

Draft

Southwestern Lehigh County Comprehensive Plan

**Alburtis, Emmaus and Macungie Boroughs
and Lower Milford, Lower Macungie
and Upper Milford Townships**

As Last Revised - August 2004

With Minor Revisions to Land Use and Housing Plan - November 2004

Prepared by the Southwestern Lehigh County
Comprehensive Plan Committee

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INTRODUCTION

What is the Comprehensive Plan?

This Comprehensive Plan is intended to establish overall policies for the development and conservation of the Southwestern Lehigh County Region over the next 15 years. The Region includes the Boroughs of Alburtis, Emmaus and Macungie and Lower Macungie, Lower Milford and Upper Milford Townships. This Plan is not by itself a regulation, but is intended to provide the policy direction for changes to the municipalities' development regulations.

The Comprehensive Plan includes the following major parts:

- The Overall Vision and Goals of the Plan
- The Natural Features and Agricultural Conservation Plan
- The Land Use and Housing Plan
- The Community Facilities and Services Plan
- The Plan for the Downtowns
- The Transportation Plan
- The Historic Preservation Plan
- Putting this Plan into Action
- Appendices

How Was this Plan Developed?

This Plan was prepared by a Regional Comprehensive Plan Committee consisting of elected and appointed officials and other citizens from each of the municipalities. The Plan policies were developed at monthly workshop meetings that were open to the public.

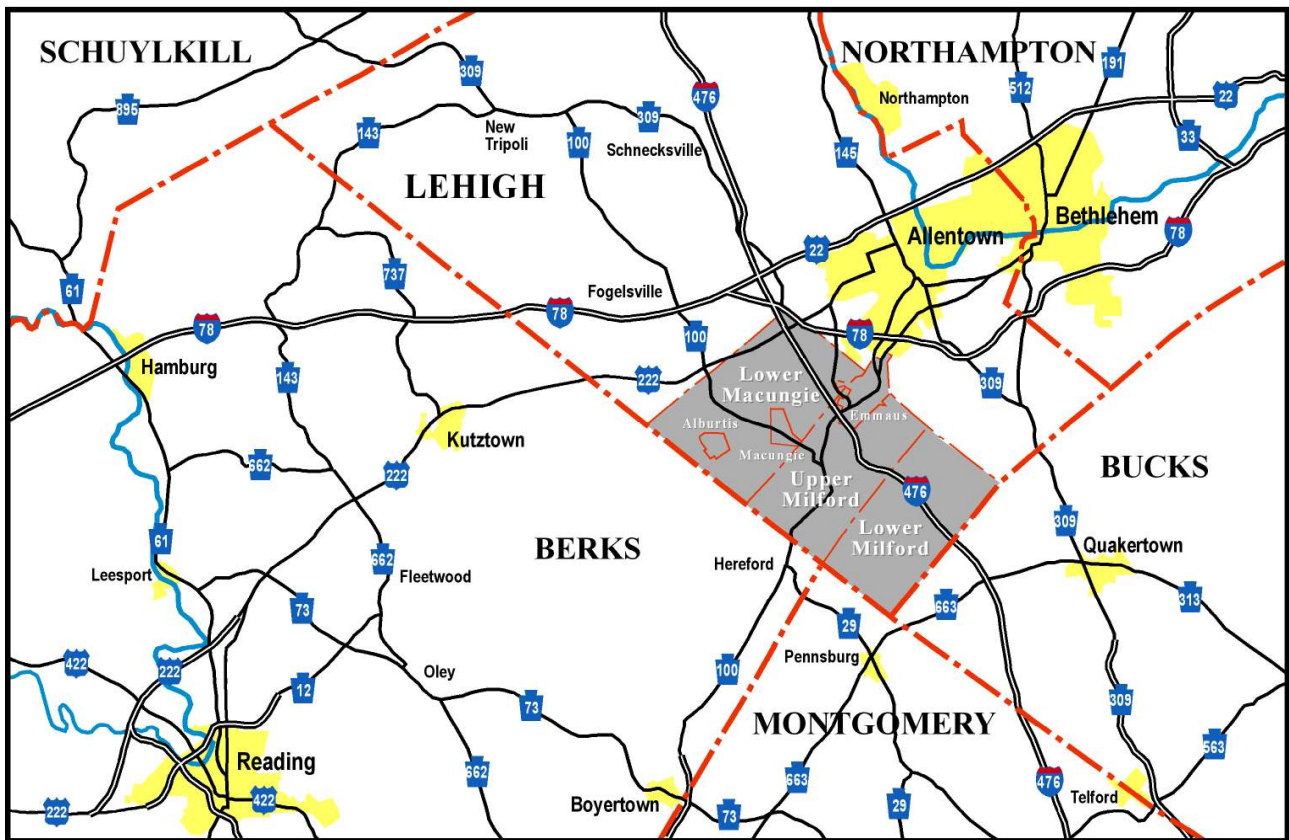
The first step in the process was the identification of major issues and concerns that needed to be addressed. The next step was an analysis and mapping of existing conditions and trends. The mapping started with computerized information provided by the Lehigh Valley Planning Commission and Lehigh County.

An "overall vision" was prepared and a set of goals were written to provide overall direction for the Plan. Then, a series of alternatives were considered to guide development in different areas of the Region. The Land Use Plan was then prepared, followed by recommendations concerning Community Facilities, Transportation, Historic Preservation and Natural Features. Public meetings were then held. After making revisions to respond to public input, the Plan is being considered for adoption by the elected officials of each municipality.

Regional Location

The Southwestern Lehigh County region is located several miles west of Allentown and borders Berks, Montgomery and Bucks Counties. The center of the region is approximately 50 miles north of Philadelphia and 30 miles east of Reading. Interstate 78 runs near the northwest corner of the region, and provides connections to Harrisburg to the west and New York City to the east. Interstate 476 (Northeast Extension of the PA. Turnpike) runs north-south through the region. There are interchanges north of the region at Route 22/Tilghman Street and south of the region at Route 663 west of Quakertown. Route 222 and Main Street/Chestnut Street in Emmaus serve as the major east-west route through the region, while Routes 100 and 29 (Cedar Crest Boulevard and Chestnut Street) serve as the major north-south routes through the region.

A base map of the Southwestern Lehigh region is included on the following page.



Base Map

L.V. Regional Plan Map

Coordination with the Regional Plan

An emphasis is needed upon coordinating the region's development policies with policies of the Lehigh Valley Planning Commission (LVPC). Under State law, a municipal or joint municipal comprehensive plan must be generally consistent with the LVPC Plan. LVPC is charged with coordinating development, preservation and transportation policies across municipal borders throughout Lehigh and Northampton Counties.

LVPC is currently working to update the Comprehensive Plan for Lehigh and Northampton Counties ("the Regional Plan") and has been encouraging input from the municipalities on possible revisions.

As of early 2004, the current Regional Plan is illustrated on the preceding page. As of this time, the Regional Plan recommends different areas of the region for different overall land use categories. The Regional Plan does not differentiate between residential, commercial or industrial land uses. The Urban Development areas are intended, when and if they are developed, to be served with public water and sewage services. The term Urban Development includes what is typically known as suburban development with public water and sewage services. In residential development, the term Urban Development is intended to mainly provide for housing at 4 or more homes per acre.

The LVPC Plan does not recommend Urban Development in areas designated as "Farmland Preservation", "Rural Development" and "Natural Resources."

The Natural Resource Areas mainly include creek valleys and very steeply sloped areas. These Natural Resource Areas are recommended for a maximum density of one home per 3 acres, except that one home per acre could be suitable with public water and sewage services. The Natural Resource Areas generally are not planned for central water and sewage services.

The Farmland Preservation Areas are mainly intended for agricultural uses and "housing on a very limited scale" - such as being limited to a maximum of 10 percent of the tract. These areas are intended to have on-lot wells and septic systems.

The Rural Development Areas mainly include lands that are not within the other three categories. These areas are mainly expected to be served by on-lot wells and septic systems. The overall density of approximately one home per acre is recommended in these Rural areas that are not steeply sloped or along creek valleys.

The Regional Plan recommends that almost all of the areas of the region that are intensely developed or are approved for intensive development (and immediately adjacent areas) be planned for "Urban Development."

Almost all of Alburtis and Macungie are recommended for Urban Development, except for the creek valleys and very steeply sloped areas. In Lower Macungie, almost all of the lands east of Route 100 are recommended for Urban Development, as well as areas: a) southwest of Trexlertown/north of Spring Creek Road, b) immediately west of Alburtis, and c) between Alburtis and Macungie.

In Upper Milford, the Urban Development Areas include the northern part of the Township closest to Macungie, Lower Macungie and Emmaus. One Farmland Preservation area is shown adjacent to Lower Milford west of the Turnpike. South Mountain and other areas of steep slopes and creek valleys are shown as Natural Resources Areas. The majority of Upper Milford is shown as Rural Development.

Furthermore, the LVPC Plan recommends that certain areas of the Lehigh Valley be planned for "Future" Urban Development. Future Urban Development is conditioned upon the availability of public water and sewage services and adequate road capacity. The Vera Cruz area was shown in this category, with the intent that public water and sewage services would be provided.

The majority of Lower Milford is recommended by LVPC as Farmland Preservation. These areas include the western, southern, south central and northern parts of Lower Milford. No areas of Lower Milford are recommended for Urban Development. Most of the eastern part of Lower Milford and areas along the Kings Highway are recommended for Rural Development.



EXECUTIVE SUMMARY OF RECOMMENDATIONS

The major goals for this Plan are described on following pages. These goals include protecting natural features, preserving agriculture in key areas, providing for orderly development with compatibility between different uses, promoting the preservation of open space within new development, strengthening the downtowns, attracting new businesses into appropriate areas, minimizing traffic safety and congestion problems, and making sure there are high-quality community services and facilities.

The Plan includes recommendations to protect steeply sloped lands, wetlands, creek valleys and other important natural features. This includes strictly limiting the density of development on steep slopes and maintaining a buffer of natural vegetation along creeks.

The Plan recommends establishing an Agricultural Conservation zoning district in Upper Milford Township to work to preserve agricultural uses over the long-run. Owners of farms are encouraged to apply to the County to have their land preserved, while remaining in private ownership. A new County program is planned that would make funds available to purchase parkland in public ownership and preserve natural areas in private ownership.

The Land Use and Housing Plan section includes recommendations for revisions to the municipalities' development regulations.

This Plan includes recommendations to maintain an attractive rural character in much of the region. This includes using strong incentives and disincentives to promote "Open Space Development." Open Space Development involves clustering homes on the most suitable portions of a tract. In return for allow smaller lots on part of a tract, the developer would be required to permanently preserve a large portion of the total tract (such as 30 to 50 percent) in permanent open space. This open space could be maintained in public, homeowner association or private ownership, but could never be developed.

This Plan seeks to direct most development to locations that can be efficiently served by public water and sewage services. This will greatly minimize the total amount of land that is consumed by development and also works to direct most housing away from agricultural areas.

This Plan emphasizes directing new commercial uses to the downtowns and other selected locations that allow for safe and efficient traffic access. This Plan is designed to prevent long strip commercial development along major highways with individual driveways, where such development does not currently exist.

This Plan recommends ways to strengthen business activity, build historic community character and provide a pedestrian-friendly environment in the centers of Emmaus, Macungie and Alburtis.

It is essential to avoid excessive densities of development to avoid overwhelming the capacity of the road system, the public school system, other community services and the natural features of each site.

This Plan recommends providing areas for a range of housing types and densities. State law requires the municipalities to meet certain obligations to provide opportunities for all types of housing and all legitimate types of land uses.

A number of recommendations are provided to strengthen older residential neighborhoods. This includes an emphasis upon encouraging home-ownership, rehabilitating older buildings, and avoiding incompatible development. This Plan also seeks to extend the best features of older development into newer development, in a concept named Traditional Neighborhood Development. Moreover, this Plan promotes compatible types "infill" development in villages and older parts of the boroughs..

Older buildings with significant architecture should be reused and rehabilitated. In historic areas, types of new construction should be encouraged that will be compatible with the historic surroundings.

New businesses need to be attracted into appropriate areas, and existing businesses should be encouraged to expand. This business development is essential to reduce the tax burden upon homeowners and to provide wider employment opportunities.

A number of road improvements are proposed to improve congested road segments and to improve traffic safety. Most of the recommended improvements involve widening, realignment or signal re-timing of intersections involving State roads. In order for improvements to State roads to occur in a timely fashion, in most cases it is critical for the municipality to take the lead in engineering improvements, seeking needed right-of-way and providing municipal funds or contributions from developers.

The Routes 222 and 100 bypasses are currently under construction, as well as several connecting road links. Moreover, this Plan also includes a full series of recommendations to improve opportunities throughout the region for safe bicycle and pedestrian travel, including a system of recreational trails.

THE VISION AND GOALS OF THIS PLAN

The Overall Vision of this Plan

As we look to the future, the best features of older development in the region will have been preserved and extended into new development.

The Downtowns of Alburtis, Emmaus and Macungie will be strengthened as active business centers for the region. Attractive streetscape improvements will make the downtowns more pedestrian-friendly.

Historic buildings will be preserved and many will be restored in a sensitive manner, with appropriate new uses. Older neighborhoods will remain strong and stable, with a high percentage of homes being owner-occupied.

Most new parking will be located to the rears or sides of buildings - allowing the front yards to be landscaped. New business development will have occurred in ways that fit into the character of the community. This will include reuse of older buildings and construction of newer buildings in the Downtowns and villages that are similar in character to older buildings.

Large areas will continue to be farmed, particularly in the western part of Lower Macungie, the southern part of Upper Milford and most of Lower Milford. Substantial areas of woodlands will be preserved, providing attractive visual relief between development. Roads and streets will be shaded by a canopy of street trees.

The creek valleys will be preserved, some in public greenways and trails, building upon the parks along the Little Lehigh Creek. Plentiful high-quality groundwater supplies will remain available, with large amounts of stormwater recharging into the ground. The creeks will also have high water quality, with the benefit of careful erosion controls. Conservation easements will have ensured the permanent preservation of large areas of open land.

Most new development will be served with public water and sewage service that will minimize the total amount of land that is consumed. Substantial areas of inter-connected open space will have been preserved within most new development, particularly through clustering.

Unightly and inefficient “strip” commercial development of new commercial businesses with individual driveways along long stretches of major roads will have been avoided. Extensive landscaping will add to the attractiveness of new development.

Traffic will have increased but will be carefully managed, with improvements to smooth traffic along major corridors. As traffic is better managed along major roads, there will be less incentive for vehicles to travel on residential streets. Coordinated driveways and interconnected parking lots will be provided between adjacent businesses. Wider shoulders will be provided on roads to increase safety and promote bicycling and walking.

Signs will be of modest size and height. Lighting will be controlled to avoid nuisances to neighbors and motorists.

A wide variety of recreation opportunities will be available and the East Penn and Southern Lehigh

School Districts will continue to be known for high quality education.

Direction: the Major Goals of this Plan

The following goals provide overall direction for this Plan. The recommendations work to carry out these goals.

Overall Goal: Continually strive to make the region an even greater place in which to live, work, learn, visit, shop and play, with a strong sense of community, scenic preserved open spaces, preserved agricultural areas, an attractive historic character, a vibrant economy, and an excellent quality of life.

Natural Features and Agricultural Conservation

- Protect important natural features, with a special emphasis upon the creek valleys, wetlands and steeply sloped woodlands.
- Make sure that new development properly respects the natural features of a site.
- Seek to maintain agricultural activities in large portions of the region.
- Protect the amounts and quality of groundwater and creek waters.

Land Uses and Housing

- Provide for orderly patterns of development that provide compatibility between land uses, particularly to protect the livability of existing residential areas.
- Maintain an attractive rural character in much of the region. Promote use of the "Open Space Development" concept to cluster development on the most suitable portions of a tract, in order to permanently preserve important natural features and open spaces.
- Direct most development to locations that can be efficiently served by public water and sewage services, in order to minimize the total amount of land that is consumed by development and to direct most housing away from agricultural areas.
- Direct new commercial uses to the downtowns and other selected locations that allow for safe and efficient traffic access - as opposed to long strip commercial development along major highways with individual driveways.
- Strengthen business activity, historic community character and a pedestrian-friendly environment in the centers of Emmaus, Macungie and Alburtis.
- Promote the reuse or redevelopment of older industrial sites.
- Control the overall density of development on a tract of land based upon the natural features of that tract. Also, control the overall density of development in each part of the region based upon the ability of the road system in that area to handle additional traffic.
- Provide areas for a range of housing types and densities. Work to meet obligations under State

law to provide opportunities for all types of housing and all legitimate types of land uses.

- Strengthen older residential neighborhoods, with an emphasis on encouraging home-ownership, rehabilitating older buildings, and avoiding incompatible development.
- Seek to extend the best features of older development into newer development and promote compatible "infill" development in villages and older parts of the boroughs..
- Encourage appropriate reuse and historic rehabilitation of older buildings, as well as encouraging new construction that is consistent with historic surroundings.
- Further improve the visual attractiveness of the region, with an emphasis upon the most highly visible corridors, and with an emphasis upon street trees, landscaping and preserved creek valleys.
- Stress a strong diversified economy that generates stability, sufficient tax revenues and wide employment opportunities.
- Emphasize tourism that is built upon the area's heritage, arts and culture, and recreational assets.

Community Facilities and Services

- Provide high-quality community facilities and services in the most cost-efficient manner, including addressing needs for future growth.
- Provide for logical extensions of public water and sewage services to accommodate planned growth areas.
- Emphasize full cooperation and coordination of municipal and emergency services across municipal borders.

Transportation

- Carefully plan road patterns and access from development according to the function each road is intended to serve within the overall road network.
- Work to control heavy truck traffic, through-traffic and higher speed traffic on residential streets/roads.
- Make well-targeted cost-effective improvements towards congested and unsafe road segments, in cooperation with PennDOT and adjacent landowners/developers.
- Improve opportunities throughout the region for safe bicycle and pedestrian travel, carpooling and public transit.

Putting this Plan into Action

- Update municipal development regulations to carry out this Plan, and periodically update the Plan and regulations as needed.

- Continually work to put this Plan into action - through a program of updated planning and many short-term actions within a long-range perspective.
- Promote substantial citizen input, including making sure residents are well-informed about community issues and encouraging volunteer efforts to improve the community.
- Maximize communications, coordination and cooperative efforts between the municipalities, the school districts, adjacent municipalities, the County and other agencies and organizations.



NATURAL FEATURES AND AGRICULTURAL CONSERVATION PLAN

Land in the Region varies greatly in its suitability for different intensities of development. Some areas, such as flood-prone creek valleys, very steep sloped lands and wetlands, are not suitable for any development. Other areas are only suitable for very low-intensity development, such as moderately steep areas. Still other areas are appropriate for intensive development.

Open space can be preserved in public, semi-public or private ownership. It is important to preserve open space to:

- recharge groundwater supplies,
- protect the quality of creeks and the groundwater,
- provide an important visual relief between developments,
- preserve areas of scenic beauty, including scenic views,
- avoid development on lands that are prone to erosion or are otherwise not physically suitable for development,
- provide land for recreation, and
- preserve habitats and cover for birds, fish and wildlife.

The Land Use and Housing Plan recommends policies, such as promoting Open Space Development, that are intended to steer development away from the creek valleys and other important natural features.

Take full advantage of all funding sources for land preservation, including connecting interested landowners with available resources, using "Conservation Easements," and using County and State funds.

There are several other funding sources for land preservation. For example, municipalities, certain other organizations and land conservancies can apply for State grants for acquisition of recreation land.

Conservancy organizations can work with individual landowners to find ways to preserve their land. This often includes purchasing a property for a price that is lower than market value, and then helping the property-owner receive a Federal income tax deduction for the difference between the market price and the sale price. Conservancies also often work with landowners to find ways to sensitively develop part of their property, while permanently preserving other parts.

"Conservation easements" can be used to permanently preserve land without outright purchase of the land. With a conservation easement, the land remains privately-owned. The easement involves the property owner voluntarily agreeing to donate or sell the right to develop his or her land. The property owner agrees to place a restriction in the deed of the property which becomes binding on all future owners of the land. The easement can be written in many different ways to restrict or not restrict certain types of activities. Most conservation easements prohibit the construction of new buildings and subdivision of the land. Conservation easements also may prohibit intensive forestry and re-grading of the land.

Often, a property-owner can receive Federal income tax benefits from donating a conservation easement. This could include a complete donation of the easement, or a sale of the easement for a price

that is less than the value of the easement. For example, if an area of land is worth \$1 million, the development value might be \$800,000. The remaining \$200,000 would be the residual value of the property after the easement. If the landowner donates a conservation easement, it may be possible to deduct \$800,000 from their taxable income. If the landowner sells the easement for \$200,000, they may be able to deduct \$600,000 from their taxable income - \$800,000 of value minus the \$200,000 purchase price. This is known as a "bargain sale." The same type of deduction could apply if the land is sold outright to a municipality or conservancy for less than its market value.

Lehigh County voters approved the issuance of \$30 million of bonds for the Green Futures Fund. As of 2004, the intent is to use:

- one-third of the funding for the County's agricultural preservation easements (which is matched with State funds),
- one-third for purchase of parkland and open space (80 percent of which would be used by townships and 20 percent by the County), and
- one-third for improvements to existing parks (80 percent of which would be used by Allentown and the boroughs for recreation areas open to the public and 20 percent for County parks).

The dollars available to purchase land could be used to buy land outright or to buy conservation easements. The dollars available to improve parks could be used on land owned by non-profits if there is a binding commitment to make sure the land will be available for public recreation.

As of 2004, the grants to the municipalities would need to be matched dollar for dollar with other funding (such as municipal dollars, State grants, conservancy donations or developer recreation fees). However, this matching requirement could be reduced to 75 percent County funds vs. 25 percent other funds if certain additional criteria are met. A point system is used to determine the allowed ratio. For example, additional points are available if a project would involve two or more municipalities.

A variety of State funds are also available through the State Department of Conservation and Natural Resources for purchase of recreation land or conservation easements. Those programs typically require a 50-50 match with other sources of funding, and are competitive.

Municipalities have additional alternatives to raise money for purchase of recreation land and preservation of open space. A municipality is also allowed to use its own funds to buy easements on agricultural land. Township programs to preserve farmland are particularly worthwhile to preserve farms that do not rank highly under the County's easement program. These alternatives to raise funds should particularly be considered to provide matching dollars with State and County grants.

One alternative is to require developers to provide recreation land within new developments, or to pay recreation fees "in lieu of" providing recreation land. These types of requirements are allowed under the State Municipalities Planning Code. The Land Use and Housing Plan also describes incentives that can be used in zoning to result in higher percentages of open space within new development.

A second alternative is to set aside funds from the general fund budget or to issue a municipal bond for land purchase and preservation.

A third option is to ask voters if they wish to have the municipality issue a bond for land purchase and preservation. This referendum may also involve asking voters to approve an additional tax that would be dedicated to land purchase. A bond is typically issued, with the annual payments on the bond paid from the tax receipts. State law allows voters to approve an increase in their earned income tax (up to

0.25 percent) or an increase in their real estate tax millage (up to 2 mills) or an increase in the real estate transfer tax (up to 0.25 percent).

The real estate transfer tax increase can be particularly attractive because it only affects properties that are sold, including new construction and re-sales. If a municipality is experiencing a high rate of construction, that tax increase can generate tremendous revenue without affecting most existing residents.

Preserve areas along major creeks in as natural a condition as possible.

Land along creeks can be preserved in private ownership, in public ownership or by homeowner associations. The municipalities should seriously consider opportunities to acquire additional land along creeks for public passive recreation, particularly for hiking trails and picnic areas. This can build, for example, upon the large amount of recreation land that has already been preserved along the Little Lehigh, Swabia and Liebert's Creeks.

The primary goal is to maintain thick natural vegetation along creeks, and to re-plant areas along creeks where thick vegetation does not exist. This thick vegetation is essential to provide high quality habitat for fishing and to filter out eroded soil and pollutants from storm water runoff. At best, to maintain the proper temperature of creeks and filter out pollutants, there should be mature canopy trees over a creek, plus thick underbrush.

To comply with State requirements, the municipalities already have regulations that limit buildings within flood-prone areas. These regulations apply within the "100-year floodplain," except Lower Macungie regulates the 500-year floodplain. The 100-year floodplain includes areas forecast to be flooded during the worst flood expected in an average 100-year period. The townships' provisions could be strengthened by prohibiting any new buildings in the 100-year floodplain, as opposed to allow new buildings in parts of the floodplain if they are flood-proofed. However, that type of provision is not recommended in the boroughs.

The municipal zoning ordinances could also be strengthened by requiring a setback of approximately 25 to 100 feet from the bank of major perennial creeks. These setbacks should vary by zoning district. A relatively narrow width (such as 25 feet) may be necessary in denser areas of the boroughs. A larger setback (such as 75 feet from the Little Lehigh Creek and 50 feet from other perennial creeks) would be appropriate in less densely developed areas. This setback should apply for buildings, parking areas and business storage. These distances assume that the setback would be measured from the top of the primary bank. If the distance would be measured from the centerline of a creek, then a larger setback could be appropriate.

The preservation and creation of vegetated drainage swales should be encouraged. These types of channels slow runoff, allow recharge and filter out pollutants.

As seen on the Water Resources Map, the northern two-thirds of this Region flows into the Little Lehigh Creek, which flows to the Lehigh River. The eastern-most parts of Upper and Lower Milford drains east to the Saucon Creek. The southern half of Upper Milford and the western two-thirds of Lower Milford eventually flow outside the Region to the Perkiomen Creek. A major tributary of the Perkiomen Creek is the Hosensack Creek in western Lower Milford.

Efforts are needed to put the Watershed Conservation Plan for the Upper Perkiomen into action, as well as similar policies for the Little Lehigh Creek. Most of the northern part of this region is in the Little Lehigh watershed, while most of the southern part of the region is in the Upper Perkiomen watershed.

For many years, the Wildlands Conservancy has taken the lead in working to manage the Little Lehigh Creek, including working with property-owners to stabilize the stream bank, plant near vegetative buffers along the creek and improve fish habitats. The Wildlands Conservancy also has a long-term program of monitoring the water quality of the Little Lehigh.

Emmaus Borough is providing leadership for two regional projects: 1) A Wellhead Protection Plan for the Borough's wells and 2) an Assessment of the Leibert Creek watershed. The locations of Emmaus' wells are shown on the Existing Central Water Service Map. The Leibert Creek watershed primarily involves areas in Emmaus and Upper Milford. Each of these projects will result in recommended policies and/or initiatives to protect and enhance the quality and quantity of the groundwater and surface waters. This Regional Plan is supportive of these types of initiatives.

Many of the policies described in the Land Use and Housing Plan section can work to preserve the creek corridors, including promoting Open Space Development and Transfer of Development Rights and establishing very low density conservation residential zoning where appropriate. Property-owners should also be encouraged to restore wetlands where they have been altered in the past.

As part of a Source Water Assessment and Protection study, the locations of potential chemical hazards to water supplies have been mapped. Local fire companies should be aware of these hazards and be well-trained and prepared to quickly address any potential leaks, spills or other emergencies.

Continued efforts are needed to educate owners of properties with on-lot septic systems about the need for proper operation and maintenance of these systems to avoid groundwater pollution. The municipalities should continue to work to identify malfunctioning septic systems and inadequate cesspools and require their repair or replacement. Lower income homeowners can be linked with low interest loans from PennVEST to help fund repairs.

Under the Federal "NPDES" program, the municipalities will need to work to improve the water quality of runoff that enters creeks from municipal storm sewers.

It may be appropriate to modify municipal Weed Ordinances to make sure that they do not prohibit appropriate natural landscaping (such as encouraging meadows that might only be mowed twice a year). Thick high vegetation is particularly appropriate along creeks. Furthermore, thick vegetation should be planted and allowed to grow along creeks and drainage swales in municipal parks.

Consider seeking a higher water quality classification for creeks in the Region.

The Pennsylvania Department of Environmental Protection (DEP) classifies all creeks according to water quality standards. The highest level of protection are "Exceptional Value" or "Outstanding Natural Resource Water" creeks. The next highest level of protection are "High Quality" creeks. The higher levels of protection involve much stricter regulations upon water quality, particularly for effluent from sewage systems. Then, a basic level of protection involves "Warm Water Fisheries" or "Cold Water Fisheries."

Consideration should be given to working with the Wildlands Conservancy to seek a higher level of water quality protection for creeks in the region. This would require the submission of water quality studies and a petition to DEP. As of 2003, there is an effort underway to change the classification of the Little Lehigh Creek from High Quality to Outstanding Natural Resource Water.

Protect the amounts and quality of groundwater and creek waters. Stress recharge of storm water into the ground to maintain groundwater supplies and reduce storm water runoff.

Too often, developments are engineered to channelize storm water runoff towards a creek, without encouraging recharge of groundwater into the ground. We should think of stormwater as a resource that should be managed, and not as something to be "gotten rid of." Groundwater recharge can be encouraged through the Manual entitled "Best Management Practices for Developing Areas in Pennsylvania," which is available through the County Conservation District. For example, storm water can be held within "retention basins" that allow some storm water to be absorbed into the ground. Depending upon soil conditions, infiltration trenches and french drains can be used to recharge some runoff into the ground. However, care is needed in areas with limestone-based geology to avoid sinkholes. The natural drainageways should be left in place as much as possible, with wide swaths of green space that allow storm water to be absorbed.

The total percentage of a lot that is covered by buildings and paving should be limited to make sure that there are areas available for absorption of groundwater. For parking areas that are not used on a daily basis, alternative surfaces and materials (such as "porous paving") should be considered that encourage groundwater recharge.

Ordinance provisions should be reviewed to make sure that they do not unintentionally increase the amount of land covered by paving. For example, sidewalks should only be required where they are truly needed. Front yard setbacks should be modest so that long driveways are not needed. Where cul-de-sac streets are used, a landscaped island should be considered in the middle of the cul-de-sac. Excessive amounts of parking should be avoided. Where there is a question about the amount of parking that may be needed, a developer can be allowed to reserve land for parking that would only be paved if the municipality determines it is actually needed after the use has been in operation. Adjacent businesses should be encouraged to share parking, which can reduce the total amount that is needed.

The Best Management Practices manual also includes recommendations of ways to control the water quality of runoff by avoiding the mixing of pollutants into runoff. For example, devices can be used to separate oils, greases and sediment from runoff. Whenever there is major earthmoving, a developer is required to prepare an erosion control plan that meets the requirements of the County Conservation District. It is equally important to regularly inspect construction sites to make sure that these erosion control measures are actually carried out.

Carefully manage wooded areas and avoid clear-cutting.

Most forested areas of the region are located on areas that were too steep, too wet or too rocky for crop farming. The woodlands in the region add character to the landscape, help preserve the water quality of creeks and provide important wildlife habitats. Trees also are important to purify the air and control erosion. Forestry must be allowed under State law. However, clear-cutting of woods should be prohibited, proper erosion controls should be in place for any large-scale tree-cutting, and other appropriate forest management practices should be used.

In development plans, developers should be required to show that they have minimized the removal of woods as part of their project. Great care should be used during construction to minimize the number of trees that are removed. Trees can add substantial value to a residential lot. During construction, temporary wood fences should be placed around trees to prevent the compaction of root systems by equipment and to prevent damage to tree trunks.

Certain areas of the region should be considered for re-forestation – particularly steep lands and lands along creeks. Funding for tree-planting programs are available from a few sources, including the Federal Urban Forestry Program, the Federal Transportation Enhancement Program (along a major highway) and Federal and State water quality programs. Some programs are limited to public lands, while others provide funding to private property owners. A Federal conservation program also provides funding to farmers who take steep areas and areas along creeks out of crop production.

Carefully control large-scale withdrawals of groundwater and spring water.

The municipalities should consider regulations that require careful review of large withdrawals of groundwater and water from springs. The applicant should be required to provide professional hydrological studies showing that the withdrawals will not harm the water supplies of neighboring homes and farms, particularly during drought conditions. This concern particularly involves water bottling operations that remove large volumes of water out of the area. If a large water withdrawal is proposed, it should be accompanied by permanent preservation of substantial amounts of surrounding land to allow sufficient groundwater recharge.

However, municipalities need to recognize that Delaware River Basin Commission regulations and State law may pre-empt the ability of a municipality to prohibit or severely regulate a large water withdrawal.

Carefully minimize sinkhole threats in limestone areas.

Much of Lower Macungie, Emmaus, Alburtis and Macungie and part of Upper Milford has limestone-based geology that is prone to sinkholes. This is also known as "karst" or "carbonate" geology. Limestone-based areas can be particularly vulnerable to sinkholes when there are mining activities, which can affect changes to the groundwater levels.

Stormwater runoff has a major role in the creation of sinkholes and other subsidence. The most important issue is usually to carefully design stormwater facilities and to use great care near isolated low spots in the ground, which are known as topical depressions. Water line breaks also often result in very severe sinkholes.

Lower Macungie already has comprehensive development regulations to address limestone geology issues. It would be appropriate for other municipalities to include similar regulations in their Subdivision Ordinance that would apply within limestone areas. These regulations could require a study by a specialist in this type of geology before any significant development is approved. This type

of study may require soil borings. This study should consider the most vulnerable locations for sinkholes and state what types of measures should be carried out during development to reduce the threat of sinkholes. This study should then be reviewed by a second expert selected by the municipality but funded by the developer.

In limestone-based areas, stormwater detention basins should be required to have an appropriate liner. Where development is proposed near a sinkhole, the sinkhole should be required to be remediated. This often involves excavating the area and filling it with concrete or other approved material. Sinkholes should be repaired as soon as possible before they expand in an uncontrolled manner. Stormwater should not be directed towards a sinkhole that has not been remediated.

Make sure that any changes to suspected wetlands comply with state and federal regulations.

It is extremely important to protect wetlands to protect water quality, control flooding, provide aquatic habitats and recharge groundwater. Wetlands are defined based upon the soil types, depth of the water table and types of vegetation. Wetlands not only include swamps, but also areas that are typically wet during parts of the year. The municipalities and local residents need to help State and Federal agencies make sure that there is compliance with wetland regulations. The Water Resources Map shows the locations of known wetlands. In addition, attention is needed regarding areas with “hydric soils” that are likely to include wetlands. Within these areas, an applicant for development should be required to provide a study by a qualified professional to determine whether wetlands will be impacted.

Each municipality should consider requiring a setback of at least 20 feet between a designated wetland and a proposed new building. This setback is valuable to help keep construction equipment out of the wetlands and to avoid other alterations to wetlands after construction.

Minimize development on steeply sloped lands.

As seen on the Steep Slopes Map on a following page, most steeply sloped lands are concentrated in the following areas:

- southwest of Albury, stretching into the southern part of the Borough,
- south and southwest of Macungie, south of Mountain Road,
- along Shimerville Road in Upper Milford,
- on South Mountain in Upper Milford south of Emmaus,
- north of Limeport, and
- scattered areas in southern Upper Milford and north-western Lower Milford.

A 15 percent slope has a rise of 15 feet for every 100 feet of horizontal distance. Moderately steeply sloped lands (15 to 25 percent) are generally only suitable for low intensity development. Very steep lands (over 25 percent) are generally not suitable for any development. It is important to limit development on steep slopes to avoid the following: erosion problems, high speed storm water problems, overly steep roads and driveways, excessive costs to construct and maintain roads and utilities, and destruction of scenic natural resources.

Consideration should be given to strengthening zoning regulations to control development on steeply sloped lands. For example, if a new principal building would be proposed on steep slopes, larger lot sizes could be required. These additional requirements would not apply if a portion of a lot was steeply sloped but was not proposed for any development.

For example, in the townships, it would be desirable to require a minimum lot size of at least one or two acres if a principal building would be built on 15 to 25 percent slopes, and two to five acres if the building would be built on slopes over 25 percent.

Seek to maintain interconnected corridors for wildlife.

Ideally, corridors along steeply sloped areas and along creeks would be permanently preserved as interconnected open space. In addition to the benefits of preserving natural features, these inter-connected corridors also provide cover for wildlife to move throughout the region. It is particularly important to have areas with woods or other thick natural vegetation that connect large areas that have been preserved. Too often, land preservation involves fragmented areas that do not allow for wildlife travel.

Work to conserve Outstanding Natural Areas.

In 1999, the Pennsylvania Science Office of the Nature Conservancy prepared a Natural Areas Inventory (NAI) for Lehigh and Northampton Counties. The NAI identifies what they consider to be "critical areas" of plant and animal habitat, and also lists unique natural features.

These critical habitat areas are based on the Pennsylvania Natural Diversity Index (PNDI), a comprehensive database of outstanding natural habitats and sensitive plant and animal species on a state level. Species in the PNDI are given endangered, threatened, special concern or concern status. Natural areas are grouped into two categories in the NAI.

The Nature Conservancy then provided recommendations for priorities among different areas in the region. Those recommended priorities are not necessarily the highest priorities of the municipalities.

The Conservancy classified certain sites to be of statewide significance for the protection of biological diversity. These sites contain exemplary natural communities and documented habitats for rare species listed in the PNDI. Those state-significant sites that are the most critical to biodiversity in the future have been labeled "top priority" by the Nature Conservancy. Sites that the Nature Conservancy categorized as "locally significant" are unique areas chosen because of size, diversity of wildlife and plant life, water quality protection, and recreation potential.

The Southwestern Lehigh Region includes the following natural areas, with two additional areas situated very close to the perimeter of the Region.

Outstanding Natural Areas Southwestern Lehigh County

Natural Area	Location (See Important Natural Areas Map)	Nature Conservancy's Recommendation for Priority	Unique Feature
East Texas - Little Lehigh Creek	Lower Macungie Township	Statewide significance	PA-threatened plant species.
Hosensack Marsh	Lower Milford Township	Top priority	Marsh and shrub swamp, several PA-endangered animal species.

Natural Area	Location (See Important Natural Areas Map)	Nature Conservancy's Recommendation for Priority	Unique Feature
Indian Creek Floodplain	Upper Milford & Lower Macungie Townships	Statewide significance	Floodplain, open marsh, evidence of PA-endangered animal species.
Area Southwest of Trexlertown (referred to as the Jungle in Natural Areas report)	Lower Macungie Township	Local significance	Saturated floodplain with creeks and springs, history of rare plant species.
Big Beech Woods	Lower Milford Township	Local significance	Maturing second growth forest. Some trees are over 2 feet in diameter.
Lower Milford Marsh	Lower Milford Township	Statewide significance	Fen (wetland) with potential for several plant and animal species of concern.
Macungie Watershed	Lower Macungie & Upper Milford Townships	Statewide significance	Seeps with potential to support several PA plant species of special concern.
Mill Hill	Lower Milford Township	Local significance	Ridge with diverse second-growth forest with potential for several plant species of special concern.
Big Beech Woods	Lower Milford Township	Local Significance	Southeast facing slope facing the Hosensack Creek with maturing 2 nd growth forest. Some trees are over 2 feet in diameter.
Mill Road Wetlands	Upper Saucon Township	Statewide significance	Wetlands with history of animal species of special concern.
Robert Rodale Reserve	Salisbury Township & City of Allentown	Top Priority	Seeps, vernal pools, two plant species of special concern.

Source: Natural Area Inventory, Nature Conservancy and the Lehigh Valley Planning Commission, 1999

The NAI provides several policy recommendations for the natural areas of Southwestern Lehigh County. In the Rodale Reserve and other areas on South Mountain, further forest fragmentation is discouraged to ensure the continuation of plant and animal species whose life cycles depend on this belt of wooded habitat. The NAI encourages renewed surveys for rare species at the Indian Creek Floodplain, Lower Milford Marsh, and Mill Road Wetlands. At the East Texas site, the report recommends the maintenance of wooded buffers along Little Lehigh Creek. Finally, it is noted that a majority of the portion of Mill Hill lying in Montgomery County has been acquired by Upper Hanover Township and designated for conservation and recreation purposes.

Other public and private organizations maintain lists of important natural areas. The Pennsylvania Department of Conservation and Natural Resources lists “outstanding scenic geological features” including the Vera Cruz Jasper Pits in Upper Milford. Native-Americans of the Lenape tribe extracted the redish-yellow quartzite rock here for making tools and weapons.

The Highlands Coalition also list individual sites as well as larger scale systems that are in great need of protection. In the area, the Coalition lists Hosensack Swamp, South Mountain, the Little Lehigh

Creek Watershed and the Upper Perkiomen Creek Watershed. The latter two watersheds are major sources of drinking water for Allentown and Philadelphia, respectively.

The boundaries of the outstanding natural areas as delineated by the Nature Conservancy are shown on the following map. The sizes of the natural areas were intentionally exaggerated by the Conservancy to avoid the pinpointing of resources that may become vandalized.

The municipalities and the County should consider the use of the funding available through the County Green Future Fund to preserve these outstanding Natural Areas. This could include fee-simple acquisition or purchase of a conservation easement. Wetlands, flood-prone land and very steeply sloped lands can often be purchased at a low price because they have limited market value for development. The Open Space Development option (described in the Land Use and Housing Plan section) could also be useful to help permanently preserve these natural areas.

Outstanding Natural Areas Map

Steep Slopes Map

100 Year Floodplains and Watersheds

Agricultural Features

AGRICULTURAL CONSERVATION

This section describes a variety of methods to encourage the continuation of farming in the townships. The Land Use and Housing Plan section further describes zoning incentives and disincentives that should be used to seek to preserve farmland.

The Prime Agricultural Soils and Preserved Farmland Map shows areas with the best soils for corn and similar crops, as estimated in the County Soils Survey. The vast majority of the undeveloped lands in the region (not including lands that are steeply sloped) include prime agricultural soils. The very best agricultural soils are called "Class I and II." These soils are mainly concentrated in western Lower Macungie, central Upper Milford and eastern Lower Milford Townships. The "Class III" soils are good agricultural soils, but not as productive as Class I and II. The Class III soils are spread throughout the region - mainly in Upper Milford and Lower Milford.

Encourage the designation of additional areas as agricultural security areas.

Large areas of farmland in the region has been designated as "Agricultural Security Areas." A farmer voluntarily asks the Township Supervisors to include their land as a Security Area. A Security Area does not result in any additional regulations upon a private property owner, nor upon private development. Once designated, the landowner becomes eligible, if they wish, to ask to have their land preserved under an Agricultural Easement (as described below). Moreover, a Security Area provides a farmer with extra protection against nuisance lawsuits, municipal regulations of agriculture and government condemnation.

Continue to promote use of agricultural easements to preserve farmland.

The most effective method to permanently preserve farmland is through purchasing the "development rights" of the land. This program uses funds from the State and the County to pay property owners to preserve their land. Property owners voluntarily apply to the County for consideration. The farms are then ranked according to a set of standards, such as the quality of the soils for crops and the proximity to other farms that have been preserved. If selected, the landowner is paid the difference between the market value of the land and the value as farmland. A landowner can voluntarily agree to a payment that is less than this value, particularly if insufficient funds are available to the County for the full amount. In that case, the landowner can deduct the difference on their Federal income tax as a charitable donation. A permanent "Conservation Easement" is then placed on the land that permanently prevents its use for non-agricultural uses. The land remains privately owned and can be sold to another farmer.

The Prime Agricultural Soils and Preserved Farmland Map shows areas that have been permanently preserved through agricultural easements. The majority of the preserved farms are concentrated in Lower Milford, with the largest concentration in the center of Lower Milford south of Limeport Pike.

That map also shows farmland that is owned by Lehigh County, most of which is currently leased for agriculture. Most of this County-owned land is in Upper Milford and most lies west of the Turnpike. This Plan recommends that the County establish conservation easements to permanently prohibit future development of that land for buildings. To avoid permanently closing opportunities for possible public recreation use, this County-owned land should not be restricted by a standard agricultural preservation easement.

There are limited funds available each year to buy easements to preserve farmland, and many farmers must sit on a waiting list for years. During the time it takes a farmer to rise up on the list, he/she may face pressure to sell for development. Also, some farms may not rank high enough according to the standards to be funded – particularly if a farm does not have the best soils for crop farming.

The State now allows the County to make installment purchases of farmland easements. This guarantees a farmer that they will receive certain payments in future years – which should increase participation. It also helps landowners to spread out the income over more than one year, which can reduce the tax rates.

Consider permitting a wide range of farm-based businesses.

Many farmers cannot earn a full-time living on their farm work. Instead, many farmers need supplemental jobs. To encourage the continuation of farming, the townships' zoning ordinances should offer reasonable flexibility to farmers on larger tracts to have small businesses. These businesses could include small engine repair, sharpening services, wood crafting, farm equipment repair, sale of seeds and fertilizers and similar activities. The number of employees and the sizes of the businesses should be limited to prevent it from becoming a major commercial business. These activities can also be useful to encourage the repair and reuse of old barns.

Farm-based tourism is also valuable to increase revenue to farmers, and thereby help farmers afford to farm. These activities can include Summer camps, Halloween events (such as haunted hayrides and corn mazes), bed and breakfast guest rooms, and other activities.

Furthermore, State law requires municipalities to allow farmers to conduct retail sales of their agricultural products on their property. In addition, Emmaus operates a Downtown Farmers Market on weekends. These types of sales should be encouraged to help farmers capture a higher percentage of the retail value of their products.

Consider wider use of agricultural conservation zoning.

Agricultural conservation zoning can be effective to preserve large contiguous areas of farmland. Generally, agricultural conservation zoning limits residential development to a portion of a tract (such as 10 percent of the tract), and then requires that the remaining land be kept in very large lots. This type of zoning is in place in the northwestern part of Lower Macungie. The Land Use and Housing Plan recommends that this type of zoning be considered on land in Upper Milford east and west of the Turnpike, which includes hundreds of acres of County-owned farmland.

The following sketch illustrates a typical site developed under agricultural conservation zoning.

Agricultural conservation zoning works best when there is grass-roots support among a number of adjacent farmers who intend to continue farming over the long-term. The major benefits of agricultural conservation zoning include:

- Protecting Public Investment in Easements - Agricultural conservation zoning is particularly important to protect the public investment that has been made in purchasing development rights of farmland. If a significant area of farmland has already been preserved, it is important to make sure that a large housing development will not occur immediately next door and create conflicts with the agricultural activities.
- School Taxes - Agricultural zoning can help moderate the rate of construction of new homes. Every major study in Pennsylvania has shown that the vast majority of new housing results in much higher school expenses than the housing generates in school taxes. These costs can be particularly dramatic if there is a need to construct new schools.
 - Therefore, if a school district experiences large amounts of new home construction, it will typically have to continually raise real estate taxes faster than inflation. Increased real estate taxes, in turn, can force farmers to sell their land.
- Priority in Development Rights Purchases - Lehigh County receives State funds each year to purchase “development rights” from farmers. Farmers voluntarily apply for the purchase. If the development rights are purchased, the farmer continues to own the land, can continue to farm it or can sell it to another farmer. However, the land cannot be developed, except for farm structures.
 - The number of applicants for this program exceeds the funding that are available. Applicants for the funding are ranked based upon a set of standards, such as the quality of the soils. The County also has a goal of preserving farms that are adjacent to each other. Therefore, the County provides extra points in its ranking system if a farm is adjacent to other farms that are in an agricultural zoning district.

- Therefore, if a farm in Lower Macungie Township is surrounded by an agricultural district, and a very similar farm in another township is not adjacent to an agricultural district, then the farm in Lower Macungie Township would probably receive priority for the funding. As a result, agricultural zoning may make it easier for farmers in the region to sell their development rights.
- Avoiding Nuisance Complaints - Agricultural zoning can reduce conflicts between homes and farming operations. Because fewer homes would be built near farms, there would be less potential for complaints about odors, flies, early morning and late night noise, and use of pesticides. This is particularly a concern to avoid one farm becoming intensely developed for homes in the middle of several active farms.
- Avoiding Crop Damage - Agricultural zoning works to avoid the construction of many homes near farms. As a result, increased problems can be avoided from young people and all-terrain vehicles damaging crops.
- Avoiding Traffic Problems - Agricultural zoning can avoid large numbers of new homes in agricultural areas, which helps to avoid large increases in the speeds and amounts of traffic. As a result, increased difficulties of operating farm equipment on roads can be avoided.
- Reducing Costs of Road Improvements - If large numbers of new homes are permitted, it would greatly increase traffic on rural roads and cause the need for major improvements. Agricultural zoning can reduce the need for a township to spend large amounts of tax dollars on major improvements to existing roads.
- Minimizing Regulations on Agriculture - Within an agricultural conservation zoning district, it can be appropriate to allow more intensive livestock and poultry operations than in other parts of a township. This is because the township would know that only limited numbers of houses would be allowed in these areas, which would reduce the potential for conflicts in the future. However, very intense types of concentrated animal feeding operations would still be carefully regulated to avoid major problems.
- Reducing the Costs of Subdividing Lots - If a township knows that the total number of homes in an agricultural area will be limited, it may be logical for the township to reduce certain regulations for new lots in that area. For example, the township could roads to be more narrow in the agricultural area than in a residential area. The township could permit subdivision plans in the agricultural area to be simpler, which saves engineering costs and time. Curbing can be waived in agricultural areas. As a result, it would be less expensive to create one, two or three new lots.
- Minimizing the Total Amount of Land that is Developed - Agricultural zoning can direct most homes to locations where they can be served by central water and central sewage services. This greatly minimizes the total amount of land that is developed, and avoids sprawl. For example, if there is demand for 50 new homes, and if the homes use wells and septic systems, the homes would typically consume 70 or more acres. However, if the same 50 homes are developed with central water and sewage services, they could easily be accommodated on 15 acres. Therefore, the sprawled development consumes 5 or more times as much land for the same number of homes.

- Making it Easier for Farmers to Expand their Farms - Many farmers find that they must farm larger amounts of land in order to be efficient. This becomes difficult when farmers find they are outbid by developers and speculators.

This type of agricultural zoning is in place in large areas of York and Lancaster counties and a few townships in Lehigh County (including western Lower Macungie and northwestern Upper Saucon). This type of zoning has also been upheld in several major court cases in Pennsylvania.

In agricultural areas, new homes should be carefully located so that conflicts with agricultural activities are minimized. A new home should be placed where it will be as far from livestock and poultry operations as possible. Home locations should also consider prevailing winds.

One goal of agricultural conservation zoning is to try to maintain farmland in large tracts (preferably over 50 acres) that can be efficiently farmed. The intent is to try to avoid the subdivision of farmland into 3 to 10 acre lots that waste land and are too small to farm. To minimize the consumption of land, each new home lots should have the smallest lot area that still meets septic requirements (which will typically be one to two acres).

As described in the Land Use and Housing Plan section, through Transfer of Development Rights, developers should be encouraged to pay property owners in these areas to preserve their land. In return, the developer could achieve a higher density in the residential areas. Owners of land in the Agricultural conservation area should be given a bonus if they sell their development rights. Therefore, for instance, for every housing unit that is not built in the Agricultural conservation area, a developer should be allowed to build 5 housing units in another location. This incentive would help to compensate landowners for preserving their land.

A range of livestock and poultry uses should be allowed throughout the townships. However, the most intensive types of livestock uses, especially large swine farms, need to be carefully controlled to prevent severe water pollution hazards and extreme nuisances. These very intense livestock uses should be limited to sites with very large setbacks from residential zoning districts and creeks.

For any new home in an agricultural area, a township could require that a notice be placed on the deed informing a purchaser that they are buying a home in an agricultural zoning district, and should expect some nuisances from routine farming operations.