UPPER PERKIOMEN VALLEY

REGIONAL COMPREHENSIVE PLAN

December 2011

East Greenville Borough • Green Lane Borough • Marlborough Township,
Pennsburg Borough • Red Hill Borough • Upper Hanover Township

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EAST GREENVILLE BOROUGH

GREEN LANE BOROUGH

MARLBOROUGH TOWNSHIP

PENNSBURG BOROUGH

RED HILL BOROUGH

UPPER HANOVER TOWNSHIP

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CHAPTER 1
BACKGROUND AND DEMOGRAPHICS

History of the Region

The first people to inhabit the Upper Perkiomen Valley were the Lenni Lenape Indian tribes. For many years these Native American people lived in peace and harmony with the first European settlers. This made it easy for William Penn to buy the Upper Perkiomen Valley Area in 1684.

The seventeenth century witnessed the Reformation and the Thirty Years War in Europe. European life was in shambles and the new Protestants suffered persecution. Brethren (or Dunkers), Lutherans, members of the Reformed Church, Schwenkfelders, Mennonites, and other religious denominations looked toward Penn's "Holy Experiment" with fervent hope. These European settlers, many of German descent, migrated to present day Upper Salford and Upper Hanover Townships. The rich soil attracted the excellent German farmers. At this time, family or subsistence-type farming was the chief economic activity in the valley. The valley yielded its bountiful resources and in its way helped the fledgling Pennsylvania colony to survive.

In the 1800s industrialization swept the valley and villages formed. Many mills, forges, and small factories flourished along (or near) the Perkiomen Creek, Unami Creek, and other creeks in the area. Farming prospered until the end of this century. Then competition from the rich fields of Lancaster County gradually diminished valley farming. People moved from the farms into the boroughs where the cigar-making industry offered ready money to farmers who had used the barter system most of their lives. By the height of the industrial revolution, the chief economic activity in the valley was cigar-making.

In 1851 the Goshenhoppen and Green Lane Turnpike (presently called Route 29 or Gravel Pike) was completed. It passes on the ridge between the Perkiomen and Macoby Creeks. Its elevation offers drivers a full view of the valley and surrounding hills. The Geryville and Sumneytown Turnpike, finished in 1865, crossed the eastern portion of the valley.

The railroad further opened up the area in 1874. This improvement facilitated easier shipment of manufactured goods, farm produce, and wheat and allowed people easier access to the more densely settled areas of Montgomery County and Philadelphia. The railroads also opened up the area for tourists and weekend visitors.

In 1921 a general strike was instrumental in causing the disruption and decline of the cigar-making industry. Also, the popularity of the cigarette and those efficient cigar-making machines in Philadelphia caused the valley to enter an economic depression. Disaster followed disaster. The Trunk Factory went up in flames on December 17, 1930. Two hundred and fifty people were out of work, and a $400,000 plant was in ashes. In the same decade, the flood of 1936 wiped out almost all of the ice dams on the Perkiomen and the other creeks. The growing popularity of the electric refrigerator prevented this industry from making a comeback. Certainly, the Great Depression had a head start in the Upper Perkiomen Valley.

In 1916 the Camp Delmont site, located in Marlborough Township, was acquired for Boy Scout use. It still provides outdoor adventures for many scouts in the Philadelphia region. In 1939 Montgomery County purchased land in Upper Frederick and Marlborough Townships. Today this land has been developed to serve as a regional county park.

During World War II many of the valley's workers traveled to industrial centers (e.g., Pottstown, Allentown, Lansdale) outside the valley to find employment in the war effort.

In 1954 a fierce controversy gripped the valley. The Philadelphia Suburban Water Company wanted to impound three billion gallons of the Perkiomen Creek's water to supply municipalities at the eastern end of Montgomery County. Valley residents felt their water rights were being confiscated. The citizens of the valley organized, took the issue to court, and lost. The dam was started in 1954. The reservoir and its surrounding parklands are now an important natural resource and recreation area for the valley.

The Upper Perkiomen Valley School District was also formed in 1954. Red Hill, Pennsburg, East Greenville, Green Lane, Marlborough, Upper Hanover, and Hereford Township in Berks County merged to better serve school needs in the valley. A multimillion dollar high school has been constructed, spanning part of Red Hill and Upper Hanover Township.

The history of the Upper Perkiomen Valley shows a progressively greater need for intermunicipal cooperation in more and more areas of government. The citizens, in general, and the public officials, in particular, realize that each community is not an island unto itself and that cooperation can and does benefit all. This regional comprehensive plan further explores that idea.

Municipal Overview

East Greenville Borough

As a village, East Greenville Borough has been in existence since 1750. In 1852 Jacob Hillegass named East Greenville after a great pine tree that was observable from all parts of the surrounding countryside.

By the late eighteen hundreds, the borough had become a railroad town. It contained drug, stock, shoe, and general merchandise stores. In 1875, the year of incorporation, the .61-square-mile borough could boast of lumber, feed, and flour industries. The jeweler, blacksmith, and carriage builder all plied their trades. The borough also contained a wagoner's shop and a "segar" factory.

A water system was laid in 1894, and the Greenville Academy was established in 1854. Later in 1900, a fire company was also organized.

The borough today has little land remaining for development and has focused on revitalization opportunities for several years. Its older but well maintained housing stock provides home ownership for many. East Greenville retains its historical and small town-flavor. Main street shopping consists of a variety of small stores and businesses.

Green Lane Borough

Green Lane, with its .31 square miles, is the smallest municipality in Montgomery County. Many of its residents will tell you how proud they are to live within its borders. The borough was incorporated on December 10, 1875. Its territory was taken solely from Marlborough Township. In 1924 another piece of Marlborough Township was deeded to the borough by philanthropist Isaac R. Smith, giving Green Lane its present 206 acres.

Thomas Mayberry, an early settler and wealthy Quaker of Marlborough Township, built the Green Lane Forge in 1737. This brought prosperity and community identity to Green Lane. "Green Lane" was named for the abundance of evergreens and pines that overhung the highway to the forge.

In 1896 the Tohickon Tribe, Improved Order of Red Men, was organized. They built their own lodge hall known as Red Men's Hall in 1907. The hall housed a bank and store on the first floor, hall with stage on the second, and lodge meeting rooms on the third. Today the Goshenhoppen historians own and operate the building, which contains the historian's museum.

Another historical landmark within the borough is Green Lane Union Sunday School. Local residents affectionately refer to the landmark as

the "chapel." The present building was constructed in 1896 at Third and Main Streets. Religious pageants put on by the Sunday school were first performed in Red Men's Hall and later moved to the firehouse stage when that building was completed.

The Green Lane Fire Company was organized in May 1918. In October 1922 the original firehouse was completed at a cost of $14,000. It was renovated and enlarged in 1949. The fire company dedicated a war memorial to honor World War I veterans and later included World War II as well.

The borough has had only one schoolhouse. It was constructed in 1870 and included grades one through eight. In 1929 a six-room elementary school was built at the intersection of Upper Ridge Road and Main Street. It was enlarged and used until 1990.

Today Green Lane is a small but proud community that retains its family and community orientation. It has several small shops and business and is nestled in some of the most beautiful open areas of Montgomery County. A recent addition to the long list of citizen groups is the Green Lane Adornment Committee. The committee is responsible for decorating Green Lane's streets and enhancing the community. It has planted a permanent Christmas Tree in the Isaac Smith Park and has taken on the responsibility of caring for the War Memorial in the park.

Marlborough Township

Marlborough Township is a 12.6-square-mile community that was established in 1741 when Salford Township was divided into the Townships of Marlborough, Lower Salford, and Upper Salford.

Farming and small trades, such as powder mills and clock-making, were the predominant means of employment before World War II. Like many of its neighboring municipalities, real population increases have taken place in the past 20 years. Today, even in light of some recent residential development, the township retains its rural character. Small communities within the township include the village of Sumneytown.

The township is served by two major roadways. Route 63 runs east-west through much of Montgomery County and connects to the Northeast Extension of the Pennsylvania Turnpike. Route 29 runs north-south between Phoenixville in Chester County, the Tri-Boroughs (East Greenville, Red Hill, and Pennsburg), and into Berks County.

Marlborough Township is part of the largest contiguous forest between Bucks and Montgomery Counties and supports a wide variety of flora and fauna, including some endangered species. The township also contains a 1600-acre Boy Scouts of America camp.

The township has dedicated itself to protecting its environment and natural resources. In September of 1994 a new zoning ordinance was adopted. The ordinance is based on the premise that the land will protect itself. Marlborough also has appointed a creek warden and has created an environmental commission as part of its effort to protect the environment while allowing for responsible development.

As part of the Montgomery County Open Space Program, Marlborough acquired the former King farm on Finland Road. The approximately 85-acre tract, known as Finland Road Park**,** is home to athletic fields, walking trails, and conservation areas. Other preserved lands include Unami Creek Park, Lake Skymount and the Weidner Farm.

Pennsburg Borough

In the eighteenth century Henry Helig and his sons owned nearly all the roughly 305-acre portion of the Upper Perkiomen Valley now known as Pennsburg. His original home, built around 1750, still stands at Fourth and Seminary streets. As the Heligs sold off land, the areas grew into a village of about ten homes, a store, a carpenter's shop, and a blacksmith's shop by around 1840.

The Goshenhoppen and Green Lane Turnpike (now Route 29) opened in 1851, allowing for continuing growth. Nearly two decades later Pennsburg entered the cigar industry. Shortly after, in 1874, a railroad was established through Pennsburg. The railroad ran along Perkiomen Creek, linking Pennsburg to Philadelphia and Allentown. The railroad opened the door for additional industry, commerce, and travel to further encourage the town's already growing economy. The Perkiomen Seminary opened in 1875 and later became the Perkiomen Preparatory School for Boys in 1916.

Continuing growth led to Pennsburg's incorporation as a borough in 1887. In 1899 Pennsburg's first English newspaper, Town & Country, added to the existing German language papers. Fire, water and electric companies existed in the borough by 1910. The railroad, cigar, and other industries propelled further growth in Pennsburg into the mid-1900s.

The Philadelphia Suburban Water Company's damming of the Perkiomen Creek in 1954 created the Green Lane Reservoir, adding to the recreation amenities of the area. During the same year, Pennsburg, Red Hill, East Greenville, and Upper Hanover made an agreement with Green Lane, Marlborough, and Hereford to better serve the educational and schooling needs of the area's residents.

Today, the borough retains its small-town flavor, and its older housing stock remains in good repair. Also, a small community shopping center is located in the borough and serves many of the residents' shopping

needs. It should be noted that the three contiguous Boroughs of East Greenville, Pennsburg, and Red Hill are very similar in their makeup and historic backgrounds. To many, these three small communities are the gateway to some of the rural areas of Berks and Lehigh Counties.

Red Hill Borough

The land of Red Hill was influential in the naming of the community. It was named after the color of the soil. The.78-square-mile borough was incorporated in 1902. At that time it became an individual municipality, separating from Upper Hanover Township. Red Hill's original name was Hillegassville, after the family who originally owned the land.

In the 1800s Red Hill's primary businesses were a general store, a coffin making shop, and a hotel (Red Hill Hotel). Also in its early days, the railroads helped connect the area and its products to other communities, including Philadelphia. A major industry at this time was cigar-making.

The borough today retains its small-community atmosphere and is primarily residential with small businesses and some industry. Red Hill is still growing, despite the small land area. Red Hill Estates, Inc., a mobile home zoned district, is still being developed. Due to this section of Red Hill more roads have been built and Sixth Street on the west side has been completed.

Red Hill is home of the Upper Perkiomen Valley Library, the Upper Perkiomen Valley High School, and the Upper Perkiomen Valley Ambulance. Red Hill Fire Company is also an important community organization.

Residents enjoy the view of the Green Lane Reservoir. Additional open space property has been acquired with a joint effort between Upper Hanover Township and the borough. Also, another pavilion has been added to the Red Hill Park, and new playground equipment has been installed.

Upper Hanover Township

Prior to 1741 Upper Hanover was a part of Hanover Township along with Douglass, Pottsgrove, and New Hanover Townships and the Borough of Pottstown. When Upper Hanover was established in 1741, it already contained the three villages of Palm, Kleinville, and Hillegassville, in addition to the settlements which now constitute the Boroughs of Pennsburg, Red Hill and East Greenville.

In the township's early days, Upper Hanover was settled almost entirely by German immigrants, part of the large wave arriving from Philadelphia in the mid-eighteenth century. The township's rich soil attracted the excellent German farmers. Industrial activity was second only to agricul-

ture in importance in this early period. The primary industry at the time was building materials. This was made relatively simple by utilizing the Hosensack Hills, which provided granite boulders that were split up into building materials. Water power was available from the Perkiomen Creek, which flows south through Upper Hanover Township. Flowing a distance of 7 miles, are the river-propelled water wheels for five grist-mills and four saw mills.

In 1851 the Goshenhoppen and Green Lane Turnpike (presently called Route 29 or Gravel Pike) was completed. The Geryville and Sumney-town Turnpike, finished in 1865, also crossed the eastern portion of the township. The railroad further opened up the area in 1873. The line was extended to Emmaus in 1874. By 1878 mail service, via the railroad, reached the train stations in Upper Hanover Township.

Livestock arrived on the rail cars for the large, public auctions in the Township. Lumber, coal, and raw materials to supply the local factories arrived by train. Finished goods, milk, and vegetables where shipped to the city in the same way.

With the railroad, travelers were able to enjoy a much easier commute to the popular township recreation destinations.

The railroad also brought the ice industry to the township. The close proximity to the exceptional waters of the Perkiomen Creek and access to the railroad made ice making a major industry between 1890 and the early 1920's. The largest icehouse built in Upper Hanover Township was the structure erected in Palm by the Hancock Ice Company. Built in 1897, it was 311 feet long, 90 feet wide and 42 feet high. The coming of electric freezers made the ice industry obsolete and the flood of 1935 wiped out almost all of the ice dams on the Perkiomen Creek that had once supported the ice industry.

During World War II many of the valley's workers traveled to industrial centers (i.e. Pottstown, Allentown, Lansdale, etc.) outside the valley to find employment in the war effort.

In 1950 a fierce controversy gripped the valley. The Philadelphia Subur-ban Water Company wanted to impound three billion gallons of the Perkiomen Creek's water to supply municipalities at the eastern end of Montgomery County. Valley residents felt their water rights were being confiscated. The citizens of the valley organized, took the issue to court, and lost. Construction on the dam started in 1954. The reservoir and its surrounding parklands are now an important landmark and recreation area for the valley.

In 1948, Upper Hanover Township had a total of nine schoolhouses. Though it had been discussed on numerous occasions, the formation of

the Upper Perkiomen School District was still several years away. Schools in East Greenville and Pennsburg were growing, but student enrollment in Upper Hanover was waning. Five of the schoolhouses, one dating back to 1855, were sold in 1948.

Today Upper Hanover is the fourth largest municipality in Montgomery County. The township remains a highly rural and agricultural area. Many large parcels remain as farms, vacant land, large-lot rural residential, or woodland properties. Upper Hanover's significant industrial plants also are located on large parcels of land. Shopping centers, stores, and offices are concentrated within the three centrally located Boroughs of East Greenville, Pennsburg, and Red Hill—creating a small-town environment.

Upper Hanover has convenient regional transportation access via Routes 29, 100, and 663, which are very important for the township's industrial facilities. The township also has substantial natural resource areas. A major recreational attraction is the Green Lane Reservoir and the surrounding county parkland. Upper Hanover also recently preserved Mill Hill in partnership with the Boroughs of East Greenville and Red Hill.

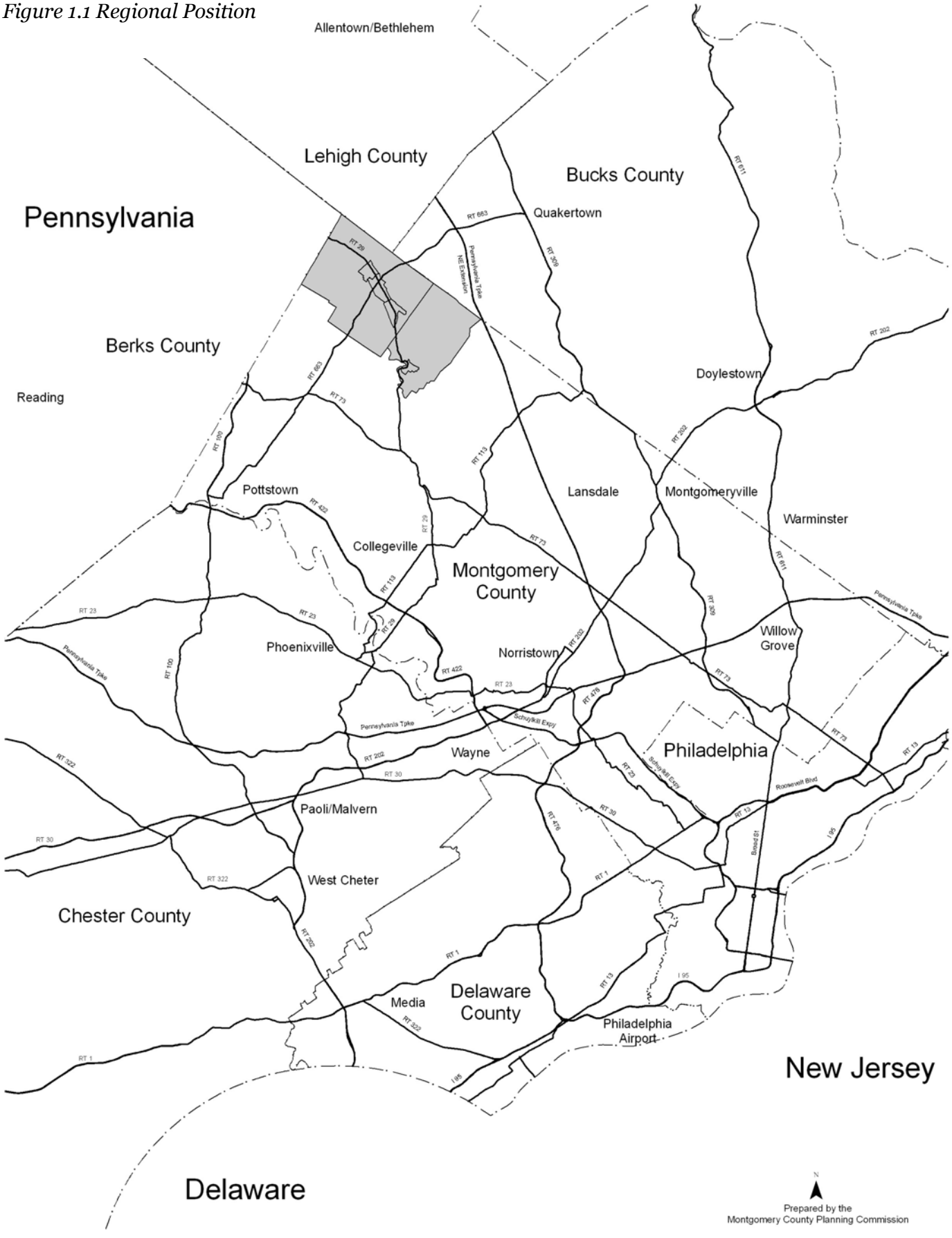
Regional Setting

The Upper Perkiomen Valley is located in the northwestern region of Montgomery County, adjacent to Berks, Lehigh, and Bucks Counties. It is approximately 43.2 miles northwest of Philadelphia and 22.1 miles south of Allentown. (See Figure 1.1 for the regional position of the Upper Perkiomen Valley.) The valley is approximately 36.22 square miles in size and includes six municipalities: Marlborough and Upper Hanover Townships and the four Boroughs of East Greenville, Green Lane, Pennsburg, and Red Hill.

The Upper Perkiomen Valley, like the rest of Montgomery County, is considered part of the Philadelphia metropolitan region. However, the valley's proximity to Routes 29, 663, 100, and the Northeast Extension of the Pennsylvania Turnpike provides convenient access to other major communities. These include Allentown, Reading, Pottstown, King of Prussia, the North Penn area of Montgomery County, and the Quakertown area in Bucks County. Also, a number of large industries within the valley attract a significant number of people from surrounding communities.

As influences from the greater Philadelphia area to the south and Allentown to the north begin to converge in the Upper Perkiomen Valley, growth pressure has been increasing and should remain steady for the near-term. However, the Upper Perkiomen Valley still has a rural quality rather than a suburban one. Many large parcels remain as farms, vacant

Figure 1.1 Regional Position



land, large lot rural residential, or woodland properties. The valley's industrial facilities are generally large plants located on large parcels of land rather than in industrial parks. Shopping centers, stores, and offices are concentrated within the four centrally located boroughs, creating a small-town environment.

The entire valley is located within the Perkiomen Creek Basin. The river valleys of the Perkiomen Creek and its tributaries are dominant natural features within the valley. They provide tremendous beauty that is highly valued by residents. Rolling farmland and stream corridors comprise approximately two-thirds of the valley's landscape. The other third of the valley's landscape is dramatically different. It contains boulder fields, steep slopes, and woodlands, due to its diabase geology. The Mill Hill area in Upper Hanover and the Unami Creek Valley in Marlborough have the highest concentrations of these natural features within the Upper Perkiomen Valley and are important natural areas for the metropolitan region.

Demographics

This section looks at the population and economic characteristics of the Upper Perkiomen Valley. It presents a general view of the existing and projected conditions in the valley. Statistics are provided for each of the valley's six municipalities, the entire Upper Perkiomen Valley, and the general trends occurring in Montgomery County and in the Philadelphia Primary Metropolitan Statistical Area (PMSA). (The PMSA includes the nine counties of Montgomery, Philadelphia, Delaware, Chester, and Bucks in Pennsylvania and Salem, Gloucester, Camden, and Burlington Counties in New Jersey.)

The regional influences of the Allentown, Bethlehem, Easton metropolitan area also were considered for the Upper Perkiomen Valley, given its proximity to the Lehigh Valley. Because these influences do not significantly alter the general demographic trends of the Upper Perkiomen Valley from the current statistics available, the focus of this report will be the Philadelphia region.

POPULATION

Figure 1.2 shows the population change in the Valley and in each of its six municipalities between 1990 and 2010. The Upper Perkiomen Valley's population grew by approximately 24.4 percent, or 3,794 persons, between 1990 and 2010. The majority of this growth (16.4% and 2,723 persons) occurred between 2000 and 2010 with Upper Hanover Township and Pennsburg Borough having the most significant gains. Upper Hanover added 1,579 persons and Pennsburg added 1,111 persons. By contrast, Montgomery County only had a growth rate of 6.8 percent between 2000 and 2010. While the Upper Perkiomen Valley grew at a

Figure 1.2 Population Change

Municipality	1990	2000	2010	% Change 1990-2000	% Change 2000-2010
East Greenville Borough	3,117	3,103	2,951	-0.4%	-4.9%
Green Lane Borough	442	584	508	32.1%	-13.0%
Marlborough Township	3,116	3,104	3,178	-0.4%	2.4%
Pennsburg Borough	2,460	2,732	3,843	11.1%	40.7%
Red Hill Borough	1,794	2,196	2,383	22.4%	8.5%
Upper Hanover Township	4,604	4,885	6,464	6.1%	32.3%
Upper Perkiomen Valley	**15,533**	**16,604**	**19,327**	**6.9%**	**16.4%**

Source: U.S. Census

higher rate than the county, the region's smaller population base tends to exaggerate growth rates. Relative to the county's other municipalities, Upper Hanover and Pennsburg ranked 13th and 18th, respectively, in the number of persons added between 2000 and 2010. While the region did experience some added growth pressure during this period, the highest growth communities grew by more than 3,000 persons each. Therefore, the Upper Perkiomen Valley still does appear to be directly within the path of growth as compared to other areas of Montgomery County, especially given the current economic conditions and the state of the housing market.

POPULATION FORECASTS

Figure 1.3 shows population forecasts for the years 2020 and 2030 for the Upper Perkiomen Valley as compared to the current 2010 population. These figures were forecasted by the Montgomery County Planning Commission (MCPC), based on regional forecasts by the Delaware Valley Regional Planning Commission (DVRPC).

Figure 1.3 Population Forecasts

				Change			
Municipality	**2010**	**2020**	**2030**	**2010-2020**	**#**	**2020-2030**	**#**
East Greenville Borough	2,951	3,211	3,272	8.8%	260	1.9%	61
Green Lane Borough	508	591	593	16.3%	83	0.3%	2
Marlborough Township	3,178	3,734	3,989	17.5%	556	6.8%	255
Pennsburg Borough	3,843	3,534	3,616	-8.0%	-309	2.3%	82
Red Hill Borough	2,383	2,458	2,509	3.1%	75	2.1%	51
Upper Hanover Township	6,464	7,824	9,098	21.0%	1,360	16.3%	1,274
Upper Perkiomen Valley	19,327	21,352	23,077	10.5%	2,025	8.1%	1,725
Montgomery County	799,874	842,452	878,158	5.3%	42,578	4.2%	35,706

Source: Delaware Valley Regional Planning Commission, 2007

According to these forecasts, the Upper Perkiomen Valley will experience a moderate future increase in population. The largest increase is forecasted to occur in Upper Hanover Township with the township receiving 70 percent of the valley's population growth between 2010 and 2030.

It should be noted, however, that these population forecasts were produced in 2007, just prior to the start of the mortgage woes of 2008 and the collapse of the housing market in 2009. For example, units built in the Upper Perkiomen Valley hit a high this decade in 2006 when 246 units were built. The two following years, the region had 103 units built in 2007 and 112 built in 2008. By 2009 that number was down to 46 units built. While it is understood that some degree of "ups and downs" in the housing market are factored into the forecasts, it is unclear if the current downturn in the housing market may last longer than normal. Therefore, the population forecasts may be overstating the region's 2020 and 2030 population. These numbers should be used with caution until new forecasts are available that more completely consider the impacts of the current housing crisis.

AVERAGE HOUSEHOLD SIZE

A household is defined as one or more persons who live together in a dwelling unit. Figure 1.4 shows the average number of persons living in a household for the municipalities of the Upper Perkiomen Valley and Montgomery County. As shown, average household size continued to decline in the valley between 2000 and 2010 in every community but Pennsburg Borough.

Figure 1.4 Average Household Size

Municipality	2000	2010	% Change 00-10
East Greenville Borough	2.76	2.64	-4.3%
Green Lane Borough	2.53	2.41	-4.7%
Marlborough Township	2.63	2.48	-5.7%
Pennsburg Borough	2.59	2.70	4.2%
Red Hill Borough	2.44	2.17	-11.1%
Upper Hanover Township	2.81	2.75	-2.1%
Upper Perkiomen Valley	**2.63**	**2.58**	**-1.8%**
Montgomery County	*2.54*	*2.53*	*-0.4%*

Source: U.S. Census

These declines in average household size are part of a trend which has been occurring virtually everywhere in the United States since the first U.S. Census in 1790. Several factors are involved. First, people have been delaying or foregoing marriage and the formation of families. Second, people have tended to have fewer children over time. Third, an aging population will lead to more one-person households and households without children. Lastly, there are more breakups of families, especially through divorce and separation, resulting in lower numbers of people living together.

Of the communities in the Upper Perkiomen Valley, Pennsburg Borough was the only one to increase its average household size. Conversely, Red Hill Borough had a significant decrease (-11.1%) in average household size. While a number of factors could be at play in these two communities, changes in age characteristics and household type may contribute to an explanation. For example, Red Hill Borough increased its population of those aged 65 and older by 57 percent compared to only an 8 percent increase in Pennsburg. Additionally, Red Hill had a 16 percent decrease in those under aged 17, while Pennsburg Borough had an increase of 52 percent. For the region as a whole, Red Hill had the smallest percentage of households comprised of a married couple with kids and had the most one-person households. Pennsburg was the only community that had an increase in the percentage of family households.

INCOME

Figure 1.5 shows the median household income and per capita income for each of the valley's municipalities in 2009. In 2009 the median household incomes in the townships were greater than the boroughs. In the Upper Perkiomen Valley, Upper Hanover had the highest median household income at $74,457.

Figure 1.5 Median Household Income

Municipality	Median Household Income	Per Capita Income
East Greenville Borough	$56,400	$24,046
Green Lane Borough	$66,500	$22,086
Marlborough Township	$73,350	$32,845
Pennsburg Borough	$58,235	$23,693
Red Hill Borough	$51,544	$26,921
Upper Hanover Township	$74,457	$34,622

Source: U.S. Census 2005-2009 ACS

EMPLOMENT FORECASTS

Employment in the Upper Perkiomen Valley is expected to grow by approximately 11.4 percent over the next 20 years, mostly in the townships (see Figure 1.6). These forecasts are provided by the Delaware Valley Regional Planning Commission and are based on countywide figures applied at the municipal level.

Figure 1.6 Employment Forecasts

Municipality	Year 2000 Estimate	Year 2010 Forecast	Year 2020 Forecast	Year 2030 Forecast	% Change 2000-2030
East Greenville	904	911	914	918	1.53%
Green Lane	407	391	392	392	-3.83%
Marlborough	500	553	589	620	19.35%
Pennsburg	1,538	1,664	1,663	1,661	7.41%
Red Hill	744	781	781	780	4.62%
Upper Hanover	4,252	4,718	5,226	5,678	25.11%
Upper Perkiomen Valley	8,345	9,018	9,565	10,049	16.96%
Montgomery County	492,677	521,200	549,269	574,251	14.21%

Source: Delaware Valley Regional Planning Commission

CHAPTER 2
EXISTING LAND USE

Introduction

This chapter focuses on the types and amounts of existing land uses within the Upper Perkiomen Valley and provides a "snapshot" of the region's existing characteristics. This snapshot of current land use patterns is a reflection of historical economic, social, and technological conditions. In addition, these existing land use patterns also provide the foundation for future growth and preservation. Therefore, in order to develop sound future land use policies, it is necessary to understand and acknowledge the context of existing development. Tracking existing land use changes over time also allows us to understand how the region is changing and to identify trends.

Land Use Categories

For the purposes of this chapter, existing land use was divided into 16 specific categories. These are listed below. A map of existing land use for the Upper Perkiomen Valley is shown in Figure 2.2. The land use category assigned to each property was initially based on the land use classifications used by the Montgomery County Board of Assessments (BOA) which assigns categories for taxing purposes. The BOA classifications, however, were adjusted to be more meaningful for land use planning. For example, a private golf course is a commercial land use for taxing purposes but is considered private open space for land use planning.

As mentioned above, 16 specific existing land use categories were used for planning purposes. These are grouped into three general categories as listed below:

Residential Categories

Country Residence	Twin/Duplex	Single-Family Attached
Single-Family Detached Dwelling		Multi-family Dwelling
Mobile Home Park		

Nonresidential and Mixed-Use Categories

Retail	Office	Utilities
Mixed Use	Industrial	Institutional

Open Space, Agriculture, and Undeveloped Categories

Public Open Space	Private Open Space
Agriculture	Undeveloped Land

Land Use Consumption

The existing land use map (Figure 2.2) shows the geographical distribution of existing land uses throughout the region. It is not surprising to see that higher density residential and nonresidential uses are primarily within and around the boroughs and villages. It is also not surprising that farmland, larger residential lots, and vacant properties are located in the townships.

Figures 2.1 and 2.3 identify existing land use by acreage as well as by the percent of the region's total area. Figure 2.1 shows the three general groupings of existing land use while Figure 2.3 shows all 16 categories.

As shown in Figure 2.1, nearly sixty percent of the land in the Upper Perkiomen Valley is categorized as open space, agriculture, or undeveloped. Furthermore, agriculture consumes nearly one-quarter of the region's land and is the single largest land use category at 5,252 acres. Together, the six residential uses comprise about thirty-four percent, or 7,525 acres, of the land in the region. The largest residential land use is single-family detached dwellings. This land use category consumes the most land after agriculture at nearly 4,300 acres or nineteen percent of the region. The remaining eight percent of the region is occupied by non-residential uses. The largest non-residential use is industrial land, consuming 671 acres or three percent of the region.

Figure 2.1 General Categories of Existing Land Use

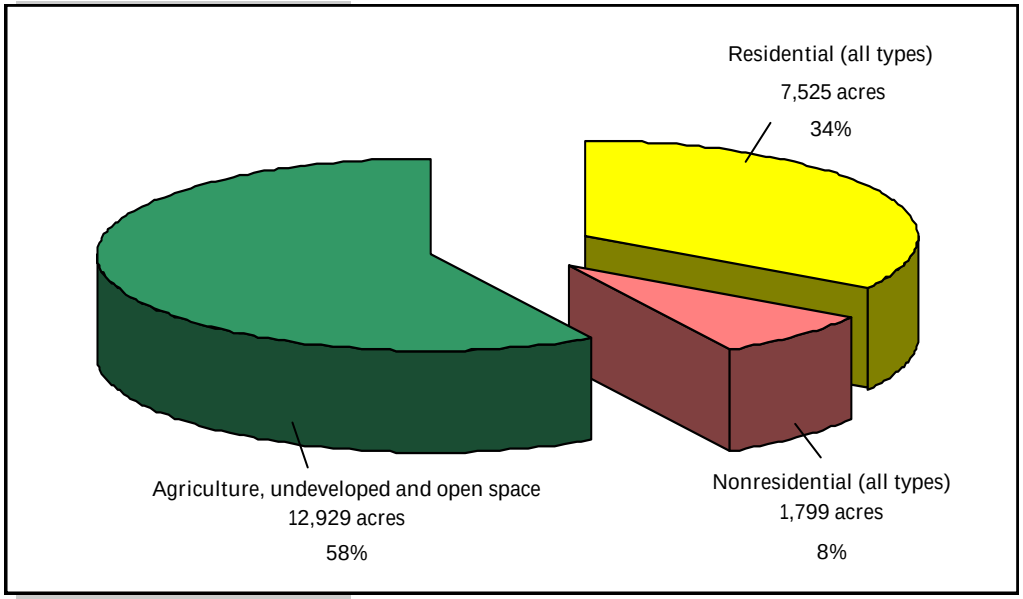


Figure 2.3 shows the acreage and percent breakdown for each of the sixteen land use categories within the region.

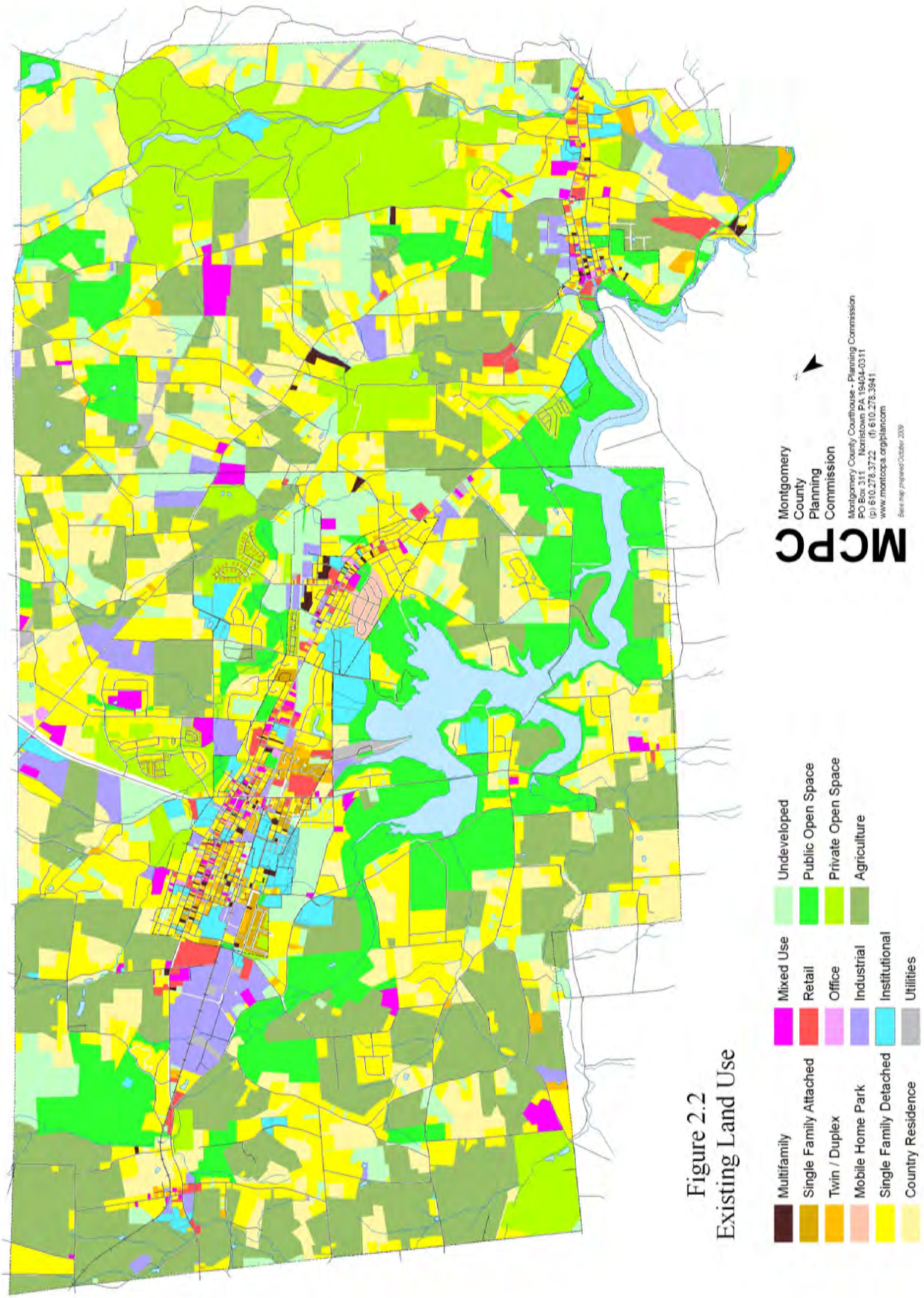
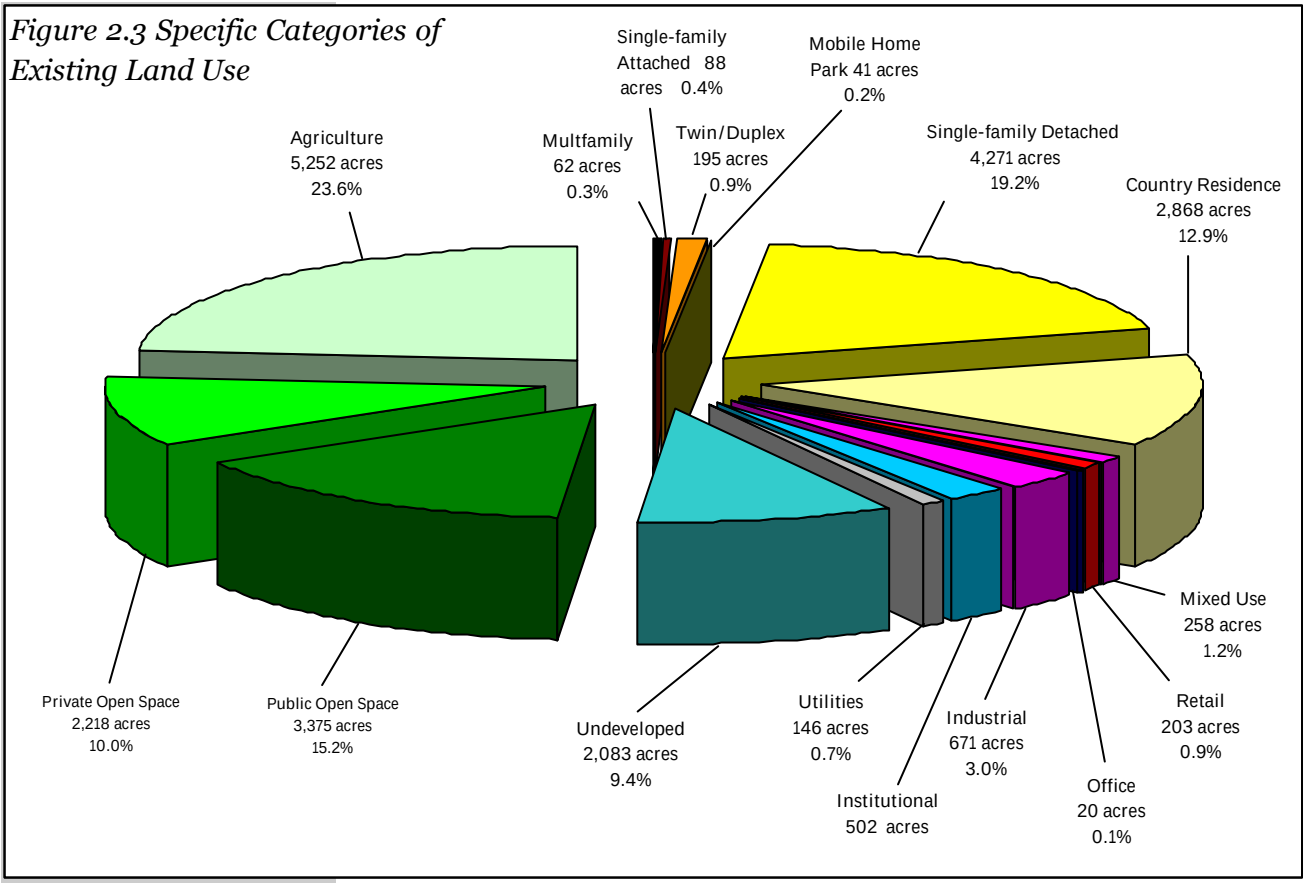


Figure 2.2
Existing Land Use
Undeveloped
Public Open Space
Private Open Space
Agriculture
Mixed Use
Retail
Office
Industrial
Institutional
Utilities
Multifamily
Single Family Attached
Twin / Duplex
Mobile Home Park
Single Family Detached
Country Residence
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/planncom
Base map prepared October 2009

Figure 2.3 Specific Categories of Existing Land Use



The following sections define each of the land use categories and provide a more detailed breakdown of the categories based upon the three use types (residential, nonresidential, and open space)

Residential Categories

Six residential categories are used. These categories are defined according to the number and arrangement of dwelling units. A dwelling unit is 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. These categories include all lots that have been developed solely for residential purposes. Lots with both residential and nonresidential uses are covered under mixed-use in the non-residential category. The six residential categories are described as follows.

Single-Family Detached (SFD). A single-family detached dwelling is a building designed for and occupied exclusively as a residence for one family and not attached to any other building or dwelling unit. There are two categories that describe single family detached dwellings, single-family detached and country residence. For the purposes of this chapter, the single-family detached category refers to a single-family detached dwelling located on a lot of less than 5 acres.

Country Residence. A country residence is the second type of single-family detached. For this chapter, a country residence is defined as single-family detached dwelling located on a lot greater than 5 acres but less than 20 acres.

Twin/Duplex. A twin or duplex is two dwelling units located in one building that is not attached to any other building. A twin has two dwelling units placed side-by-side and joined to each other by a vertical common wall. Duplexes have one dwelling unit placed above the other and share a common horizontal partition (floor/ceiling).

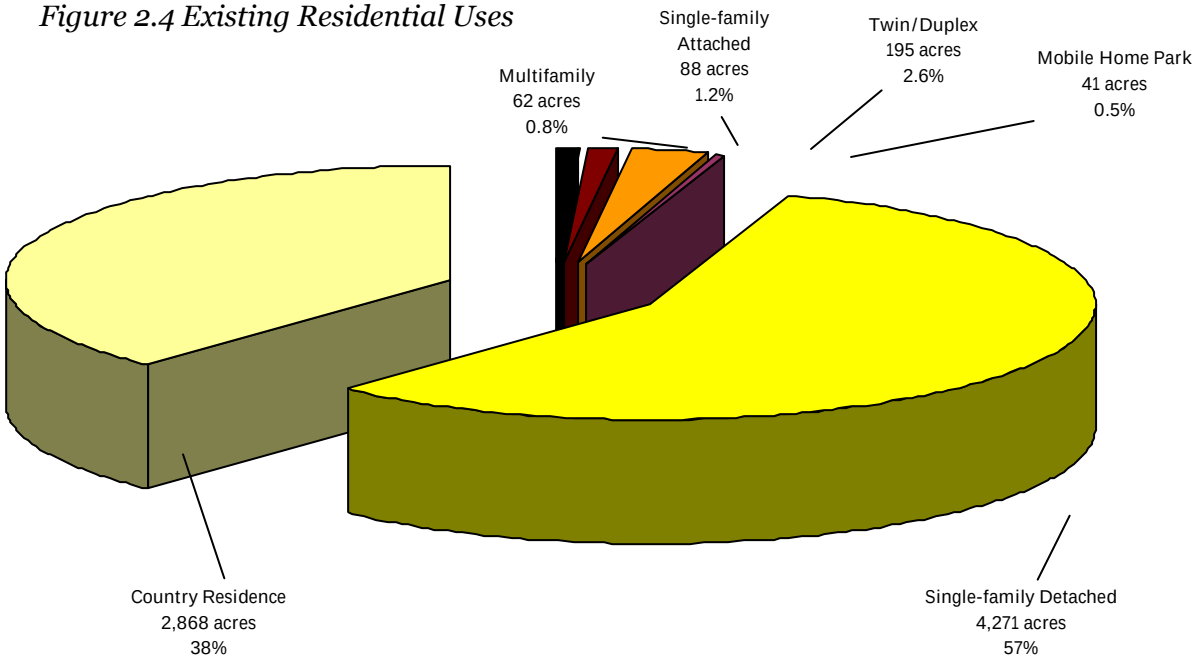
Single-Family Attached (SFA). A single-family attached dwelling is often defined as a dwelling unit with independent outside access with no other dwelling units located directly and totally above or below it. Single-family attached units have party walls in common with at least one but not more than three adjacent similar dwelling units. They also contain at least three dwelling units. Townhouses, row houses, triplexes, and quadruplexes are typical single-family attached dwelling units.

Multi-family. Multi-family residential uses are dwelling units located in a detached residential building containing three or more dwelling units, usually referred to as apartments. Typically, they are located entirely above or below one another, may share outside access and/or internal hallways, lobbies, or similar facilities, and share the lot on which the building is located. Multi-family development is usually under one operating unit as a rental or condominium property and includes garden apartments, flats, and multifamily conversions from single-family detached dwellings.

Mobile Home Park. A mobile home park is a distinct classification identified in the Pennsylvania Municipalities Planning Code. A mobile home park is a parcel of land that contains lots rented under one operating unit for the placement of mobile homes. Typically, residents own their mobile home. When mobile homes are place on lots owned by the mobile home owner, it is considered a single-family detached dwelling.

Figure 2.4 shows how the various land uses are distributed within the residential land use category. As expected, single-family detached occupies the most residential land at 4,271 acres or fifty-seven percent. Country residence is the next highest at 2,868 acres. Most of these two uses are located within Marlborough and Upper Hanover townships. None of the remaining residential land uses account for more than three percent of residential land uses.

Figure 2.4 Existing Residential Uses



Nonresidential Categories

The existing nonresidential and mixed-use lands are categorized as mixed use, retail, office, industrial, institutional, or utilities. The categories are described as follows:

Mixed Use. This category identifies individual properties having more than one land use. The property has one or more nonresidential uses and may or may not include a residential component. Within the boroughs, mixed uses often combine stores and dwellings or stores and offices.

Retail. Retail includes stores, restaurants, repair shops and garages, and a variety of other commercial uses that are frequented by the general public. The Shops at Harleysville is among the largest and most recognizable retail development in the region. Many retail businesses in the boroughs are included under the mixed use category because the retail building also includes offices or dwellings.

Office. The office category includes properties that are developed exclusively for office purposes in addition to other miscellaneous uses such as animal hospitals, funeral homes, and banks. Many office businesses in the boroughs are included under the mixed use category because the office building also contains retail uses or dwellings.

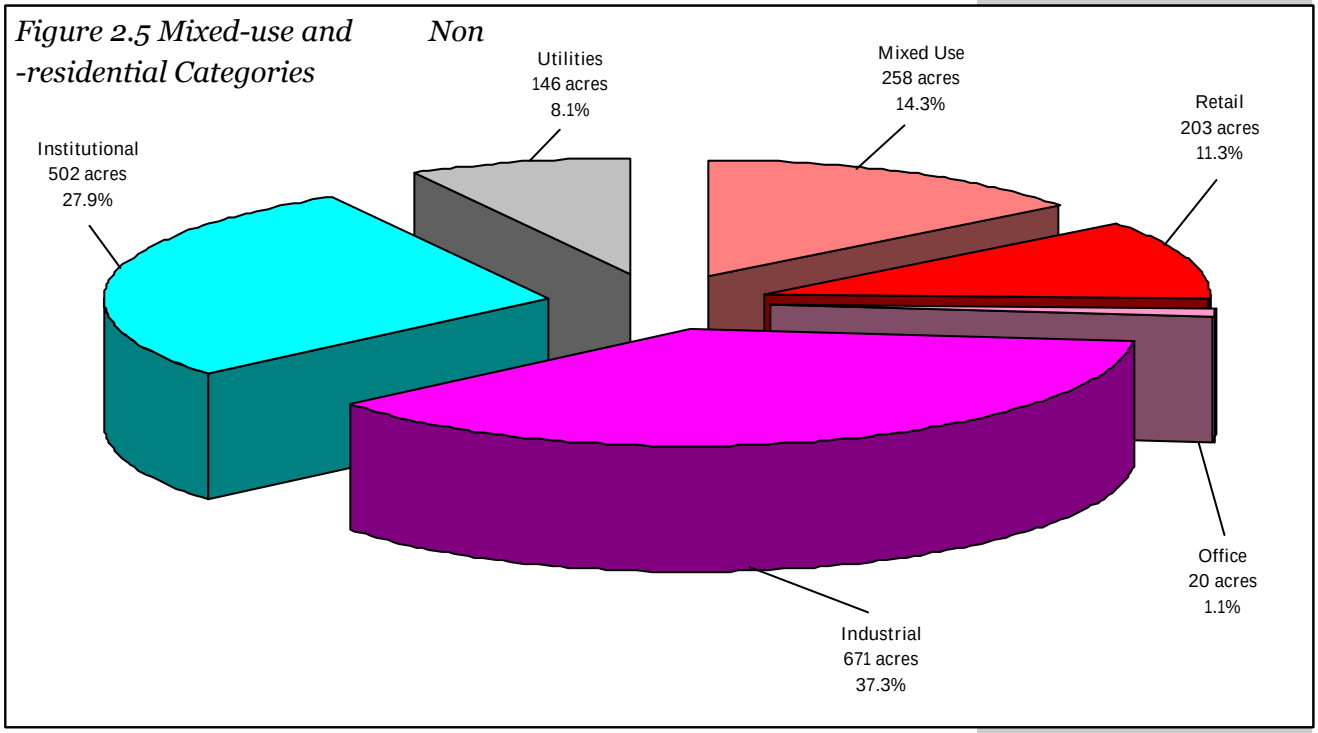
Industrial. This category includes large industrial uses and a variety of smaller uses that are scattered throughout the townships and boroughs.

Institutional. Institutional uses include schools, churches, cemeteries, fire companies, and similar uses.

Utilities. Utilities include primarily sewer and water company properties and gas and electric transmission lines. Large sections of the electric companies' transmission lines and water and sewer lines are located within easements on properties shown under other categories and are not counted under utilities.

Figure 2.5, depicts how the various land uses are distributed within the non-residential land use category. Industrial land uses comprise thirty-seven percent of nonresidential land uses by area with over 671 acres devoted to this use. Institutional is ranked second at nearly twenty-eight percent and 502 acres. Mixed Use and Retail are the last two uses with the nonresidential category that are over ten percent at fourteen and eleven percent, respectively.

Figure 2.5 Mixed-use and Non -residential Categories



Open Space, Agriculture, and Undeveloped Categories

The existing land use categories distinguish between public open space and private open space. These two categories as well as agriculture and undeveloped land are defined as follows:

Undeveloped. Undeveloped land includes properties designated as vacant land under the Board of Assessment land use classifica-

tions. Larger properties may easily be seen as vacant while other smaller properties may appear to be part of adjoining developed properties. Each parcel is assigned an individual tax parcel number, and it is, therefore, possible for a parcel to be transferred to a new owner as a vacant lot. The smaller properties, however, may not be large enough for independent development.

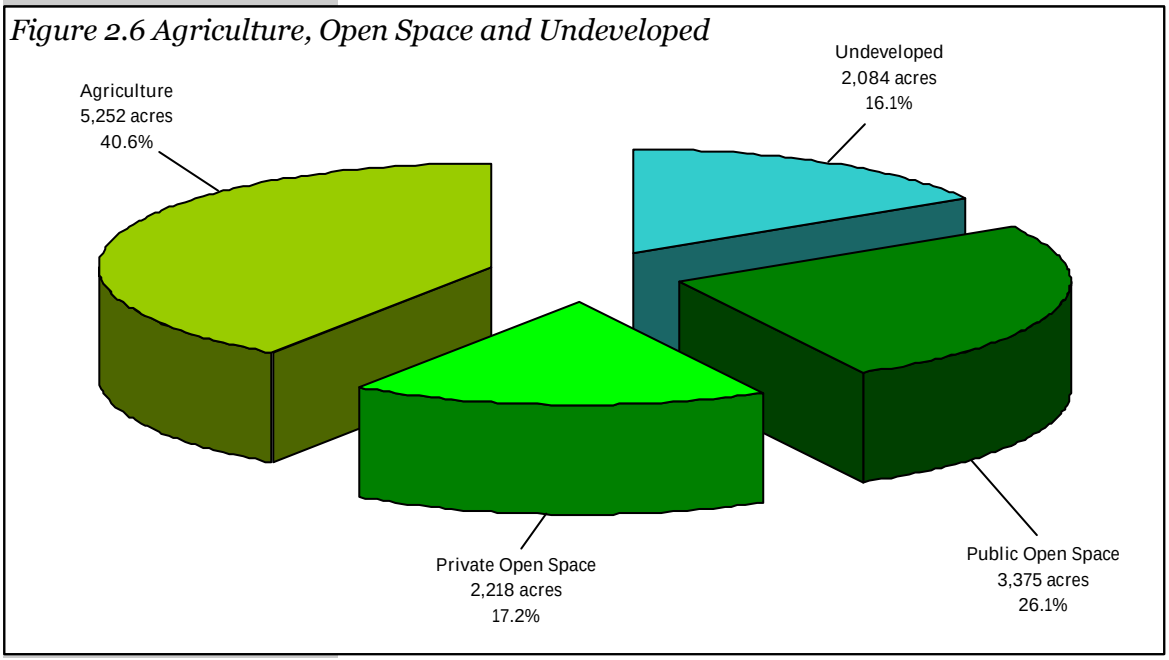
Public Open Space. Public open space includes park, recreation, and open space parcels owned by Montgomery County or one of the municipalities of the region. Public open space is considered to be permanently preserved open space.

Private Open Space. Private open space includes golf courses, camps, and similar uses. Unlike public open space, most of the private open space could be sold by its private owners and/or developed as permitted by zoning.

Agriculture. Agriculture includes parcels larger than 20 acres that are covenanted under Act 319, land where development rights were sold to Montgomery County under the County's Farmland Preservation Program, and other farmland identified from aerial photography and input from municipal officials. Most of the parcels contain a house, but agriculture is the dominant use of the land.

Figure 2.6 depicts how the various land uses are distributed within the open space, agriculture and undeveloped land use category. The largest single land use in the Valley, agriculture, also consumes the most land in this category of land uses at over forty percent. The next largest land use

Figure 2.6 Agriculture, Open Space and Undeveloped

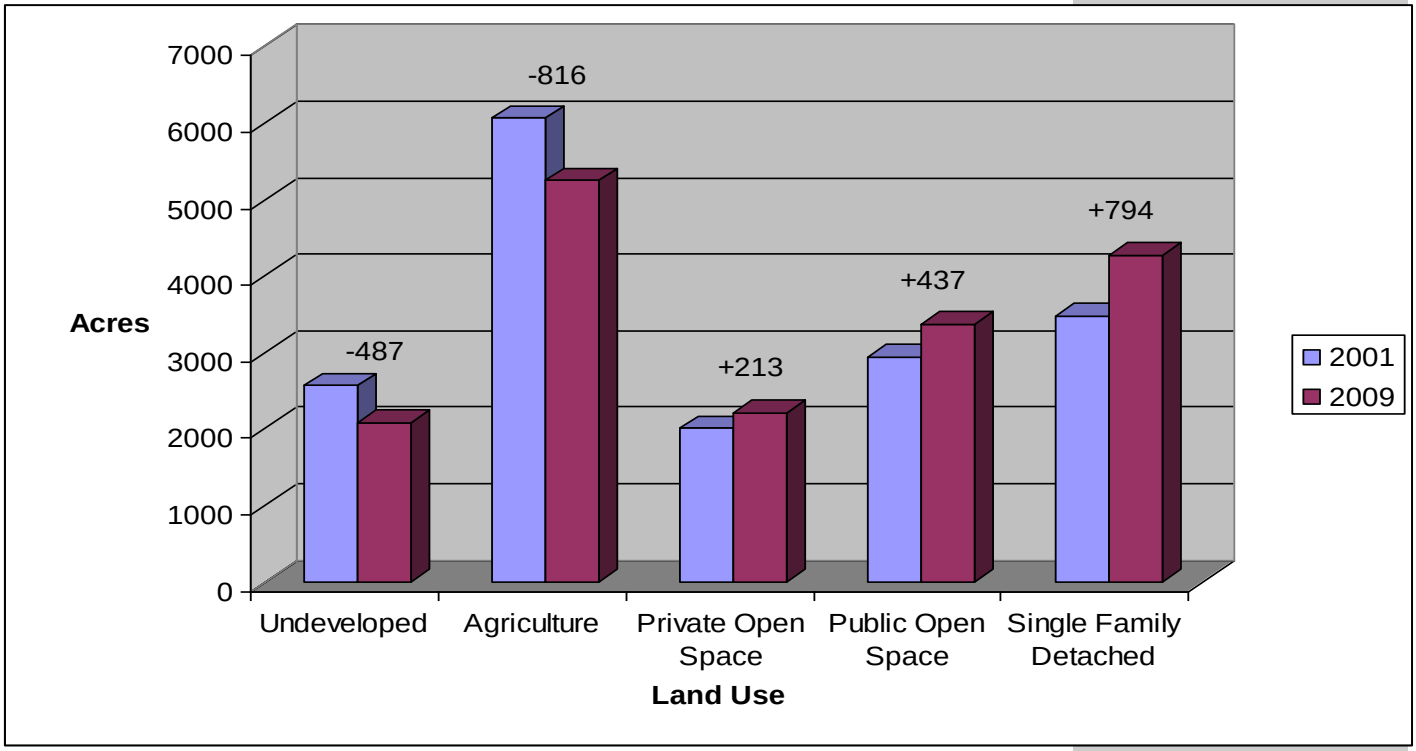


in the open space, agriculture and undeveloped category is public open space. Approximately 3,375 acres of land are preserved as public open space or over one-quarter of the land in this category of land uses. Private open space consumes 2,218 acres or seventeen percent of the area, while undeveloped land covers 2,084 acres or sixteen percent of the open space, agriculture and undeveloped category.

Land Use Changes 2001-2009

Having land use information from 2001 also gives us the opportunity to see how land use has changed over time in the Upper Perkiomen Valley. Figure 2.7 shows the major changes in land use between 2001 and 2009. The two largest losses occurred in undeveloped and agricultural land. Over 1,300 acres of undeveloped and agricultural land were converted to other land uses. However, not all of this land was converted to residential or non-residential uses. The region added roughly 650 acres of public and private open space. This includes land acquired for municipal open space as well as land preserved through the land development process. However, nearly 800 acres of land in the region was converted for single-family detached development.

Figure 2.7 Land Use Changes 2001-2009



CHAPTER 3
GOALS AND OBJECTIVES

Introduction

The Upper Perkiomen Valley is a unified and identifiable region with rolling hills, scenic vistas, meandering streams, historic boroughs and villages, and charming rural character. These features combine to form a unique region with a high quality of life. The goal of the six Upper Perkiomen Valley municipalities is to preserve and protect this quality of life from suburban sprawl. The joint municipal comprehensive plan specifically intends to:

- Address the specific needs and unique conditions of each municipality.
- Accommodate the needs of the existing and future residents of the valley.
- Protect the natural resources of the valley.
- Protect the unique and cherished historical and cultural resources of the valley.
- Encourage new high-quality jobs.
- Support new recreation opportunities.
- Encourage a range of housing options.
- Implement effective growth management techniques to provide for orderly and well-planned development.
- Direct infrastructure improvements to designated growth areas.

Goals and Objectives

Housing Goal

Housing is a basic element of a community's economic health and growth. The Upper Perkiomen Valley will provide adequate housing opportunities for current and future residents.

Objectives

- Concentrate new development in designated growth areas.

- Encourage new housing developments that foster a sense of community and promote a pedestrian-friendly environment.
- Meet fair-share requirements as a region.
- Encourage infill housing to be architecturally compatible with the surrounding neighborhood.
- Encourage housing opportunities for a range of income levels.
- Encourage housing and continuing care opportunities for older adults.

Commercial/Retail Goal

The valley's commercial needs have traditionally been provided for on the boroughs "Main Streets." There is a strong desire within the valley to maintain these areas. However, change is a constant for the valley's shoppers and retailers, and the Upper Perkiomen Valley seeks to encourage economic vitality while meeting the current and future commercial and retail needs of the valley.

Objectives

- Preserve, protect, and enhance existing commercial areas in the boroughs and townships.
- Limit the amount of new commercial and retail development outside of established areas.
- Encourage the creation of jobs that offer sustaining wages.
- Encourage commercial infill development within an established commercial core.
- Encourage commercial and retail uses that, among other things, support outdoor recreation and nature tourism

Office Goal

Our dynamic economy has brought new economic needs and opportunities for the Upper Perkiomen Valley. The valley will encourage office, research lab, and administrative center development in established commercial areas.

Objectives

- Enhance the tax base within the region.
- Provide employment opportunities.
- Provide office space that meets the needs of a range of users.

- Encourage high-quality office, research lab, and administrative center development within appropriate areas in coordination with infrastructure improvements.

Industrial/Light Manufacturing Goal

Industry has been and continues to be an important economic base for the Upper Perkiomen Valley. The valley will continue to encourage industrial development in established industrial areas.

Objectives

- Enhance the tax base within the region.
- Provide employment opportunities.
- Provide for industrial/light manufacturing uses that meet the needs of a range of users.
- Encourage new industrial/light manufacturing uses in designated areas.
- Promote clean and environmentally friendly industrial/light manufacturing uses.
- Encourage the retention and expansion of existing industries in the region
- Promote workforce training and professional development activities that suit the needs of the region's targeted business sectors.

Parks and Recreation Goal

Recreation facilities add to the quality of life within a community. The Upper Perkiomen Valley will provide sufficient recreational opportunities to meet the needs of present and future residents.

Objectives

- Coordinate park and recreational opportunities among the six Upper Perkiomen Valley municipalities.
- Continue to implement the park and recreation goals of the municipal open space plans.
- Provide a network of trails between open space and recreational areas.
- Develop active and passive recreational opportunities within the region.
- Promote the region's natural resources and amenities for the development of outdoor recreation and nature tourism activities.

Open Space Goal

The Upper Perkiomen Valley has long valued its land. Residents of the valley rank preservation and protection of open space and natural resources as their highest priority for the future.

Objectives

- Actively pursue resources to preserve open space in the region.
- Continue to implement the open space goals of the municipal open space plans.

Natural Resource Protection Goal

The valley has unique natural resource areas and significant conservation objectives. Residents of the valley rank preservation and protection of open space and natural resources as their highest priority for the future.

Objectives

- Protect existing groundwater resources.
- Preserve and protect environmentally sensitive areas and natural resources including woodlands, stream valleys, wetlands, floodplains, watersheds, groundwater recharge areas, steep slopes, scenic vistas, vegetation, and wildlife.
- Continue to implement the natural resources goals of the municipal open space plans.

Agricultural Goal

Farming has a long history in the Upper Perkiomen Valley, and the region seeks to encourage and support the preservation of agriculture as a viable industry.

Objectives

- Encourage permanent preservation through participation in county and state agricultural programs.
- Limit new development in designated agricultural areas.
- Encourage and support "farming as a business" in the region by providing opportunities for farmer's markets and community supported agriculture.
- Encourage use of locally grown agricultural products, including "from the field to your plate" restaurant initiatives.

Transportation Goal

Circulation of people and goods is a basic need for a community's economic health and growth. The Upper Perkiomen Valley will provide a safe and efficient transportation system throughout the region.

Objectives

- Identify problematic traffic areas and develop mitigation strategies.
- Encourage sidewalks in new development where appropriate.
- Develop a local and regional trail network.
- Explore options for public transportation that provide residents with access to destinations inside and out the region.
- Consider centralized parking facilities in established commercial areas.
- Pursue transportation improvements that implement the region's Transportation Capital Improvements Program.

Community Facilities Goal

The Upper Perkiomen Valley will serve the needs of current and future residents regarding public sewer and water systems, emergency services, schools, and library facilities. These services greatly impact the quality of life and safety of the valley's residents.

Objectives

- Consider sharing municipal services/facilities.
- Use public sewer and water systems efficiently by extending these systems only within designated growth areas.
- Protect surface water quality and ensure sufficient water supply by using public sewer and water systems effectively.
- Support existing emergency services and extend and improve their capacities to serve a growing population.
- Cooperate with the school district and library to encourage appropriate locations of new or expanded facilities.

Quality of Life

In order for the Upper Perkiomen valley to remain a vibrant and successful community it will be important for the region to maintain it's quality of life. Having a high quality of life will allow the region to retain its

younger generations while attracting new residents, maintaining the region's knowledge-base.

Objectives

- Continue to emphasize the region's family-oriented community values and the provision of quality educational opportunities.
- Support arts and cultural initiatives that assist local artists and cultural organizations; promote local cultural amenities; community involvement in the arts.
- Encourage the development of streetscape and urban design standards that enhance the charm and integrity of the region's "small towns."

CHAPTER 4
NATURAL AND HISTORIC RESOURCES

Introduction

The natural environment affects how we can use the land, and how we use the land affects the natural environment. Good planning requires knowledge of, and respect for, the various elements that make up the natural system. These elements form the foundation for the quality of life residents often seek when choosing a place to live or work. A quality of life founded on clean and accessible waterways, scenic views, farmland, woodlands, and outdoor recreation is particularly important in today's mobile society where people and companies move more often than in the past.

A variety of elements make up the natural environment including geology, hydrology, soils, vegetation, and wildlife. If we consider these individual natural resources as parts of interrelated functional systems, we can provide better protection for them and enhance their value to the region. Although prime agricultural soils are an important natural resource, land that is being farmed does not necessarily mean the soils are particularly valuable. However, land with active farming operations, regardless of the soils, are a significant cultural feature of the region and important to preserve.

While encouraging infill development and redevelopment will be an important tool in maintaining the region's natural environment, some additional growth will continue to occur in the region. As stewards of the natural environment, however, it will be important to preserve the region's natural resources as new growth takes place. This can be accomplished by directing growth to specific areas, maintaining large, valuable areas of natural resources and farmland. It will also be important to enlist land use techniques that provide for appropriate levels of development while respecting the presence of important natural features and arranging development in ways that maintain natural systems.

This chapter first identifies and describes various natural features of the Upper Perkiomen Valley region that form the basis of our natural landscapes. Once the specific resources are understood, we will identify three specific natural landscapes that are most important to maintain and protect. This chapter will also include suggestions and recommendations to protect and preserve the natural resources and landscapes while

addressing the potential for future growth in the valley. Balancing the protection of natural resources with other factors, such as previously established land uses, growth pressures, legal requirements, and water, sewer, and road systems, will be necessary to formulate a future land use plan for the region to ensure it will continue to be a desirable location to live and work.

Natural Resources

Geology

Bedrock geology is the foundation for all other natural features. Changes in elevation and orientation of landforms, steep slopes, and the locations of watercourses are results of bedrock geology, the hydrologic cycle, and other weathering effects. Orientation of landforms also influences vegetative communities, soils, and availability of sunlight. The Upper Perkiomen Valley's bedrock geology is an asset aesthetically because it has created a varied landscape. Geology also affects the creation of soils and produces variations in groundwater yields among different types of bedrock.

Montgomery County is underlain by sedimentary, igneous, and metamorphic bedrock. The youngest sedimentary bedrock is the Brunswick formation found under the northern half of the county, including the Upper Perkiomen Valley. The other major bedrock in the valley is diabase, which occurs as intrusions within the Brunswick formation.

Brunswick Shale

Brunswick shale is found under most of the Upper Perkiomen Valley, except where diabase intrusions are found, as shown in Figure 4.1. This bedrock is typically reddish-brown shale, mudstone, and siltstone and is moderately resistant to weathering. Although the weathered zone can be excavated with heavy power equipment, unweathered rock requires blasting. It is considered to be a good to fair source for road material and fill. Part of the formation can be an excellent source of lightweight aggregate and material for common brick.

Diabase

Diabase is igneous bedrock that was forced into large cracks in the surrounding Brunswick formation. Often referred to as "black granite," it is usually black, dense, and very fine-grained. The molten diabase intrusions transform adjacent areas of Brunswick shale into a hard black or gray slate known as hornfels. In many areas, the diabase intrusions are less than a half-mile wide, and in some cases only several feet in width. The intrusions are highly

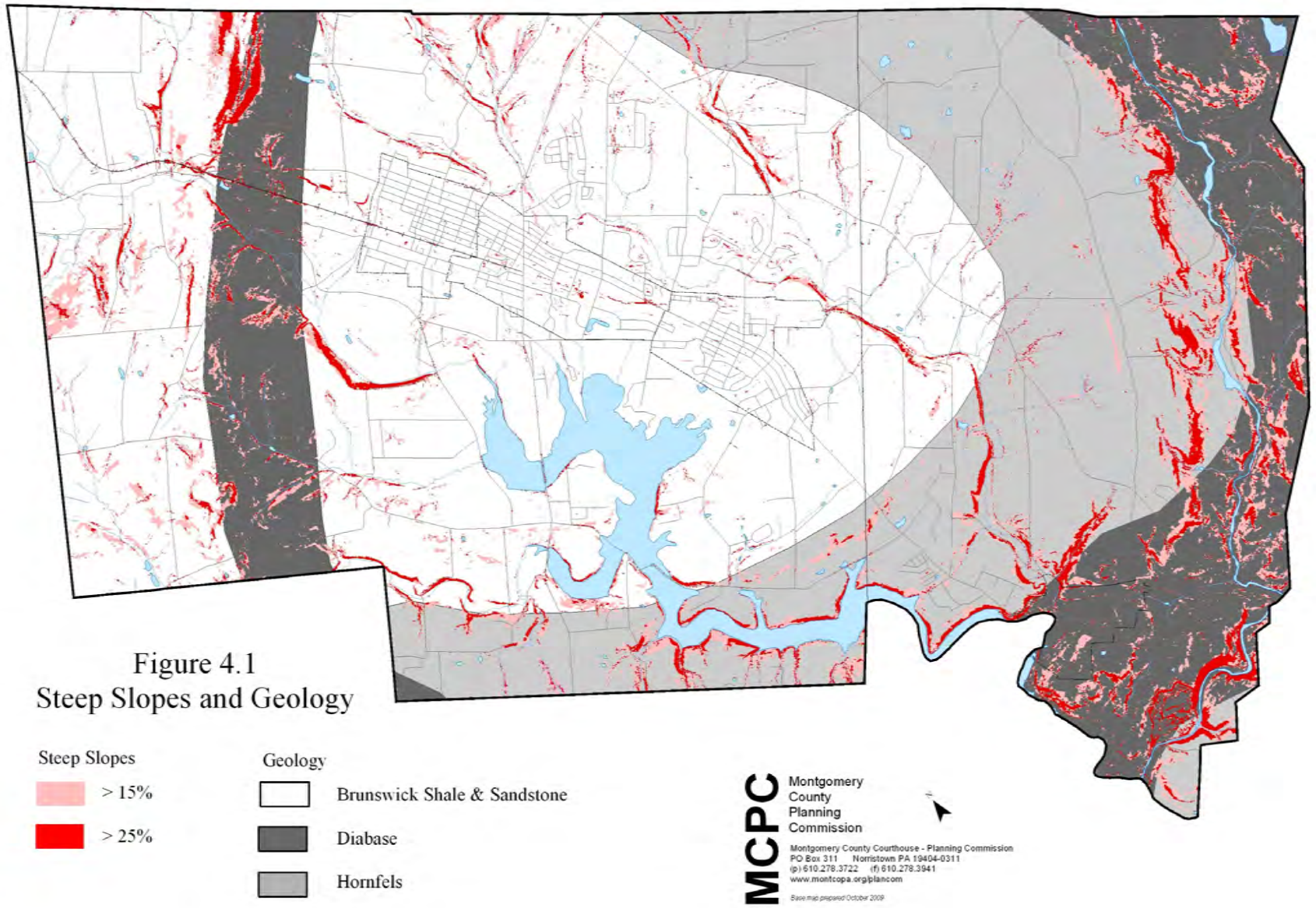


Figure 4.1
Steep Slopes and Geology

resistant to erosion, weathering, water infiltration, and groundwater movement. Areas of diabase are often steeply sloped and wooded, with numerous surface outcrops and boulders. Excavation requires considerable blasting, and large boulders present special problems.

As shown in Figure 4.1, the major intrusions of diabase do not impact the Boroughs of East Greenville, Pennsburg, and Red Hill and affect only a narrow strip through Upper Hanover, from Mill Hill to Douglass Township. However, almost all of Green Lane Borough and large areas of Marlborough Township are underlain by diabase. These intrusions have had an interesting effect on the topography of the region, creating a circle of ridges which almost entirely surrounds the Upper Perkiomen Valley regional planning area.

Hornfels

Hornfels are intrusions in the Brunswick shale similar to diabase. However, hornfels intrusions are metamorphic rather than igneous rock. The hornfels are also more resistant to weathering and almost impenetrable for excavation purposes. Water yields for hornfels are similar to those yields found with Lockatong formations.

The basic patterns of the earth's surface and bedrock formations in the Upper Perkiomen Valley were molded by internal geologic forces during the Triassic Period, 150 to 180 million years ago. Since that time, the effects of wind, water, gravity, and chemical activity have acted continuously to modify the earth's surface. The effects of all these forces are evident in the following features:

- Landforms ranging in elevation from 200 feet near Perkiomenville to 715 feet on Mill Hill, the highest area in Montgomery County.
- Drainage basins defined by surrounding ridges and the watercourses in their valleys.
- Aquifers producing variable groundwater supplies.
- Slopes ranging from gentle to very steep.
- A variety of soil types suitable for woodland conservation, productive farming, or development.
- The variety of plant materials seen in natural conditions and farmlands.
- The visual character and wildlife habitats created among these natural features.

Slopes

The region has large areas of gentle-to-moderate slopes, which easily allow agriculture or development, as shown in Figure 4.1. Land with a slope of 15 percent or more is generally considered steeply sloped and places constraints on active uses. Some areas have steeper slopes, which are suitable only for the least intensive development or for open space and preservation of natural features.

The slopes on Mill Hill are among the steepest in the region. These slopes are greater than 50 percent and are found on steep, stony land with bedrock outcrops. Steep slopes continue along the Mill Hill ridge-line, which is underlain by diabase bedrock, toward Douglass Township. The diabase bedrock and steep slopes then curve toward the south, running generally along the boundary of New Hanover Township toward Upper Frederick. The diabase and steep slopes continue past Green Lane Borough through Marlborough Township along the Salford Township Boundary and Unami Creek into Bucks County. Other relatively narrow bands of steeply sloped land are found along watercourses of various sizes and along the banks of the Green Lane Reservoir. No significant areas of steep slopes have been identified within the four boroughs.

A view north across Mill Hill

Steeply sloped lands are natural resources that provide community character and contain most of the woodlands in the region. Dense vegetation is also found on many steeply sloped areas along stream valleys. These concentrations of dense vegetation benefit air and water quality and provide extensive habitats for wildlife. The slopes and soils present on steep slopes exist in balance with vegetation, underlying geology, and precipitation levels. Maintaining this equilibrium reduces the danger to public health and safety posed by unstable hillsides. Generally speaking, as the slope increases, the depth of topsoil and the ability of the soil to support structures usually decreases. When runoff and sedimentation from disturbed slopes increases, public expenditure for flood control and stormwater management will also increase. Also, disturbance of steep slopes negatively affects plant species and the wildlife, which depends on these plants. The result is destruction of unique habitats.

The extent of development and clearing of vegetation should be restricted on steep slopes to avoid erosion. It is not necessary to use steeply sloped areas for farming or residential development because there is sufficient land available with gentle to moderate slopes (0% to 15%) . Regulations adopted to protect steeply sloped lands should identify performance principles to protect this natural resource. The regulations can be enacted as part of the zoning ordinance.

Hydrology

Hydrology is the scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere. The region's hydrology is evident in its annual rainfall, waterways, and groundwater supplies. Of the average 47 inches of annual precipitation in the region, about 25 percent becomes direct surface runoff, 50 percent evaporates or is transpired by plants, and 25 percent replenishes groundwater. The distribution and effects of water influence the region's landforms, soils, vegetation, and wildlife.

Regional Surface Water Flow

The entire Upper Perkiomen Valley regional planning area is within the Perkiomen Creek watershed, and the valley's land area is divided into drainage basins based on branches of the Perkiomen Creek and its tributaries. The watershed's ridge and valley landforms of the watershed are among the most visible and identifiable natural features of the land's surface. These naturally defined drainage basins can provide the basis for sanitary and storm sewer planning as well as for planning of natural resource conservation.

The Perkiomen Creek watershed covers a drainage area of 362 square miles in four counties. Over 220 square miles of that area is within Montgomery County alone, including the drainage basins of the Unami, Macoby, Hosensack, Swamp, and Skippack Creeks, the East and West Branches and Main Stem of the Perkiomen Creek, and the manmade Green Lane Reservoir. The Perkiomen Creek watershed covers 45 percent of the land area of Montgomery County, making it the largest watershed within the county. The Upper Perkiomen Valley regional planning area covers 36 square miles of the Perkiomen Creek watershed.

Surface Water Quality

Located at the upper end of the Perkiomen Creek watershed, the six municipalities of the Upper Perkiomen Valley regional planning area are near the headwaters of the Perkiomen Creek and several major tributaries, as shown in Figure 4.2. The Unami, Macoby, and Hosensack Creeks and the West Branch and Main Stem of the Perkiomen Creek all have their origins on the nearby wooded hillsides and farmlands in Berks,

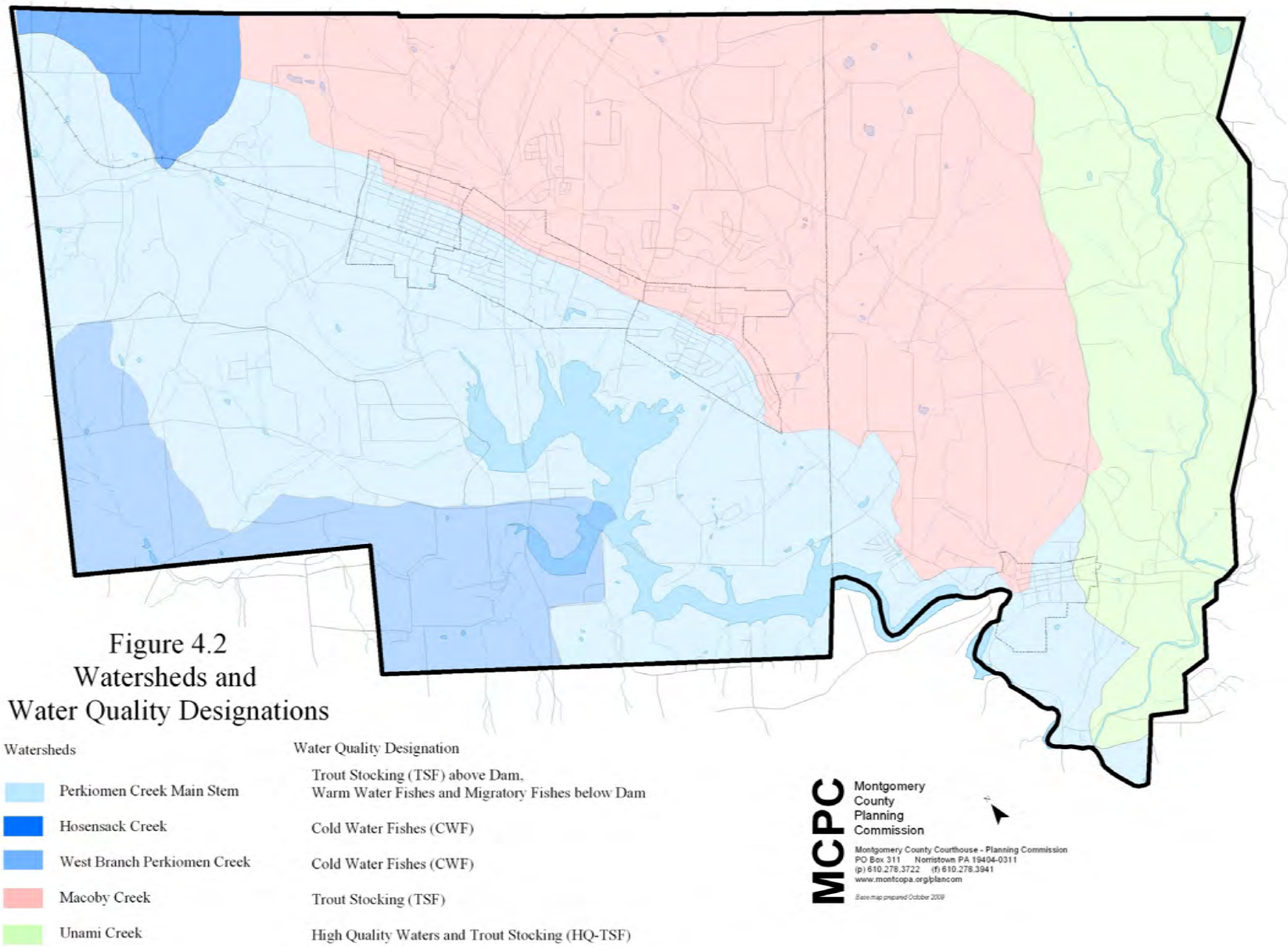


Figure 4.2
Watersheds and
Water Quality Designations

Lehigh, and Bucks Counties. The drainage basins of these creeks are predominantly rural in character and contain a mix of farmlands, woodlands, and developed areas. Most of these basins also receive effluent flows from sewage treatment plants, mainly from pockets of urbanized development. These streams enter the Upper Perkiomen Valley regional planning area at a variety of locations, but the entire surface water flow leaves the valley in the Perkiomen Creek south of Green Lane Borough.

Statewide water quality standards are established in Title 25 PA Code Chapter 93 to protect designated water uses. The designations given to the region's waterways indicate their value for the protection and propagation of aquatic life, as shown in Figure 4.2. So far, only the Unami Creek has been designated as High Quality. Portions of the West Branch and Main Stem of the Perkiomen Creek are reported to support the spawning of native trout and are highly treasured by area fishermen, but they have not been officially designated for Special Protection.

Although surface waters entering the Upper Perkiomen Valley regional planning area come from predominantly rural drainage areas, their water quality can be degraded by major nonpoint pollution sources. These sources include sediment from inadequately protected construction sites, effluent from malfunctioning on-lot septic systems, and stormwater runoff from unprotected agricultural uses. Sediment loadings that contribute nitrogen and phosphorous from nonpoint sources tend to eutrophy the water in the Green Lane Reservoir. Eutrophication is the nutrient enrichment of a water body. It can result in algae blooms, depletion of dissolved oxygen, fishkills, offensive odors, and a degraded appearance. These sediments are not only the direct result of activity adjacent to the reservoir, but also of activities along all the streams contributing flow to the reservoir. The following measures can be used to protect and improve existing surface water quality:

- Enforce erosion and sedimentation regulations in all communities.
- Conserve and enhance riparian buffer vegetation along watercourses to trap much of the nonpoint pollution before it enters the streams.
- Prepare a Watershed Stormwater Management Plan, as regulated by Act 167, the state's Stormwater Management Act, in cooperation with the Perkiomen Watershed Conservancy and upstream and downstream neighbors.
- Create a management program for on-lot sewage treatment systems to help guard against future malfunctioning systems that could pollute surface waters.

- Use site design and resource preservation methods to protect water quality, including use of Best Management Practices (BMPs). This chapter explains these measures in detail.

Groundwater Supply

A bedrock formation that yields groundwater in sufficient quantity to supply springs or pumped wells is called an aquifer. Aquifers are replenished as surface water infiltrates the soil layers and seeps into fractures in the bedrock, where it flows slowly under the earth's surface. The quantity and quality of groundwater available for extraction depend on the type of bedrock formation. Although the region's bedrock geology has created interesting and attractive landforms, the effects on groundwater supply vary greatly.

Brunswick Formation

This relatively porous formation is considered to be a reliable source of small to moderate quantities of groundwater for most uses. Brunswick shale has been reported to yield 100 gallons or more per minute from wells drilled more than 200 feet deep. Yields, however, can be much less because of variations in the formation and the impacts of impervious surface coverage on groundwater recharge. Inadequate spacing between wells may create interference that affects water availability. Secondary openings in Brunswick bedrock (joints and fractures) are the key to adequate groundwater flow, causing groundwater yields to vary considerably from one area to another.

Diabase Formation

This has some fractures near the surface that allow minimal absorption of water. Groundwater movement within diabase is slow. The formation is notorious for low well yields, commonly supplying 10 gallons per minute or less. Fracture zones, however, sometimes represented by stream valleys or gullies provide the best locations for wells supplied by diabase aquifers.

Groundwater Replenishment

It is vital to continually replenish the groundwater supply so that water will remain available. The locations of prime aquifer recharge should be identified, such as faults and seeps in the bedrock. This way measure can be taken to preserve these sites in their natural state, or at least minimize the intrusion of impervious surface coverage. In many cases, these areas may be heavily wooded, located in areas of undevelopable soils (hydric and/or alluvial, explained later in this chapter) or on slopes that constrain development. The more natural constraints located in the re-

charge areas, the more likely these areas can be preserved through ordinances or innovative development techniques. Aquifer recharge is a regional process. Recharge areas in one community often supply groundwater to another community. Therefore, regional cooperation is needed to ensure maximum protection of recharge areas. The region's aquifers should be studied and identification of recharge areas should be identified.

Adequacy of Regional Water Supply

Individual On-Lot Wells

These serve all of Marlborough Township and Green Lane Borough and most of Upper Hanover Township. This type of water supply is most directly affected by a community's natural features and the intensity of surrounding development. For example, more intense development can be located in areas of Brunswick bedrock than in areas of diabase. But if individual on-lot wells are spaced too closely, they will interfere with one another and cause supply problems even on the Brunswick formation. During periods of drought these wells are the most likely to run dry and stay dry for extended periods. Therefore, it is critical to control the intensities of development served by individual on-lot wells to avoid overtaxing the available groundwater supply. In addition, sufficient land area should be provided for recharge of these wells on the individual lots and in critical regional aquifer recharge areas. The balance of withdrawal and recharge is helped by the use of on-lot septic systems. These systems naturally filter effluent and return approximately 50 percent of water usage for recharge and spray irrigation of effluent, which can return larger amounts to the groundwater aquifer.

Municipal Water Authorities

Municipal systems serve parts of Upper Hanover and all of East Greenville, Pennsburg, and Red Hill, as shown in Figure 4.3. They are supplied by the Perkiomen Creek, municipal wells within the region, and wells and springs in Hereford Township, Berks County and Upper Milford Township, Lehigh County. Generally, municipal systems provide larger and more reliable supplies than individual on-lot wells and allow greater concentrations of development. In addition, interconnecting of these systems allows better distribution of available supplies and better protection during drought or other extenuating circumstances. These existing sources, new wells, and appropriate expansion of the distribution systems should be the basis for supplying most of the growth in the region. Outside the areas served by the munici-

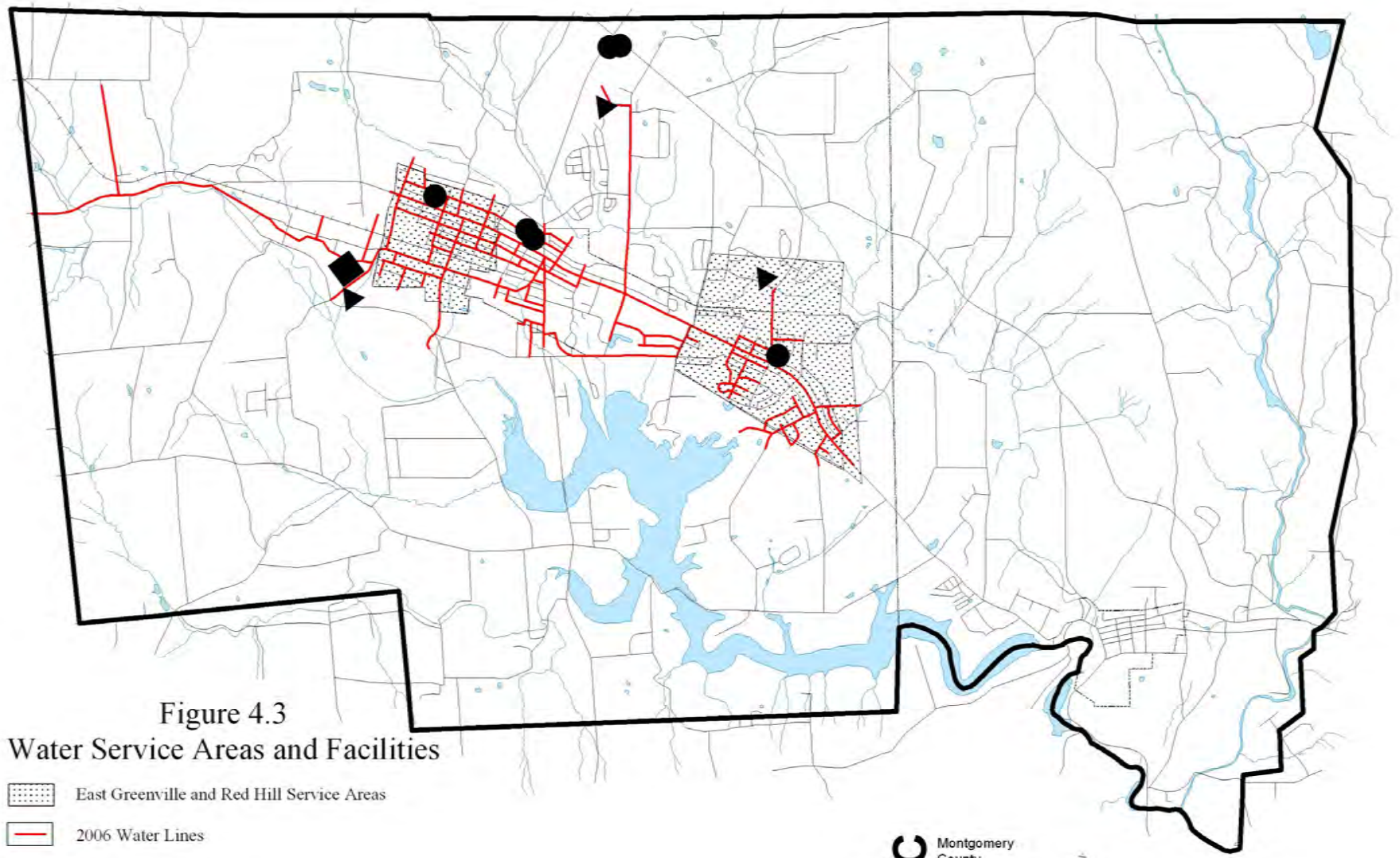


Figure 4.3
Water Service Areas and Facilities

NOTE: Water lines and connections outside East Greenville and Red Hill Borough service areas are maintained by the Uppaer Hanover Township Authority.

pal systems, lower densities of development should contribute to an overall balance of groundwater withdrawal and recharge for the region.

Soils

Soils are produced by the continual interactions of weathering, underlying geology, and organisms over long periods of time. They are one of the most influential natural resources of a community. Because soils affect the use of land in various ways, they should be considered in preparing a comprehensive plan. For example, suitability for productive agriculture and for on-lot sewage disposal are major considerations in rural areas. In all areas, development limitations caused by alluvial, hydric, and other frequently wet soils need to be considered by subdividers and developers, along with such factors as shallow depth to bedrock.

Hydric Soils

Other soils limit construction because of their poor drainage, shallow high water table, and slow rates of permeability and runoff. These soils prohibit on-lot sewage disposal because of their wet characteristics but may be otherwise developable with appropriate site engineering and construction practices. It is better to avoid development on these soils because of the additional costs and efforts required and because of the increased potential for environmental degradation. These soils include those in the following series: Abbottstown, Beltsville, Chalfont, Glenville, Lawrenceville, Lehigh, Mount Lucas, Raritan, Readington, Reaville, and Rowland and are shown in Figure 4.4.

Soil Suitability for Sewage Disposal

Soils that provide very limited potential or no potential for on-lot sewage disposal are found in all areas of the region. They range in extent from small pockets to broad swaths. Among the soil characteristics that will affect on-site disposal are depth to a limiting zone (groundwater or bedrock) and the ability of the soil to percolate water. Since suitable and unsuitable soils are scattered throughout the region, they provide little guidance for choosing where to direct growth. From a public health perspective, it would seem desirable to provide municipal centralized sewage facilities for development on all of these restrictive soil types. All sewage would be treated, disposed, and maintained by a municipal sewer authority, the county's health department, and the state's department of environmental resources. However, it would not be practical, economical, or realistic to serve the entire region by central sewage facilities. The costs would require

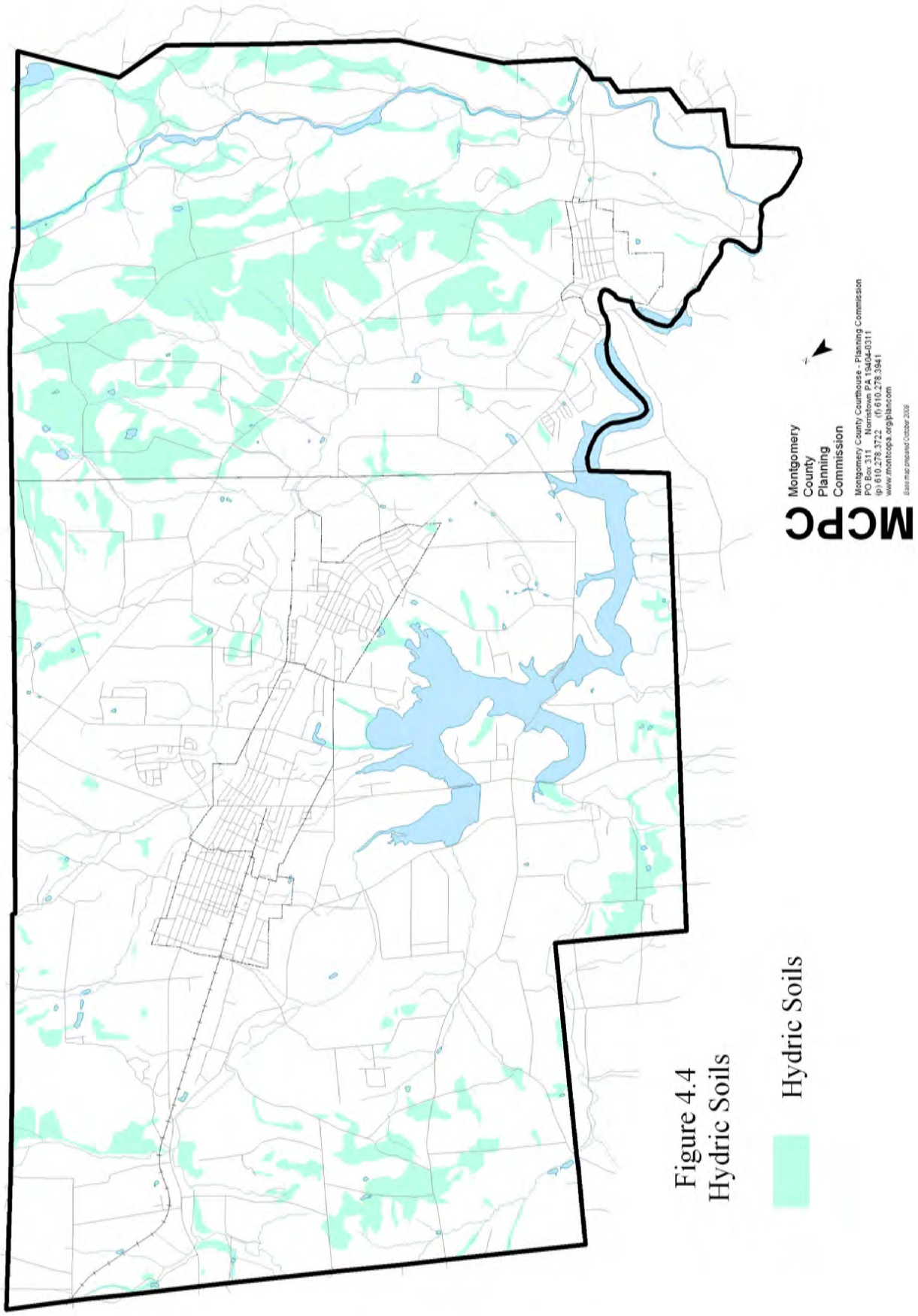


Figure 4.4
Hydric Soils

development to be permitted at densities that developers consider economically feasible. These densities would project growth far beyond the levels anticipated by this comprehensive plan. Instead, municipal central sewage facilities should be used throughout growth areas for medium- and high-density development to protect water quality and public health for the largest concentrations of new development. Alternative methods of sewage treatment should be used outside the growth areas to protect water quality and to keep development levels in line with the goals of this comprehensive plan. These methods are explained in the "Community Facilities" chapter.

In areas not served by municipal sewer systems, restrictions caused by the soil types are expected to result in low-density development served by on-lot systems or by various forms of community disposal systems. Sewage disposal systems in these areas should consist primarily of types that help to recharge the groundwater supply. These include spray irrigation, sand mounds, and traditional in-ground systems. When package sewage treatment plants are used in these areas, their purpose should be to protect water quality and encourage groundwater recharge. They should not be used to justify an increase above the density proposed in the land use plan. This would include package plants with stream discharge or with spray irrigation of treated effluent.

Development regulations that encourage shared and/or community systems for sewage disposal in areas not served by municipal sewer systems are desirable to further help protect water quality and public health. Cluster regulations can be used with community sand mound systems and spray discharge of treated effluent as a significant tool to preserve open space and replenish the groundwater supply.

Agricultural Soils

Soils in Montgomery County are classified as prime farmland, farmland of statewide importance, and other land. These classifications are based on the soil fertility, depth to bedrock or groundwater, texture, erodibility, slope and amount of large stones. Prime farmland includes deep, well-drained, and mildly 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. Agricultural use of the "other" soils is generally limited to pasture, and woodlands. Figure 4.5 shows the extent and locations of

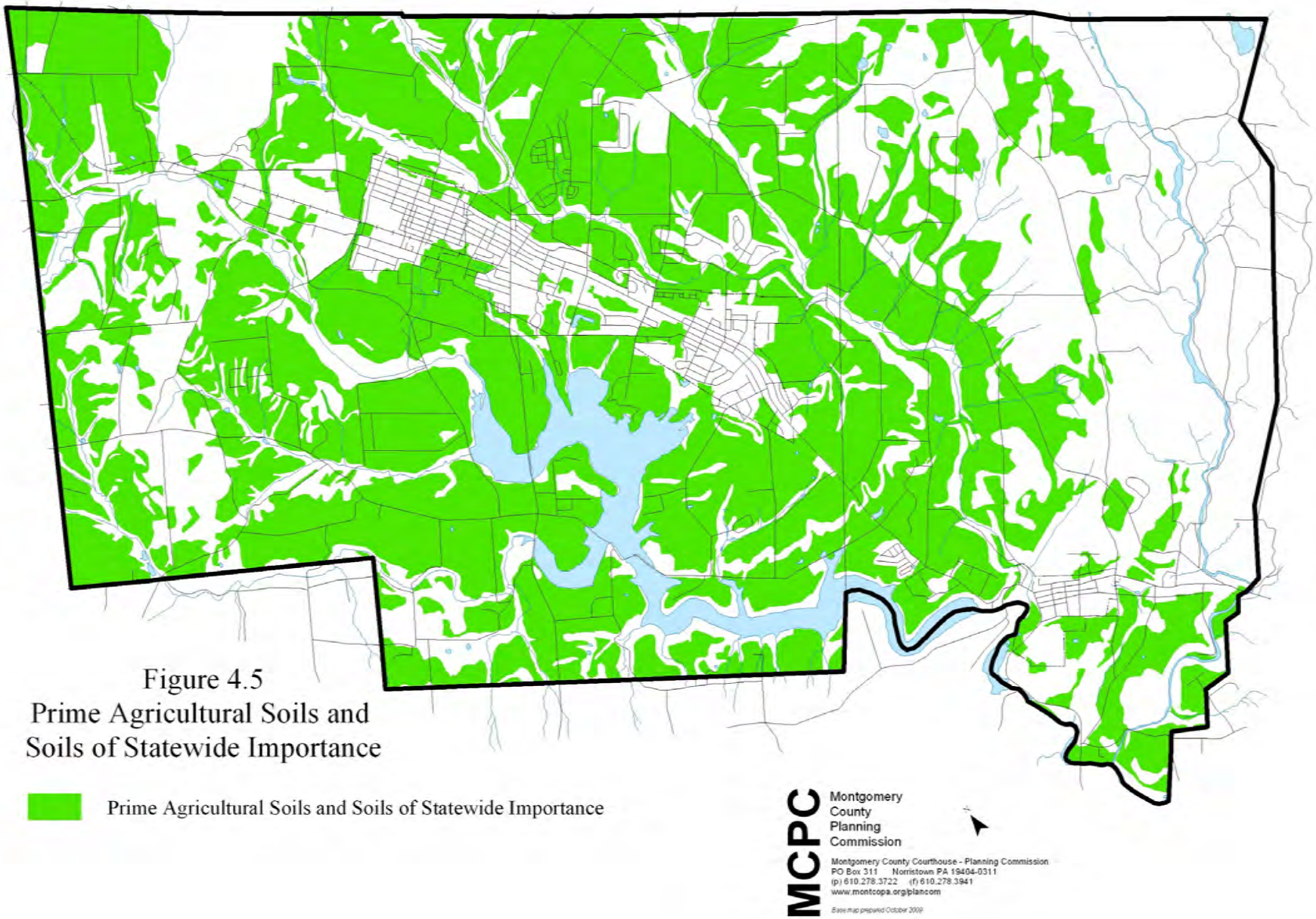


Figure 4.5
Prime Agricultural Soils and
Soils of Statewide Importance

prime and important farmlands, with the residual areas being "other" land.

High priority should be given to continuing farming on prime and important farmlands. It must be noted that these soils are found not only in rural parts of the region but also close to the boroughs and near other concentrations of development. Also, the best farmlands have gentle to moderate slopes. This makes them easier to develop than some of the "other" lands, which often contain steep slopes or shallow bedrock with rock outcrops. Although it is inevitable that some farmlands will be developed, strong efforts should be made to continue farming the better-quality farmlands in the non-growth areas of the region.

Zoning regulations can be enacted to encourage retention of farming as a viable alternative. Cluster standards, such as Montgomery County's model Land Preservation District, which requires preservation of 75 percent of a tract as open space, can be used to retain farmland in conjunction with some new residential lotting. In addition, Pennsylvania law permits municipalities to enact restrictive agricultural zoning requirements to discourage undesirable development of farmlands. Agricultural zoning is most suitable in areas where farming is a strong and healthy industry and farmers have made a firm commitment to continuing agricultural activities.

Although good soils are important for farming, there are many factors involved in farmland preservation. Support from the farmers, other residents, and the county, through its farmland preservation program, is necessary. If an agricultural advisory group is formed of farmers, bankers, lawyers, realtors, and/or other interested citizens, then methods of keeping farming viable in the region could be explored, and a program could be developed for these purposes.

Hundreds of acres of farmlands are already within the Upper Hanover agricultural security district. This district is regulated by state law which protects farming activities from being restricted by local nuisance ordinances and complaints from neighbors who may be offended by noise, odors, dust, or other routine farming characteristics. Farmers in agricultural security districts are eligible to sell their development rights. The development rights of several farms in Upper Hanover Township have already been sold to Montgomery County under its farmland preservation program.

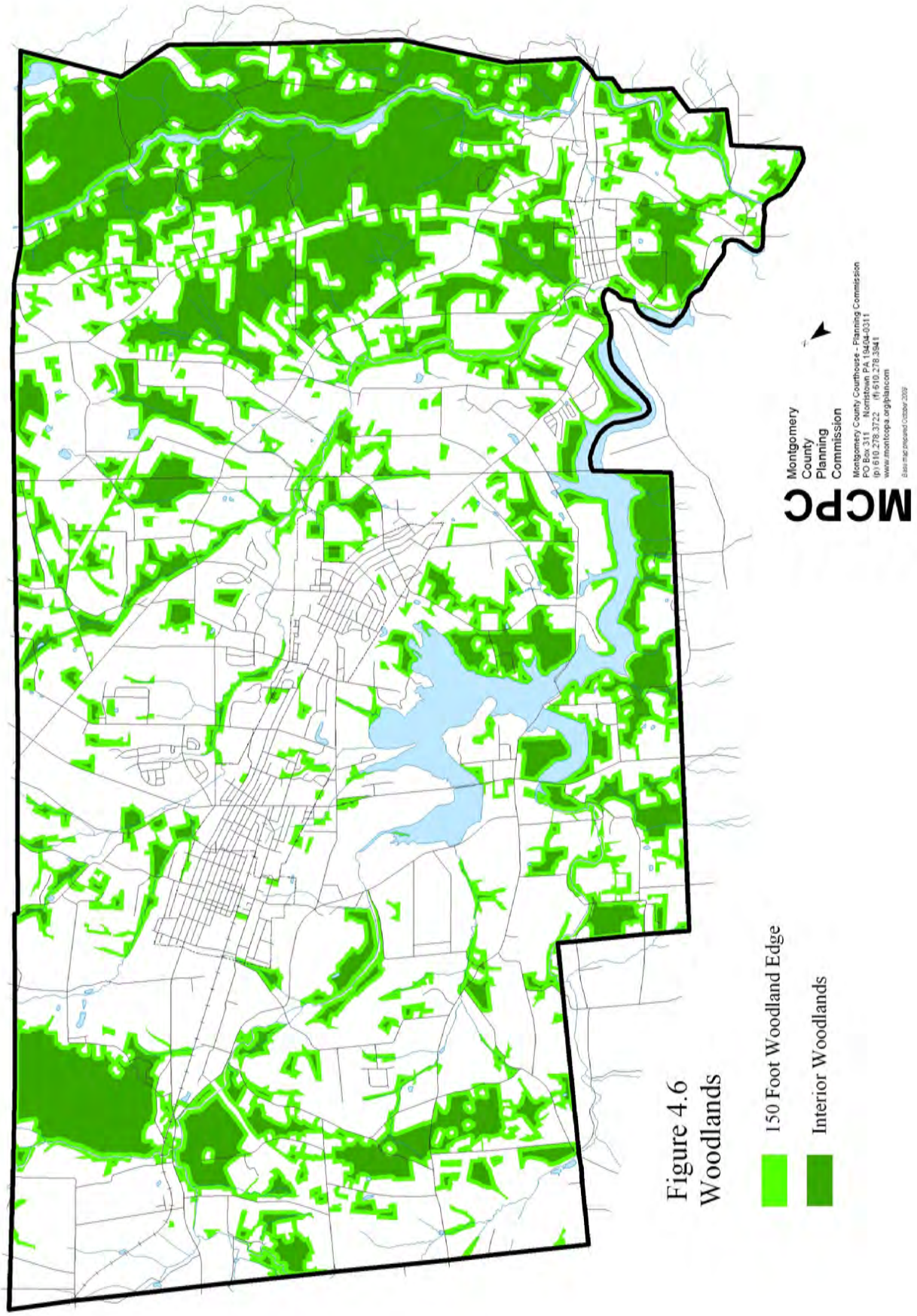


Figure 4.6
Woodlands

Woodlands

The types of soils found in the region influence the various vegetative communities because different types of plants grow well in different types of soils. Appropriate vegetation along streams and ponds improves water quality by filtering stormwater runoff pollution before it reaches the water bodies. It also provides unique habitats for specific types of vegetation and unique wildlife habitats. The types and quantities of wildlife in an area vary with the types of vegetation and the habitats provided by landforms, hydrology, soils, and vegetation.

The types of woodlands found in the Upper Perkiomen Valley result from the long-range effects of many other natural resources. Locations of remaining woodlands are affected by cultural reasons as well. Early settlement and growth of the boroughs diminished original woodland areas, and new growth often removes woodland as well. The fact that farmers will not farmlands, which are too steep, too rocky, or too wet has left concentrations of woodlands in these areas. Figure 4.6 shows locations of the regions woodlands, differentiating between a 150-foot woodland edge and interior forest land.

Soils, slopes, and solar orientation influence the type of species associations found within woodlands. The soils on north-facing slopes tend to be cooler and more moist than south facing slopes due to less exposure to sunlight. They also tend to have more softwoods (pines, hemlocks) mixed with some hardwoods such as beech and black walnut. The warmer, drier southern slopes tend to have more hardwoods (tulip poplar, ash, and oak).

Woodlands, particularly large contiguous tracts, are both functional and aesthetic. Generally, woodlands prevent soil erosion, particularly in areas of steep slopes and shallow soils. This reduces siltation and minimizes nonpoint source pollution, provides natural buffer areas around surface water features, and provides habitats for wildlife. This not only benefits the wildlife but also offers recreational and educational opportunities for residents. In addition, woodlands create a scenic quality that cannot be quantified. They have an intrinsic value that enhances the character of the community.

Woodlands also contribute by providing "corridors" that supply cover for wildlife movement and migration. These include hedgerows and larger woodland connections such as those found along stream valleys. These areas also provide important shelter and foraging opportunities for wildlife. Woodland corridors, in particular hedgerows, also add to the scenic rural character and reduce soil erosion by slowing wind and water. These areas are often found along roads, property lines, and

separating fields within a property. In the Upper Perkiomen Valley, preserving these types of woodlands will help to maintain rural quality.

The largest contiguous wooded areas within the Upper Perkiomen Valley are found almost entirely along the diabase geology and areas of steep slopes that encircle most of the region. These areas contain some of the only Class One (best) Forest Land in the county. Forest capability is a reflection of a soil's capacity to produce timber in a certain time rotation, typically 50 years, and the health of existing forest stands.

Because of the type and regional importance of the large woodland, every effort should be made to preserve this valuable resource. Soils in this area are thin, of low fertility, stony, and contain large rock outcrops. Their clay subsoil is typically covered with a humus layer that is less than 1 inch thick, which is very prone to erosion once exposed. Not only does this forest cover protect steep areas from erosion, but it also allows the groundwater to be replenished by slowing down surface runoff. The forest also acts as a natural buffer for surface water traveling through the watershed and helps filter out pollutants and sediments before they can enter the larger regional watercourses. The extent of the forest also encourages and provides wildlife habitat and scenic quality that help to define the Upper Perkiomen Valley. Development within the forest area, even at low densities or along its edges, can change its characteristics. The removal of trees alters the ecology by exposing areas to greater effects of wind, sunlight, erosion, and other factors that can encourage competing plant species or cause physical damage. Clearing of woodland cover, and the important understory and herbaceous cover, can also have severe impacts on erosion and sedimentation. This can increase the potential wind throw hazard, to which shallow rooted trees are vulnerable.

Large and small remnants of woodlands are scattered throughout the region as a result of development and agricultural practices. These areas are also important for habitat and buffering, particularly along the Macoby, Stony Run, Hosensack, Perkiomen (both branches), Molasses, and Unami Creeks. Many of the remnants are not large enough to sustain concentrations of wildlife, but when they are connected by hedgerows or other natural links, they form important corridors for wildlife migration. These areas also lend a rural quality to the landscape when located in areas predominantly used for agriculture.

Regional Conservation Landscapes

The Upper Perkiomen Valley is rich with a variety of significant natural resources, including unique geology, prime farmland, large concentrations of interior forests, a large man-made reservoir, and significant floodplain habitat. Based upon the unique concentration of these natural resources, and a recently completed county-wide Natural Areas Inventory (2008), three significant landscape have been identified and within the region. These three landscapes are discussed in greater detail below, including a summary of critical features, core areas, management strategies.

Mill Hill/Deep Creek Conservation Landscape

The Mill Hill/Deep Creek Conservation Landscape has as its central feature a forested diabase ridge extending in a half circle around Upper Hanover Township. The extensive forest cover found on the ridge is of particular ecological significance, as it provides critical habitat for forest interior species. The landscape also contains a high diversity of plants typical of diabase forests.

Location Description

The Mill Hill/Deep Creek Conservation Landscape contains approximately 2,049 aces and is located within Upper Hanover Township (Figure 4.7). At the southern end, it also includes the portion of Green Lane Park underlain by diabase geology. The landscape adjoins the Upper Perkiomen Creek/Green Lane Reservoir and Unami Creek/Ridge Valley Creek Conservation Landscapes on the east. To the south, it adjoins the Spring Mountain Conservation Landscape.

Natural Resources

The boundary of the landscape takes in the western and southern portions of the ring of diabase that encircles East Greenville, Pennsburg, and Red Hill and extends into Lehigh and Bucks Counties. The landscape is anchored on the northern end by Mill Hill, a narrow portion of the diabase ridge that extends from Upper Hanover Township into Lehigh County, and includes the highest point in the county at a little over 700 feet above mean sea level.

The landscape contains 1,182 acres of forest, or 58 percent of the total area of the landscape, compared to 20 percent forested land cover in Montgomery County in 2000. Applying a 150-foot buffer inside all forest edges reveals that the Mill Hill/Deep Creek landscape contains 668 acres that qualify as forest interior habitat (Figure 4.6).

The main stem of the Perkiomen Creek and the West Branch both flow through gaps in the diabase ridge. The Hosensack Creek corridor from

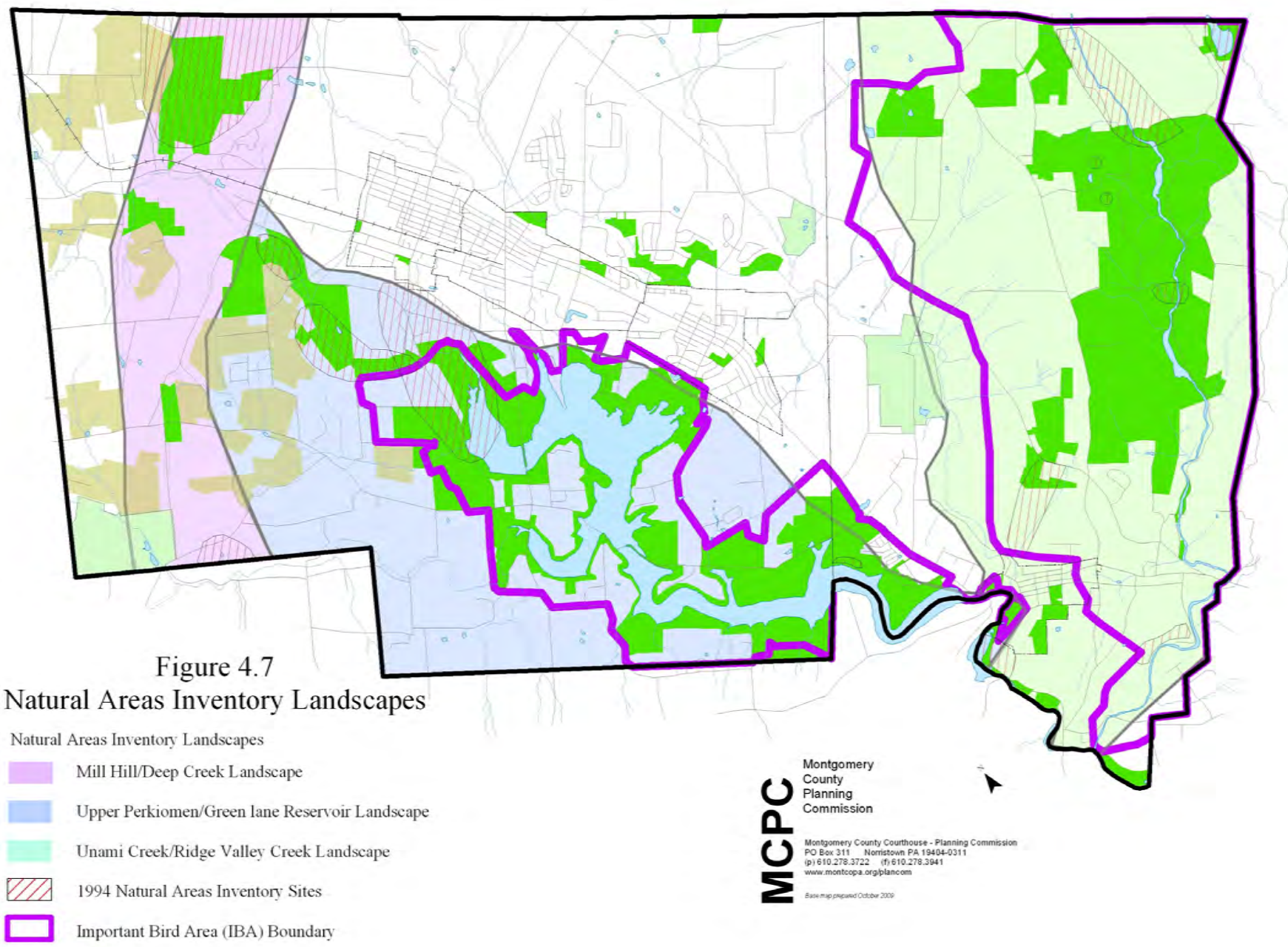


Figure 4.7
Natural Areas Inventory Landscapes

the Lehigh County line to its confluence with the Perkiomen is part of the landscape. In addition the diabase ridge contains the headwaters of the Macoby Creek. Analysis reveals that 70 percent of the riparian corridor extending 25 feet on each side of the streams is forested.

Critical Features

Sites within the Landscape that were previously identified in the County's Natural Areas Inventory include Mill Hill, and Niantic Northeast (Figure 4.7). Species of special concern documented in the Mill Hill/ Deep Creek Conservation Landscape during 2006 field studies include six plants: puttyroot orchid, ginseng, goldenseal, Indian paintbrush, brown sedge, and Mead's sedge.

The Landscape's predominant diabase geology discouraged conversion of the landscape to agriculture (only 229 acres of the 1,150 acres of preserved farmland in Upper Hanover Township are located within the Mill Hill/Deep Creek Landscape), creating an island of forest.

Preservation Status and Other Designations

Upper Hanover Township owns 223.8 acres at Mill Hill, a tract on Soffa Road contains 45.2 acres, a small portion of the township's Peevy Road Open Space, and at the corner of Kutztown Road and Township Woods Road is a 28.2-acre tract. The majority of these sites, except for Peevy Road Open Space, is forested. County-owned land in the landscape includes 758.2 acres at Green Lane Park.

Diabase boulders exposed along the ridge at Mill Hill

Core Areas

Mill Hill

Huge diabase boulders create a dramatic landscape along the steep rocky spine of Mill Hill just east of the village of Palm (Figure 4.7). From the top of the ridge the power line right-of-way affords spectacular views to the north and south. This site includes one of the largest blocks of forest in the county. Upper Hanover Township owns a 223.8-acre portion of Mill Hill that includes most of the north side of the ridge. On the north side of Mill Hill the Hosensack Creek follows the base of the ridge to its confluence with the Perkiomen Creek on the southern edge of the village of Palm. Numerous seeps located along the bottom of the slope contribute to the flow in the creek. Several tributaries of Macoby Creek have their headwaters on the lower slopes on the south side of Mill Hill.

Past Uses – Although the upper slopes of Mill Hill do not appear to have been cleared, stumps in various stages of decay provide evidence of timber harvesting over the years. Some areas on the lower slopes, especially at the southwestern end, were cleared for farming but have reverted to successional forest. Aerial photographs from 1942 reveal that the floodplain along the creek was pastured in the past; it has since grown up into a thicket of multiflora rose, spicebush, and silky dogwood.

Another commercial use of the natural resources of Mill Hill was surface quarrying. There is evidence of stone cutting on both the north and south slopes in the form of drill holes and squaredoff cut surfaces visible in the diabase boulders. Some of the old woods roads undoubtedly served as wagon routes to carry out the cut stones which were shipped by railroad to Philadelphia for paving and construction.

One PNDI-listed plant, puttyroot orchid, has been found at the site. In addition the upper slopes provide habitat for species such as redbud, Allegheny vine, rock harlequin, red columbine, and flowering raspberry. Forest communities include dry oak mixed hardwood forest, tuliptree – beech – maple forest, and red maple – black ash palustrine forest. The power line right-of-way also contains examples of birch (blackgum) rocky slope woodland and tussock sedge marsh.

Reptiles and amphibians documented at the site during 2006-2007 include eastern garter snake, northern ringneck snake, eastern box turtle, wood frog and American toad. Wetlands along the Hosensack and Macoby Creeks provide important habitat for reptiles and amphibians.

Pennsylvania Breeding Bird Atlas data for block 81A66, which includes Mill Hill, listed 63 species of breeding birds for the period 1984-1989. Data for the 2004-2008 atlas are not yet complete. The list includes the following forest interior species: Ovenbird, Scarlet Tanager, Wood Thrush, Worm-eating Warbler, and Veery.

Although Mill Hill is open to deer hunting through a cooperative arrangement with the Pennsylvania Game Commission, parts of the site still show evidence of over browsing. Data from studies we carried out on forest composition indicate that canopy species present in the sapling and seedling layers of the forest are mainly sugar maple, beech, bitternut hickory and the non-native Norway maple. Current canopy species including red oak, white oak, chestnut oak, tuliptree, and sourgum are all highly preferred by

deer and are not regenerating; These data indicate that oak will be less important in the future at this site and sugar maple will be more abundant. Loss of oaks can affect many forest animals because acorns are such an important source of food.

Invasive plants at Mill Hill are concentrated along the northern end of the ridge top where winged euonymus is abundant; in addition, the floodplain of Hosensack Creek is choked with multiflora rose. There are scattered sites along the access road to the power line right-of-way where invasives such as Japanese angelica tree have become established. This latter example is still very limited and should be eradicated before it spreads. Norway maple is also present in several areas and should be targeted for control.

Green Lane Park

Because of the continuation of the diabase geology that defines the rest of the landscape, forested slopes south of Deep Creek and west of Perkiomen Creek that are part of Green Lane Park are included in the Mill Hill/Deep Creek Conservation Landscape. This portion of the park includes approximately 758.2 acres, most of which is mature forest that provides habitat for a rare plant and forest birds. The forest community is primarily red oak – mixed hardwood type. A site that merits special mention is a forested slope along the Perkiomen Creek behind the campground. In the 1950s tall white trillium and twinleaf, wildflowers native to western Pennsylvania, were planted. They have multiplied and spread and today present a striking display in late April. Evidence of earlier surface quarrying of diabase boulders is present on the forested slope along Deep Creek Road. A more complete discussion of Green Lane Park is included in the section on the Upper Perkiomen Creek/Green Lane Reservoir Conservation Landscape.

Large-flowered trillium at Green Lane Reservoir Park

Other Protected Open Space

Other publicly owned open space in the Mill Hill/Deep Creek Landscape includes a 45.3-acre tract off Soffa Road south of the village of Palm owned by Upper Hanover Township. It includes a short stretch along both sides of Perkiomen Creek and a wooded area bisected by a pipeline right-of-way. This tract contains a mix of mature forest and weedy successional areas. Of interest was a large population of Virginia snakeroot.

Another 28.2-acre tract of Upper Hanover Township-owned mature diabase forest is located at the corner of Kutztown Road and Township Woods Road.

Additional Sites Requiring Protection

Niantic Northeast Woods

Identified in the 1995 Natural Areas Inventory as a high priority site, Niantic Northeast Woods Large-flowered trillium naturalized at Green Lane Reservoir Park is a forested, south-facing, diabase slope along the Perkiomen Creek between Papermill Road and Wentlings Schoolhouse Road. An unnamed tributary of the Perkiomen Creek cascades down the slope over a bed of mossy boulders. The site spans the border between Upper Hanover and Douglass Townships, and has several private owners. Three Pennsylvania Natural Heritage Program-listed plants occur there: ginseng, puttyroot, and goldenseal. A high diversity of native spring wildflowers was also present.

This site should is significant because it includes a 3000 ft. stretch of the West Branch Perkiomen Creek; three PNDI-listed plants are present; and it has a high diversity of native herbaceous and woody species.

Management should include a reduction in deer numbers and removal of invasives including tree-of-heaven, Norway maple, winged euonymus, Japanese barberry, and multifl ora rose that are scattered throughout.

Management Strategies

- Protection of the remaining forested land on Mill Hill (area bounded by Hosensack Road, the Lehigh County line, Mill Hill Road and Ziegler Road).
- Connection of Mill Hill and Soffa Road Woods to protected areas along the Perkiomen Creek and provide a future trail corridor to connect Mill Hill to Green Lane Reservoir Park.
- Protection of large forested parcels (>50 acres), especially in the area bounded by Route 663, Hill Road, Green Hill Road, and Little Road.
- Protection of the Niantic Northeast site including the stretch of the West Branch Perkiomen Creek from the Paper Mill Road bridge to Branch Road.

- Reduction of deer density by facilitating greater access by hunters and placing more emphasis on herd reduction strategies with the goal of restoring forest structure and species diversity.
- Initiation of an invasive species control programs at Mill Hill and other accessible sites. Begin by targeting localized infestations before they spread further. At Mill Hill species that should be eradicated include Japanese angelica tree and Norway maple.
- Reduce mowing of grass areas adjacent to water to discourage use by Canada geese.

Upper Perkiomen/Green Lane Reservoir

High bird diversity is a major feature of the Upper Perkiomen/Green Lane Reservoir Conservation Landscape. The Green Lane Reservoir, associated wetlands, and riparian areas support waterfowl and migrating shorebirds. Adjacent forests provide habitat for breeding, migratory, and over-wintering songbirds as well.

Location Description

The Upper Perkiomen/Green Lane Reservoir Conservation Landscape is located in the heart of the Upper Perkiomen Valley surrounding Green Lane Reservoir, an impounded portion of the Perkiomen Creek. It includes both terrestrial and aquatic habitats and supports a large diversity of birds.

The landscape includes a total of 5,780 acres within the Upper Perkiomen Valley. It includes parts of Marlborough, and Upper Hanover Townships (Figure 4.7). This landscape adjoins the Mill Hill/Deep Creek Conservation Landscape on the west; at the southeast end it meets the Unami Creek/Ridge Valley Creek Landscape.

Hydrology

The landscape is completely within the watershed of the Perkiomen Creek. It includes 861 acres of open water created by a dam on the Perkiomen Creek. Perkiomen Creek above the Green Lane Reservoir dam and all unnamed tributaries to the Reservoir are classified as TSF (trout stocked fishery). The main stem of the Perkiomen Creek below the Green Lane Reservoir dam is classified as WWF MF (warm water fishery, migratory fishes), and the West Branch Perkiomen Creek is CWF (cold water fishery).

Geology

The Upper Perkiomen/Green Lane Reservoir Conservation Landscape is located in a basin underlain by the Triassic Brunswick Formation shale, mudstone and siltstone. A ring of diabase rock surrounds the basin; in

addition a narrow diabase dike cuts across the landscape parallel to Route 663 on the east (Figure 4.1). For further discussion of diabase geology see the section on geology earlier in this report.

Forest Cover

This landscape contains 1,637 acres of forest, of which 592 acres qualifies as forest interior (Figure 4.6). The largest forest block is located along the southwest side of Green Lane Reservoir.

Critical Features

The landscape includes three high priority sites identified in the 1995 Natural Areas Inventory:

Knight Road Bluffs, Green Lane Marsh, and New Goshenhoppen Meadows (Figure 4.7). Two additional sites, Church Road Floodplain and Fruitville Road Floodplain, were identified as areas of local significance.

Two PNHP-listed plants were documented in 2006: forked rush and Missouri rockcress. Animals of special concern known from the landscape include bald eagle, Virginia rail, great blue heron, and redbelly turtle.

Past Uses

Until the early 1900s the Upper Perkiomen watershed was an agricultural landscape with scattered villages. Mills and tanneries were located along Perkiomen Creek and some of the tributaries. The Perkiomen Railroad, which was completed in 1874, spurred the growth of towns and industry, including the harvesting of ice. Dams on the Hosensack and Perkiomen Creeks near Palm provided expanded water surface for a local ice harvesting industry; the ice was stored in large icehouses along the creek and shipped by rail to Philadelphia. Ice harvesting ceased after catastrophic floods and fires damaged the dams and icehouses in the mid 1920s.

The pastoral landscape of the Upper Perkiomen Valley was changed drastically in the 1950s with the construction of the Green Lane Reservoir. Built by Philadelphia Suburban Water Company to provide a water source for the city, the dam impounded more than four billion gallons of water. Many of the old mills, bridges, and even entire villages disappeared beneath the lake surface.

Preservation Status and Other Designations

The bulk of this landscape consists of Green Lane Park, a 3400-acre area managed by Montgomery County Department of Parks and Heritage Services. However, Montgomery County owns only 736 acres in this landscape. The remainder of the park is managed under an agreement

with Aqua Pennsylvania, formerly Pennsylvania Suburban Water Company. (Note that part of Green Lane Park falls within our Mill Hill/Deep Creek Landscape.) Other publicly owned lands include 107.3 acres along the Perkiomen Creek above the reservoir, which was acquired by Upper Hanover Township. In addition, approximately 1,500 acres of preserved farmland lie within one mile of the landscape; most of it is clustered at the northern end.

The Upper Perkiomen Creek Watershed was designated as one of the critical treasures of the Pennsylvania portion of the Highlands Region. In addition, Audubon Pennsylvania has designated a 4,005-acre area, which includes our entire conservation landscape, as the Green Lane Reservoir Important Bird Area. The nomination cited the presence of breeding bald eagles, a high diversity of water birds, migrating shore birds, and grassland species as factors.

Core Areas

Green Lane Park

Green Lane Park consists of a mosaic of open water, marshland, riparian and upland forest, meadows, and early successional old fields. Trails are provided for hiking, mountain biking, and horseback riding, but there are parts of the park that receive very little direct human use. Fishing and boating are permitted on the lakes. The park includes a variety of vegetation types, which contribute to species diversity.

Great Blue Heron along the shore line.

Green Lane Reservoir is a premier birding location in the Delaware Valley. A bird list for the park lists 248 species of which 98 are reported to breed locally. Highlights include breeding populations of grassland species including Grasshopper Sparrow, Bobolink, and Eastern Meadowlark, and several species of concern. A pair of Bald Eagles (federal threatened) has been nesting in the park for several years, Virginia Rail (S3 - PA vulnerable) and Great Blue Heron (S3S4 - PA vulnerable/secure) also nest there. During fall migration up to 30 species of shorebirds frequent the exposed mudflats at the north end of the reservoir.

Deer overabundance is a problem throughout the Landscape. Stunted shrub and herbaceous layers are common; forest regeneration is also affected.

Floodplains are particularly susceptible to colonization by invasive non-native plants due to the constant scouring, and deposition of propagules by floodwaters. One of the

most common species is lesser celandine, which carpets many floodplains with yellow flowers in early spring. Other common floodplain invasive species include multiflora rose, mile-a-minute, field garlic, and stinging nettle.

In marsh and wet meadow habitats Japanese stiltgrass, purple loosestrife, crown vetch, and common reed are often abundant. Arthraxon grass is a fairly recent invader. The first Montgomery County record of the species, which is native to southeast Asia, dates from 1977, in the park. It has rapidly become a major component of the late summer flora in moist, open areas, competing with late summer wildflowers such as gentians, false foxglove, and great blue lobelia. Like Japanese stilt grass it is a warm season (C4), annual grass; however, unlike stiltgrass it is not shade tolerant.

The most common invasives in moist upland forests include Norway maple, garlic mustard, and Japanese barberry. The foregoing are all shade tolerant and able to penetrate an area with an intact tree canopy. The invasive potential of winged euonymus has only become apparent in the past 20 years. This native of China and Japan is very popular in the landscape industry because of its rapid growth and brilliant fall color. It is being found with increasing frequency in moist forests, especially on diabase geology. It not only grows in the shade, it also flowers and fruits prolifically. Forest edges are very susceptible to invasion and often develop a wall of multiflora rose, wineberry, Japanese honeysuckle, Amur honeysuckle, and autumn olive.

Knight Road Bluffs

Knight Road Bluffs, which was a high priority in the 1995 Natural Areas Inventory, is within Green Lane Park. It consists of outcrops of Brunswick Formation shale on the upper portion of a steep, shaly, southwest-facing slope above the reservoir. The bluffs support a small population of Missouri rockcress, a state endangered plant.

The vegetation type on the steep shale slopes is a red-cedar – mixed hardwood rich shale woodland. Species include chestnut oak, hop-hornbeam, and pasture rose. Other native species present on the outcrops include poison-ivy, eastern red-cedar, rattlesnake weed, and woodland sunflower. The upland immediately above the bluffs contains a dry oak – heath forest. Although a trail traverses the upland edge, it does not appear to pose a direct threat to the Missouri rockcress population.

Green Lane Marsh

Green Lane Marsh, a top priority site in the 1995 Natural Areas Inventory, is also located in Green Lane Park. It includes a large area of open

wetlands best described as a mosaic of bluejoint– reed canary grass marsh and wet meadow. This vegetation type surrounds the upper end of the Green Lane Reservoir just below Church Road. Recently, under the TreeVitalize program, trees were planted along the margins of the Perkiomen Creek in this area.

Species composition is similar to the New Goshenhoppen Meadow across Church Road. However, this site has more robust stands of goldenrods, reed canary grass, and common reed. There are also thickets of silky dogwood, gray dogwood, and multiflora rose. Lower areas near the creek and margins of the reservoir flood frequently.

Invasive non-native plants including multiflora rose, Japanese hops, purple loosestrife, and common reed should be targeted for control. Deer may be playing a role in retarding succession in the marsh by browsing heavily on woody plants.

Virginia Rails are known to have bred in this area in the 1980s. More recent sightings have occurred nearby along the Molasses Creek corridor where similar habitat exists. Breeding habitat for the Virginia Rail is described as dense emergent vegetation of freshwater marshes; the rails are solitary nesters. According to the Cornell Laboratory of Ornithology the birds build a basket-type nest among emergent plant stems, often above shallow water. They are secretive, and when disturbed, scurry away under cover of thick vegetation rather than flying, making detection difficult. Pennsylvania is at the southern edge of the breeding range in eastern North America.

Many acres of what would appear to be suitable nesting habitat occur in the upper part of the park. In addition, the mud flats at the upper end of the lake, just below Church Road, are a prime stopping point for migrating shorebirds in August - September. The lake is very shallow and in most years water levels are low enough to expose extensive areas of mud where up to 30 species of shorebirds have been observed resting and feeding. Similar conditions develop in Knight Lake and the vicinity of Walt Road. The meadow also provides habitat for butterflies and other insects. Monarch butterfly larvae, pupae, and adults were observed during a September 2006 visit.

Newly emerged monarch butterfly at Green Lane Marsh

Additional Sites Requiring Protection

New Goshenhoppen Meadow

New Goshenhoppen Meadow, together with Green Lane Marsh, was identified as a top priority in the 1995 Natural Areas Inventory. The site contains a wet meadow community on a floodplain terrace along the Perkiomen Creek on the west side of Church Road. A survey of plant diversity in August and September 2006 resulted in a list of 106 species of grasses, sedges, forbs, and woody plants including one species (forked rush) that is classified as endangered in Pennsylvania.

Threats to the meadow community include succession, which could lead to greater dominance by woody species, and spread of invasive, non-native plants. Annual mowing late in the season would help to retard succession. No additional tree planting should occur here as shading would reduce meadow habitat. In addition, invasives such as multiflora rose, purple loosestrife, crown vetch, Japanese hops, and Canada thistle should be targeted for control.

Arthraxon grass, a non-native invasive grass that has spread into the area recently, is abundant in the New Goshenhoppen Meadow. This plant is an annual, warm-season grass for which a control strategy has yet to be devised. Unfortunately it reaches its peak of development at the same time and in the same habitats as late season wildflowers such as gentians and false foxglove. A strip of the meadow along the Perkiomen Creek is owned by Aqua America and managed as part of Green Lane Park. Another portion belongs to the New Goshenhoppen Reformed Church. The entire site should be targeted for protection.

Church Road Floodplain

The Church Road Floodplain is a forested site located along the east side of the Perkiomen Creek between Church Road and Fruitville Road. It was listed as a site of local significance in the 1995 Natural Areas Inventory. It is owned partly by Aqua America, partly by the New Goshenhoppen Reformed Church, and partly by Upper Hanover Township. The floodplain forest is separated from the New Goshenhoppen Meadow, described above, by a small tributary stream.

The Church Road Floodplain includes multiple flood channels of the Perkiomen Creek. Trees including shagbark hickory, pin oak, swamp white oak, and basswood are present along the creek and heavily scoured channels. It is probably best described as bottomland oak – hardwood palustrine forest. Typical native herbaceous species along the stream bank include great blue lobelia, cardinal flower, cutleaf coneflower, and dotted smartweed. Non-native herbaceous species typical of floodplains

Great blue lobelia

such as lesser celandine, moneywort, orange daylily, and dame's-rocket are also abundant.

The slightly higher floodplain terrace contains scattered large trees including black walnut and slippery elm in addition to the species listed above. The older trees are surrounded by a matrix of younger sugar maples, green ash, and blackhaw. The area appears to have been a pasture in the past. While cattle are no longer present, there is ample evidence of heavy browsing by deer. Other than a few non-native species including multiflora rose, and Japanese barberry and the ubiquitous poisonivy, a shrub layer is absent. Even the shoots of the few beech trees present were chewed down to a few inches. Herbaceous vegetation was very sparse. A large wet meadow dominated by reed canary grass is present on the floodplain on the west side of the creek just below Fruitville Road.

Fruitville Road Floodplain

Fruitville Road Floodplain is a site of local significance identified in the 1995 Natural Areas Inventory. The site lies along the Perkiomen Creek between Fruitville Road and Peevy Road; most of it is owned by the East Greenville Water Company. Riparian forest borders the creek and the numerous scoured flood channels. The forest might best be described as sycamore – box-elder floodplain forest. Canopy trees include sycamore, sugar maple, box-elder, and black willow. Spicebush, silky dogwood, poison-ivy, and multiflora rose are prominent in the shrub layer.

Native herbaceous species include jewelweed, dotted smartweed, and common blue violet. Non-native herbs such as Indian-strawberry, low smartweed, Japanese hops, and Japanese stiltgrass are also abundant.

Toward Water Street there is a wet meadow where TreeVitalize carried out a tree planting project in 2006. The meadow, which has been maintained by frequent mowing, retains evidence of native marsh/wet meadow vegetation including tussock sedge and other wetland plants. This site should be restored to marsh conditions by reducing or eliminating mowing other than what is needed to suppress unwanted woody invaders.

Management Strategies

- Protection of a continuous riparian corridor along the Perkiomen Creek above the Green Lane Reservoir to the mouth of the Hosensack Creek in Palm. Areas for consideration include:

  - Churchville Road floodplain (78-acre parcel owned by the New Goshenhoppen Reformed Church)
  - The 97-acre tract on the west side of the Perkiomen Creek between Fruitville Road and Peevy Road
  - East Greenville Water Company tract
- Permanent protection for lands owned by Aqua America.
- Elimination of mowing in the wet meadow on East Greenville Water Company's tract along Water Street to restore tussuck sedge meadow.
- Management of invasive non-native plants in the Green Lane Marsh including multiflora rose, Japanese hops, purple loosestrife, and common reed should be targeted for control.
- Targeting the following invasive species in the New Goshenhoppen Meadow for control: multiflora rose, purple loosestrife, crown vetch, Japanese hops, and Canada thistle.
- Enhancement of the Green Lane Reservoir Important Bird Area, including the following activities:
  - Protect mudflats, which are critical if shore and wading birds are to continue to use the area as a migratory stopover during the late summer. Areas in the vicinity of Church Road, Knight Lake, and Walt Road are the flats considered most important to protect.
  - Evaluate the grassland bird habitat present on the approximately 700 acres of agricultural lease fields that have been delayed-mowed (after July 15th and before August 31st) since 1990.
  - Control invasive weedy plant species, especially Canada thistle and spotted knapweed, in former agricultural fields.

Unami Creek/Ridge Valley Creek

The central feature of the Unami Creek/Ridge Valley Creek Conservation Landscape is a large block of unbroken forest bordering the Unami and Ridge Valley Creeks and covering the ridge that separates the two streams. This landscape is an important source area for birds and helps to maintain bird diversity elsewhere in the county. It is also supports six state listed species of plants and an extremely scenic landscape centered around the boulder-strewn Unami Creek.

Description Location

The Unami Creek/Ridge Valley Creek Conservation Landscape occupies a broad swath of land extending northeast from the mouth of the Unami Creek to the Bucks County boundary (Figure 4.7). Containing 6,650 acres in Marlborough Township, the large landscape also includes parts of Salford, and Upper Salford Townships. The valleys of the Unami and Ridge Valley Creeks and the diabase ridge that separates them are the major landscape features. The landscape adjoins the Spring Mountain, Mill Hill/Deep Creek, and Upper Perkiomen Creek/Green Lane Reservoir Conservation Landscapes to the west (Figure 4.7). The Unami Creek/Ridge Valley Creek Conservation Landscape is part of the larger 16,000-acre Unami Forest, which extends into Bucks County.

Geology

The landscape of the Unami and Ridge Valley Creek valleys is shaped by the broad zones of the Boyertown diabase sheet that encircle Red Hill, Green Lane, and Pennsburg and extend into Bucks and Lehigh Counties. Weathered, exposed diabase is responsible for the boulder-choked course of the Unami Creek. The northwestern one-third of the Unami/ Ridge Valley Creek Conservation Landscape includes a second, narrower diabase dike and an area underlain by Brunswick Formation shales and sandstones (Figure 4.1).

The landscape includes an active quarry located on the north side of the Unami Creek near its confluence with the Perkiomen Creek where metamorphosed shale known as hornfels, is being extracted and crushed for use in road building.

Forest Cover

Overall the area remains 64 percent forested, due to the unsuitability of the rugged, rocky hills for agriculture. It is one of few forested tracts of this size remaining in southeastern Pennsylvania, exceeded in size only by the Hopewell Big Woods area that straddles the Berks/Chester County boundary. An important characteristic is the presence of 2,555 acres of forest interior. The large blocks of unbroken forest and extensive areas of riparian forest habitat along the creeks constitute prime bird habitat.

Hydrology

The landscape includes the Unami Creek from the Bucks County border to the mouth at the Perkiomen Creek and also includes the lower portion of the Macoby Creek, a tributary that enters the Perkiomen Creek at Green Lane. The Unami Creek basin in Montgomery County (which includes Ridge Valley Creek) is designated HQ-TSF (high quality, trout stocked fi hery). The Macoby Creek designation is TSF.

The Unami Creek is dammed at two locations within the landscape, forming Lake Delmont and Long Lake in the Musser Scout Reservation. In addition the remains of a mill dam can still be seen closer to Sumneytown. Ridge Valley Creek is dammed to form Skymount Lake.

Critical Features

Extensive areas of interior forest habitat are the most important feature of this landscape and the presence of six PNHP-listed plant species was confirmed during 2006-2007: prairie phlox, Indian paintbrush, showy goldenrod, pinelands pimpernel, Mead's sedge, and goldenseal. One hundred and seventy-six (176) species of birds have been recorded in the Unami Creek Valley throughout the year in habitats ranging from interior forest, riparian forest, floodplains, and grasslands to emergent wetlands and ponds. At least 30 species of concern have been noted.

Past Uses

Bean's History of Montgomery County Land assessments for Marlborough Township in the 1800s distinguished between usable land and "rock land," which was taxed at a lower rate. The streams powered gristmills, saw mills, fulling mills, (linseed) oil mills and (gun and blasting) powder mills. The forested hills were the source of timber for building material, fuel, and charcoal making. Charcoal was hauled to Green Lane to power the iron forge that was operated there from about 1733 until 1812 by the Maybury family and later by William Schall. Charcoal was also an ingredient in the manufacture of gun powder, a local industry that was centered in the vicinity of Sumneytown during the 1800s .

Evidence of surface quarrying of diabase boulders.

Protection Status and Other Designations

The 1,250-acre Musser Scout Reservation is protected under a conservation easement held by the Natural Lands Trust. In addition, an agreement has recently been reached to protect the 150-acre Diversified Community Services Camp located along the Unami Creek between Camp Hart and Camp Delmont. The Natural Lands Trust also holds easements throughout the Unami Creek/Ridge Valley Creek Landscape.

Publicly owned land includes 145.1 acres owned by Marlborough Township.

In 1865 there were 11 mills in Marlborough Township, most along the Unami Creek, producing 20 tons of powder daily. The production of

powder involved mixing saltpeter and sulfur obtained from Philadelphia with locally produced charcoal. Accidental explosions were not uncommon, usually caused when the mixture was not kept adequately moist during mixing or if a spark occurred during milling. Because of the danger, powder mills were usually located in thinly populated areas. Powder from the Unami Creek Valley supplied troops during the Civil War and was also shipped north on the Schuylkill Canal to the coal region for use in mining. It seems likely that it was also used in local quarrying of diabase to produce Belgian blocks for building and road construction. Evidence of quarrying, in the form of drill holes and split surfaces, is readily apparent on the wooded slopes along the Unami Creek.

The Unami Hills area of Montgomery and Bucks Counties has been designated as one of the critical treasures of the Pennsylvania portion of the Highlands Region by the Highlands Coalition. The Coalition Webpage describes the area as: The Unami Hills region of northern Montgomery County is part of a diabase rock formation that stretches across Bucks and Montgomery Counties. These rocky, wooded ridges form a conspicuous band of forest two to three miles wide from the Delaware River to central Montgomery County, including the Unami Creek Valley and that of the adjacent Ridge Valley Creek. The diabase zone constitutes the largest contiguous tract of forest remaining in these two counties, and provides important habitat for forest interior birds such as pileated woodpeckers, songbirds and other species that require large blocks of unfragmented forest.

In addition, Audubon Pennsylvania has designated a 9,945-acre area, which extends into Bucks County as the Unami Creek Valley Important Bird Area, citing the presence of breeding populations of many forest interior and riparian corridor species as a major factor. A landscape conservation plan prepared by The Natural Lands Trust mapped habitat conservation networks and established landscape conservation priorities for sustaining the ecological and cultural integrity of the area.

Core Areas

Musser Scout Reservation

Musser Scout Reservation is the site of three Boy Scout camps: Camp Hart, Camp Delmont, and Camp Garrison. The reservation occupies 1,250 acres along both sides of the Unami Creek. Acquired by the Boy Scouts beginning in 1918, the land remains primarily forested. Camp facilities are concentrated on the west side between the creek and Camp Road.

The boulder-strewn streambed and steep rocky slopes of the Unami Creek valley limited agricultural use to small plots. However, the creek provided good sites for mills; 9 or 10 mills of various types operated along the Unami Creek in what is now the Musser Reservation during the 1700s and 1800s. While never cleared for agriculture, the forested slopes along the Unami were cut repeatedly for timber and the manufacture of charcoal. The forests of today are the result of regrowth. Timber harvesting continues; in the winter of 2005-2006 two tracts totaling approximately 200 acres were cut in the areas bounded by Swamp Creek Road, Scott Road, and Sutch Road, and Swamp Creek Road, Boucher Road and the power line right-of-way. Evidence of surface quarrying of diabase boulders visible in the forest at the Musser Scout Reservation

Populations of four plants listed by the Pennsylvania Natural Heritage Program including goldenseal, prairie phlox, pineland pimpernel, and showy goldenrod are known to be present in the reservation. Two others, Indian paintbrush and Mead's sedge grow nearby. Four others are known from historical records, but have not been documented recently: puttyroot orchid, spring ladies'-tresses, horse-gentian, and few-flowered nutrush.

The forests of the Reservation are successional forests of various ages that have regenerated following repeated timber harvesting. Common species include white oak, red oak, black oak, sugar maple, black birch, white ash and tuliptree with an occasional patch of hemlock. Remaining stumps revealed that trees 60 - 120 years of age had been cut in the previous year (ash - 66 years, white oak - 120 years, black oak - 80 years, tuliptree - 60 years). Timber management appears to be directed at removal of red maple and black birch as many trees of these species had been cut and left to rot on the ground. American beech was notably absent, perhaps the result of previous "stand improvement" efforts. Plantations of Norway spruce and white pine are present in scattered locations.

Floodplain forests, characterized by a mosaic of sycamore - (river birch) - box-elder floodplain forest and silver maple floodplain forest, are located along the Unami Creek. Wetlands are limited to 18.1 acres, and mostly confined to the floodplain.

Surveys by Marlin Corn during 2006-07 documented the nine common species of reptiles and amphibians within the Musser Scout Reservation.

Like most areas of Montgomery County, the Unami Creek Valley is being over browsed by deer. Seedlings and saplings of any species except sugar maple are rare. Those that reach sapling stage are often damaged during the rut by male deer rubbing their antlers on the trunks to remove velvet. Browsing may slow tree regeneration in areas of recent timber harvests.

It remains to be seen if the combination of the amount of land harvested and the protection afforded by residual brush left behind allows trees to outgrow the reach of deer. A January 2007 walk of the harvest area, revealed few young oak trees; those that were present were less than 18 inches tall and had been browsed repeatedly.

The forest of the Musser Reservation is relatively free of invasive species except for forest edges and recent harvest zones. Openings in the forest canopy caused by tree harvests allows species such as multiflora rose to flourish, as there is a constant "rain" of these bird-dispersed seeds. Japanese stilt grass is another species that follows disturbance such as timbering. The seeds were likely introduced on the tires of logging trucks as within the first year post harvest, stiltgrass appeared in the haul roads. Other species we noted include a large colony of tree-of-heaven in the power line right-of-way between Camp Road and Upper Ridge Road, Japanese spiraea spreading along the woods edge on Camp Road, and a major infestation of European water chestnut in Lake Delmont. Arthrax-on grass, a non-native grass similar to Japanese stilt grass, has invaded open areas along the stream banks and moist meadows throughout.

Camp Skymount

Camp Skymount Lake in Marlborough Township

The former Camp Skymount, just inside the Montgomery County line, has been acquired by Marlborough Township. The 41.8-acre property includes a 15.8-acre lake formed by a dam on a small tributary of Ridge Valley Creek. The property also includes areas of tussock sedge marsh below the dam. In addition, wet meadow habitat is present along the west side of the lake. Skymount Lake provides habitat for four species of frogs and toads: American toad, bullfrog, green frog, and pickerel frog.

Other Protected Open Space

Marlborough Township owns two small tracts along the Unami Creek just above Sumneytown that provide public access to the creek for fishing and picnicking. Two larger tracts of parkland are located on Finland Road (82 acres) and Geryville Pike (approximately 100 acres) The Finland Road tract consists of mature forest, much of which is seasonally wet, meadows, agricultural fields, and several intermittent streams. The property on Geryville Pike is former agricultural fields in early stages of succession. Plans are being developed to establish a butterfly meadow at

the site. In addition, Marlborough Township recently acquired an 83-acre tract along Swamp Creek Road north of the Musser Scout Reservation. This tract, known as the Ziegler Nature Preserve, consists of forested diabase slopes above the Unami Creek. Several upland meadow areas are present also. A timber harvest in the past 5-8 years opened up the canopy on a major portion of this tract allowing multiflora rose and other invasive plants to proliferate. Regeneration of continuous forest canopy on this site will take many years.

Management Priorities

- Protection and expansion of forest interior areas is the focus of recommendations contained in the Conservation Plan for the Unami Creek Valley Important Bird Area and the Unami Creek Valleys Landscape Conservation Plan. The goal is to secure a 10,000-acre expanse of forest. Consistent with this emphasis, our major recommendation is to focus on extending preservation/protection to existing in holdings, and targeting large parcels that can connect and extend existing protected areas. In addition, a program to enlist voluntary action by private landowners to manage their land in accordance with this goal is needed. Several specific sites for which protection should be sought are listed below:
  - The Camp Green Lane property along Ridge Valley Creek
  - Forested slopes on the south side of Unami Creek just above Sumneytown
- Reduction of deer density; a reduction in the number of deer present is desperately needed to protect the high diversity of plant species recorded in the Unami/Ridge Valley Creek landscape.
- Control invasive species; a good initial target would be the population of European water chestnut in Lake Delmont.
- Initiation of a forest-monitoring project to document the condition of the habitat vis-à-vis deer browse.
- Monitoring the impact of the recent timber harvest on the Musser Scout Reservation to determine the impact on the forest community and bird diversity.

HISTORIC AND SCENIC RESOURCES

Globalization and new economic patterns have dramatically altered and "standardized" land uses in many communities. With these rapid changes, buildings, objects, and places that remind us of our past and connect us to our natural environment are considered important community resources. A key to protecting the historic and scenic resources is to emphasize the relationships among environmental protection, natural resource conservation, and historic preservation. The historic towns, hamlets, farmlands, hills, valleys, woodlands, distant views, and reservoir certainly add to the character of the Upper Perkiomen Valley. If these resources are altered, the rural and small-town character of the region will also be altered, reducing the value of the community as a desirable place to live. Figures 4.8 through 4.19 contain various places that have been identified as significant historic and/or scenic resources for the communities of the Upper Perkiomen Valley.

Figure 4.8
East Greenville Historic Sites

Figure 4.9 East Greenville Historic Sites

Map #	Description	Address
1	Home	443 Main st.
2	Home	337 Main St.
3	Masteller House	300 Main St.
4	Home	240 Main St.
5	Home	238 Main St.
6	Home	216 Main St.
7	Home	125 Main St.
8	Twin Home	110-112 Main St.
9	Row Homes	126-134 Main St.
10	Row Homes	327-329 Jefferson St.
11	Row Homes	331-333 Jefferson St.
12	Commercial/Residential Building	145-147 Jefferson St.
13	Ebenezer Evangelical Church	108 Main St.
14	Realty Hall	258 Main St.
15	East Greenville Fire House	433 Main St.
16	St. John's Reformed Church	Jefferson btw. Third and Fourth streets
17	Globe Hotel	326 Fourth St.
18	Perkiomen Knitting Mills	241 Jefferson St.
19	Sweinhart's/ Nolt's Ice	135 Washington St.
20	Grand Theater	252 Main St.
21	Greenville Academy School	353 Main St.
22	East Greenville Owls Home	Main and Banks St.
23	Bill Lees Tae Kwon Do	314 Main St.
24	New Goshenhoppen Bandshell	Third St.
25	Borough Hall	206 Main St.
26	Twin Corner Store/dwelling house	113-115 Main st.
27	Farmhouse	136 Main st.
28	Three-story townhouse	232 Main st.
29	home	345 Main St.
30	Oldest Homes in town	407,409, 411 Main st.
31	home	206 Fourth St.
32	home	207 Fourth St.
33	Bieler's Store (Residence)	300 Fourth St.
34	East Greenville Railroad station (Residence)	408 Fourth St.
35	D.D. Fritch Milling Company (Residence)	410 Fourth St.
36	Home	227,229,231 third street
37	Home	201 Third street

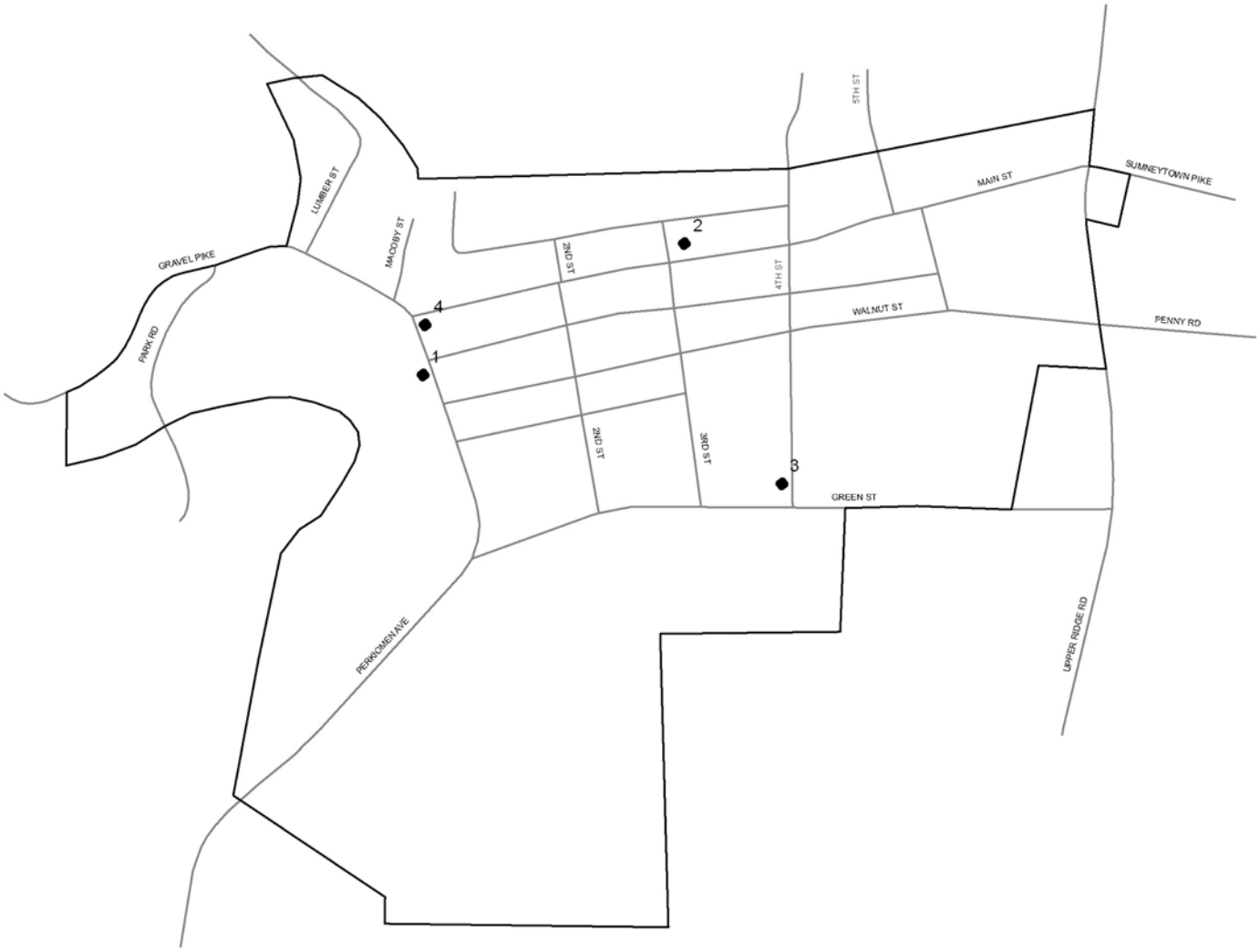


Figure 4.10
Green Lane Historic Sites

- Historic Sites

MCPC
Montgomery
County
Planning
Commission

Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom

Base map prepared October 2009

Figure 4.11 Green Lane Borough Historic Sites

Map #	Name	Brief Description
1	Red Men's Hall	Built 1907 by Tohickon Tribe improved Order of Red Men, housed their lodge, a bank, a store and a jail.
2	Green Lane Sunday School	Historic Landmark in Green Lane, privately maintained by Hunsberger Family
3	Boy Scouts Cabin	Located with Isaac Smith Park, is the only identified facility of local cultural significance in Isaac Smith Park
4	William and Caroline Schall House	Listed on the National Register of Historic Places. It was built in 1835 and has local architectural significance for its Federal Style architecture.

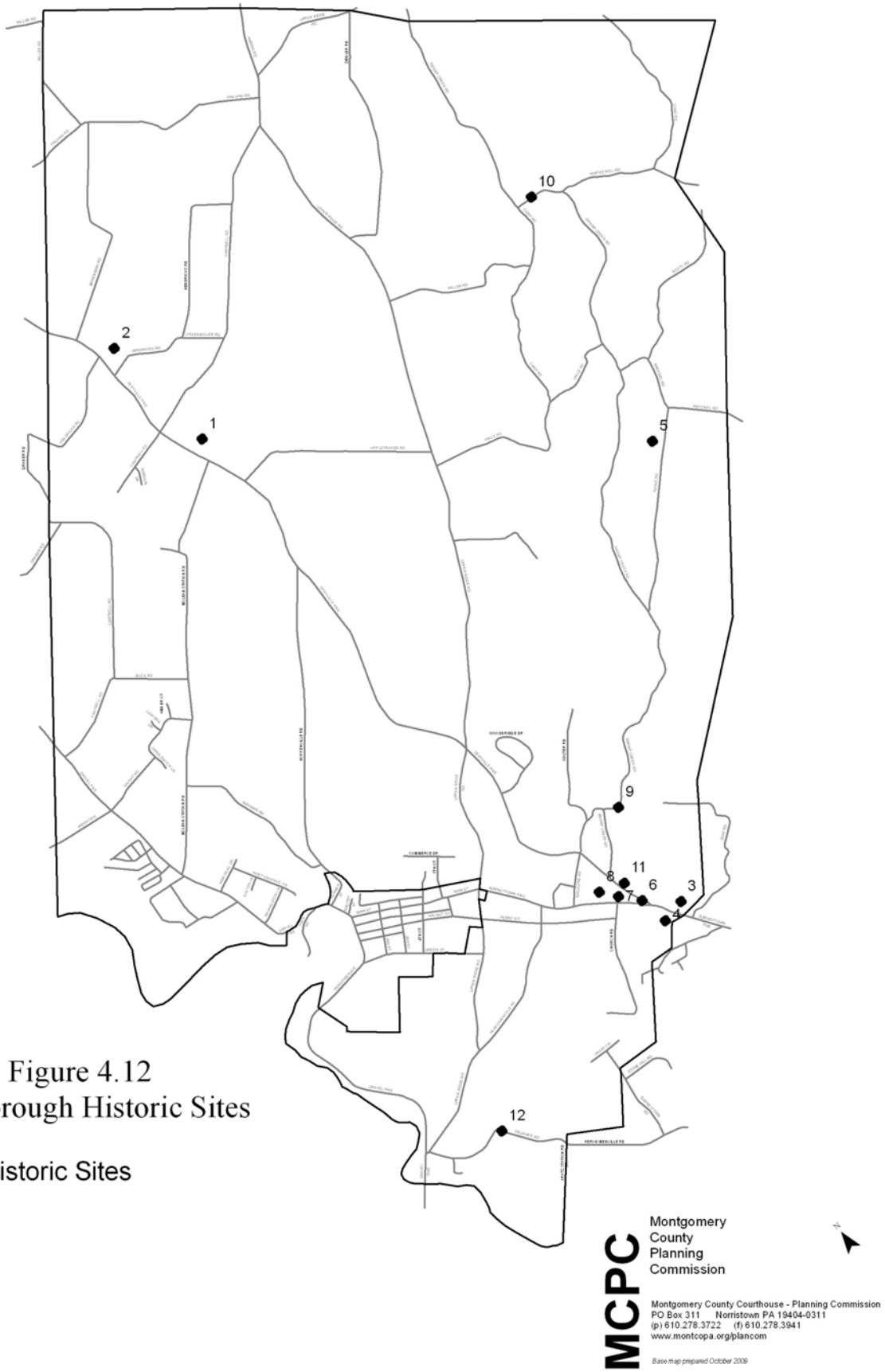


Figure 4.12
Marlborough Historic Sites

- Historic Sites

Figure 4.13 Marlborough Township Historic Sites

Map #	Name	Brief Description
1	Mayberry Farm	Stone House built in 1750 and owned by Dr. William Mayberry; located near small stream
2	Gerhart Farmhouse	Log House built in 1811; typical square hewn configuration
3	Geiger's Store	Built in 1790, major social and community center in 18th century
4	Jacoby House	Built circa 1790 is considered the largest and best preserved house of its period
5	Unami Creek Rock Shelters	Evidence of Indian rock shelters and associated artifacts
6	Sumneytown Hotel	Built in 1875, one of several inns in the community; business of Isaac Sumney (whom the village was named after)
7	Benner Print Shop	Built in 1838, originally a residence converted to print shop of the Bauern Freund in 1858; remain private print shop into 20t century; currently a residence
8	Kaufman House	Built in 1850; was the last of three major innsto be built; two-story loggia good example of 19th century hotel type; today a combination bed and breakfast/resturant
9	Unami Creek Bridge	Built in 1892; one of the last bridges erected during the 19th century; good example of 19th century civic construction project
10	Sutch Road Bridge	Built in 1730
11	Bauren Freund Print Shop	Built in 1832
12	Perkiomenville Bridge	

Figure 4.14
Pennsburg Historic Sites
Historic Sites
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/planncom
Base map prepared October 2009
PENNSBURG
MAIN ST
PENN ST
JOHN FRIES HWY
POTTSTOWN AVE
LAWFIELD RD
OAK RD
SCHOOL HOUSE RD
MONTGOMERY AVE
SEMINARY ST
JEFFERSON ST
WASHINGTON ST
ARMORER ST
BUCK RD
MIDDLE CREEK
MACOBY ST
DOTTS ST
THISTLE DR
MEADOWLN
HONEYSUCKLE
CASSIL CT
DAISY LN
HUNTER DR
LAKEVIEW TER
LAKE LN
JODIE CT
JACKSON ST
PERKIOMEN ST
SHIRLEY LN
STOVE ST
CHURCH ST
MONEY ST
CHERRY ST
GRAVEL RD

Figure 4.15 Pennsburg Borough Historic Sites

Map #	Name and Location	Description
1	Hotel Harley, Fourth St.	A 3-story hotel of Italianate design, constructed of brick, wood and stucco; built. C. 1875
2	Keystone Tax Service and Pennsburg Fastag	Birthplace of Dr. Frank N. D. Buchman; Commonwealth of PA historic site
3	Carnegie Library, Seminary St.	Italian renaissance design constructed of brick, limestone over steel frame; built in 1912-13
4	Former Wachovia Bank, 405 Main St.	Built by Tilghman Moyer Co.; modern classical design, with brick and cast stone; built 1926
5	Ganter Residence and adjacent home, 519 & 523 Main St.	2 Queen Anne style, brick houses; 2.5 stories with slate covered roofs and projecting cross gables; built c. 1895
6	Goshenhoppen Mutual Insurance, 544 Quakertown	One story tan brick modern office building of Colonial Revival design; built in 1941
7	Haas Residence 218 Main St.	Queen Anne design composed of shingles/wood trim; built c. 1890
8	Hank Residence and adjacent home, 503-507 Pottstown Rd.	Includes three 2.5 story twins all with front first story porches supported by banded concrete columns; built c. 1910
9	Hawkrider Residence 304 Main St.	Queen Anne style made of brick, cast stone with wood trim; built c. 1890
10	Heilig, Henry House, Fourth & Seminary Sts.	2.5 sotry house of Pennsylvania German Vernacular styling; built of stone with wood trim c.1750
11	Kehs Hall, Seminary	Built in 1910 by the Perkiomen School to house the gymnasium and indoor assembly hall
12	Kerivel Residence 715 Main st.	1.5 story bungalow style house on cast stone foundation with wood frame; built c. 1915
13	Kriebel Hall, Seminary St.	Principal landmark of the Perkiomen School, example of Second Empire styling; built in 1895
14	Landis Residence 101 Pottstown Ave.	1.5 story wood, brick and stone bungalow; built c. 1915
15	Lynch Mill building 119 Fourth St.	Gable-roofed mill building of brick and cut stone;first story arched windows and entry; built c. 1890
16	McManus Residence and adjacent home 546 &548 Main St.	2.5 story brick double with slate roof and shed windows; built c. 1920
17	Meadow Brook Dairy, 503 Pottstown Ave,	Unique structure built c. 1945; giant replica of a soda cap; most of the original trim exists
18	Meinzer Residence, 127-129 Fourth St.	3 story brick structure on rubble foundation; built c. 1890
19	Monaco, owned house 45 Forth St.	2.5 story Queen Anne, brick double with cylindrical turret;built c. 1890
20	Sam Morgan Auctioneer, Fourth St.	Colonial Revival warehouse, wood frame covered with pressed metal stamped in a stone texture; built c. 1915
21	Old Silk Mill, Penn St.	1.5 story brick mill building on a stuccoed stone foundation with gabbled roof; built c. 1900
22	Pennsburg Station, Fourth St.	1 story wooden station with bay ticket window; built in vernacular style; built c. 1875
23	Pennsburg School, 924-925 Main St.	Modern Georgian constructed of brick; center entry tower flanked by classrooms; built in 1924
24	Reese Residence, 379 Main St.	2.5 story stone house with slate tile gable roof; built c. 1860
25	Reformed Church of Pennsburg, 774 Main St.	Gothic Revival church originally built in 1855; 1902 addition including Gothic window and low tower.
26	Schantz Silk Mill 401 Seminary St.	This 2 story brick building marked the beginning of the silk industry in Pennsburg; built c. 1895
27	Schwenkfelder Library, Seminary St.	Colonial Revival brick building; date stone marked 1951
28	St. Mark's Evangelical Lutheran Church, Main St.	Beautiful Gothic Revival church built in 1898 of stone with large corner tower
29	Town & Country Newspaper, Fourth St. & Pottstown Ave	2.5 story brick double with slate roof and shed windows; built c. 1920
30	Welker, Thomas House, 713 Main St.	Stone and wood frame German two room: built c. 1740
31	Whittaker Residence, 753 Main St.	2.5 story brick Downing Gothic with wood trim and slate shingled roof; built c. 1870

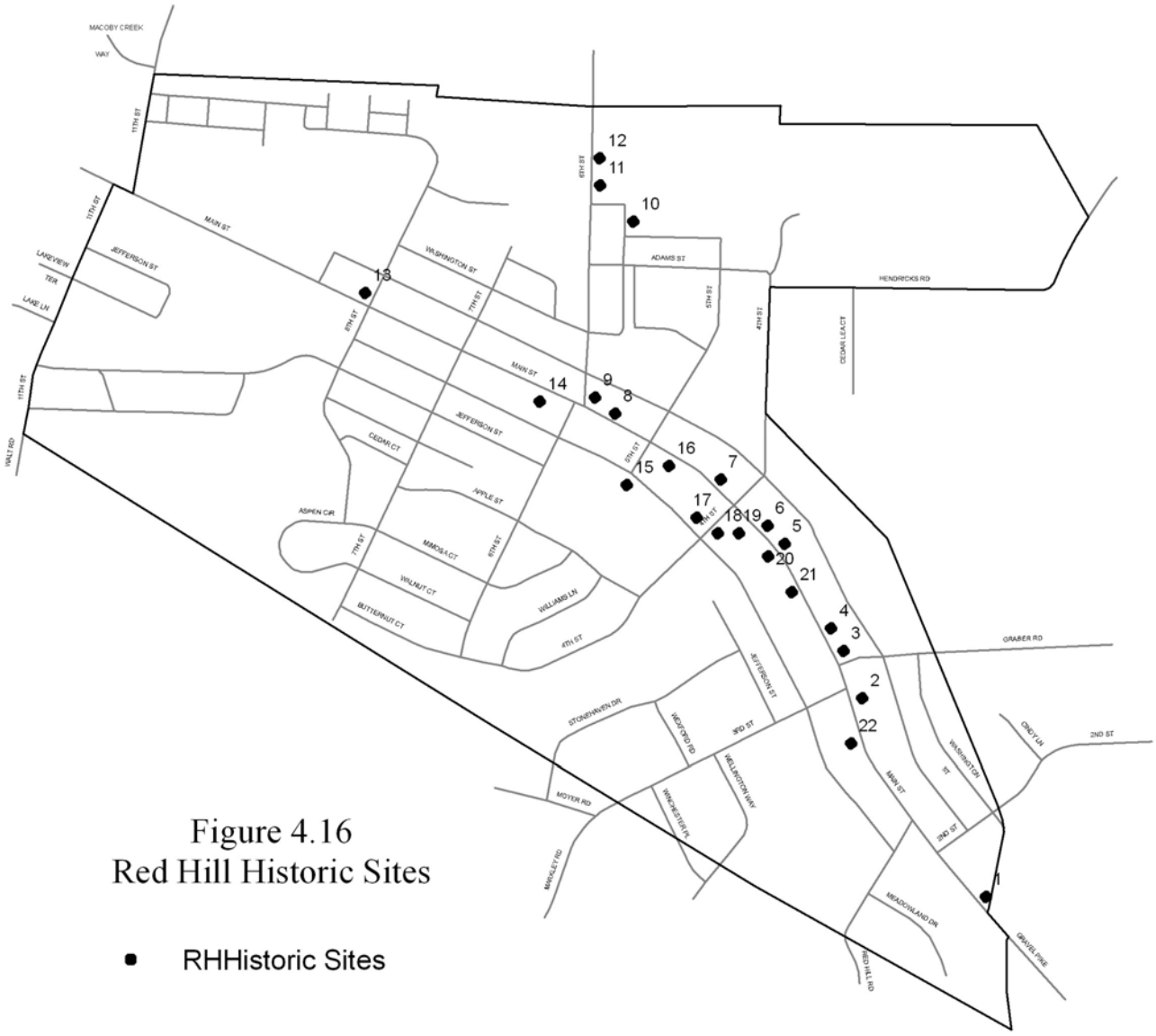


Figure 4.16
Red Hill Historic Sites

- RHHistoric Sites

MCPC
Montgomery County Planning Commission

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Base map prepared October 2009

Figure 4.17 Red Hill Borough Historic Sites

Map #	Address	Description
1	Main Street	1855;former Reiter farmhouse
2	254 Main Street	1880 keyser
3	310 Main St.	1855; Seasholtz (Hillegass-Miller House)
4	320 Main St.	1895; Nolte
5	350 Main St.	1897; Numerous owners (former Miller and Kline Cigar Factory
6	360 Main St.	1905; Nolte (first firehouse in Red Hill)
7	414-420 Main St.	1895;Engle/Ramsdale/Lawler
8	512-514 Main St.	1890; Capps/Miller
9	520 Main St.	1847: Mullaney (Josiah Hillegass House)
10	532-550 Adams St.	1910; Numerous owners
11	220-222 E. Sixth St.	1880; Brant/Beard
12	224 E. Sixth St.	1885; Daniel/ Roberts(former Moyer cigar factory)
13	800 Main St.	1930; former Woodson/Rosenberger Dairy
14	615-617 Main St.	1910; Shwak/ Bonenberger
15	501 Graber Alley	1932: Hope Valley Church (formerly Red Hill Elementary School)
16	427 Main St.	1924; Hagenbuch (former firehouse and town hall)
17	407-409 Main St.	1895; Reinard/ Psaris
18	373 Main St.	1895; Romano
19	367-369 Main St.	1895; Shaiman/ Bartholomew
20	355 Main St.	1870; Weber/Flad
21	343 Main St.	1870 Adams
22	241 Main St.	1880: Miller

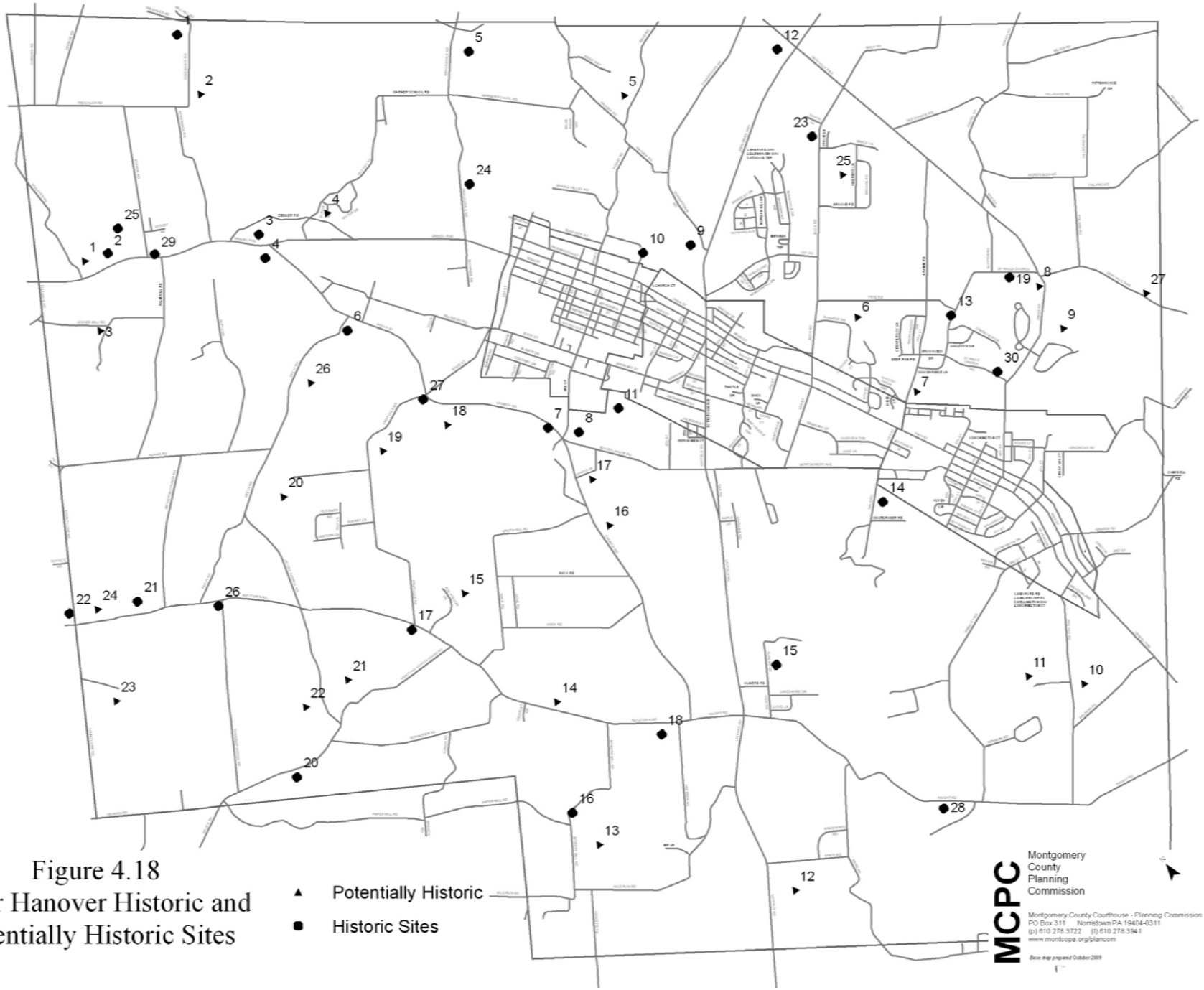

Figure 4.18
Upper Hanover Historic and
Potentially Historic Sites

Figure 4.19 Upper Hanover Township

Historic Sites

Map #	Name
1	Schwenkfelder Meetinghouse and Cemetery
2	Palm Schwenkfelder Church, Cemetery & Parish House
3	Millside Inn
4	American Legion
5	Kraussadale Schwenkfelder Meetinghouse and Cementary
6	Comly's Inn
7	New Gosenhoppen Church, Cementery, Parish, and Park
8	One Room Schoolhouse
9	Holy Cross Cementery
10	Upper Perkiomen Recreation Pool Facility
11	Perkiomen School Campus
12	Lighthouse Christian Fellowship
13	St. Paul's Church and Cemetery
14	Upper Perkiomen High School
15	St. Philip Neri Church, All-purpuse building and Rectory
16	Bowers Mill
17	Fruitville Store
18	One Room Schoolhouse
19	One Room Schoolhouse
20	Wentling's One Room Schoolhouse - private residence
21	Bethesda Cemetery
22	Schwenkfelder Cemetery
23	One Room Schoolhouse
24	Cemetery
25	Palm Dairy Co-op
26	Bethesda School - private residence
27	Original location for East Greenville Water Treatment Plant
28	Borneman Cemetery Marker
29	Palm Hotel
30	Hillegass Mill - first Mill in Region

Potentially Historic (Farmsteads)

Map #	Name
1	John Wentz Farmstead
2	Henry Fretz Property
3	Lesher's Mill
4	Miklosovic Property
5	Weisbecker Farmstead
6	Runaway Farms
7	Sabo property
8	Harry Wood Farmstead
9	Roderick Wood Farmstead
10	Zappala Farmstead
11	Surma Farmstead
12	Pepe Farmstead
13	Mohan Farmstead
14	Latshaw Property
15	Burlap Farmstead
16	Schwenk Farmstead
17	Landis Farmstead
18	Camelot Farm
19	Bieler Farmstead
20	Wentz Farmstead
21	Jacobs Farmstead
22	Loughlin Property
23	Henry Farmstead
24	Schultz Farmstead
25	Early Farmstead
26	Stevens Property
27	Phillips Property/Museum

CHAPTER 5
OPEN SPACE

Introduction

The preservation of open space and rural character is one of the associated benefits of directing new development into designated growth areas. However, active preservation of open space is essential for the provision of recreational opportunities, the protection of significant natural features, and the creation of connections between larger areas of open space. This chapter identifies and describes the open space, parkland, and recreation areas of the Upper Perkiomen Valley, how they relate to one another, and recommendations for increasing the amount, function and value of open space. The Upper Perkiomen Valley as a region has the opportunity to create a wealth of recreational opportunities, including trails and parkland for active and passive recreation, as well as considerable natural resource protection.

Existing Conditions

Municipal Core Parks and Greenway Parks

Municipally-owned open space in the region can be separated into two basic categories: core parks and greenway parks. The region's "core parks" consist of those parks that meet the community's basic active recreation needs. Core parks all contain some element of active recreation, which may include playgrounds, hard surface courts for basketball or tennis, playing fields for baseball, football, soccer, or lacrosse, picnic areas and pavilions, or walking paths. Greenway parks provide passive recreation opportunities, such as hiking, and provide protection for significant natural resources. Typically larger in size than core park land, greenway parks are often associated with larger woodlands and stream valleys, creating or contributing to interconnected swaths of open space or "greenways." Figure 5.1 contains a list of municipally-owned core parks and greenway parks.

County Parkland Conservation Lands

In addition to the parkland owned by the region's six municipalities, there is a considerable amount of land preserved in the Upper Perkiomen Valley by Montgomery County, the Natural Lands Trust, and via the State's Agricultural Preservation Program (see Figure 5.2). Montgomery County owns and operates the 3,181-acre Green Lane Park, of which approximately 2,283 acres are located in the Upper Perkiomen

Figure 5.1 Upper Perkiomen Municipal Park Inventory

Type	Name	Acreage	Municipality
Core Parks	Blaker Drive Community Park	1.71	East Greenville
	Isaac Smith Park	5.82	Green Lane
	Finland Road Park	82	Marlborough
	Unami Creek Park	5.8	Marlborough
	Pennsburg Community park	11.72	Pennsburg
	Red Hill Park	5.02	Red Hill
	Camelot Park	92.3	Upper Hanover
Total		*204.37*	
Greenway Parks	Nature Meadow	1.81	East Greenville
	Former Bieler Property	13.7	East Greenville
	East Greenville Water Authority	41.51	East Greenville Water Authority
	Green Lane Open Space	26.13	Green Lane
	Zeigler Nature Preserve	149.87	Marlborough and Green Lane
	Lake Skymount	41.8	Marlborough
	Weidner Farm	102.2	Marlborough
	Pennsburg Nature Preserve	8.67	Pennsburg
	Centennial Park	6	Red Hill and Upper Hanover
	Hildegard Blair Park	10.64	Upper Hanover
	Macoby Run Park	79	Upper Hanover
	Mill Hill Preservation Area	223.8	Upper Hanover
	Peevy Road Open Space	85.16	Upper Hanover
	Soffa Road Open Space	45.3	Upper Hanover
	Township Woods	28.2	Upper Hanover
Total		*863.79*	
Upper Perk		**1068.16**	

Valley (1,531 acres of land and 752 acres of water). In addition, The Natural Lands Trust holds easements on several boy scout camps owned by the Boy Scout's Cradle of Liberty Council (Camps Delmont, Hart, and Unami), totaling 1,264 acres. Lastly, Montgomery County, through the state's agricultural land preservation program, has preserved 17 farms totaling 1,364 acres. All of the farms are located in Upper Hanover

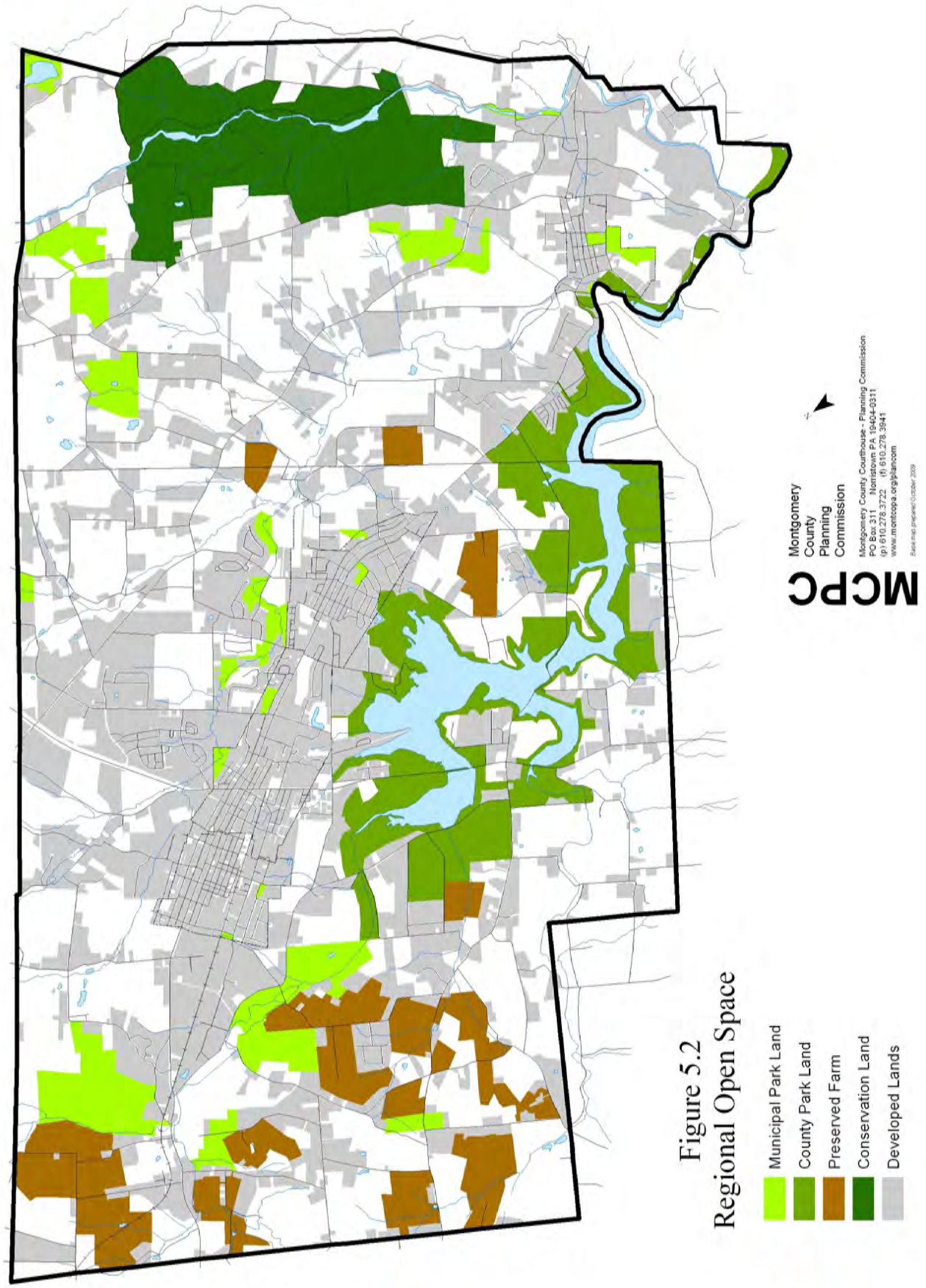
Figure 5.2
Regional Open Space
Municipal Park Land
County Park Land
Preserved Farm
Conservation Land
Developed Lands
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown, PA 19404-0311
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Base map prepared October 2009

Township, remain in private ownership and continue to be actively farmed.

Regional Recreation Survey

As part of a larger effort to understand the current recreational activities and preferences of Valley residents, the Regional Planning Commission conducted a Regional Recreation Survey. The survey was developed in beginning in 2006 and contained questions pertaining to household characteristics, park usage, and the need for additional recreational facilities and programs. The survey was finalized in early 2007 and each municipality was responsible for distributing the survey to their own residents. However, due to administrative timing and varying methods of distribution, the surveys were distributed through the second-half of 2007 and into early 2008. Surveys were unable to be distributed for Green Lane Borough. When the survey results were tallied in early 2008, 545 surveys had been returned, resulting in a response rate for the region of nearly 8%. The boroughs of East Greenville and Pennsburg and Marlborough Township all had return rates greater than 10%. Red Hill Borough and Upper Hanover Township had return rates of 3.0% and 3.4%, respectively.

Based upon the survey's demographic questions, the types of households that are represented by the survey findings were able to be characterized. From a region-wide perspective it was estimated that the 545 surveys represented about 1,579 people, resulting in an average household size of 2.90. Figure 5.3 shows the number of persons represented by the survey returns for each municipality. As a side note, the municipal survey returns depicted in Figure 5.3 only add up to 509, versus the 545 returned for the region, because not all survey respondents indicated the municipality in which they reside. Therefore, questions summarized for the region will utilize all of the 545 surveys that provided a response to a specific question, while municipal-specific questions will use only those responses attributable to that municipality.

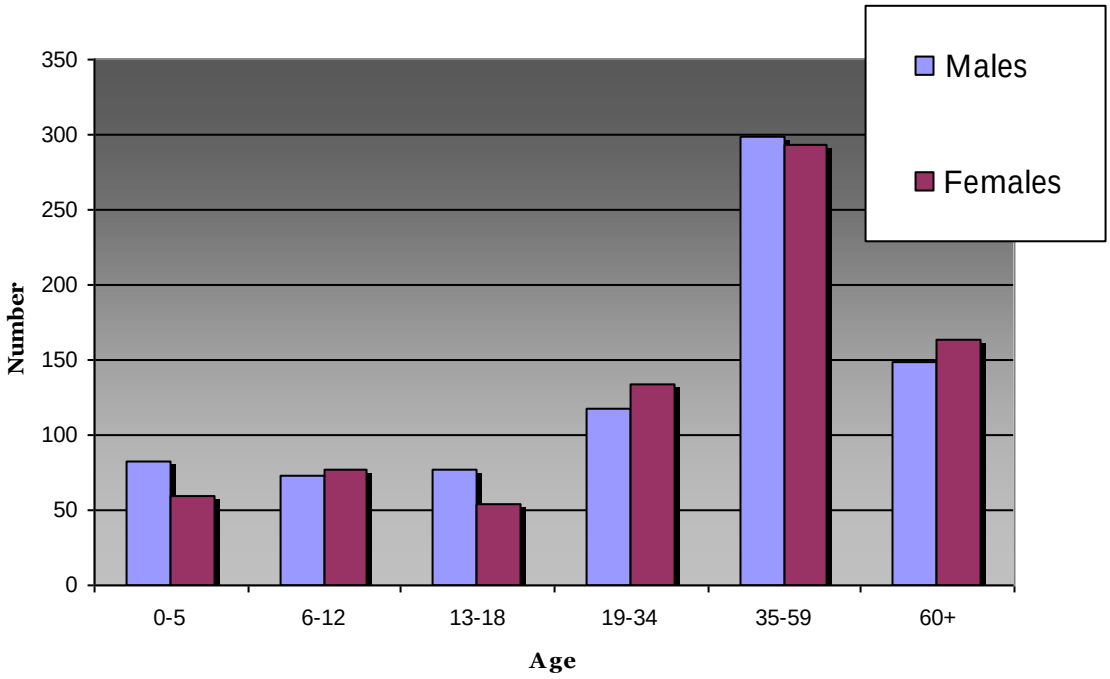
Figure 5.3 Survey Returns by Municipality

Municipality	Surveys Returned	2007 Households*	Return Rate	Population Represented
East Greenville	140	1,098	12.8%	373
Marlborough	138	1,240	11.1%	372
Pennsburg	132	1,281	10.3%	351
Red Hill	28	949	3.0%	64
Upper Hanover	71	2,111	3.4%	199

* Estimated from 2007 U.S. Census population estimates and 2000 average household size.

In terms of gender composition for those represented by the survey returns, 50.5% were Male and 49.5% were Female. While there is some variation in the gender break-

Figure 5.4 Age and Gender of Representative Survey Population

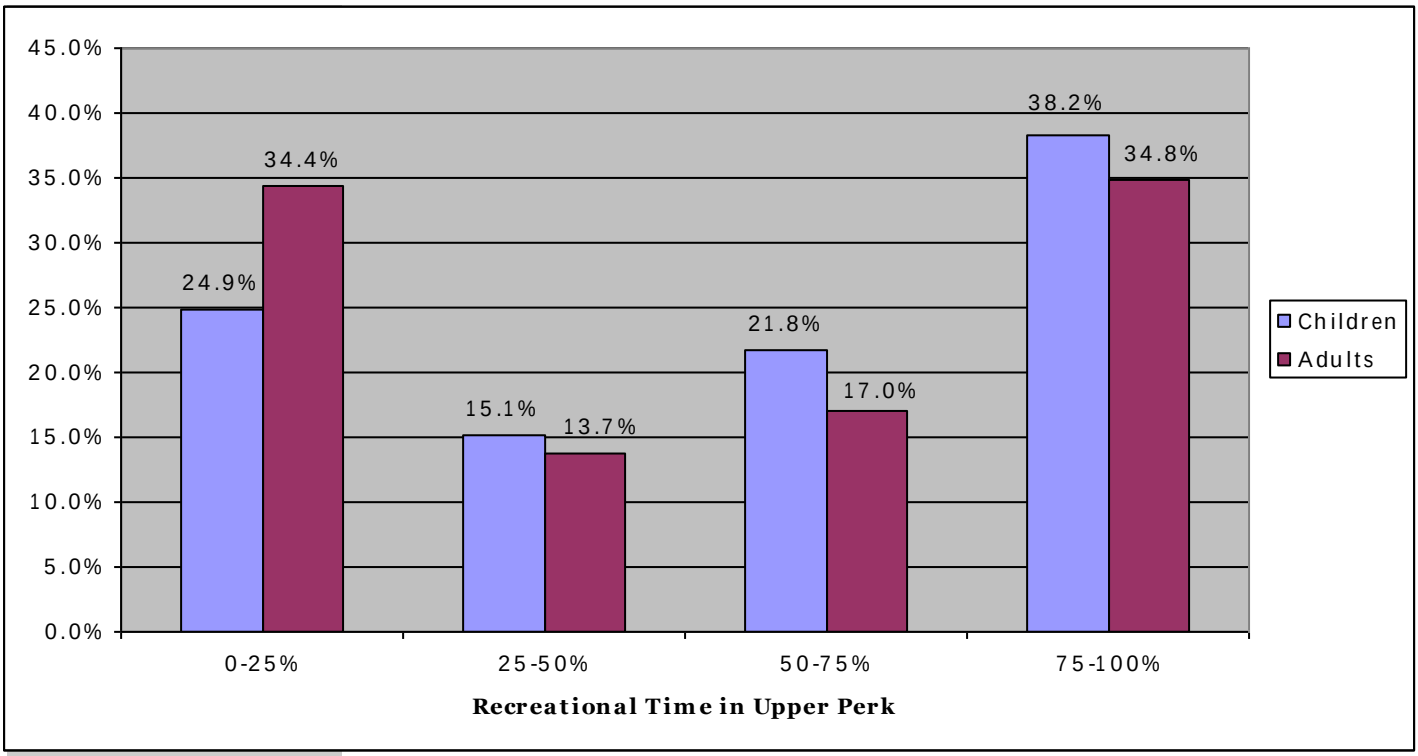


down for different age groups (see Figure 5.4), the most populous age group (35-59) was almost an even 50/50 split. Looking further at the age breakdown, children 18 and under comprise 26.8% of those represented by the surveys and those 60 and over comprised 19.8%.

Also significant regarding household composition is the percentage of households that have children under 18 years of age living at home. For the region as whole, 42% of the households had children while 58% percent of the households were without children. When considering the individual municipalities, households with and without children in East Greenville and Pennsburg were nearly split 50/50.Marlborough, Red Hill and Upper Hanover all had a greater percentage of households without children. Red Hill had the largest percentage of households without children at nearly 80%. The percentage of households in Marlborough and Upper Hanover without children was 64% and 59%, respectively.

In terms of where adults and children within these households spend more than half of their recreation time, either within the Upper Perkiomen region or outside the region, both adults and children spend the more than half of their recreation time within the region. However, while 60% of the children spend more than half of their recreation time within the region, only 52% percent of adults do (see Figure 5.5). This means that nearly half of all adults (48%) spend the more than half of

Figure 5.5 Percentage of Recreational Time Spent in the Upper Perk



their recreation time outside the region. Given the likelihood that adults are generally able to travel further for recreational activities and may be involved in a greater variety of activities, some of which may not be available within the region, this is not too surprising. Conversely, children tend to be involved in recreational activities through school or local sports teams, resulting in more children staying within the region for more of their recreational activities. In terms of adults, Upper Hanover residents were most likely to spend the over half of their recreation time within the region (nearly 70%) while a slight majority of Pennsburg adults spent over half of their recreation time outside the region. Of the few children in Red Hill represented by the surveys, over 80% spent more than half their recreation time within the region. Of the other four municipalities, only children in Marlborough were reported to spend more than half their recreation time outside the region.

Lastly, the survey determined which parks within the region received the most use. Of all the parks within the region to be visited at least once by the households responding, Green Lane Park was used the most: 289 of 545 households used Green Lane Park at least once and 75 households used it more than 24 times over the previous year. The other parks to be used more than once by at least 90 households included Various Upper Hanover Parks (164), Isaac Smith Park (132), Pennsburg Nature Preserve (116), Blaker Drive Community Park and Unami Creek Park (96 each) and Finland Road Park (93).

Open Space Needs
Level of Service Standards

Historically, open space needs have been calculated using a 1983 guide, *Recreation, Park and Open Space Standards and Guidelines,* developed by the National Recreation and Park Association (NRPA). The 1983 guidelines suggested a municipal park system include 6.25 to 10.5 acres of land per 1,000 people. These standards were primarily used to calculate park needs for a majority of the Open Space Plans completed by the Upper Perkiomen Valley communities. Using the high-end of the standard, at 10.5 acres per 1,000 people, the cumulative open space needs of Upper Perkiomen Valley communities based upon the region's projected 2035 population (23,850) would be approximately 250 acres . With total open space over 1,000 acres, the region presently exceeds this future acreage need by more than 4 times (818 acres). Basing open space needs solely on acreage, however, does not necessarily mean the proper mix of open space and recreation opportunities exist within each municipality. Given this deficiency of the standards, the NRPAs 1983 publication has been replaced to recognize the expanded role parks and open space play in local communities.

The newer publication, *Park, Recreation, Open Space and Greenway Guidelines*, was developed by the National Recreation and Park Association and the American Academy for Park and Recreation Administration. The new title, without the word "standards," is indicative of the shift toward a new way of looking at open space. The philosophy of the more recent publication is to provide guidance only, ultimately allowing the amount of park, recreation, and open space to be defined by individual communities. The publication also emphasizes a systems approach to park, recreation, open space, and greenway planning that focuses on local values and needs rather than strict formulas.

This new systems approach looks at the level of service provided to the users of the facilities rather than the size of the facilities based upon population. This method reflects, in part, the dual function of municipal parkland: providing recreation opportunities (passive and active) and protecting important natural features. Municipal parks often contain a significant amount of environmentally sensitive land that prevents much of the acreage from being utilized for active recreation. Under these guidelines a 5-acre, fully developed municipal park that contains few significant natural features may afford the same level of service as a 35-acre park that provides active recreation and also provides protection for important woodlands, wetlands, or other environmental amenities. Therefore, acreage needs for each municipality will hinge upon their individual goals and not an arbitrary per capita acreage figure.

The Upper Perkiomen as a region feels strongly about natural resource protection and preservation of open space. Therefore, each community will individually establish park and open space plans that balance their desire to provide recreation opportunities while protecting the region's natural resources. This philosophy also complements the objective to establish trail connections between open space and recreational areas since many of these connections are often viewed as "linear parks" and can be provided in association with greenway protection.

Regional Recreation Survey

The results of the regional recreation survey can also be used to identify potential open space and recreation needs of the region. While the first six questions of the survey request information on household composition and park usage, question 7 asked each respondent to provide their preferences (1 = strongly disagree to 5 = strongly agree) regarding a series of questions. Figure 5.6 summarizes these responses for each municipality, the region as a whole, and for those households with children. The chart in Figure 5.6 highlights in yellow the top three responses for each entity as well as the two questions with the lowest favorable responses (highlighted in red). From a region perspective, 2 questions were in the top responses for every entity, the desire to preserve more natural areas and provide more recreation for teens, and there was general agreement among all groups that respondents would not be more likely to use a park if one were closer to their home.

When asked specifically about the need for new recreational facilities, respondents identified pathways for hiking/walking, pathways for cycling, fitness/exercise trails, indoor recreation, and nature trails/areas as the top five responses. With four of the top five responses involving trails and pathways, there is a clear desire to increase and expand recreational trails within the region. This may also support the idea that the region is well-served by traditional open space and recreational lands and that future expansion of the regional park system should focus upon less land-intensive linear parks like trails and pathways.

When asked about recreation programming, survey respondents highlighted the need for more programs involving concerts, environmental education, soccer, baseball, and softball.

Figure 5.6 Preferences for Survey Questions 7a—7f7

Question/Planning Area	East Greenville	Marlborough	Pennsburg	Red Hill	Upper Hanover	Region	w/Children
#7a Municipalities should take primary responsibility	3.86	3.54	3.9	3.9	3.91	3.79	**4.05**
#7b Use park more if closer to home	3.49	2.85	3.72	3.3	3.11	3.34	**3.68**
#7c Develop more active recreation facilities	3.85	3.29	3.88	3.78	3.75	3.71	**4.18**
#7d Establish a network of pathways	3.94	3.73	4.03	4.04	3.59	3.88	**4.05**
#7e Preserve more natural areas	4.15	4.21	4.23	4.52	4.27	4.23	**4.22**
#7f1 more recreation for preschoolers (age 1-5)	3.66	3.24	3.8	3.53	3.37	3.55	**3.85**
#7f2 more recreation for children (age 6-12)	3.94	3.55	4.17	3.88	3.62	3.88	**4.24**
#7f3 more recreation for teens (age 13-18)	4.25	3.91	4.29	4.36	4.13	4.18	**4.47**
#7f4 more recreation for young adults (age 19-34)	4.06	3.73	3.92	3.95	3.75	3.9	**4.13**
#7f5 more recreation for older adults (age 35-59)	3.93	3.68	3.8	3.71	3.58	3.77	**3.88**
#7f6 more recreation for seniors (age 60+)	3.95	3.47	3.94	3.9	3.63	3.79	**3.78**
#7f7 more recreation for handicapped (any age)	3.92	3.59	3.9	4.11	3.72	3.82	**3.91**

MENU OF NATURAL AND HISTORIC RESOURCE AND OPEN SPACE RECOMMENDATIONS FOR CONSIDERATION

Update and Implement Municipal Open Space Plans

The municipal open space plans should be selectively updated where necessary to reflect new conditions. Specifically, the plans should incorporate the 2010 Census data, when available, acquisitions completed since adoption of the Open space Plans, and an analysis of open space needs using the updated NRPA Level of Service approach. The updated open space plans should also revisit properties recommended for acquisition and possible trail alignment to determine if the recommendations are still suitable and/or have changed priority. Finally, the open space plans should integrate the policy recommendations within this regional comprehensive plan. Increased focus upon inter-municipal connections and cooperation will greatly enhance the value of existing open space and permit consideration of future acquisitions within a regional context.

Preserve Rural Character

The preservation of the Upper Perkiomen Valley's rural character will involve protecting the region's natural environment, as well as the historic character of the Boroughs and existing villages, and promoting farmland and agricultural protection measures. This policy can be achieved by the municipalities of the Upper Perkiomen Valley through the implementation of acquisition (both fee simple and development rights purchase) and nonacquisition methods. Acquisition can involve preservation of significant natural features, including woodlands, stream valleys, and steep slopes, land for parks and open space, and agricultural lands. However, the limited availability of resources to purchase open space and the existing amount of rural area to be preserved makes it impossible to rely completely upon acquisition to preserve rural character. Therefore, each of the municipalities will need to implement various nonacquisition methods to ensure that when development or redevelopment does occur it is done so in a way that protects and enhances the rural character. Below is a summary of zoning and other techniques that might be considered to preserve and protect the rural character of the Upper Perkiomen Valley.

Methods to Preserve Rural Character

Agricultural Zoning

Agricultural zoning lowers the possible development density in rural areas by allowing only agricultural uses or a large few residential lots. The minimum lot size needs to be large enough to support profitable farm operations (for example 10-40 acres). Ten acres is generally used as a minimum farm size and is consistent with Act 319 and other state and federal criteria. This type of restrictive minimum lot size lessens the amount of residential development to a large degree.

An alternative to the above approach is to have a density calculation based on one home per 10-40 acres but allow homes to be placed on smaller lots of 1 or 2 acres. This will limit agricultural density but allow small lots to be subdivided so that a farmer can subdivide off residential lots and still retain the character of the agricultural area.

Another possibility is basing agricultural zoning on the soil type. For example, an area with prime agricultural soil would have one home per 10 acres or up to 40 acres (depending upon the community's ideals). Areas with other soil types could have homes on smaller lots (such as one home per 1 to 2 acres).

The zoning techniques discussed above require that a municipality have a limited amount of rural residential development with a strong, agricultural community. The intent of this type of zoning is to protect agricultural areas (rather than just rural character). Further zoning techniques relating to the preservation of agricultural soils would enhance any agricultural zoning designation.

Agricultural Security Area and the Sale of Farmland Development Rights

Agricultural security districts can be created through state law. Groups of farmers, with municipal approval, can form these districts. The districts must be at least 500 acres in size (although farms do not have to be contiguous). If a municipality is unable to meet the acreage requirement, it can join another municipality's district. While there are no obligations with this program, landowners receive these benefits:

Farms in agricultural security areas are protected from new ordinances that restrict normal farming operations or define farms as nuisances. (Although farm operations must use acceptable farming practices).

Condemning land in agricultural security areas becomes more difficult. Land condemnation by the Commonwealth or municipal authorities,

school boards, and governing bodies, must be reviewed by and approved by a state agricultural board prior to any action.

Farms in agricultural security areas can apply to sell their development rights to the county and the state. Farmers receive the difference between the development value of their property and the farm value of their property when development rights are sold. A conservation easement is then placed on the property, which permanently restricts the property from any nonfarm development on the property.

Performance Zoning

With performance zoning, the minimum lot size is directly related to the natural features of the site. The lot size corresponds to such features as: high water table soils, floodplains, and steep slopes. When many of these features exist on a site, the minimum lot size must be increased. If these features are not present, the minimum lot size can be smaller, such as 1 acre. These provisions are placed in the zoning ordinance.

An example of performance zoning is where the environmental constraints of a lot are subtracted from the net lot area. If the zoning district allowed a minimum of 1-acre lots and the applicant proposed a 2-acre lot and the lot contained 1.5 acres of floodplain, then the application would not be permitted because the net area would be 0.5 acres.

Performance zoning ordinances can also apply ratios to a wide range of environmental constraints such as floodplains, wetlands, steep slopes, soils, geology, woodlands, etc. The ratio is multiplied by the constrained portion of the lot. This is then subtracted from the lot area to yield the net lot area. For example for a 5-acre lot with a ratio of 100 percent for floodplains and 50 percent for steep slopes that contains 1 acre floodplains and 1.5 acres of steep slopes:

1.5 (acres of steep slopes) x .50 = .75 acre

1 (acre of floodplain) x 1 = 1 acre

1 (floodplain) + .75 (steep slopes) = 1.75

5 – 1.75 = 3.25 net acres

Conservation Subdivision

One method to preserve open space is to cluster homes within one portion of a development and reserve the rest for permanent open space. The overall density of the site is about the same, while the homes are on smaller lots. The open space area might preserve the views, or historic landscapes, farmland, woodlands, steep slopes, wetlands, etc. The open space may then be dedicated to the township or borough as parkland.

Through clustering, significant portions of the site can be preserved as much as 75 or 80 percent. The open space may be in the developed portion of the site so that the homes have neighborhood open space. While this type of development preserves natural resources, it also benefits the developer by lowering infrastructure costs (reducing road length and utility lines).

Incentive Zoning

Communities can encourage developers through incentive zoning to provide open space, recreation facilities, trails, and parkland. The incentives are placed in specific zoning districts, and might allow a developer to get a higher density than permitted, or a smaller lot size. The ordinances should be crafted so that the cost for providing the amenity does not exceed the benefit received from the incentive.

Natural Resource Protection Ordinances

The ordinances discussed below protect natural features such as floodplains, stream corridors, wetlands, groundwater, steep slopes, and woodlands.

Floodplains – Floodplain ordinances (which exist in Montgomery County municipalities) restrict or prohibit development within floodplains, especially development within the 100-year floodplain. There are typically three types of floodplain restrictions in the county. One type, often common in the boroughs, allows development within the floodplain provided that buildings are floodproofed. Many ordinances do not allow building within the floodplain. This type of ordinance protects properties from flood damage, protects the environment within the floodplain, and also reduces the possibility of raising the flood level. A third type of ordinance not only restricts development within the floodplain but also requires a minimum setback from the edge of the floodplain. This type of ordinance protects the unique wooded habitat, or riparian woodlands, of the floodplain.

Stream Corridors – Stream corridor protection ordinances go beyond floodplain ordinances to protect the water quality of the stream in addition to plant and animal habitats. These ordinances have a minimum setback requirement from the stream bank where no development can occur. A minimum setback of 75 feet from the stream bank, for example, will help stabilize the stream bank, control sediment, remove nutrients that would pollute the stream, moderate stream temperature, and preserve wildlife habitat. The area within the setback should be left in its natural state.

Wetlands – In addition to federal and state governments, municipalities can regulate development that occurs on wetlands. Municipalities can prohibit development on wetlands and require wetlands to be shown on development plans. While developers can locate homes right next to wetlands (after receiving all the federal and state permits needed), such location might lead to future problems. Homeowners might decide to fill in the wet areas behind their home to have a more usable back yard. To prevent this, local municipalities can require a minimum building set-back from wetlands. While federal and state regulations address only the filling of wetland and not the destruction of vegetation within the wetlands, municipalities can take the extra step and require the replacement of destroyed wetlands vegetation.

Groundwater – Wellhead protection ordinances can help protect groundwater quality. Stormwater ordinances which include provisions for groundwater recharge also help protect groundwater quality.

Stormwater management ordinances help protect surface and groundwater and ensure that adequate stormwater management takes place with development. Such ordinances maintain existing pre-development water balance within watersheds, groundwater recharge, and runoff volumes. Furthermore stormwater management ordinances can help minimize non-point source pollution and the impact on stream temperatures.

Wellhead protection areas are identified by a number of methods, such as a hydrogeologic survey. Wellhead protection ordinances can restrict certain uses such as gas stations, limit the intensity of development (such as limiting the density of single-family detached homes with individual septic systems), and/or by controlling how a land use activity occurs (such as farming with specific types of pesticides and other chemicals) within wellhead protection areas. A municipality can also impose design standards that would not allow, for example, hazardous materials containment structures or large impervious areas such as parking to limit potential groundwater pollution.

Steep Slopes – Development on steep slopes, which are typically slopes of 15 percent or more, can be restricted or prohibited through steep slope ordinances. Development often is permitted on slopes of 15 percent to 25 percent if the minimum lot size is increased and/or the percent of the lot disturbed is limited. Some steep slope ordinances prohibit all development, although typically development is prohibited on extremely steep slopes such as 25 percent or more.

Woodlands – Protection of existing trees and woodlands can be accomplished with woodland preservation ordinances. Some ordinances provide minimum standards that must be followed during construction for trees that will remain. Other ordinances, when existing trees are preserved, allow developers to put up fewer street trees, buffers, or individual lot trees. Tree replacement is another requirement of some ordinances.

Donations of Properties for Permanent Open Space

Landowners can preserve their land by donating the full title of their property or by donating their development rights to a nonprofit land conservation group. These two methods permanently preserve open space.

Landowners who donate development rights receive tax benefits and their land must be permanently restricted from future development. Land conservation groups that operate within Montgomery County and who receive donations include: Montgomery County Lands Trust, the Brandywine Conservancy, the Natural Lands Trust, the Nature Conservancy, the Conservancy of Montgomery County, and the Wissahickon Watershed Association.

Some land conservation groups can also help local landowners to develop some of their land while keeping the majority of the land open and deed-restricted. This approach ensures that land is developed in a sensitive manner yielding the landowner some monetary compensation, while also preserving the most important environmental amenities on the site.

Requiring Open Space in Developments or a Fee in Lieu of Open Space

Municipalities can require developers to provide open space through their zoning and/or the subdivision ordinance.

An open space requirement when placed in the zoning ordinance must be located in specific zoning districts (for example the high-density residential district). The zoning ordinance can specify the percentage of required open space, for example between 15 and 20 percent, and other criteria relevant to the maintenance of common open space. The municipality can not require the open space to be dedicated or open to the public or to include specific recreational facilities. However, the community can require that the land meet specific standards such as being flat, open land suitable for playing fields.

The subdivision ordinance can also require developers to provide open space but it also allows further provisions. The ordinance can require the land to be dedicated to the township or borough. If a developer does not want to provide the land, the ordinance can require fees in lieu of land.

An adopted recreation plan must be in existence in order to have this requirement and must follow the provisions within the Pennsylvania Municipalities Planning Code. A community needs to make a decision of whether fees in lieu of should be accepted so as to create larger central parks for a number of neighborhoods or if there should be smaller scale open space within developments. Requiring developments to provide open space allows municipalities to meet the needs of new residents without building additional municipal parks. The provision of requiring open space or a fee in lieu of allows for a community to have flexibility in establishing their open space priorities.

Historic Preservation Ordinances

While not directly related to open space preservation, historic preservation ordinances help save historic properties that add to the character of an area. There are a number of techniques that communities can use for historic preservation.

One possibility is that communities can amend their building codes to require a review before demolition permits are issued. This method delays demolition and allows for community input. Communities can also amend their zoning ordinance to encourage historic preservation. One way of encouraging historic preservation is the creation of a village ordinance that gives development bonuses for preserving buildings or restricts the uses within the district. Incompatible uses with historic areas, such as gas stations, are not permitted in these districts. The zoning ordinance can also encourage historic preservation by allowing historic buildings to have more uses than normally permitted in a particular district. For example, apartments, bed and breakfast establishments, or offices might be permitted in historic homes located in a single-family detached residential district.

A third possibility is that communities can create historic districts with approval of the Pennsylvania Museum Commission. This approach is more restrictive than the previous approaches discussed. Once a historic district is created, townships or boroughs have stringent control over design and preservation of facades. A township or borough architectural review board is required to be created to review all proposed changes to historic buildings.

CHAPTER 6
COMMUNITY FACILITIES

Introduction

Community facilities of the Upper Perkiomen Valley Region include public sewer and water systems, municipal stormwater systems, emergency services, educational institutions, libraries and museums, and solid waste services. This chapter will describe these services which have a great impact on the quality of life and safety of the Region's residents.

Sewage Facilities Existing Conditions

All development relies on some type of sewage facilities, such as public sewage facilities or individual on-lot septic systems. Both individual and public sewage facilities play a role in determining the amount, location, and rate of growth of a region. If there is access to public sewer in an area and adequate capacity at a treatment facility, extensions to a municipal sewerage system are often made to accommodate growth. Conversely, the lack of public sewers has often been a major constraint to development, especially in areas poorly suited for on-lot disposal systems.

Therefore the strong connection between public sewers and development requires careful coordination between sewage facilities planning and land use planning. Sewer growth areas should be provided only where growth is appropriate. Municipal central sewage facilities should be used throughout growth areas for medium- and high-density development to protect water quality and public health for the largest concentrations of new development. In addition, when land uses that require public sewers are grouped together, it allows economical sewage treatment service and helps control suburban sprawl. Methods of on-lot sewage treatment should be used outside the growth areas to protect water quality and keep the levels of development in line with the goals of this comprehensive plan.

In areas where on-lot sewage disposal systems are used, the type of system selected and permitted depends on the site conditions and the type of soil on the lot. In order to use an on-lot system for new land development, a property owner must demonstrate that the lots are

generally suitable for on-lot sewage disposal. Site suitability information is reviewed by the Pennsylvania DEP as part of the planning module process and a permit must be obtained from a local certified Sewage Enforcement Officer (SEO) or the State of Pennsylvania depending on the size of the system. As a minimum, general site suitability for planning is determined based on one test pit and one 6-hole percolation test passing in each soil type as defined by soils series, slope and erosion class. In order for a site to be generally suitable, the percolation rate must fall between 3 and 180 minutes per inch, have a depth of soil of 20 inches or greater to a limiting zone and have slopes of 25% or less.

While soil types are generally not a limiting factor when planning public sewer service, soil is the foundation of conventional onsite wastewater treatment. Soil type and characteristics are important factors in determining if an on-lot system can be installed and which type of on-lot sewage disposal system is best suited for a site. Among the soil characteristics that will affect on-site disposal are depth to a limiting zone (groundwater or bedrock), slope, and the ability of the soil to percolate water. Soils that provide very limited potential or no potential for on-lot sewage disposal are found in all areas of the region and can be seen on Figures 6.1 through 6.4 which show soil suitability for four different types of on-lot sewage disposal systems based upon the various soil characteristics.

On-lot disposal systems, such as the four systems referred to in Figures 6.1 through 6.4, fall into either one of two categories: conventional or alternate on-lot sewage systems. There are five basic conventional on-lot systems permitted for use on residential lots which include in-ground trenches, in-ground seepage beds, subsurface sand filters, elevated sand mounds, and spray irrigation. In some cases, when a lot does not qualify for a conventional onlot disposal system, the lot owner may wish to consider an alternate system which include A/B soil systems, peat based filter systems, and drip irrigation systems among others.

The four systems referenced in Figures 6.1 through 6.4 are sand mounds, A/B systems, spray irrigation and drip irrigation on-lot sewage disposal systems. In an elevated sand mound system, effluent is pumped from a dosing tank to a perforated pipe in a fabricated sand mound which covers plowed soil. Liquid flows through gravel, through sand and into the soil. The mound's vegetation enhances evapotranspiration. Although some natural soil permeability is required, an elevated sand mound may be placed in areas with relatively shallow limiting zones. A/B systems consist of a septic tank, dosing tank, recirculating subsurface sand filter, and UV disinfection, with final treatment and disposal using an at-grade absorption area. This type of system can be used on limiting zones of less than 20 inches. Individual spray irrigation systems use a stationary

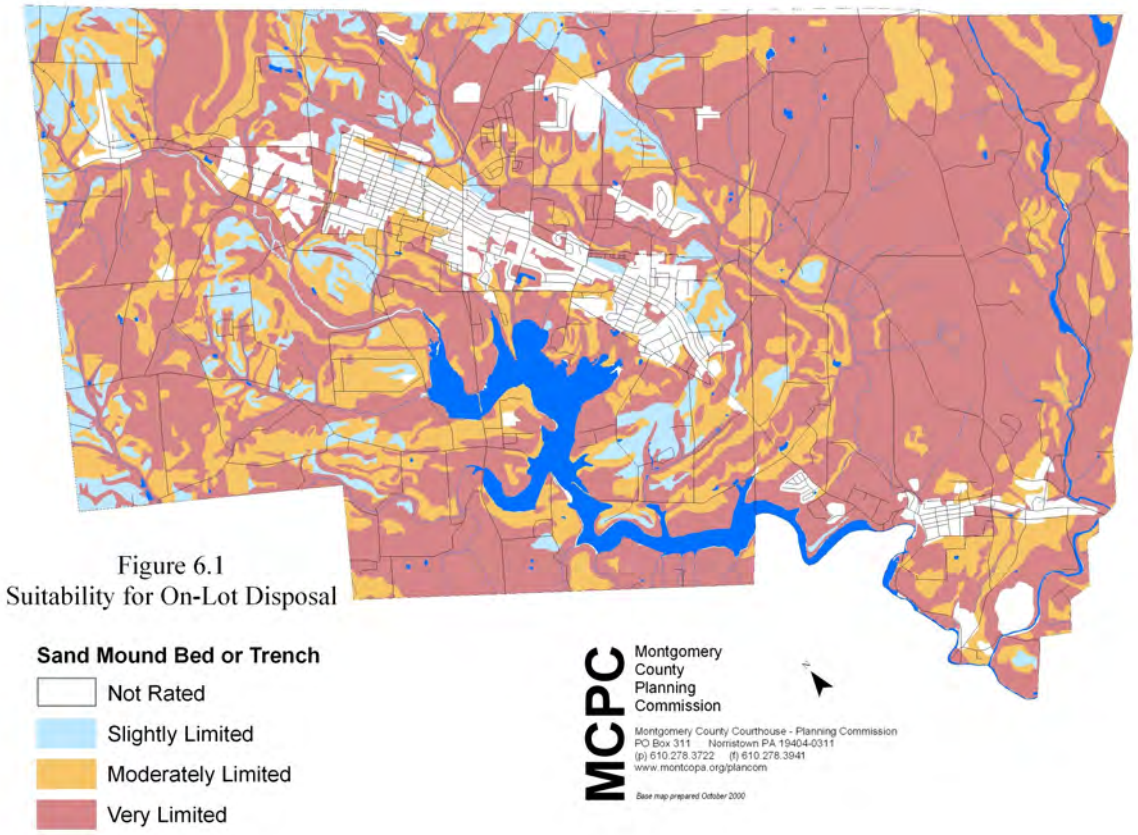


Figure 6.1
Suitability for On-Lot Disposal

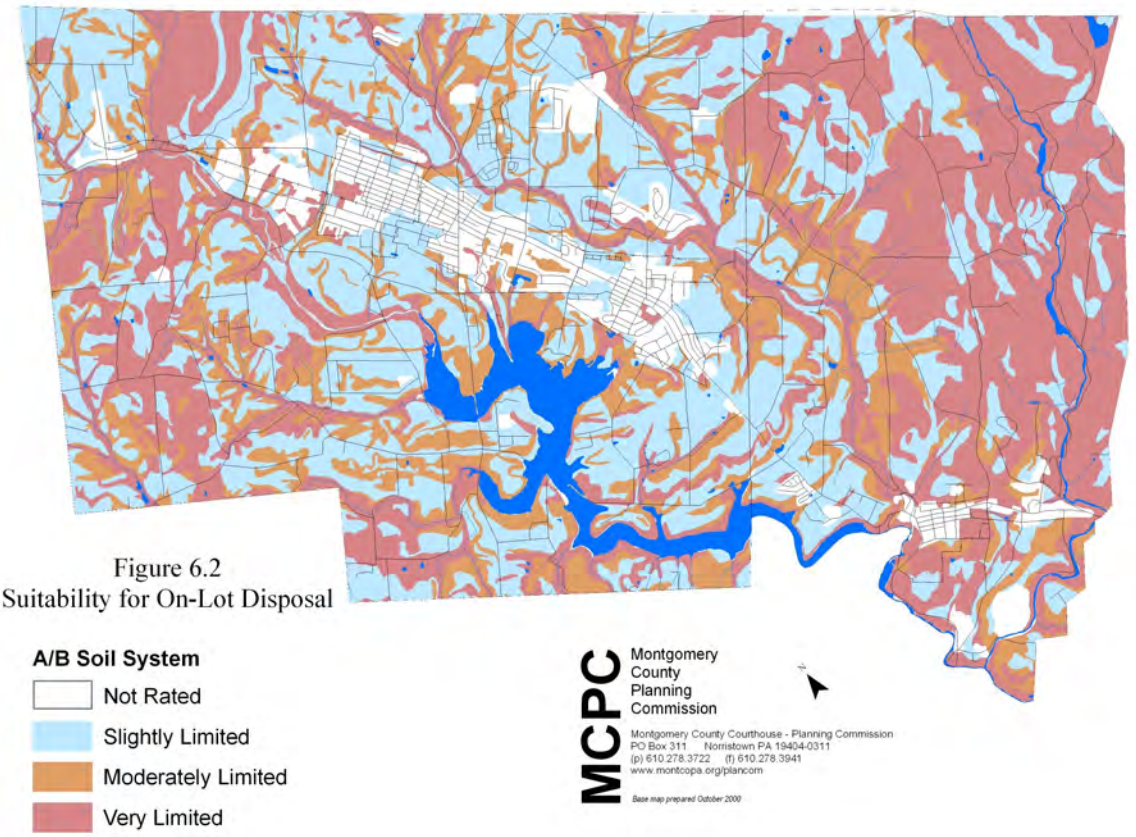


Figure 6.2
Suitability for On-Lot Disposal

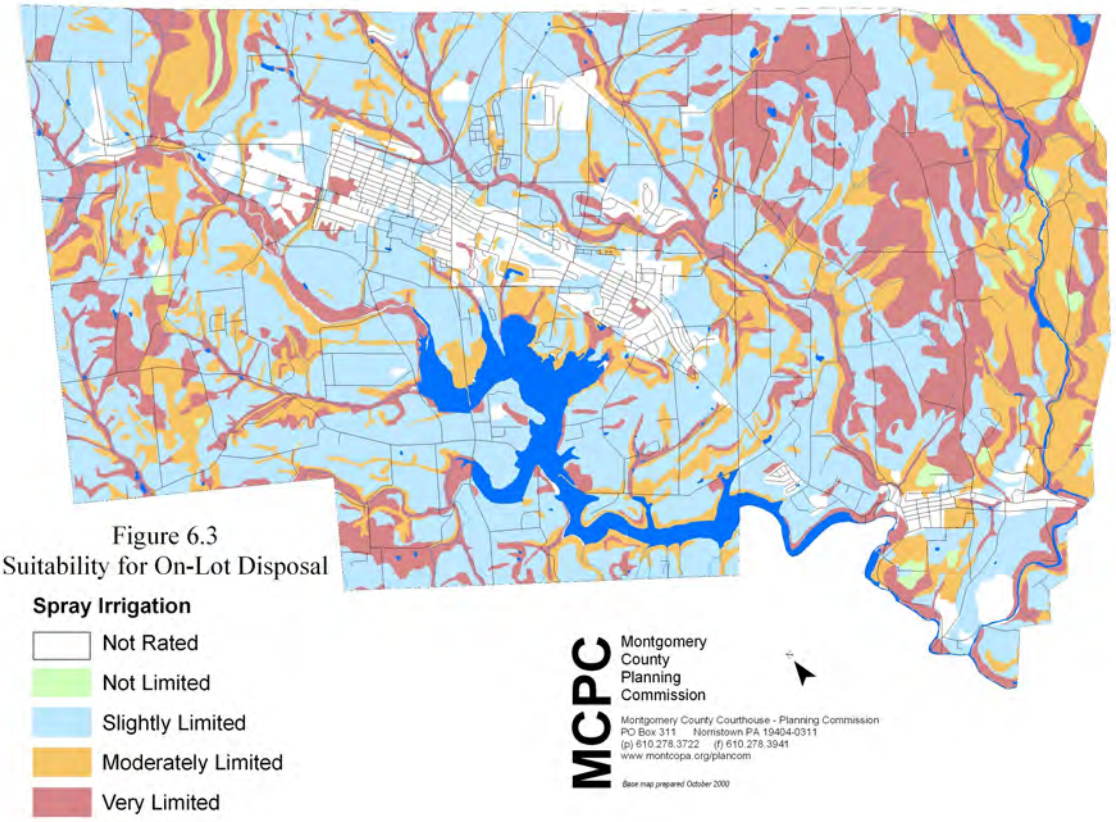


Figure 6.3
Suitability for On-Lot Disposal

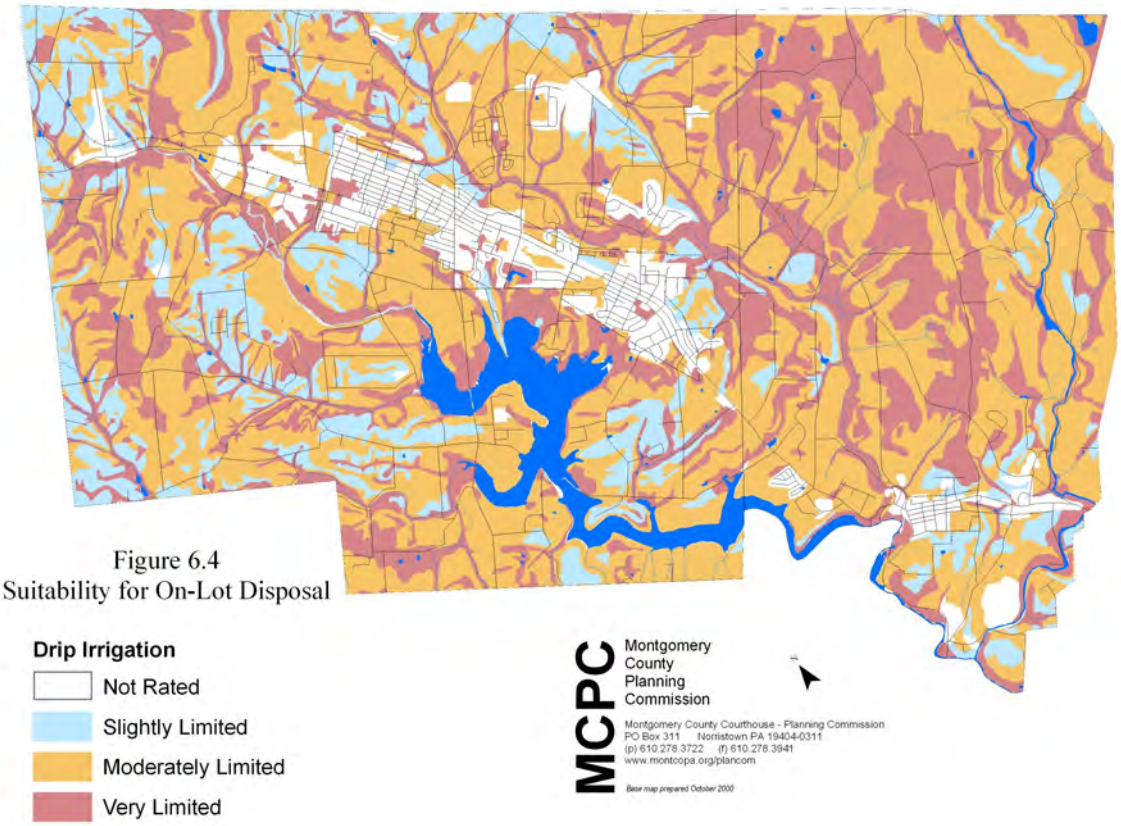


Figure 6.4
Suitability for On-Lot Disposal

sprinkler system to spray treated effluent over the surface of land. This type of system requires a PA DEP Bureau of Water Quality Management Permit. Drip irrigation systems treat wastewater effluent and discharge it via small-diameter flexible drip irrigation tubing and emitters that are installed in narrow trenches within the root zone of vegetation.

Several of the sewage disposal systems described above help to recharge the groundwater supply. These systems play an important role in groundwater recharge in areas of the region not served by municipal sewer systems where restrictions caused by the soil types result in low-density development served by on-lot systems, or by various forms of community disposal systems, where appropriate. Septic systems that help recharge groundwater should be encouraged when new systems are being installed or systems are being replaced.

When package sewage treatment plants are used in these areas, the types used and their purposes should protect water quality and encourage groundwater recharge. They should not be used to justify an increase above the density proposed in the land use plan. This would include package plants with stream discharge or with spray irrigation of treated effluent.

Although most of the Upper Perkiomen Valley Region is served by on-lot disposal systems, four public sewage treatment plants serve residents connected to public sewer in the higher-density areas. The four treatment plants include the Upper Montgomery Joint Authority's plant on Mensch Road at the Green Lane Reservoir, the Upper Hanover Authority's plant on Frey Road at the Macoby Creek, the Upper Hanover Authority's plant on Pillsbury Road (formerly the privately-owned Pillsbury sewage treatment plant), and the Green Lane-Marlborough Joint Authority plant at the confluence of the Macoby and Perkiomen Creeks (See Figure 6.5).

In addition, there are ten privately run sewage treatment plants (STP) in the Upper Perkiomen Valley Region (see Figure 6.5). Seven of these are located in Upper Hanover. There are three plants in the area north of East Greenville which include Knoll furniture, Brown printing and a water filtration plant. Along Route 663, east of Pennsburg, RAF Pennsburg PT and Entrance Systems Inc., each have a plant. In addition, YMCA of Pottstown owns a treatment plant located off Tagart Road**.** There is one additional private treatment plant in Upper Hanover Township owned by the Strawberry Family Restaurant and located on Route 663 along the western boundary of Upper Hanover.

Three of the ten privately owned sewage treatment plants are located in Marlborough Township. The Green Hill Mobile Home Park and the Candlewyck Estates Homeowner's Association have their own plants and

Figure 6.5
Sewer Lines, Treatment Facilities, and Growth Areas
2006 Sewer Lines and Interceptors
Force Mains
Municipal Sewage Treatment Plants
Non-Municipal and Industrial Sewage Treatment Plants
Pump Stations
The Boroughs of East Greenville, Green Lane, Pennsburg, and Red Hill
Macoby Creek Growth Area
Perkiomen Creek Mainstream Growth Area
Green Lane/Marlborough Growth Area
MCPC
Montgomery County Planning Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom
Base map prepared October 2000

the Marlborough Elementary School has a plant that also serves the Montgomery County Nature Education Center. These are not far from the Green Lane-Marlborough plant, but their flows would need to be pumped over a ridge and the municipal plant is reported to be at or near capacity.

Sewer Service and Growth Areas

Existing public sewer service areas in the Upper Perkiomen Valley Region are relatively small. Figure 6.5 shows proposed sewer growth areas for the Upper Hanover Authority and the Green Lane-Marlborough Joint Authority. The proposed growth areas would allow public sewers to be extended within these relatively small portions of the region. However, most of the region would remain outside growth area boundaries where public sewer should not be extended. The following sections describe public sewer service areas and growth areas relative to the three authorities that currently have jurisdiction:

Upper Montgomery Joint Authority (UMJA)

Although the UMJA plant is located in Upper Hanover, its primary service area is limited to its member communities, the boroughs of East Greenville, Pennsburg, and Red Hill (see Figure 6.5). In Upper Hanover, UMJA serves only a relatively small number of residences and commercial buildings located adjacent to the UMJA service area.

The UMJA plant has an average annual capacity of 2.0 million gallons per day (MGD). Of this, approximately 273,000 gallons per day is excess hydraulic capacity.

The primary UMJA growth area is currently limited to the three boroughs. UMJA has reported wet weather overflows in several locations along its collection system during periods of prolonged rainfall. The authority has installed 6,000 feet of cured in place pipe lining to repair leaks in the sewer system and has plans to install another 1,900 feet of lining in the next year. Upper Hanover Authority (UHA)

The Upper Montgomery Joint Authority Treatment Plant

Upper Hanover Authority

The Upper Hanover Authority controls public water and sewer in Upper Hanover Township. Its sewer service areas are along the Macoby Creek east of Pennsburg and Red Hill and along the Perkiomen Creek north and west of East Greenville (see Figure 6.5).

Macoby Creek Treatment Plant and Growth Area

The Macoby Treatment Plant is located between Frey Road and the Macoby Creek and was needed to replace malfunctioning on-lot systems along Gramm Road and Geryville Pike. The plant has a capacity of 150,000 gallons per day. It currently experiences periodic infiltration during excessive rainfall and is operating under reserved capacity allowing only failing on-lot systems within the service area to connect. However there are plans to upgrade the plant to a capacity of 450,000 gallons per day by 2011 to accommodate future growth in the Macoby area. Although the 2005 Act 537 Plan Update for the Macoby Service Area depicts 5 and 10 year growth areas for the Macoby Area, these areas are shown as a single color in Figure 6.5.

Perkiomen Creek Sewer Growth Area

The UHA purchased the former Pillsbury sewage treatment plant and now operates it as the Perkiomen Plant to provide municipal service to residences and industries in the Perkiomen Creek mainstream growth area. The plant was recently operating under reserve capacity and experienced periodic infiltration during excessive rainfall but upgraded in spring of 2009 to increase flow capacity from 60,000 gallons per day to 98,000 gallons per day. A 537 Plan update for the Perkiomen Creek Area was currently approved and Figure 6.5 depicts the 5 and 10 year growth area displayed in the 537 plan.

Green Lane-Marlborough Joint Authority

This sewage treatment plant is located at the confluence of the Macoby and Perkiomen Creeks in Green Lane Borough. The plant primarily serves Green Lane Borough, but includes portions of Marlborough Township as well (see Figure 6.5). It is a small facility, rated at only 200,000 gallons per day and is near capacity. The plant experiences occasional I&I problems during wet weather conditions.

Consolidation and Environmental Protection

Long range planning for the region should identify and evaluate the potential benefits of consolidating the three sewer authorities.

Between Upper Hanover and the three contiguous boroughs, this could allow the most efficient use of existing facilities and reduce the costs of expansion to serve new development. For example, it may be feasible to divide the UMJA flows along the ridge line through the boroughs to direct them to either the UMJA plant or the UHA plant, whichever is more appropriate. Then existing capacity in the UMJA plant might be used to help serve the Perkiomen Creek Growth Area.

Although the Green Lane-Marlborough Authority's service and growth areas are not contiguous to the UMJA and UHA areas, consolidation could still provide administrative and operational benefits.

Long range planning should also identify and evaluate the potential benefits of making the systems' operations more efficient and environmentally friendly. Since the supply of groundwater in the region and stream discharge of treated effluent are regional concerns, land application of treated effluent should be investigated as a means to help recharge groundwater and reduce stream pollution. Alternative methods of treatment should be evaluated to optimize environmental protection, including the following:

1. Mechanical and Biological Alternatives. These include lagoon systems, sand filter systems, and systems that employ spray irrigation for effluent disposal. Although these types of systems may be used in either growth or non-growth areas, they may be more easily applied in the low density, non-growth areas because they consume more land than other methods.

2. Spray Irrigation of Treated Effluent. This should be considered wherever public or community systems will be used although initial review of soil characteristics in the area reveals that this may not be easy to achieve on a large scale. Spray irrigation may be more practical in non-growth areas, where large areas of open space may be retained more easily, but should also be considered for growth area sewage facilities. For example, the Macoby Creek treatment plant's effluent might be used to irrigate golf courses in the region, and the UMJA plant could spray-discharge its treated effluent on lands within the Green Lane Reservoir Park. However, this method would require easements and/or other legal agreements that would grant the authorities the right to use private lands for these purposes; If it could not be shown to be practical and cost effective, spray irrigation might even be used to preserve some rural land from development by disposing of treated effluent from the growth areas' sewage treatment plants.

Water Facilities Existing Conditions

Water facilities are also important aspects of the overall infrastructure needed to accommodate development and growth. This is particularly so for the Upper Perkiomen Valley where public water service is in limited supply. The Upper Perkiomen Valley is served with public water from three water purveyors: Upper Hanover Water Authority, Red Hill Water Authority, and East Greenville Borough Water Department. The three water purveyors serve parts of Upper Hanover and all of East Greenville, Pennsburg, and Red Hill as shown in Figure 6.9. Figure 6.9 also shows future public water service areas as identified in Montgomery County's 2010 Comprehensive Plan Update which reflect logical extensions of public water service according to future growth areas and land use. However public water service is currently limited to approximately 3,956 residential and 260 nonresidential customers in the region. Tables 6.6 through 6.8 show the number of residential and non-residential connections for each of the three water purveyors in the Upper Perkiomen Valley Region.

Figure 6.6 East Greenville Borough Water Department Connections within the Upper Perkiomen Valley Region

Municipality	Residential Connections	Non-residential Connections	Total Connections
East Greenville	1,140	65	1,205

Source: 2008, East Greenville Borough Water Department

Figure 6.7 Red Hill Borough Water Authority Connections within the Upper Perkiomen Valley Region

Municipality	Residential Connections	Non-residential Connections	Total Connections
Red Hill Borough	1,139	19	1,158
Upper Hanover	45	2	47

Source: 2008, Red Hill Borough Water Authority

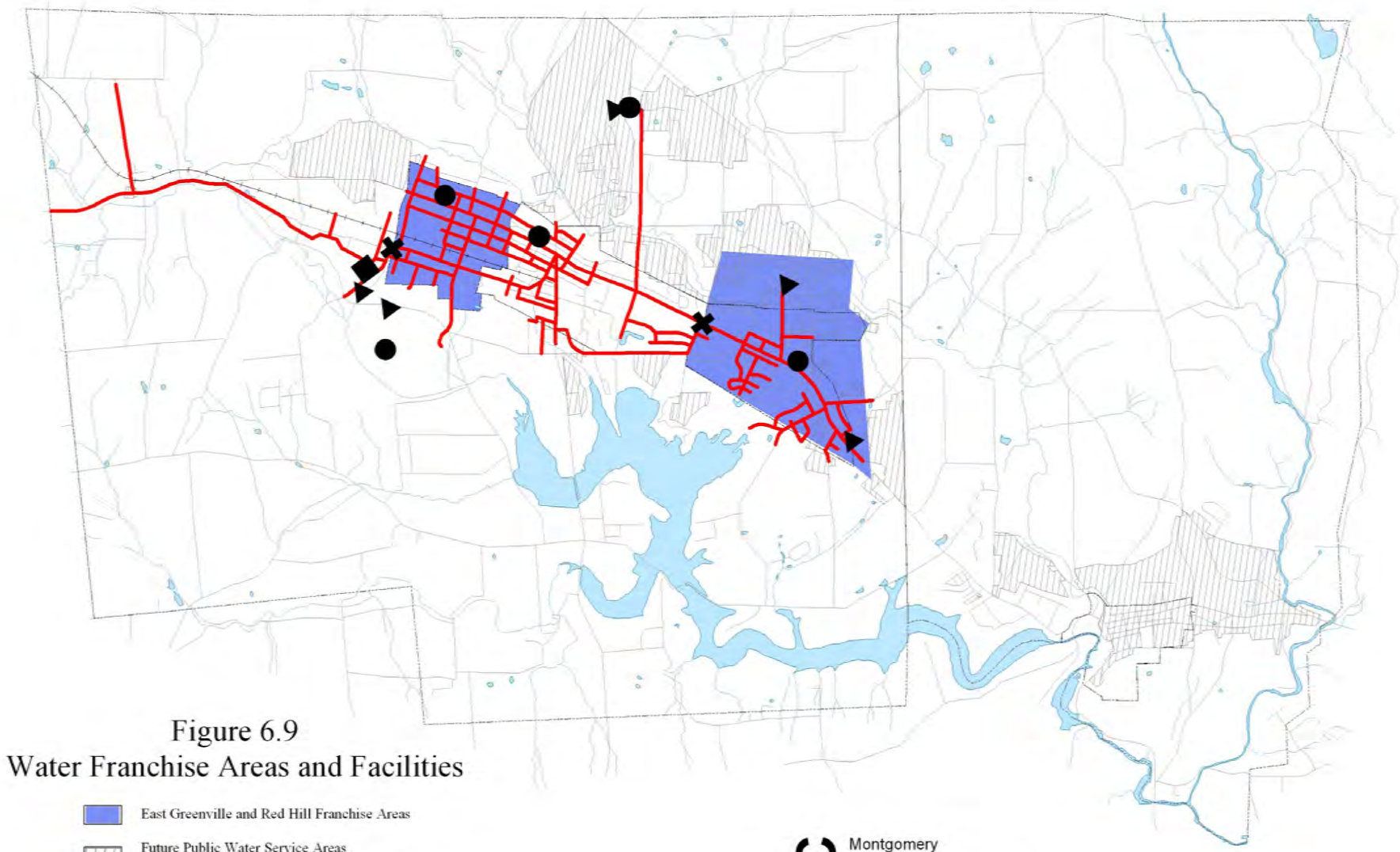


Figure 6.9
Water Franchise Areas and Facilities

Figure 6.8 Upper Hanover Water Authority Connections within the Upper Perkiomen Valley Region

Municipality	Residential Connections	Non-residential Connections	Total
Pennsburg Borough	1,223	118	1,341
Upper Hanover	710	35	745

Source: 2008, Upper Hanover Township

The three public water suppliers that serve the Upper Perkiomen Valley Region obtain their water from groundwater and surface water sources. East Greenville Water Department relies on a single well and operates a filtration plant withdrawing from the Perkiomen Creek. Red Hill Borough Water Authority operates two municipal wells; however, it obtains the majority of its water from Kemmerer Spring in Lehigh County. Upper Hanover Township Water Authority relies completely on wells in Berks and Montgomery Counties and also has an interconnection with Red Hill Borough Water Authority which provides almost 400,000 gallons per day of water.

Red Hill Water Authority's Kemmerer Spring

Generally, municipal public water systems provide larger and more reliable supplies than individual on-lot wells and allow greater concentrations of development. Public water facilities are especially important in higher-density residential developments where clustered individual on-site wells are more likely to interfere with each other, reducing reliability. In addition, many individual on-site wells also provide more pathways for contaminants to reach and pollute aquifers.

Additionally, the interconnection of water suppliers with suppliers in adjacent service territories allows better distribution of available supplies and better protection during drought or other extenuating circumstances if water quality or quantity problems arise. In addition to its permanent connection with Upper Hanover Township Water Authority, Red Hill Borough Water Authority maintains an interconnection with East Greenville Borough Water Department for emergency use. East Greenville Water Department also maintains an interconnection with Upper Hanover for emergency use.

The existing water sources from where the public water providers currently obtain water, new municipal wells, and appropriate expansion of the distribution systems should be the basis for supplying most of the growth in the region. Extension of public water facilities should occur in conjunction with land use planning decisions regarding extension of centralized sewer systems and transportation facilities.

Outside the areas served by the municipal systems, lower densities of development should contribute to an overall balance of groundwater withdrawal and recharge for the region. While there is limited public water service in the region, the majority of the region gets its drinking water from individual on-lot wells outside the areas served by the public water systems. Most of Upper Hanover Township is served by individual on-lot wells as is all of Marlborough Township and Green Lane Borough.

In the areas of the region served by individual on-lot wells, it is vital to continually replenish the groundwater supply so that water will remain available. Maintaining the groundwater supply is important so that individual wells do not dry up and so that the baseflow of streams can be maintained to protect instream habitat and water quality. The locations of prime aquifer recharge should be identified, such as faults and seeps in the bedrock. This way measures can be taken to preserve these sites in their natural state, or at least minimize the intrusion of impervious surface coverage. In many cases, these areas may be heavily wooded, located in areas of undevelopable soils (hydric and/or alluvial) or on slopes that constrain development. The more natural constraints located in the recharge areas, the more likely these areas can be preserved through ordinances or innovative development techniques. Aquifer recharge is a regional process. Recharge areas in one community often supply groundwater to another community. Therefore, regional cooperation is needed to ensure maximum protection of recharge areas. Further detailed study of the region's aquifers and identification of recharge areas should be done as a step in this process.

Study of aquifers and identification of recharge areas can also be done as part of a Source Water Protection Plan. The purpose of Source Water Protection Plans is to delineate, identify new sources and potential contaminants and threats to drinking water sources within a source water protection zone, and avenues for planning and management of those threats at the local level. East Greenville has adopted a source water protection plan which addresses the protection of a well and a surface water intake on Perkiomen Creek and recommends measures to protect the upper reaches and tributaries of the creek. The other water purveyors in the Upper Perkiomen Valley Region should also consider creating source water protection plans.

Wellhead protection and sound land use planning is particularly important in the Upper Perkiomen Valley Region because of the region's underlying geology which can help dictate the intensity of development. For example, more intense development can be located in areas of Brunswick bedrock than in areas of diabase. The diabase bedrock that underlies much of Marlborough and parts of Upper Hanover severely restricts the availability and distribution of water. Diabase is very dense and resistant to ground water infiltration. Since diabase is such a poor aquifer, it is often challenging and expensive to find sufficient quantities of water for new development. Also, the installation of public water distribution lines in areas of diabase is highly impractical because the dense bedrock often lies very close to the surface.

If individual on-lot wells are spaced too closely, they will interfere with one another and cause supply problems even on the Brunswick formation. During periods of drought, especially under severe conditions, these wells are the most likely to run dry and stay dry for extended periods. Therefore, it is critical to control the intensities of development served by individual on-lot wells to avoid overtaxing the available groundwater supply. In addition, sufficient land area should be provided for recharge of these wells on the individual lots and in critical regional aquifer recharge areas.

The problem of water supply is not confined to new development only. Often in times of drought, many existing individual wells may run dry forcing homeowners to dig even deeper wells. However, in areas of diabase a deep well is no guarantee of finding water. Even public water systems are dependent upon wells for most of their water supply. Therefore the protection and preservation of ground water is a regional priority.

The balance of water withdrawal and recharge in areas served by on-lot wells can also be helped by the use of on-lot septic systems. These systems naturally filter effluent and return approximately 50 percent of water usage for recharge and spray or drip irrigation, which can return larger amounts to the groundwater aquifer. However proper maintenance of on-lot disposal systems is necessary to protect water quality. Malfunctioning on-site disposal systems can lead to ground and surface water pollution. Long-term maintenance and inspection of these systems is critical to keep them operating properly to ensure that they do not fail completely or operate well below their capacities. An important component of a municipal sewage facilities plan is its on-lot disposal system (OLDS) management program. An OLDS establishes the legal, administrative, and financial mechanisms needed for long-term operation and maintenance.

Water Facilities Planning

Pennsylvania recently adopted a State Water Plan which provides a vision, goals and recommendations for meeting the challenges of sustainable water use into the future of the state. Although the State Water Plan does not require water planning by local governments, the Montgomery County Planning Commission's 1979 Water Service Plan and 2005 Water Resources Plan outline criteria that can be used for planning water service growth areas. These include population estimates, proposed land use and growth areas, sewage facility growth areas, proximity to existing water lines, physical constraints, location of problem water areas, and water supply. When these criteria are applied to the Upper Perkiomen Valley region, the proposed water service areas correspond closely with the proposed sewage facility service areas (see future public water and sewer service areas on Figures 6.5 and 6.9).

The two planning documents stress that water planning should be correlated closely with sewage facility planning, and that residential areas zoned low density rarely or never justify public water service. In addition, when municipalities consider extending sewer lines they should also concurrently extend public water lines in order to prevent the depletion of groundwater resources. Public water is often needed in a "sewered" area because all effluent will be transported and disposed of in areas other than where the water was withdrawn. If water is withdrawn from these areas via wells and not allowed to recharge back into the underlying aquifers, ground water mining can occur and the groundwater supply can become depleted.

Protection of Groundwater Supplies

Overusing groundwater will cause the water table to drop and reduce base flow. Base flow can be described as excess groundwater that is discharged into streams, creeks, ponds, and lakes. In addition, a drop in the water table could cause individual on-lot wells to go dry, or becoming contaminated by on-lot septic systems.

This is particularly the case for Marlborough Township and Green Lane Borough, which are entirely served by on-lot wells, many of which are drilled into diabase bedrock. Given the critical importance of ground water recharge in this area, the extension of public sewers and the introduction of public water should be deferred as long as possible.

Large lot sizes can reduce the impacts of numerous individual on-lot wells because the open land surrounding each individual well allows for recharge of the aquifer below. Densities of one unit per two or more acres should be the maximum in areas that depend on individual on-lot wells. In these same areas, low-density cluster development served by

centralized water supply will also allow wide areas for recharge and spacing between wells.

Future Development

Recharge of aquifers and maintenance of adequate stream base flow should be the highest priorities regarding water and sewer for future development. In addition, water use should be managed by enacting and enforcing water conservation measures.

New residential development on lots of two acres or more should rely on individual on-lot water supply and sewage disposal to encourage recharge of groundwater withdrawn for use. Low-density cluster development should use central or community systems, and take advantage of their open space for land application of treated effluent to the greatest extent feasible. Medium- and high-density development in the region's designated growth areas should rely on public water supply and public sewers. However, land application of treated effluent should be preferred over stream discharge whenever feasible.

Carefully managed use of shallow aquifers for individual on-lot wells, use of deeper aquifers for centralize or public well supplies, and continued use of existing public water sources, should be expected to provide sufficient water supplies for existing development and a reasonable amount of future growth.

Specific steps to ensure continued adequate water supply to the region include the following:

1. Avoid discharge of treated sewage effluent into surface waters whenever feasible.
2. Use sewage disposal systems that help groundwater recharge for new development.
3. Continue groundwater recharge from existing on-lot sewage disposal systems.
4. Continue using all existing water supplies, including those from Berks and Lehigh counties.
5. Use public or centralized water supply from deep aquifers to supplement the existing supplies from surface water and shallow aquifers.
6. Enact water conservation measures to reduce per capita consumption so that available supply can be used more efficiently.

Municipal Stormwater Systems

Another important component of community facilities are the municipal stormwater facilities. Stormwater facilities can include inlets, outlets, swales, piping, and detention basins. Municipalities have their own stormwater facilities and require land developments to plan for stormwater management. These facilities are put in place to properly convey and manage stormwater from impervious surfaces such as roads, sidewalks, and parking lots. Because impervious surfaces do not allow water to pass through them, water from a weather event instead runs across them and can create problems such as flooding, stream bank erosion, stream sedimentation, threats to public health and safety, and property damage.

In response to these concerns, Pennsylvania passed the Stormwater Management Act, commonly referred to as Act 167 in 1978 to promote stormwater management on a watershed-wide basis to mitigate the adverse effects of increased rates and volumes of stormwater. The act requires Montgomery County to prepare watershed-based stormwater management plans for the designated watersheds within its border. Municipalities are then required to adopt the stormwater management ordinance contained in the plan.

Although a stormwater management plan has not yet been prepared for the Perkiomen Creek watershed (the watershed that contains the Upper Perk region), all municipalities in the region have adopted their own stormwater management ordinances and standards required under the Pennsylvania Department of Environmental Protection's Municipal Separate Storm Sewer Systems Program (MS4 Program). The municipalities in the region operate their municipal stormwater systems under the MS4 Program which was established to implement Phase II of the National Pollutant Discharge Elimination System (NPDES) Program. It regulates small communities and public entities that own or operate a municipal separate storm sewer system (MS4). The regulations were developed to address stormwater impacts on water quality. The municipalities in the Upper Perk Region applied for and are operating under NPDES permits to discharge stormwater from their municipal separate storm sewer systems. Under their NPDES permits, the municipalities are also required to provide public education, public involvement, and inspection and elimination of illicit discharge from stormwater outfalls. Marlborough and East Greenville have partnerships with the Perkiomen Watershed Conservancy who assists the municipalities the education components of their MS4 programs.

While new development within the boroughs will utilize a combination of on-site and existing municipal facilities for controlling stormwater,

most of all new development within the townships will rely on on-site controls installed by developers. As development occurs in the townships, focus should be given to infiltration, water quality and streambank protection as required by the MS4 program permits.

Government Facilities

The region is generally well-served by government facilities (Figure 6.10). Each municipality has a Township or Borough Hall. Additionally, there are six U.S. Post Offices that serve the area.

Emergency Services

The Upper Perkiomen Valley Region is served by fire, police, and emergency services (Figure 6.11).

The Pennsylvania State Police provide police services to Upper Hanover, East Greenville, Pennsburg, and Red Hill. East Greenville and Pennsburg are also served by the Upper Perkiomen Police Department. Marlborough Township has its own police department manned by a Chief and two additional full-time officers. Marlborough's police department also provides coverage to the borough of Green Lane on a contract basis. In addition, the Marlborough Police Department has recently joined the North Penn Area Tactical Response Team in which trained and equipped SWAT team personnel will respond to critical incidents in the township.

The East Greenville Volunteer Fire Company, the Pennsburg Fire Company, and the Red Hill Fire Company provide fire services in Upper Hanover, East Greenville, Pennsburg, and Red Hill. The Green Lane Fire Company provides firefighting and rescue functions in Marlborough and Green Lane.

There are no hospitals located in the region. However, there are a number of hospitals located in close proximity to the region including St. Luke's Hospital in Quakertown, Grand View Hospital in Sellersville, Lehigh Valley Hospital in Allentown and Pottstown Memorial Medical Center in Pottstown. Additionally, Grand View Hospital has a lab located in Pennsburg. St. Luke's Upper Perkiomen Outpatient Center that offers radiology services, walk-in laboratory services, physical therapy, and houses Pennsburg Family Practice.

The Community Ambulance Service of Green Lane provides local emergency medical services to Marlborough Township, Green Lane Borough, and part of Upper Hanover Township. The Upper Perkiomen Valley Ambulance Association provides coverage to East Greenville, Pennsburg, and Red Hill.

Figure 6.11
Government Facilities
Municipal Buildings
U.S. Post Offices
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
ph 610.278.3722 (f) 610.278.3941
www.montcopa.org/planning
Base map prepared October 2009

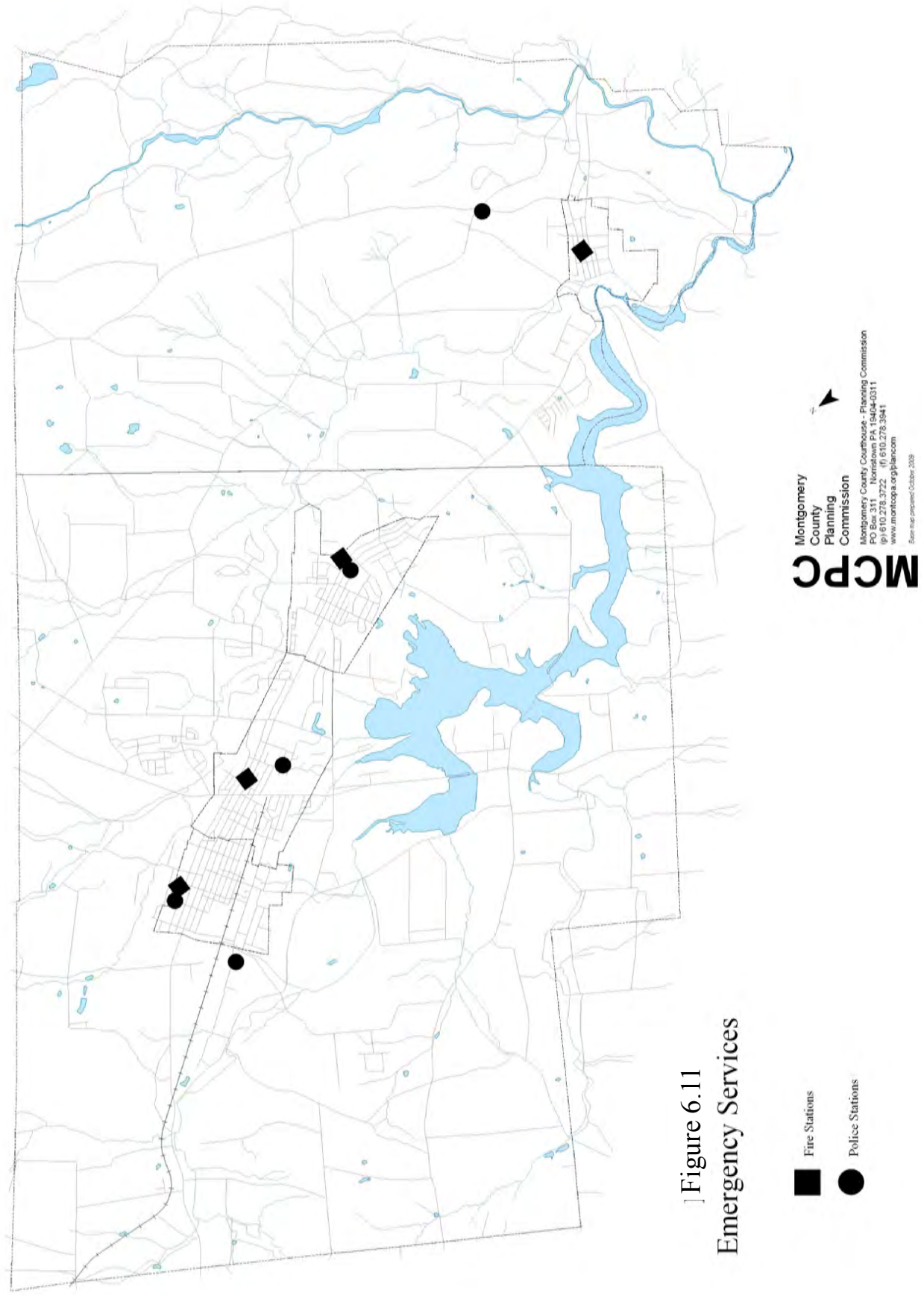


Figure 6.11
Emergency Services
Fire Stations
Police Stations
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom
Base map prepared October 2009

Educational Institutions

The Upper Perkiomen Valley Region is within the Upper Perkiomen Public School District (Figure 6.12). Public schools in the region include Marlborough Elementary, Upper Perkiomen Middle School, and Upper Perkiomen High School, as well as Hereford Elementary in Berks County.

Figure 6.13 Enrollment

School District	Enrollment (2007 - 2008)	Projected Enrollment (2017 - 2018)
Upper Perkiomen	3,180	3,665

Source: PA Department of Education

In addition, there are three private schools in the region, the Perkiomen School, St. Phillip Neri Elementary School, and Red Hill Christian School. The Perkiomen Prep school is an internationally known independent boarding school located in Pennsburg, educating students from 5th grade through 12th grade. For the 2008-2009 school year it enrolled 273 students. The St. Phillip Neri Elementary School is a private parochial school located in East Greenville educating students from preschool through 8th grade. It enrolled 120 students in the 2008-2009 school year. Red Hill Christian School is a private Christian school educating students from preschool through 3rd grade. High school students who wish to follow a technical career path can also enroll in the Western Montgomery Career and Technology Center in Limerick Township.

Libraries and Museums

There are four libraries in the region (Figure 6.15). The Upper Perkiomen Valley Library is a public library located at 359 Main Street in Red Hill. It is a branch of the Montgomery County Norristown Public Library and serves residents of the six municipalities in the region. The library offers free WiFi service, two multi-purpose rooms , nine computers equipped with Internet access as well as Microsoft Word, Excel, Powerpoint and Access for patron use.

The other two libraries are housed within museums. The Schwenkfelder Library and Heritage Center is located at 105 Seminary Street in Pennsburg. It is a non-profit organization that displays exhibits, books, manuscripts and artifacts related to the Schwenkfelders, the people of southeastern Pennsylvania in general and the Perkiomen Valley in particular. The library collection currently contains over 30,000 volumes. All materials are non-circulating and are to be used on site. The library

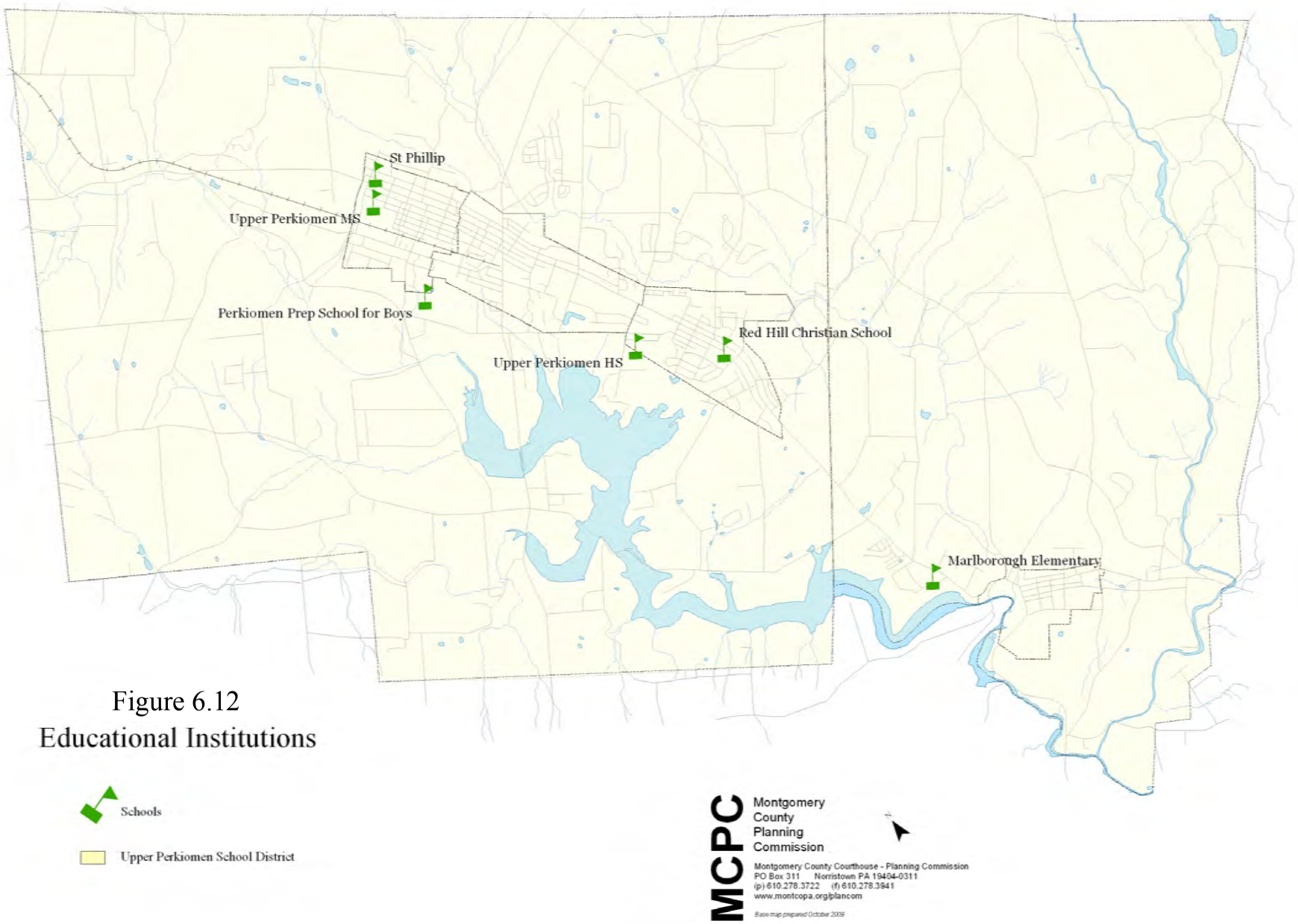


Figure 6.12
Educational Institutions

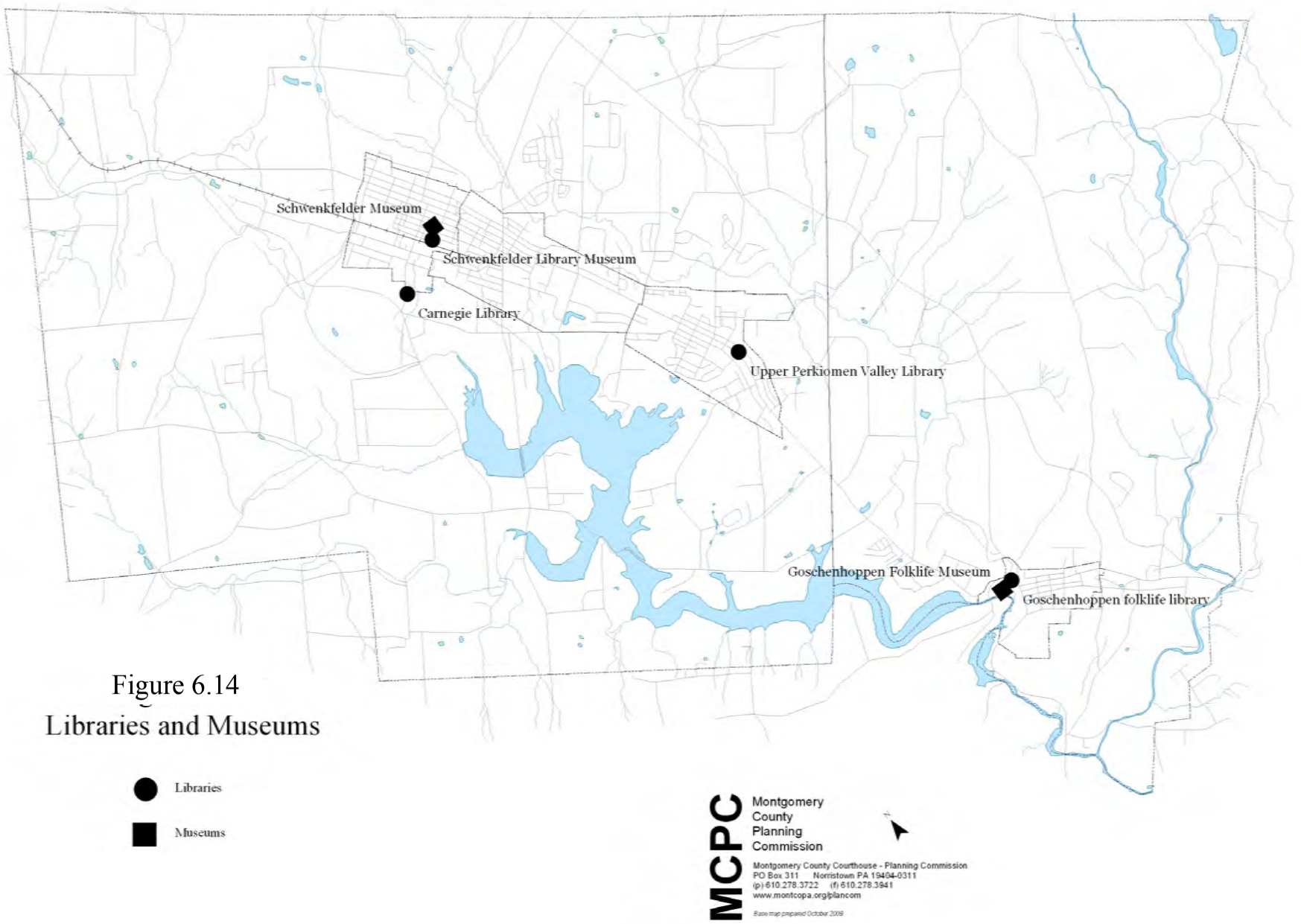


Figure 6.14
Libraries and Museums

serves specific Schwenkfelder and local history researchers and also functions as a public library for the Upper Perkiomen Valley region.

The Goschenhoppen Folklife Library is located in the same building (Red Men's Hall) as the Goschenhoppen History and Folklife Museum at Routes 29 and 63 in Green Lane. The library contains a collection of early local newspapers, manuscript account books, diaries, letters, periodicals, journals, magazines and books concerning genealogy. It is open for tours and research by appointment only and all library materials must be used on the premises. The Goschenhoppen History and Folklife Museum is open to visitors on Sunday afternoons from April to October. It depicts the local Pennsylvania Dutch culture prior to 1870 and features hand made furniture and textiles.

The Carnegie Library at the Perkiomen School is a public library available by appointment only during the regular school day. It serves the needs of the school's students and faculty. Items in the collection may be accessed through Inter-Library Loan.

Solid Waste Services

Trash collection and recycling are two of the solid waste services offered in the Upper Perkiomen Valley Region. Residential and commercial trash collection in Upper Hanover is through private waste haulers contracting directly with property owners. The three contiguous boroughs of East Greenville, Pennsburg, and Red Hill each provide trash collection through contracted private haulers once a week for their residents. However all trash must be placed in Borough trash bags which must be purchased. In Marlborough Township and Green Lane Borough, residential trash disposal is arranged by private contractors.

Recycling for the municipalities in the region takes place through several different means. The Red Hill Regional Recycling Program maintains a 24/7 drop off location at 56 West Fourth Street in Red Hill Borough (next to the Red Hill Borough Municipal Building). Upper Hanover Township and Marlborough Township residents can also participate in the program. Items accepted for recycling include glass food and beverage containers, aluminum beverages cans, plastics and paper, including newspapers, magazines, junk mail and catalogs.

East Greenville Borough offers curbside recycling every other week. They collect glass bottles and jars, tin and aluminum cans, and plastics #1 and #2. Newspapers, cardboard, and magazines are collected the first Saturday of each month by the Boy Scouts. Pennsburg Borough also picks up the recyclables of its residents every other week. The Pennsburg / East Greenville Recycling Center is located behind the Pennsburg Civic Building on West Sixth Street in Pennsburg. Cardboard drop off

takes place once a month at the recycling center. Newspaper, office paper, and magazines can be dropped off 24/7 at the Pennsburg Fire Company. Recycling for residents in Green Lane Borough takes place through arrangements with private contractors.

CHAPTER 7
TRANSPORTATION

Introduction

The transportation system of the Upper Perkiomen Valley Region is extremely important because of the need for mobility in our society. Transportation systems affect mobility, accessibility, safety, economic development and quality of life. Residents of the valley must be able to reach their jobs, as well as community facilities such as stores and schools. Area businesses must also have an adequate road network in order to move their goods and services. This chapter will discuss existing conditions and planning for the Region's highways, public transit, bike and pedestrian mobility, and freight transport to provide a safe and efficient transportation system throughout the region.

Transportation Existing Conditions

Two of the major roads with in the Region are Routes 29 and 663. These roads experience some of the heavier traffic volumes in the region. Figure 7.1 and Figure 7.2 display traffic counts for some of the major roads in the region. The most current data is presented where available.

Figure 7.1 Traffic Counts –Vehicles Per Day

Municipality	Road	Location (between)	Traffic Volume (cars per day)	Date of Data Collection
Upper Hanover	Gravel Pike	Station Rd. and Toll Gate Road	9746	2005
Upper Hanover	Gravel Pike	6th St. and Palm Hill Road	8467	2008
Upper Hanover	Ziegler Rd.	Mill Hill Rd. and Gravel Pike	262	2002
Upper Hanover	Palm Hill Rd.	Kutztown Rd and Gravel Pike	719	2007
Upper Hanover	James Bridge Rd	St. Paul's Church Rd. and Geryville Pike	2,742	2005
Upper Hanover	Finland Rd.	Geryville Pike and Hillegass Rd.	2,022	2006
Upper Hanover	PA 633	Otts Rd. to Quakertown Rd.	13,298	2009
Upper Hanover	Quakertown Rd.	PA 663 and Geryville Pike	1,421	2007
Upper Hanover	PA 633	Quakertown Rd. and Geryville Pike	12,435	2008

Municipality	Road	Location (between)	Traffic Volume (cars per day)	Date of Data Collection
Upper Hanover	Knight Rd.	Ward Rd. and Markley Rd.	2,036	2008
Upper Hanover	Knight Rd.	PA 663 and Markley Rd.	2,222	2006
Upper Hanover	Layfield Rd.	Kutztown Rd. and Maple Lane	9,799	2007
Upper Hanover	Layfield Rd.	Hill Rd. and Kings Rd.	9,549	2009
Upper Hanover	Congo Rd.	Perkiomen Creek Bridge and Kutztown Rd.	1,096	2007
Upper Hanover	Kutztown Rd.	Congo Rd. and Jacobs Sawmill Rd.	1,537	2007
Upper Hanover	Kutztown Rd.	Township Woods Rd. and County Line Rd.	1,607	2006
East Greenville	Main St	2nd St. and 4th St	11,407	2008
Pennsburg	Main Street	7th and PA 663	11,665	2003
Red Hill	Main Street	6th St and 8th St	12,537	2006
Red Hill	6th St	PA 29 and St. Paul's Church Rd	3,507	2008
Red Hill	Main St.	2nd St. and 3rd St.	9,387	2009
Marlborough	Upper Ridge Rd.	Finland Rd. and Ziegler Rd.	2,354	2008
Marlborough	Upper Ridge Rd	Ziegler Rd. and Camp-bell Rd.	1,090	2006
Marlborough	Swamp Creek Rd.	Camp Rd. and Bucks County Line	179	2005
Marlborough	Swamp Creek Rd	Whites Mill Rd. and Camp Rd.	372	2009
Marlborough	Swamp Creek Rd	Geryville Pike and Whites Mill Rd.	235	2007
Marlborough	Miller Rd	Camp Rd. and Upper Ridge Rd.	164	2008
Marlborough	Hoppenville Rd	Reihman Rd. and Geryville Pike	919	2005
Marlborough	Gravel Pike	Mcleans Station Rd. and Knight Rd.	10,447	2004
Marlborough	Upper Ridge Road	PA 63 and Geryville Pike	1,469	2005
Marlborough	Geryville Pike	Swamp Creek Rd. and Upper Ridge Rd.	2,077	2006
Marlborough	Sumneytown Pike	Upper Ridge Rd. and Geryville Pike	11,210	2009
Marlborough	Upper Ridge Road	Perkiomenville Rd. and Green St.	912	2007
Green Lane	Park Road Bridge	Gravel Pike and Hill Rd.	2,922	2003
Green Lane	Gravel Pike	PA 63 and Lumber St	14,299	2005
Green Lane	Main Street	Gravel Pike to 3rd Street	10,960	2006
Green Lane	Gravel Pike	Perkiomenville Rd. and PA 63	4,996	2008

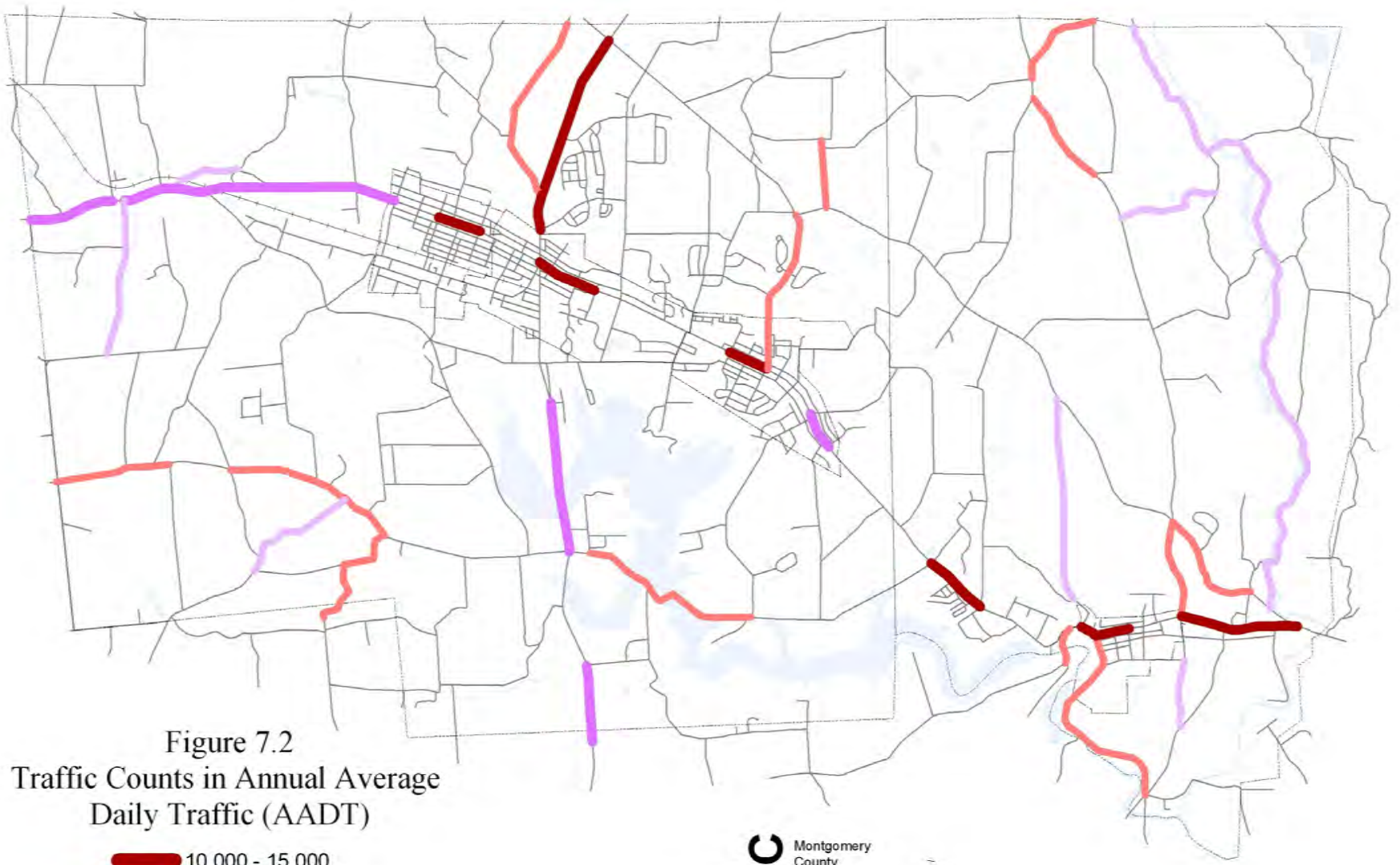


Figure 7.2
Traffic Counts in Annual Average Daily Traffic (AADT)

Traffic count data for years 2002 - 2009 from DVRPC

The high traffic volumes are a result of continued growth in the Upper Perkiomen Valley Region. As the region grows, traffic will naturally increase placing a greater burden on existing roads. Many of the roads within the Upper Perkiomen Valley are little more than rural lanes that are not designed or intended to carry significant amounts of traffic. There are currently no plans to dramatically improve these roads, and to do so would in fact destroy much of the region's rural character. In order to preserve the countryside, development will be directed to areas that have a road network capable of carrying the higher volumes of traffic.

The ownership of all the public roads in the valley falls under the jurisdiction of either the Commonwealth of Pennsylvania (PADOT), Montgomery County, or the six municipalities of the Upper Perkiomen Valley (see Figure 7.3). Within the limits of applicable laws, the townships and boroughs have complete control over roads under their jurisdiction but must coordinate with PADOT and the Montgomery County Department of Roads and Bridges regarding state and county roads.

For planning purposes, however, the townships and boroughs of the valley have the responsibility for designating all the roads under an appropriate functional classification relative to the purposes they are intended.

Functional Road Classification System

Functional classification is the grouping of roads into a hierarchy by the character of service and function they provide. It was developed as an important planning and design tool for comprehensive transportation planning. The system is based on standards established by the American Association of State Highway and Transportation Officials (AASHTO) and is used by the Pennsylvania Department of Transportation. It provides design guidelines appropriate for each road, as well as a way to coordinate road functions and improvements among neighboring communities and throughout the state. This system permits a logical and efficient road network to be established under a road hierarchy.

Figure 7.4 shows the Upper Perkiomen Valley's functional road classification system using the following classifications:

- Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads and Rural Lanes

Figure 7.3
Road Jurisdiction
State Roads
County Roads
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom

Figure 7.4
Functional Road Classifications
Principal Arterials
Minor Arterials
Major Collectors
Minor Collectors
Local Roads and Rural Lanes
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
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(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom
Base map prepared October 2009

Principal arterials

A principal arterial is a major highway not on the interstate system. It generally has two to four through-lanes and serves primarily to carry the highest volumes of through traffic on a regional level. Two principal arterials serve the Upper Perkiomen Valley, Routes 29 and 663. Both state routes connect the valley to major transportation and employment centers and carry significant amounts of traffic. We can safely anticipate that traffic on these main arteries will only continue to grow as development occurs in and outside the region. New development within the valley will be directed along these two corridors.

Minor arterials

Minor arterials interconnect with and augment principal arterials in serving major activity centers, but generally serve trips of more moderate lengths. They are spaced at intervals consistent with population density and carry traffic within or between several municipalities of the county. Further, they link other areas not connected by principal arterials and provide key connections between roads of higher classification. The Upper Perkiomen Valley's minor arterials include Kutztown Road, Knight Road, and Geryville Pike.

Major collectors

Major collectors provide a combination of accessibility (road interconnectivity) and mobility (the ability to travel through and area quickly) with a priority on mobility. Ideally access is partially controlled with preference given to through traffic. Access is permitted with at-grade intersections and ideally is limited to major access driveways of selected land uses such as a retail or employment centers. They accommodate trips within and between neighboring municipalities. Further, they may serve as a major road through large industrial or office parks or provide key connections between roads of higher classification. Major collectors within the Upper Perk include Upper Ridge Road, Finland Road, James Road, and Crusher Road.

Minor collectors

Minor collectors provide a combination of mobility and access. They allow access to abutting property with little or no restriction. Generally, minor collectors accommodate shorter trips within a municipality. They are spaced to collect traffic from local roads and neighborhoods and channel it to major collectors and arterials. The minor collectors within the Upper Perkiomen Valley are Hill Road, Quakertown Road, Wentling Schoolhouse Road, and Congo Road.

Local roads and rural lanes

Local roads and rural lanes are the minor streets that carry the lowest volumes of traffic and function primarily to provide vehicular access to adjacent land uses. They have relatively short trip lengths, generally not exceeding one mile. Because property access is their main function, there is little need for mobility or high operating speeds and as a result they have lower posted speeds between 20 and 30 miles per hour. They provide a link between properties and the collector road network. Through traffic is discouraged from using local roads. The remaining roads in the Upper Perkiomen Valley are considered local roads. A number of the local roads are narrow, without shoulders and some may be constructed with soil aggregate.

Road Design Guidelines

General design guidelines for the Functional Classification System were derived from the 1990 edition of *A Policy on Geometric Design of Highways and Streets* by the American Association of State Highway and Transportation Officials (AASHTO); the *Pennsylvania Department of Transportation Design Manual, Part 2*, Highway Design (Publication 13) (1990); and the *Guide for the Development of Bicycle Facilities*, published by AASHTO (1991).

The guidelines are listed below in Table 7.5 and make recommendations for dimensions of different components of a roadway based on its functional classification and whether it is located in an urban or rural locale.

Table 7.5 Highway Functional Classification and Design Guidelines

Functional Classification	Right-of-Way[1]	Number of Lanes[2]	Travel Lane Width[3]	Left Turn Lane Widths[3]	Paved Shoulder Width[4]	Parking Lane Width[5]	Bicycle Lane Width[6]	Border Area[7]	
								Grass Strip	Sidewalks /
EXPRESSWAYS	300'								
Urban		4-6	12'	N/A	10'-12'	N/A	N/A	N/A	12'
Rural		4-6	12'	N/A	10'	N/A	N/A	N/A	12'
ARTERIALS									
Principal									
Urban	80'-100'	2-5	12'-14'	11'-12'	8'-10'	8'-10'	5'-6'	5'	5'-8'
Rural		2	12'-14'	11'-12'	8'-10'	N/A	5'-6'	5'	5'-8'
Minor	80'-100'								
Urban		2-5	11'-14'	11'-12'	8'-10'	8'-10'	5'-6'	5'	5'-8'
Rural		2-3	11'-14'	11'-12'	4'-10'	N/A	5'-6'	5'	5'-8'

Functional Classification	Right-of-Way[1]	Number of Lanes[2]	Travel Lane Width[3]	Left Turn Lane Widths[3]	Paved Shoulder Width[4]	Parking Lane Width[5]	Bicycle Lane Width[6]	Border Area[7]	
								Grass Strip	Sidewalks / Paths[8]
COLLECTORS									
Urban	60'-80'	2-3	11'-14'	10'-12'	6'-10'	8'-10'	5'-6'	4'	5'-8'
Rural Major	60'-80'	2	11'-13'	10'-12'	6'-10'	GNA	5'	GNA	GNA
Rural Minor	60'	2	10'-12'	NA	2'-8'	GNA	5'	GNA	GNA
LOCAL ROADS	50'								
Urban		[Total Cartway Width 26 to 30 Feet]						4'	4'-8'
Rural		[Total Cartway Width 20 to 20 Feet]						GNA	GNA

1. **Right-of-Way:** The right-of-way can be variable in order to accommodate highly urbanized and laterally restricted areas as well as unrestricted areas.

2. **Number of Lanes:** The number of lanes vary in order to accommodate the traffic volume, turning movements, and land capacity demand for selected level of service. This number does not include right-turn lanes where needed

3. **Range of Lane Width:** Lane width is based upon minimum and desirable standards as well as other conditions such as being adjacent to a curb or the anticipation of heavy truck traffic. When feasible, a 14 foot lane should be located next to a curb.

4. **Shoulder:** Shoulder width is based upon minimum and desirable standards as well as other conditions such as highly urbanized and laterally restricted areas, or the anticipation of heavy truck traffic. Wide shoulders may function as bike lanes.

5. **Parking Lane:** Parking lane width is based upon minimum and desirable standards as well as other conditions such as lot size, intensity of development, or potential for use as a traffic lane where required by future demand. For principal arterials, parking lanes are only recommended in highly developed areas.

6. **Bicycle Lane:** A portion of a roadway that has been designated by striping, signing, or pavement markings for the preferential or exclusive use of bicyclists. Width specifications must be in accordance with FHWA/AASHTO standards. Wide shoulders may function as bike lanes.

7. **Border Area:** The presence of curbing, grass planter strips and sidewalks will depend upon adjacent land uses and site conditions. Otherwise, the border area would consist of a drainage swale and slope.

8. **Sidewalks:** Sidewalk width is based upon minimum desirable standards for use along each particular roadway. Under certain circumstances, the location, feasibility, and other site specific conditions may require deviations from these guidelines.

9. **Paths:** Paths for multi-use purposes, pedestrians or bicyclists may be desirable in lieu of sidewalks in rural areas or parallel to an expressway.

10. **Cartway Width:** For local roads, the total cartway width generally includes travel lanes, parking lanes, and/or shoulders.

11. **Definitions: GNA** – Generally Not Applicable. **N/A** – Not Applicable.

Source: Derived from design ranges specified by AASHTO, PennDOT, and other design manuals.

Smart Transportation

Located between the suburban fringe areas of Allentown and Philadelphia, the Upper Perkiomen Valley is still predominantly rural in character, yet is developing. In addition, the four boroughs function as an urban center to the region, but at a village scale. Therefore, neither the "rural" or "urban" categories used in the Highway Functional Classification System and Design Guidelines exactly serve the needs of the valley. Another limitation of the functional classification system is that often an entire road is placed into a certain class based on select characteristics such as trip volumes relative to other roadways in the area; however, that class may not be appropriate for all segments of the roadway. This creates a dilemma for roadway designers to apply design standards for that class which may encourage higher operating speeds than are appropriate for segments serving community access.

Transportation agencies are recognizing these issues and the changing needs and demands of our transportation system. To adapt to this changing world, more than 25% of the states in the United States are working on a concept called "Smart Transportation." Smart Transportation considers financial, land use, environmental, technological, and social contexts when approaching transportation challenges. The idea is that road design should not be a one-size-fits-all approach, but should be done to complement community character. Agencies including PennDOT are working on revisions to design manuals and policy documents so that rules and standards better reflect the principles of Smart Transportation.

The Pennsylvania Department of Transportation (PennDOT), New Jersey Department of Transportation (NJ DOT), and the Delaware Valley Regional Planning Commission (DVRPC) prepared a *Smart Transportation Guidebook* in 2008 to provide technical guidance for standards and approaches related to traffic engineering and design. The Guidebook outlines six principles:

1. Tailor solutions to the context
2. Tailor the approach
3. Plan all projects in collaboration with the community
4. Plan for alternative transportation modes
5. Use sound professional judgment
6. Scale the solution to the size of the problem

Figure 7.6 Smart Transportation Proposed Roadway Categories

Roadway Class	Roadway Type	Desired Operating Speed (mph)	Average Trip Length	Volume	Intersection Spacing (ft)	Comments
Arterial	Regional	30-55	15-35	10,000-40,000	660-1,320	Roadways in this category would be considered "Principal Arterial" in traditional functional classification.
Arterial	Community	25-55	7-25	5,000-25,000	300-1,320	Often classified as "Minor Arterial" in traditional classification but may include road segments classified as "Principal Arterial."
Collector	Community	25-55	5-10	5,000-15,000	300-660	Often similar in appearance to a community arterial. Typically classified as "Major Collector."
Collector	Neighborhood	25-35	<7	<6,000	300-660	Similar in appearance to local roadways. Typically classified as "Minor Collector."
Local	Local	20-30	<5	<3,000	200-660	

Source: Smart Transportation Guidebook (2008)

The Smart Transportation Guidebook outlines seven land use context areas: rural, suburban neighborhood, suburban corridor, suburban center, town/village neighborhood, town/village center, urban core. A land use context area is a land area that contains a unique combination of built and natural characteristics made up of different land uses, architectural types, urban form, building density, roadways, and topography and other natural features. The seven context areas can be condensed into three context areas: urban, suburban, and rural.

The Smart Transportation Guidebook also proposes new roadway categories in order to design roadways to better reflect their role in the community. The new roadway categories focus more narrowly on the characteristics of access, mobility, and speed and are outlined in Figure 7.6. It is important to note that the Smart Transportation categories should be used as only a planning and design "overlay" for individual projects and that both Pennsylvania and New Jersey will keep the underlying traditional functional classification.

Figure 7.7
Smart Transportation
Context Overlay
Major Collector - Community Collector
Minor Collector - Neighborhood Collector
Principal Arterial - Regional Arterial
Minor Arterial - Community Arterial
Principal Arterial - Community Arterial
Suburban Context Area
Urban Context Area
Rural Context Area
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom
Base map prepared October 2000

Figure 7.7 shows the Smart Transportation road categories and land use context areas applied to the Upper Perkiomen Valley Region. The map is a hybrid of the two classification systems that relate to major roads in Montgomery County: functional classification and roadway typology as presented in the Smart Transportation Guidebook.

The Smart Transportation Guidebook also outlines standards for roadway design based on land use contexts and roadway types. These design elements are summarized in Table 7.8 for urban, suburban, and rural context areas. The table only provides a summary of the design elements. To see a more expansive list of design elements for each of the seven context areas and five roadway typologies see the Smart Transportation Guidebook.

Figure 7.8 Smart Transportation Summary of Guidelines for Dimensional Roadway and Roadside Elements

	Urban	Suburban	Rural
Travel Lanes	Consider 10 to 11 ft. lanes (11 ft. as typical minimum) of 35 mph or below; 12 ft. for roadways of 35 mph or above and high traffic volumes and heavy vehicles.	11 to 12 ft.	Consider 10 ft. for lightly trafficked roadways; 11 to 12 ft. for roadways with regularly trafficked roadways, or with speeds above 35 mph.
Shoulders	4 to 6 ft. if no sidewalks are provided.	8 to 10 ft., but 4 to 8 ft. for suburban neighborhoods.	8 to 10 ft. for arterials, 4 to 8 ft. for collector roadways.
Medians	Provide depending upon control, left turn, and "pedestrian refuge" needs. Left turn medians are 12 to 18 ft.; pedestrian refuges 4 to 8 ft.	Provide depending upon access control, left turn, and "pedestrian refuge" needs. Left turn medians are 12 to 18 ft.; pedestrian refuges 4 to 8 ft.	Design depending upon access control, left turn needs
On-Street Parking	7 to 8 ft. parallel parking; consider in town center contexts.	Provide on-street parking as needed in suburban neighborhoods.	NA
Grass Buffer	4 to 6 ft. along neighborhood streets, typically absent in town/ village centers.	4 to 8 ft.	NA
Sidewalk	Strive for 6 to 10 ft. in town/village centers, 5 to 8 ft. in town/village neighborhoods.	Min. 5 ft.	NA
Bike Lanes	5 to 6 ft.	5 to 6 ft.	NA

Source: Smart Transportation Guidebook (2008)

The design guidelines presented in the Smart Transportation Guidebook will not yet replace PennDOT's design manual guidelines but rather will help PennDOT to apply their own design manual guidelines to road improvements in a context-sensitive manner that serves the best interests of local communities. The guidebook is also intended for use by Metropolitan Planning Organizations, Counties, municipalities, developers, and the general public as a guide for planners to direct future improvements that will preserve the feel of the road.

Highway Improvements and Recommendations

The Montgomery County Planning Commission maintains lists of proposed transportation projects that are used along with municipal suggestions to make recommendations for future highway improvements. Projects with top priority are passed onto DVRPC and PennDOT to include in the Transportation Improvement Program (TIP) to the extent allowed by fiscal constraints.

Transportation Improvement Program (TIP)

The TIP is the regionally agreed upon list of priority projects, as required by federal law (ISTEA and TEA-21). The TIP document must list all projects that intend to use federal funds, along with non-federally funded projects that are regionally significant. These include projects that are in the TIP for a specified phase (preliminary design, final design, right-of-way acquisition, or construction) or have funding committed for that phase through some other source, such as private development. By definition, these projects are ranked high as they are already funded for at least one phase of the project development process.

See Figure 7.9 for the Upper Perkiomen Valley Region bridges, roads, and intersection improvements are included in the 2009-2012 TIP.

Figure 7.9 Upper Perkiomen Valley Region Projects Included in the 2009-2012 Transportation Improvement Program (TIP)/PADOT 12-Year Program

Municipality	Project Number	Project Name	Project Description
Red Hill, Pennsburg	57849	PA 29, Main St (Bridge)	Removal of narrow bridge
Upper Hanover	16086	PA 29, Gravel Pike (Bridge)	Remove and replace the existing bridge over a branch of the Perkiomen Creek DELAYED UNTIL 2013
Upper Hanover	16085	PA 29 over Hosensack Creek (Bridge)	Remove and replace existing bridge DELAYED UNTIL 2013
Upper Hanover	16408	Fruitville Road (Bridge #232)	Replace a bridge over the Perkiomen Creek. DELAYED UNTIL 2017
Upper Hanover	80053	Knight Road over Green Lane Reservoir	Bridge replacement. DELAYED UNTIL 2015
Marlborough	50646	PA 63 – Rehab two bridges	Rehabilitate 2 bridges on Route 63 Between PA 113 and PA 29, over the Unami Creek and the East Branch of the Perkiomen Creek. DELAYED UNTIL 2018

Source: Delaware Valley Regional Planning Commission (DVRPC)

Montgomery County Recommended Projects

Montgomery County prioritizes projects not currently on the TIP as First-Priority Projects (the group from which the next TIP projects would be nominated), Second-Priority Projects, and Third-Priority Projects. The prioritized projects are included in the transportation element of the County Comprehensive Plan. Figure 7.10 presents County-prioritized projects for the Upper Perkiomen Valley Region.

Figure 7.10 Montgomery County Planning Commission Recommended Transportation Projects

Status	Number	Project Name	Project Description	Municipalities
2nd Priority	525	PA 63: PA 113 Harleysville Pike to Green Lane; PA 29: Green Lane Borough to Red Hill Borough	Upgrade to a good two-lane with shoulders; add turn lanes where necessary	Green Lane, Upper Hanover, Red Hill
2nd Priority	1034	PA 663 Layfield Rd at Knight Rd	Re-grade to improve vertical alignment and sight distance	Upper Hanover
3rd Priority	860	PA 29 Gravel Pike at Campbell Rd	Improve for safety, remove hump on PA 29	Marlborough
3rd Priority	878	PA 29 Gravel Pike: Washington Ln to Lumber St	Widen road through steep curve, possibly providing passing lane	Green Lane, Marlborough

Source: Montgomery County Comprehensive Plan, Transportation Element (2005)

Upper Perkiomen Valley Regional Transportation Study Area Roadway Sufficiency Analysis and Capital Improvements Plan

In July 2007, Pennoni Associates completed a Roadway Sufficiency Analysis and Capital Improvements Plan for the Upper Perkiomen Valley Transportation Study Area. As part of the Capital Improvements Plan phase, project descriptions and project cost estimates have been defined to address existing, on-going regional growth (pass-through traffic) and expected total future traffic (including expected development within study area) demand at twelve key intersections within the study area. Figure 7.11 lists traffic condition scenarios for the twelve intersections studied. The Capital Improvements Plan also established conceptual cost estimates for each project recommended to mitigate the various study intersection deficiencies.

Figure 7.11 Summary of Recommended Improvements Identified in Upper Perkiomen Valley Regional Transportation Study Area Capital Improvements Plan

	Intersection	Traffic Condition Scenario		
		Existing	Pass-Through (2016)	Total Future (2016)
1	John Fries Highway (S.R. 0663) & Gerryville Pike	NA	Left turn lanes on each approach Left turn arrows on Westbound approach of John Fries Highway (S.R. 0663) and Southbound approach of Geryville Pike	Add a through lane on Eastbound and Westbound approaches of John Fries Highway (S.R. 0663)
2	John Fries Highway (S.R. 0663) & Quakertown Road	NA	NA	NA
3	Pottstown Avenue (S.R. 0663) & Gravel Pike (S.R. 0029)	NA	Right turn lanes on Eastbound approach of Pottstown Avenue (S.R. 0663) and Northbound approach of Gravel Pike (S.R. 0029)	Add a through lane at Northbound and Southbound approaches of Gravel Pike (S.R. 0029)
4	Layfield Road (S.R. 0663) & Knight Road / Kutztown Road	NA	NA	NA
5	Geryville Pike & St. James Street / Church Road	NA	NA	Install traffic signal Realign Church Road
6	Geryville Pike & Upper Ridge Road	NA	NA	NA
7	Gravel Pike (S.R. 0029) & West Campbell Road	NA	NA	NA
8	Gravel Pike (S.R. 0029) & Knight Road	Install traffic signal	NA	NA

9	Gravel Pike (S.R. 0029) & McLean Station Road	NA	Install traffic signal Realign McLean Station Road	NA
10	Gravel Pike (S.R. 0029) & Main Street (S.R. 0063)	Install traffic signal	Separate right and left turn lanes at Westbound approach of Main Street (S.R. 0063)	Separate through and right lanes at Northbound approach of Gravel Pike (S.R. 0029)
11	Sumneytown Pike (S.R. 0063) & Upper Ridge Road	Install traffic signal	NA	NA
12	Sumneytown Pike (S.R. 0063) & Geryville Pike	Install traffic signal Restrict Eastbound left turns on Sumneytown Pike (S.R. 0063)	Add a through lane at Eastbound approach of Sumneytown Pike (S.R. 0063)	Add a right lane at Westbound approach of Sumneytown Pike (S.R. 0063)

Source: Upper Perkiomen Valley Regional Transportation Study Area Capital Improvements Plan, 2007

Traffic Calming

Traffic calming is defined by the Institute of Transportation Engineers as "the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users." It encourages motorists to drive at a speed which residents of the area consider compatible with surrounding land uses and also can be an important means of enhancing community character.

Traffic calming measures can be employed in the Upper Perkiomen Valley Region in one of two situations: when an area is being newly developed, or as a retrofit of an existing street. New development gives the designer or planner ability to shape the roadway and roadside in a manner that encourages motorist speeds that they consider desirable for the area. For situations of new development, the designer may consider narrow roadways or on-street parking to slow cars. Retrofitting of existing streets can occur when high traffic speeds have been identified as an issue on a roadway. In residential areas when high speeds are an issue, municipalities should gather traffic data, evaluate a range of traffic calming measures such as speed humps and traffic circles, and conduct a survey of motorists on the street to determine support of the installations. To address high speeds in commercial areas, intrusive measures such as speed humps and traffic circles are not recommended, and curb extensions, narrow lanes, and on-street parking could be considered.

Figure 7.12 depicts traffic calming measures appropriate based on Smart Transportation roadway typology.

Figure 7.12 Traffic Calming Measures Appropriate to Roadway Classifications

Classification			Regional Arterial	Community Arterial	Community Collector	Neighborhood Collector	Local Street
Design speed range (mph)			30 to 45	25 to 45	25 to 30	25 to 30	20 to 25
Traffic calmed category			Framework Street		Non-Framework Street		
Transition zone to traffic calmed segment							
Gateway (landscaping, archway, signs, etc.)							
Cross Section Measures	Reduction in number of lanes						
	Reduction in width of lanes						
	Long median						
	Short median/refuge						
	Bulbouts(1)						
	Curb and gutter						
	Pedestrian-scale lighting						
	Street trees						
	Buildings at back of sidewalk						
	Lateral shifts						
	Bike lanes						
	On-street parking	Parallel					
		Back-in-angle					
		Front-in-angle					
		90 degrees					

Periodic Measures	**Horizontal Measures**	Roundabouts					
		Mini-traffic circles					
		Chicanes					
		Short medians					
	Narrow-ings	Pinch points					
	Vertical Measures	Raised intersec-tions					
		Raised cross-walks					
		Flat-top speed humps					
		Speed cushions					
		Speed humps					

Key:

Appropriate

Not Applicable

Appropriate in Special Circumstances

(1) Bulbouts should be used on regional arterials only in urban or suburban center contexts, with speeds of 35 mph or below. On arterials they should be no greater than 6 feet in width.

Source: Smart Transportation Guidebook, 2008

Public Transportation

Public transportation is another key element in the Upper Perkiomen Valley Region's transportation system. Public transportation reduces the amount of traffic on the roads and provides greater transportation options to those who without access to automobiles or those with physical disabilities who cannot drive. Use of public transit can also conserve energy and improve air quality. Furthermore, an expanded public transit network can better connect workers and jobs and consumers in commercial areas, thus enhancing economic development.

The Upper Perk Region had no public transportation or taxi service until July 15, 2009 with the unveiling of the Upper Perk Coaster. It is a fixed

route municipal shuttle operated by the Partnership TMA and serving the Pennsburg, Red Hill, and East Greenville areas. The Coaster has thirteen stops including:

- Upper Perk Manor
- Redner's Market
- Red Hill Villas
- Professional Rx
- 7th Street Medical
- Pennsburg Shopping Center
- Perkiomen Place
- St. Marks Lutheran Church
- Upper Perk Senior Center
- Walmart in Upper Hanover
- Red Hill Estates
- St. Luke's Perkiomen Outpatient Center
- Valley Medical Center

The Upper Perk Coaster operates between 9am and 4:30pm, Wednesday through Friday. The Coaster introduces travel independence for non-drivers in the region.

Pedestrian Mobility

Pedestrian circulation is also a part of a regional transportation network. Pedestrian networks in the Upper Perkiomen Valley Region include sidewalks, trails, paths, and crosswalks. Pedestrian travel can be an effective alternative to the automobile for short distance trips, particularly within the boroughs in the Upper Perkiomen region. People also may use the network for longer distance exercise activities such as jogging.

Pedestrian access needs to be created where lacking in order to facilitate access between and among growth areas in the region. These networks should be as interconnected as possible to form an integrated, safe pedestrian network.

Sidewalks

Sidewalks promote walkabilty and reduce motorized vehicle use. Where sidewalks exist, they provide safety for non-drivers.

There are often many problems with an existing sidewalk network. Network gaps can exist where existing sidewalks fail to interconnect with wider networks. Existing sidewalks may be broken in places, obstructed, or inaccessible to the handicapped. Also crosswalks may be missing or inadequate, therefore inhibiting pedestrian traffic across major roads.

Sidewalks should be well-designed and set back from the street, free of obstructions, interconnected, and wide enough to accommodate the anticipated volume of foot traffic in the area served. See Figure 7.13 for sidewalk design standards. Additionally, crosswalks should be clearly marked and should connect to adjoining sidewalks.

Figure 7.13 Sidewalk Design Standards

Sidewalk Location	Sidewalk Width	Planting Strip Width
Central Business District	8' or wider	8' or wider
Commercial, office, industrial areas outside of CBD	5' or wider; 7' with no planting strip or; 5' with 2' planting strip	4' to 8' preferred
Residential areas along arterial or collector	5' or wider	4' to 8' preferred; 2' is acceptable
Residential areas along local streets w/ density > 4DU/acre	5' or wider	Minimum 2' wide; Wider is preferred
Residential areas along local streets w/ density ≤ 4DU/acre	4' or wider	Minimum 2' wide; Wider is preferred
Important Note: All sidewalk widths are exclusive of any obstacle. Sidewalk areas containing street lights, trees, benches, doors, trash cans, mailboxes, newspaper boxes, etc., must be added to the minimum width. In addition, in central business districts, two feet should be added to the width wherever pedestrians may be window shopping or doors may be opening onto the sidewalk area.		

Source: Montgomery County Comprehensive Plan, Transportation Element, 2005

Within higher density areas, municipal Zoning and Subdivision and Land Development ordinances should provide language that requires sidewalks along all streets, major driveways, and parking areas. Sidewalks should be located anywhere there is a potential for pedestrian-vehicle conflicts. Because the nature of suburban development has given priority to auto traffic at the expense of pedestrian mobility, there are many such conflict points that lack proper sidewalks.

Installing sidewalks everywhere they are absent and improving existing but inadequate sidewalks can be problematic. Therefore, this becomes a question of prioritizing where sidewalks are missing or inadequate and where is it most important they be installed or upgraded. They should be installed wherever people might be expected to walk which could

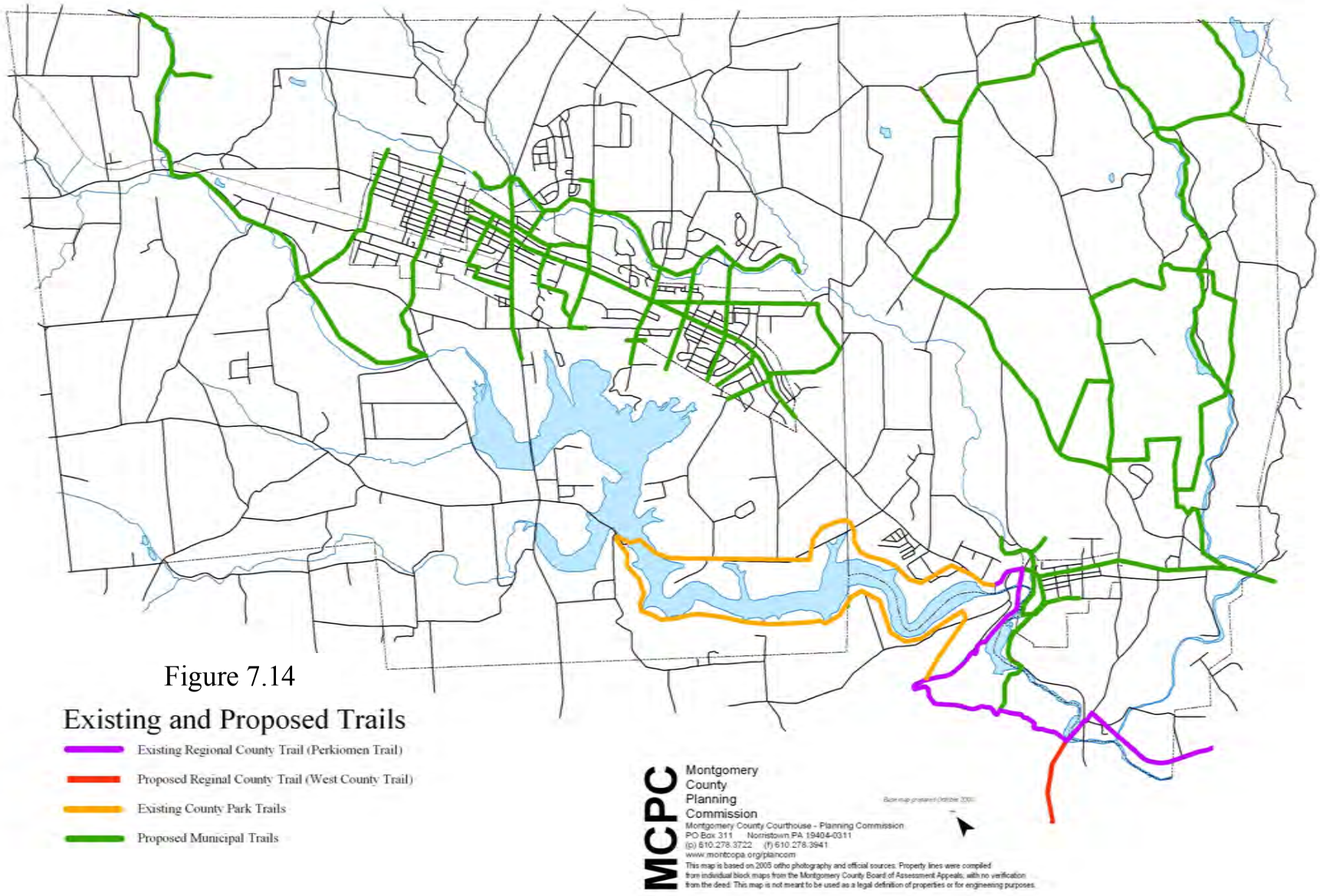

Existing and Proposed Trails
Existing Regional County Trail (Perkiomen Trail)
Proposed Reginal County Trail (West County Trail)
Existing County Park Trails
Proposed Municipal Trails
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610.278.3722 (f) 610.278.3941
www.montcopa.org/plancom
This map is based on 2005 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.

Figure 7.14

include main street areas, shopping centers, office parks, industrial complexes, higher density residential areas. Sidewalk should also connect to "destinations" such as shopping centers, bus stops, schools, parks, and libraries.

Trails

Trails can be used for recreation but can also be used as an alternative transportation choice. Trails work best as a transportation method where they are accessible to homes and places of interest. They can connect destinations in the within and outside of the region that are too far apart for sidewalks to link. Trails also have been shown to enhance the quality of life in communities.

The Upper Perkiomen Valley Region trail network consists of existing and proposed trails (Figure 7.14). The Perkiomen Trail, a County regional trail extending from the Schuylkill River up to Green Lane Park, is in the process of being extended approximately a half mile along Route 29. The trail extension is expected to be completed in November of 2009. Additionally, there is a network of County trails within Green Lane Park itself.

The municipalities in the Upper Perkiomen Valley Region have a trail network in place and also identified additional proposed trails in each of their Open Space Plans. Municipalities have been working to develop these trails and connections as resources permit. In doing so, the municipalities should connect sidewalks and trails as much as possible, however; trails should not be considered a replacement for a sidewalk network along roads.

Bicycle Mobility

Bicycling can be a means of recreation and also a way to run errands or commute to work. If biking is used in place of automobile trips, it can help reduce traffic congestion, pollution, and energy. Road improvements for bicycling should be encouraged and facilitated in the region to help achieve some of these things. PennDOT has adopted the Federal Highway Administration's guidelines as "recommended standards" for making roads in the state bikeable. These standards are presented in Figure 7.15.

Freight Transport

Freight transportation can include trucking, rail, and air transportation. Although there are no airports in the Upper Perkiomen Region, trucking and rail transport are prevalent forms of freight transport. The East Penn Railway has a freight rail line through northwest Upper Hanover

Figure 7.15 Standards for Bikeable Roads

Bicyclist Type, Average Motor Vehicle Operating Speed (AMVOS), and Road Profile	<2,000 AADT volume				2,000 – 10,000 AADT volume				>10,000 AADT volume			
	Adequate site distance		Inadequate site distance		Adequate site distance		Inadequate site distance		Adequate site distance		Inadequate site distance	
GROUP A BICYCLISTS:		Truck, bus, RV				Truck, bus, RV				Truck, bus, RV		
<30 mph AMVOS:												
Urban, no parking[1]	13 sl	13 sl	15 wc	15 wc	13 sl	15 wc	15 wc	15 wc	15 wc	15 wc	15 wc	15 wc
Urban, with parking[2]	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	15 wc	15 wc	14 wc
Rural[3,4]	12 sl	12 sl	14 wc	14 wc	12 sl	14 wc	14 wc	14 wc	14 wc	14 wc	4 sh	4 sh
30-40 mph AMVOS:												
Urban, no parking[1]	15 wc	15 wc	16 wc	16 wc	15 wc	16 wc	16 wc	16 wc	15 wc	16 wc	16 wc	16 wc
Urban, with parking[2]	14 wc	14 wc	14 wc	15 wc	14 wc	15 wc	15 wc	15 wc	14 wc	15 wc	15 wc	15 wc
Rural[3,4]	14 wc	14 wc	4 sh	4 sh	14 wc	15 wc	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh
41-50 mph AMVOS:												
Urban, no parking[1]	16 wc	16 wc	16 wc	16 wc	16 wc	16 wc	6 sh	6 sh	16 wc	16 wc	6 sh	6 sh
Urban, with parking[2]	15 wc	15 wc	15 wc	15 wc	15 wc	16 wc	16 wc	16 wc	15 wc	15 wc	16 wc	16 wc
Rural[4]	4 sh	4 sh	4 sh	4 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh
>50 mph AMVOS:												
Urban, no parking	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh
Urban, with parking	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rural[4]	4 sh	6 sh	6 sh	4 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh
GROUP B/C BICYCLISTS:		Truck, bus, RV				Trucks, bus, RV				Trucks, bus, RV		
<30 mph AMVOS:												
Urban, no parking [1,5]	15 wc	15 wc	15 wc	15 wc	15 wc	15 wc	15 wc	15 wc	5 bl	5 bl	5 bl	5 bl
Urban, with parking[2,5]	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	14 wc	5 bl	5 bl	5 bl	5 bl
Rural[4]	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh	4 sh
30-40 mph AMVOS:												
Urban, no parking[5]	5 bl	5 bl	5 bl	5 bl	5 bl	6 bl	6 bl	5 bl	5 bl	6 bl	6 bl	5 bl
Urban, with parking[5]	5 bl	5 bl	5 bl	5 bl	5 bl	6 bl	6 bl	5 bl	6 bl	6 bl	6 bl	6 bl
Rural[4]	4 sh	4 sh	4 sh	4 sh	4 sh	6 sh	6 sh	4 sh	6 sh	6 sh	6 sh	6 sh
41-50 mph AMVOS:												
Urban, no parking[5]	5 bl	5 bl	5 bl	5 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl
Urban, with parking[5]	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl
Rural[4]	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh	6 sh
>50 mph AMVOS:												
Urban, no parking[5]	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl	6 bl
Urban, with parking	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rural[4]	6 sh	6 sh	6 sh	6 sh	8 sh	8 sh	8 sh	8 sh	8 sh	8 sh	8 sh	8 sh

LEGEND:

sl = shared lane (12 to 13 foot)

wc = wide curb lane (14 to 16 foot)

sh = shoulder (4 to 8 foot)

bl = bike lane (5 to 6 foot)

NOTES:

1. The wc or sl number represents the "usual width" of the outer travel lane, measured from the left strip of the travel lane to the face of the curb.

2. The wc number represents the "usable width" of the outer travel lane, measured from the left edge of the parking space (8 to 10 feet minimum from the face of the curb) to the left stripe of the travel lane.

3. The wc or sl number represents the "usable width" of the outer travel lane, measured from the left strip of the travel lane to the edge of the pavement if a smooth, firm and level shoulder is adjacent. If a soft shoulder exists or if there are rough or dropped seams at the edge of the pavement, then a width should be increased by a minimum of 1 foot.

4. For a sh, a minimum 2 foot separation is desirable between the edge of the pavement and the edge of the roadside ditch, if any.

5. The bl number indicates the recommended standard width measured from the bike lane stripe to the face of the curb. The minimum allowable width for a bl is 4 feet. If a curb is not provided, a minimum 2 foot separation is desirable between the edge of the pavement and the edge of the roadside ditch, if any.

6. It is uncommon for roadways in Montgomery County to be designed and constructed with gutter pans. However, if a gutter pan exists or is provided as part of a retrofitting project, the standards cited in Tables 1 and 4 from FHWA's publication entitled "Selecting Roadway Design Treatments to Accommodate Bicycles, 1994" should be used.

The *1998 Bicycling Road Map: A Bike Mobility Plan for Montgomery County, Pennsylvania* was completed to examine potential bicycle routes in Montgomery County and encourages making Montgomery County more "bikeable." Primary and secondary bicycle routes from the plan are identified on Figure 7.16. Primary bicycle routes are key bicycling corridors that link major destinations and contribute to an interconnected on-road bicycle network. Secondary bicycle routes are all arterials and collectors not otherwise categorized as primary routes. The suggested routes could serve as a guide to where bike lanes or paved shoulders would be appropriate. In addition to the on-road routes suggested above off-road paths could be introduced in areas that offer convenient access to shopping, employment, schools, or recreation areas. The municipalities of the Upper Perkiomen Valley Region should work to develop bike routes where appropriate to encourage biking within the region.

Figure 7.16
Recommended Bicycle Routes
Primary Bike Routes
Secondary Bike Routes
MCPC
Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
ph 610.278.3722 fx 610.278.3941
www.montcopa.org/plan/com
Data last updated October 2009

into East Greenville and Pennsburg. It serves a number of industries in the region.

The Upper Perkiomen Valley Region also experiences truck traffic, particularly between the industrial complexes in the western portions of Upper Hanover and the Quakertown interchange of the Pennsylvania Turnpike. Trucks have been known to use Route 29 through the Boroughs of East Greenville and Pennsburg although that portion of Route 29 does not allow for travel of trucks greater than 102 inches in width due to size constraints of the road. Truck traffic has been directed to use an alternate route of Water Street/Church Road/School House Road to connect from Route 29 to Route 663. Montgomery County and Upper Hanover Township have discussed upgrades to these roads to accommodate the increased truck traffic; however can not proceed with any actions until funding becomes available.

CHAPTER 8
ECONOMIC REVITALIZATION

Introduction

Based upon the Comprehensive Plan's goals and objectives, economic revitalization in the Upper Perkiomen Valley will focus upon encouraging new retail, office and industrial development within designated areas to meet a range of uses. Fostering this economic revitalization in a way that encourages infill and redevelopment within established commercial areas, such as the region's downtowns, while complementing more recent commercial development in surrounding areas, will be essential to the region's success.

The focus of economic revitalization for the purposes of the recommendations in this chapter will be on the region's two primary main street corridors. These corridors are defined as Rt. 29 through the boroughs of Red Hill, Pennsburg and East Greenville; and Rt. 63 as it runs between Sumneytown in Marlborough Township and Rt. 29 in Green Lane Borough. In terms of the main street corridor within the three boroughs, both Pennsburg and East Greenville have completed Revitalization Plans and Red Hill Borough is beginning the process of developing a plan. The other main street corridor in Marlborough and Green Lane currently does not benefit from any defined revitalization planning.

Downtown Areas

Create a Market Niche

The "downtown" portions of the Main Street Corridors should work to attract businesses that will complement the retail offerings within the surrounding shopping centers. Traditional downtown areas can provide an alternative to shopping centers and big-box retail through small shops that specialize in unique services and local eateries that offer indoor and outdoor dining.

Maintain Unique Historical Identity

Revitalization should be done so that the history and identity of the main street corridors is preserved. An example of this being done is the renovation of "The Grand" movie theater in East Greenville. The movie theater shows second run movies at a reduced price and has become a cornerstone of the borough's downtown area, attracting new businesses to adjacent properties.

There has also been new development within downtown Pennsburg, such as the construction of a new Rite-Aid Pharmacy that was designed with a historic flair and has provided the borough with a new municipal parking lot. New infill development and redevelopment within the main street corridors should be designed so that it is historically sensitive to the architecture of its surroundings.

The main street corridors could further leverage the historical and cultural amenities of the region by establishing new arts and cultural programs and events, preserving properties identified in historic inventories, starting a farmers market, and fostering heritage tourism.

Streetscape Improvements

Streetscapes and building conditions are important in framing a visitor's overall impression of an area. It is important that the main street corridors continue to improve and enhance their physical character and aesthetics. For example, since 2001 East Greenville has completed several phases of improvements along its Main Street and has streetscape improvements scheduled for the next several years. These improvements have included widening the street, new sidewalk with brick pavers between the curb and sidewalk, new curbing, street trees, streetlights, and patterned crosswalks. East Greenville will continue to pursue these streetscape improvements until the entire length of the Borough's Main Street, from Front Street to the Borough Municipal Boundary right after 6th Street, is completed.

Pennsburg has also completed several phases of their streetscape improvements. The improvements completed to date include wider sidewalks for better pedestrian access, period streetlights with planter bases, curb bump-outs, and accent paving within pedestrian crossings.

Sidewalks within the Main Street Corridors are necessary in order to facilitate the movement of pedestrians and shoppers in the downtowns and enhancing safety. It is important to install sidewalks where they are missing to create links between businesses and residences and to repair existing sidewalk that is in need of repair. For example, residents of East Greenville may be able to better utilize the Kistler-Bitting YMCA Park is located right outside the Borough's boundary, if they were able to walk along either Bank or 2nd Streets. However, presently Bank Street, from Washington Street to Lake Street in Upper Hanover Township, does not contain sidewalk. Neither does 2nd Street from Washington Street all the way to the main entrance of the YMCA. East Greenville has plans to pursue the installation of sidewalks along both Bank and 2nd Streets that make it safe and convenient for the Borough's residents to access the Kistler-Bitting YMCA.

Streetscape improvements also include the installation of benches and trash receptacles. By placing street benches at centrally located spots, such as major retail establishments like the Grand Movie Theater or Community Coaster stops, people can gather and rest. The street benches selected by the community should contain a design that complements the character already established by the historic street lighting fixtures found within the main street corridor.

Cleanliness is also an important aspect of aesthetics. A way to ensure that these corridors remain clean is to provide trash receptacles at appropriate locations. Similar to the benches, the trash receptacles should contain a design reflective of the corridor's existing character.

It is also important to improve the streetscape on the side streets. These could include installation of new sidewalks and curbing, planting of street trees, and continuing the installation of streetlights identical to those being installed on the corridor's main thoroughfare.

Signage

The provision of attractive and informative signage within the main street corridors plays an important role in economic revitalization. Sign ordinances should be up-to-date to regulate the installation of new signage so that it is compatible with the small-town feel and historic environment of the main street corridors. The ordinances should regulate different types of signs and their characteristics which can include size, lettering, setback, and illumination. Pennsburg has established a Sign Improvement Grant program, in which several businesses already have participated.

All municipalities within the main street corridors could benefit from the creation of a unified pedestrian way finding sign system to direct pedestrians to downtown businesses and community features. Ideally, the sign design will be consistent throughout a corridor, but should have a small distinguishing feature to allow a viewer to know which municipality they have entered.

There are different types of signs such as amenity signs, wayfinding signs, historic signs and gateway signs. Studies to identify the appropriate locations for the different types of signs should be completed where necessary. Amenities signs could be installed at municipal parking lots, athletic fields and parks. Historic signs could be installed at not only historic properties, but also at the location of important local industries such as cigar factories or the railroad. Gateway signs should be installed at the entrance to a municipality and serve as the first impression visitors will have to a community. A good example of gateway signage already exists in Pennsburg at the intersection of Route 29 and 663.

Revitalize Vacant Lots

While the majority of land within the main street corridors is developed, the existing vacant land will become increasingly important as these areas revitalize and infill development increases. The existing vacant lots should be identified and inventoried for potential future development.

Parking, Circulation and Pedestrian Safety

Parking Improvement Studies

A parking improvement study should be completed for each main street corridor area to determine if sufficient capacity exists. If deficiencies are identified, the parking improvement study will identify new parking opportunities, develop strategies that will better utilize existing parking or both.

Parking that does exist should be effective, visible and accessible. Signage can act as a form of marketing and draw attention to something that people are not fully aware of. As part of the signage strategy for the main street corridors, municipalities should pursue the installation of signs throughout the community that direct visitors and patrons to available parking.

Circulation

A Roadway Sufficiency Analysis was completed for the Upper Perkiomen Valley that looked at existing and projected traffic conditions at twelve signalized intersections. The levels of service for the intersections within the main street corridors that were analyzed should be reviewed to determine if they are impediments to proper vehicular circulation.

Finally, the use of bicycles within the main street corridors should be encouraged. If biking is used in place of automobile trips, it can help reduce traffic congestion, pollution, and energy. Chapter 7 of this Comprehensive Plan makes recommendations to facilitate biking in the region.

Pedestrian Safety

It is important to reduce the impact of motor vehicles in order to make the downtown a comfortable shopping, dining, and office destination. Reducing speed limits at targeted roadways and intersections can help achieve this. The Main Street for the East Greenville, Pennsburg, and Red Hill is Route 29 which is a state road used by commuters traveling through the region. It has been observed that the commuters can often create speeds on Main Street that are undesirable for pedestrians. Some

measures have already been taken to achieve lower speed limits including the lowering of the speed limit from 35 to 30 through the downtown between Front Street on the border of Pennsburg and East Greenville and 3rd Street and the lowering of the speed limit from 35 to 25 between 3rd Street and Route 663. PennDOT has stated that they will also investigate a further reduction in speed limit on Main Street between Front Street and 3rd Street to 25 mph sometime in the future. The boroughs should also determine if there are other streets within their limits that could benefit from a speed limit reduction.

Municipalities should also consider other traffic calming measures described in the transportation chapter to increase pedestrian safety. East Greenville is currently undertaking a traffic calming measure of placing yield to pedestrian signs at crosswalks along Main Street.

Business Attraction and Retention

Market Study

A market study should be considered for each main street corridor to identify sites for redevelopment and opportunities for new growth. A market study can inform a community of its opportunities, options, and benefits and drawbacks of the options. A market study will document the area's residents, employers, employees, available land, housing, commercial and industrial facilities, physical infrastructure, and historic sites. It will also look at different growth scenarios and provide estimates of the impact. A market study will also determine what types of businesses the municipalities should try to attract and will include a vacant property inventory.

Attract new businesses and entrepreneurs

One way that the region can attract new businesses is by establishing capital, operating, and start-up cost assistance programs. Municipalities should consider the development of a marketing plan that will also promote their communities as ideal places to locate new businesses. Some elements of this could include the creation of logos, pamphlets and brochures that market the areas unique amenities.

Additionally, there are a number of state and local programs to assist in attracting new businesses. These include Keystone Opportunity Zones, Local Economic Revitalization Tax Assistance Act (LERTA), State Enterprise Zones, Tax Increment Financing Guarantee Program, Business In Our Sites-revolving loan fund, and Tax increment financing (TIF). The boroughs may wish to investigate some of these programs to determine if they are applicable and could benefit them.

Support small business owners

A way to maintain and improve the businesses in the region's main street corridors may be the development of a small business assistance program. The program can provide training and financial support to businesses in the commercial core through a grants program. It can also provide opportunities for networking and training of commercial and retail personnel. The program could be run by an umbrella organization such as an economic development committee, Main Streets program, or the Chamber of Commerce. Some services that the program could provide could include: business administration, business restructuring, accounting, property acquisition, commercial leasing, shopper increase, customer service assistance, financial management, marketing, record-keeping and reporting, regulatory compliance, retail merchandising, and façade improvements.

Arts and Culture

Protect and Promote Historical Resources

Historic Resources Inventory

An historic inventory, as part of the overall effort to restore and revitalize the historic streetscape and business patterns of the main commercial core, would serve as an excellent resource to the region. Cataloguing, preserving, and maintaining an inventory of historic resources helps create an awareness and appreciation of the region's rich history. An historic inventory aids in recognizing, maintaining, and protecting unique historical and cultural sites. Being listed in the inventory is not a historic designation, but does imply that a property has historical significance. The Schwenkfelder Library and Heritage Center completed a comprehensive study of the historic resources for each of the communities in the Upper Perkiomen Region. The study includes twenty historic sites complete with corresponding historical information. As the study was completed in 2004 some of the information is no longer accurate, but the majority of the study could easily serve as the backbone for a new historic sites inventory. In addition, the Pennsylvania Historical and Museum Commission maintains a Pennsylvania Historic Resource Inventory with over 115,000 listings. Since individual communities within the Region may conduct their own inventory, this study may simply require compiling those individual inventories.

Evaluate the Benefit of Overlay Districts for Historic Preservation

Municipalities should consider the adoption of overlay districts that provide incentives for historic preservation. A historic preservation

overlay district would provide protection and preservation incentives to specified properties in the Borough that is not provided through a local historic district. Section 603(g)(2) of the MPC states that zoning ordinances "shall provide" for the protection of historic features and resources. Zoning regulations can allow a municipality to regulate the uses that may be permitted in an area of historic properties or a historic district. They also can regulate other characteristics such as the density of development, the maximum sizes for buildings, and the setbacks from property lines. Zoning regulations can allow for the reuse and redevelopment of properties within a historic district so that newer structures complement the appearance of the village and remodeled buildings preserve the characteristics that make them historically significant. Marlborough Township is currently in the process of developing an historic overlay district.

Improvement And Redevelopment Of Key Landmarks

The region can also memorialize some of its historic resources with a historical marker through the Historical Marker Program of the PHMC. Any individual or group may nominate a structure or site for such a commemoration. If the independent panel designated by the PHMC approves the marker, the nominator must submit a request for grant funding for approximately half of the cost of the monument's manufacture and designate a nonprofit organization as a sponsor who will provide funding for the remaining costs of manufacture. Once erected, the Commission takes ownership of the monument and assumes all responsibility for its maintenance.

Protect And Promote Heritage And Cultural Resources

Cultural Resource Inventory

Similar to an historic inventory or a natural resources inventory, the cultural amenities inventory would help the region assess its supply of cultural offerings. The inventory should include information such as description of the offering, current venue, related events and frequency, and contact information. Local culture and heritage is important to economic development, as it provides amenities that draw people to the region and can make it more attractive to new business development.

Evaluate Creating an Arts and Culture Council.

Research indicates there is a wealth of artisans in the region; however, there is no organization or network in place to assemble them for local events, business development, or marketing purposes. An Arts and Culture Council would lead the region in promoting existing heritage, art

and cultural resources to the communities; provide resources to local artists and art and culture organizations; encourage community involvement; and develop new attractions to draw visitors to the region. Local artisans are also an important resource for adding public art to beautify and possibly unify the region's commercial areas.

Foster Heritage Tourism

In their revitalization planning processes, East Greenville and Pennsburg have suggested the creation of a CD-based heritage walking tour of the Upper Perkiomen Valley. The Schwenkfelder Library and Heritage Center has a walking tour of East Greenville that contains detailed information compiled by local experts on all the historic sites within the Borough that are fifty years of age and older. East Greenville's walking tour could be expanded to an inter-municipal level by including the heritage trail efforts of Pennsburg Borough, any heritage fostering endeavors done by Red Hill Borough, as well as any other regional efforts. For ease of use, the tour may be focused only on the contiguous Boroughs of East Greenville, Red Hill and Pennsburg. A separate tour could be developed for the Sumneytown/Green Lane area. Used by locals and tourists alike, a regional Heritage Trail would lead to different culturally significant sites throughout the region and yield greater pedestrian traffic. The tour should incorporate as many interesting sites in the area as possible. Simply put, the more sites, the better the tour. Historic sites and sites with a less historic but still interesting nature should be looked at for inclusion.

Tourism And Recreation

The wealth of natural resources in the region could facilitate pursuit of a low-impact economic development strategy around outdoor recreation and natural resources tourism. Opportunities in outdoor recreation and natural resource tourism include: enhanced or new recreational amenities, trails, parks, campgrounds, scenic areas, restaurants, cafes, bed-and-breakfasts, outfitters and rental operations, antique stores, and specialty retailers. These uses contrast with the more typical economic development strategy of attracting large commercial or professional offices, which would have a greater impact on the region's character. Furthermore, outdoor recreation and active use of natural resources is a growing trend; the region would be capitalizing on a unique opportunity to use its own resources in a beneficial way. Benefits of this type of economic development include: limited increase in density and new construction; preservation of existing natural resources; limited or no infrastructure expansion or development; increased visitor spending; new small enterprise; and job creation.

Foster Outdoor Recreation And Natural Resources Tourism

Park and Recreation Inventory

An inventory of all the natural areas (parks, trails, campgrounds, active recreational amenities, etc.) should be gathered from previous planning documents and further research. This inventory will be helpful in identifying gaps in the recreational and natural resources available—both in location and in type of resource. The inventory will also expose concentrations of resources, in which new economic generators might be best-located.

Identify Enhancement Opportunities

The resource inventory described above can also be used to ensure continued maintenance of existing park and recreation facilities, as needed, and identify resources in need of enhancement.

Prioritize Expansion Opportunities

Emphasize park and recreation opportunities that preserve natural linkages, environmental resources and viewsheds. Develop upon the existing trail network, including the Perkiomen Trail and its links to Philadelphia, to expand the regional trail network to connect communities and recreation areas within the region. In order to capitalize on the potential economic benefits of a regional multi-use recreation trail, trails could be expanded to enter or come adjacent to commercial centers. With that connection, new businesses such as cafes, rental outfitters, and lodging options, can establish to serve the needs of trail users. Once drawn into the community and off the trail, users may spend more time and money in the community. Schwenksville is exploring a similar strategy lower along the Perkiomen Trail.

New Business Development

Develop and implement a business recruitment strategy. Encourage new business development that provides shopping, dining and lodging for visitors. Identify opportunities for retail, restaurant, and service development in the region that support and emphasize the natural resources available in the region to draw visitors.

The rural nature of the Upper Perkiomen Region and its natural open spaces, combined with the Perkiomen Trail to the southeast, and the newly expanded Bear Creek Mountain Resort, offer competitive outdoor recreation and nature tourism advantages for the region. This type of tourism includes the attraction of tourists to destination areas replete with natural areas for recreation, and a rich local heritage and culture.

For communities, the influx of visitors for these activities provides opportunities for new local entrepreneurship. Typical outdoor recreation and nature tourism opportunities include restaurants, gift shops, clothing stores, art galleries, home accessory stores, wine/liquor stores, antiques and collectibles markets, music and book stores, sporting goods/outfitters, and bed and breakfasts/inns/hotels.

CHAPTER 9
HOUSING

Introduction

The housing goal of the Upper Perkiomen Valley Regional Comprehensive Plan is to accommodate adequate housing opportunities for current and future residents. In addition, the objectives of the housing goal recognize that the long-term social and economic well-being of the region depends upon an adequate supply of all housing types for a range of income levels, including the housing needs of older adults. To facilitate this, the housing objectives identify the importance of concentrating new development within designated growth areas, encouraging infill housing to be architecturally compatible with surrounding development, and encouraging housing developments that create a sense of place and promote a pedestrian friendly environment.

Together these housing objectives complement the region's goals for open space and natural resource protection by discouraging suburban sprawl. Providing various housing types for a range of income levels within designated growth areas will contribute to the protection of the open fields, woodlands, stream valleys, and farms that create the Upper Perkiomen Valley's rural character. At the same time, new development within the designated growth areas should be done in a way that complements existing neighborhoods and retains the small-town charm of the boroughs.

Existing Conditions

Housing Units

The housing stock of the Upper Perkiomen Valley is diverse and in ample supply. There are single-family homes, twins, duplexes, townhouses, apartments, mobile homes, and mobile home parks.

According to information from the 2000 U.S. Census and the Montgomery County 2008 Units built report, 56 percent of all homes in the Upper Perkiomen Valley are single-family detached (see Figures 9.1 and 9.2). The remaining housing units consist of higher density attached units, multi-family dwellings or mobile homes. These three high density housing types represent 25%, 14%, and 5%, respectively, of the Upper Perkiomen's overall housing stock. This low density to high density breakdown mirrors that of Montgomery County as a whole, which is

Figure 9.1 2008 Upper Perkiomen Valley Housing Allocation

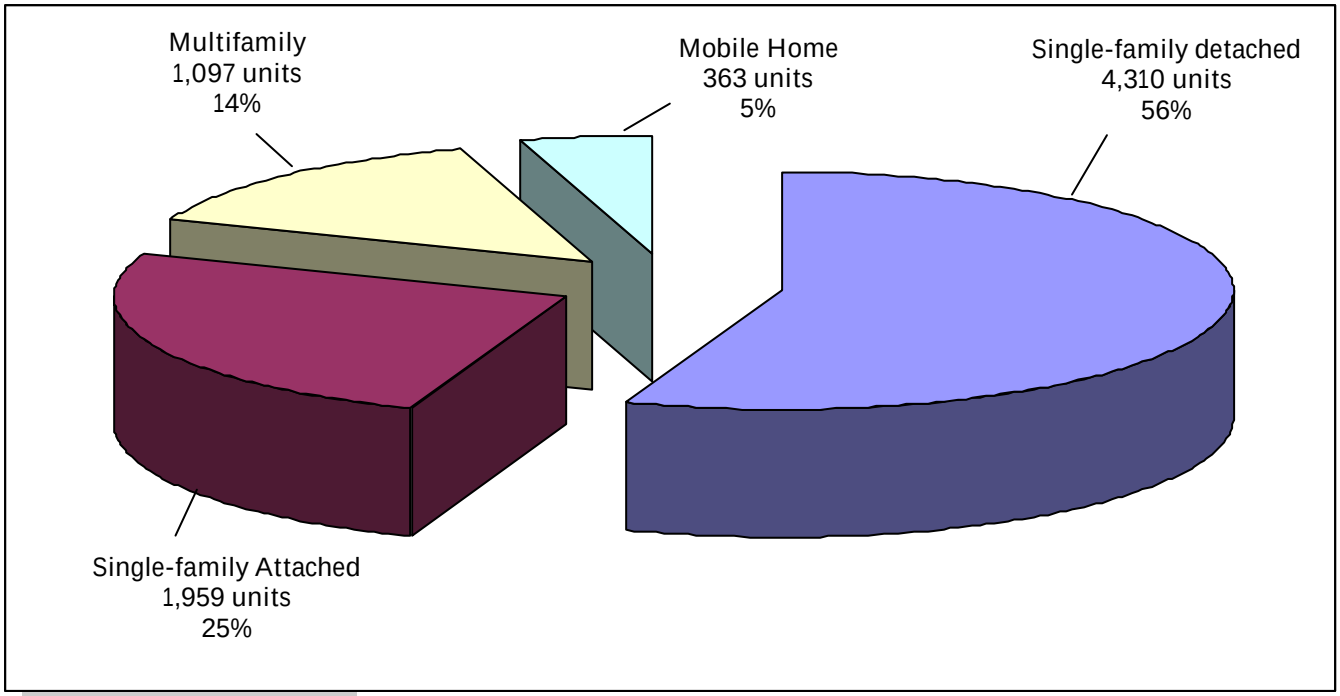


Figure 9.2 2008 Housing Types

Municipality	Total Housing Units	Single-Family Detached	Single-Family Attached	Multifamily	Mobile Homes
East Greenville	1,232	294	638	300	0
Green Lane	237	161	26	46	4
Marlborough	1,339	1,058	22	87	172
Pennsburg	1,386	517	576	293	0
Red Hill	1,164	362	349	319	134
Upper Hanover	2,371	1,918	348	52	53
Upper Perkiomen Valley	***7,729***	***4,310***	***1,959***	***1,097***	***363***
Montgomery County	320,930	179,435	61,921	76,585	2,989

Source: U.S. Census, MCPC 2008 Units Built Report

comprised of 56 percent single-family detached (low density) units and 44 percent higher-density units.

In addition, the region's ratio of low density units to high density units has decreased since the 2000 census based upon the mix of housing constructed in the Valley through 2008 (see Figure 9.3). In 2000 the region's low density to high density breakdown was 58.5% and 41.5%, respectively. Since 2000, 58% of the units built in the Upper Perkiomen Valley have been high density units, causing the low density to high density split to narrow.

Housing Value

Based upon all housing units sold in the Upper Perkiomen Valley in 2007, the region's median sales value was $245,966. Figure 9.4 shows for each municipality the median housing value as reported in the 2000 Census, the 2007 median sales values, and the percent change between 2000 and 2007. While the 2007 sales values reflect only the prices paid for the 346 units sold that year, it does represent 4.5% of all housing units, including both existing and new units, and will serve as a reasonable surrogate for housing value. Pennsburg and Red Hill Boroughs and Upper Hanover Township had the greatest jump in median housing value with all three municipalities more than doubling their 2000 housing value. This is not surprising since the units built in these communities, representing 91% of all units built in the region and 34% of all residential sales this decade, would have been newer, more expensive units.

Figure 9.3 2000 and 2008 Housing Mix

	2000	2000 % of Total	2008	2008 % of Total
Low Density	3755	58.5%	4310	55.8%
High Density	2661	41.5%	3419	44.2%
Total	6416	100.0%	7729	100.0%

Figure 9.4 2000 and 2007 Median Housing Value

Municipality	2000	2007	% Change
East Greenville Borough	$94,200	$155,200	64.76%
Green Lane Borough	$132,700	$214,500	61.64%
Marlborough Township	$153,400	$243,600	58.80%
Pennsburg Borough	$114,000	$232,500	103.95%
Red Hill Borough	$114,000	$234,000	105.26%
Upper Hanover Township	$154,400	$323,950	109.81%
Upper Perkiomen	**NA**	**$245,966**	**NA**
Montgomery County	**$158,600**	**$278,000**	**75.28%**

Source: U.S. Censusl MCPC 2007 Median Prices for Housing Report

Figure 9.5 breaks down the 2009 median housing value for single-family detached and single-family attached units. While we expect the median price for attached units to be generally lower than that for detached units, the percentage difference does vary by community. This variation can be attributed to the total number of sales for each unit type and by the breakdown of sales between existing,

Figure 9.5 2007 Median Prices for Housing

Municipality	Detached	Attached
East Greenville Borough	$205,000	$149,000
Green Lane Borough	NA	NA
Marlborough Township	$359,000	NA
Pennsburg Borough	$227,450	$183,500
Red Hill Borough	NA	$207,000
Upper Hanover Township	$287,250	$230,228
Upper Perkiomen	**270,000**	**185,000**
Montgomery County	**$297,000**	**$215,000**

Source: MCPC 2009 Median Prices for Housing

Figure 9.6 Median Household Income and Affordability

Municipality	Estimated 2007 Median Household Income	2007 Sales Value of "Affordable Housing"
East Greenville Borough	$56,794	$191,000
Green Lane Borough	$59,571	$197,778
Marlborough Township	$72,903	$248,000
Pennsburg Borough	$56,600	$191,000
Red Hill Borough	$54,902	$187,500
Upper Hanover Township	$78,776	$269,000
Montgomery County	**$73,701**	**$246,250**

Source: U.S.Census; MCPC

often more affordable, units and newer, generally more expensive, units. The difference in value ranges from detached being 10% more expensive than attached in Red Hill Borough to detached being 47% more expensive than attached in East Greenville Borough.

Lastly, it is important to have a sense of how affordable the housing is in the Upper Perkiomen Valley as compared to the median income of Valley households. Therefore, we looked at 2007 median household income, as predicted from 2000 census values and the 2007 county median income, and estimated what home price could reasonably be afforded by that household income. Affordability is calculated assuming not more than 30% of gross income should be spent on housing costs, and in consideration of the 2007 30-year fixed mortgage interest rate, 2007 municipal tax rates, and the buyer having a 10% down payment. Based upon this analysis, Figure 9.6 shows the estimated 2007 median household income for each municipality and the housing value that could reasonably be afforded by that income. When comparing Figures 9.5 and 9.6 and using these broad assumptions as a glimpse into affordability (many other factors can also affect affordability), we see that home prices in 2009 were generally higher than what the median Valley income could afford. Only attached units in East Greenville and Pennsburg Boroughs and Upper Hanover Township were "affordable" in terms of the median incomes for those municipalities. This, however, is not an unusual situation. For example, the county median household income can only "afford" a home worth $246,250 while the median value of a detached dwelling in the county is $297,000. And while the price of Upper Perkiomen Valley homes in 2009 were often more than could be afforded by half the current households, these more expensive homes were sold, either to those living in the Valley with incomes above the median or to those with higher incomes moving in from outside the region. While this is a positive situation, it will be important over time to ensure housing opportunities exist

for the median income levels and below in order to retain current residents and offer a variety of housing types.

Housing Demand

As discussed in Chapter 1, the population of the region is projected to increase from 16,605 people in 2000 to 23,077 people by the year 2030. In order to understand how this additional population will relate to land use, we need to project the additional housing demand that could be generated by these additional residents. Figure 9.7, below, estimates future 2030 housing demand for both the county and the region based upon the projected 2030 population. Figure 9.7 also outlines each step

Figure 9.7 2030 Projected Housing Demand

	Montgomery County	Upper Perkiomen Valley
2030 Projected Population	878,158	23,077
2030 Average Household Size is based on a projection of the national household size. The county's household size is calculated as a percentage of the 2000 national household size and the Upper Perkiomen Valley is calculated as a percentage of the County's household size.	2.44	2.59
2030 Projected Group Quarters Population is based on 2000 group quarters populations. The percentage of total population in group quarters for Montgomery County is 3.1% and 0.84% for the Upper Perkiomen Valley.	27,223	194
2030 Projected Household Population equals the projected population minus the group quarters population.	850,935	22,883
2030 Projected Number of Households equals the household population divided by the average household size.	348,744	8,835
Estimated Total Number of Housing Units Needed by 2030 equals the projected number of households (which is equivalent to the projected number of occupied housing units) added to the number of projected vacant units. The vacancy rate for Montgomery County is 2.3% and 2.5% for the Upper Perkiomen Valley.	356,765	9,056
2008 Total Units Built	319,361	7,729
Estimated Number of Housing Units Remaining to be Built by 2030 equals the number of total estimated units minus the housing units built as of 2008.	**37,404**	**1,327**

in the process and discusses the numbers being used. The analysis reveals that if the region grows to the population projected for 2030, the demand for housing will increase by approximately 1,327 units. To meet this housing need, an average of 66 units per year would need to be constructed within the region over the next 20 years. This is much less than half of the 157 units per year that were constructed during the building boom of the early 2000s (2000-2006). It is also less than the 107 units per year that have been built over the last two years since the economic slowdown began in 2007. So, based upon these recent construction numbers, it appears the projected demand of 66 units per year could be easily achieved. However, given the 32% decrease in the number of homes built per year since 2006, it is still unclear how much more the economic slowdown, particularly in the housing sector, will reduce the demand for housing. It is quite possible that a continued slowdown in the housing sector could result in a number much closer to the average projected demand of 66 units per year and may even fall below it. Therefore, given the unpredictability of the current economic conditions and future housing cycles, the 2030 population and housing projections appear to be reasonable and will provide a firm foundation for planning the region's housing needs.

As we plan for the projected 2030 demand of 1,327 units, it is also important to determine the types of units (low density and high density) that may be in demand. In order to estimate this split between low density and high density units, the region's current housing ratio of 60:40 (low density to high density) was used. Even though a higher percentage of high density units were built in the region between 2000 and 2008 (58%), the 60:40 split reflects a longer time frame and may be more accurate over time. Therefore, we could expect that of the 1,327 additional units projected by 2030, 796 would be low density and 531 would be high density.

Housing Distribution

Based upon the future housing demand established for 2030, how and where will the region lodge these new units? More specifically, does the region have enough land zoned for higher density uses to meet both the region's "fair share" of high density housing types and the expected 2030 demand for residential units (low density and high density).

In terms of "fair share," the courts have ruled in cases involving Warwick Township, Marshall Township and Upper Southhampton Township that 2.9%, 2.7% and 3.5%, respectively, of land area zoned for high density housing is not considered exclusionary. Using this fundamental "fair share" analysis, Figure 9.8 shows that with 6.4% of the region zoned for high density housing, including 44% percent of all existing units being

Figure 9.8 Zoning Acreage (gross)

Category	Residential Land Use			All Other	Region Totals
	Low Density	*High Density*	*Total*		
Number of Acres	20,086	1,488	21,574	1,598	23,172
Percent of Region Gross Area	86.7%	6.4%	93.1%	6.9%	100.0%
Percent of Total Residential Area	93.1%	6.9%	100.0%	NA	NA

high density, the Upper Perkiomen Valley could not be considered exclusionary.

In more practical terms, how does the region's zoning relate to the projected 2030 housing demand? To answer this, the existing zoning and the gross developable land within each zoning district was analyzed. Figure 9.9. below, shows that 9,027 acres of gross developable land remain zoned for both low density and high density residential uses. Based upon the developable acreage for residential uses, we can calculate how many units can be built upon those 9,027 acres. Once we have these "buildout" numbers we can incorporate them into the analysis determining if the region can accommodate the 2030 housing demand.

Figure 9.9 Land Use of Developed Land and Zoning of Developable Land (gross)

Category	Residential	Non-Residential	Region Total
Developed Areas			
Acres	11,682	1,049	12,731
Percent of Region	52.5%	4.7%	57.2%
Developable Areas			
Acres	9,027	495	9,522
Percent of Region	40.6%	2.2%	42.8%
Percent of Total Developable Area	94.8%	5.2%	100.0%

Through computer mapping analysis the 9,027 gross acres of developable residential land was adjusted to account for steep slopes and floodplains, resulting in 8,142 net developable acres. To calculate the number of potential dwelling units that could be built on these sites, another 20% was subtracted from the net developable acreage to account for roads, absorption of secondary natural resources (woodlands, important soils, etc), and irregularly shaped parcels. The resulting acreage for each site was then multiplied by the permitted density of the applicable underlying zoning district. The results of the buildout analysis indicate that if every parcel in the region zoned for residential use was built upon, the region could expect another 4,276 dwellings. More specifically, based upon the highest and best use of the underlying zoning, these 4,276 units

would likely consist of 3,584 low density units and 692 high density units.

In order to determine the region's ability to accommodate the projected housing demand of 1,327 units (796 low density and 531 high density), we will consider the potential for infill and redevelopment, the number of units approved but not yet built, and the results of the buildout analysis. Once these three potentialities have been factored in (see Figure 9.10), it becomes apparent that the region is easily capable of accommodating the potential 2030 housing demand. In fact, the demand for low density housing of 796 units can be fully accommodated through 210 approved but not yet constructed units and just 454 units (16%) of the region's total low density buildout. The high density housing demand of 531 units can be entirely accommodated by the projected infill/ redevelopment of 133 units and the 530 units of approved but not yet constructed housing.

Figure 9.10 Accommodation of the 2030 Housing Demand

	Total Units	Low Density Units	High Density Units
2030 Projected Housing Demand	**1,327**	**796**	**531**
Potential Infill/Redevelopment would take place within the boroughs and villages on developed or underdeveloped properties and is projected to be 10% of total development. Nearly 5% of current development in the Valley is infill and redevelopment, however, over time this would be expected to move closer to the county average of 30%. It would be assumed, given its location, that all infill/redevelopment would consist of high density units.	133	NA	133
Remaining Projected Demand	**1,194**	**796**	**398**
Units Approved But Not Constructed is based upon the number of units that have been granted development approval in the Valley but have not yet been constructed. This reflects the actual number of low density and high density units.	740	210	530
Remaining Projected Demand (potential excess units)	**454**	**586**	**(132)**
Buildout of Developable Land reflects the number of units, both low density and high density, that can be constructed on developable land per the current zoning of the site.	4,276	3,584	692
Remaining Projected Demand (potential excess units)	**(3,822)**	**(2,998)**	**(824)**

Housing Form

A primary objective of this plan is to concentrate new housing development in areas where infrastructure exists or is planned. Infrastructure, such as roads, public sewers, and public water, can be found primarily in and around the four boroughs (see Future Land Use Chapter). Conversely, the rural areas of Marlborough and Upper Hanover Townships, are to be protected as much as possible by limiting the amount of new development through a variety of planning and regulatory means.

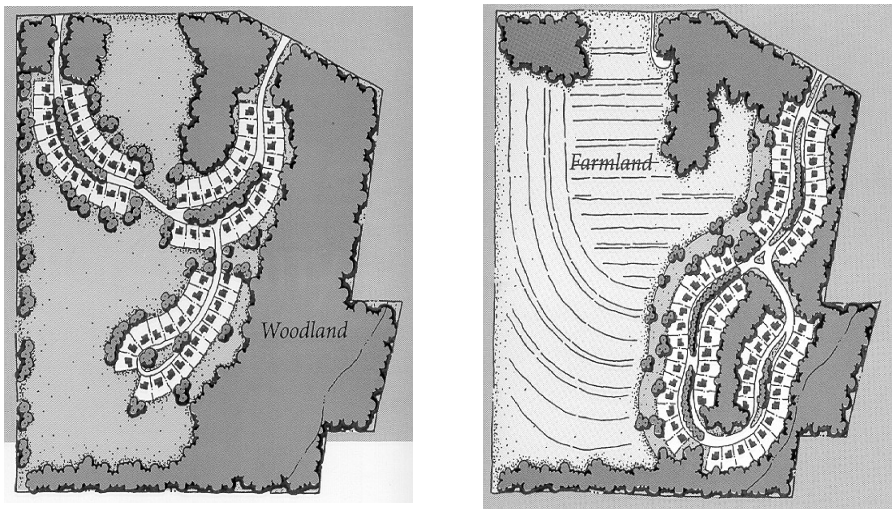
Low-Density Residential

Limiting development in the rural areas to low-density residential will help to reduce conflicts between agricultural operations and residential development as well as preserve the region's environmental features and rural character. This will be accomplished by limiting the amount of residential development in the rural areas to a maximum of one dwelling unit per two acres. In addition, no public sewer or water is planned for the rural low-density areas

To further protect the region's viable farming activity and significant environmental constraints, a number of regulatory tools, such as conservation subdivision, agricultural zoning, and environmental performance zoning may be may be implemented, resulting in even larger lot sizes. Investigations into the applicability of a transfer of development rights (TDR) program for the region should also be continued, including the monitoring of a newly adopted TDR program in nearby Hereford Township.

One of these tools, conservation subdivision or cluster zoning, is illustrated below to show how the goal of open space and natural feature preservation can be achieved in concert with new residential development. The two sites in Figure 9.11 are considered fully developed with 65 homes on 130 acres. Yet more than 75 percent of each tract has been permanently preserved as open space (conservation subdivision typically preserves 50% of gross tract acreage plus all primary natural features). In the example on the left in Figure 9.11, all of the wood-

Figure 9.11 Conservation Subdivision Examples



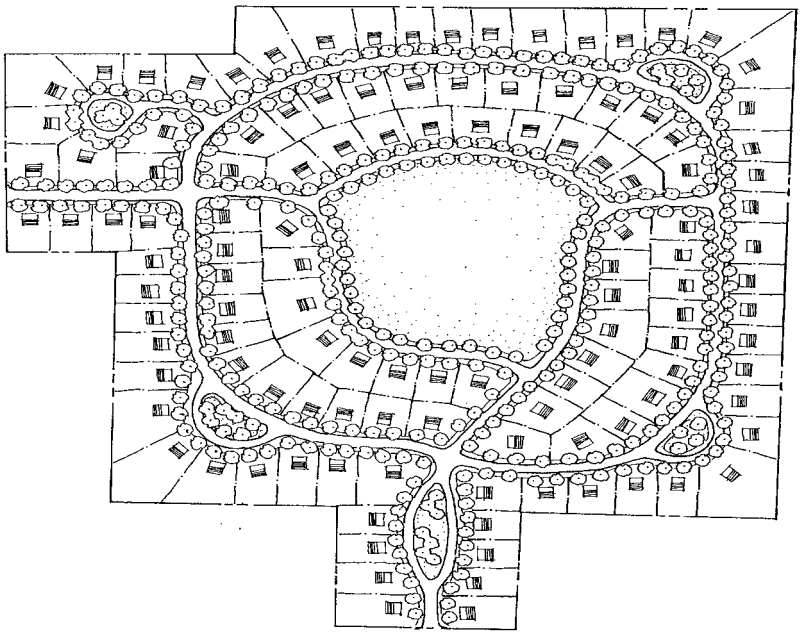
lands are saved. In the example on the right, where perhaps farming is still a viable activity, the homes have been placed in the wooded areas to preserve the farm fields. In both cases, because of the large amount of required open space, developers have a great deal of flexibility in siting the homes. With conservation subdivision, open space or farmland can be preserved while still allowing some development to occur. Consistent with the region's goals for resource protection and residential development within the rural resource area, Marlborough Township adopted standards for conservation subdivision in September 2009.

Medium-Density Residential

Medium-density housing, ranging from 1 to 4 units to the acre, will be permitted in the designated growth areas (see Future Land Use Chapter). To preserve the rural countryside and environmental amenities as much as possible, infill development and redevelopment within the boroughs will be encouraged. In addition, medium-density development will also be directed to designated growth areas within the townships. These growth areas are situated where the road network, community facilities, and commercial and retail centers already exist. In addition, Upper Hanover Township intends to serve its designated growth areas with public sewers and water. Since growth tends to follow public sewer and water, this decision will help insure that new development occurs only in the most appropriate locations.

For larger residential subdivisions, typical suburban medium-density development often appears dull and uniform with its rigid quarter-acre to one-acre tract housing. Although appropriate for many of the more developed areas of the county, suburban-style development would not fit into the rural landscape of the Upper Perkiomen Valley. Medium density development with a village-style appearance would be more suitable to local development patterns. Village development would fit into the existing style of development within the boroughs and foster a sense of community and a pedestrian friendly environment.

Figure 9.12 Medium-density Housing Design



The county's model for medium-density housing calls for central greens, landscaped cul-de-sac islands, sidewalks, and a number of other design standards intended to

evoke the feeling of a village. The example in Figure x.12 incorporates many of these design features. Street trees are planted in front of each house, sidewalks are on both sides of the street, and lot widths are varied for visual interest. In the center of the development is a large central green, which serves as the focal point of the neighborhood and serves as a common play area.

However, not all medium-density residential development will consist of the large residential subdivisions. Some of the new units being constructed within the boroughs and villages will consist of infill development. Infill development typically occurs in several ways: when an oversized lot or small vacant lot is split into two or more lots, when an existing dwelling is demolished to allow for one or more new dwellings, or a non-residential use is demolished or converted for new residential uses. Infill development can be beneficial in that it often provides more affordable housing, adds residents near downtown commercial areas, provides housing in a walkable environment, and does not involve the expansion of infrastructure. However, even though infill development does not involve a large number of units, it can have a dramatic impact on an existing neighborhood if it is not done appropriately (see Figure 9.13). Poorly designed and planned infill development can change neighborhood character by reducing breaks in development created by extra-wide lots, placing homes at irregular setbacks, having new construction that is not compatible in terms of architecture or materials, or by adding new curb cuts or front facing garages where none exist. To ensure new infill development does not detract from community character, design standards that encourage development to fit into the existing built environment, also known as context sensitive design, should be considered by each municipality in the Valley.

Figure 9.13 Examples of Infill Housing

New infill twin dwelling on tree-lined street with rear parking creates new curb cuts, front-facing garages and dramatically alters the streetscape.

New infill single-family dwelling respects the existing streetscape by using rear parking and extending the low retaining wall.

High-Density Residential

High-density housing in the region's designated growth areas will exceed 4 units to the acre for townhouses, apartments, twins, duplexes, and mobile homes in mobile home parks

Most of the region's high-density housing is located within East Greenville, Pennsburg and Red Hill Boroughs and adjacent to these areas within Upper Hanover Township. Approximately 80%of the higher density units are located within the three boroughs. These areas have infrastructure already in place, and are best suited to accommodate new high-density housing. In the boroughs much of this new development will be in the form of infill and redevelopment on scattered vacant sites or the improvement of underutilized properties. The designated growth areas in Marlborough and Upper Hanover Townships will provide additional land to allow for market flexibility. As shown earlier, these areas should be sufficient to meet the long-term high-density housing needs of the region.

New high-density development should be physically and architecturally compatible with existing high-density housing. In the Upper Perkiomen Valley, that means taking on a village-style appearance. Design criteria should be integrated into the municipal zoning codes to insure new development fits in seamlessly with the community. Design elements include sidewalks, interconnected streets, and central greens. These elements work in combination to create a livable community.

CHAPTER 10
FUTURE LAND USE

Introduction

The Future Land Use chapter is the central policy element of the Upper Perkiomen Valley Regional Comprehensive Plan. Understanding existing land use patterns and properly integrating future land use as part of a single unified plan will result in a more efficient land use pattern that preserves open space, revitalizes business centers and preserves the small town character that is so important to residents. The Future Land Use Plan designates appropriate areas for residential and non-residential growth and directs revitalization, new development and infrastructure improvements into those areas. Outside of the growth areas, the primary land use objective is preservation of the region's rural landscape and its natural and cultural resources.

The Future Land Use Plan lays out a land use strategy for the entire Upper Perkiomen Valley region. Implementation of the Future Land Use Plan, however, relies upon the individual and collective efforts of the six participating municipalities. Specifically, it is the responsibility of the municipalities to implement the agreed-upon land use policies via local zoning ordinances and other municipal policies. In order to further the goals and objectives of the Regional Comprehensive Plan, while maximizing municipal control over local zoning decisions, the Future Land Use Plan will rely upon two key elements for implementation:

Existing and Proposed Sewer Service Areas

A fundamental policy of the Upper Perkiomen Valley Regional Comprehensive Plan is to direct new residential and non-residential development to appropriate areas while protecting the region's natural features and rural character. This can be achieved by directing infrastructure investment and the provision of public sewer into those areas where development is desired. Outside of these sewer service areas, preservation of the valley's rural landscape and natural resources is the primary land use objective. Allowing for new growth and development in a community, and managing it appropriately, can have many positive benefits. It helps to maintain the economic vitality of a community and often provides new opportunities. Growth in the Upper Perkiomen Valley, however, should be complementary to the community's character and further the goals of the comprehensive plan. These goals include provid-

ing housing for future residents and guiding the development of new non-residential uses to meet commercial needs, expand employment opportunities and promote new industry.

Future Land Use Map and Summaries

The Future Land Use map includes 15 land use designations. The 15 land use designations are grouped into three categories: 1) residential, 2) mixed use and non-residential and 3) open space and agriculture. Each category includes a detailed discussion for each of the land use designation, describing the uses, densities and intensities that would typically be represented by that specific land use.

Existing and Proposed Sewer Service Areas

The Future Land Use Map (Figure 10.1) depicts the region's existing and proposed sewer service areas. In addition to accommodating the region's existing centers of development, these sewer service areas will serve to accommodate future residential and non-residential development.

In terms of residential development, it is anticipated that the region's population will increase by 6,472 people between 2000 and 2030, resulting in a 2030 population of 23,077. These new residents will require approximately 1,327 new homes, of which 531 are estimated to be higher density units (see Chapter 9 Housing for a full discussion on housing needs). Currently, based upon approved but not built developments, infill development and developable land, the region's residentially zoned areas within the existing and proposed sewer service areas could accommodate over 1,300 units. In addition, the sewer service areas include areas zoned for a variety of non-residential uses, and mixed-use districts to meet potential market demands.

The region's sewer service areas, while shown as a single area on the Future Land Use map, actually includes several distinct development areas in the region. These areas are described in the following sections.

The Boroughs of East Greenville, Green Lane, Pennsburg, and Red Hill

The boroughs of the Upper Perkiomen Valley historically have been the economic and social centers of the valley. In recent years, however, new industrial and commercial processes have caused many businesses to locate outside of these older communities. In addition, regional shopping malls and community shopping centers now supply many retail goods that were once located on "Main Street." The Upper Perkiomen Valley recognizes the importance of these places for the identity and quality of life of the valley and seeks new growth and redevelopment that

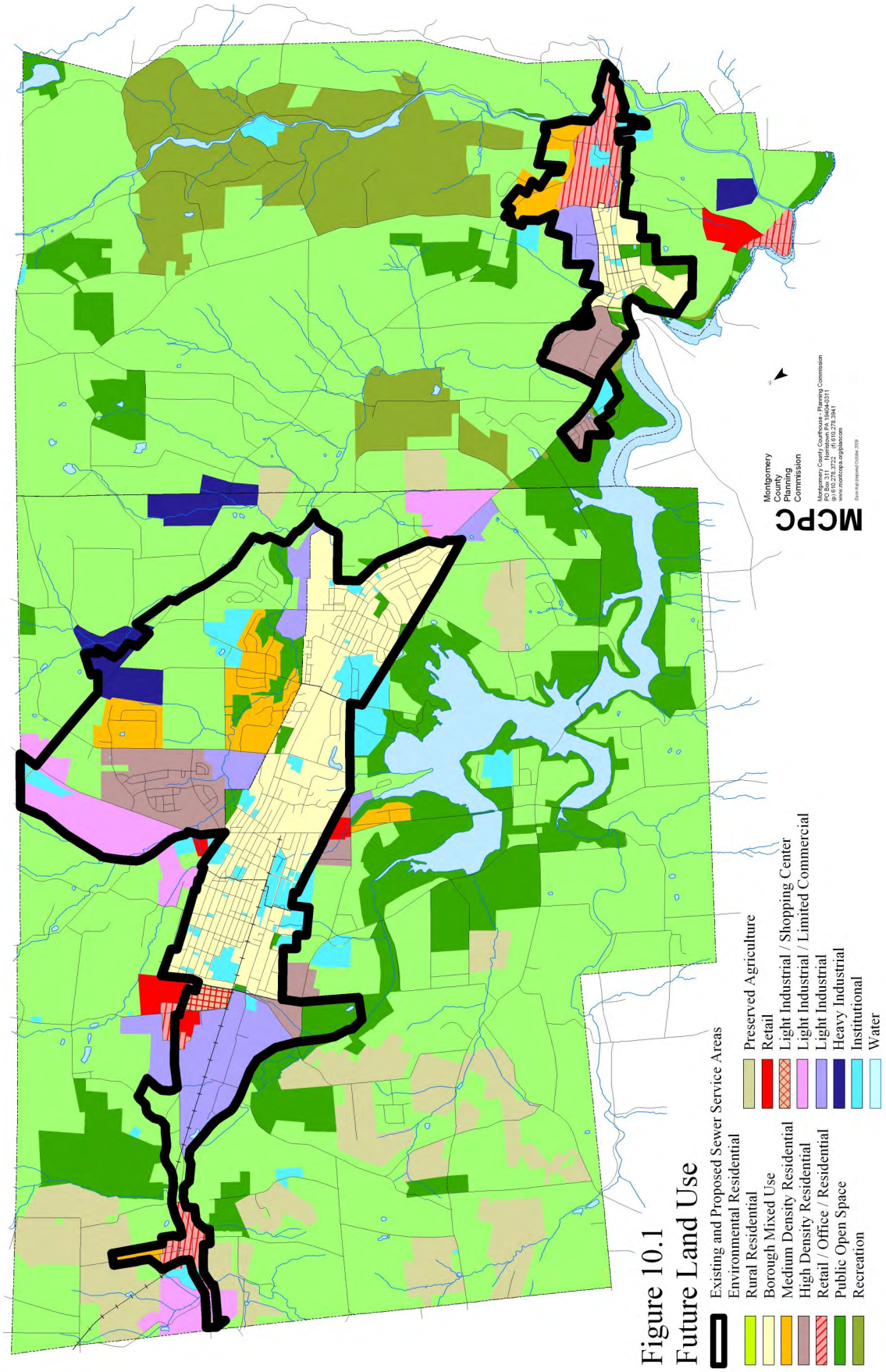


Figure 10.1
Future Land Use
Existing and Proposed Sewer Service Areas
Environmental Residential
Rural Residential
Borough Mixed Use
Medium Density Residential
High Density Residential
Retail / Office / Residential
Public Open Space
Recreation
Preserved Agriculture
Retail
Light Industrial / Shopping Center
Light Industrial / Limited Commercial
Light Industrial
Heavy Industrial
Institutional
Water
MCPC
Montgomery
County
Planning
Commission

is consistent with the existing character in these boroughs. In addition, these towns have significant assets to build on—a good housing stock with historic character, civic institutions and restaurants where people gather, small businesses, pedestrian-friendly streets for people of all ages, and infrastructure services. Recently, the national trend has been to establish "new" town centers within the suburban landscape in an attempt to create a sense of place. In the Upper Perkiomen Valley, these traditional town centers already exist and the region is well-positioned to take advantage of the renewed interest in town-living and walkable communities. An identified goal of the comprehensive plan is to preserve and revitalize these areas. Economic revitalization programs should be encouraged and supported by the whole region, for the benefit the Upper Perkiomen Valley. Revitalization techniques to be pursued could include a market analysis of potential new small businesses, design guidelines, residential conversion regulations, home-based business regulations and historic preservation regulations and incentives.

Macoby Creek Sewer Service Area

The Macoby Creek Service Area is located on the northeast side of Pennsburg and Red Hill boroughs and along the "lower" section of the Macoby Creek drainage basin within Upper Hanover Township. Due the area's vehicular access to Routes 663 and 29, and Geryville Pike, it has been identified as a preferred area for new development. Public water is readily available and could be extended relatively easily throughout the entire area. The defined sewer service area reflects the sewer growth policies of Upper Hanover Township and the location of the sewer treatment plant allows much of the area to be served by gravity flow.

Perkiomen Creek Sewer Service Area

Several land use planning factors also support designating a portion of the Perkiomen Creek main stem drainage basin in Upper Hanover Township for future sewer service, as shown in Figure 10.1. This portion of the sewer service area contains several large industrial uses currently served by privately owned industrial sewage treatment plants. These industries and new industries can be served by a municipal central sewer system intended to serve this expansion area. Additional, this sewer service area is intended to alleviate on-lot sewage problems in and around the Village of Palm.

Green Lane/Sumneytown Sewer Service Area

Green Lane and Sumneytown have long been the primary development centers in this part of the valley. Maintaining existing development and providing opportunities for new development along this main street corridor is a key goal for this portion of the region. The intersection of Route 29 and Route 63 in Green Lane provides this service area with

good transportation access. Also, by concentrating future growth adjacent to Green Lane and Sumneytown, new development can connect to existing infrastructure where possible. However, water and sewer availability are major challenges for any future development within this portion of the Upper Perkiomen Valley, due to the age and condition of existing infrastructure as well as the area's diabase geology and other environmental constraints.

Upper Perkiomen Valley Rural Resource Areas

The land areas surrounding the sewer service areas outlined in Figure 10.1 constitute the region's rural resource areas. Preserving the open spaces, farmland, woodlands, and other natural and cultural resources within these rural areas is very important to sustaining the environment, agricultural economy, and qualify of life of the Upper Perkiomen Valley. A wide range of natural and cultural resources in these areas will require various preservation techniques (see Chapter 5 Open Space for how they can be preserved through innovative preservation techniques). The intent of the rural resource category can be summarized into two basic elements: 1) farmland preservation and 2) resource conservation.

The purpose of farmland preservation is to preserve the region's prime agricultural soils and retain the local agricultural economy. In addition, Pennsylvania law permits municipalities to enact restrictive agricultural zoning requirements to discourage undesirable development of farmlands. Agricultural zoning is most suitable in areas where farming is a strong and healthy industry and where farmers have made a firm commitment to continuing agricultural activities.

The portions of the rural resource area having environmental characteristics that cause significant challenges for development will need to focus on resource conservation. The challenges of these areas may include diabase geology, rock outcroppings, soil limitations, extensive wetlands, steep slopes and floodplain areas. The combination of these environmental features also provides the region with unique natural resource and scenic areas, which the region desires to protect. Therefore, preservation of natural features should be the dominant purpose served by land use regulations throughout this portion of the rural resource area.

FUTURE LAND USE MAP AND SUMMARIES

A fundamental policy of the Upper Perkiomen Valley Regional Comprehensive Plan is to direct new residential and non-residential development to appropriate areas while protecting the region's natural features and rural character. At the most basic level, this policy results in the establishment of Growth Areas and Rural Resource Areas. As previously

discussed, new residential and non-residential growth should primarily be directed toward the sewer service areas. Development anticipated and occurring in the rural resource areas is not intended to be served by community facilities and should be designed in a manner that preserves and protects the region's environmental and cultural resources. Within these Growth Areas and Rural Resource Areas, varying forms of development are permitted. The Future Land Use map designates 15 categories of use for the region which are discussed below.

Development Categories

RESIDENTIAL LAND USES

A diversity of housing options is an important part of a community's economic health, and the design of its housing shapes a community's growth and quality of life. The Upper Perkiomen Valley's Future Land Use Plan addresses the valley's objectives of concentrating new development in designated growth areas, meeting the region's fair share requirements, and providing housing opportunities for a range of incomes. Site planning and other design elements are also important aspects to be considered in residential development. These topics and additional housing issues are discussed further in the Housing Chapter of this comprehensive plan.

Rural Residential

The rural residential category constitutes the vast majority of land with the region's rural resource area. Therefore the primary goals of this land use category is directly related to the farmland preservation and resource conservation elements of the rural resource area.

The farmland preservation element of the rural resource area is mostly limited to the northwestern area of the Upper Perkiomen Valley. Farming has a long history in this part of the valley, and preserving its agriculture and natural features is a high priority. Farmers in this area have already begun the preservation process under Montgomery County's Farmland Preservation Program by selling their development rights to hundreds of acres of farms, and more farms are currently in the application process. Given this preservation objective, dwellings in this category will be predominately single-family detached residential units with a maximum density of 1 dwelling unit per 2 acres of land. This density is not intended to be implemented uniformly across this area. Lower-density zoning and agricultural zoning may be considered. Agriculture should be the dominant land use throughout this area and all other land uses should be subordinate to the agricultural character of the area.

For the remaining portions of the rural resource area designated for rural residential, the main focus should be on environmental and open space protection. The combination of environmental features is this area provides the valley with unique natural resource and scenic areas, which the valley desires to protect. Therefore, development in this area should be limited to single-family detached residential uses with a maximum density of 1 dwelling unit per 2 acres of land. Land use and zoning techniques that relate minimum density to what the land will support without causing environmental degradation should be considered for this area.

Medium-Density Residential Category

Where medium-density residential uses are identified on the Future Land Use map (Figure 10.1), dwellings are anticipated to be primarily single-family detached units built at a density between 1-4 units per acre. With few exceptions, these medium-density residential areas are located within the sewer service areas of the valley and are meant to complement the existing character of adjacent villages or boroughs.

High-Density Residential Category

The Future Land Use Plan (Figure 10.1) identifies high-density residential areas to be developed between 4-6 units per acre. High-density developments may include apartments, townhouses, twins, and small-lot single-family detached units.

MIXED-USE AND NONRESIDENTIAL LAND USES

Older mixed-use town centers and nonresidential land uses in the Upper Perkiomen Valley offer essential commercial, industrial, and housing options within the valley. Revitalizing the valley's older towns maintains an important element of the valley's economic life and physical character—an identified goal of the Upper Perkiomen Valley. Commercial, industrial, and other nonresidential uses provide needed services and employment for valley residents. They also contribute to the tax base for investing in the valley's future.

Borough Mixed-Use

The region's four boroughs, consisting of East Greenville, Pennsburg, Red Hill and Green Lane, currently contain most of the regions' high-density residential housing, including apartments, townhouses, twins and small lot single-family detached units. The boroughs also contain a mix of commercial and light industrial uses that contribute to their unique historic character. Given

the complexity of dealing with such a concentrated mix of uses, the Borough Mixed Use category is intended to provide flexibility when regulating the variety of residential, commercial and light industrial uses found within the boroughs.

In terms of residential uses, the four boroughs are primarily developed and only several large tracts remain for residential development. Therefore, it is expected that a significant portion of future residential development will occur as infill. Local ordinances should encourage adaptive re-use and redevelopment of the existing housing stock, as well as the conversion of obsolete or unused non-residential space to quality residential options. Future development should also be compatible with the existing character and heritage of the Boroughs.

Future commercial development should continue to provide for a wide-range of uses at varying intensities. An extensive range of commercial and office uses will be permitted in the Boroughs, consistent with those uses that currently exist. The intensity of commercial development within the Borough Mixed Use category will be determined by the individual municipalities. The boroughs should consider establishing flexible standards that encourage new viable retailers that fill a niche market not served by larger "big-box" retailers. Future development should apply appropriate design, dimensional, and development concepts that complement and enhance the existing development patterns of the boroughs.

Future industrial development within the Borough Mixed Use category will continue to provide for a variety of small-scale uses that are coordinated with the existing infrastructure. In an effort to encourage economic development and strengthen the region's tax base, maximum intensity limits for industrial development will be established by the individual municipalities. Local ordinances, however, should promote the adaptive reuse of vacant industrial facilities that is consistent with the surrounding character. New industrial development shall adhere to strict performance standards.

Retail/Office/Residential Category

This development category is intended to include a unique mix of residential and commercial uses which create an historic "Main Street" character. This category is appropriate for the region' village centers or as a "Main Street" extension out of a borough's downtown. Land uses permitted in these areas should be retail, office, and residential uses which complement the

design and operation of the existing small-scale shops, offices, historic houses, factories, and schools.

Retail Category

There are pockets of existing retail land use in both Upper Hanover and Marlborough townships. These areas will continue to serve a portion of the region's retail needs and are shown on the Future Land Use map. As locations for stand-alone retail uses or community-level shopping, good vehicular access is a key element for this land use category. Therefore, all of the areas designated for retail either front along or are in close proximity to Route 663 or Route 29.

Industrial Categories

Existing industries are expected and encouraged to remain in the valley. Between the two townships, Upper Hanover has the most existing industrial development. These consist of large industrial buildings on large individual lots rather than in industrial park settings. This trend is expected to continue in Upper Hanover while Marlborough will continue to encourage development of their industrial park, focusing upon smaller industries on smaller lots.

Light Industrial

This category, shown in Figure 10.1, includes existing light industrial development and future uses engaged in manufacturing (predominantly from previously prepared materials) of finished products or parts including processing, fabrication, assembly, treatment, packaging, incidental storage, sales, and distribution with the exclusion of basic industrial processing.

Heavy Industrial

Figure 10.1 identifies existing and future locations for heavy industrial uses engaged in the basic processing and manufacturing of materials or natural resources, predominantly from extracted or raw materials. Additional uses considered heavy industrial are junkyards, mining, and outdoor storage of bulk items.

Industrial/Limited Commercial

This category is appropriate for light industry and for some types of commercial establishments. The dominant use of these areas should be light industry. However, a relatively small percentage of the land could also be used for commercial purposes.

Industrial/Shopping Center Category

Areas designated for this category are suitable for light industrial development that are consistent with the character of nearby industrial uses. This category also permits community-level shopping centers and currently includes strip commercial development that contains a Wal-Mart and a number of other retail uses.

Institutional Category

Due to the nature of institutional land uses, it is not feasible to designate mapped areas for institutional use prior to either needs arising for specific uses or proposals by institutional organizations. Therefore, the only lands designated on Figure 9.x as institutional are either fully or partly developed as an existing institutional organization. Identified institutional uses include churches, cemeteries, schools, and municipal buildings.

PUBLIC OPEN SPACE, PRESERVED AGRICULTURE, AND RECREATION

The Upper Perkiomen Valley's rolling hills, scenic vistas, meandering streams, forests, and historic farmsteads are all part of the valley's charming rural setting. The value of this rural character was highlighted in a recent survey of Valley residents (see the open space chapter). These survey responses support the high priority given to preserving open space and natural resources in the regional planning process.

Public Open Space Category

It is important to permanently preserve passive and active public open space areas in the valley for public use and enjoyment. Montgomery County's 3,181-acre Green Lane Park, surrounding the Green Lane Reservoir, offers the valley a unique parkland resource and is shown in Figure 10.1 as part of this category. All other public open space identified in Chapter 5 Open Space are also included in this category.

Recreation Category

The recreation category includes land that has either been permanently preserved by a private conservation organization or is zoned for recreational uses. This type of land use is especially appropriate for the lands containing the Boy Scouts of America camp in Marlborough Township. The recreational campgrounds maintain approximately 1,600 acres of environmentally sensitive woodlands. These woodlands are both an asset to the Boy Scouts of America camping programs and to the preservation of the valley's landscape and quality of life.

Preserved Agriculture

Preservation of active farmland is another priority for municipalities in the Upper Perkiomen Valley, especially in Upper Hanover Township. Agricultural lands that have been permanently protected via the County's Farmland Preservation Program are shown as part of this category. Upper Hanover Township will continue to add properties to its agricultural security area (ASA) as long as owners of qualified properties request to be included. Also, the sale of development rights to the Montgomery County Farmland Preservation Program will continue to be encouraged.

Water Category

There are some large water bodies within the Upper Perkiomen Valley which are significant for future land use. The Green Lane Reservoir covers approximately 750 acres of land area in the valley. Lake Skymount is another important water body and natural resource. The major streams in the Upper Perkiomen Valley also are identified by this category.

Implementation

The Intergovernmental Cooperative Implementation Agreement adopted by each of the six participating municipalities guides implementation of the Upper Perkiomen Valley Regional Comprehensive Plan. The Implementation Agreement recognizes the goals and objectives of the Regional Comprehensive Plan, and establishes processes for reviewing subdivisions and land developments of regional significance, comprehensive plan amendments, and local zoning changes. Most significant for future land use policy, the agreement requires all zoning amendments involving a change in use or density to be reviewed for general consistency by the regional planning commission. Proposals not consistent with the Future Land Use plan will require an amendment to the Comprehensive Plan.

APPENDIX: ADOPTION RESOLUTIONS

EAST GREENVILLE BOROUGH
MONTGOMERY COUNTY, PENNSYLVANIA

RESOLUTION TO ADOPT THE UPPER PERKIOMEN REGIONAL COMPREHENSIVE PLAN

RESOLUTION NO. 2011-07

Whereas, the municipalities of the East Greenville Borough, Green Lane Borough, Marlborough Township, Pennsburg Borough, Red Hill Borough and Upper Hanover Township, collectively known as the Upper Perkiomen Valley, have joined together for the purpose of mutual cooperation through regional planning, and

Whereas, the municipalities of the Upper Perkiomen Valley created the Upper Perkiomen Valley Regional Planning Commission in 1999 to oversee comprehensive planning for the region in order to manage future growth and development, and

Whereas, after development of the region's initial comprehensive plan by the Upper Perkiomen Valley Regional Planning Commission, the municipalities of the Upper Perkiomen Valley effectively adopted said plan on July 10, 2001, and

Whereas, the 2001 Comprehensive Plan has been implemented by the Upper Perkiomen Valley municipalities and guiding growth and development in the region, and

Whereas, the region is required to review the Comprehensive Plan at least every ten years per the guidelines set forth in the Pennsylvania Municipalities Planning Code, Act 247, and

Whereas, in consideration of several previous Comprehensive Plan amendments, newly available census information and evolving municipal land use policies, the Upper Perkiomen Valley municipalities chose to update the Regional Comprehensive Plan and renew their commitment to regional planning, and

Whereas, the planning commissions and governing bodies of the Upper Perkiomen Valley municipalities have reviewed the Comprehensive Plan Update and have found it acceptable for guiding the region's growth and development, and

Whereas, said Comprehensive Plan Update has been subject of a public hearing.

Now Therefore Be It Resolved that: the undersigned do hereby adopt the Upper Perkiomen Valley Regional Comprehensive Plan – 2011 Update, prepared by the Upper Perkiomen Valley Regional Planning Commission, as the official comprehensive plan of The Borough of East Greenville and the Upper Perkiomen Valley.

DULY ADOPTED at the regular stated meeting of East Greenville Borough this 5th day of December 2011.

East Greenville Borough

Jennifer Boye
President of Borough Council

ATTEST:

Kathleen M. Chilton
Borough Secretary

BOROUGH OF GREEN LANE
MONTGOMERY COUNTY, PENNSYLVANIA

RESOLUTION NO. 2011-__/____

A RESOLUTION TO AMEND THE UPPER PERKIOMEN VALLEY REGIONAL COMPREHENSIVE PLAN BY ADOPTING THE UPPER PERKIOMEN VALLEY REGIONAL COMPREHENSIVE PLAN – 2011 UPDATE

WHEREAS, the municipalities of the East Greenville Borough, Green Lane Borough, Marlborough Township, Pennsburg Borough, Red Hill Borough and Upper Hanover Township, collectively known as the Upper Perkiomen Valley, have joined together for the purpose of mutual cooperation through regional planning, and

WHEREAS, the municipalities of the Upper Perkiomen Valley created the Upper Perkiomen Valley Regional Planning Commission in 1999 to oversee comprehensive planning for the region in order to manage future growth and development, and

WHEREAS, after development of the region's initial comprehensive plan by the Upper Perkiomen Valley Regional Planning Commission, the municipalities of the Upper Perkiomen Valley effectively adopted said plan on July 10, 2001, and

WHEREAS, the 2001 Comprehensive Plan ("Comprehensive Plan") has been implemented by the Upper Perkiomen Valley municipalities and guiding growth and development in the region, and

WHEREAS, the region is required to review the Comprehensive Plan at least every 10 years per the guidelines set forth in the Pennsylvania Municipalities Planning Code, Act 247, and

WHEREAS, in consideration of several previous Comprehensive Plan amendments, newly available census information and evolving municipal land use policies, the Upper Perkiomen Valley municipalities chose to update the Comprehensive Plan and renew their commitment to regional planning, and

WHEREAS, the planning commissions and governing bodies of the Upper Perkiomen Valley municipalities have reviewed the Comprehensive Plan update and have found it acceptable for guiding the region's growth and development, and

WHEREAS, said Comprehensive Plan update has been subject of a public hearing.

NOW, THEREFORE, BE IT RESOLVED, that the Green Lane Borough Council hereby resolves and adopts the following:

LN1 1248250v1 10/26/11

1. The Upper Perkiomen Valley Regional Comprehensive Plan – 2011 Update, which amends the 2001 Comprehensive Plan and was prepared by the Upper Perkiomen Valley Regional Planning Commission, as the official Upper Perkiomen Valley Regional Comprehensive Plan.

2. In the event any section, sentence, clause, phrase or word of this Resolution shall be declared illegal, invalid or unconstitutional by any Court of competent jurisdiction, such declaration shall not prevent, preclude or otherwise foreclose enforcement of any of the remaining portions of this resolution.

3. All ordinances or resolutions or parts of ordinances or resolutions inconsistent herewith or in conflict with any of the specific terms enacted hereby, to the extent of said inconsistencies or conflicts, are hereby repealed.

4. This Resolution shall become effective within the time period provided by law.

APPROVED this 10 day of November, 2011, by the Green Lane Borough Council following a public hearing of the Green Lane Borough Council on November 10, 2011.

BOROUGH OF GREEN LANE

By: _____
Brian Carpenter, Borough Council President

By: _____
Lynn Wolfe, Borough Mayor

ATTEST:

_____
Jeanne Ruth, Assistant Secretary

(Green Lane Borough seal)

LN1 1248250v1 10/26/11

RESOLUTION NO. 2011 - 10

MARLBOROUGH TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

A Resolution Adopting the Upper Perkiomen Valley Regional Comprehensive Plan – 2011 Update

WHEREAS, the municipalities of East Greenville Borough, Green Lane Borough, Pennsburg Borough, Red Hill Borough, Marlborough Township and Upper Hanover Township, collectively known as the Upper Perkiomen Valley, have joined together for the purpose of mutual cooperation through regional planning; and

WHEREAS, the municipalities of the Upper Perkiomen Valley created the Upper Perkiomen Valley Regional Planning Commission in 1999 to oversee comprehensive planning for the region in order to manage future growth and development; and

WHEREAS, after development of the region's initial comprehensive plan by the Upper Perkiomen Valley Regional Planning Commission, the municipalities of the Upper Perkiomen Valley effectively adopted said plan on July 10, 2001; and

WHEREAS, the 2001 Comprehensive Plan has been implemented by the Upper Perkiomen Valley municipalities and guiding growth and development in the region; and

WHEREAS, the region is required to review the Comprehensive Plan at least every ten years per the guidelines set forth in the Pennsylvania Municipalities Planning Code, Act 247; and

WHEREAS, in consideration of several previous Comprehensive Plan amendments, newly available census information and evolving municipal land use policies, the Upper Perkiomen Valley municipalities chose to update the Regional Comprehensive Plan and renew their commitment to regional planning; and

WHEREAS, the planning commissions and governing bodies of the Upper Perkiomen Valley municipalities have reviewed the Comprehensive Plan Update and found it acceptable for guiding the region's growth and development; and

WHEREAS said Comprehensive Plan Update has been subject of a pubic hearing.

NOW THEREFORE BE IT RESOLVED AND ADOPTED this 14th day of December, 2011 that the undersigned do hereby adopt the Upper Perkiomen Valley Regional Comprehensive Plan – 2011 Update, prepared by the Upper Perkiomen Valley Regional Planning Commission, as the official comprehensive plan of Marlborough Township and the Upper Perkiomen Valley.

MARLBOROUGH TOWNSHIP
BOARD OF SUPERVISORS

Brian L. Doremus, Chairman

Carl A. Ascoli, Vice Chairman

Joan P. Smith, Member

Attested by:

Paul A. Williams, Secretary

PENNSBURG BOROUGH
Montgomery County, Pennsylvania

RESOLUTION NO. 7-2011

A RESOLUTION TO AMEND THE UPPER PERKIOMEN VALLEY REGIONAL COMPREHENSIVE PLAN PURSUANT TO ARTICLE III, SECTIONS 302(a), (b) and (c) OF THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE, ACT 247.

WHEREAS, the Borough of Pennsburg has adopted the Upper Perkiomen Valley Regional Comprehensive Plan in accordance with Articles III and XI of the Pennsylvania Municipalities Planning Code, Act 247; and

WHEREAS, the Borough of Pennsburg is a member of the Upper Perkiomen Valley Regional Planning Commission ("Commission"); and

WHEREAS, the current plan was adopted in 2001 and the Municipalities Planning Code requires a ten (10) year review and update to the Upper Perkiomen Valley Regional Comprehensive Plan ("Plan"); and

WHEREAS, the revised Plan was prepared and released for public comment on September 14, 2011, and the forty-five (45) day period for review and comment has been met; and

WHEREAS, the Commission, having approved the revised Plan, now forwards the revised Plan and recommendation and any and all submitted review comments to the member municipalities for consideration and adoption, as required.

NOW, THEREFORE, BE IT RESOLVED that Pennsburg Borough Council hereby approves the Upper Perkiomen Valley Regional Comprehensive Plan - 2011 Update.

ENACTED and **RESOLVED** following public hearing of Pennsburg Borough Council this 6th day of December, 2011.

PENNSBURG BOROUGH COUNCIL

BY: _____
President

ATTEST: Jeanne W. Hopkins
Secretary

Approved this 6th day
of Dec., A.D., 2011.

Ethel G Ritchey
Mayor

RED HILL BOROUGH COUNCIL

MONTGOMERY COUNTY, PENNSYLVANIA

RESOLUTION NO. 2011-09

A RESOLUTION TO ADOPT THE 2011 COMPREHENSIVE AMENDMENT TO THE UPPER PERKIOMEN VALLEY REGIONAL COMPREHENSIVE PLAN PURSUANT TO ARTICLE III, SECTION 302 (a), (b), AND (c) OF THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE, ACT 247, AS SET FORTH IN THE FINAL DRAFT ENTITLED "UPPER PERKIOMEN VALLEY REGIONAL COMPREHENSIVE PLAN – DRAFT FOR PUBLIC COMMENT SEPTEMBER 2011", WHICH CONSISTS OF THE FOLLOWING SECTIONS: BACKGROUND AND DEMOGRAPHICS; EXISTING LAND USE; GOALS AND OBJECTIVES; NATURAL AND HISTORIC RESOURCES; OPEN SPACE; COMMUNITY FACILITIES; TRANSPORTATION; ECONOMIC REVITALIZATION; HOUSING; AND FUTURE LAND USE; AS PREPARED BY THE UPPER PERKIOMEN VALLEY REGIONAL PLANNING COMMISSION, COMPRISED OF REPRESENTATIVES FROM THE FOLLOWING PARTICIPATING MUNICIPALITIES: EAST GREENVILLE BOROUGH, GREEN LANE BOROUGH, MARLBOROUGH TOWNSHIP, PENNSBURG BOROUGH, RED HILL BOROUGH AND UPPER HANOVER TOWNSHIP.

WHEREAS, the Borough of Red Hill (sometimes hereinafter, the "Borough") adopted the Upper Perkiomen Valley Regional Comprehensive Plan dated July 10, 2001, in accordance with Articles III and XI of the Pennsylvania Municipalities Planning Code, Act 247; and

WHEREAS, the Borough is a member of the Upper Perkiomen Valley Regional Planning Commission (the "Commission"); and

WHEREAS, East Greenville Borough, Green Lane Borough, Marlborough Township, Pennsburg Borough, Upper Hanover Township and Red Hill Borough, through duly authorized representatives, serve on the Commission and have, through their representation, participated in the preparation and review of the 2011 Comprehensive Amendment to the Upper Perkiomen

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Valley Regional Comprehensive Plan, which is entitled "Upper Perkiomen Valley Regional Comprehensive Plan – Draft for Public Comment September 2011" (the "2011 Comprehensive Amended Plan"); and

WHEREAS, the Commission, as specified by the adopted Upper Perkiomen Valley Intergovernmental Cooperative Implementation Agreement (the "Intergovernmental Agreement"), prepared the 2011 Comprehensive Amended Plan, conducted a number of public meetings on the proposed 2011 Comprehensive Amended Plan, and submitted the 2011 Comprehensive Amended Plan for review and comment to the Montgomery County Planning Commission, the Upper Perkiomen Valley School District, and to all of the contiguous municipalities as specified by Article 302 of the Pennsylvania Municipalities Planning Code, Act 247; and

WHEREAS, the Red Hill Borough Planning Commission reviewed the 2011 Comprehensive Amended Plan at its duly held meeting conducted on November 9, 2011, and has forwarded to Red Hill Borough Council its formal recommendation for adoption of the 2011 Comprehensive Amended Plan by the Borough; and

WHEREAS, the forty-five (45) day period for review and comment by the Montgomery County Planning Commission, the Upper Perkiomen Valley School District, and all of the contiguous municipalities has been met; and

WHEREAS, Red Hill Borough Council has conducted one final public hearing on November 9, 2011 on the 2011 Comprehensive Amended Plan to take public comment, consider submitted review comments, and to make a formal decision regarding adoption of the 2011 Comprehensive Amended Plan; and

WHEREAS, Borough Council desires to formally adopt the 2011 Comprehensive Amended Plan as recommended by the Commission and the Borough Planning Commission;

NOW, THEREFORE, BE IT RESOLVED, that the Borough Council of the Borough of Red Hill hereby adopts the proposed 2011 Comprehensive Amendment to the Upper Perkiomen Valley Regional Comprehensive Plan, as more specifically set forth in the "Upper Perkiomen Valley Regional Comprehensive Plan – Draft for Public Comment September 2011" attached hereto as Exhibit "A" and made a part hereof.

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the 2011 Comprehensive Amendment to the Upper Perkiomen Valley Regional Comprehensive Plan shall hereinafter appear as the official Upper Perkiomen Valley Regional Comprehensive Plan.

APPROVED at the public meeting of the Borough Council of the Borough of Red Hill held this 9th day of November, 2011.

RED HILL BOROUGH COUNCIL

By: _____
Thomas Paul, President

Attest: _____
Darlene Stoudt, Secretary

APPROVED the 7th day of November, 2011.

_____
David Schiffgens, Mayor

UPPER HANOVER TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA

RESOLUTION NO. 2011-19

A RESOLUTION ADOPTING THE UPPER PERKIOMEN VALLEY REGIONAL COMPREHENSIVE PLAN OF 2011.

WHEREAS, the Pennsylvania Municipalities Planning Code (hereinafter, the "MPC"), 53 P.S. §10101, *et. seq.*, provides that the governing body of a municipality may adopt and amend a comprehensive plan in whole or in part; and

WHEREAS, in order to preserve the region's rural character and quality of life while recognizing that current zoning requirements mandate that each municipality provide for a full range of land uses, the municipalities of Upper Hanover Township, Marlborough Township, Pennsburg Borough, East Greenville Borough, Red Hill Borough and Green Lane Borough joined together to establish the Upper Perkiomen Valley Regional Planning Commission, in accordance with the provisions of the MPC; and

WHEREAS, the Upper Perkiomen Regional Planning Commission was directed to prepare an amendment to its comprehensive plan by its constituent municipalities; and

WHEREAS, the Upper Perkiomen Regional Planning Commission discussed the components, contents and priorities of a comprehensive plan amendment, reviewed drafts thereof, made revisions thereto, and provided the public with an opportunity to offer comments and ask questions; and

WHEREAS, the result of these discussions and reviews is a document prepared by the Township Planning Commission entitled "Upper Perkiomen Valley Regional Comprehensive Plan," which bears a publication date of September 2011 (hereinafter referred to as the "Comprehensive Plan Update"); and

WHEREAS, the Comprehensive Plan Update includes and encompasses all of the maps, charts, plans, figures, tables, appendices and text that are physically a part thereof, as well as any documents, maps, charts, studies, plans, analyses and other items that are explicitly made a part thereof by reference, even though not physically attached or affixed thereto; and

WHEREAS, in accordance with MPC, the Upper Hanover Township Planning Commission conducted a public meeting on November 2, 2011 at which meeting it discussed and reviewed the provisions of the Comprehensive Plan Update, presented the Comprehensive Plan Update to the public and provided the public with an opportunity to offer comments and ask questions; and

WHEREAS, at its November 2, 2011 meeting, the Township Planning Commission formally recommended that the Board of Supervisors adopt the Comprehensive Plan Update; and

WHEREAS, in accordance with MPC, the Upper Hanover Township Board of Supervisors conducted a public hearing on November 8, 2011 to discuss, review and receive testimony with respect to the Comprehensive Plan Update.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of Upper Hanover Township hereby adopts the Comprehensive Plan Update as the comprehensive plan of Upper Hanover Township and the Upper Perkiomen Valley Regional Planning Commission, based upon the Township Planning Commission's recommendation and the testimony presented at the aforementioned public hearing. A copy of the Comprehensive Plan Update is hereby incorporated herein by reference as if attached hereto.

RESOLVED this EIGHTH day of NOVEMBER, A.D., 2011.

Attest:

UPPER HANOVER TOWNSHIP
BOARD OF SUPERVISORS

Stanley W. Seltzinger, Jr.
Township Secretary/Manager

Richard K. Fain
Chairman

Eugene F. Fried

Shannan E. Bieler

Ben R. Fiorito

Mary Gibbs Kershner

Seal