



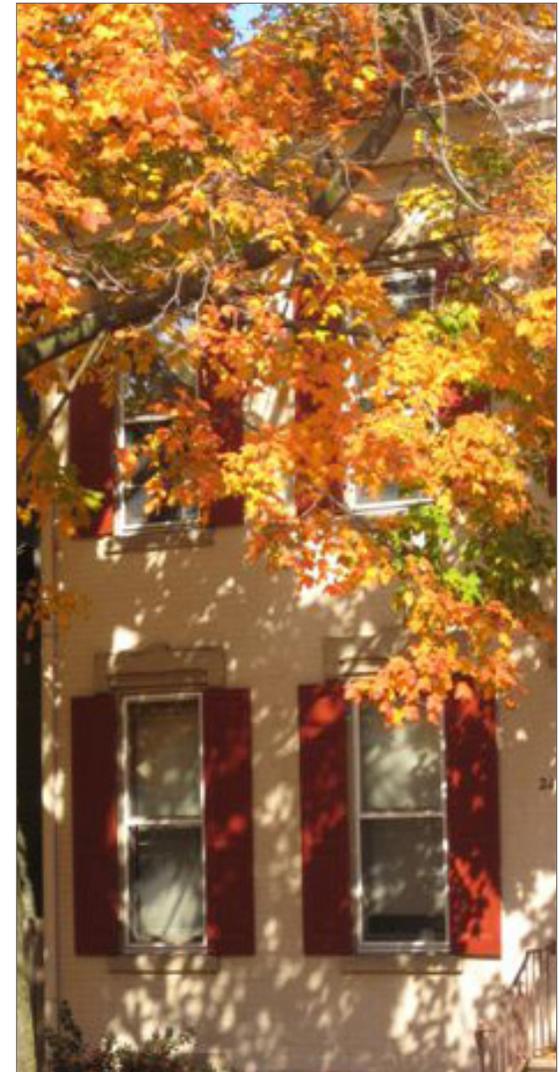
Part II Comprehensive Plan Elements

UNION COUNTY, PA

Part II - Comprehensive Plan Elements

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4. Natural and Agricultural Resources

4.1 Overview

Natural and agricultural resources have played an important role in shaping human settlement in Union County. Today, woodlands represent the predominant land use, with 60 percent of the County's land in public or privately owned forest, including approximately 100 square miles of state forest. With nearly 60,000 acres, farmland represents about 30 percent of the County's total land area, of which over 80 percent is cropland. Agriculture and forestry contribute \$122 million of economic output to the County each year.

In addition to woodlands, a wide range of natural resources, including stream and river corridors, wetlands, wildlife habitat, public and private conservation lands, and public and private working lands (forests and farms) together form the County's natural life support system or **green infrastructure** network. Union County has a strong legacy of planning to maintain and strengthen its green infrastructure resources. In 1997, it became the first county in the nation to be designated by the U.S. EPA as a "Green Community" based on the efforts of its public-private partnerships and involved citizenry.

Natural Resources

An essential component of a healthy natural resource system is the protection and conservation of water quality and supply. High-quality water resources are vital to ensuring a healthy community, sustainable economy, and the continued existence of native plant and animal species. There are approximately 50 small watersheds within Union County, each an integral part of a system of larger watersheds in the County. These smaller watersheds drain to either the West Branch or the Lower Susquehanna Subbasin and ultimately to the Chesapeake Bay watershed, which encompasses 64,000 square miles in portions of six states and the District of Columbia.

Greenways or open space corridors through the landscape are critical to sustaining the integrity of natural systems. Union County is fortunate to have substantial woodland and open space areas already preserved as state forestland, state gamelands, state parks, and Merrill Linn Conservancy sites. With the exception of the smaller Merrill Linn sites, these conservation areas generally form a "greenbelt" around the perimeter of the County. In addition, some privately owned woodland and open space corridors extend from the state forest into the central areas of the county. To provide a

SUSTAINABILITY KEY = SYSTEM INTEGRITY

System integrity is the sustainability key for the natural and agricultural resource element of the Comprehensive Plan. Maintaining the integrity of natural and agricultural systems (woodlands, greenways, waterways, wetlands, animal and plant habitats, open space, soils, and agricultural land) provides essential environmental, community health, and economic benefits.

Examples of these benefits include natural resource protection, energy conservation, improved water and air quality, recreation, food production, increased property values, and reduced costs of public utilities and services. In this context natural and agricultural resource systems include all living organisms (e.g., plants, animals, microorganisms), soils, mineral, water, and atmosphere in a physical environment functioning together as a unit. Ensuring system integrity reinforces the interconnectedness between the elements (land use, transportation, etc.) of the Comprehensive Plan and depends upon all of the other sustainability keys, including mixed-use development, energy conservation, and multi-modal transportation.

Green Infrastructure

Green infrastructure has been defined as: the Nation's natural life support system - a strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for America's communities and people.

The network encompasses a wide range of landscape elements, including natural areas – such as wetlands, woodlands, waterways, and wildlife habitat, nature preserves, wildlife corridors, greenways, parks, forests, farms, and ranches.

(greeninfrastructure.net, sponsored by the Conservation Fund and USDA Forest Service)

basis for preserving natural system integrity, a number of statewide and regionally significant sites were identified for conservation in the County's Natural Heritage Inventory (last updated in 2000). This report prioritizes important sites and provides recommendations for preservation and resource management. The priority sites include Mohn Mill Ponds, Shikellamy Bluffs, Halfway Run, Penns Creek at White Mountain, The Gooseneck, and Seebold Quarry.

The greenways or riparian buffers that border streams, lakes, rivers, and other watercourses offer a number of important benefits, such as filtering urban and agricultural runoff, limiting erosion, improving air quality, and providing opportunities for outdoor recreation. The County supports a number of high quality streams, including Penns Creek, White Deer Creek, and Class A wild Trout waters (portions of Rapid Run, Buffalo Creek, and Weikert Run). Segments of Beaver Run, Buffalo Creek, Penns Creek, Turkey Run, Limestone Run, and the West Branch of the Susquehanna River are classified as impaired by the Pennsylvania Department of Environmental Protection (PA DEP). Sources of water degradation are often unknown, but include nutrient and silt runoff from agricultural land use and leaking of mercury or PCB into the water and then aquatic life. Imple-

mentation of the Susquehanna Greenway and other potential recreational trails is underway (see Section 2.6 and 2.7 for a more complete description of existing conservation and recreation areas in the County).

Agricultural Resources

Generations of farmers have sustained a diverse agricultural economy that helps define Union County's rural character. Though agriculture has impacted native plant and animal communities, it should be considered an important resource that adds value to the green infrastructure system. Given the preponderance of livestock agriculture and the County's location in the Chesapeake Bay watershed, there is growing public concern about nutrient management of these operations.

Agriculture is a significant industry in the County representing nearly 60,000 acres and approximately 30 percent of the County's total land area. About 72 percent of agricultural land is enrolled in Agricultural Security Areas (ASAs), and the County Purchase of Agricultural Conservation Easement (PACE) program has protected 52 farms or more than 6,000 acres of its 2010 goal of 10,000 acres. The County's ultimate goal is to protect 40,000 acres by 2020. The program has a

strategy to protect large blocks of farmland and applies ranking criteria that emphasize protection of the best soils and best farms.

The majority of the County's farmers (about 70 percent) are from Plain Sect communities, predominantly Old Order Mennonites, who provide the County with a distinctive cultural perspective and uphold its agrarian traditions. In addition to the business of farming, commercial opportunities related to the natural environment, such as milling, mineral extraction and food processing, support the economies of the County's historic towns and villages.

Contract farming and confined livestock operations are growing sectors of Union County's agricultural economy. Contract arrangements separate livestock and/or poultry production from ownership. Contractors — including processors and packers — own the livestock or poultry and essentially hire the farmer to raise and care for them in his facilities. Contractors typically furnish production inputs, provide technical assistance, and pick up and deliver for slaughter, final processing and marketing. Confinement operations are known to concentrate nutrients on specific sites creating the potential for water pollution. Although federal cost-share

funds are available to improve nutrient management, Plain Sect farmers who manage many of these operations often do not participate in federal programs.

The future of these important agricultural and natural resources depends on the land use decisions being made today. It is important to plan for an integrated system that balances agriculture and resource conservation with sustainable growth. This element (or section of the plan) establishes goals and strategies designed to preserve farms and forest lands, maintain valuable agriculture and forestry economic enterprises, and protect natural resources and systems. More information on the state of the County's resources is available in Appendix C - the Agricultural and Natural Resources Technical Report prepared for Union County by American Farmland Trust (AFT)



4.2 Strengths and Issues

Natural Resources

Strengths

- Located within the Ridge and Valley geologic province, Union County has a four-season climate, including cold winters and generally warm summers with an average of about 40 inches of rainfall annually. Natural disasters, such as extreme storms or drought are not common in this region.
- About 60 percent of the County's land area is publicly or privately owned woodlands. Nearly 35 percent of the County's woodlands are publicly owned or permanently conserved as state forest, state parks, state gamelands, or Merrill W. Linn Conservancy lands. Over 40 percent of the County's land is zoned for either forestry or woodland preservation.
- Forests are important economically. The County's sawmills generated \$13 million of economic output and \$1.7 million in employment compensation in 2006.
- Forestlands provide multiple environmental benefits, such as wildlife habitat, clean air and water, erosion control, and fire suppression. Multiple research studies have shown that open space and forest preservation increase net property tax revenue.
- Forests also offer a wide range of recreation opportunities that add to the quality of life for residents and attract tourists interested in camping, hiking, fishing, and hunting.
- Woodlands offer presently untapped economic benefits, such as the potential to provide renewable sources of energy by combusting biomass (wood). While underutilized today, Union County's forested land could provide renewable and energy-efficient building products in the future.
- Many streams and river corridors, including streams classified as high quality and Class A Wild Trout waters, traverse woodlands, agricultural lands, towns, and villages throughout Union County.
- The Merrill Linn Conservancy works with non-profit, governmental and private groups to identify, evaluate, and protect land for conservation.
- Another non-profit group, the Buffalo Creek Watershed Alliance, monitors water quality and organizes stream restoration and habitat improvement projects, such as buffer plantings, within the Buffalo Creek Watershed. Similarly, the Lower Penns Creek Watershed Association's mission is to protect, conserve, and improve the Penns Creek watershed. This group was formed by residents with assistance from Union and Snyder County Conservation Districts.
- Greenways and open space corridors throughout the County perform essential environmental functions, including floodplain management, water quality protection, erosion control, and wildlife habitat. They further provide recreational and aesthetic benefits that improve the quality of life of nearby residents and attract investment in local economies.
- The Union County Natural Areas Inventory (last updated in 2000) includes a list of priority sites recommended for preservation due to their statewide significance for the protection of biological diversity in plant and animal species.
- Mifflinburg and Lewisburg have mature street tree canopies that are not only attractive, but also provide environmental benefits such as shade, energy savings, stormwater reduction, and attenuation of air pollutants.

Issues

- Scattered development within and at the edges of forest resources has divided the County's larger woodlands into smaller parcels, fragmenting and impacting natural systems.
- Population growth and shifting development patterns, in which new housing and businesses are

located farther away from town and village centers, generally increases reliance on automobiles and non-renewable energy sources, such as fossil fuels.

- Many small towns and villages of the County developed around stream and river corridors. Inappropriate development in these areas near floodplain and flood-prone areas may threaten water quality and lead to increased flooding and property damage.
- Some state forest access roads traverse private lands that are being developed for residential uses, leading to demand for maintenance and services to residential rather than rural standards.
- Managing competing public interests in recreational activities is a challenge. For example, conflicts can arise between those who enjoy hiking or mountain biking and those who enjoy dirt bikes and ATVs.
- Forest health is declining for several reasons, including unsustainable management practices such as high-grading, diseases (especially hemlocks), deer browsing, invasive species, and effects on soil chemistry of acid precipitation. These various factors inhibit the growth of native forest communities.
- Runoff from urban development and agricultural land use poses a continuing threat to the water quality of streams and rivers throughout the County.

Agricultural Resources

Strengths

- Union County's farmland provides multiple scenic, economic and environmental benefits and was identified during public meetings as one of the County's most valuable assets.
- About 72 percent of agricultural land is enrolled in Agricultural Security Areas (ASAs), and the County Purchase of Agricultural Conservation Easement (PACE) program has protected more than 6,000 acres.
- The majority of farmland in the County is classified as either Prime Farmland (land that has the best combination of physical and chemical characteristics for producing food and other agricultural crops as determined by the Secretary of Agriculture) or Farmland of Statewide Importance (designated by the State Rural Development Committee for the production of food, feed, fiber, and forage).
- The County has an active Conservation District with ample staff capacity to administer the County's PACE program and help farmers protect agricultural resources.





- The farm economy is healthy: overall net farm income grew 115 percent in 10 years from \$11.4 million to \$24.5 million in 2005.
- Over 50% of farms use “no-till” farming leading to less erosion, less fertilizer use, and less use of gasoline for farm equipment.
- Union County is a rural county with access to major metropolitan markets along the Northeast corridor and to Cooperative Extension at Penn State University.
- Given Plain Sect family structure and social order, young people stay on the farm, supplying labor and helping provide stability for agriculture in the future.

livestock operations is changing agricultural practices in the County and creating tensions between farmers and nonfarm residents.

- Costs of production inputs are increasing rapidly, especially grain and energy, putting a strain on farm operations.
- Given these pressures, some farmers would like to pursue secondary commercial activities on their land, such as feed mills, dog kennels, repair shops, welding, woodworking and other “cottage industries” (home-based businesses) that may or may not be related to the primary farming operations.

Issues

- Scattered development has fragmented the farmland base and caused conflicts between new neighbors and established farmers. These trends threaten the viability of farming in the future.
- The County has preserved less than 10 percent of its farmland but could preserve more with greater funding. The PACE program currently has a backlog of 40 applications representing 4,363 acres of farmland.
- The growth of contract arrangements and confined

4.3 Natural and Agricultural Resource Goals

Natural Resource Goals

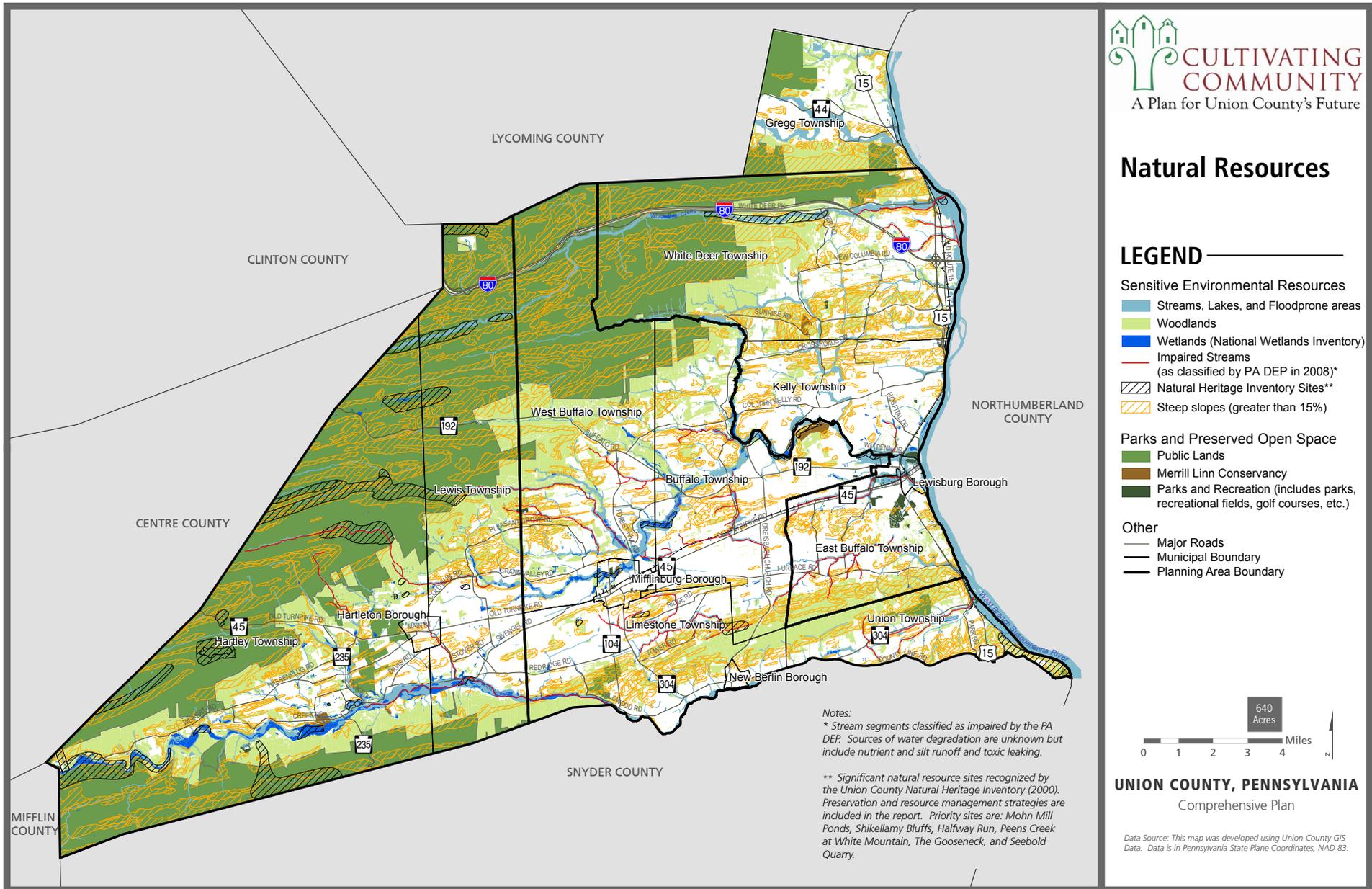
- Valued private woodland resources are protected from scattered development and fragmentation.
- The County's forests and woodland resources are managed for long-term sustainability and environmental health.
- The quality of the region's water resources, including rivers, streams and groundwater, is improved and protected.
- Greenway corridors protect stream and rivers, provide ecological habitat for native plant and animal species, and connect major conservation areas, such as the Bald Eagle State Forest with other areas of the County.
- Important natural areas are monitored on a regular basis and protected from threats to their environmental health and biological diversity.
- Quality-of-life for residents in Union County is enhanced through diverse and accessible opportunities for outdoor recreation in natural settings.
- Development patterns allow opportunities for use of alternative energy sources (e.g., solar, wind, geothermal), conservation of natural resources, and decreased reliance on automobiles for transportation.

Agricultural Resource Goals

- A minimum of 40,000 acres of productive farmland are permanently protected to support the agricultural economy, and prime and statewide important soils are preserved.
- Scattered development and conflicts between new neighbors and existing farms are minimized to sustain the agricultural economy, a rural quality of life, and landscape character.
- The farm economy is strong, there is adequate agricultural infrastructure, and farmers have sufficient support to adapt to changing markets and socio-economic forces.
- Farmers practice sustainable agricultural production and conservation practices to protect and enhance environmental quality.



Figure 4-1
Natural Resources



Natural Resources

LEGEND

- Sensitive Environmental Resources**
- Streams, Lakes, and Floodprone areas
 - Woodlands
 - Wetlands (National Wetlands Inventory)
 - Impaired Streams (as classified by PA DEP in 2008)*
 - Natural Heritage Inventory Sites**
 - Steep slopes (greater than 15%)
- Parks and Preserved Open Space**
- Public Lands
 - Merrill Linn Conservancy
 - Parks and Recreation (includes parks, recreational fields, golf courses, etc.)
- Other**
- Major Roads
 - Municipal Boundary
 - Planning Area Boundary



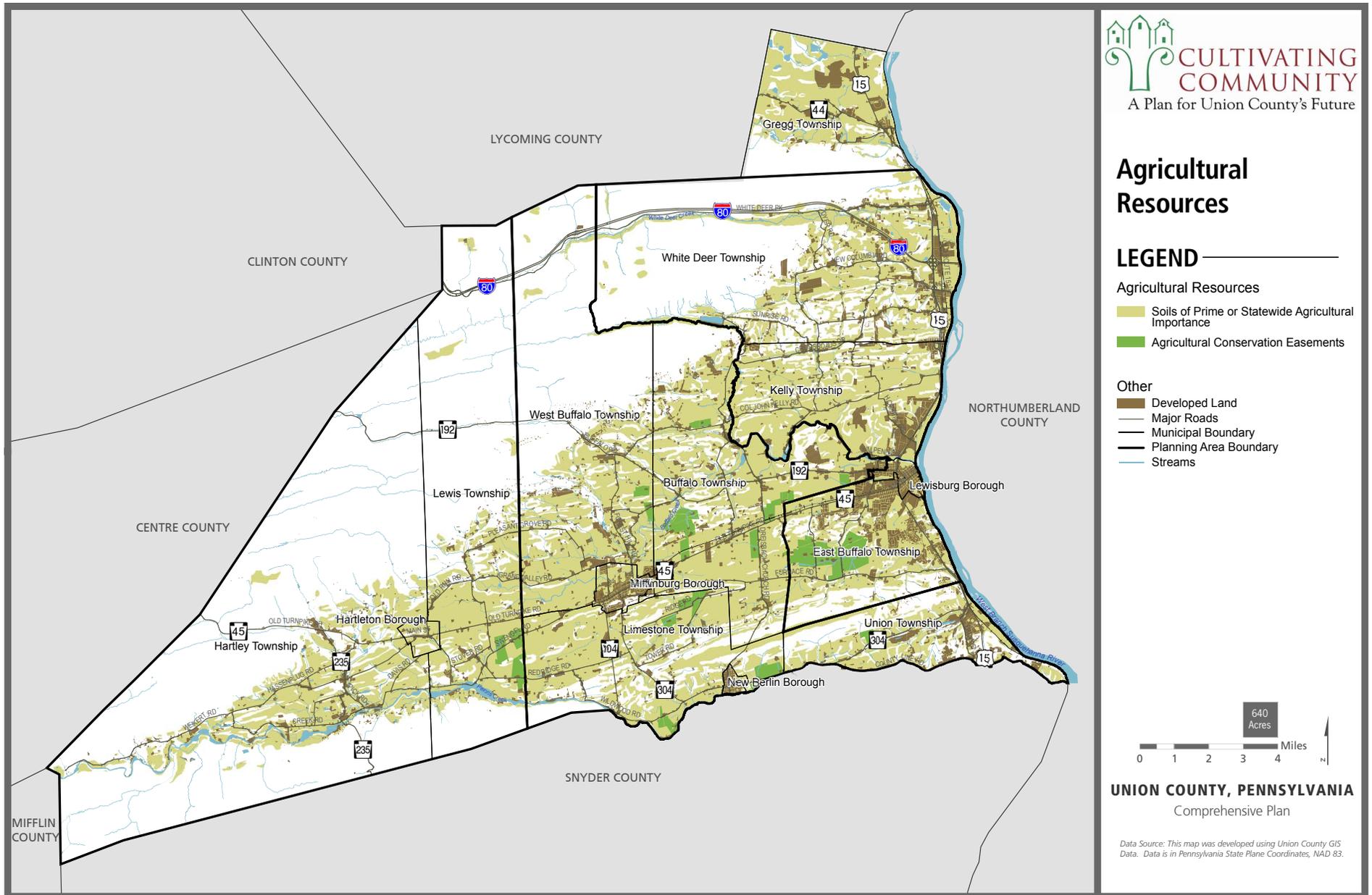
UNION COUNTY, PENNSYLVANIA
Comprehensive Plan

Data Source: This map was developed using Union County GIS Data. Data is in Pennsylvania State Plane Coordinates, NAD 83.

Notes:
* Stream segments classified as impaired by the PA DEP. Sources of water degradation are unknown but include nutrient and silt runoff and toxic leaking.

** Significant natural resource sites recognized by the Union County Natural Heritage Inventory (2000). Preservation and resource management strategies are included in the report. Priority sites are: Mohn Mill Ponds, Shikellamy Bluffs, Halfway Run, Peens Creek at White Mountain, The Gooseneck, and Seebold Quarry.

Figure 4-2
Cultural Resources



4.4 Natural and Agricultural Resource Strategies

TRANSFER OF DEVELOPMENT RIGHTS (TDR)

A TDR ordinance allows property owners in designated sending areas (e.g., valuable agricultural or woodlands resource lands) to transfer development potential to parcels in designated receiving areas (e.g., Growth Areas). Typically, owners purchasing the development rights are allowed to develop at a higher residential density in receiving areas than otherwise would be permitted under existing zoning. The highest quality natural resources lands are often designated as sending areas. TDR programs can be established at the municipal, county or state level. Pennsylvania requires a multi-municipal plan for the transfer of development rights across municipalities.

The use of TDR programs to preserve agricultural land and open space has been successful in many places across the Country such as the Pinelands in New Jersey, Warwick Township in Lancaster County, Montgomery County, Maryland and Boulder County, Colorado.

Natural Resource Strategies

4-1. Enact regulatory provisions and incentives to preserve natural resources.

Natural resource preservation is essential for long-term environmental health in the County and larger region. Preservation of rural resources such as sensitive natural features and scenic views is also a sustainability principle of this Plan (see Chapter 3). Municipalities can adopt regulations and incentives to support preservation of natural resources. Conservation zoning, which establishes larger minimum lot sizes based on the carrying capacity of the land, and conservation subdivision design, which allows development on smaller lots while maintaining large tracts of open space, and Transfer of Development Rights (TDR) are examples of available tools (see Section 5.4 for more information on conservation design).

4-2. Work with private landowners to protect and restore natural resource lands.

There are a number of effective conservation tools available to private landowners. In Union County, the Merrill W. Linn Land and Waterways Conservancy works with private landowners to protect land through conservation easements, land gifts, and purchases.

Additional approaches include land management plans (to guide native habitat preservation and restoration) and the promotion of sustainable forestry practices. Private woodland owners can join together to form a marketing cooperative that adds value to locally grown forest products by tapping into niche markets and promotes sustainable forestry practices. In addition, owners can improve the market value of harvests by having their operation certified. Certified forests are managed in an environmentally responsible manner for long-term sustainability. Certification uses an independent scientific review process that determines if an operation maintains a healthy forest ecosystem. Pennsylvania has over 2 million acres of certified forestland, the largest amount of any state in the nation.

4-3. Develop and implement a comprehensive strategy to improve the quality of the County's waterways.

Many high-quality streams and river corridors traverse the County's woodlands, agricultural lands, towns, and villages. A comprehensive waterways strategy can help improve the County's watersheds and should include techniques to monitor and improve streams impaired by urban and agricultural runoff and maintain high-quality waterways.

Potential components of the waterways strategy include:

- Watershed management plans / partnerships with watershed organizations
- Riparian buffer protection through measures such as planting native vegetation along waterways
- Ordinances to protect streams and improve water quality
- Stormwater best management practices
- Partnerships with farmers through the Union County conservation district to reduce impacts of agricultural operations on waterways

4-4. Initiate a "green infrastructure" approach to preserving, restoring, and managing natural resources as part of an integrated system.

The purpose of this strategy is to establish an interconnected system of green infrastructure **hubs** – forested areas, parks, and other concentrations of "green" resources – connected by **greenways** – open space corridors along linear features such as streams. At present substantial woodland and open space areas are preserved in public ownership, generally forming a "green-belt" around the perimeter of Union County. A green infrastructure approach would extend and connect this greenbelt to the County's towns and villages through a system of greenways and open space linkages through the central valley. A key component of this system, the Susquehanna River Greenway, will provide a connection to the statewide greenway system. To implement this approach, a plan should be developed that updates the Union County Natural Heritage Inventory and integrates it with a broader strategy to preserve, restore, and create a green infrastructure system throughout the County. Elements of the green infrastructure plan should include, among others:



- Definition of a countywide network of greenways and open space
- Protection and restoration of significant natural areas and the ecological functions needed to sustain them
- Green features in existing communities (e.g., the urban tree canopy) and new developments (e.g., street trees and open spaces)
- A network of parks and outdoor recreational facilities, including greenways and trails
- Watershed protection and enhancement (e.g., restoration of riparian vegetation along streams)
- Urban green infrastructure (e.g., green streets, green roofs, pedestrian and bicycle networks, “rain gardens” that absorb stormwater on site, etc.)

Agricultural Resource Strategies

4-5. Strengthen the existing Union County Purchase of Agricultural Conservation Easements (PACE) program.

As noted, the County PACE Program has preserved more than 6,000 acres and has an ultimate goal to protect 40,000 acres by the year 2020. The program has a strategy to protect large blocks of farmland and applies ranking criteria that emphasize protection of the best soils and best farms. As easement acquisition is expensive with increasing costs over time, potential strategies include boosting funding to meet the short-term (2010) program goal of 10,000 acres, pursuing diversified funding (e.g., federal funding¹⁰, encouraging townships to contribute a larger share) to match the County contributions, and evaluating the use of other tools, such as donated easement, fee-simple acquisition, and Transfer of Development Rights (TDR).

¹⁰ The federal Farmland Protection Program provides matching funds for easement acquisitions and is funded at \$646 million for the next four years.

4-6. Enact municipal or multi-municipal policies, regulations, and infrastructure investments to direct new development away from agricultural lands to designated growth areas. (See also Land Use Strategies 5-1 to 5-3.)

Figure 5-1 (Future Land Use) designates Growth Areas and Rural Resource Areas (Conservation/Woodland and Agriculture). Municipalities should evaluate current zoning ordinances and adopt policies and regulations to strictly limit development in Rural Resource Areas. Potential tools include maintaining or establishing effective agricultural zoning, creating a countywide TDR program, limiting infrastructure extensions outside of growth areas, and locating commercial development related to the rural economy in Rural Business Centers.

4-7. Reduce conflicts between agriculture and other land uses.

Scattered development in rural areas causes fragmentation of agricultural resources, creates conflicts with neighbors and escalating land prices and real estate taxes, all of which affect profitability for farmers. In Union County, conflicts have been exacerbated with the rise of con-

tract arrangements and the increase in confined animal feeding operations (CAFOs). Potential tools to reduce conflicts include:

- Conservation subdivision ordinances that create buffers between new homes and existing farms
- Other buffer/land use separation requirements
- Notification requirements for prospective buyers of nearby real estate
- Local right-to-farm ordinances
- Mediation program modeled after Maryland's "Farm Sense" Program
- Public education campaigns
- "Cottage industry" or on-farm¹¹ ordinances to regulate on-farm businesses that do not directly relate to the agricultural use of the land

¹¹ Cottage industries, sometimes referred to as on-farm businesses, generally refer to part-time, home-based operations. Traditionally, cottage industries were related to home-based manufacturing generally on farms (e.g., spinning, sewing, furniture making, etc.). The definition has expanded to include almost any small home-based businesses (home-based assembly, dog kennels, technology hosting, Internet/eBay Vendors, etc.).

4-8. Institute an on-going, multi-faceted approach to supporting the "business" of farming.

Sustaining farm viability is important to agricultural land use and the local economy. Municipalities can help support the agricultural economy in a number of ways. For example, Pennsylvania Cost of Community Services studies have repeatedly shown that agricultural properties contribute a surplus of revenue for public services such as schools. Municipalities can consider reducing or freezing property taxes on preserved farms to create an incentive for preservation.

The growing demand for alternative management systems (e.g., organic, pasture-raised, locally grown food, and antibiotic-free meat, etc.) offers potential growth for agriculture in the County. For example, Bucknell University in Lewisburg purchases 25% of its produce locally from growers, suppliers, and dairies within 150 miles of the University. Other potential elements of an economic development strategy for agriculture include:

- Support and enhance agricultural infrastructure
- Support and enhance traditional livestock agriculture in regional markets

Maryland's FARM SENSE Program

Farm Sense is a USDA-certified mediation program. It provides a low cost, voluntary, and confidential dispute resolution system in which a neutral party helps disputing parties to reach a mutually agreeable solution. The program is funded through matching grants from the USDA Farm Service Agency's (FSA) Agricultural Mediation Program. Farm Sense provides mediation services for farmers involved in conflicts that could affect the profitability of their enterprises, such as a nuisance dispute with a neighbor. Mediation generally resolves disputes faster than traditional litigation. Farm Sense offers farmers a free initial consultation and can partially or in some cases totally waive program fees based on the parties' income.





- Support opportunities for on-farm energy production techniques (e.g., methane power)
- Promote agri-tourism, farmers' markets, community supported agriculture (CSAs), farm-stands, and accessory farm businesses
- Create local distribution chains to reduce barriers to selling Union County milk and farm products

4-9. Promote agricultural conservation and nutrient management practices that protect Union County's waterways and the larger Chesapeake Bay watershed.

Confined livestock operations (CAFOs) are known to concentrate nutrients, creating the potential for water pollution. Nutrient management is heavily regulated in Pennsylvania to prevent water pollution and is an issue of public concern, in particular because of Union County's location in the Chesapeake Bay watershed. Federal cost-share funds are available to improve nutrient management; however Plain Sect farmers who manage many of these operations often do not participate in federal programs. Other potential strategies to protect the County's waterways

include conservation technical assistance, conservation planning, best practices, use of regional or on-site manure digesters, education for non-farmers, and nutrient trading.

