stone and boulder content. Groundwater yield differs from one bedrock formation to the next. In Montgomery County, the difference ranges from under 1 gallon per minute (gpm) to over 30 gpm.

Montgomery County is located in the Triassic Lowland and Piedmont Upland section of the Piedmont Physiographic Province. The Triassic Lowlands are primarily red shales and sandstones, with intrusions of diabase. Four formations - Stockton Sandstone/ Conglomerate/Shale, Lockatong Argillite/Shale, Brunswick Shale/Sandstone, and diabase - comprise the Triassic Lowlands. Three of these are found in Worcester: Brunswick, Lockatong, and Stockton. The formations underlying Worcester are described below and shown in Figure 4 - 1.

The Lockatong formation underlies over half of Worcester Township and is primarily composed of thick-bedded dark gray to black argillite (hard claystone or siltstone) with occasional zones of thick-bedded dark shale, impure limestone, and limey argillite. Lockatong is resistant to weathering and the formations usually protrude from the ground in ridge-like fashion.

The Brunswick formation underlies the second largest area in Worcester. It typically consists of reddish-brown shale, mudstone, and siltstone. The topography of the formation is usually characterized by rolling hills.

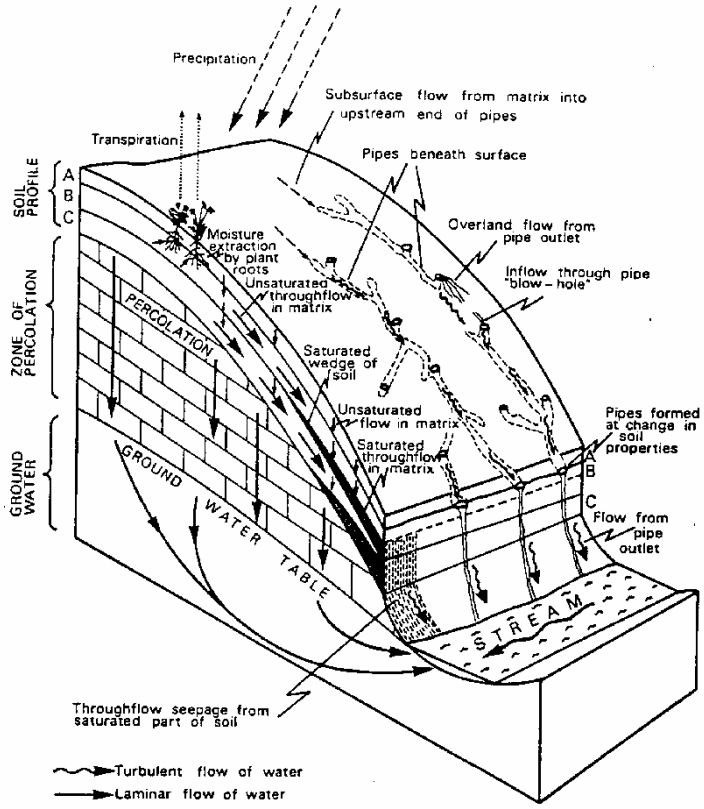
The Stockton formation is present in the southeastern corner of the township and is a good water producer. It is composed chiefly of very fine to coarse-grained arkosic sandstone and conglomerates, interbedded with red shale and siltstone.

Figure 4 - 1 shows that Worcester is underlain mostly by the Lockatong formation, which yields small supplies of groundwater, adequate for domestic use only. As a result, about 10% of the wells in this formation fail. Most of the remainder of the township is underlain by the Brunswick formation, which is a highly variable water producer. The greatest yields are in the conglomerates; however, in shales there is always adequate water yield for domestic use.

Because of the limitations of the various formations on groundwater withdrawal, the minimum lot size that should be permitted in areas without public water is much larger than in many other areas. Residential areas that depend upon groundwater from individual wells are drawing on a limited supply, which comes from the portion of rainfall that percolates through the soil into the underlying bedrock to the water table.

In the Skippack Creek drainage area (which covers most of Worcester Township), which is made up of Triassic Shale formations (Lockatong and Brunswick), about 88% of the rainfall in an average year either runs off the land during and after a storm (27.8%) or is lost to the atmosphere through evapotranspiration (60.3%). Therefore, only about 12% of the

Figure 4 - 2
Hydrology



Source: Lawrence A. Morris, Ph.D. (http://www.archês.uga.edu/~lmorris/Classes/CRSS(FORS)3060/Chap9/Chap9.html)

rainwater is available to replenish groundwater and provide baseflow to local streams. Baseflow is the amount of water that flows out of the ground to replenish non-storm stream flow and to maintain stream flow during dry periods. In Figure 4 - 2, baseflow is shown as various subsurface flows that lead to the stream.

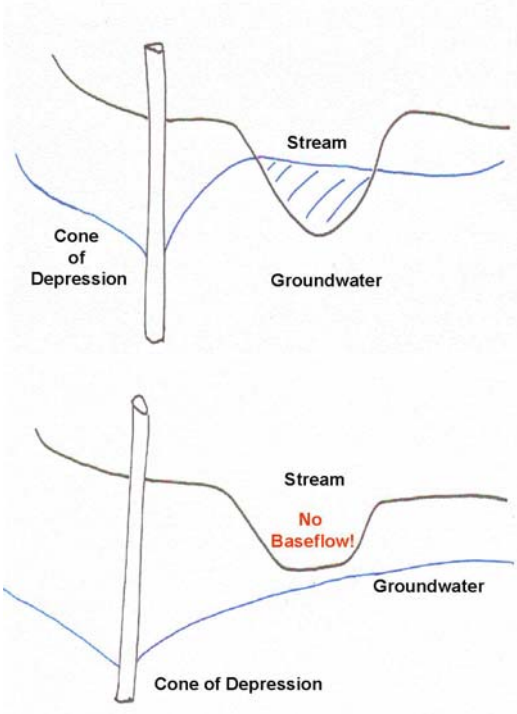
In the Skippack Creek drainage area the baseflow contribution per acre is approximately 344 gallons per day for an average year. However, during a drought year with a one year in ten probability of recurrence, the average baseflow contribution per acre of undeveloped land is approximately 82.8 gallons per day. This baseflow becomes surface water that can be used for human purposes, but it is also vital for the survival of the natural habitat. For long-term planning or as a basis of zoning density, using 83 gallons of water per net acre as an estimate of water supply is reasonable.

With one home per two acres, there will be about 166 gallons of baseflow water available per home; however, the average suburban household can use up to 300 gallons per day of water. Fortunately, with on-lot sewage disposal, some of this water will be returned to the groundwater.

Approximately 10% of a household's water is consumed for cooking, plant watering, drinking, and other uses. The remaining 270 gallons per day are sent out of the house as sewage. In most homes with on-lot sand mound septic systems, up to 50% of the waste water that is discharged into the sand mound is lost through evapotranspiration. The other half of the treated effluent, or 135 gallons per day, provides effective recharge to the groundwater. The total water available, 166 gallons per day from rainfall during a drought year and 135 gallons from sewage disposal recharge, matches the 300 gallons per day that most families withdraw. This means the water available in the Skippack Creek drainage area supports a maximum average development density of one house per two acres.

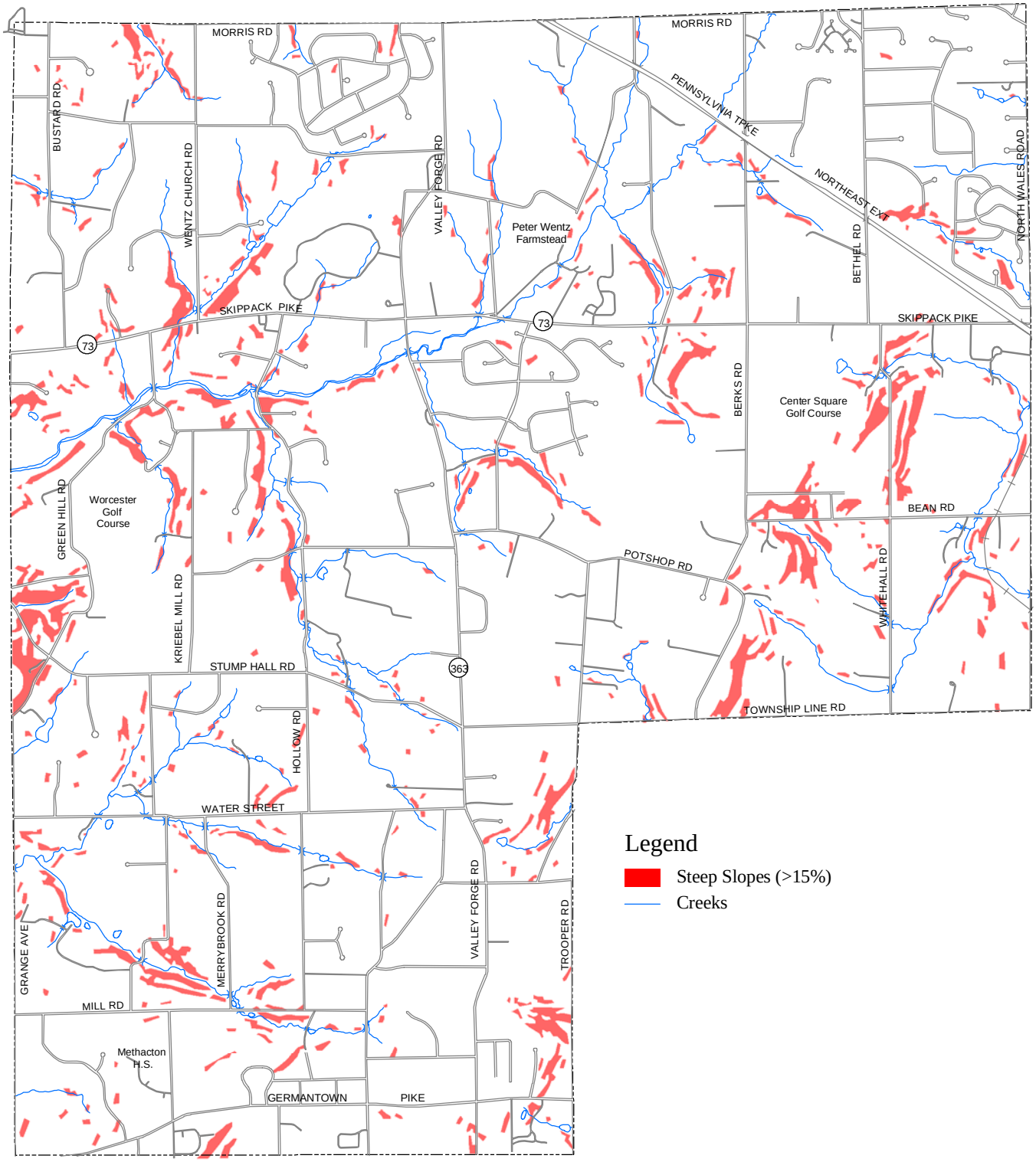
Like surface water, groundwater flows from place to place, although it moves more slowly. As it flows, it eventually can return to the surface through springs or seeps, or it can flow up through streambeds or into ponds. As previously explained, this is called baseflow, and it contributes to surface water flow. During dry periods, such as between rains or during

Figure 4 - 3
Effects of Wells on Groundwater and Baseflow



Source: http://www.mass.gov/dfwele/river/rivlow_flow_inventory/groundwater.html

Figure 4 - 4
Steep Slopes



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droughts, this groundwater to surface water movement, or baseflow, is critical to maintaining stream flow and aquatic environments, and to diluting discharges from treatment plants and other sources.

If homes withdraw more water than is being recharged, then the water table will go down, which may dry up some wells and cause people to have to drill new, deeper wells. In addition, it will damage the ecology of the area by reducing or eliminating baseflow water that plants and animals need to survive. Figure 4 - 3 illustrates the effect of excessive water withdrawal on groundwater and stream baseflow.

TOPOGRAPHY

STEEP SLOPES

When expressed as a percentage, slope is defined as the amount of change in vertical elevation over a specified horizontal distance. For example, a three foot rise in elevation over a one hundred foot horizontal distance is expressed as a three percent slope. These changes in elevation throughout a community contribute a great deal to its appearance and natural diversity.

This is especially true of the steep slope areas of a community, which also cause limitations to development. The slope and soils present on steep slopes are in a delicate balance with vegetation, underlying geology and precipitation levels. Maintaining this equilibrium reduces the danger to public health and safety posed by unstable hillsides. Steep slopes often have a combination of vegetation, climate, soil and underlying geology that differs from the surrounding area. Frequently this means that the environmental sensitivity of the steep slope is different as well. Susceptibility to erosion and mass movement may be greater than for the surrounding area, especially if vegetation is removed. Increased runoff and sedimentation from disturbed slopes require increased public expenditure for flood control and stormwater management. Also, different species of plants and the associated wildlife that depends on these plants may be present only on the slopes, creating unique conservation opportunities and scenic vistas.

The township is comprised mostly of 3 to 8 percent slopes. This degree of slope presents a gently rolling effect. The second most common range of slopes is 0 to 3 percent. These slopes are usually found in the bottom of stream valleys and the top of ridge lines. Eight to 15 percent slopes are scattered throughout the township. Many of these slopes are associated with stream valleys.

Fifteen to 25 percent slopes are scattered throughout the township, with the largest concentration in the northwest section of Worcester. The 25 percent and higher slopes are also scattered throughout Worcester, with concentrations in the southwestern and southeastern sections of the township. All of these areas are associated with steep stream banks.

Generally, the 0 to 8 percent slopes are suited for institutional, industrial, commercial, and residential development. Residential development is also possible on 8 to 15 percent slopes. Only large lot residential should be developed on 15 to 25 percent slopes, as the large lot size allows flexibility in siting the unit away from steep slopes. Slopes above 25 percent are suited only for parks, forests, and open space. Areas with slopes over 15 percent are shown in Figure 4 - 4. Development of steep slope areas should be avoided, since it often leads to soil erosion which, in turn, leads to degraded water quality in local streams.

Associated with slope are elevation and relief. The three highest areas in the township are in the Methacton Hills, which are 495 feet above sea level and run roughly parallel to Valley Forge Road. The lowest area in the township is where the Skippack Creek exits from the township at Green Hill and Stump Hall Roads and is 135 feet above sea level. The range between the highest and lowest points in Worcester, called the relief, is 360 feet. However, since the horizontal distance between the high and low points in Worcester is fairly great, the average relief in the township is not significant.

WATERSHEDS AND DRAINAGE AREAS

The drainage basins in Worcester, which are shown in Figure 4 - 5, form different watershed areas that provide a valuable source of groundwater.

Portions of three major basins — Skippack Creek, Stony Creek, and Wissahickon Creek — are present in Worcester. These basins flow into the Schuylkill River, which is a part of the Delaware River basin.

The portion of the Skippack Creek basin that is in Worcester Township flows west into Skippack Township, draining most of Worcester. The southern boundary of the Skippack basin's major ridge line

follows Valley Forge Road in Fairview Village and then runs diagonally in an easterly direction to the easternmost corner of the township.

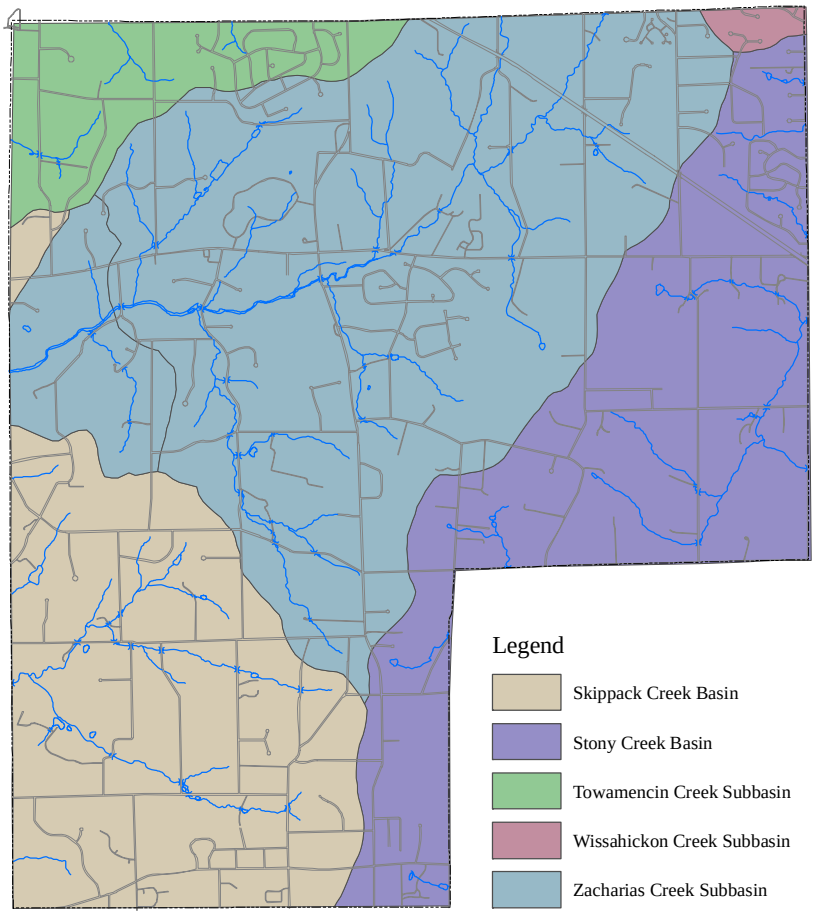
The Stony Creek basin, found in the southeastern portion of Worcester, drains first into Whitpain, then to East Norriton Township, and eventually to Norristown.

The Wissahickon basin, found in a small portion of the eastern section of Worcester, drains into Upper Gwynedd, where it reaches the Wissahickon Creek.

The largest minor basin in Worcester is the Zacharias, which flows into Skippack Creek. This sub-basin drains from east to west across the northern portion of the township.

The delineation of drainage patterns and drainage basins is important for the formulation of public sewer systems, since their collection systems usually take advantage of topography for gravity flow. In addition, solutions to stormwater drainage problems can be influenced greatly by drainage patterns.

Figure 4 - 5
Watersheds



SOILS

Soils are a natural assortment of organic materials and mineral fragments that cover the earth and support plant life. The composition of soils changes slowly over time, due to weathering of rock and activity of soil organisms. As a consequence, soils vary with respect to depth to bedrock, depth to groundwater, color, mineral characteristics, fertility, texture, and erodibility. One of the most influential natural features, soils are a result of the hydrology and the weathering capacity of the underlying geology in a given area. They are also influenced by the orientation of the land and the types of vegetation that grow in them. Conversely, the type of soil influences the vegetative cover of the land, which affects the quality and quantity of surface water and groundwater, wildlife diversity, rates of erosion, and the aesthetic quality of the landscape.

Though soils are diverse, soil scientists have classified the soils found in Montgomery County into several groups called soil series. Soils listed within the same series will display similar subsurface characteristics. The surface characteristics of soils within a particular series can vary in slope, degree of erosion, size of stones, and other easily recognizable features.

In addition to the soil series, soils can also be divided into prime and important agricultural soils, hydric components, and alluvial soils. The groups of soils pertinent to the township are described below.

PRIME AND IMPORTANT AGRICULTURAL SOILS

The agricultural capability of soil is based on fertility, depth to bedrock and groundwater, texture, erodibility, and slope. Based on these characteristics, soils are classified as prime farmland, farmland of statewide importance, or other land. Prime farmland includes deep, well drained, and moderately sloped soils that can support high yields of crops with little management. Farmland of statewide importance includes soils that support cultivation but require careful crop management. The remaining soils are best used for pasture and woodlands.

As can be seen in Figure 4 - 6, a majority of the township's soils are suitable for agriculture. The best areas for agriculture in the township, those with prime farmland soils, are located in the stream valleys and are scattered around the township, with major concentrations near Morris Road, Valley Forge Road, and Berks Road. The least productive

Figure 4 - 6
Agricultural Soils

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Merrymead Farm

Photo: MCPC

areas, those with neither prime farmland soils nor soils of statewide importance, are also scattered around the township, although the largest concentration is located around Whitehall Road, south of Skippack Pike.

ALLUVIAL SOILS

Figure 4 - 7 shows the alluvial soil areas and the 100-year floodplains in Worcester. Alluvial soils are frequently, but not always, located within a floodplain. They have been deposited by flowing water and are not stable as a result of their texture and composition. The presence of alluvial soils is only one indicator of a floodplain. Changes in the tributary drainage area or slope of the adjacent stream may create a floodplain that is either larger or smaller than the area of alluvial soils. Also, alluvial soils do not indicate the probability of recurrence of a flood (for example, a 100-year flood). An important aspect of alluvial soils is that they often form aquifer (groundwater) recharge areas, making these areas a priority as preserved lands for groundwater recharge, natural resource protection, and passive, but not active, recreation.

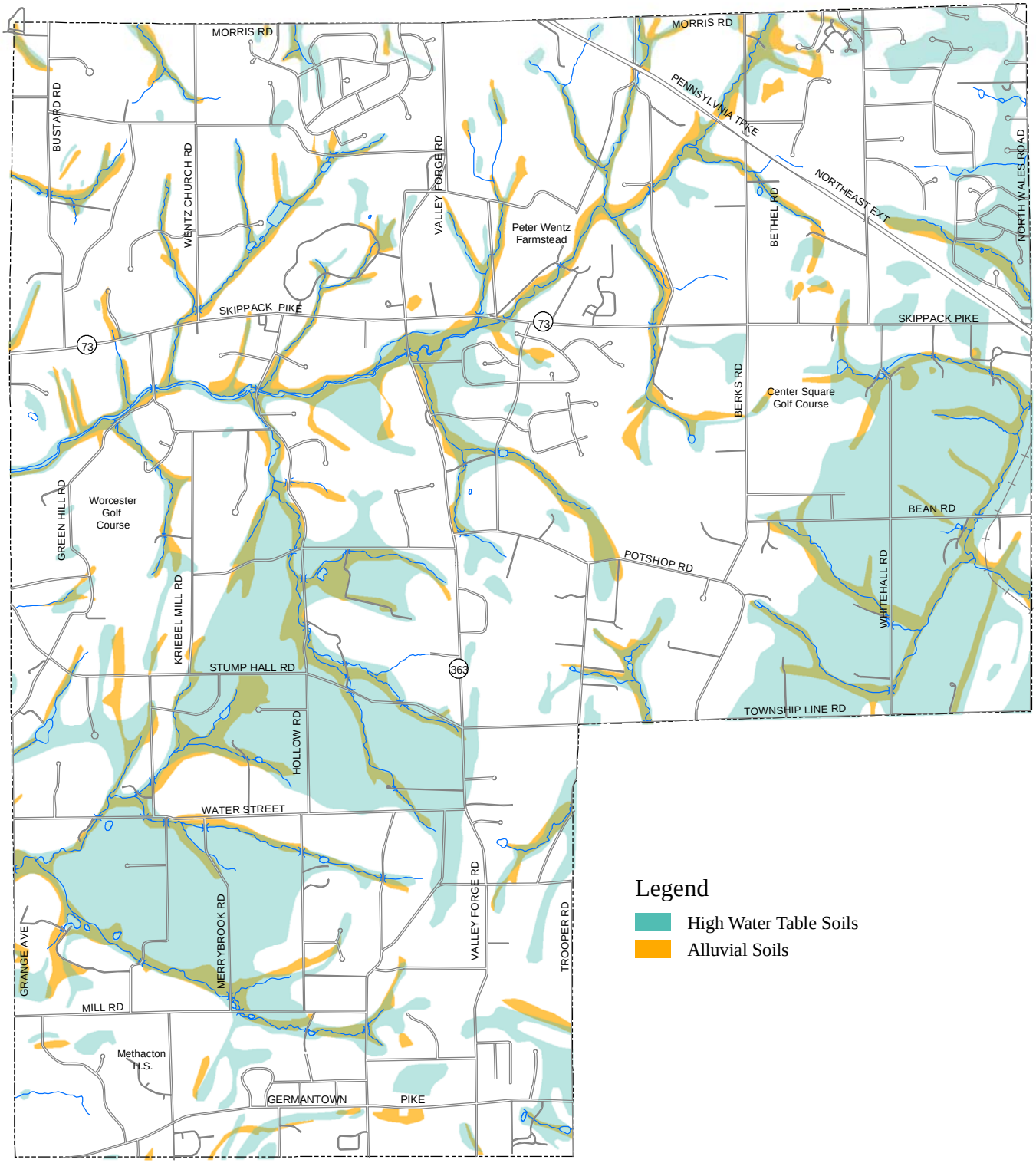
HIGH WATER TABLE (HYDRIC) SOILS

In general, soils that are saturated with water at or near the ground surface, particularly during certain times of the year, are considered to have a high water table and are called hydric soils. As would be expected, such areas often exist near water bodies and watercourses and may be part of wetlands or, as is frequently the case in Worcester, the spring-fed headwaters of streams. Because of wetness, these soils present a major constraint for development wherever on-site subsurface sewage treatment is utilized, as in many rural areas, since treatment depends largely on adequate water percolation through the soil.

One of the limits for on-lot sewage disposal is a high water table. Figure 4 - 7 shows portions of the township that have hydric soils, which means the water table is 0 to 3 feet below ground level.

Few areas in the township are well suited for on-lot sewage disposal, and even the suitable areas are made up of variable as well as satisfactory soils. Whenever on-lot sewage disposal is proposed, the soil's ability to handle this disposal must be fully investigated through the use of soil probes and perco-

Figure 4 - 7
Alluvial and Hydric Soils



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lation tests. Since much of the township has such soil limitations for on-lot disposal, these investigations must be done carefully and comprehensively.

For this open space plan, hydric soils are important not only because they affect the amount of development that is appropriate, but also because they are valuable as an important environment for certain species of animals and shallow-rooted plants, and for the animals that depend on such plants for food and habitat. Also, as briefly mentioned above, hydric soils may indicate the existence of wetlands, which are yet another type of environment for special species.

SURFACE WATERS AND HYDROLOGY

FLOODPLAIN AND STREAM CORRIDORS

Water is a valuable resource, consumed by people and industry, enjoyed at recreation facilities, employed in the assimilation of treated sewage, and integral to wildlife and the landscape. The average annual rainfall in the county varies from 43 inches near City Line Avenue to 47 inches in the vicinity of the Green Lane Reservoir.

It should be noted that in any given year, annual precipitation can vary from the average by as much as ten inches. Generally speaking, on undeveloped land about 25 to 30 percent of precipitation becomes direct runoff, 50 to 60 percent evaporates or is absorbed and transpired by plants, and 10 to 15 percent replenishes groundwater. The surface water that falls on or is carried through Worcester, affecting the topography, soils, vegetation, and groundwater, comes from two natural sources: direct runoff and groundwater. A third, manmade source may also contribute to stream flow: effluent from sewage treatment plants, which tends to dampen the variation between high and low flow periods.

Tributary of the Zacharias Creek at Hollow Road Photo: MCPC

The largest floodplain, which traverses the township from east to west, is found along Zacharias Creek. A substantial floodplain also is present along Stony Creek in the southeastern part of Worcester, as seen in Figure 4 - 8.

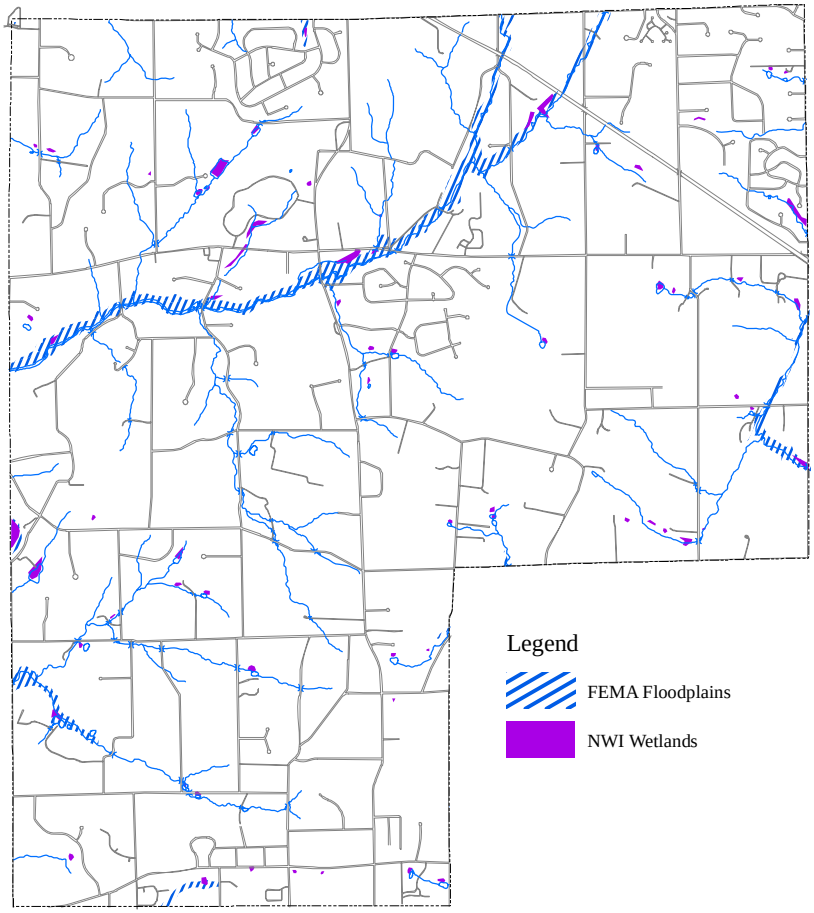
Floodplains provide storage for excess stormwater during periods of flooding and are an important part of a natural drainage system. When floodplains are developed, such as with buildings, walls, fill, or other obstructions, flooding increases, and life and property are threatened. Because of this, the Federal Insurance Agency, which provides floodplain insurance for the nation, has strict regulations on floodplain development.

Because the aesthetic value of stream valleys is considerable, these areas are usually attractive and worth setting aside for passive recreation and conservation purposes. If this is not done, the development of these stream valleys will destroy vegetation, disrupt wildlife by removing habitat and disturbing the water supply, and reduce the amount of groundwater recharge that normally takes place within floodplains.

With the development of floodplains, the absorption capacity of the watershed is decreased. Rooftops, parking lots, and street pavement all contribute to increased surface drainage and flooding. Stream valley preservation is an important component of controlling stormwater and decreasing floodplain drainage. In the Stony Creek drainage basin, all stormwater facilities should be designed in accordance with the standards in the Stony Creek/ Sawmill Run Stormwater Management Plan completed under Act 167.

Floodplains and stream corridors serve important functions beyond the conveyance of stormwater. Trees and vegetation along stream corridors absorb precipitation and control snow and ice flow into the stream. If stream corridors are developed, the vegetation that would control the flow of precipitation

Figure 4 - 8
Floodplains and Wetlands



into the stream is missing and stream flows become irregular. Irregular flow means that the stream highs and lows will also be altered. If impervious coverage is increased, this cycle is exacerbated as the rate of runoff is increased and snow and ice melt faster. In effect, the developed surfaces and the increased runoff that they cause result in a greater propensity for streams to flood due to their inability to handle the additional water.

In addition to flooding, runoff often results in sedimentation. When stream corridors lack vegetation, sediments are carried into the streambeds, where they deposit on the stream floor and make the stream increasingly shallow and warm. Typically, high-water-quality streams are those that are deep and cold.

Often, sediments carried into streams by stormwater runoff include pollutants. These pollutants can be generated by a variety of sources, ranging from industrial to residential to farming uses. For example, fertilizers used on residential lawns and on farms enter the streams via surface runoff and cause algae and other plant life in the streams to grow too rapidly. The fertilized plants and algae consume most of the oxygen, in effect smothering the fish and other organisms in the stream. Other pollutants, such as bacteria from farm animal waste and failing on-lot sewage disposal systems, are also carried into streams via surface water and groundwater. In fact, fecal bacteria goes directly into streams when farm animals are permitted to roam unrestrained into the streambeds. The bacteria cause contamination and degradation of the stream water quality.

The condition of the stream corridor itself is important in minimizing erosion and water pollution, protecting water quality (temperature and velocity), providing animal habitat, and providing recreation opportunities. Well-vegetated corridors will reduce pollutant loads to streams, control excess temperature by shading the stream, and provide habitat for wildlife. If vegetation is preserved along the banks of feeder streams as well as the main stem, pollutant loads are greatly reduced. Wetlands that filter and impede stormwater and provide a habitat for aquatic life are frequently found along the stream corridor. Unconsolidated gravel and stone deposits along the corridor allow for groundwater recharge. People benefit from stream corridors, as they also provide opportunities for trails and other forms of recreation, such as fishing.

Figure 4 - 8 shows the location of all streams and ponds in Worcester. The Pennsylvania Department of Conservation and Natural Resources (DCNR) classifies streams according to the type of wildlife they can support: "exceptional value waters" {the cleanest streams, the ones with the least amount of pollution); "cold water fishes" streams (the next cleanest level); "trout stocking" streams; "warm water fishes" streams; and "migratory fishes" streams. Only one type is found in Worcester, the trout stocking streams. Skippack Creek and its tributaries, including Zacharias Creek, and Stony Creek and its tributaries are this type. These categories are used, among other reasons, to determine the amount and quality of sewage effluent that can be discharged into the stream.

WETLANDS

According to the US Fish and Wildlife Service, wetlands generally are "lands where saturation with water is the dominant factor determining the nature

A segment of the Skippack Creek in Worcester Photo: Susan Caughlan

of soil development and the types of plant and animal communities living in the soil and on its surface. The single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil."

The National Wetlands Inventory (NWI) uses the following definition to determine the NWI wetlands shown in Figure 4 - 8: "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of the year."

Wetlands have many benefits, including purifying water, retaining stormwater runoff and thereby limiting erosion and reducing flood flows, providing food and shelter for a wide array of animals and plants, facilitating groundwater recharge, and helping maintain the baseflows of area streams. Developers must carefully and comprehensively identify wetland areas when they prepare a development plan by examining the soils, hydrology, and vegetation of the land. Often, wetland areas are found in or near streams and swales.

Figure 4 - 8 shows where wetlands might be located in Worcester, based on hydric soils, wet spots, and marshes identified in the Montgomery County Soil Survey. However, this map is only a general guide to where wetlands might exist. Specific, comprehensive wetlands studies and mapping must be completed for individual parcels before any development occurs.

HYDROLOGY

In terms of drainage, all township land drains toward the Schuylkill River, as does the major portion of the county. As shown in Figure 4 - 5, this occurs within the Skippack and the Stony Creek drainage basins, which also cover parts of Skippack, Lower Salford, Towamencin, Upper Gwynedd, Lower Gwynedd, Whitemarsh, Whitpain, East Norriton, West Norriton and Lower Providence Townships and the Borough of Norristown. These basins are comprised of a series of smaller basins, the most important of which in Worcester is the Zacharias Creek.

Because basins are usually larger than one community, an interrelationship exists whereby municipalities that are upstream contribute surface water flow to Worcester, while those downstream receive the township's flow. Any efforts to improve the creeks by downstream communities can be thwarted simply by less rigorous attention to stream quality by even one upstream community. Luckily, much of Worcester is at or very near the top of several watersheds. The Zacharias Creek originates in Upper Gwynedd, but most of the tributary headwaters are in Worcester. Several of the tributary headwaters of the Stony Creek are also in Worcester. One tributary of the Skippack Creek that drains half of Fairview Village is entirely in Worcester Township and therefore all of the headwaters are, too. With this in mind, the Township should aim to maintain the natural conditions of its drainage system, through preservation of open space along watercourses, to provide maximum water quality and flood control benefits not only to Worcester residents but also for downstream communities.

Groundwater behaves much like surface water, flowing like a stream, only much slower. Groundwater is tapped as a source of drinking water and for industrial purposes where surface water is unavailable.

Groundwater replenishment occurs slowly as precipitation, and in some cases stream water, seeps through the soil and enters the aquifer. Open, undisturbed land is essential to groundwater recharge, since vegetation serves to retain precipitation where it falls, allowing it to soak into the soil rather than run off the surface. Impervious surface from development prevents infiltration of precipitation.

Most of the residents of the township who are not using private wells obtain their water supply from the North Penn Water Authority (NPWA), which utilizes a series of wells (24 percent of supply) and surface water supplies (76 percent of supply) for its system. Only 1 of NPWA's 38 wells is located in Worcester Township, along the Zacharias Creek near the Peter Wentz Farmstead. One development along Skippack Pike near Weber Road, Center Point Farm, is part of another water supplier, Superior Water Company, which has one on-site well, also along the Zacharias Creek, as its source of water for the development.

VEGETATION AND WILDLIFE

WOODLANDS

The original vegetation of Montgomery County was a dense forest of hardwoods that covered over 99 percent of the county. Oaks were the dominant species, but chestnut, tulip poplar, hickory, ash, red maple, and dogwoods were also present. Several hundred years of clearing and cultivation, and in more recent times the rapid development of houses and commercial facilities, have reduced these woodlands to a shadow of their former extent. The principal types of woodlands remaining in the county are:

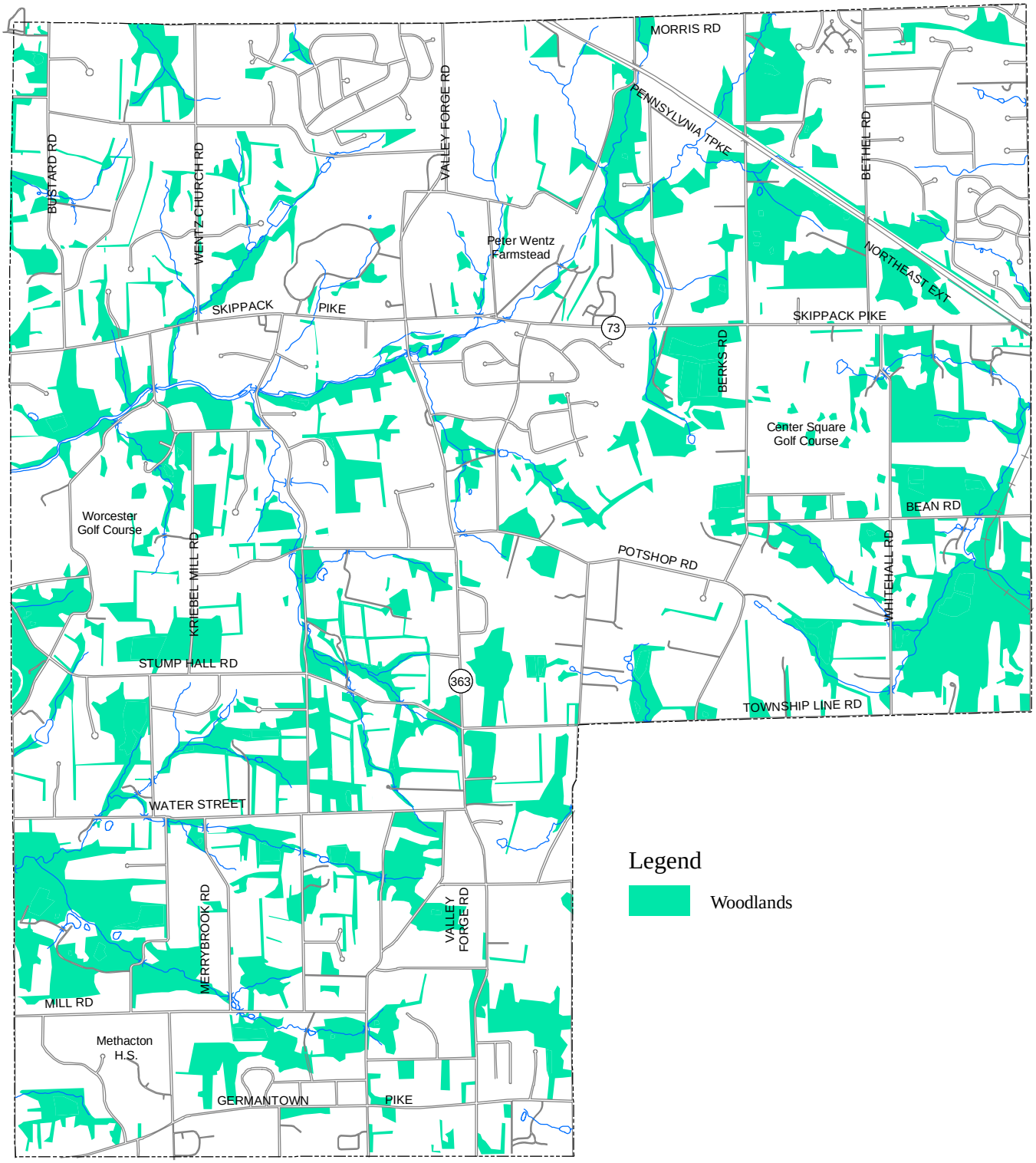
Red Oak – This constitutes about 60% of all remaining woodlands. Northern Red Oak is predominant, but Black, Scarlet and Chestnut Oak are also abundant.

Ash/Maple/Elm - About 19% of all remaining woodlands are of this type. Local mixtures will vary, and include minor species, such as the Slippery Elm, Yellow Birch, Black Gum, Sycamore, and Poplar.

Woodlands in Worcester

Photo: Susan Caughlan

Figure 4 - 9
Woodlands



Eastern Red Cedar – About 18% of the county's remaining wooded acres are covered with this species and associated species: Gray Birch, Red Maple, Sweet Birch, and Aspen.

Sugar Maple/Beech/Yellow Birch - The remaining 3% of woodlands is comprised of this type. Associated species include Red Maple, Hemlock, Northern Red Oak, White Ash, and Tulip Poplar.

Woodlands and hedgerows serve many purposes, both functional and aesthetic. Woodlands provide groundwater recharge, prevent erosion, provide habitat for wildlife, provide buffers for creeks, and offer recreational opportunities for residents. Hedgerows and wooded corridors also prevent erosion and provide cover for wildlife movement, shelter, and migration.

The distribution of woodlands in Montgomery County can be described in three different patterns. Small, widely scattered stands can be found east of the central county ridge, often strung along alluvial soils. Long, linear stands along streams and on alluvial soils are typical in the central part of the county. Large forested blocks of land, often hundreds to thousands of acres in size, are found in valleys and on ridges in the central and northern areas of the county.

Worcester is home to a mixture of these woodland patterns. Looking at Figure 4 - 9, one can see that there are smaller stands located throughout the township. The linear streamside and alluvial stands border almost all the streams. Worcester also has a few large stands ranging from 100 to 200 acres located in the western and eastern portions of the township. Although only 144 acres of Evansburg Park are in Worcester Township, it is part of one of the largest contiguous blocks of woods (perhaps several thousand acres in all) in the county.

Wild turkeys in Worcester Photo: Dee Dee McGrane

HABITATS

Worcester has a wide variety of wildlife habitats, including the four habitats normally found in this portion of the Piedmont region. These are: deep woodlands, riparian woodland corridors, upland fields, and wetlands.

Wetlands were discussed above. Upland fields, generally, are farms or the edges of farm fields and fallow fields. Deep woodlands are woodlands at least 300 feet from open land, and riparian woodlands border streams.

Woodlands and hedgerows are scattered throughout the township. These areas provide habitat for many animal and plant species, control erosion, clean the air, protect privacy, provide windbreaks, cool the air in the summer, reduce the impact of rainfall, muffle noise, absorb odors, and improve the appearance of an area. Because of all of these benefits, woodlands and hedgerows improve the quality of life of a community and usually increase property values.

Worcester has some significant clusters of woodland habitat, especially near Whitehall Road, Bethel Road, and Evansburg State Park, as illustrated in Figure 4 - 9.

SPECIES OF SPECIAL CONCERN

There are significant natural areas in Pennsylvania which provide benefits to the residents of the state by purifying groundwater, controlling erosion, maintaining plant and animal diversity, providing educational opportunities, and containing scenic vistas. In order to plan for the wise use of these natural areas and the important resources they contain, the Pennsylvania Natural Diversity Inventory (PNDI) was established in 1982 as a joint venture of The Nature Conservancy, the Pennsylvania Department of Environmental Resources, and the Western Pennsylvania Conservancy. The PNDI has become Pennsylvania's chief storehouse of information on outstanding natural habitat types, sensitive plant and animal species, and other noteworthy natural features.

Red-backed salamanders (red phase and dark phase) in Worcester Photo: David Brooks

PNDI sites consist of four categories: endangered plant locations, endangered animal locations, unique natural communities, and geologically significant locations.

Recent inquiries to the PNDI participating agencies indicate that two animal species of special concern are known to exist in or near the township: the bog turtle (Clemmys muhlenbergii) and the red-bellied turtle (Pseudemys rubriventris). The bog turtle is an endangered species in Pennsylvania and the red-bellied turtle is a threatened species in Pennsylvania.

The Pennsylvania Fish and Boat Commission is the agency responsible for species of special concern for fish, reptiles, amphibians, and aquatic organisms. They describe the bog turtle as "a small (up to a 4 inch carapace) semi-aquatic, omnivorous turtle that prefers open marshy wetlands associated with springs and groundwater, specific vegetative communities and mucky soils for burrowing. This species is restricted to the southcentral and southeast portions of Pennsylvania. However, due to the lack of pristine habitat found in its range from disturbance and plant successional processes, the bog turtle has, in some cases, become accustomed to disturbed, low-quality wetland complexes often with semi-closed canopies. Bog turtles are also known to be transients in forested habitat that are associated with springs and small streams leading to more open marshes. They use these habitats as dispersal corridors to other wetlands. The bog turtle is threatened by habitat destruction, poor water quality and poaching."

The Fish & Boat Commission describes the red-bellied turtle as "one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes and marshes with permanent water and ample basking sites. Red-bellied turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality, and competition with aggressive non-native turtle species that share its range and habitat (e.g. red-eared slider, Trachemys scripta elegans)."

In addition to this recent information, according to the 1997 Montgomery County Natural areas Inventory, Worcester contained at that time one habitat area on the PNDI and part of another habitat area. This information may now be out of date in terms of qualifying for the state PNDI list, but these resources may still be some of the most valuable local habitat.

The 1997 sites in Worcester include an area north of North Wales Road along Stony Creek, called Norritonville Woods, and is a locally significant example of upland and floodplain woods. The woods consist of oaks, hickory, ash, red maple, and black walnut in a canopy with a shrub layer containing bladdernut and spicebush. Only part of the site was surveyed, and further study is encouraged. Left as is, the site provides significant biological diversity in a largely suburban area.

The other site, called Green Hill Road Woods, is described as one of the best populations of a locally rare shrub (which was dropped from the species of special concern list shortly before 1997) in the county and occurs west of Stump Hall Road within

Eastern red-bellied turtle Photo: Suzanne L. Collins

Bog turtle (Clemmys muhlenbergii) Photo: Joe Boris

Evansburg State Park. In addition to the shrub, the site includes hemlock, beech, oak, and cherry. Keeping the forest cover and minimizing disturbance will help to maintain the quality of this site.

SCENIC ROADS AND VISTAS

Scenic resources are elements of the natural and/or built environment which stand out among all the attributes of a community. They tend to be the most pleasant and interesting places, such as historic sites, natural features like lakes or creeks, and recreation areas.

Although the process of identifying a scenic resource is largely dependent on the observer's own opinions and preferences, information collected from a community group, such as a planning commission, can provide a relatively broad inventory. On November 9, 2004, the Open Space Committee conducted a public forum that included the opportunity for members of the public to identify scenic resources in the township. Figure 4 - 10 provides a qualitative summary and a chart illustrating the distribution of concerns. The defining element or feature for each resource is noted. Wherever possible, these areas should be preserved and linked to the community's open space and recreation system.

Worcester has many scenic rural roads. Portions of six stand out in particular. These are Bean Road, Hollow Road, Kriebel Mill Road, Green Hill Road, Weber Road at the intersection of Schultz Road, and Grange Avenue. Each of these is surrounded by open farmland or woods, and each has very few, if any, new subdivided lots strung out along the road. In addition, these roads are off the beaten track and tend to have little or medium traffic volumes, except during commuting hours.

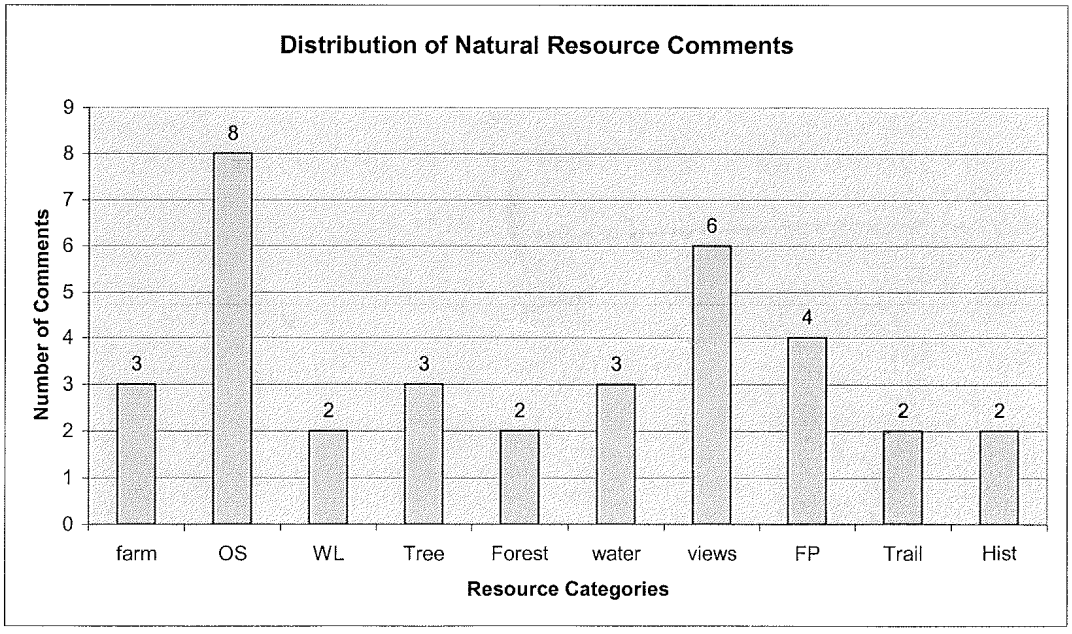
Long-distance scenic view over Potshop Road Photo: Susan Caughlan

Figure 4 - 10
Public Comments

Site or Approximate Location	Resource of Concern or Comment
Heyser Field	Expand township-owned open space
Haydown Farm (Eleanor Jonathon)	Farm preservation
Charles Miller property (backs onto twp property)	Floodplain; open space
Kibblehouse farm on Zacharias Creek	Open space; rural views; headwaters preservation
Rhoads tree farm (Skippack Pike & Weber Rds)	Wildlife habitat
Barn/silo/farmhouse/outbuildings	Classic farmstead view
Ralph Kranick farm (Germantown Pike)	Farm preservation; open space; rural views
Steigerwalt farm (Grange Ave)	Open space; rural views; horse farm
Our Farm (Potshop Rd)	Open space; viewshed to Phila
Historic house on Hollow Rd	Historic resource
Reimer's old oak (Mill & Quarry Hall Rds)	Historic tree
Easement area for potential trail	Trail
Joan Wolfenden's woods	Mature forest habitat
Worcester Schoolhouse No. 2	Historic resource
Springs on McGrane farm (Stump Hall Rd)	Water resource -- springs
Graham & McGrane farms (Stump Hall & Valley Forge Rds)	Farmland preservation
Old plane tree in Glasgow woods	Historic/champion tree
Valley Forge encampment feature	Historic resource (breastwork/redoubt)
Springs on Kumpf farm	Water resource -- springs
Methacton oak, Wentz oak	Historic trees
Pipeline & PECO easements as trails	Trails
Floodplain preservation near Landis	Floodplain/open space
Open space adjacent to riparian corridor (Valley Forge Rd)	Open space; rural views
Existing woodlands	Forest & habitat protection
Stony Creek headwaters land (Bean Rd)	Headwaters protection; rural views
Merrymead Farm	Family working farm
Willow Creek Orchards	Family working farm; 1st organic farm in Montco
Bean Rd	Scenic road
Hollow & Heebner Rds	Scenic roads
Johnson farm (Bean & Berks Rds)	Open space; rural views

Qualitative Summary & Distribution of Concerns

3	9%	farm	farmland/farmstead protection/preservation
8	23%	OS	valued as general open space
2	6%	WL	wildlife habitat protection
3	9%	Tree	historic trees
2	6%	Forest	forest & woodlands
3	9%	water	ponds/springs
6	17%	views	scenic or rural view
4	11%	FP	floodplain protection
2	6%	Trail	trail potential
2	6%	Hist	historic structure (not farmhouse)
35	100%		



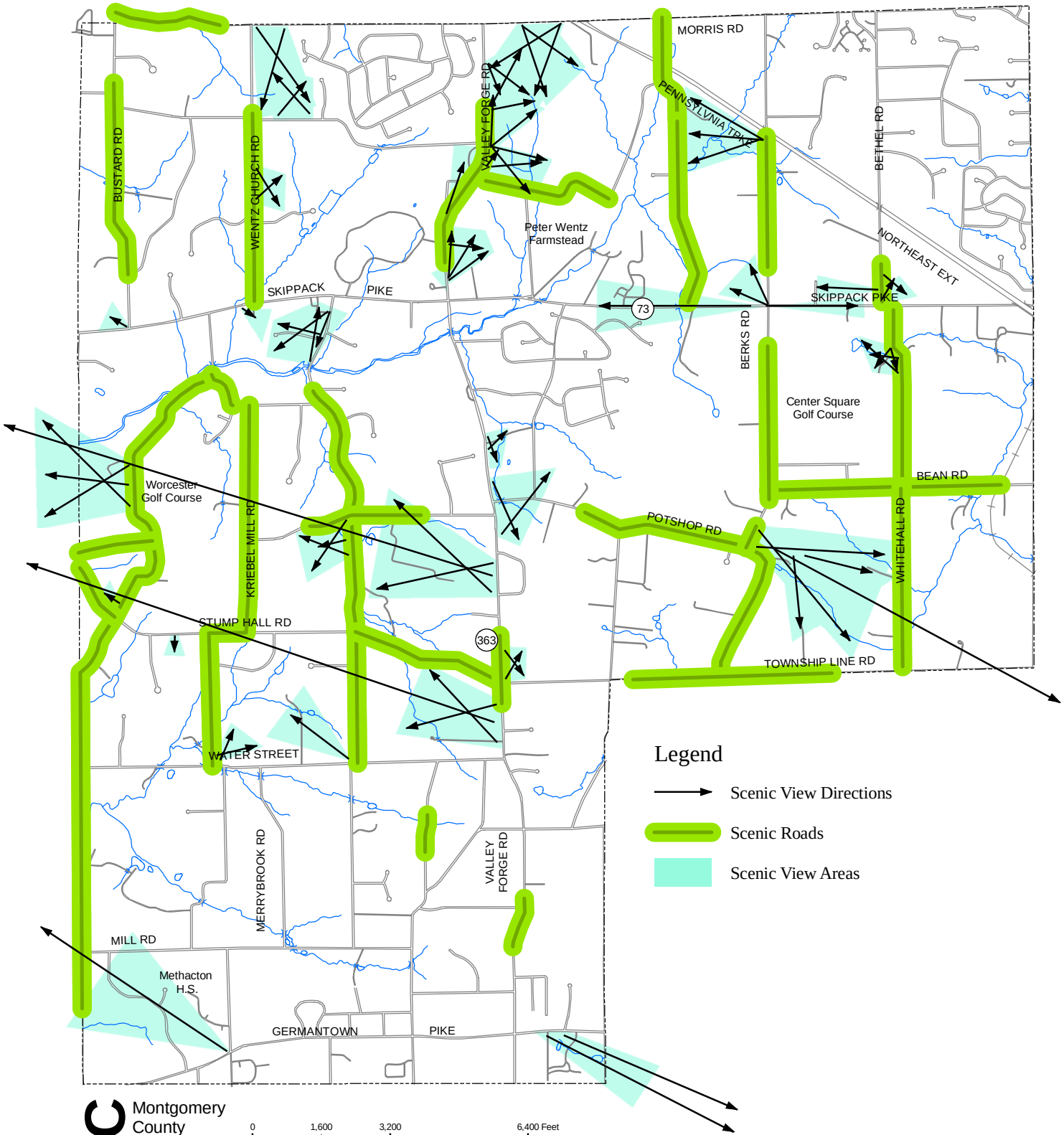
Scenic view from horse pasture near Potshop and Berks Roads Photo: MCPC

Despite this, the scenic qualities of some of these roads are being threatened by new development, which usually removes scenic qualities and creates higher traffic volumes, which may then increase demand for road widenings or intersection improvements that are not complementary to the scenic qualities. Roadways with scenic attributes contribute to a community's open space system because they provide a way to view its scenic resources and in some cases also serve as attractive recreation routes for walkers, bicyclists, and joggers. Scenic roads also contribute to the overall economic values of the township, adding value to businesses, homes and land. Losing a scenic amenity is, in a sense, taking value away from every nearby property and business owner. Figure 4 - 11 shows the location of these scenic roads in the township.

Development in surrounding communities is also threatening these scenic roads. Just as increased development inside the township can increase traffic, the surrounding communities are increasing development much faster than Worcester, and much of that traffic is wending its way through Worcester. The township is pressured to increase road capacity, which usually means, as mentioned before, road widenings or intersection improvements that are not complementary to the scenic qualities. Worcester may need to work with these neighboring communities to help decrease this pressure or find alternative solutions that will help preserve the township's scenic roads.

Scenic Bean Road Photo: Susan Caughlan

Figure 4 - 11
Scenic Roads and Vistas



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0 1,600 3,200 6,400 Feet

Base map prepared date

This map is based on 2000 ortho photography and official sources. Property lines were compiled from individual block maps from the Montgomery County Board of Assessment Appeals, with no verification from the deed. This map is not meant to be used as a legal definition of properties or for engineering purposes.

Snow scene at Peter Wentz Farmstead Photo: Morgan McMillan / PWF

Because the Central County (Methacton) Ridge runs through Worcester, the township has a number of scenic, long-range views. These include a long view past Methacton High School, looking towards the north and the Skippack Creek Valley; long views from Valley Forge Road towards Evansburg State Park and the Skippack valley; a view from Potshop Road towards Philadelphia (where the tops of downtown skyscrapers can be seen) and Stony Creek; a view towards the north from Skippack Pike where the Central County Ridge crosses the road; a view to the south from Valley Forge Road, north of Center Point, looking over Peter Wentz Farmstead; and perhaps the longest view of them all, from Fairview Village southeast along Germantown Pike, where on clear days the tops of downtown Philadelphia's skyscrapers can be seen 30 miles away.

Scenic view over Evansburg State Park from Green Hill Road Photo: MCPC

Because of the township's gently rolling landscape, there are also a number of medium and short range views. These and the long-range views are shown in Figure 4 - 11.

HISTORIC AND CULTURAL RESOURCES

NATIONAL REGISTER SITES

George Washington did in fact sleep in Worcester Township, as did some of the Revolutionary Army. Washington planned the Battle of Germantown in

Scenic view of farm at the crossroads of Center Point Photo: Susan Caughlan

1777 while staying at Peter Wentz Farmstead, which is now a county historic site and is listed on the National Register of Historic Places. The army also encamped at the Worcester Mennonite Church and cemetery near Fairview Village. In addition to these, Worcester has a large number of historic properties and sites, including Lenni-Lenape Indian sites, inns, churches, farms, schools, homes, villages, creameries, cemeteries, and stores. Some of the more notable historic sites, besides the two mentioned above, are the Old Mill Farm, the Wentz United Church of Christ, the Rittenhouse Farm, and the Anthony Morris/Bean House, the second nationally registered historic site in the township. A comprehensive history of the township, as well as its buildings and landscapes, is provided in *Worcester*, a book published by the Worcester Historical Society in 1976.

Figure 4 - 12 indicates all the residential properties in the township which, according to estimates by tax assessors, are older than 1940, older than 1900, older than 1850 and older than 1800. These dates are based on informal observation and may sometimes be inaccurate. Nevertheless, this map can guide future historic resource surveys and historic preservation programs and policies. Figure 4 - 12 shows that Worcester has over 120 properties with a building over 60 years old, about 60 buildings that are over 100 years old, and more than 10 properties built in the 1700's.

For resources of historic value, preservation of these resources in their historic landscape is important for maintaining the value as a historic resource and sometimes for retaining township or neighborhood character.

A number of significant historic sites are shown in Figure 4 - 13 and listed in Figure 4 - 14. These are all properties which have been individually singled out at some time in the past by an individual or organization because they were thought to be his-

Henry Rittenhouse house and barn Photo: Donald C. Atkinson

Figure 4 - 12
Properties with Structures Built Before 1940

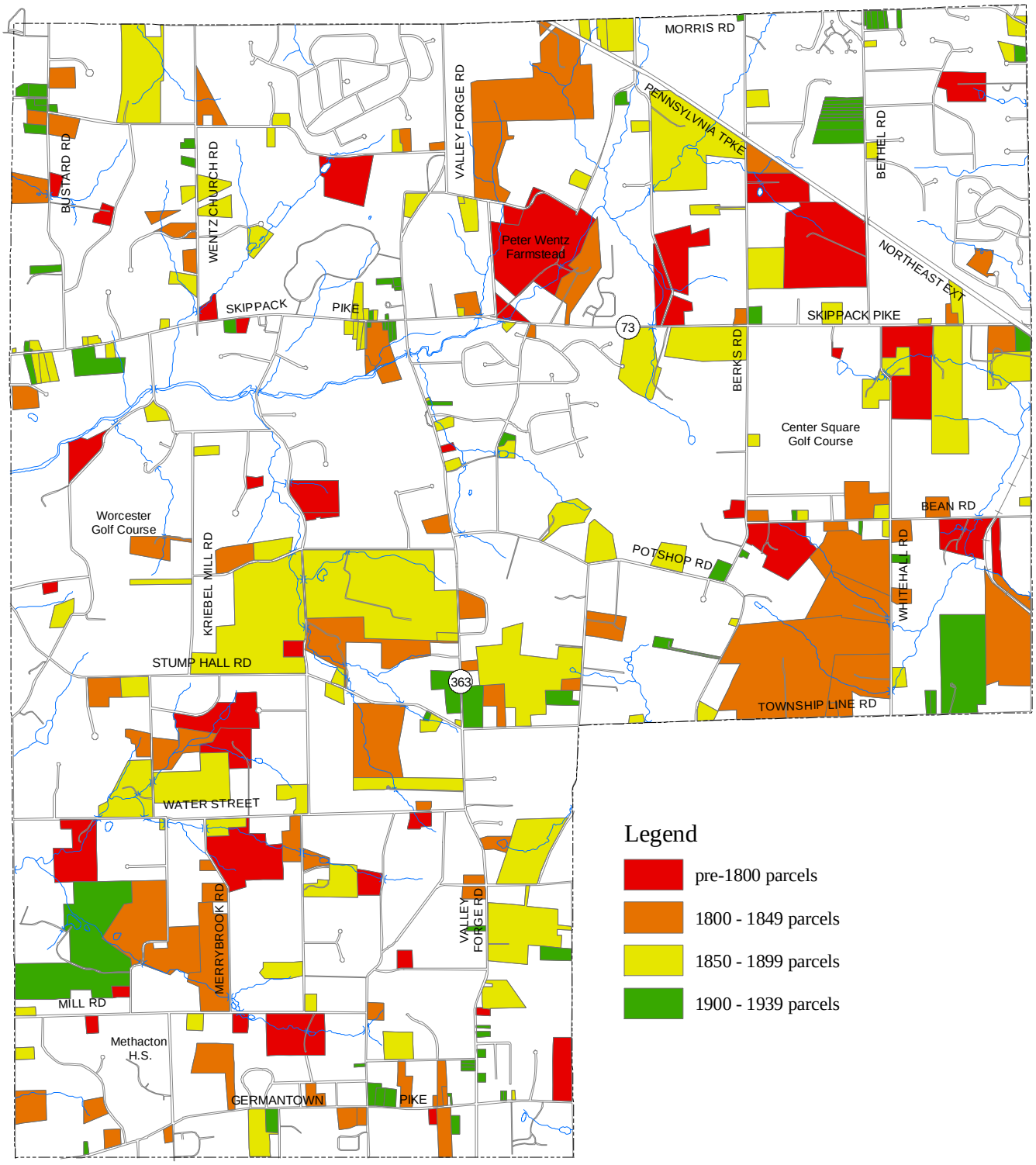

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Figure 4 - 13
Historic and Cultural Resources

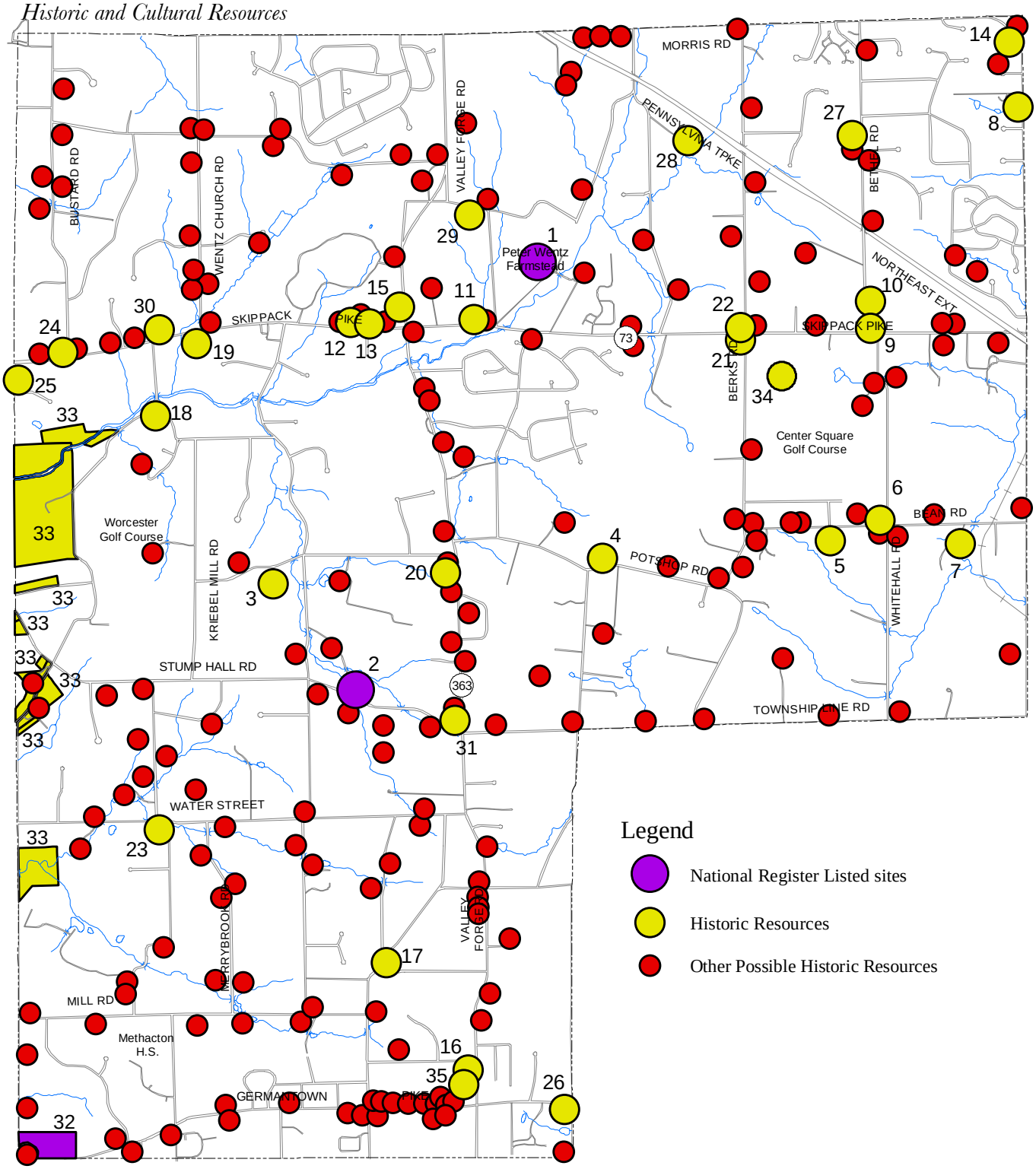

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Figure 4 - 14
Key to Historic and Cultural Resources Shown on Figure 4 - 13

Map #	Name of Historic Resource	Location	Date Built	National Register Status
1	Peter Wentz Farmstead	Schultz Rd	1758	**Listed**
2	Anthony Morris / Bean House	Stump Hall Rd	1717	**Listed**
3	Heebner Farmstead	Heebner & Frog Hollow Rds.	1840	undetermined
4	Bookheimer Farm	Potshop & Trooper Rds.	1860	undetermined
5	Beyer (Boyer) / Smith Farmstead	2632 Bean Rd.	1840	undetermined
6	Torres (Cassel) House	2600 Bean Rd. (Whitehall & Bean)	1865/1870	undetermined
7	Garrett Bean (Gerhard Bun) Farmstead	2568 Bean Rd	1780	undetermined
8	Joseph Supplee (Haines) Farmstead	North Wales Rd	1820	**Eligible**
9	Bethel Hill Church	Skippack Pike & Bethel Rd	1845 / 1904	undetermined
10	Worcester Public School Building #6	2000 Bethel Rd	1891	undetermined
11	Dr. Meschter House	2917 Skippack Pike	1890	undetermined
12	Detwiler Residence	3103 Skippack Pike	1855	undetermined
13	Geyer Residence	3027 Skippack Pike	1865	undetermined
14	Reinwald Property - Brunner House	2508 Morris Rd	1800	**Eligible**
15	Farmers' Union Hall	Valley Forge Rd	1895	**Eligible**
16	Fairview Village Assembly Hall (Community Hall)	Valley Forge Rd	1918	undetermined
17	Worcester (Methacton) Mennonite Church & Cemetery	3069 Mill Rd	cem: 1739, church: 1873	undetermined
18	Old Mill Farm (Kriebel Mill Barn)	Kriebel Mill Rd	1800	undetermined
19	Wentz United Church of Christ (and Parsonage - 1870)	Skippack Pike	1878	undetermined
20	Evangelisches Versemmlangs Haas (German Evangelical Church)	Valley Forge Rd	1845	undetermined
21	Thompson Orchards (Jesse Humsher House)	Skippack Pike & Berks Rd	1851	undetermined
22	Brunner House	2003 Berks Rd	1831	undetermined
23	Water Street School (Worcester Public School #2)	Kriebel Mill Rd and Water St	1885	undetermined
24	Cedars Country Store (Cassel's Store)	Skippack Pike & Bustard Rd.	1849	undetermined
25	Little Residence	Skippack Pike (parcel #670003331004)	1875	undetermined
26	(David) Rittenhouse Farm	Trooper Rd & Germantown Pike	1750	undetermined
27	Hance Supplee Homestead aka: Ellis-Supplee House (Maj. Gen. Greene's HQ)	2110 Bethel Rd	1753	**Eligible**
28	Dresher/Kibblehouse Farmstead	2160 Weber Rd	1857	**Eligible**
29	Worcester Public School (Anders)	Shearer Road	1879	undetermined
30	Worcester Public School (Metz)	Skippack Pike	1849	undetermined
31	Worcester Public School (Stump Hall)	Stump Hall & Valley Forge Roads	1857 / 1881	undetermined
32	Evansburg Historic District	Germantown Pike & Grange Road	from 1700's	**Listed**
33	Evansburg Historic District (boundary increase)		from 1700's	**Eligible**
34	Clepsysaurus (dinosaur) fossil	quarry near Whitehall Rd	Triassic Era	undetermined
35	Heyser Field	Griffith Road	—	NA

Sources: National Register of Historic Places, 2005; Pennsylvania Historic and Museum Commission, 2005; *Montgomery County Inventory of Historic and Cultural Resources*, 1975; CLIO Group Inc. Survey, 1986; *Worcester,* 1976.

toric. The map and list, Figures 4 - 13 and 4 - 14, include a few non-building historic resources such as the Mennonite Cemetery, the dinosaur bone site, and the Evansburg National Historic District.

The Evansburg National historic District was formally approved by the National Park Service in June 1972. While focused around the Lower Providence Township village of Evansburg, the district also extends into Worcester Township. Properties in the Evansburg Historic District are included in Figures 4 - 13 and 4 - 14. Recognizing that significant historic and cultural resources in the area were and are in jeopardy from development and destruction, the historic designation provides some protection to the structures and resources within the district, mostly from government actions. While the early preservation work was significant, little has been done to continue to preserve and improve the historic district since its inception.

Since the last Open Space Plan there have been some historic preservation successes and some losses. The Evangeliches Versemmlangs Haas (German Evangelical Church) on Valley Forge Road has been purchased by the Historic Society to preserve it. The historically significant Bunner House was demolished to make room for the new Eckerd drugstore in Fairview Village. The Bell/Kumpf development demolished the mid-1800's farmhouse, the 1700s farmhouse and springhouse, and the large 20th century barn that contained timbers from a much older barn. A few other historic buildings have been destroyed by fire or accident.

SUMMARY

Worcester's natural, cultural and scenic resources will become even more vulnerable as development continues. New development should be designed to protect these resources and preserve local character. The pursuit of all methods of preservation should be encouraged. Natural resource protection will provide for groundwater infiltration, protect surface water quality, and provide more and improved habitat for native animals and plants. Efforts to protect valuable farmland and historic structures will help preserve the rural character of Worcester Township.

"Those who cannot remember the past are condemned to repeat it."
- George Santayana

Farmers' Union Hall, built in 1895, now preserved as the Worcester Historical Society Museum, still stands in the village of Center Point Photo: Susan Caughlan

1700s / 1821 house and springhouse, now demolished, on former Kumpf farm Photo: MCPC

Stony Creek Railroad tracks Photo: Susan Caughlan

CHAPTER 5

POTENTIAL OPEN SPACE LINKAGES

An important aspect of open space is the accessibility of that space to community residents and to the region as a whole. This section of the plan identifies potential open space linkages that can tie together open space sites within Worcester Township and connect to open space in adjacent communities. Such connections help form a more comprehensive open space system for residents and contribute to the creation of a more effective and enjoyable regional network. They can increase the accessibility of parks by allowing off-street pedestrian and bicycle access and can offer recreational opportunities in and of themselves as passive, natural recreational space. Open space connections can also increase natural species diversity by providing natural corridors for the safe passage of animals to various types of environments that are needed for different life functions and stages. Some connections already exist, usually by virtue of simple adjacency. However, this chapter will identify as many potential connections, or linkages, as possible. Examples of potential linkages include utility corridors, stream valleys, abandoned rail lines, sidewalks, potential routes through future development on currently undeveloped land, and similar linear features.

Identification of potential linkages on a regional level will help to contribute to Montgomery County's vision of a county-wide trail system as well as foster intermunicipal trail linkages that can be mutually beneficial to residents of all the municipalities involved.

These linkages can take various forms, from simple, undeveloped, natural land to dirt paths, sidewalks, equestrian trails, paved multi-purpose trails or other configurations. The purpose of the connection, the constraints and opportunities of the land, and the disposition of its owners will determine the final form and location of these connections. This chapter will discuss the possibilities and suggest some forms and locations for these connections. As implementation proceeds, the suggestions herein may change significantly.

LINKAGES TO WORCESTER TOWNSHIP

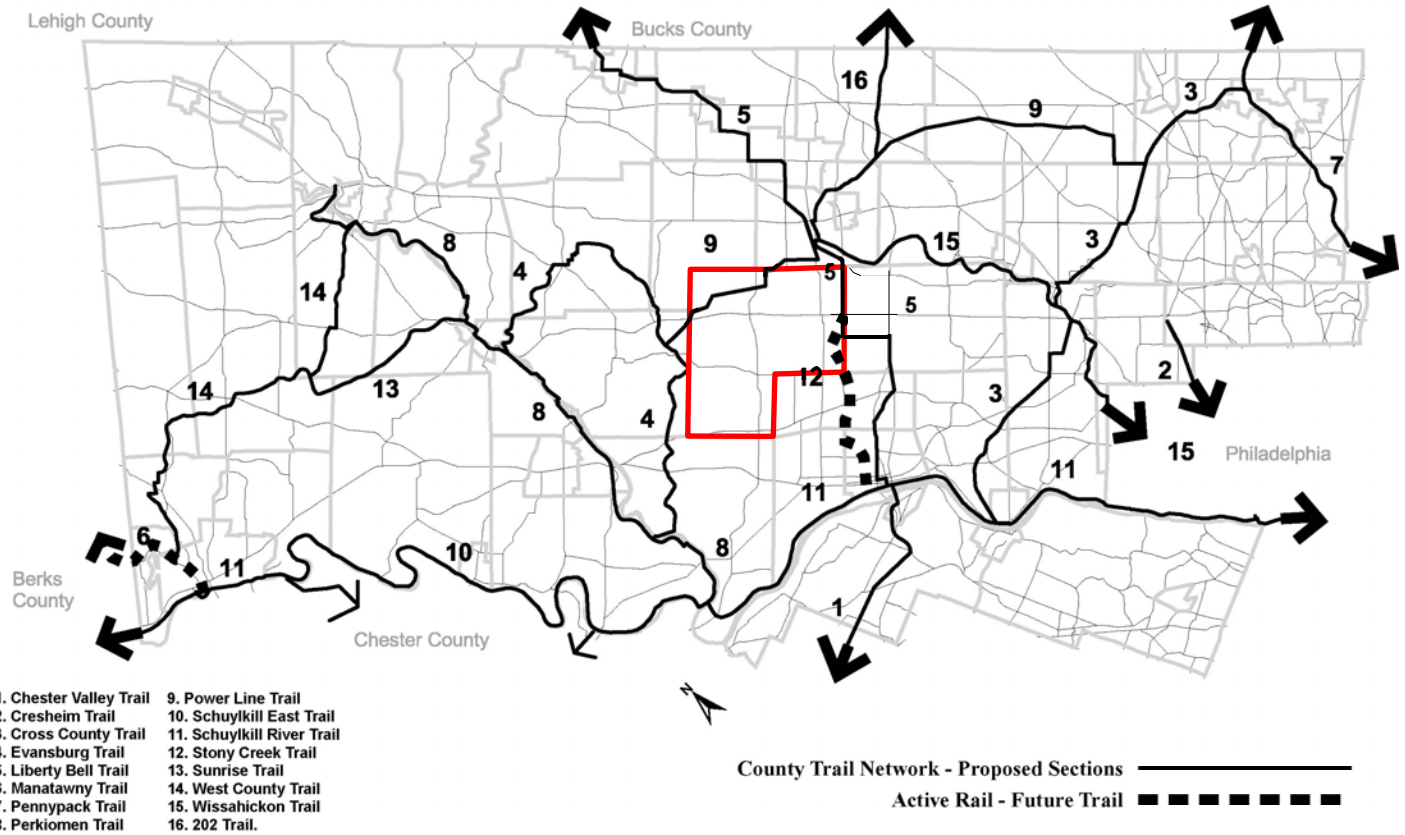
COUNTY TRAILS

There are three Montgomery County trails that are planned to cross, skirt, or pass near Worcester Township. Connections to these trails would afford Worcester residents access to almost 100 miles of trails throughout the county, to other counties and all the way to Center City Philadelphia. The County trail system is shown in Figure 5 - 1. Note the proximity of Worcester Township to a major hub in the county network in Upper Gwynedd. Access to that hub affords access in multiple directions throughout the county and beyond.

EVANSBURG TRAIL

The County has proposed a regional trail that starts at the Perkiomen Trail near the outlet of the Skippack Creek into the Perkiomen Creek, follows the Skippack Creek upstream through Evansburg State Park and into Lower Salford Township, where it crosses the watershed ridge in Harleysville, enters

Figure 5 - 1
County Trail Connections



the watershed of the East Branch of the Perkiomen Creek, follows that downstream and reconnects to the Perkiomen Trail just south of Schwenksville. Most of this trail is envisioned as an off-road multi-purpose trail; however some segments will not be paved and some will be on-road. Nevertheless, it will be a significant regional trail connecting tens of thousands of people to large areas of open space. Evansburg State Park is a vast park of mostly natural landscapes: streams, woods, brush and meadows. It is traversed by several unpaved hiking and equestrian trails. The park also includes a golf course, an environmental education center, a hostel, some picnic facilities, restrooms and some parking areas. One area of the park in Lower Providence Township is leased for sports fields.

Evansburg Park is located mostly in Skippack and Lower Providence Townships, parallel and adjacent to the northwest boundary of Worcester Township. The park and the Evansburg Trail continue into Lower Providence Township along the Skippack Creek.

Connections to the Evansburg Trail would provide Worcester residents access to the full length of the park and to the lower end of the Perkiomen Trail, which, in turn, connects to Valley Forge National Historic Park.

Connection to this park and its trail system would be of great benefit to the residents of Worcester Township. Currently official access by township residents is only by car and therefore only from the western side of the park, in Skippack Township. Some residents enter the park wherever it is convenient, but these unofficial access points cause an increased security and maintenance burden for park staff.

In 2005 the Bureau of State Parks established a task force of representatives from the municipalities that adjoin Evansburg State park to work with park staff to redesign the park's trail system. One objective of this task force is to provide each municipality with connections that coordinate with its residents' existing and proposed uses of the park. Possible connections for Worcester Township are described below and can be seen in Figure 5 - 2.

The Township has been working diligently on acquiring land to facilitate a connection between Evansburg Park and the Township's major park, Heebner Park. Most of what remains is the actual design and construction of this trail, most of it on Township land and some on State land. This connecting trail is described more fully below in the sections on the Zacharias Creek and the equestrian trail to Nike Park.

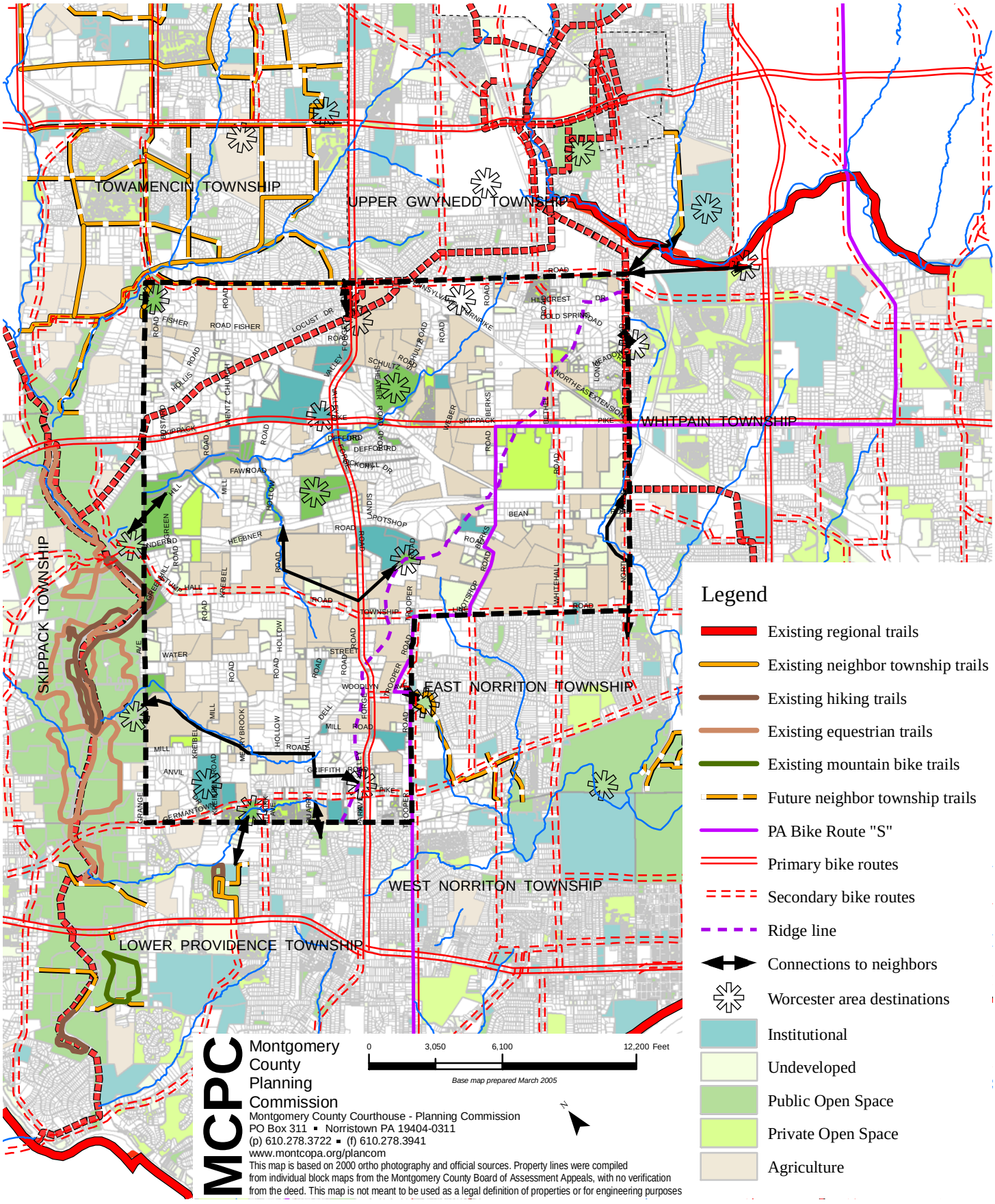
POWERLINE TRAIL

The County plans to have this regional trail extend from the Evansburg Trail in Evansburg Park all the way to Upper Moreland Township and connect there to the County's planned Cross County Trail. The alignment of this trail at the Evansburg end currently has two possibilities. One is to use the trail planned by Towamencin Township from the northeastern tip of Evansburg Park, through Fischer's Park, along a series of open spaces to the end of a cul-de-sac near the turnpike and Valley Forge Road (Route 363), along a residential street, and then along Morris Road, across Valley Forge Road and across the Turnpike to the powerline there. This route directly involves Worcester Township only where the trail follows Morris Road.

Discussions with the County trail planners have revealed a preference for an alternate alignment that would avoid having a segment of the Powerline Trail pass along a residential street, as is proposed in Towamencin along Valley View Way. This alignment would follow more closely the powerline through Worcester Township, beginning in Evansburg Park near the powerline and Zacharias Creek, continuing along PECO lands across Skippack Pike at the village of Cedars and diagonally across the township, and eventually ending up at the Pennsylvania Turnpike crossing on Morris Road. While a relatively straight line is shown on the map, Figure 5 - 2, this trail may need to navigate around obstacles, across streets, or along the edge of farmland. This alignment would be of greater value to more Worcester residents than the Towamencin alignment, especially since it seems that Towamencin may be constructing their trail whether it is part of the County trail system or not.

The Powerline Trail is expected to continue through Upper Gwynedd Township in a relatively east-west direction, exiting Worcester Township along Morris Road at the Turnpike. Upper Gwynedd's segment of the Powerline Trail would connect Worcester residents to the Merck pharmaceutical campuses, the Wissahickon Green Ribbon Trail (see below), the Nor-Gwyn Pool in the municipal complex, the Lansdale School of Business, Pennbrooke Middle School and Gwyn-Nor Elementary School, as well as to several other township and North Wales Borough trails.

Figure 5 - 2
Potential Linkages



LIBERTY BELL TRAIL

The third Montgomery County trail of interest to Worcester is the Liberty Bell Trail. This trail loosely follows the path of the historic Liberty Bell trolley line, which itself loosely followed the path used by those who evacuated the Liberty Bell from Philadelphia to Allentown during the Revolutionary War. Currently, this trail is planned to connect Norristown to Lansdale, Souderton and points beyond in Bucks County.

The route between Norristown and Lansdale passes along the southeastern edge of the township along North Wales Road, adjacent to Whitpain Township. Originally, the Liberty Bell Trail was intended to run along the former trolley line, but much of that land has been subdivided into housing developments, making this alignment very difficult to achieve. Currently the trail is planned to traverse the powerline that enters Worcester Township about midway along North Wales Road. Even here, however, the properties have been developed in such a way as to make an off-road trail on Whitpain's side of North Wales Road difficult. An off-road route in Worcester seems to be a likely alternative to complete this trail.

With the trail alignment directly along the edge of the township, Worcester will have better control over the number and quality of connections its residents have to that trail. About one third of North Wales Road in Worcester already has a sidewalk that is set back considerably from the road, utilizing the large road right-of-way. The rest of the length is a mixture of large tracts and a few new homes. The new homes are likely to have provided the large road right-of-way, and the large tracts would also do so if they are developed. Crossings would be needed at the powerline, at the Skippack Pike traffic signal, and at Morris Road. This alignment is shown in Figure 5 - 2.

The Liberty Bell Trail is perhaps the most significant trail in Whitpain Township of interest to Worcester residents. This trail could provide access for Worcester residents through Whitpain Township to some of the connected open spaces, but perhaps most importantly, it would provide access to the Norristown Farm Park, the myriad of trails and recreation opportunities there, and, from there, to the Schuylkill River Trail.

The Lower Gwynedd Township segment of the Liberty Bell Trail begins at the easternmost corner of Worcester Township and connects to Lansdale. Worcester residents, particularly those from the more heavily populated eastern part of the township, would benefit from connections to this trail segment since it, too, would provide access to the Wissahickon Greenway and the nearby Gwynedd Wildlife Preserve, the Merck campuses, the Nor-Gwyn Pool in the municipal complex, the Lansdale School of Business, and the Pennbrooke Train Station.

STATE BIKE ROUTE "S"

The state has established a network of bicycle routes throughout Pennsylvania. Only a few cross through the southeastern region, and Worcester is lucky to have one, Route S, pass through the township. This route is intended for long bicycle journeys and was chosen for its scenic qualities as well as its suitability for bicycle touring. In Worcester, Route S enters the township on Trooper Road and follows Trooper Road to Township Line Road and then to Potshop Road. It follows Potshop Road to Berks Road and then Berks Road to Skippack Pike, where it turns east and enters Whitpain Township. The route is depicted in Figure 5 - 2.

NEIGHBORING MUNICIPAL TRAILS

Most of the neighboring townships also have plans for trails in their townships which connect open spaces. Several of these trails come near Worcester or are intended to allow for an extension into Worcester Township. These potential connections for Worcester Township are described below and shown in Figure 5 - 2.

SKIPPACK TOWNSHIP

Since Evansburg State Park is mostly in Skippack and Lower Providence Townships, the trails provided by the state in that park are the most significant trails in Skippack Township of relevance to Worcester Township. Not only is the county's Evansburg Trail planned to traverse this park, as discussed above, but the state also has many other trails in the park. Some are hiking trails and some are equestrian trails. If connections were provided to these trails in Evansburg Park, it would be a great asset to the residents of Worcester Township. Since Evansburg Park parallels the township line, Worcester could connect to the park's trails at various points. The most apparent linkages at the moment are from the Zacharias

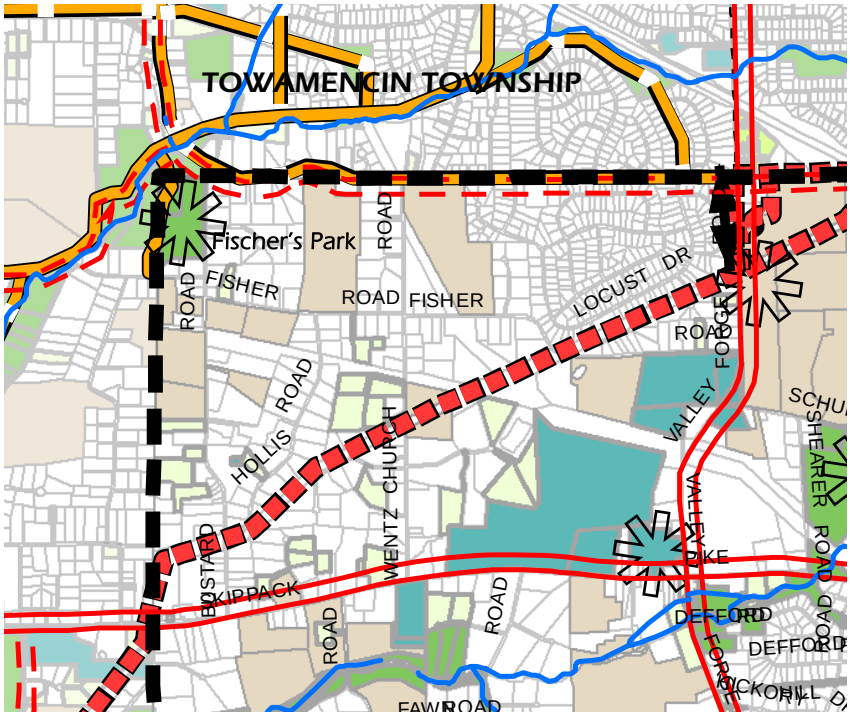
Creek, Fairview Village, and Fischer's Park. Other linkages that may become possible in the future are Stump Hall Road, Water Street Road, and tributaries of the Skippack Creek. The Township is working with the Evansburg State Park Task Force to ensure that Worcester residents have adequate access to park trails. Possible connections for Worcester Township are shown in Figure 5 - 2.

TOWAMENCIN TOWNSHIP

Towamencin Township is planning a trail network that connects to and through Fischer's Park. Part of that park is in Worcester Township, making relatively seamless connections to Towamencin Township's trails possible. Connections to this park would most likely come from the powerlines. However, much of the land around the park is private, residential land with few trail opportunities. Where such opportunities are possible, they should be used; otherwise, connections to Fischer's Park may have to use on-road segments. Refer to the map of this area, Figure 5 - 3.

Towamencin's existing and proposed trail network is quite extensive, including segments that abut the Worcester Township boundary. Connecting to Towamencin's trail network could eventually give Worcester residents access to almost all of Towamencin Township, including North Penn High School, Freddy Hill Farm, and Kulpsville. Possible connections for Worcester Township are shown in Figure 5 - 3.

Figure 5 - 3
Potential Linkages to Fischer's Park (For legend refer to Figure 5 - 2.)



UPPER GWYNEDD TOWNSHIP

The County's Wissahickon Trail, which crosses Upper Gwynedd Township, connects not only all the destinations reachable by the other two county trails to the north of North Wales Road, but also several significant destinations to the south and southeast following the Wissahickon Green Ribbon greenway. The closest, most significant destination for Worcester residents is the Gwynedd Wildlife Preserve, which is described on The Natural Lands Trust web site as "a 234-acre oasis of meadows, woodlands and wetlands … A walk along the trails reveals a re-emerging ecosystem of native flora including warm season grasses and native wildflowers. … The restoration work has helped to attract a variety of grassland birds such as meadowlark and northern harrier." Facilities in the preserve include trails, parking, information kiosk, brochures, restrooms and meeting facilities. Organized activities also are arranged to take place at the preserve. Hiking, bird and wildlife watching, and nature photography are activities well-suited to this preserve and ones which many Worcester residents could enjoy.

The Township trail in Upper Gwynedd of most interest to Worcester residents would be the segment of the Street Side – North Wales Trail (the dashed orange line on the right side of Figure 5 - 4) that uses the powerline along the edge of the Gwynedd Wildlife Preserve, connecting the Wissahickon Trail, the Preserve, and North Wales Borough at Center Street and Prospect Avenue. This trail would likely be the preferred connection for Worcester residents from the Wissahickon Trail to the Preserve.

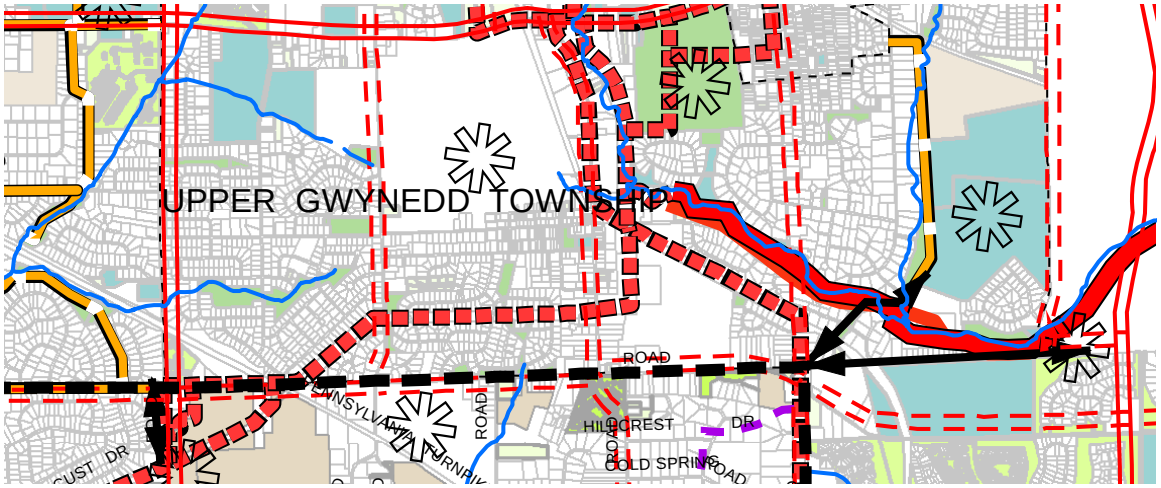
A very important equestrian trail connection that may also involve Upper Gwynedd Township is discussed in the section on Whitpain Township below.

Possible connections for Worcester Township are shown in Figure 5 - 4.

BOROUGH OF NORTH WALES

Even though North Wales does not border Worcester, it is a relatively significant nearby town that, once access to the Liberty Bell Trail is achieved, is easy to reach. For those Worcester residents who are looking for pedestrian or bicycle access to businesses or friends in the borough of North Wales,

Figure 5 - 4
Regional Trail Connections through Upper Gwynedd Township (For legend refer to Figure 5 - 2.)



the borough's trails will be important. While most of them will be on-road trails, the added safety of such designation or the provision of bike lanes can make such a trip more comfortable and enjoyable. Within the borough, North Wales Road, Sumneytown Pike, Center Street and Montgomery Avenue are the roads slated to have trails.

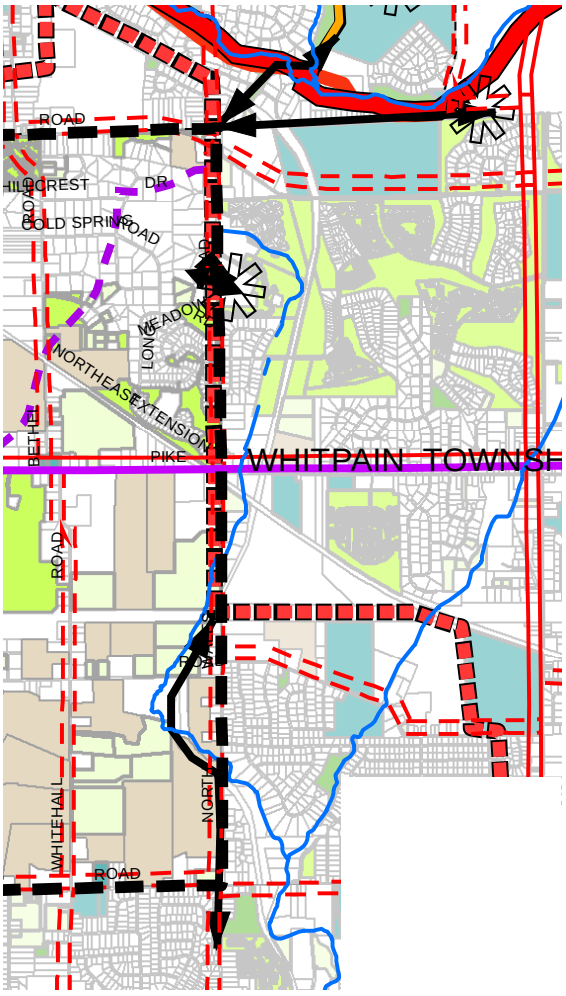
WHITPAIN TOWNSHIP

A simple connection across North Wales Road to Whitpain's Stony Creek Sports Park can be made with a formal street crossing.

Whitpain Township is home to several horse farms. As a result, over the decades, horse trails have been established which either connect horse farms and other destinations or simply create enjoyable rides. One organization, Horseways, was founded in the 1980s to create and maintain equestrian trails in the area. The network of extensive trails approaches the Worcester border. If a connection were made between the equestrian trails planned in Worcester and these existing trails, a person could ride from Evansburg State Park, which itself has several miles of trails, all the way to Fort Washington State Park in Whitemarsh Township. This would be an incredible asset to all the horse farms in the area and a potential source of economic development. The shortest connection to this network would be along Township Line Road on the border between Whitpain and Upper Gwynedd Townships, as shown in Figure 5 - 5.

At this time, no trails in Whitpain Township, other than the Liberty Bell Trail, are expected to approach the border with Worcester, so connections other than the Liberty Bell Trail are not foreseen at this time. Possible connections for Worcester Township

Figure 5 - 5
Potential Linkages to Whitpain Township



to the Liberty Bell Trail and the equestrian trail are shown in Figure 5 - 5.

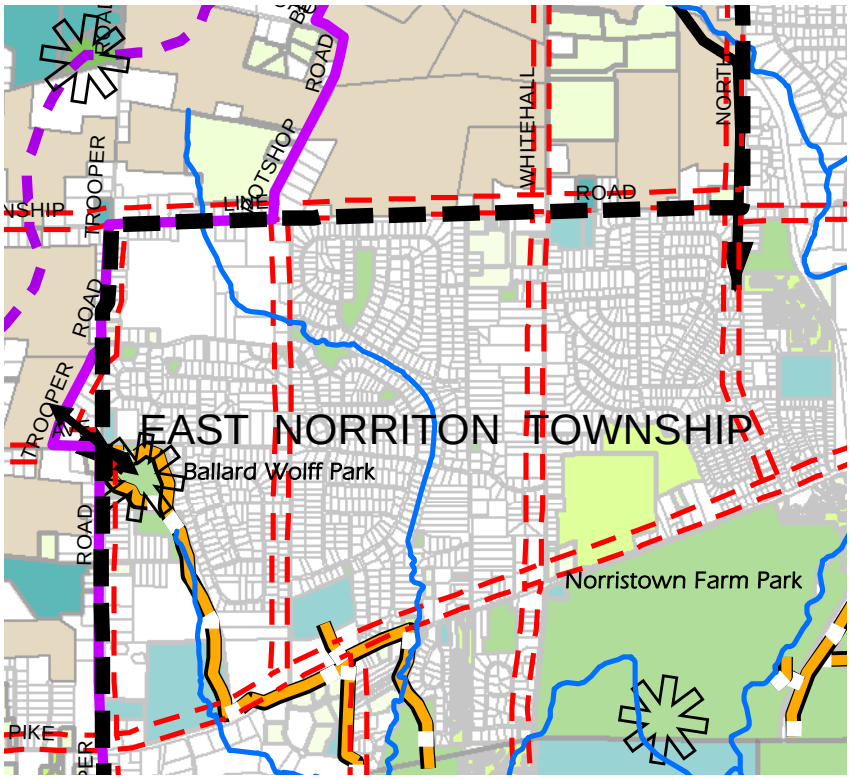
EAST NORRITON TOWNSHIP

The Liberty Bell Trail, which also traverses East Norriton Township, has been discussed above. There are no other county trails proposed for East Norriton. There are, however, three separate township trail networks proposed.

The township's northwesternmost trail is the one of most interest to Worcester residents. This trail is proposed to connect Ballard Wolff Park, located adjacent to Worcester Township at Trooper and Woodland Roads, to Norristown High School. A connection to this trail by Worcester Township would provide Worcester residents access to all the destinations located along the trail as well as access from the high school to Norristown Farm Park. Once in the Farm Park, there is access to the second East Norriton Township trail network, their municipal building and recreation facilities, the Liberty Bell Trail, and the spur to the Schuylkill River Trail.

Possible connections for Worcester Township are shown in Figure 5 - 6.

Figure 5 - 6
Potential Linkages to East Norriton Township



WEST NORRITON TOWNSHIP

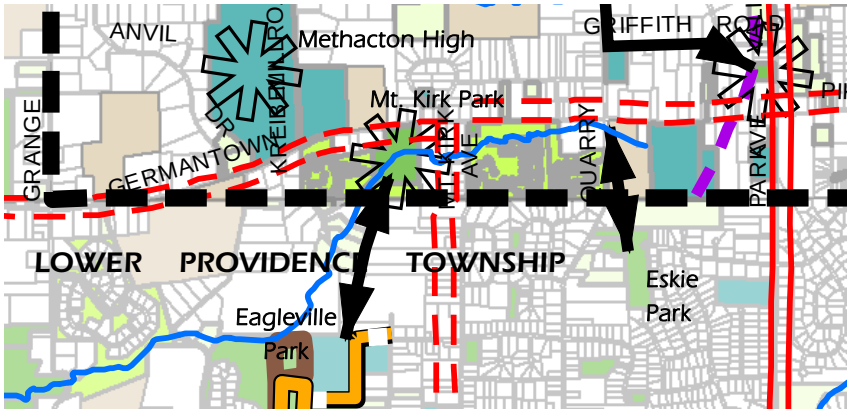
West Norriton Township abuts Worcester Township only at the tips of their common corner. At this time there are no trails proposed to come near Worcester Township.

LOWER PROVIDENCE TOWNSHIP

Lower Providence Township has a few open space lands which are close to the boundary with Worcester. Current planning suggests a few trail connections to Worcester Township, such as one along Quarry Hall Road (the extension of Church Road in Lower Providence) crossing the township line and one property in Lower Providence Township and connecting to Eskie Park. Another possible connection is from Mount Kirk Park in Worcester, across the township line and several large properties, to connect to Eagleville Elementary School and Lower Providence's flagship park, Eagleville Park.

Possible connections for Worcester to Lower Providence Township are shown in Figure 5 - 7.

Figure 5 - 7
Potential Linkages to Lower Providence Township



LINKAGES WITHIN WORCESTER TOWNSHIP

STREAM VALLEYS

ZACHARIAS CREEK

Worcester's most prominent natural corridor is Zacharias Creek, which runs across the township through Peter Wentz Farmstead and township park land until it empties into Skippack Creek in Evansburg State Park. Although Evansburg State Park

already has some trails, its long-range master plan proposes a number of trails. Worcester Township officials are working with the Bureau of State Parks to ensure appropriate connections between Evansburg State Park trails and the Township's proposed trail along the Zacharias Creek.

The trail along the Zacharias Creek is envisioned as a hiking and equestrian trail. It has been proposed to follow township-owned open-space lands along the creek to Hollow Road. From there, several options are possible. The trail could turn south along a Zacharias Creek tributary along Hollow Road. Upon reaching Heebner Park, the trail could traverse the park to Valley Forge Road and proceed north within the right of way to the Center Point intersection. A safe crossing could be provided at this signalized intersection across Valley Forge Road and then across Skippack Pike into the Palmer property, which is envisioned to be a township trail hub as well as a neighborhood park. From the Palmer property, the Powerline Trail can be accessed via a township multi-use trail from the northern corner of the property, and the Peter Wentz Farmstead can be accessed via a short connection across the multi-use trail at the southeastern edge of the property. The trail could then continue as far as the farm store at Merrymead Farm.

Alternatively, from Heebner Park this trail could traverse the park to Valley Forge Road and reconnect to the Zacharias Creek near Defford Road. The trail could then proceed northeast along township-owned lands to Skippack Pike, at which point it could proceed along the right of way of Skippack Pike to a safe crossing.

Another possible route to connect Evansburg Park and the Palmer trail hub could proceed along township-owned lands and then along Hollow Road north to Skippack Pike, cross this road onto the Meadowood Retirement Community property, and connect to Meadowood's internal trail system to traverse the property and arrive at Worcester Elementary School. The trail could continue across the rear of the school property to the township-owned historic Farmers Union Hall, on Valley Forge Road. It could then proceed south along Valley Forge Road a few hundred feet to the Center Point intersection. After crossing Valley Forge Road at this signalized intersection, the trail could enter the Palmer property and provide access to the township multi-use trail and Peter Wentz Farmstead, as described above.

As an alternative, the portion of this proposed trail form Hollow Road to the Center Point intersection could proceed directly along Skippack Pike within the right of way.

EQUESTRIAN TRAIL TO NIKE PARK

This potential linkage uses a combination of private open space, on-road, future development and public open space. Beginning at the Zacharias-Heebner Trail on Hollow Road, this equestrian trail is proposed to follow along the shoulder of Hollow Road,

Figure 5 - 8
Potential Linkages to Nike Park (For legend refer to Figure 5 - 2.)

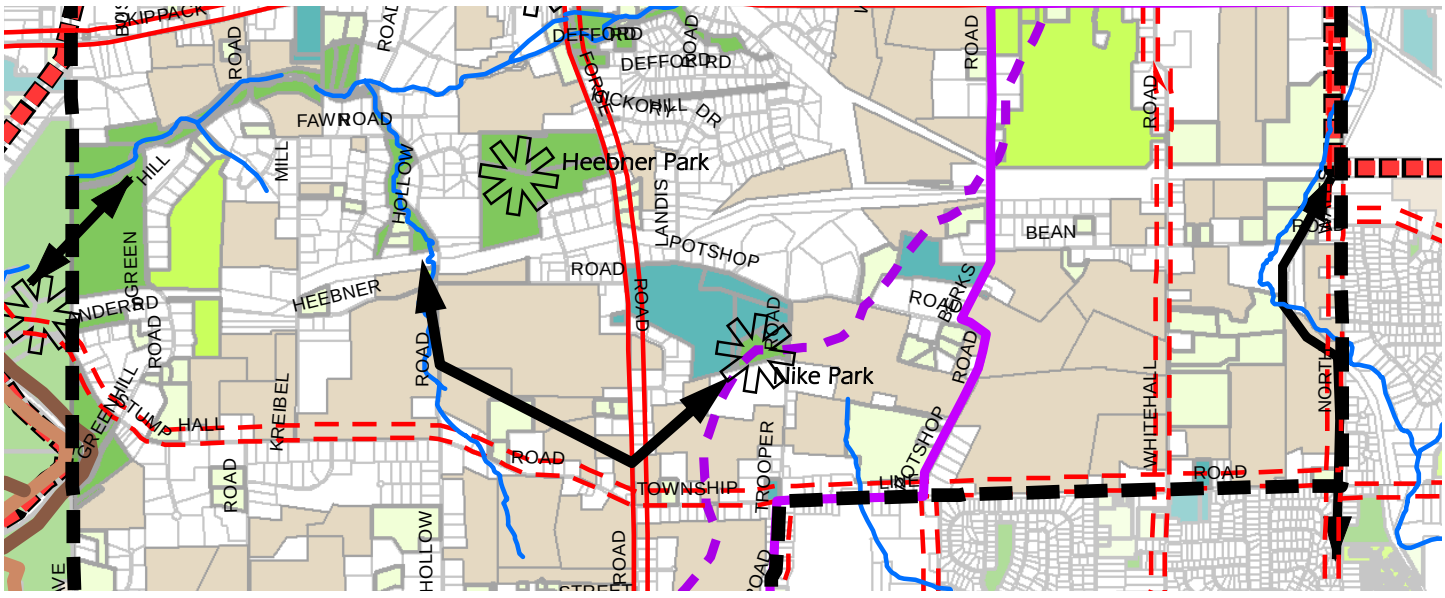
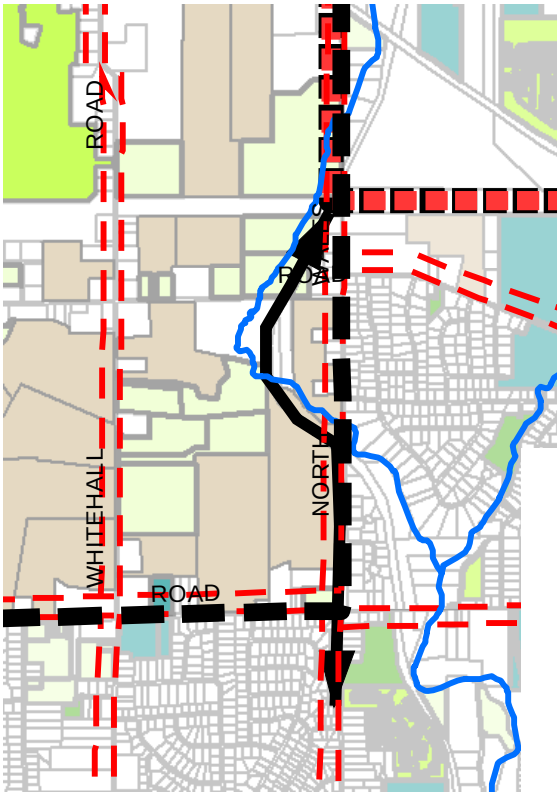
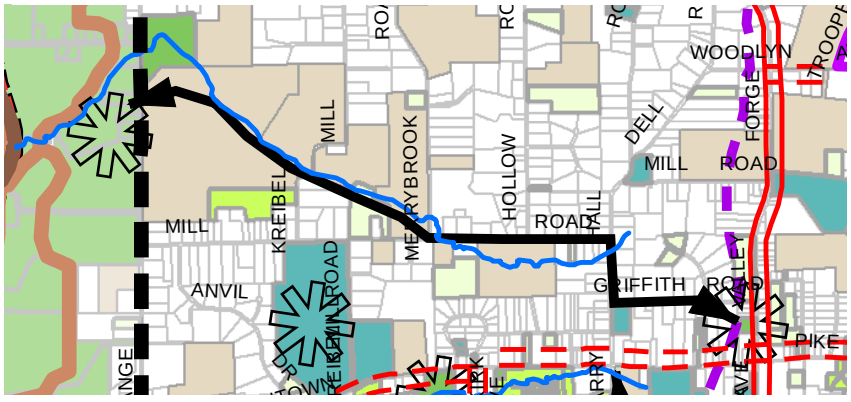


Figure 5 - 9
Linkages Along Stony Creek



skirt the perimeters of three farms, cross Valley Forge Road (Route 363) and continue along the perimeter of the third farm, follow an easement across a farm planned for development, cross the corner of a large industrial property, and enter Nike Park. Parts of this equestrian trail have been used by local horseback riders, with the permission of the landowners, for 50 years. Realization of this trail will depend on the Township's ability to negotiate the necessary easements with several of the farm owners along this route. This potential open space linkage to Nike Park is shown in Figure 5 - 8.

Figure 5 - 10
Potential Linkage between Evansburg Park and Fairview Village



STONY CREEK

Stony Creek has potential for a future trailway. In the past, the Stony Creek Railroad line had been proposed for a trail; however, it has been reopened for freight use and is currently unavailable for a trail. The County's Liberty Bell Trail runs along the eastern boundary of the township. Stony Creek could potentially be used to connect with the trail at this point. Potential stream open space linkages are shown in Figure 5 - 9. These linkages would also connect to other Worcester trails, particularly the multi-use trails along the powerlines.

TRIBUTARY OF THE SKIPPACK CREEK TO FAIRVIEW VILLAGE

Fairview Village has many of Worcester's residents and also has a potential pedestrian connection from Community Hall in Fairview Village to Methacton High School and Evansburg State Park. Some of this connection might be on the shoulder of existing roads and some of the connection is possible along a tributary of the Skippack Creek. The constraints and opportunities of this route are too complicated for this plan, so a more detailed feasibility study should be conducted to determine the most likely route for this connection (see Figure 5 - 10).

UTILITY CORRIDORS

In addition to stream corridors, other linear features in Worcester can be used for trails and open space linkages. Existing utility corridors would probably be the easiest to use. Worcester is crossed by a number of PECO transmission lines, as well as the Texas Eastern Natural Gas pipeline. While these corridors seem to be simple connection solutions, they often cross land being used for other purposes as well as roads or other obstacles, so open space connections along utility corridors must be carefully investigated and planned as to viability, location and design. However, due to the far-reaching connection possibilities, the effort to accomplish such connections usually results in rewards for the residents which far outweigh the costs. The actual locations of trails in this corridor have yet to be determined so as to avoid or minimize any disruptions to other uses on or surrounding the corridor and yet serve the residents of the township as effectively as possible.

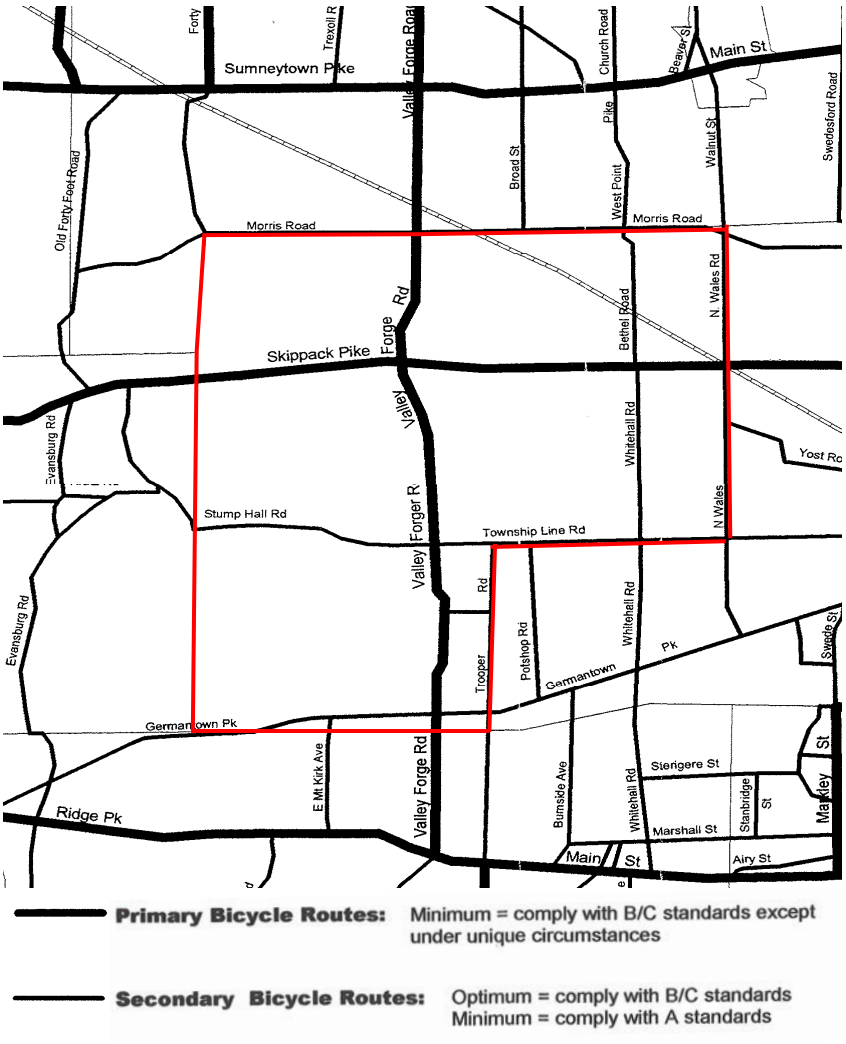
The PECO lands are quite wide and offer the potential for some of the most valuable types of trails. For the most part, a full-service multi-use trail could be provided, and along many stretches an equestrian trail could parallel the multi-use trail. This would be a kind of "combination trail."

The recent Greenway Plan conducted for Worcester Township by Simone Jaffe Collins studied these corridors quite thoroughly. We will discuss them here briefly.

POWERLINE TRAIL

As mentioned before, the Powerline Trail, as laid out by the county, is planned either to cross the northern corner of the township or to pass through Towamencin Township near that corner. The discussion earlier in this chapter gives a more detailed description of this valuable potential regional linkage.

Figure 5 - 11
County Recommended Bike Routes



Source: Bicycling Road Map: A Bike Mobility Plan fo Montgomery County, Pennsylvania, 1998, MCPC

CROSS-TOWNSHIP POWERLINE TRAIL

This PECO powerline corridor could be used to connect Evansburg State Park, the Zacharias and Stony Creek greenways, the Liberty Bell Trail, and other trails, as well as Heebner Park. Other "feeder" trails could also connect from this cross-township powerline trail to Nike Park and other township destinations.

NORTH-SOUTH POWERLINE TRAIL

Towamencin Township proposes to have a trail connect from Fischer's Park, which is partially located in the northern corner of Worcester, to Evansburg State Park. The lands under the PECO transmission lines in Worcester could be used to get near this park and other future trail connections as well as to connect to the county-wide Powerline Trail, Peter Wentz Farmstead, and to the Cross-Township Powerline Trail, which would connect to the Liberty Bell Trail. One branch of this trail could cross Morris Road and connect to the Towamencin's trail along the tributary of the Skippack Creek.

ROADWAYS

Connections along roads must be evaluated to ensure user safety. The 2004 Greenway Plan includes a section describing the necessary components of on-road trails. Possible connections for Worcester Township are described below.

STATE ROADS

Worcester has many miles of state roads. The County Planning Commission produced a bicycle mobility plan in 1998 which indicated the routes recommended for improvements as bicycle routes. The plan depicted several routes in Worcester, all of them state routes. The mobility plan also set forth the optimum and minimum standards for the routes. In addition to providing a county-wide vision for a network of bicycle routes, the plan also provides guidance to municipalities as to what should be provided and where to undertake bicycle route improvements should they decide to do so. The plan also gives the municipalities an authoritative document to use when working with PennDOT on roadway improvements.

Stony Creek Railroad tracks Photo: Susan Caughlan

The recommended bicycle routes for Worcester Township are shown in Figure 5 - 11 and are included in the map in Figure 5 - 2.

The primary routes have recommended bike route standards (B/C standards), and these same standards are recommended for secondary routes, but a lower (A) standard is offered as an optional minimum. The recommended bicycle facilities vary according to the amount of traffic, type of road, and the kinds of riders expected. Other factors include traffic speed, visibility, and whether a large number of trucks or other large vehicles use the road.

According to the bicycle mobility plan, in order to provide appropriate bicycle route facilities, many of the roads in Worcester would need a range of improvements. Sometimes a "share-the-road" slightly wider travel lane is all that is recommended. Sometimes, due to traffic and other conditions, a full 6-foot bicycle lane (or off-road trail) is recommended.

Bike lanes (or off-road trails) are recommended by the plan along Skippack Pike and Valley Forge Road.

The secondary routes — Morris Road, Township Line and Stump Hall Roads, Germantown Pike (a county road), Whitehall Road, Bethel Road, North Wales Road, part of Trooper Road, and part of Woodlyn Avenue (a township road) — are suggested to provide, depending on the individual location, at least a wide travel lane or a wide shoulder, but optimally a bike lane or off-road trail.

TOWNSHIP AND COUNTY ROADS

The rest of the roads in Worcester are township roads, and they generally are residential or country roads with low traffic volumes except during rush hours. Many of these already provide pedestrian or bicycle connections and need no additional improvements. Some, however, due to their location, safety, or other circumstances, should be improved to provide safe connections for pedestrians and bicyclists who will be using these roads. The roads that need sidewalks are outlined below. The rest of the roads may need a special investigation to determine the issues, needs and possible solutions.

SIDEWALKS

Worcester currently has only a few areas with sidewalks, usually in new housing developments, and rarely along older, connecting roads. Nevertheless, there are areas where sidewalks could and should be used, either as part of the township-wide trail network or to connect neighborhoods to the trail network. Other sidewalks are necessary to allow residents to safely travel to their neighbors, to nearby destinations and to the township trail network. Depending on individual conditions, other roads may also need sidewalks, sometimes on one side, sometimes on both sides.

NORTH WALES ROAD

As mentioned before, the Liberty Bell Trail is proposed to use the Worcester side of North Wales Road. This portion of North Wales Road will need to have a multi-use trail. The rest of North Wales Road, to the south, should also have sidewalks so that township residents will have safe access to the Liberty Bell Trail and to Norristown Farm Park along North Wales Road in East Norriton Township.

FAIRVIEW VILLAGE

The Worcester Township Community Greenway Plan suggests a hiking trail from Community Hall to Evansburg Park. In some places, sidewalks would be needed for Fairview Village residents to get to such a trail, and if the trail is not completed, sidewalks may be the only way for pedestrians to access Evansburg Park. In this light, sidewalks should at least be considered along all roads in the Fairview Village area.

UNDEVELOPED LAND

The land development process poses a valuable opportunity to achieve trail connections. For those parcels that are to remain undeveloped or farmed, habitat corridors and trails can be a matter of negotiation, preservation grants, or philanthropy.

FUTURE DEVELOPMENT

Sometimes one of the best ways to establish a trail is to require it as part of the land development process.

FARMLAND

Informal trails that have been established by consent of the landowner sometimes pass through or around farmland. It should be noted, however, that once a farm is preserved through the state farmland preservation program, trails cannot be built on the land. However a trail corridor can be set aside before the farm is preserved. A trail may also be provided as part of a state road widening project.

PRIVATE OPEN SPACE IN DEVELOPMENTS

Depending on the agreements and easements provided during the land development process, trails through private open space may sometimes be open to the public. At a minimum, these trails are available to all the residents of that particular development.

PRIVATE CONSERVATION LANDS

Trails that pass through private conservation lands are similar to trails through private open space lands in that they may or may not be open to the public.

COMBINATION CONNECTIONS

Some of the linkages that are possible could be combination connections, such as where multi-use trail and equestrian trail connections coincide. Combinations such as this provide an efficient way to provide various types of connections.

SUMMARY

There are many potential open space linkages for Worcester Township. Internal connections can be made between destinations within Worcester, and connections can be made to networks and destinations right at or near the township boundaries. Linkages are one of the most effective and economic means to improve access to parks and recreation opportunities for Worcester residents. These linkages also serve relatively well for expanding or preserving natural habitats by keeping natural areas connected.

For these reasons the Township has determined the creation, acquisition and development of these linkages to be a high priority.

View into Whitpain Township at linkage to the Liberty Bell Trail

Photo: MCPC

Norriton Woods

Photo: Susan Caughlan

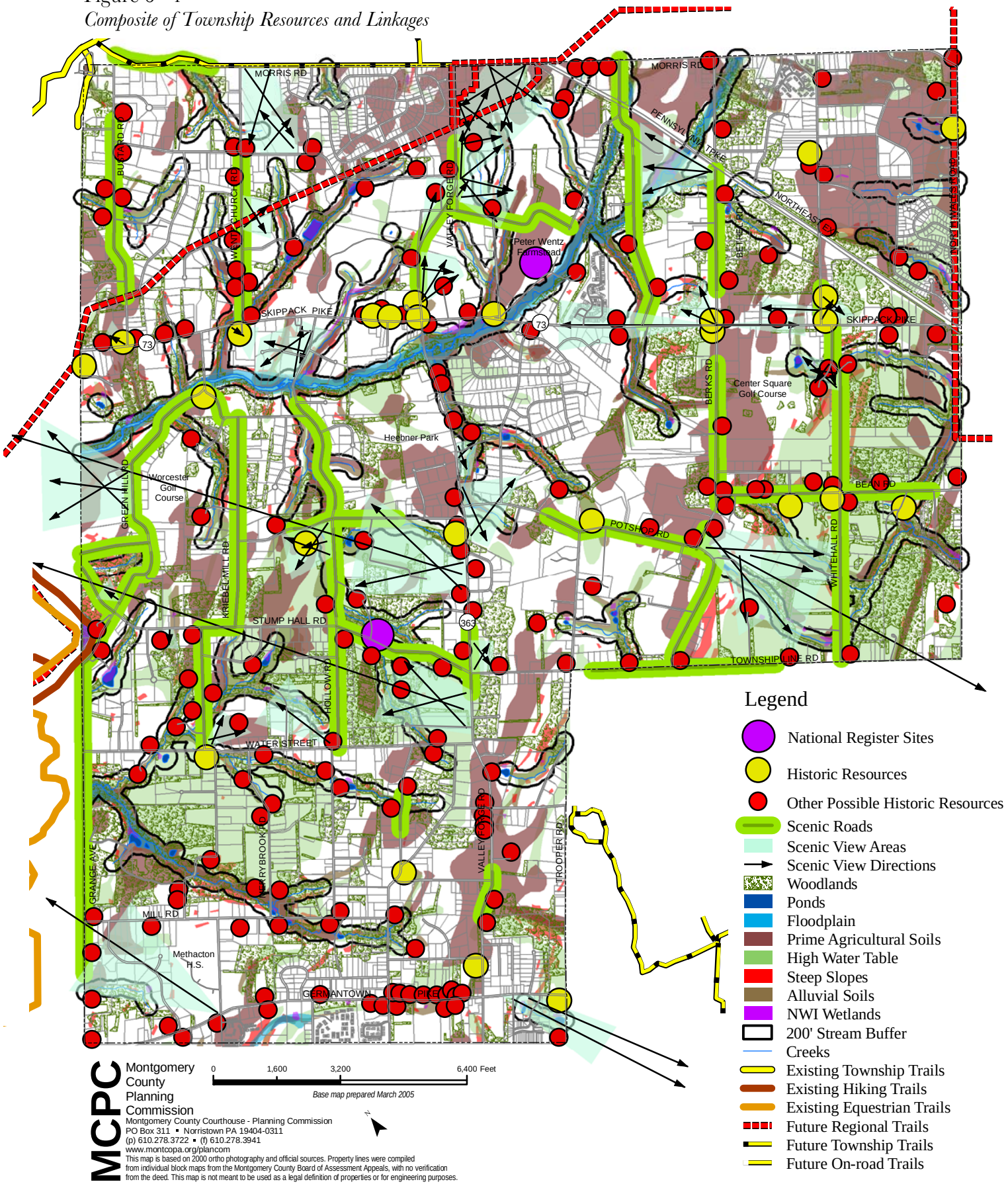
CHAPTER 6

ANALYSIS AND PRIORITIZATION OF UNPROTECTED RESOURCES

The inventory of vulnerable resources in Chapter 4 details the extensive lands underlain by bedrock with less than average aquifer characteristics, steep slopes, wetlands, hydric and alluvial soils, prime and statewide important agricultural soils, woodlands, historic resources, and scenic viewsheds. These cultural and environmental features were mapped as individual features without showing their overlapping, interconnected relationships.

In this chapter, Worcester's resources are analyzed in combination to identify areas with concentrations of resources. With the assistance of Natural Lands Trust, working under a grant from DCNR's Municipal Conservation Futures program, Worcester is able to undertake this additional analysis and prioritization of its resources. Together these resources contribute to the whole of Worcester's environmental and scenic integrity and suggest priorities for protection. The following narrative briefly describes the analysis conducted to prioritize the unprotected resources as well as the significance of each of the individual resources and its relationship to the township's goals and priorities.

Figure 6 - 1
Composite of Township Resources and Linkages



COMPOSITE MAPS OF EXISTING PROTECTED LANDS, VULNERABLE RESOURCES, PROXIMITY TO PROTECTED RESOURCES AND HABITAT CORRIDORS

A Worcester field Photo: Susan Caughlan

In order to analyze the relationship between the township's vulnerable resources and existing protected land, a composite map of the township's resources was developed.

The Composite of Township Resources and Linkages map (Figure 6-1) shows many of the vulnerable resources and potential linkages. The resources appear to be spread throughout the township, with a concentration focused in the area between Fairview Village and the village of Cedars, and along the streams, particularly the Zacharias Creek. However, at least one of the vulnerable resources can be found in almost every part of the township.

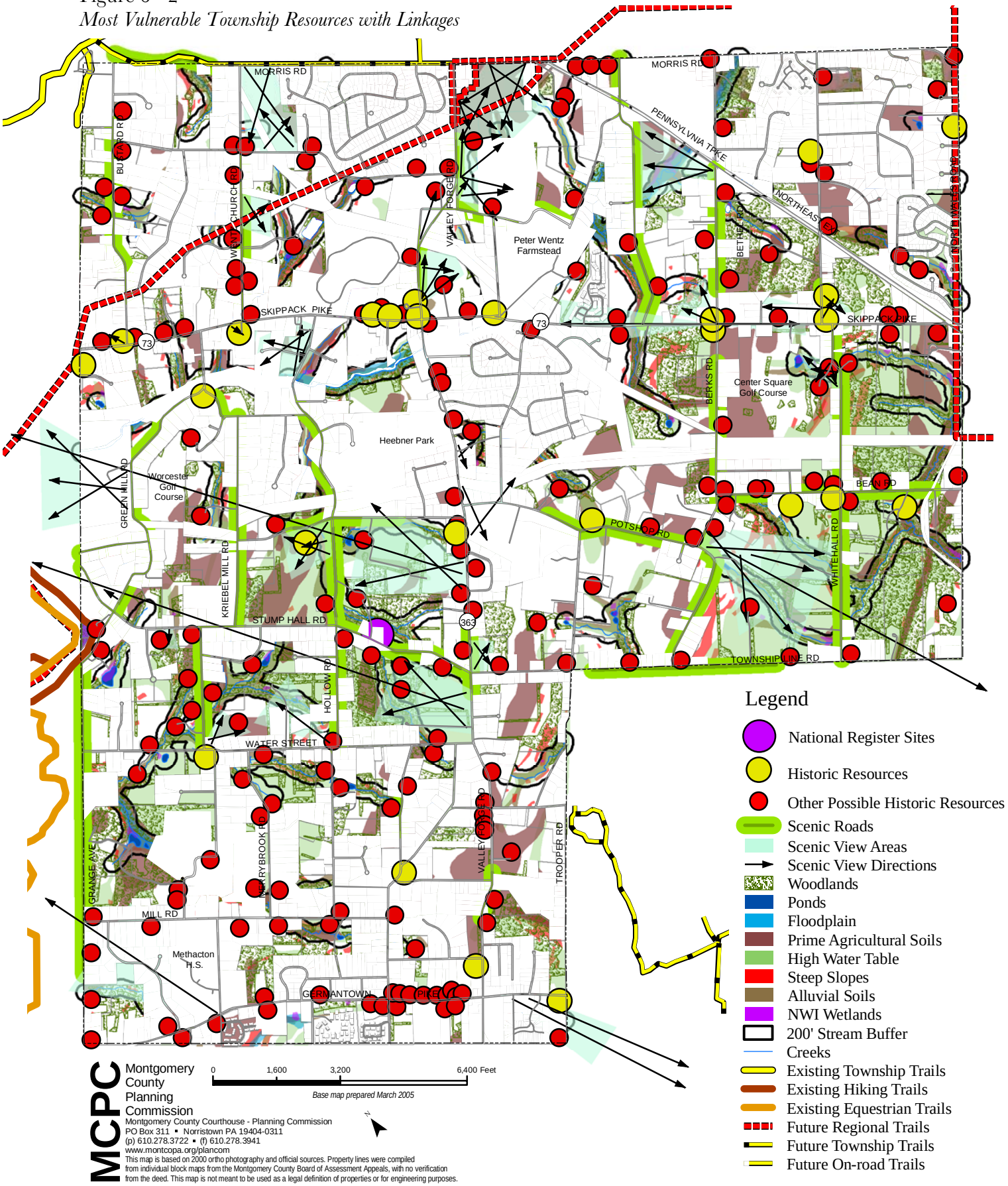
Additionally, this composite map shows the importance of having good resource protection ordinances in place which cover the entire township, so that as future development takes place, the resources are afforded some level of protection. However, the township may wish to provide more comprehensive protection by having control over the management of resource lands in certain situations. For example, there are instances where two or more of the resources overlap on the map and the township could protect multiple resources within one property. This might make that property a higher priority for protection.

Protection of resource lands may also complement other land preservation purposes. This may occur when a property that the township may be considering for active recreation or farmland preservation also has a concentration of significant natural resources worthy of protection.

Therefore, it can be quite useful to compare the natural resource values between two pieces of property. For example, a property that has three resources overlapping (i.e. alluvial soils, woodlands, and buffer area) might have a greater relative value than a piece of property that contains only high water table (hydric) soils. This analysis should also take into account the fact that the township does not value all resources equally. For example, the preservation of farmland is a significant township goal, and since floodplains already have a certain amount of protection with existing land use regulations, if all other things are equal, the farmland will be a higher priority than the floodplain preservation.

A cardinal in a Worcester snowstorm Photo: Susan Caughlan

Figure 6 - 2
Most Vulnerable Township Resources with Linkages



Primarily, however, this map is very useful to understand the overall value township-wide actions can have on individual or multiple resources. For example, if the Township were considering a soil preservation program or ordinance, the map shows that prime agricultural soils are found in many parts of the township, often with no other resources at the same location. On the other hand, a stream restoration program or a riparian corridor ordinance might serve to protect many resources at once, since many of the resources are located in, along or near the creeks.

While useful to understand the vast amount of various resources in the township and also to help understand the value of township-wide preservation efforts such as conservation ordinances, this map can also be overwhelming. To simplify understanding where the township might act most effectively and most directly in the future, all parcels less than 5 acres which have been developed, as well as any land that has been preserved or is owned by the public, have been eliminated from the map, creating a new map, Most Vulnerable Township Resources (Figure 6 - 2).

Bean Road Photo: Susan Caughlan

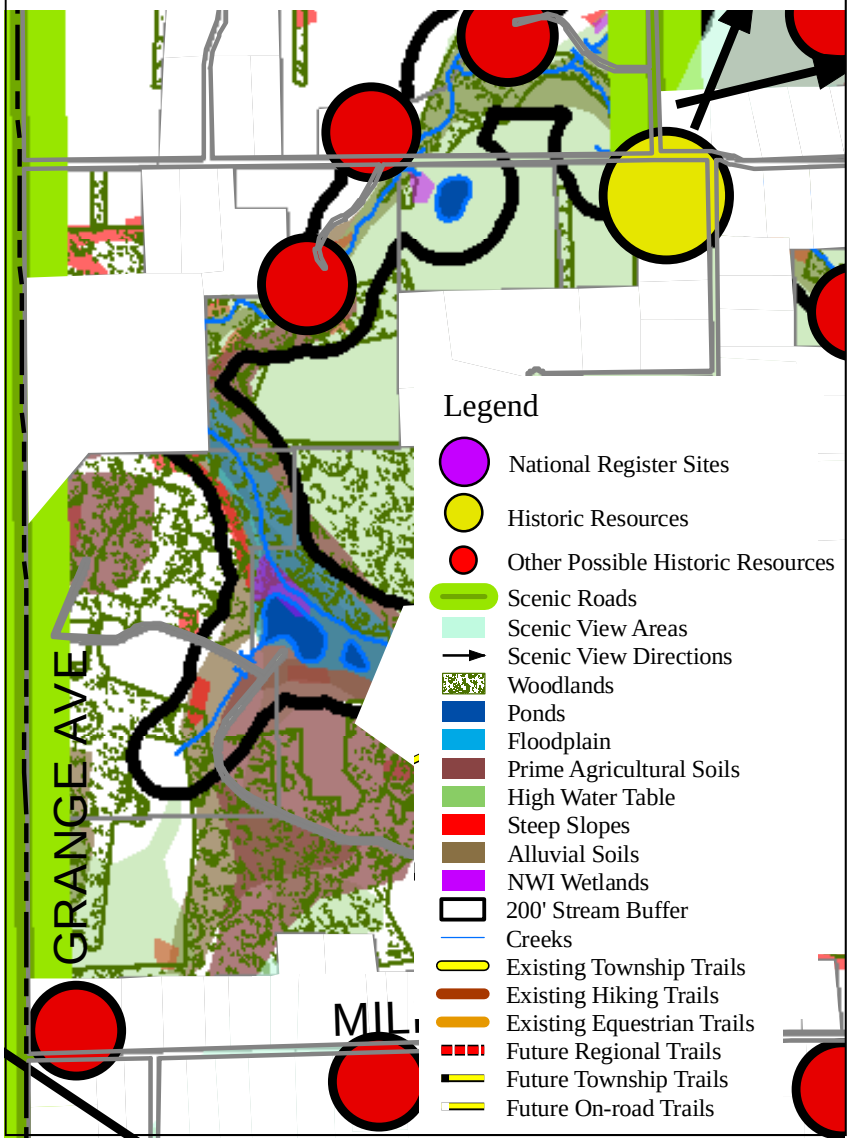
This map removes a lot of information, allowing the township to focus on specific areas of the township or specific properties for conservation efforts. This map, however, is not intended to replace the overall map, Figure 6 - 1. Each has its own value, directed at different township actions.

Figure 6 - 2 illustrates that the areas along the several Skippack Creek tributaries in the center of the township and the area in the southeastern portion of the township up to the turnpike are large areas that are still very vulnerable.

A segment of the map has been enlarged (Figure 6 - 3) to illustrate how the map could be used. Beginning at the lower left in Figure 6 - 3, one can see that many township resources are present. Along Grange Avenue, the road is scenic. Much of the land is wooded and includes prime agricultural soil, alluvial soils, hydric soils, some steep slopes, several ponds, some floodplains, and wetlands. The 200-foot stream buffer shows that if a riparian buffer were established here, a large variety of these resources would be protected, since they are clustered around the creek. In the upper right corner, a historic resource is also indicated. Almost all types of the township's resources are found in this little area.

With this information the township could seek ways to preserve the resources in this particular area.

Figure 6 - 3
Most Vulnerable Resources along a Tributary of the Skippack Creek



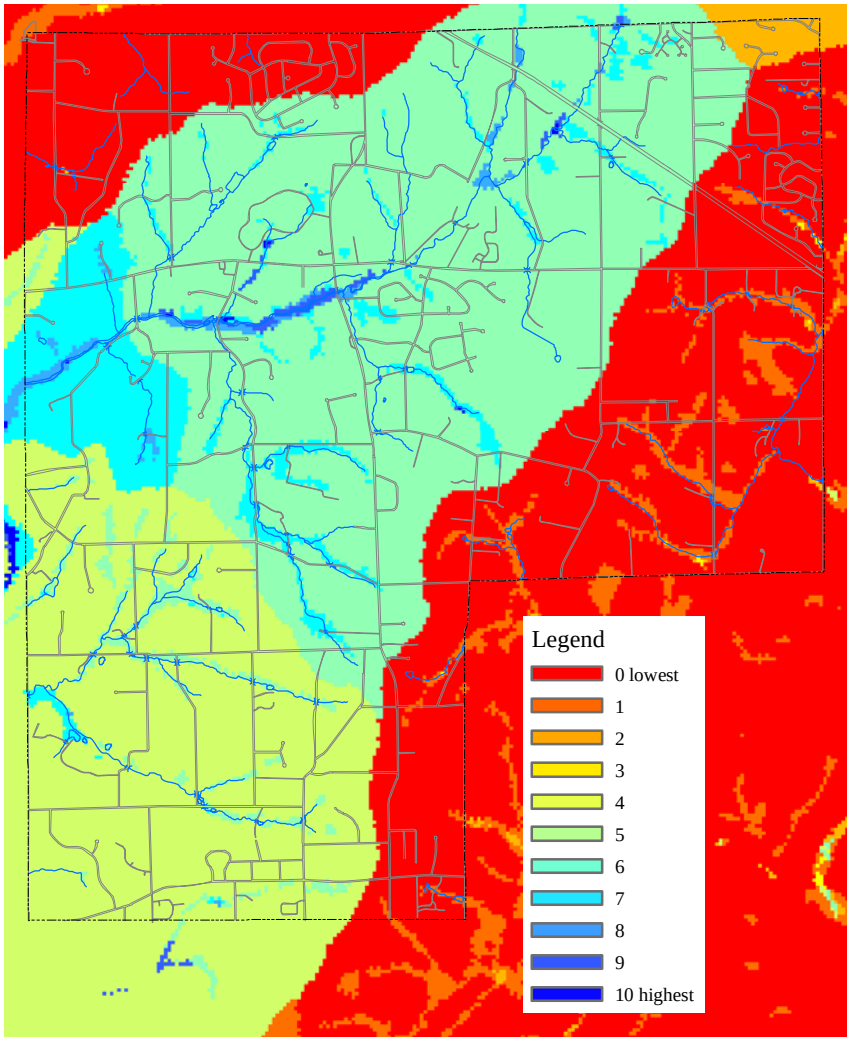
SMARTCONSERVATION™

Natural Lands Trust, with funding from the PA Department of Conservation and Natural Resources, the PA Department of Environmental Protection and The William Penn Foundation, has compiled a Piedmont-based regional map and prioritized database of natural conservation resources called SmartConservation™.

SmartConservation™ is a critical conservation planning tool for regional assessments. Policy-makers and conservation practitioners can use this tool to make educated decisions about how to prioritize conservation projects, thereby focusing conservation dollars for the maximum impact. A variety of criteria are used to evaluate a site's ecological assets, conservation potential, and development threat. These science-based criteria reflect the input of the region's best aquatic specialists, botanists, community planners, conservationists, herpetologists, ornithologists, and mammologists.

Zacharias Creek at Hollow Road Photo: MCPC

Figure 6 - 4
Regional Aquatic Conservation Resource Values



AQUATIC RESOURCES

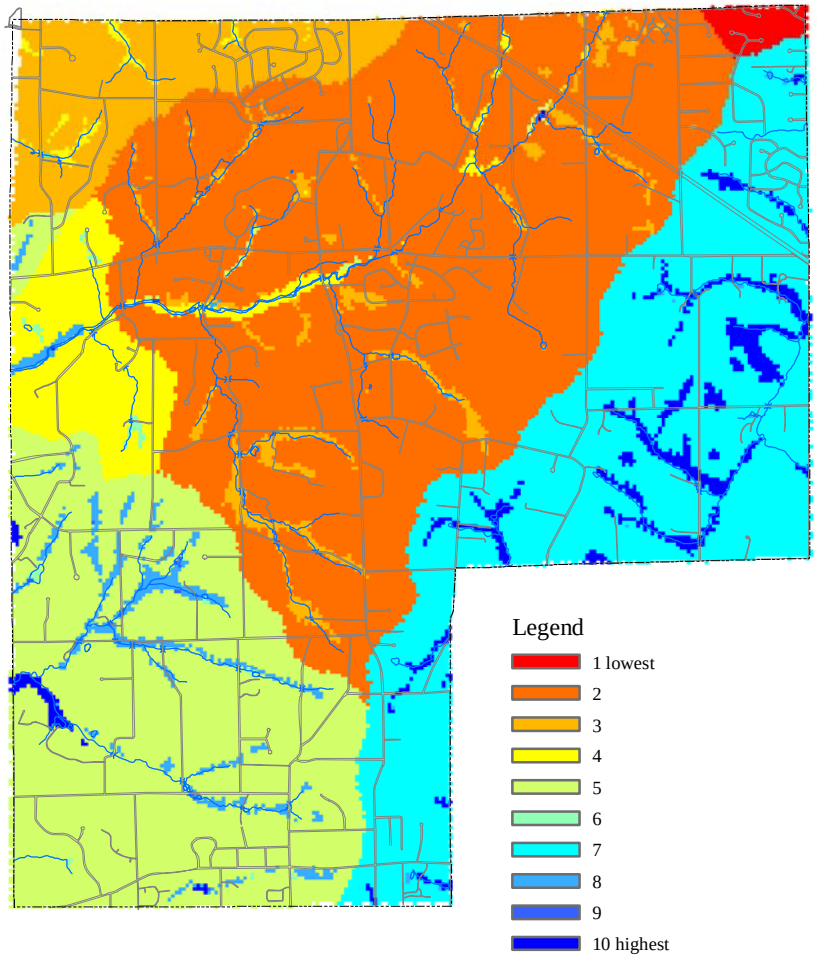
REGIONAL CONSERVATION VALUES

Figure 6 - 4, Regional Aquatic Conservation Resource Values, is an excerpt from the SmartConservation™ regional aquatic resource values map. That map is the result of combining and scoring the following regional aquatic resources:

- National Wetland Inventory
- Hydric Soils
- Floodplains
- Forested Water Quality
- Riparian Buffer Quality
- Water Quality from DEP's Unassessed Waters 303 [d] List
- Headwaters Protection
- Impervious Cover (2000)
- Impervious Cover Change (1985 - 2000)

The map in Figure 6 - 4 shows that Worcester Township has a full range of regional values for aquatic conservation resources. Some areas, particularly along the Zacharias Creek, rank high, with a few small areas reaching as high as a 10, the 90th

Figure 6 - 5
Township Aquatic Conservation Resource Values



percentile, putting that land in the top 10% of all land in the region with regard to its value as aquatic resources.

This map indicates which parts of the township would be most valuable for open space preservation in the Piedmont region to protect natural habitat for aquatic species and water quality.

TOWNSHIP CONSERVATION VALUES

Just as the entire land area of the region can be evaluated to determine which 10% of the land is the most valuable in the Piedmont region, so, too, can Worcester use a similar set of data to determine which 10% of the land in Worcester Township is the most valuable in the township. Worcester used an intermediate level of the SmartConservation™ data and evaluated it to determine the top 10%, second 10%, third 10%, etc. ranked land of the township.

The resulting map, Figure 6 - 5, is different from the regional map because while perhaps 3% or even 15% of Worcester might be in the top 10% of the region, the township-valued map was calculated to place about 10% of Worcester's land in each of the percentiles. The result is helpful for establishing township priorities for its financial and workforce resources with regard to natural open space preservation. The result tells us what land is important to Worcester as opposed to what is important (or less important) to the region.

This township-valued analysis was conducted for each of the three regional resource types: aquatic resources, terrestrial resources, and vertebrate resources. These three layers were then combined, just as with the regional layers, to create a final "composite" evaluation of all the land in Worcester (Figure 6 - 12).

Figure 6 - 5 is the result of recalibrating the aquatic conservation data to determine the top ranked lands for local priorities. The largest change made to the data was the removal of some watershed scores. Looking back at the regional map, Figure 6 - 4, there is a sharp difference in values which is very closely tied to the shapes of the watersheds. Of particular note on Figure 6 - 4 is how low the Stony Creek watershed scored, with the entire watershed depicted as providing some of the least valuable aquatic habitat and water quality in the entire region. However, a visit to the area shows that the headwaters of the watershed which are within Worcester Township are in quite good condition. What is true is that the majority of the Stony Creek watershed, which lies outside Worcester Township, includes heavily developed townships and the large, old borough of Norristown. Since the lower scores for this heavily degraded watershed are distributed over the entire watershed, even the relatively pristine headwater areas in Worcester Township were given these scores. Removing the

Leopard frog found in Worcester Photo: David Brooks

Stony Creek Headwaters Photo: Susan Caughlan

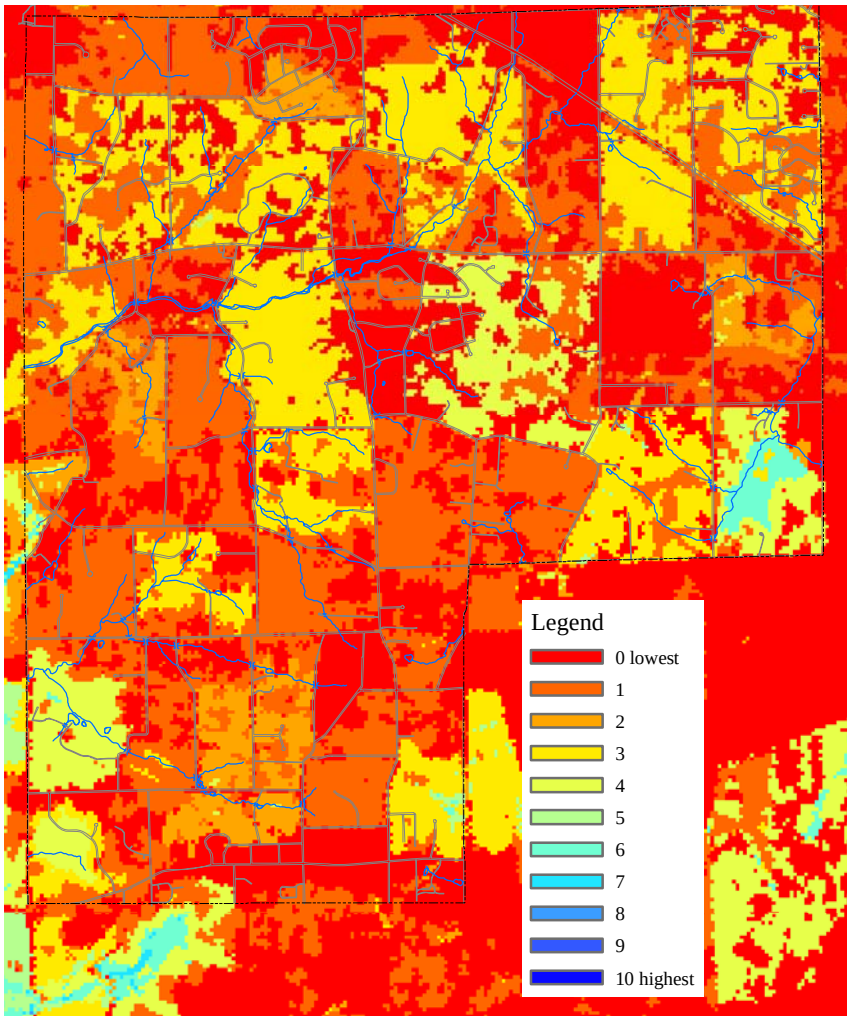
watershed scores gives a more realistic value to the area of the Stony Creek watershed that lies in Worcester Township.

The resulting increase in value to this entire area, plus the recalibration of the percentiles, creates a map that is very different from the regional map. Figure 6 - 5 shows that, when considering township-wide values, the most important areas for aquatic resources are those along Stony Creek and along the lower reaches of the tributary to Skippack Creek.

This analysis works both ways. About 10% of the township must be ranked in the lowest values, too. So, since the Stony Creek watershed greatly increased in value, other areas must decrease in value. As a result, the Zacharias Creek watershed is, from a township perspective, less valuable for aquatic resources than most of the rest of the township.

Figure 6 - 5 indicates which parts of the township would be most valuable to the township for open space preservation intended to protect natural habitat for aquatic species and water quality.

Figure 6 - 6
Regional Terrestrial Conservation Resource Values



TERRESTRIAL RESOURCES

REGIONAL CONSERVATION VALUES

Figure 6 - 6, Regional Terrestrial Conservation Resource Values, is an excerpt from the SmartConservation™ regional terrestrial resource values map. That map is the result of combining and scoring the following terrestrial resources:

- Steep Slopes
- Interior Forest Habitat
- Natural Vegetation Habitat Blocks
- Contiguous Grassland Habitat Blocks
- Contiguous Scrub/Shrub or Barrens Habitat Blocks

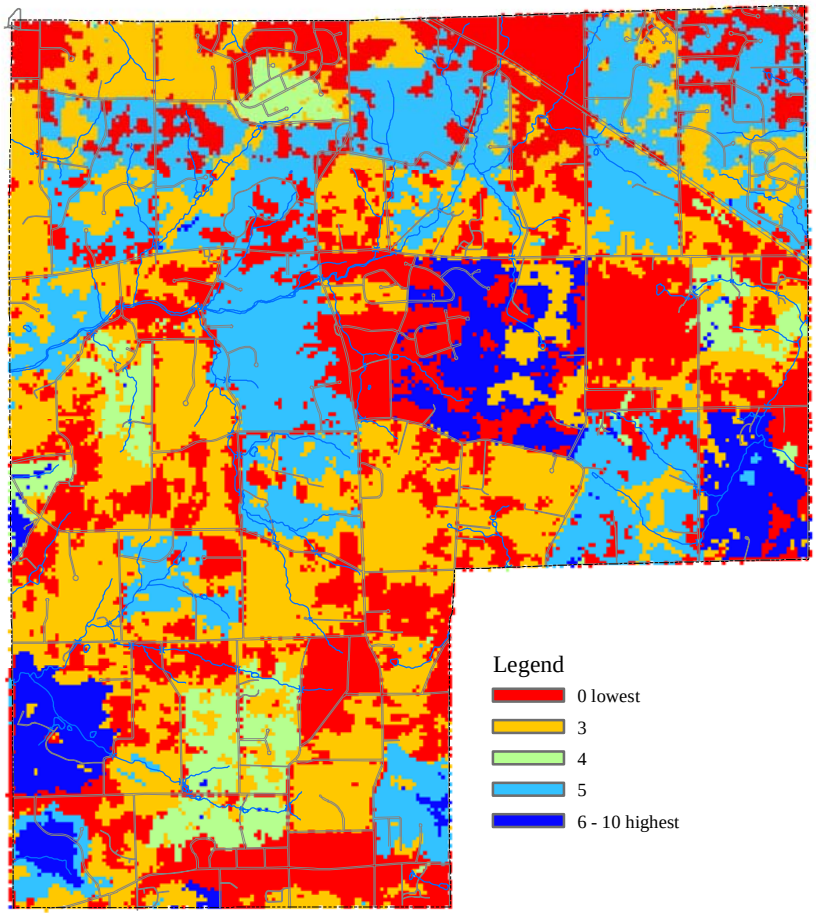
The map in Figure 6 - 6 shows that most of Worcester Township has low or medium regional values for terrestrial conservation resources. The highest valued areas scored a 6, which is the 50th percentile, such as in the area near Township Line and Whitehall Roads, putting that land in the top 50% of all land in the region with regard to its value for terrestrial resources.

This map indicates which parts of the township would be most suited, from a regional perspective, for open space preservation to protect natural terrestrial habitat for many plant and animal species.

TOWNSHIP CONSERVATION VALUES

The regional terrestrial conservation resource values map was adjusted to recalculate the percentiles of these resources within the township. For statistical

Figure 6 - 7
Township Terrestrial Conservation Resource Values



reasons, the values had to be combined into a small number of groups, with approximately 20% of the land in each group. The resulting map is shown in Figure 6 - 7.

The resulting increase in value to this entire area, plus the recalibration to redistribute the percentiles, creates a map that is very different from the regional map. Figure 6 - 7 shows that, when considering the township-wide values, there are many more valuable areas for terrestrial resources throughout the township.

This map, Figure 6 - 7, indicates which parts of the township would be most valuable to the township for open space preservation intended to protect natural terrestrial habitat for many plant and animal species.


Terrestrial Resources in southwestern Worcester Photo: Pictometry


Woodland in Evansburg State Park Photo: David Brooks


Native plants of Montgomery County Photo: MCPC

VERTEBRATE RESOURCES

REGIONAL CONSERVATION VALUES

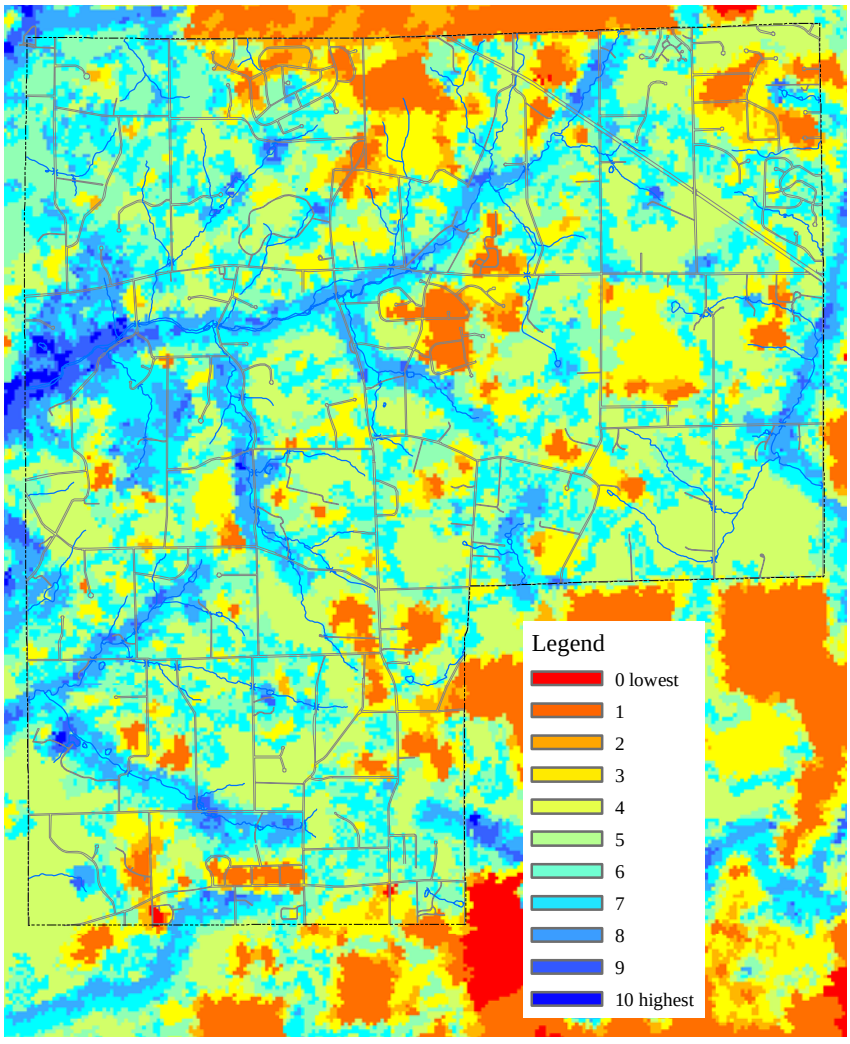
Figure 6 - 8, Regional Vertebrate Conservation Resource Values, is an excerpt from the SmartConservation™ regional potential vertebrate resource values map. That map is the result of combining and scoring the following vertebrate resources:

- Potential Mammals Conservation Value
- Potential Fish Conservation Value
- Potential Herps Conservation Value
- Potential Birds Conservation Value
- Important Bird Areas (PA Audubon Society)

The map in Figure 6 - 8 shows that Worcester Township has a full range of regional value for vertebrate conservation resources. Some areas, particularly the areas along the creeks, rank very high, scoring an 8, 9, or 10, putting that land in the top 10% to 30% of all land in the region with regard to its value as potential vertebrate resources.

A fox family at Merrymead Farm Photo: Scott Rothenberger

Figure 6 - 8
Regional Vertebrate Conservation Resource Values



This map indicates which parts of the township would be most suited to open space preservation for the Piedmont region to protect natural habitat for many kinds of vertebrates.

TOWNSHIP CONSERVATION VALUES

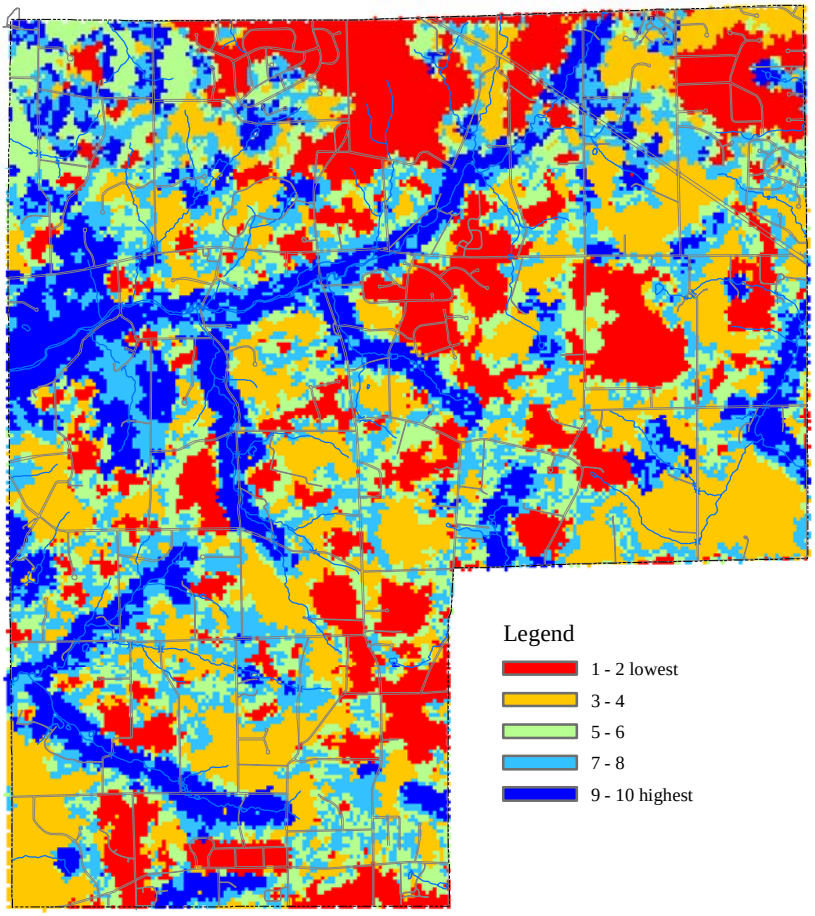
The regional vertebrate conservation resource values map was adjusted to score these resources just within the township. For statistical reasons, the values had to be combined into a small number of groups, with approximately 20% of the land in each group. The resulting map is shown in Figure 6 - 9.

The resulting increase in value to this entire area, plus the recalibration to redistribute the percentiles, yields a map that is very different from the regional map. Figure 6 - 9 shows that, when considering only the township values, the most valuable areas for vertebrate resources generally follow the streams and creeks.

The major creekways have very high values all along their lengths, and a large area in the lower Zacharias Creek area also has some of the highest scores.

This map indicates which parts of the township would be most valuable from the township's perspective for open space preservation intended to protect natural habitat for many kinds of vertebrates.

Figure 6 - 9
Township Vertebrate Conservation Resource Values



Wild Turkeys in Worcester

Photo: Dee Dee McGrane

COMPOSITE OF CONSERVATION RESOURCES

Of course, just because several resources are found at the same location does not necessarily mean they are the most important resources to be preserved or protected. Earlier in this chapter, three maps were presented which showed the regional values for all the land in the township: Regional Aquatic Conservation Resource Values (Figure 6 - 4), Regional Terrestrial Conservation Resource Values (Figure 6 - 6), and Regional Vertebrate Conservation Resource Values (Figure 6 - 8). The scoring for each of the resources in these layers was done by several panels of experts in order to provide professional values for the various resources. For more detailed information about this process, please contact Natural Lands Trust.

REGIONAL COMPOSITE CONSERVATION VALUES

Figure 6 - 10, Composite of Regional Conservation Resources, is an excerpt from the SmartConservation™ regional composite conservation resources map. That map is the result of combining the following conservation resources maps as if they were layers added together, with the scores for each area of land averaged together:

- All the resources of the Aquatic Conservation Resource Values Map (Figure 6 - 4)
- All the resources of the Terrestrial Conservation Resource Values Map (Figure 6 - 6)
- All the resources of the Vertebrate Conservation Resource Values Map (Figure 6 - 8)

In addition, another regional map layer was added to boost the scores of certain areas because of their value for endangered species:

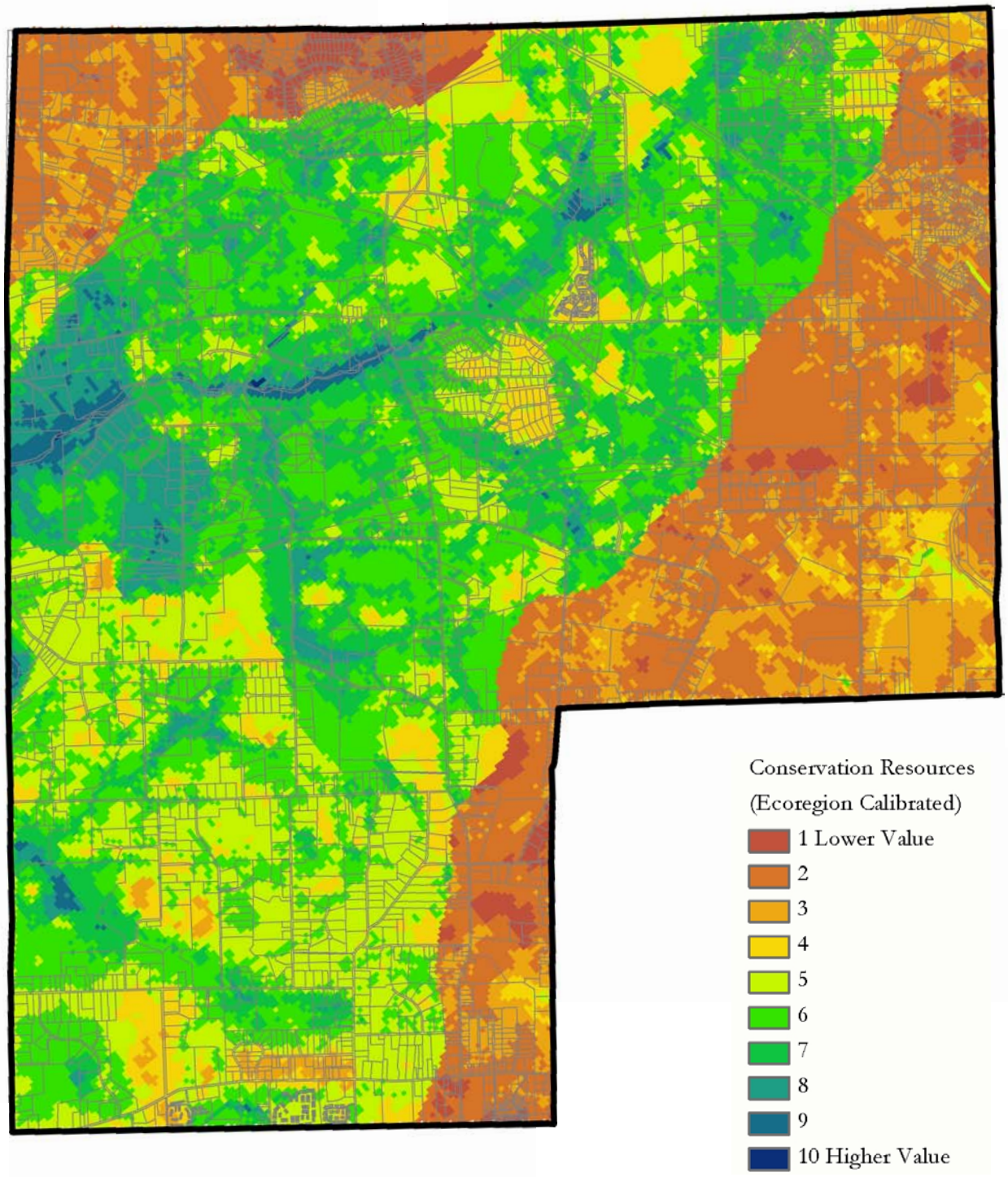
- County Natural Areas Inventory and Rare Plants.

Because this map layer indicated no such resources in Worcester, it has not been included as an illustration in this plan.

The map shows that Worcester Township has a full range of regional values for composite conservation resources. Some areas, particularly along the Zacharias Creek, rank as high as the 80th and 90th percentiles, putting that land in the top 20% to top 10% of all land in the region with regard to its value for the conservation of natural resources.

This map indicates which parts of the township contain the most valuable natural habitats for many kinds of plants and animals.

Figure 6 - 10
Composite of Regional Conservation Resources



1. County boundaries and municipal boundaries received through PASDA (www.pasda.psu.edu)
2. Parcels from Montgomery County
3. Conservation Resources created by Natural Lands Trust using SmartConservation criteria

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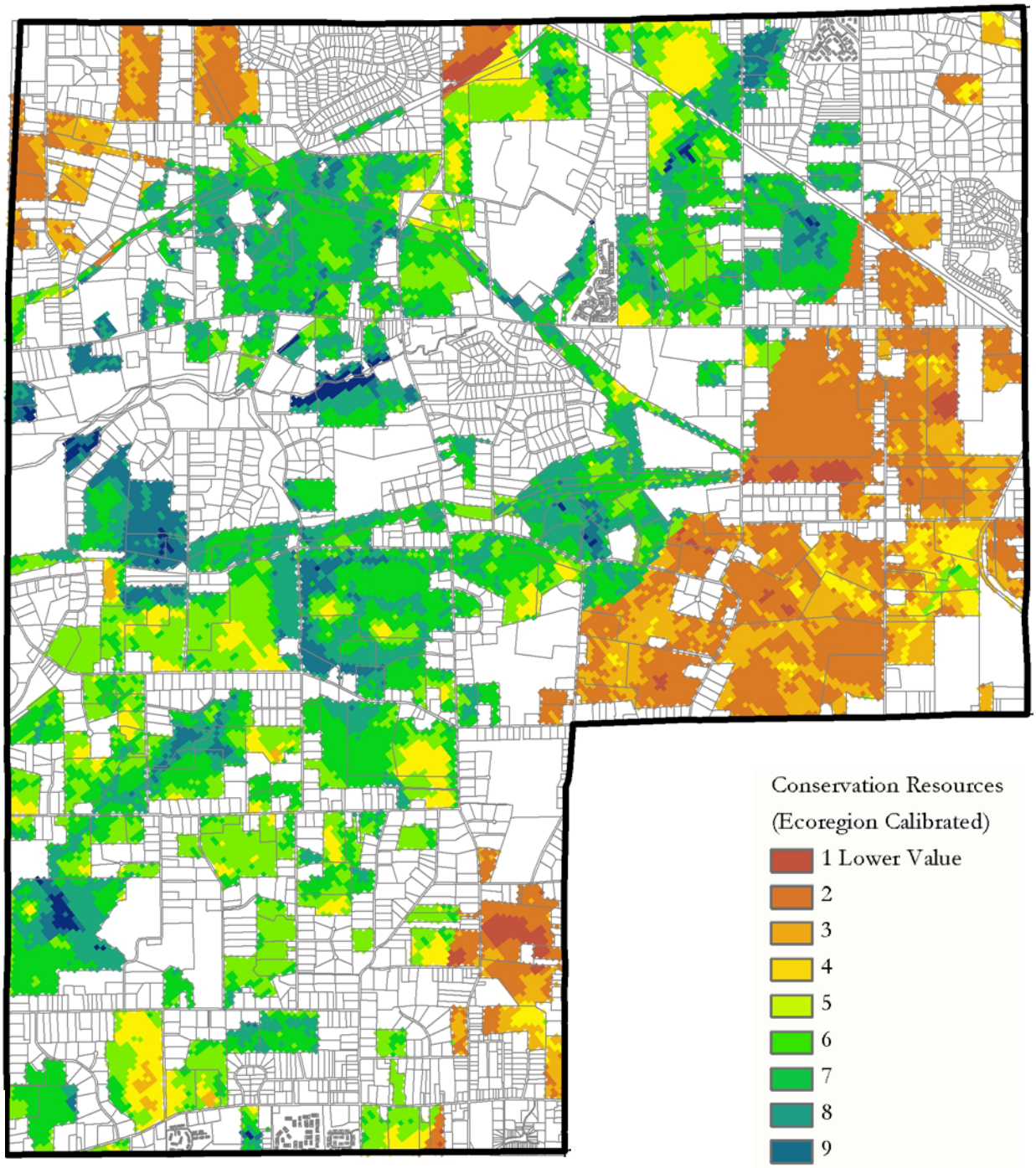
Worcester Township
Montgomery County, Pennsylvania

N

0 1,750 3,500 Feet

Compiled By: DCR 10/06/05

Figure 6 - 11
Remaining Regional Conservation Resources



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MOST VULNERABLE COMPOSITE REGIONAL CONSERVATION RESOURCES

In Figure 6 - 11, all parcels less than 5 acres which have been developed and any lands that have been preserved or are considered protected from development (lands owned by the Commonwealth, County, or a municipality, and those on which further development has been restricted by deed) have been eliminated from the Composite of Regional Conservation Resources (Figure 6 - 10) to create a new map, Remaining Regional Conservation Resources.

This map removes a lot of information, allowing the township to focus on specific areas of the township or specific properties for conservation efforts. This map, however, is not intended to replace the overall map, Figure 6 - 10. Each has its own value, directed at different township actions.

COMPOSITE TOWNSHIP-VALUE CONSERVATION RESOURCES

As mentioned earlier, one of the limitations of using the regional maps for specific township conservation efforts is that the regional data do not consider township boundaries. Worcester Township was interested not only in understanding the value of its natural resources to the region, but also in using the data to better understand the value of these natural resources to their township alone.

Due to the fact that parts of the township are located at the top of a watershed that is significantly degraded downstream, the Stony Creek watershed, those lands in Worcester are valued quite low for the region. This is because, from a regional perspective, efforts to conserve natural resources in the Worcester portion of the watershed are likely to have little effect on the downstream problems. For Worcester, however, efforts to conserve these same natural resources will have considerable effect in Worcester.

For this reason, Montgomery County Planning Commission was asked to produce another set of composite conservation maps. These are the Township Resource Conservation maps, Figures 6 - 5, 6 - 7, and 6 - 9.

Just as the three Regional Conservation Resources maps were combined to create a Regional Composite map, the three Township Conservation Resources maps were combined to create a Township-value Composite map, Figure 6 - 12.

Perkiomen Creek woodlands Photo: MCPC

Norriton Woods and the Garrett Bean Farmstead with Bean Road at top right and Stony Creek tracks curving through the woods Photo: Pictometry

Figure 6 - 12, Composite of Township Conservation Resources, is much different than the regional version of this map. While the Zacharias Creek still has some of the highest value lands, other areas also show up with high-value resources.

This map also indicates which parts of the township would be most suited to open space preservation to protect a variety of natural habitats for many kinds of plants and animals, from a township perspective.

MOST VULNERABLE TOWNSHIP COMPOSITE CONSERVATION VALUES

As with the creation of Figures 6 - 2, and 6 - 11, all parcels less than 5 acres that have been developed and any lands that have been preserved or are considered to be protected from development (lands owned by the Commonwealth, County, or a municipality, and those on which further development has been restricted by deed) have been eliminated from the Composite of Township Conservation Resources (Figure 6 - 12) to create a new map, Remaining Township Conservation Resources (Figure 6 - 13).

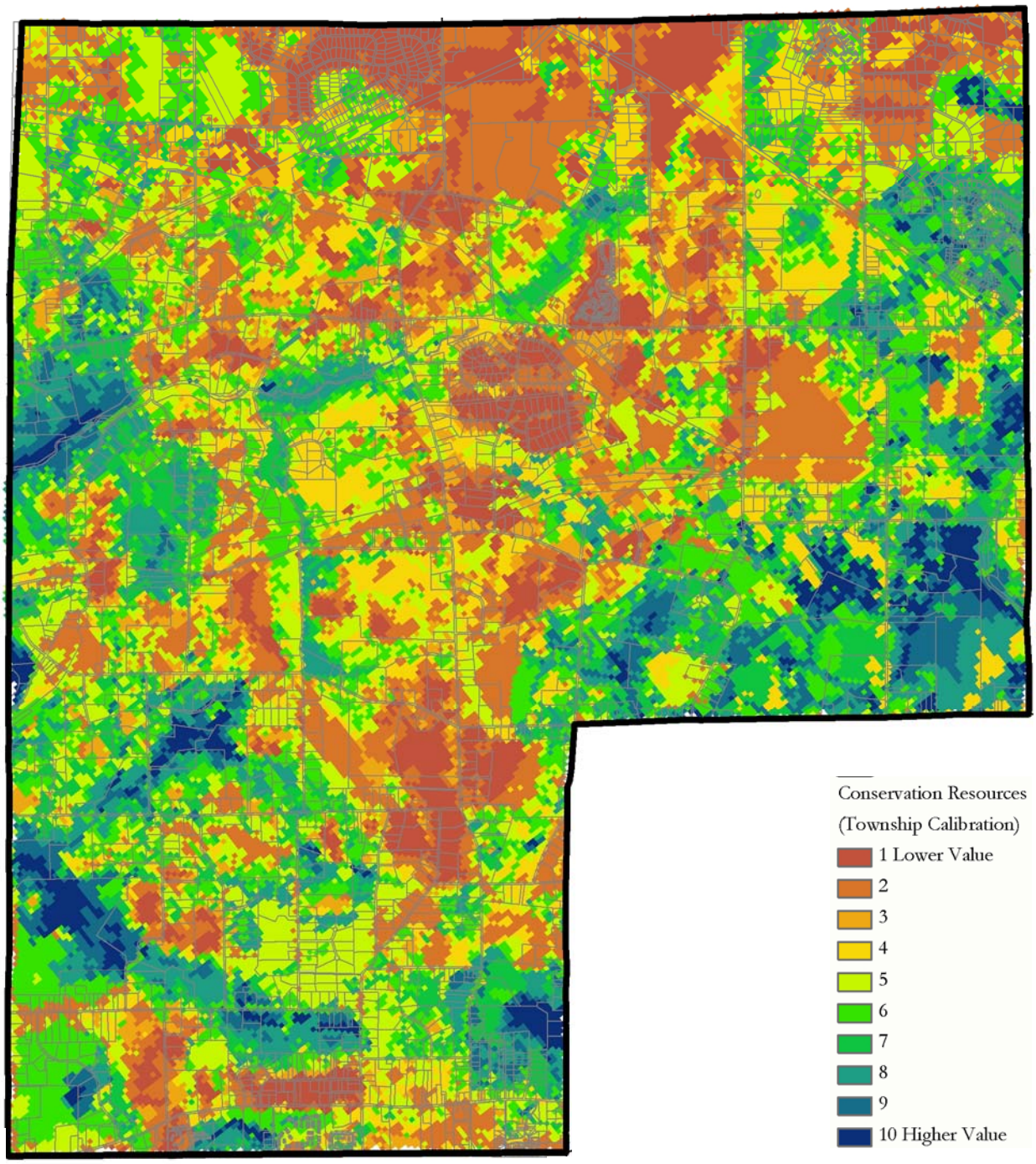
Like the others, this map removes a lot of information, allowing the township to focus on specific areas of the township or specific properties for conservation efforts. This map is not intended to replace the overall map, Figure 6 - 12. Each has its own value, directed at different township actions.

The resources shown on this map could also be considered the only township-value conservation resources remaining to be preserved.

This map illustrates that the areas along the tributary to the Skippack, most of the lands in the Stony Creek watershed, and some areas along the Zacharias Creek and its tributary along Hollow Road are large areas that are highly valuable and are still very vulnerable.

Monarch butterfly found in Worcester Photo: David Brooks

Figure 6 - 12
Composite of Township Conservation Resources



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MCPC Montgomery County Planning Commission

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April 4, 2005

Montgomery County Courthouse - Planning Commission
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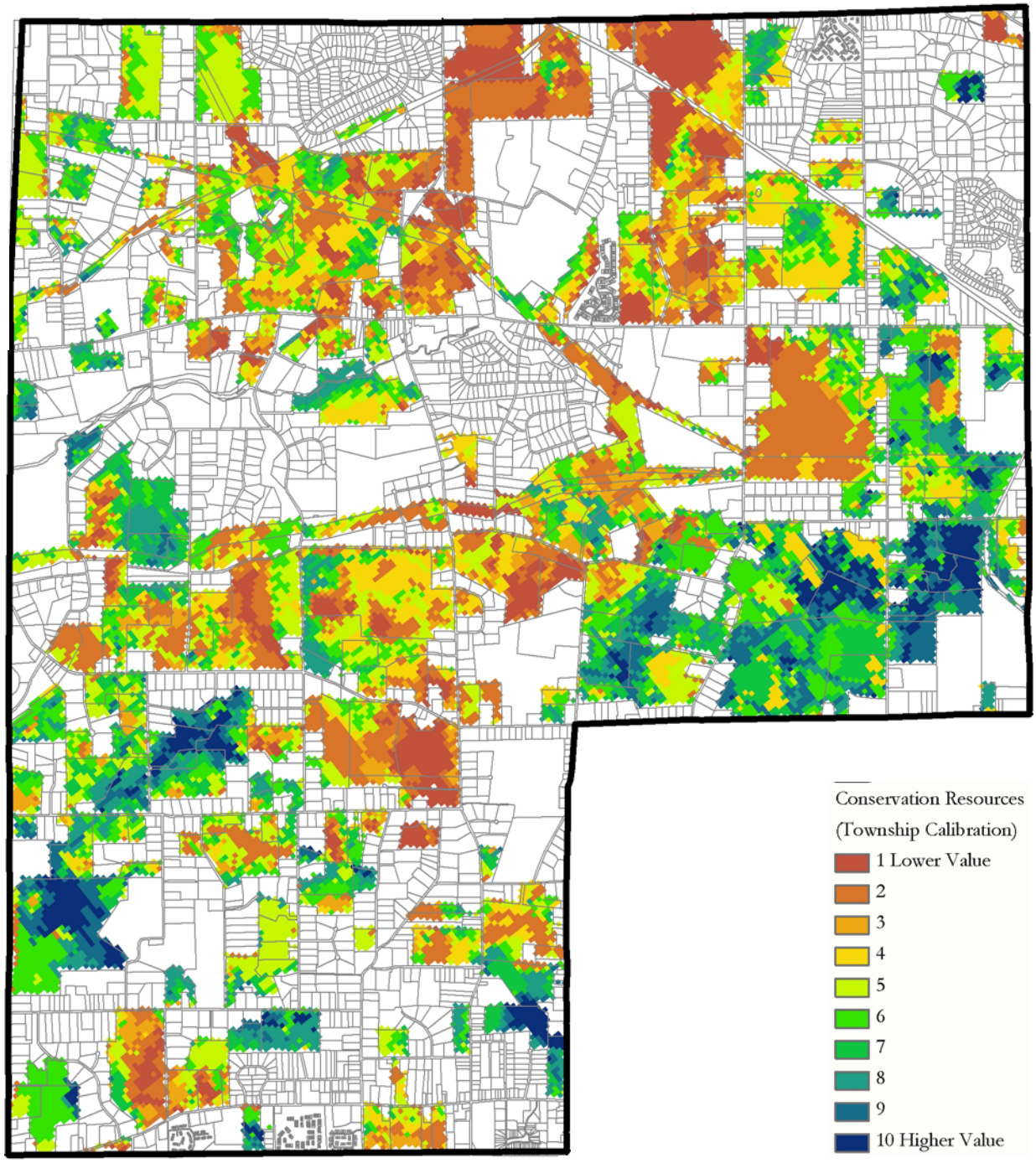
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom

Figure 6 - 13
Remaining Township Conservation Resources



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0 1,600 3,200 6,400 Feet
April 4, 2005

This map is based on 2000 ortho photography and official sources. Property lines were compiled from individual block maps from the Montgomery County Board of Assessment Appeals, with no verification from the deed. This map is not meant to be used as a legal definition of properties or for engineering purposes.

PROXIMITY TO EXISTING PRESERVED RESOURCES

Another important factor in preserving open space is proximity to resources that are already preserved. This is the principle of synergy. Enlarging an area of existing preserved resources has a greater impact than simply preserving the same number of acres in two or more unconnected areas.

Natural Lands Trust generated a map that assigns a score for land based on its proximity to the most valuable areas of existing preserved and protected resources in the township.

In the summer of 2005, Worcester became the first municipality in Montgomery County to work with NLT to identify and use actual land cover type(s) of each protected parcel in the township for the "protected lands proximity analysis" that NLT typically uses when ranking protected lands at the eco-regional scale.

The Open Space Committee was consulted with regard to the values of the various types of preserved resources. On a scale of 1-10, the Committee determined:

2 = housing association lands and active recreation lands owned by state/county/township

4 = farmed fields owned in fee by state/county/township

5 = farmed fields (privately owned) with a conservation easement

6 = wooded areas owned in fee by state/county/township

9 = wooded areas (privately owned) with a conservation easement

10 = wooded areas owned in fee by state/county/township plus a conservation easement

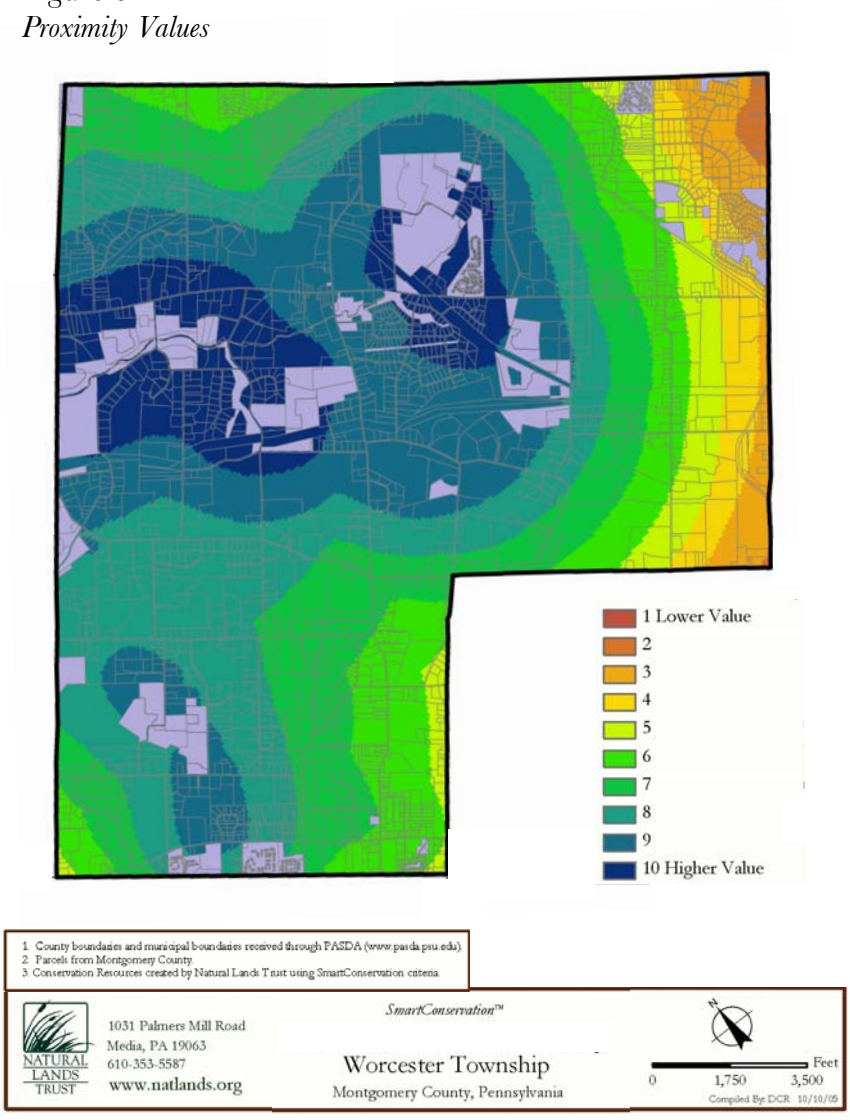
A recent (1999) aerial photo with the protected lands outlined on top was created; then landcover types were delineated within each protected land polygon; and finally the Township Open Space Committee ranked their protected lands according to the scale above.

NLT then ran a continuum of protected lands analyses for the Worcester Open Space Committee to review, using 0% to 100% of the protected land ranks as weights in the process. Worcester selected the 50% weight to use in compiling their final parcel prioritization maps.

These values were used to help generate the proximity map so that, for example, two pieces of land equally distant from preserved or protected land of different value received more or less of a boost based on the value of the preserved land. Then, these values were reduced as the distance from the preserved area increased.

This map, Figure 6 - 14, indicates which parts of the township are located closest to the most valuable areas of existing preserved and protected resources. This map was also used in combination with the Composite Conservation Resources maps and the map that will be discussed next, Habitat Corridors, to create Comprehensive Composite Conservation Resources maps.

Figure 6 - 14
Proximity Values



HABITAT CORRIDORS

Looking at the map of the entire Piedmont region sparks the question: how are there any animals at all in some places, since their land area scored so low? And although a few animals can survive in such very poor habitat, that still doesn't explain the many animals that do. For example, why are there so many deer and raccoons in the suburbs? Many of these animals have discovered or developed relatively small pockets of habitat and narrow paths, or corridors, between larger habitat areas so that they can survive and move around in more developed areas.

Natural Lands Trust also produced a map of the Piedmont region using computer analysis to calculate from various layers of habitat data the corridors that are most likely used by animals to conduct their daily, seasonal, and life functions such as eating, drinking, mating, rearing young, hibernating, etc..

In explaining the significance of these maps, NLT notes, "the long-term viability of ecological resources is COMPLETLY dependent on effective population-scaled connectivity across the landscape. Without development of such networked ecological green infrastructure systems, the entire ecological basis of the ecoregion could be irrevocably compromised."

The process by which the habitat corridor, or green infrastructure, maps were created is only summarized here. For more detailed information, contact NLT.

First, regional "nodes," or large habitat areas, were identified and certain criteria were used to determine which nodes would be connected to each other. In and around Worcester the nodes were large natural areas such as Evansburg State Park, the Norristown Farm Park and the Gwynedd Wildlife Preserve.

Then, barriers such as roads, railways and larger streams were scored based on the degree to which they would obstruct the movement of a generic, medium-sized mammal, such as a raccoon or fox. Using a 1-100 score range, the Pennsylvania Turnpike, for example was assigned a score of 100, whereas dirt roads were assigned a score of 5. The presence of multiple barriers within a limited area was also considered.

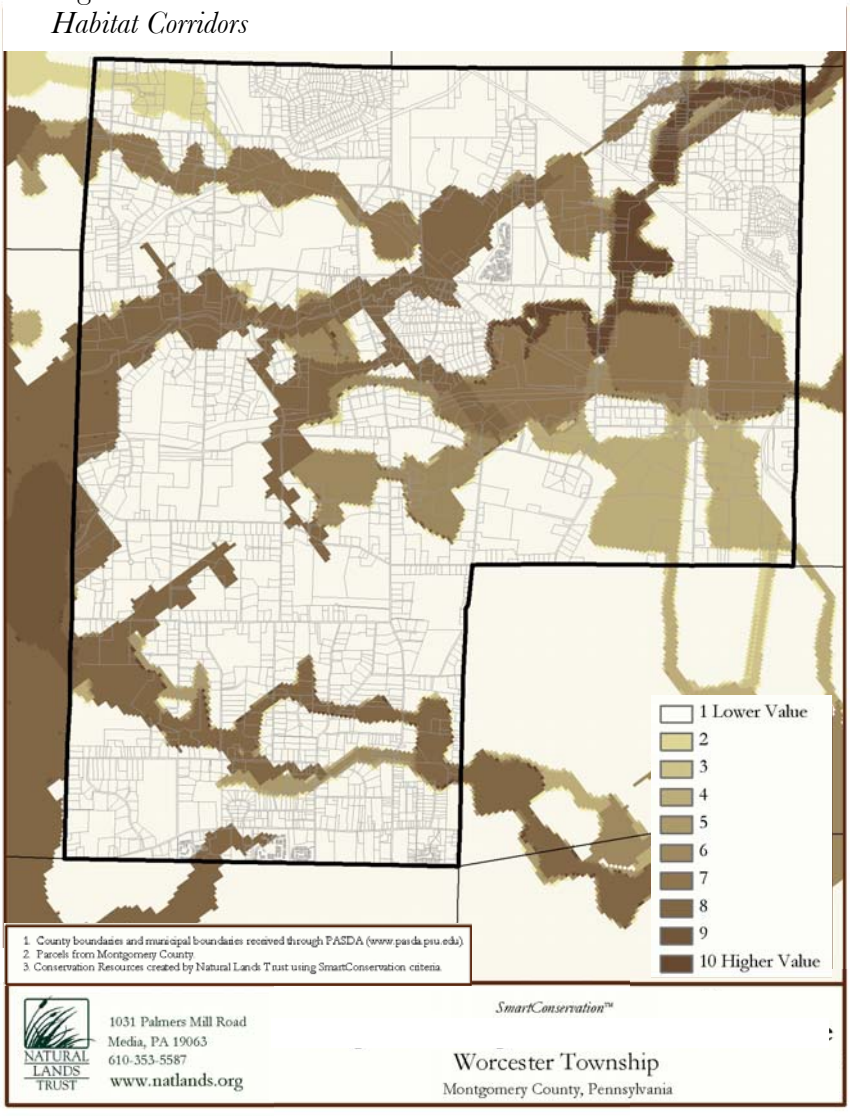
Although there were some limitations based on the available data, the scale of the data grid, and some other software considerations, the result is still useful to identify, in a general way, some of the most valuable habitat corridors in the region.

The map is computer generated on a regional scale, and although it can be viewed on a local level, it is intended to give only a general idea of the location of these corridors. The exact or best location should be verified and adjusted to reflect the actual conditions on the land.

Figure 6 - 15, Habitat Corridors, is an excerpt from this SmartConservation™ regional habitat corridors, or green infrastructure, map.

Considering the amount of development in the area around Worcester, plus the location of Evansburg State Park along the western border, it is not surprising that the map, Figure 6 - 15, shows that Worces-

Figure 6 - 15
Habitat Corridors



A Whitetail Deer buck under wooded cover in Worcester Photo: Scott Rothenberger

ter Township has several habitat corridors connecting through it. The Gwynedd Wildlife Preserve and the Norristown Farm Park are two other large habitat areas that are connected with habitat corridors through Worcester.

The most important corridor areas are:

- from the Gwynedd Wildlife Preserve to the area where the PECO lands split near Berks Road, and along the PECO corridor towards the Whitpain border, and then to Norristown Farm Park
- From Evansburg State Park, along the Zacharias Creek, possibly connecting through Heebner Park and on to the area where the PECO lands split near Berks Road.

Other corridors and areas appear on the map as well, including Peter Wentz Farmstead, more of Heebner Park, Fischer's Park and a corridor from the area where the PECO lands split near Berks Road, through the area near Nike Park, and diagonally across the township to the Methacton High School.

This map indicates which parts of the township would be most valuable for preservation that would protect a habitat corridor or restore a vital link in a corridor. This map is not presented with the developed lands removed because, unlike most other types of preservation, habitat corridor conservation can be accomplished on land that has been developed as well as on protected land. Effective habitat corridor protection can be as simple as establishing a band of naturalized meadow along the rear yards of adjacent homes.

Because habitat corridor protection depends on continuity throughout a region, the use of developed as well as protected land is crucial to maintain this continuity. For this reason, habitat corridors are shown without regard to the developed status of the land.

Redbud tree blossoms Photo: Mark Polatty

FINAL COMPOSITES OF CONSERVATION RESOURCES, PROXIMITY TO PRESERVED RESOURCES & HABITAT CORRIDORS

Finally, all of these conservation resources maps were combined into two master maps, Figure 6 - 16, Final Composite of Regional Resources, Open Space Proximity & Habitat Corridors, and Figure 6 - 17, Final Composite of Township Resources, Open Space Proximity & Habitat Corridors.

The components of these two composite maps were combined as follows.

The Final Composite of Regional Resources, Open Space Proximity & Habitat Corridors consists of:

- 70% of the Composite of Regional Resources,
- 10% of the ranked proximity values, and
- 20% of the habitat corridors values.

The Final Composite of Township Resources, Open Space Proximity & Habitat Corridors consists of:

- 70% of the Composite of Township Resources,
- 20% of the ranked proximity values, and
- 10% of the habitat corridors values.

These maps depict which lands in the township are valuable for overall natural resource protection based on the existence or absence of important resources, their inclusion in a habitat corridor, and their proximity to preserved or protected resources.

HOW TO READ THESE MAPS

These maps are the only ones in this plan which depict the resource values after they have been adjusted for proximity to large preserved or protected resource areas. Therefore, the colors on the map are different from those on other maps.

Of particular note is that the habitat corridors are shown only on the parcels that are already developed. The color of the value of the resources and the color of the habitat corridor could not both be displayed on the same map. Because the location of the corridor is approximate and the values are relatively constant in a linear direction, the habitat corridor values can be mentally projected from the nearby parcels onto the vulnerable parcels.

For example, in Figure 6 - 16 the area around the split in the PECO lands near Berks Road is shown as a high-value area for natural resource conservation. In addition, it can be seen that high-value habitat corridors are also nearby. By mentally projecting the corridors, it can be determined that the PECO split area itself may also be high-value habitat corridor land.

The same technique can be used elsewhere on this map as well as on the map in Figure 6 - 17, which depicts township values.

A pair of foxes in a field in Worcester

Photo: Scott Rothenberger

Figure 6 - 16

Final Composite of Vulnerable Regional Conservation Resources, Open Space Proximity & Habitat Corridors

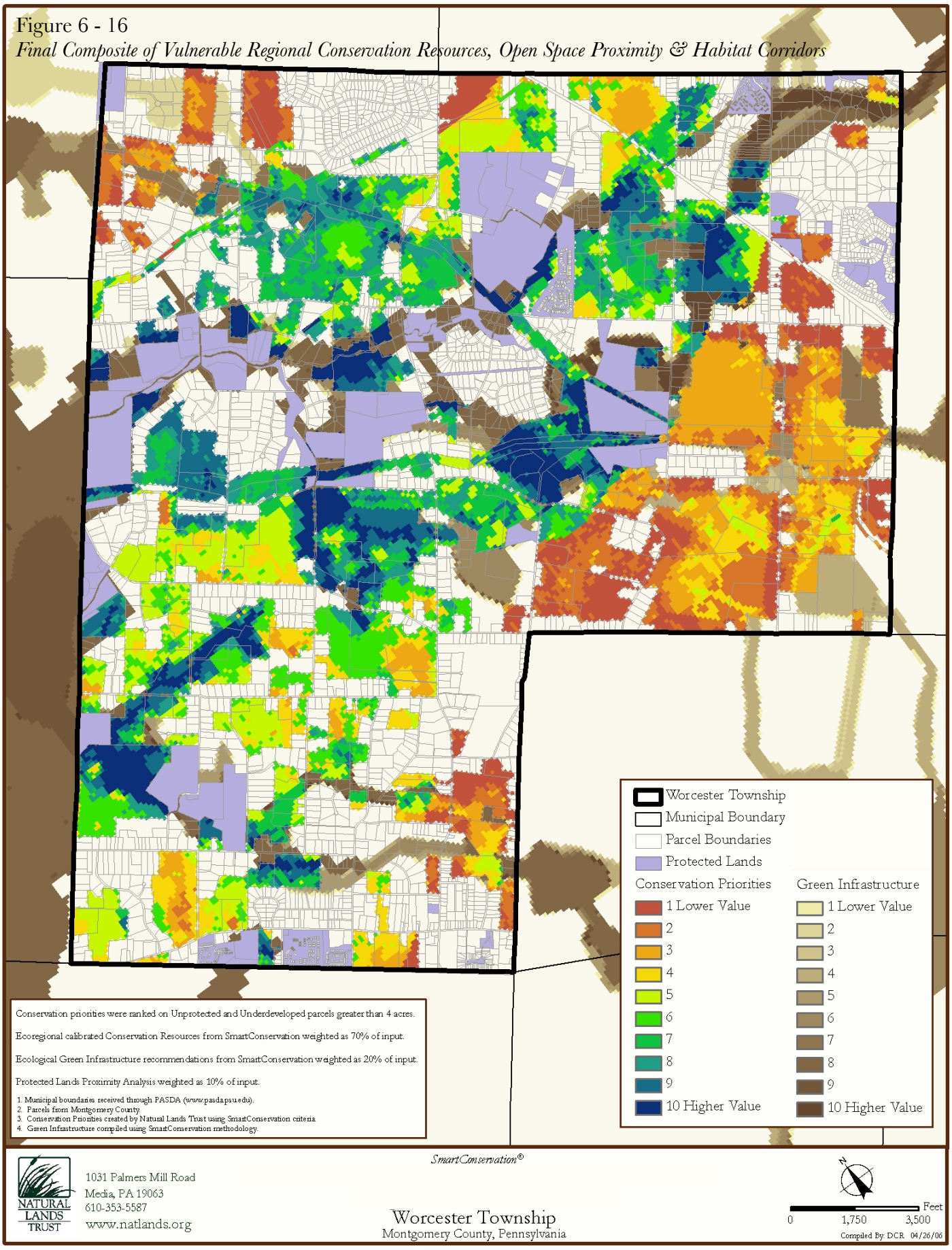
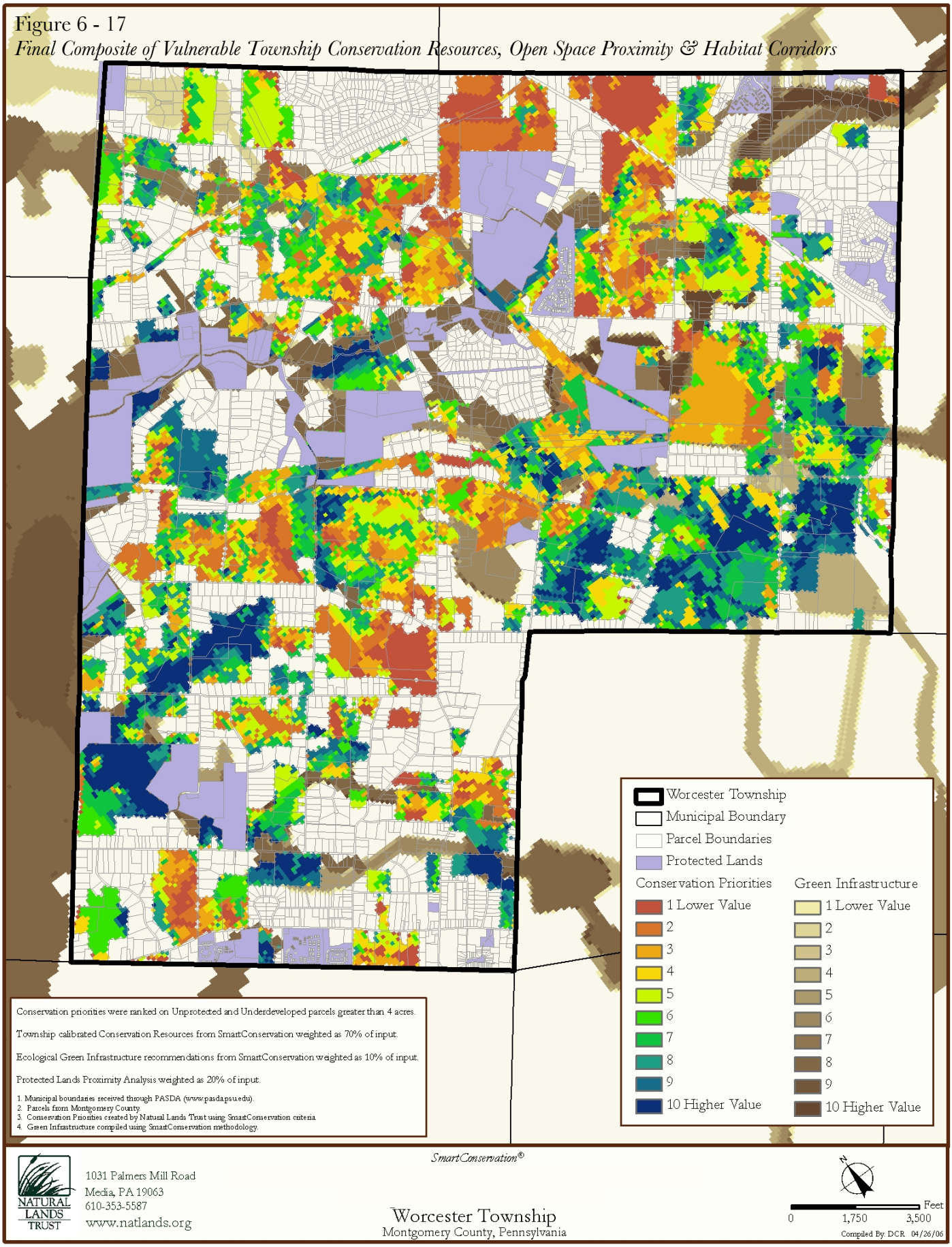


Figure 6 - 17

Final Composite of Vulnerable Township Conservation Resources, Open Space Proximity & Habitat Corridors



SUMMARY

Worcester Township's natural resources have been analyzed in combination in order to identify areas with concentrations of resources. These areas were evaluated according to regional and local values. The results were then prioritized to identify the areas of unprotected resources in the township which would yield the highest concentration or value of resources if protected.

This chapter will serve as the analytical basis for the recommendations and implementation set forth at the end of the plan.

Virginia Bluebells in Evansburg State Park Photo: David Brooks