Chapter 2
County Overview

Regional Position

Situated within the picturesque Susquehanna River Valley in Central Pennsylvania, Union County is located within a three-to-four hour drive of several major cities. About 165 miles northwest of Philadelphia, 181 miles north of Washington, D.C., 141 miles north of Baltimore, MD, 200 miles east of Pittsburgh and 200 miles west of New York City, NY, Union County is easily accessible via Interstate 80 and US Route 15 (Figure 1).

Union County is bordered to the east by Northumberland County, to the direct south by Snyder County, to the west by Mifflin, Centre, and Clinton Counties, and to the north by Lycoming County.

The Susquehanna River, which forms the eastern boundary of the county, has played an important role in shaping the region's economic, community, and cultural identity, what locals have described as being "conveniently isolated". Union County provides an attractive rural quality of life yet is easily accessible to the major metropolitan areas of the Mid-Atlantic region. The region's quality of life is in large part due to its strong agricultural heritage and small historic downtowns.

While agriculture remains at the foundation of the county's heritage, industries such as agribusiness, wood products, education, and tourism, in addition to residential growth trends, are factors which will influence the county's future. Understanding the county's position in the region and current demographic, employment, and land use trends is essential to creating a plan for the future that balances conservation with sustainable growth.

Overview of Union County

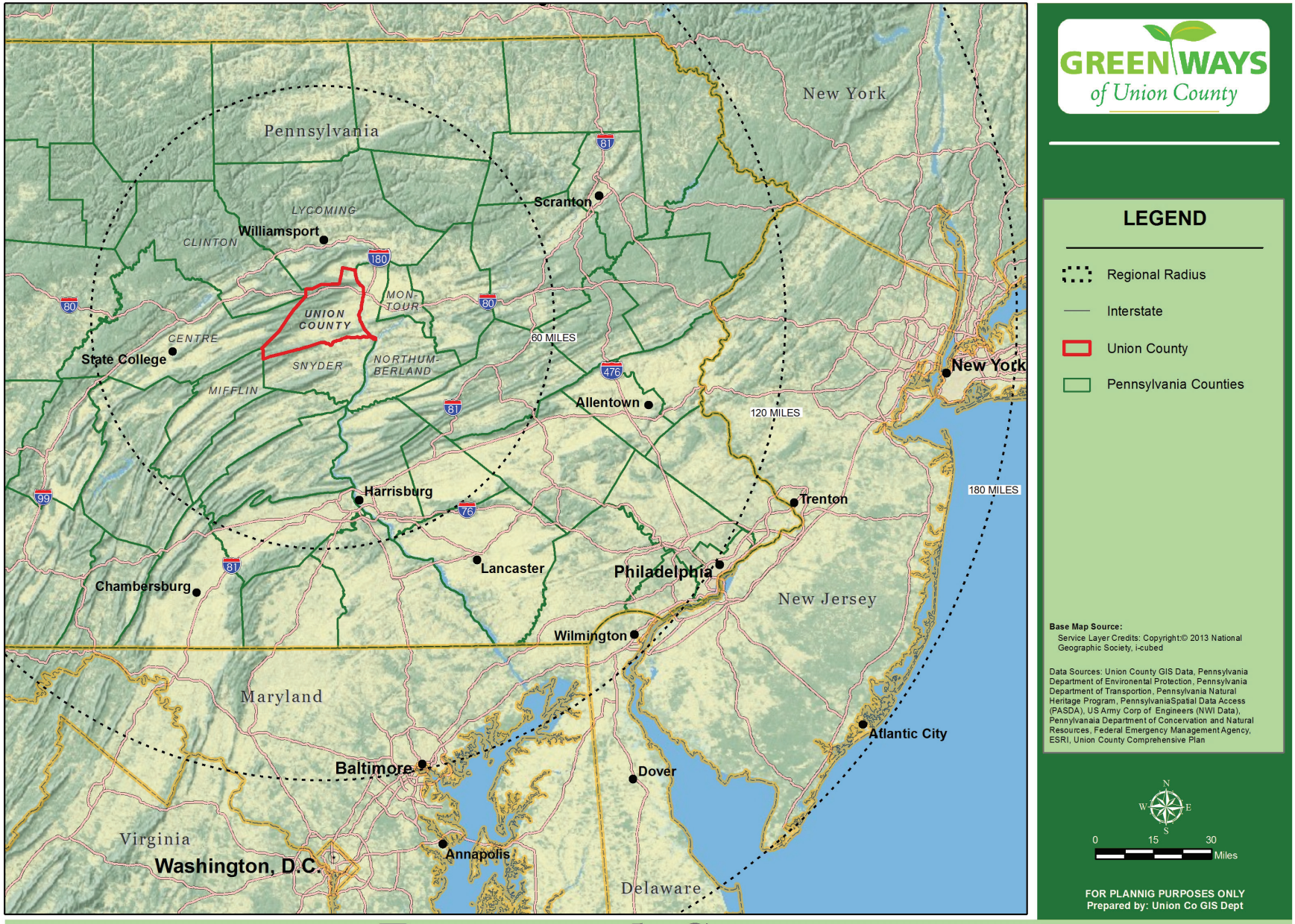
The county has 10 townships:

- Buffalo Township
- East Buffalo Township
- Gregg Township
- Hartley Township
- Kelly Township
- Lewis Township
- Limestone Township
- Union Township
- West Buffalo Township
- White Deer Township

And 4 boroughs:

- Hartleton Borough
- Lewisburg Borough
- Mifflinburg Borough
- New Berlin Borough

Figure 1. Regional Context Map



Regional Context

Population

Union County population, as illustrated in Figure 2 has been increasing since the county's formation in 1813, with the exception of a small decline which occurred between 1890 and 1920. Between 1920 and 1990, the County's population doubled in size and is projected to increase through 2040.

Recent Population Growth

According to the U.S. Census, Union County experienced an 8% population increase (3,323 persons) between 2000 and 2010. This was tied for the second highest increase in the entire 11-county SEDA-COG region trailing only Centre County which grew at a faster pace. For comparison the total population in Lycoming County decreased by 3.3% and Northumberland County remained the same during the period. Refer to Figure 3 for a comparison to other counties in the region.

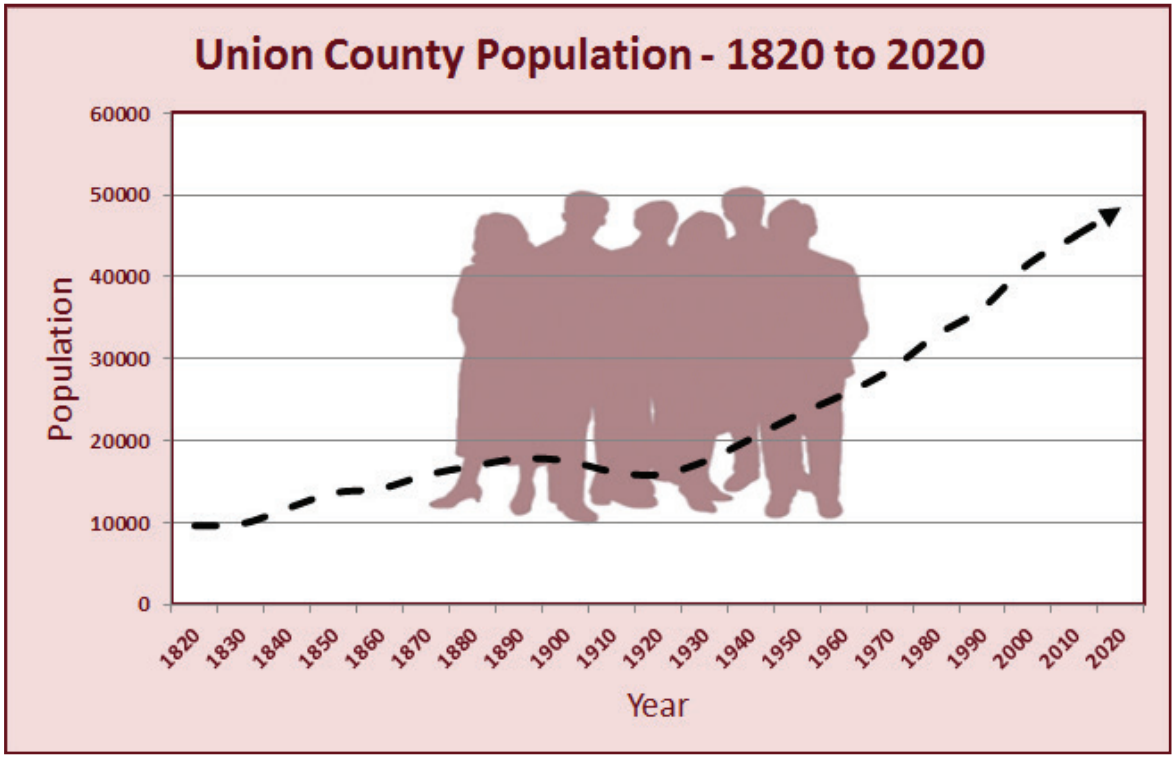
Population Estimates and Projections

The US Census Bureau provides estimates of population by county, the most recent of which were for 2013 and it shows there has been a slight total population decline in Union County since 2010. However this is debatable, given the continued growth in housing units and the long-term growth suggested by population projections prepared by the Pennsylvania State Data Center and the Union County Planning Commission. The Pennsylvania State Data Center projects Union County population to increase by 14.9% reaching 51,641 persons by 2040, while the Planning Commission calculations suggest a greater growth rate of 23% between 2010 and 2040. Even using the most conservative figures, population will grow significantly which will impact community resources including greenways and open space.

Municipal Change 2000 to 2010

The eastern area of Union County that includes East Buffalo, Kelly, Gregg, Union and White Deer Townships had the largest numerical and percentage increase in total population between 2000 and 2010. Kelly Township led the way with a 22% increase, followed by East Buffalo Township at 11.9% and Union Township at 11.4%. It was not unexpected that the area along the US Route 15 corridor saw the most growth. The municipalities in the central part of the county, including Buffalo, Limestone, and West Buffalo Townships, also experienced population increases as did the municipalities of Lewis and Hartley Townships and Hartleton Borough, but this was the slowest growing area of the county. Incidentally of the four boroughs only Mifflinburg lost population between 2000

Figure 2. Union County Population



and 2010 while the other three had cumulative growth of 3.4%.

Population Age Groups

From 2000 to 2010 the county population, like most of Pennsylvania, continued to age. Median age increased from 35.8 to 38.5 during this span and the percentage of older residents increased while the number of younger residents as a percentage of overall population decreased. In 2000 49% of the population was under the age of 35 but by 2010 that dropped to 45%. Conversely in 2000 22% of residents were over age 55, but by 2010 this rose to 26% as more Baby Boomers began to call Union County home. This mimics statewide trends of lower fertility rates and fewer children per household which has multiple public policy implications including for greenways, open space, and public recreation. Figure 4 shows the current age distribution of the population and how the different age groups have changed over the past several decades. Since 1980 the number of residents over age 45 has increased by 88% while overall population during the same period rose by 37%.

Figure 3. Change in County Population

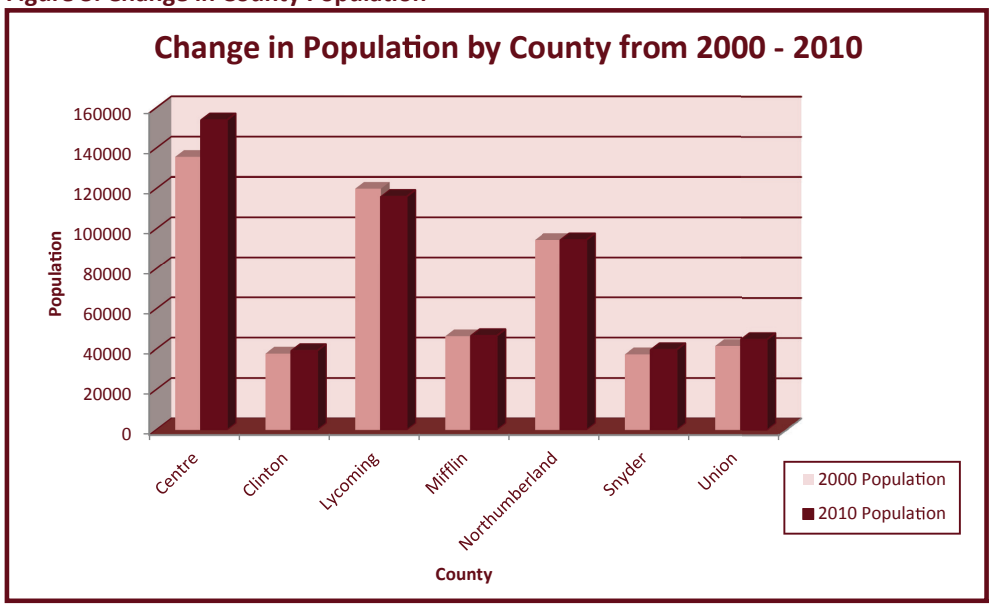
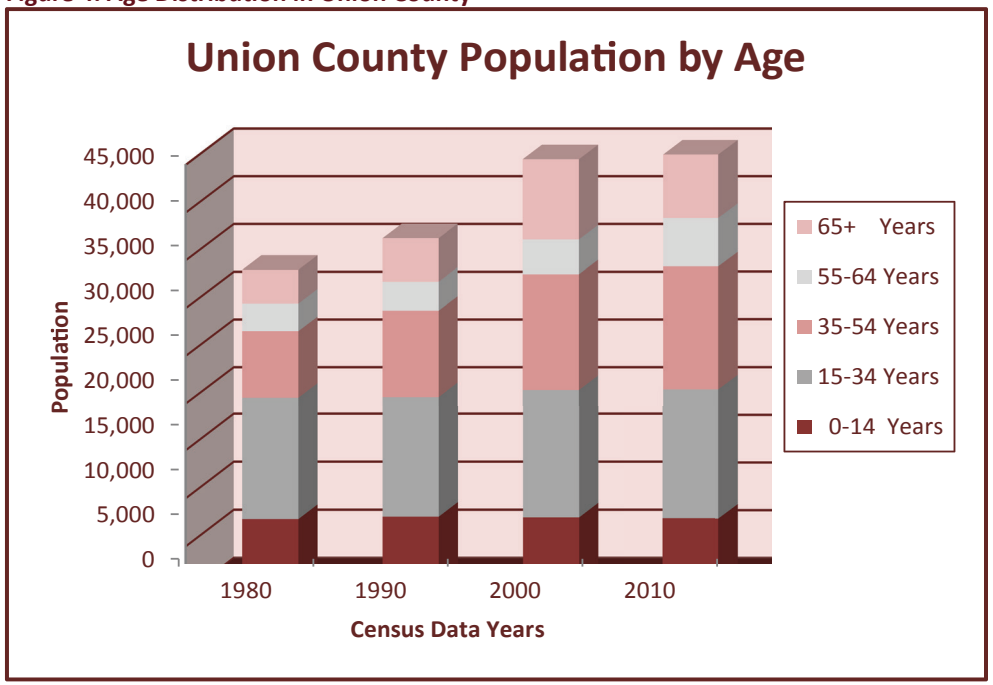


Figure 4. Age Distribution in Union County



Housing

Change in Housing Units

At the time of the 2000 Census there were 14,684 housing units in Union County. By the 2010 Census this grew to 16,997, a 15.8% increase. The Census Bureau in 2012 estimated that 36 more housing units were gained since 2010, bringing the total number of units to 17,033 for an overall growth rate of 16% during the 12 year period. However it should be noted that local data shows zoning and/or building permits were issued for 110 new housing units during 2011 and 2012, three times the Census Bureau estimate.

It is important to highlight that from the 2000 to 2010 time period, housing units grew at a faster rate than population. This trend may be a result of multiple factors, such as an overall decrease in household size, growth in the percentage of older householders, and/or the shrinking percentage of younger households (25-35 year old age bracket) in the county. The Union County Planning Commission projects increases in housing units in all of the municipalities through 2040 with the largest increases in White Deer and East Buffalo Townships. The Planning Commission also projects significant housing growth in Buffalo, Kelly and West Buffalo Townships.

Housing Types

The predominant housing type within the county is the Single Family Dwelling unit, which is estimated to be 70% of the housing stock according to the Census Bureau estimates. From 2010 to 2014, Union County Tax Assessment and GIS records indicate 204 residential units were constructed with 92% being single family dwellings and 8% multi-family. The growth in single family detached homes is expected to retract to reflect an aging population as demographics shifts continue, including the trend among Millennials to resist or delay home ownership.

Household Composition

In 2000 the US Census reported that 70% of all households were occupied by families and 25% were persons living alone. In 2010 family households dropped to 67% and single person households climbed to 28% with average household size also shrinking from 2.5 to 2.4 persons countywide, which continues a 20 year trend of smaller households.

Economy

Like the rest of Pennsylvania and the United States Union County found itself struggling from late 2007 to 2012 to survive and recover from the nation's worst economic recession since the Great Depression. While conditions proved challenging for residents, employers, and local governments the county was fortunate in that a number local economic sectors remained strong despite national and global struggles. Bucknell University, Evangelical Community Hospital, the Federal Prison System, Riverwoods, Buffalo Valley Lutheran Village, and local manufacturers helped minimize the impacts within the county. Additionally the mortgage foreclosure crisis did not rip through the county as it did in many areas.

Unemployment Rates

The Union County civilian unemployment rate stands at 5.8% according to the Pennsylvania Department of Labor and Industry, which is equal to the state average. In recent years the county had one of the lowest unemployment rates in the region, but now it is one of the highest. This could be due to the steady loss of good paying manufacturing jobs.

Employment Projections

The Pennsylvania Center for Workforce Information and Analysis (CWIA) has prepared employment projections by industry for the Central Pennsylvania area. This area includes Union County and the counties that are contiguous. The long-term projections show a growth of 5% or the addition of 289,090 jobs from 2010 to 2020.

The largest net growth in employment in the Central Pennsylvania area is projected to be in Health Care and Social Assistance (6,540), Construction (1,620) and Professional and Technical Services (1,160). The largest decrease in employment is projected to be in non-durable Manufacturing at -7.2%, Finance and Insurance at -5.3% and Government -4.3%.

Median Family & Household Income

According to the 2000 Census, Union County had a median family income of $47,538 and median household income of $40,336. The American Community Survey 5-Year Estimates of 2012 indicate that median family income and median household income rose to $55,964 and $46,737 respectively. However after adjusting for inflation, Union County incomes did not keep pace with inflation and residents actually lost ground economically. For example, the $55,964 median family income of 2012 had approximately the same purchasing power as $41,974 in 2000. It should also be noted the number of people living in poverty increased to 12.6% by 2012, up from 8.8% in 2000.

Land Use and Zoning

Land Use

The land use patterns that are prevalent and valued in Union County – such as farmland, woodlands and open space dotted with small towns and rural villages – mirror the land use patterns in the Central Pennsylvania region (See Figure 5). This general pattern of ridges and valleys distinguishes the region from other places. While Pennsylvania ranks 45th of all states in population growth, it ranks 12th in land developed. The long-term development pattern occurring in the region and state is fiscally and environmentally unsustainable.

The existing land use pattern in Union County is shaped by the county's natural features and agricultural heritage. Figure 5 summarizes the amount of land within each major land use category.

Approximately 60 percent of Union County is classified as woodlands, which includes state owned, federally owned, or privately owned forests. These woodlands are concentrated in the mountain ridges along the northern and southern boundaries of the county. Agricultural

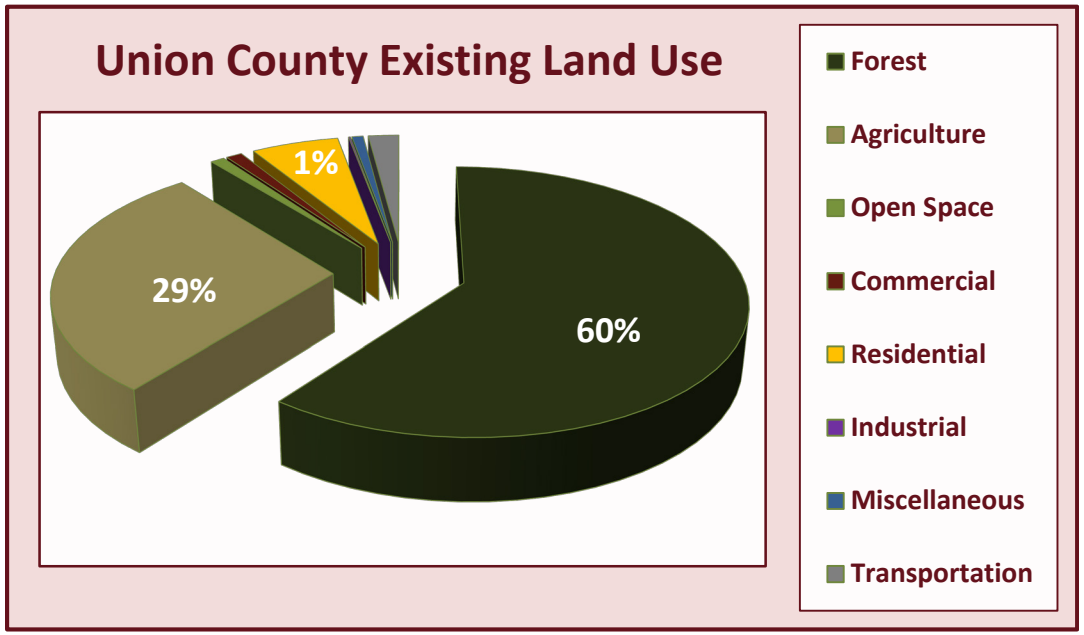
land comprises the second highest percentage of land use in the county (29%). The county's most productive agricultural soils are located in the Buffalo and Penns Creek valleys and are generally surrounded by forested land to the north, west, and south and the Susquehanna River to the east.

Another one percent of county land area is other open space and water resources leaving 10% of the county as development that is primarily in the form of existing towns and villages that include a mix of residential, commercial, institutional, and industrial land uses.

Over the past few decades as population growth has occurred in the county, residential, commercial, and employment-based land uses have spread outward from the traditional towns and villages, altering the historic land use pattern. Residential growth has been most pronounced along the edges between woodlands and agricultural land within Buffalo, Lewis, Limestone, West Buffalo, and White Deer Townships. New non-residential development also has extended outside of the historic town centers in Mifflinburg and Lewisburg along Route 45 and Route 15.

The county and multi-municipal comprehensive planning process resulted in the designation of primary and secondary growth areas within the county (See Figure 6) and established a goal that 80% of new development would occur in those areas with the remaining 20% outside of the growth areas. A review of new commercial and residential development between 2010 and 2014 illustrates where recent development has occurred. Based on a visual analysis using GIS data, approximately 44% of this development has been within designated growth areas while 56% has occurred elsewhere, primarily in rural resource areas. It is clear this pattern is not meeting the targets established by the plan.

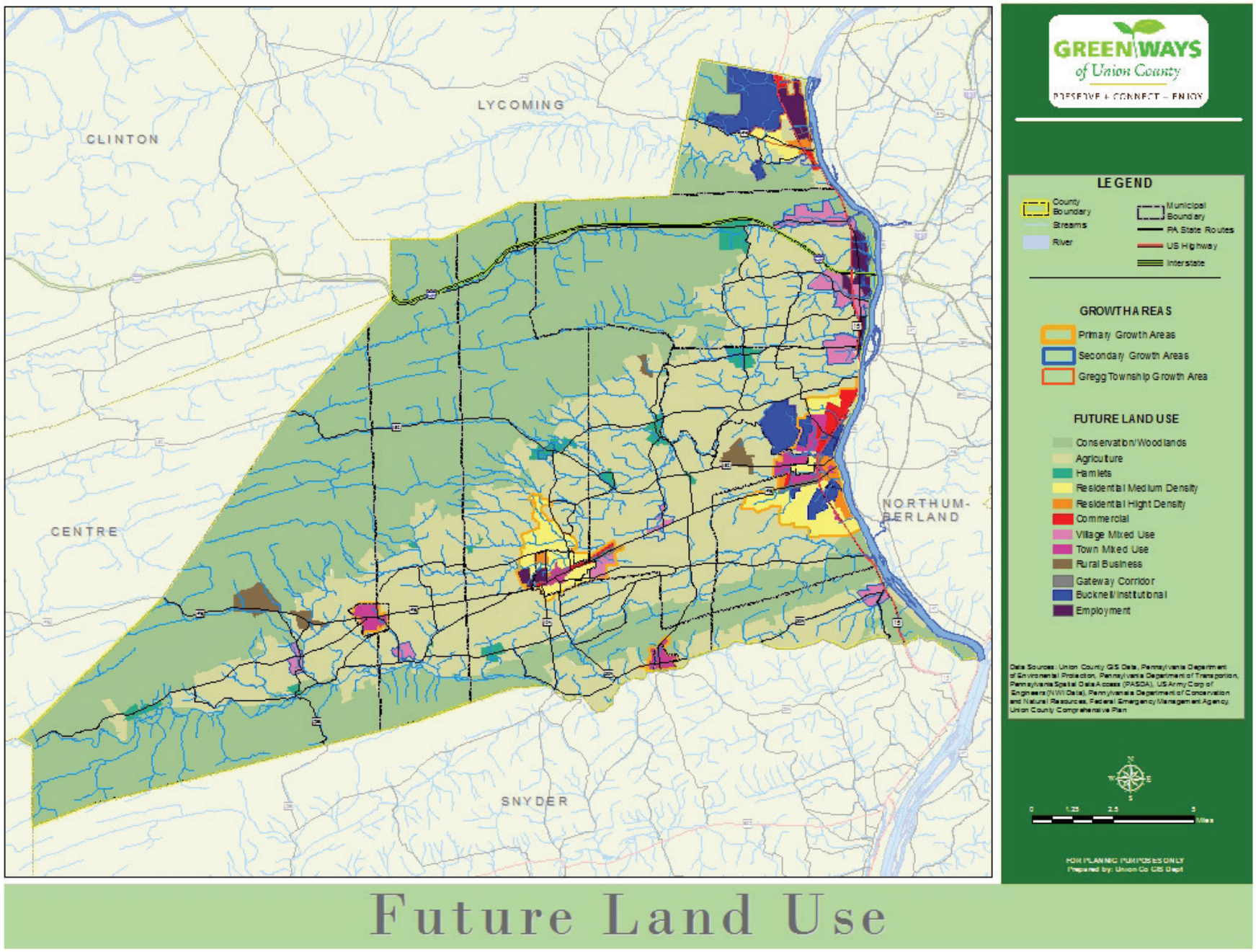
Figure 5. Existing Land Use



Zoning

Zoning regulations within Union County's municipalities have a major influence on land use in the county. A significant portion of the county (46%) is zoned for forestry/wildlife preservation with limited residential uses permitted. Further, about 27% of the county falls within the Agricultural Preservation Districts. In most of the Agricultural Preservation Districts, residential subdivisions are permitted on a sliding scale basis, which varies permitted densities based on parcel size. It is important to note that Limestone Township, Union Township, and Hartleton Borough, representing 8% of the county land area, do not have zoning.

Figure 6. Future Land Use



Future Land Use

Transportation

Given the rural nature of the county, it is not unexpected that the majority of trips taken, whether for work commute or other purposes, are vehicular. According to available data, only 918 households in the county do not have a personal vehicle available. Many of these are likely Plain Sect households that rely on horse and buggy and bicycle as primary transport modes. Transportation to work is 87% by car with 8% walking and 1% by bicycle. However, in Lewisburg Borough, which is more densely developed and has an extensive sidewalk and street network, the combined rate of walking and bicycling is near 30%.

Over the past five years, it does appear that more people in the county are walking and bicycling both for health and recreation and as a form of transportation. This would mirror a national trend as the US Census Bureau in May 2014 released a report documenting that biking to work increased by 60% over the last decade in the United States. In Union County, according to PennDOT data, vehicle miles traveled (VMT) has decreased in recent years which is another indicator that people are driving less.

The Buffalo Valley Rail Trail opened in November 2011 and Bucknell University faculty and students began collecting data on use the following year. Automated and manual counts show that estimated trail use is 400 persons a day and approximately 80,000 to 100,000 unique visits annually. Based on interviews of trail users, we also know people are using the trail for both recreation and transportation purposes.

The implication for greenway and open space planning is that county residents have demonstrated they will use greenways and trails if available. In fact, the rail trail on average sees a higher volume of bikers and walkers on a daily basis than many of our rural roads see in traffic volume. Another point is that greenways and open space can serve multiple purposes including integration of alternate transportation routes for non-motorized travelers.

Community Health

Union County is fortunate to be ranked as the healthiest county in Pennsylvania according to analysis conducted by the Robert Woods Johnson Foundation. Part of this can be attributed to the high quality health care available to residents in the region along with a variety of positive environmental and socio-economic factors. However even with such a high ranking there is still room for improvement as the diabetes rate (8.1%) and overall obesity rate (26.9%) are just under the state average while the adult obesity rate (30%) is the same as for Pennsylvania. Also the Pennsylvania Department of Health reports heart disease as the number one cause of county deaths.

The cost to employers, the economy, and society from these preventable health conditions is well documented as some sources estimate that more than $7 billion a year is spent in the state on obesity related ailments.[6] Additionally statewide it is reported that 65% of adults are overweight and 12% of children are now obese. Furthermore 26% of residents report they did not participate in any physical activity during the past month and 31% of children watch three hours or more of television on a school day. And if that is not enough, researchers at the Trust for America's Health are projecting that by 2030 over 56% of Pennsylvanians will be obese and associated medial costs will increase by 9%.

Open space and greenways that offer publicly accessible areas for exercise such as parks and trails in proximity to where people live can contribute to healthier lifestyles, improved physical fitness and potentially reduced medical costs.

Children in neighborhoods that lack access to parks, playgrounds, and recreation centers have a 20% to 45 % greater risk of becoming overweight. In general, states with the highest levels of bicycling and walking have the lowest levels of obesity, high blood pressure and diabetes, and have the greatest percentage of adults who meet the recommended 30-plus minutes a day of physical activity.[6]

In 2011, the American Heart Association published a review of more than 200 studies and concluded that for every $1 spent on building bike paths, approximately $3 in medical expenses would be saved.[7]

Notes

1 "Natural Connections: Pennsylvania's Statewide Comprehensive Recreation Plan 2014 - 2019" p.3. <http://paoutdoorrecplan.com/cs/groups/public/documents/document/dcnr_20030867.pdf>

2 "Outdoor Participation Report 2013" <http://atfiles.org/files/pdf/OutdoorIndustryTrends7.pdf>

3 "Outdoor Recreation in the Northern United States" p.26. <http://www.fs.fed.us/nrs/pubs/gtr/gtr_nrs100.pdf> USDA Forest Service, August 2012

4 "2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation in Pennsylvania" p.5. <https://www.census.gov/prod/2013pubs/fhw11-pa.pdf>

5 Bicycling and Walking in the United States. Washington, D.C.: Alliance for Biking & Walking, 2010. http://www.peoplepoweredmovement.org/site/index.php/site/benchmarkingdownload/ (accessed April 13, 2010).

6 Weintrub, WS et al, AHA Policy Statement: Value of Primordial and Primary Prevention for Cardiovascular Disease. Circulation 124: 967-990. 2011.

7 Schmitt, Angie. "The Physical Benefits of Biking and Walking Paths". Streetsblog. August 7, 2014. <http://urbanmilwaukee.com/2014/08/07/streetsblog-the-physical-benefits-of-biking-and-walking-paths/>

Chapter 3
Greenway & Open Space Resources

Natural Resources

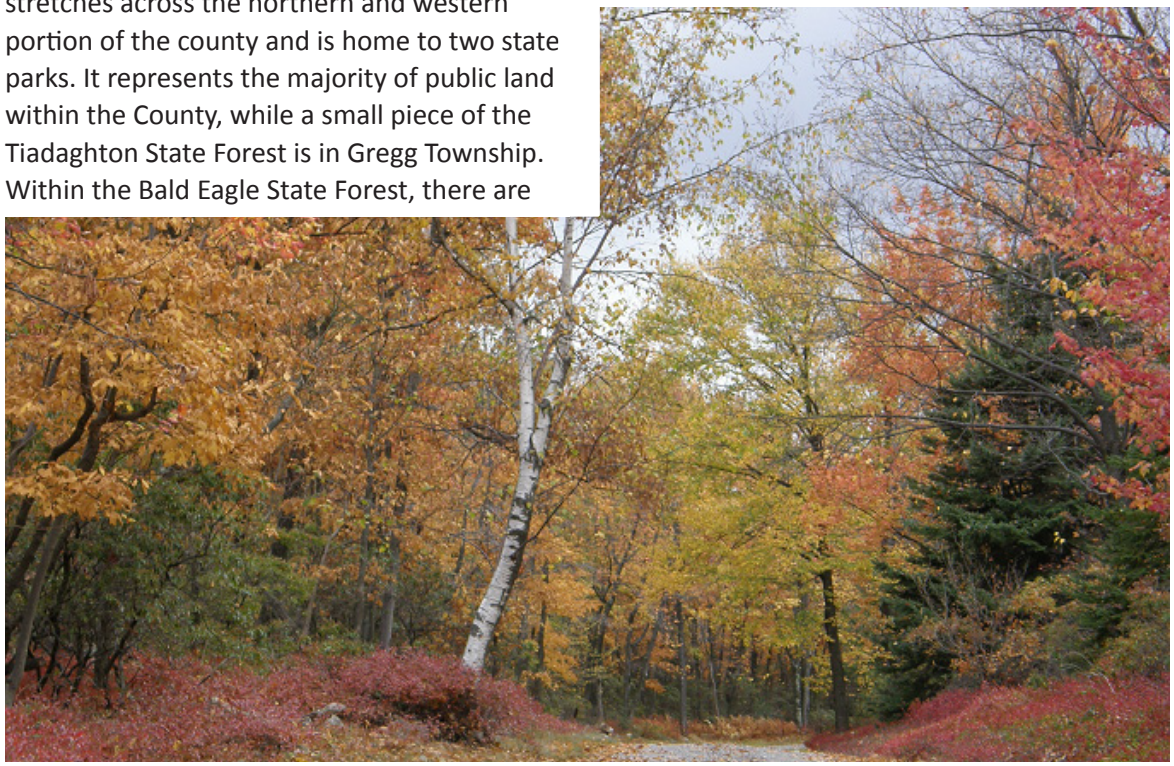
Union County is rich in natural features, including prime agricultural soils, woodlands, high-quality streams, wildlife, and diverse vegetation. Topography consists of mountain ridges and rolling valleys of high-quality agricultural soils stretching west from the Susquehanna River. The natural and scenic resources of the county attract residents and visitors alike and are vital to the local heritage, culture, and economy. This chapter provides a description of the various resources that exist within the county today that present opportunities and could be integrated into a greenway and open space network.

Agricultural Resources

Prime agricultural soils and those of statewide importance are present throughout the county. They predominantly support working farms that include cropland and grazing for livestock that are enrolled in Agricultural Security Areas (ASAs). Nearly 30% of the county land area, or 60,000 acres, is farmland. A growing number of farms are protected from development by agricultural easements through the county farmland preservation program, which has preserved over 8,000 acres. Refer to Figure 1 for the distribution of farmland, prime agricultural soils, and preserved farms in the county. The abundant agricultural resources contribute to the regional economy, culture, rural landscape, and identity of Union County. The number of farms owned by Plain Sect families continues to grow as does the trend of higher prices being paid for farmland. Several farms recently topped the $1 million mark and brought $10,000 to $12,000 per acre at auction. Additionally, agricultural economics have improved noticeably in the last five years as commodity prices increased and farmers have enjoyed some of the best return on investment in decades.

Woodland Resources

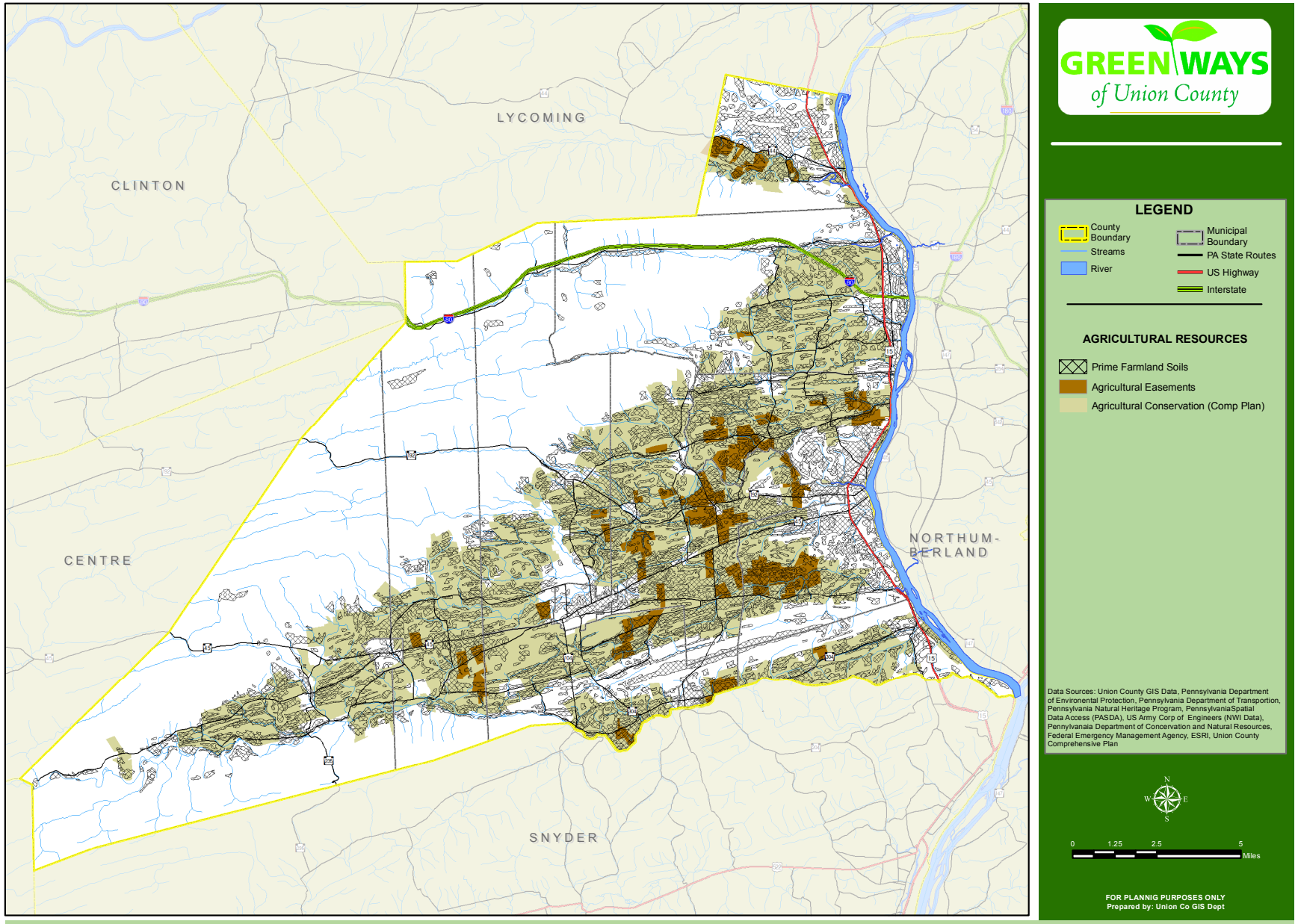
The county is somewhat unusual in that the majority of its land use, 60% or 121,728 acres, is forest. As shown on the map in Figure 2, the Bald Eagle State Forest, with 66,430 acres, stretches across the northern and western portion of the county and is home to two state parks. It represents the majority of public land within the County, while a small piece of the Tiadaghton State Forest is in Gregg Township. Within the Bald Eagle State Forest, there are



Overview of Union County's Natural Resources

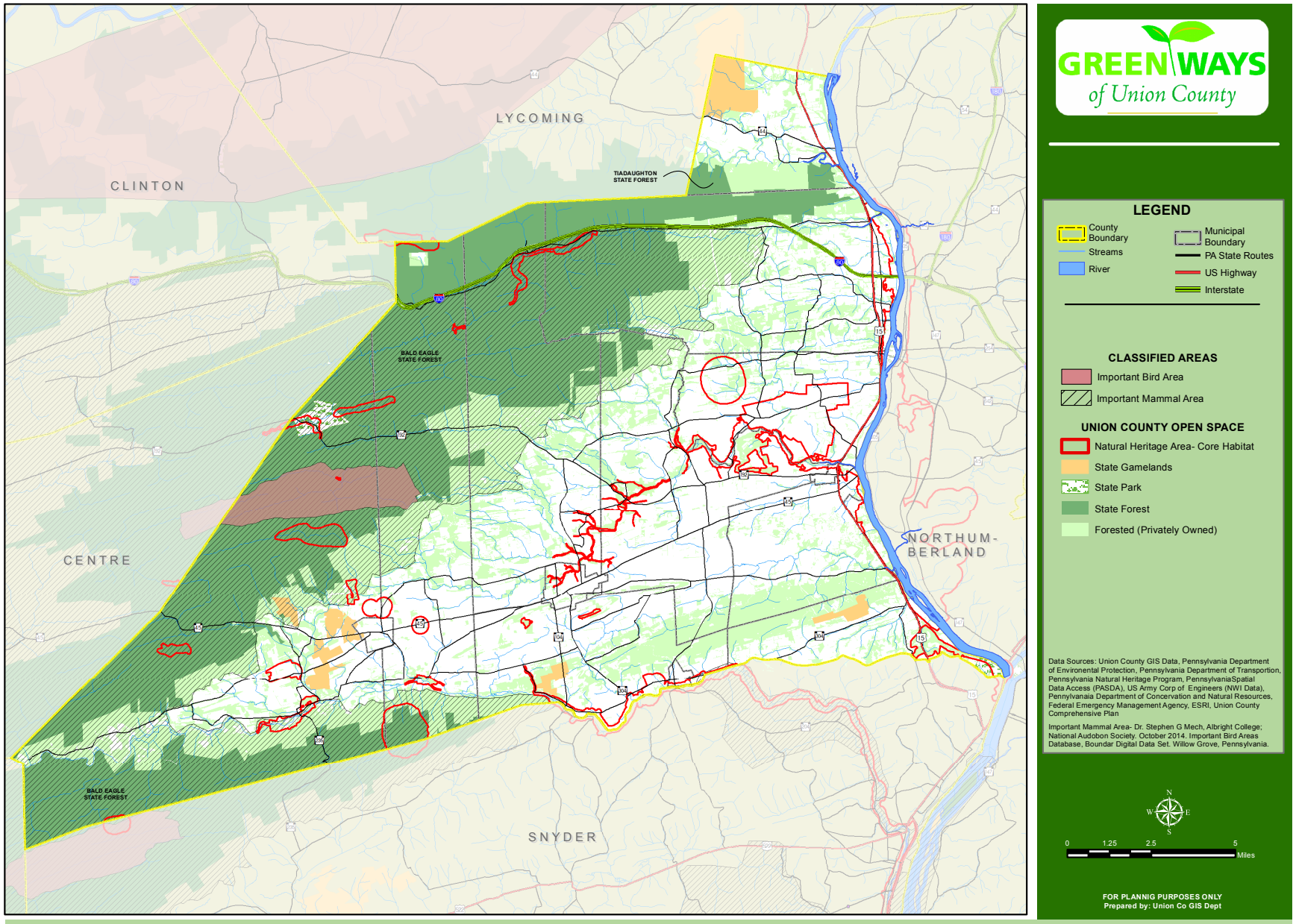
* Residents have identified agricultural and woodland resources as high preservation priorities.
* High-quality streams provide excellent environmental, fishing and recreational benefits.
* 54 stream miles are officially impaired.
* 190 square miles of woodlands provide wild life habitat, scenic vistas, recreation, and pro tect steep slopes and streams.
* The Susquehanna River forms the eastern boundary of Union County.

Figure 1. Agricultural Resources



Agricultural Resources

Figure 2. Woodland Resources



Forest Resources

three designated natural areas in the county (Halfway Run, The Hook, and Joyce Kilmer) and one wild area (White Mountain). The Hook Natural Area is also an Important Bird Area designated by the National Audubon Society[1]. The vast woodlands in the county, including over 55,000 acres of privately-owned forests, generally form a green ribbon around the farmland. Within both the public and private forests is a portion of the Pennsylvania Important Mammal Area 20, which is known to support significant aggregations of mammals and sustains confirmed populations of species considered of greatest conservation need.[2] These woodlands provide numerous ecological and economic benefits, including plant and animal habitat, carbon sequestration, public water supply, protection of steep slopes and streams, scenic vistas, trails, recreation, and forest products, such as timber, firewood, and woodchips. Woodland resources, like agriculture, have previously been identified as a high preservation priority by Union County citizens.

Water Resources

One of the largest continental rivers in the United States, the Susquehanna River's West Branch forms the eastern boundary of the county. Within the county, Spruce Run, the North Branch of Buffalo Creek, and Cherry Run are watersheds of exceptional value. There are also many high-quality streams in the county, including Penns Creek, Rapid Run, and White Deer Creek. Excellent fishing and recreation opportunities exist along many county streams. Portions of Rapid Run, Buffalo Creek, and Weikert Run

are Class A Wild Trout Waters[3] as classified by the Pennsylvania Fish and Boat Commission (PA FBC). Panther Run, Cherry Run, and Buffalo Creek headwaters are considered Wilderness Trout Streams. There are also portions of 29 other streams that support wild trout reproduction in the county, according to the PA FBC.

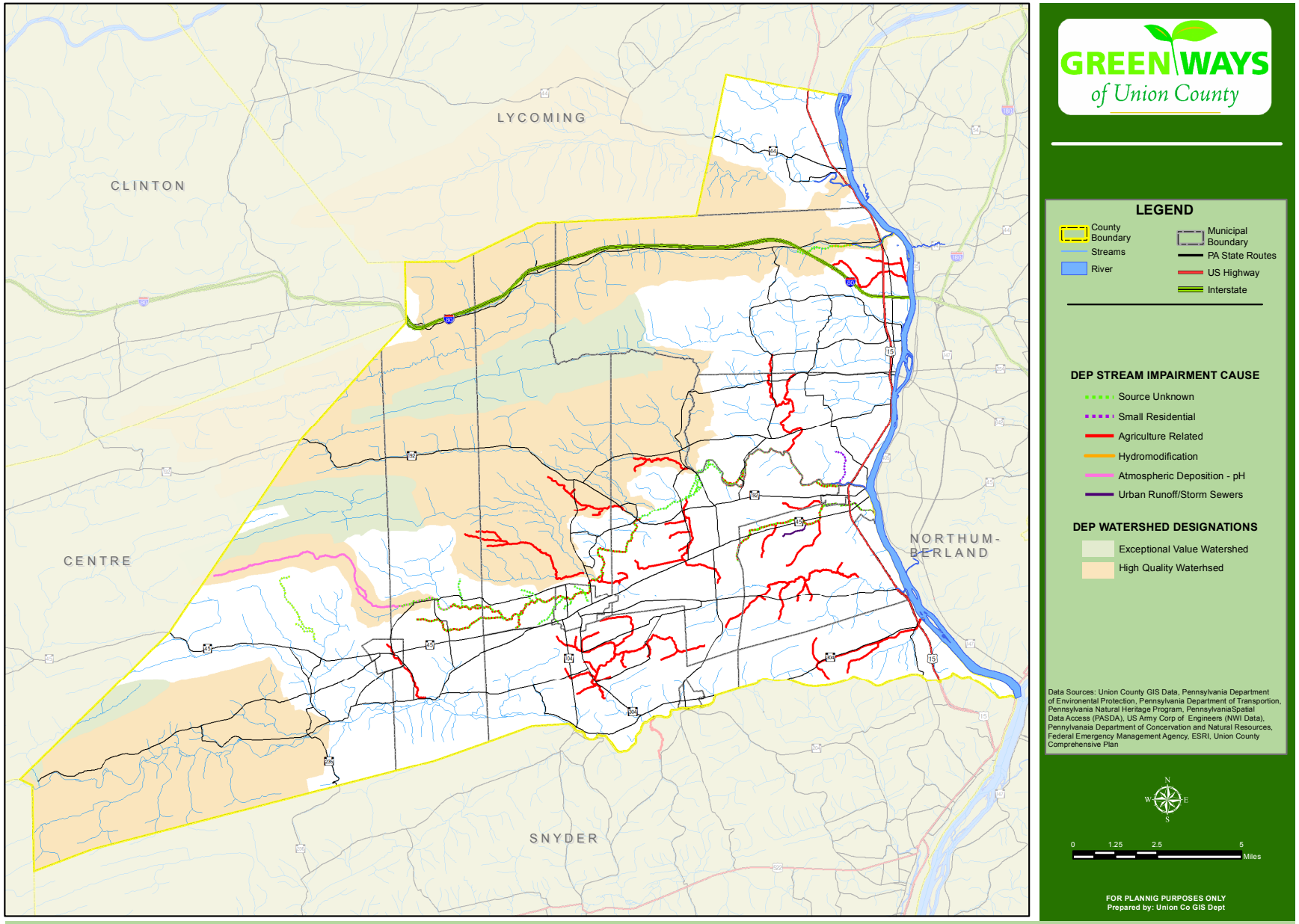
While many of the county's streams are in good-to-excellent condition, there are a number of impaired (non-attaining) streams as classified by the Pennsylvania Department of Environmental Protection (PA DEP). The PA DEP monitors and seeks to protect four stream water uses: aquatic life, fish consumption, potable water supply, and recreation. When a segment of a stream is not attaining any of its four uses, it is considered impaired. As of the most recent PA DEP assessment report in 2013, there were 53.5 miles of impaired stream segments with a significant portion impaired in the Buffalo Creek and Penns Creek watersheds due to agricultural impacts.[4] Unfortunately, the number of impaired stream miles has grown by 38% or 15 additional miles of impairment since 2009, even though the Conservation District and watershed associations for Buffalo Creek and Penns Creek have been attempting to implement restoration projects with landowners aimed at reducing non-point source pollution on farms. Refer to the map in Figure 3 showing the major water resources in the county and the location of impaired stream reaches.

Flood Prone Areas and Wetlands

Floodplains in the county are most prominent along the West Branch of the Susquehanna River, White Deer Creek, Buffalo Creek, and Penns Creek. According to the Susquehanna River Basin Commission (SRBC), the Susquehanna River basin is one of the nation's most flood-prone areas. In total there are 11,034 acres, or 5% of the county land area, designated as 100-year floodplain by the Federal Emergency Management Agency (FEMA) and

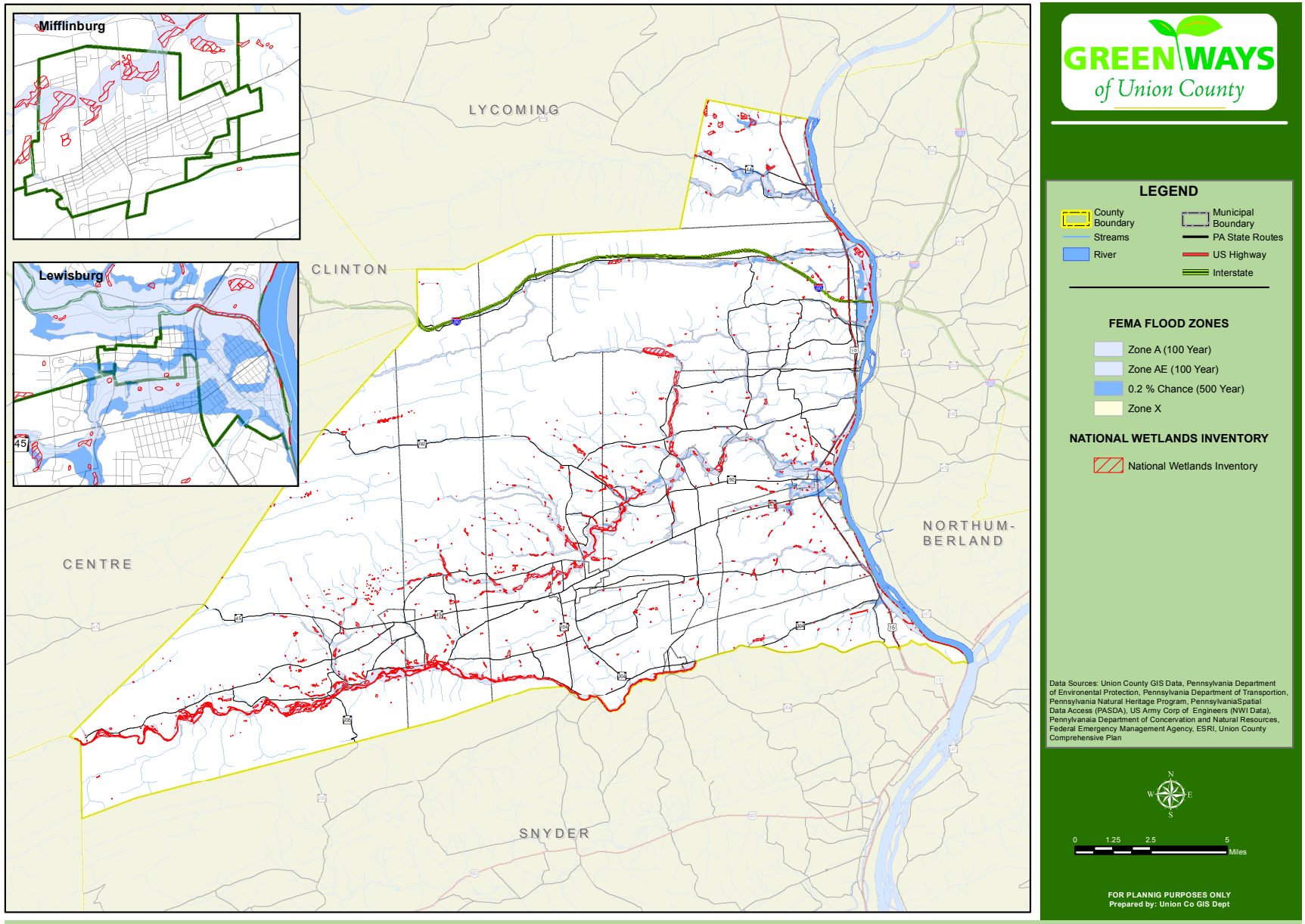
> "I recognize the right and duty of this generation to develop and use the natural resources of our land; but I do not recognize the right to waste them, or to rob, by wasteful use, the generations that come after us."
>
> - ***Theodore Roosevelt***

Figure 3. Water Resources



Water Resources

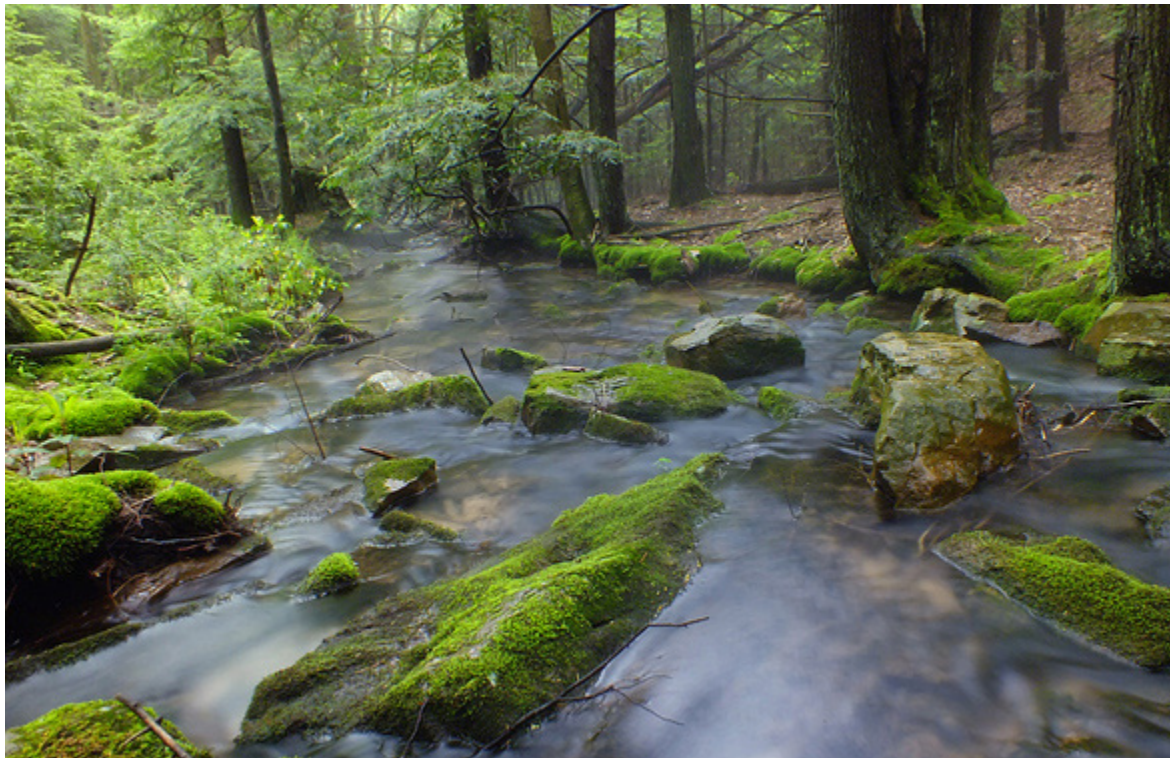
Figure 4. Floodplains and Wetlands



Flood Plains and Wetlands

2,152 acres of FEMA-identified floodway throughout the county. In addition, there are approximately another 1,500 acres of Pennsylvania regulated floodways, as measured 50 feet from the top of streambank where FEMA studies have not been done. In terms of percentage of total land area in the floodplain, Lewisburg Borough, by far, leads the way with 72% of the borough having such designation; however, in terms of acreage White Deer Township has the most floodplain, but it is only 8% of the municipal land area. With recent Federal reforms to the National Flood Insurance Program, the cost of flood insurance could be a deterrent to developing new and maintaining some existing floodplain properties, thus creating opportunities for restoration and open space conservation.

Wetlands, defined by the United States Fish and Wildlife Service (USFWS) as the transitional areas between terrestrial and aquatic systems that are periodically saturated by groundwater and can support swamps, marshes, or other similar hydrophytic vegetation, are found throughout the county, including within the demarcated floodplains. Wetlands like natural floodplains provide numerous benefits, such as absorbing floodwater, filtering pollutants, and providing food sources and natural habitat for numerous species. Existing wetlands are inventoried as part of the National Wetlands Inventory and are regulated by federal and state laws. The National Wetland Inventory (NWI) maps show 2,600 acres of wetlands in the county, but NWI maps in general likely under-represent the actual wetland acreage.



Refer to Figure 4 for the location of mapped floodplains and wetlands within the county.

Steep Slopes

Situated in the Ridge and Valley geologic province, the county topography is dominated by broad-flat valleys running east west and two major ridges. This geologic and topographic configuration results in areas of considerable slope that are not suitable for agricultural production or development. Figure 5 illustrates that of the county's 317 square miles of land area 30%, or 97 square miles, has slopes exceeding 15% while another 77 square miles has slopes between 15% and 25%. In total 55% of the county presents topographical challenges for development purposes. These steep slopes are best suited for conservation uses like wildlife habitat and outdoor recreation.

Natural Areas

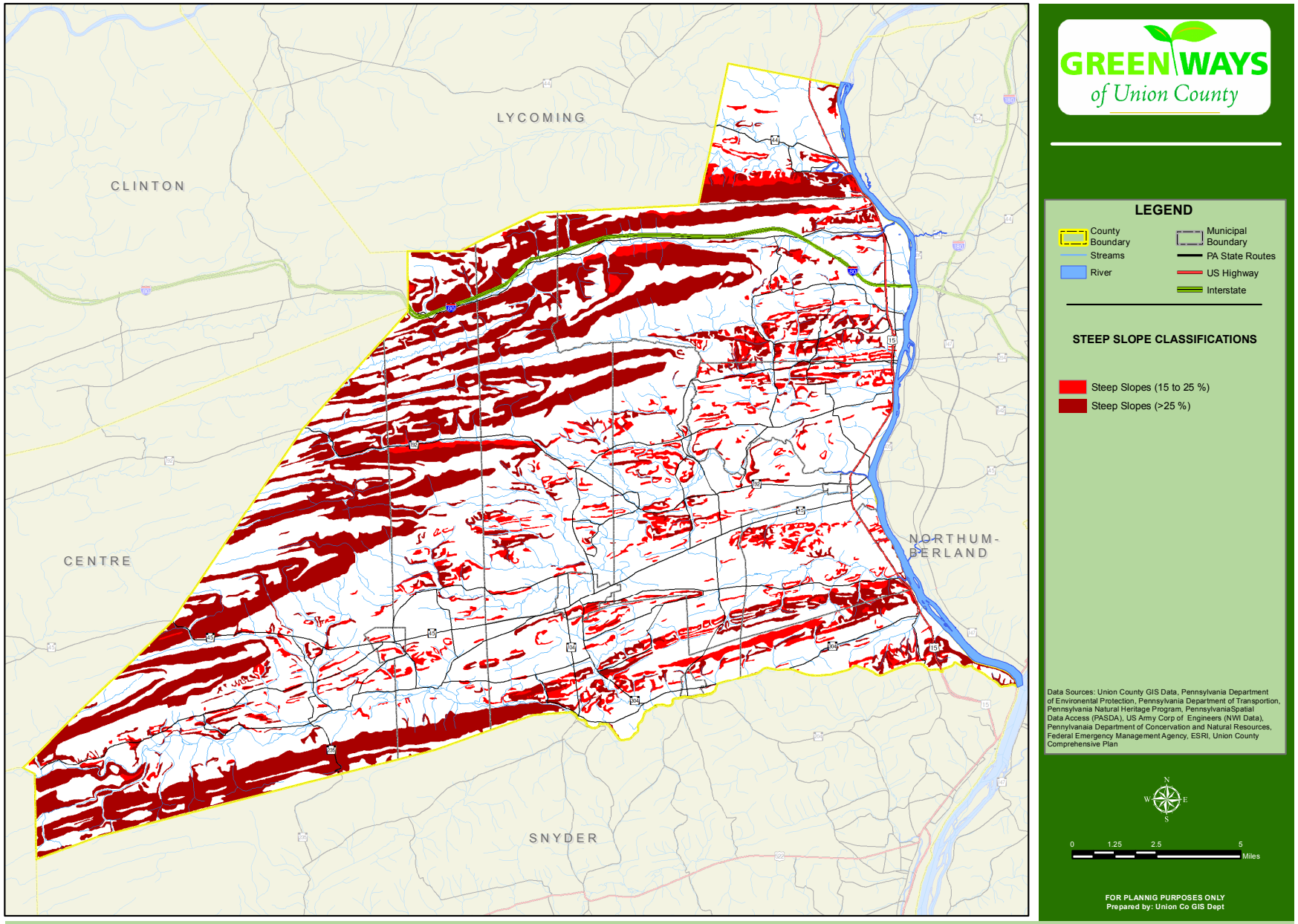
The Union County Natural Areas Inventory was originally prepared in 1993 and then updated by the Nature Conservancy in 2000. In 2015, the PA DCNR again updated the maps which now show some new sites and core habitat[5]. The report classifies sites of statewide significance for the protection of biological diversity in plant and animal species. The following sites were given a priority ranking and are listed in order of importance.

Recommendations for each site and additional conservation areas of statewide significance are included in the original reports. The top six sites for the county are as follows:

- Mohn Mills Ponds (Lewis Township)
- Shikellamy Bluffs (Union Township)
- Halfway Run (Hartley and Lewis Townships)
- The Gooseneck (Hartley Township)
- Penns Creek at White Mountain (Hartley Township)
- Seebold Quarry (Limestone Township)

It should be noted that only two of the six involve private property (Shikellamy Bluffs and Seebold Quarry) and that many of the other priority areas listed in the inventory are on lands owned by the Commonwealth of Pennsylvania. However a significant portion of core habitat from the latest update is on private lands. The map in Figure 2 shows the location of the six highest ranked locations from the inventory along with the other noted sites and core habitat areas.

Figure 5. Steep Slopes



Steep Slopes/Topology

Open Space Resources

State Parks

Union County is home to three state parks, two of which are surrounded by the Bald Eagle State Forest. Raymond B. Winter State Park, located in Hartley Township, is 695 acres and includes a designated camping area, Halfway Lake, beach, hiking trails, and picnic areas. The three-acre Sand Bridge State Park, with the distinction of being the smallest in the state park system, is located near Raymond B. Winter adjacent to State Route 192 along Rapid Run and has pavilions and picnic tables. Shikellamy State Park is at the confluence of the North and West Branches of the Susquehanna River at Northumberland, PA and includes a scenic overlook that is in Union Township, Union County. The overlook area was 78 acres in size, but in 2015, was expanded to 195 acres, or two and a half times its original size, due to a 36-acre acquisition of the adjacent McGinnis parcel by the Linn Conservancy which was a catalyst for The Conservation Fund to purchase an additional 82 acres (Rozyckie tract) to protect the remaining undeveloped portion of Shikellamy Bluffs. The scenic overlook offers spectacular views of the valleys for both river branches, has hiking trails, picnic areas and hosts a summer concert series. The Milton State Park, an 82-acre island in the Susquehanna River between the village of West Milton and Milton Borough, is technically in Northumberland County, but is used by Union County residents. The site includes a concrete boat launch, walking trails, open grass fields used mainly for soccer, and a small playground. The State Parks are included on Figure 2.

State Game Lands

The Pennsylvania Game Commission (PGC) owns nearly 3,000 acres on four State Game Lands (SGLs) in the county that vary from open farmland to scrub and woodland. These properties are managed for wildlife habitat to benefit both game and non-game species and for recreation, primarily lawful hunting and trapping. Although non-consumptive recreation is permitted there are restrictions on activities and times

of year for use by non-hunters. SGL 252 in Gregg Township is the largest in the county with nearly 1,300 acres and more land in adjacent Lycoming County. This SGL is unique from a historical perspective since it contains ruins of the former Alvira Village, several historic cemeteries, and concrete bunkers that were built as part of the Susquehanna Ordinance Works during the World War II era. It also has 24 miles of trails or administrative roadways that are open to the public for non-motorized use. The next largest property is the 1,100 acre SGL 317 in Hartley Township and Hartleton Borough while SGL 193 in Union Township and SGL 201 in Limestone Township are 325 acres and 271 acres respectively. The location and extent of PGC owned property can be found on Figure 2.

Community Parks

The municipal park system provides additional close to home recreation opportunities for citizens in Union County, as nine of the 14 municipalities have local parks and recreation areas available. Local parks and facilities support more community based recreation such as swimming pools, athletic fields for baseball, softball and soccer, picnic areas, children's playgrounds, skate parks, and general community green space. Fifty percent of people surveyed in the state indicated that they go to county or local parks the majority of the time.[6]

Community parks total approximately 200 acres in the county with Lewisburg Borough having the largest municipal park system at 54.5 acres followed by Hartley Township with 37.7 acres. However using national standards recommended by the National Recreation and Parks Association, only Hartley Township and New Berlin Borough have enough local parkland to meet resident needs based on current population. All other municipalities currently have an acreage deficit which will grow over the next several decades without additional park acquisition and development as the population continues to expand.

Countywide, the deficit currently stands at 217 acres which could increase to 322 acres by 2040 based on population growth projections (Federal prison inmates were factored out for this calculation). The single largest municipal deficit now, and projected for the future, is in East Buffalo Township, where population has increased substantially over the last several decades but the amount of community parkland has not kept pace.

The Lewisburg Area Recreation Park in Lewisburg Borough is one of the most heavily used parks in the county and has a public swimming pool, tennis courts, a walking trail, skateboard park, winter ice skating rink, pavilions, and a large well-appointed playground. There are also several privately-owned parks and recreation areas that are either open to the public or to members. The Turtle Creek Dog Park in East Buffalo Township, the Community Park in the village of White Deer, and the Riverwoods Soccer Complex are a few examples of privately owned parks and recreation areas open to the public while churches and the sportsmen's clubs have lands and facilities available to members and their guests. The school districts and Bucknell University also have a variety of facilities and fields, but these are prioritized for team sports and other school functions and are typically off limits to the general public.

Conserved Lands

One can see there are many conservation areas already in place within Union County as approximately 39% of the total land area is permanently protected open space. The bulk of this is state forest, but growing are properties preserved through the county farmland preservation program (8,000 acres) and through the work of land trusts like the Merrill W. Linn Land and Waterways Conservancy. Unlike the farmland preservation program which pays farmers to participate by purchasing development rights, the Conservancy primarily protects lands through the donation of conservation easements. The Conservancy holds easements on 584 acres in the county and is working on adding more properties to its conservation inventory. It should be noted that the interest in donated easements has increased in recent years, including the donation of easements to the farmland preservation program.

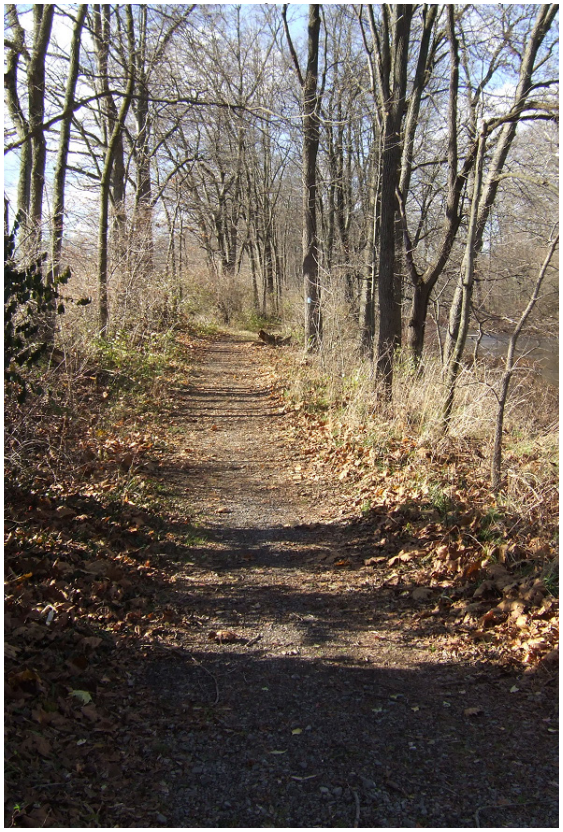
Trails and Bike Routes

Over 175 miles of hiking, biking, and equestrian trails skirt through Union County with all but 15 miles found on state-owned property. There are 136 miles that wind through the Bald Eagle State Forest and Raymond B. Winter State Park, offering a variety of trail uses including horseback riding, mountain biking, hiking, and cross-country skiing. Limited trail mileage is designated for ATV access while the snowmobiling network is more extensive. Many of the trails within the state forest are primitive, not accessible to individuals with mobility limitations, and not near where the majority of people reside. There are also quite a few that have lagged in terms of maintenance and blazing over the years and can be difficult to locate. However a few of the more notable and better maintained trails are the Mid-State Trail, the Cherry Run Rail Trail and the Hook Natural Area Trail.

Local trails and walking paths total approximately 15 miles and are located on a mix of public and private lands open to the public. The Buffalo Valley Rail Trail (BVRT) is a 10-mile rail-banked corridor in the center of the county that opened in 2011 for non-motorized use. Currently 9.5 miles are constructed linking the county's two largest population centers of Lewisburg and Mifflinburg. The trail is popular among bicyclists and pedestrians and, according to counts conducted by Bucknell University faculty and students, it attracts an average of 400 users per day utilizing the trail for recreation and transportation.[7] Most recently a new trailhead

was established in the village of Vicksburg in Buffalo Township, the midway point on the trail, and extensions were completed from 12th Street in East Buffalo Township to US Route 15 and from 8th Street to 5th Street in Lewisburg Borough. This leaves the US Route 15 crossing as a major gap in the trail, preventing users from having a direct and convenient connection into and out of downtown Lewisburg on the historic alignment.

Some of the first local trails on private proper-

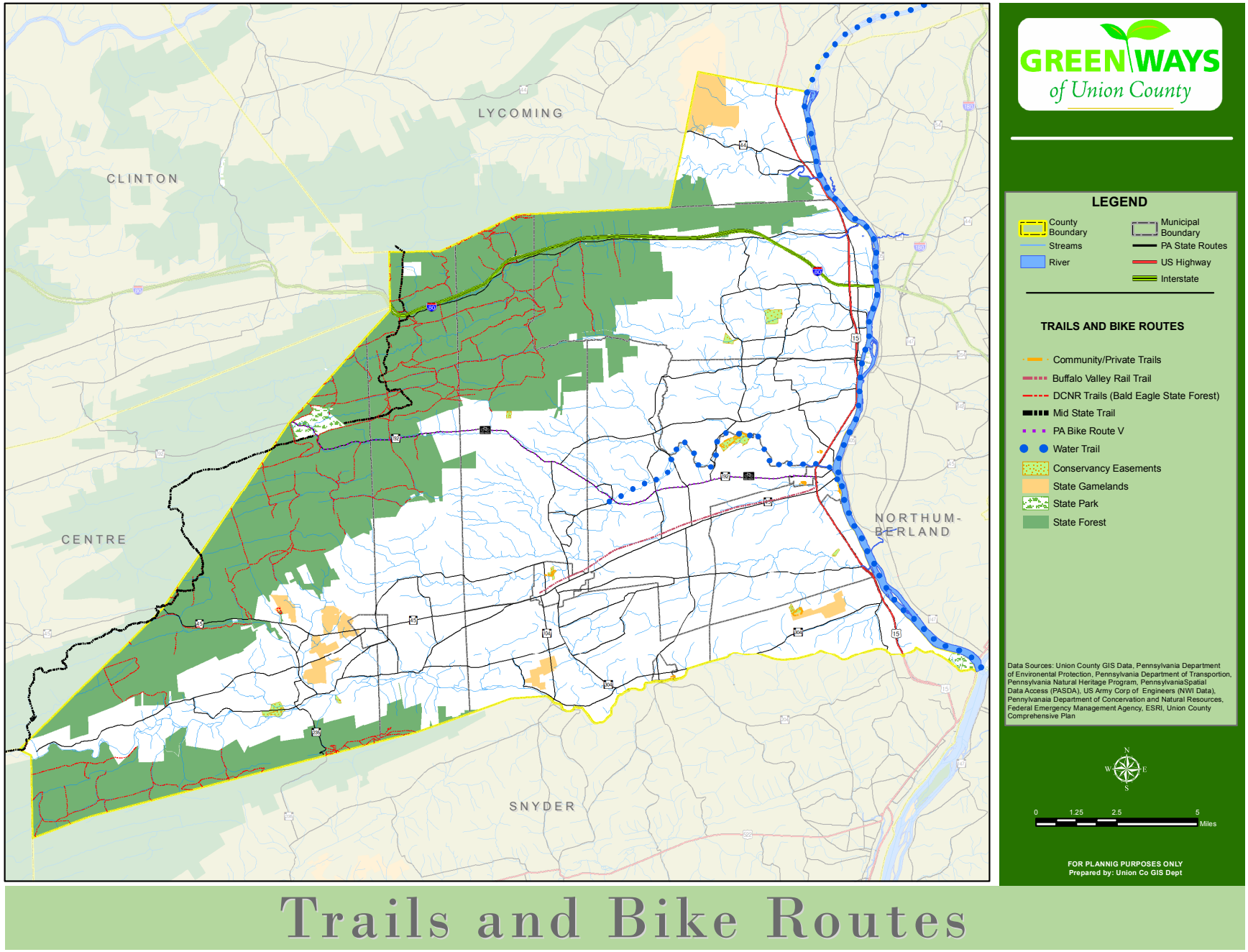


developed through the efforts of the Merrill Linn Conservancy. The two-mile Dale's Ridge Trail on the Dale Engle Walker property in Buffalo Township provides a scenic walk along Buffalo Creek and ascends to a splendid vista overlooking the Buffalo Valley. The one-mile Koons Trail in Mifflinburg Borough parallels Buffalo Creek and winds through a wetland and riparian ecosystem while the one-mile Shamokin Mountain Trail is on an upland ridge in Union Township. These two trails are also on private property, but are open to the public.

In addition to the trails noted above 19 miles of State Bike Routes "J" and "V" follow US Route 15 and State Route 192 respectively. These routes were designated by the Commonwealth during the Governor Ridge administration and are intended to be on road routes. In recent years complaints have been made by the public to PennDOT about Bike Route V not having adequate shoulders to safely support bicycling given growing traffic and increasing vehicular speeds. The Susquehanna River Valley Visitors Bureau has also published several maps showing a number of on-road routes throughout the county on rural roads. These are not officially designated bike routes, but do give recreational bicyclists ideas about where to travel. These maps can be found on their website at http://www.visitcentralpa.org/things-to-do/outdoor-recreation/bicycling.

Land-based trails were historically the only officially recognized routes, but within the last ten years, water trails have grown in popularity

Figure 6. Trails and Penn-DOT Designated Bike Routes



Trails and Bike Routes

across the state and region. The Susquehanna River Water Trail is a federally designated National Recreation Trail that is an extension of the John Smith Historic Trail. It follows the West Branch of the river along the county's entire eastern border and connects the river headwaters to the Chesapeake Bay. The other water trail in the county is on Buffalo Creek and has been established by the Buffalo Creek Watershed Alliance. It is 11 miles in length, beginning near Cowan in Buffalo Township and ending downstream of where the creek meets the river at St. George Street in Lewisburg. Refer to Figure 6 for the location of trails and PennDOT designated bike routes.

Cultural and Historic Resources

Cultural and historic resources help define community character and shape the uniqueness of the county. The majority of cultural and historic assets, including buildings and sites, are concentrated in the boroughs of Lewisburg, Mifflinburg, and New Berlin. Lewisburg and Mifflinburg Boroughs are National Register Historic Districts and 17 other sites in the county are listed on the National Register of Historic Places, including houses, churches, bridges, railroad stations and the courthouse among others. The Pennsylvania Historic and Museum Commission (PHMC) has also placed 22 roadside markers throughout the county that capture the memory of people, places, events and innovations that have affected the lives of Pennsylvanians over the centuries. These locations include sites noted for Native Americans, early settlement, the French and Indian War, American Revolution, religion, canal history, and the Underground Railroad among others. There are also many historic structures and sites, including older agricultural barns and rural landscapes, located throughout the county which are not officially designated but help tell an important story of earlier days.

The Slifer House Museum, Packwood House Museum, Gutelius Log House Museum, the Mifflinburg Buggy Museum, the White Deer Station Railroad Museum, and the Dale Engle Walker House offer a glimpse into the

county's past. Similarly a number of cultural celebrations occur throughout the year and carry out traditions for new generations to learn about and continue. These include the Mifflinburg Chriskindl Market and Oktoberfest that celebrate the region's Germanic history, Lewisburg Arts Festival, New Berlin Day, Rural Heritage Days, New Columbia Apple Butter Festival, and the Union County West End Fair, which started in 1925 and is held in Laurelton to promote the county's agricultural roots.

Other cultural venues in the county include the Samek Art Museum, Campus Theatre, and the Weis Center for Performing Arts on the Bucknell University campus in Lewisburg and the Elias Center for the Performing Arts in Mifflinburg. The Union County library system, with branches

in Laurelton, Lewisburg, and Mifflinburg, is another important cultural asset. See the map in Figure 7 for the location of the National Register Historic Districts, National Register of Historic Places, museums, and cultural resource locations.

Water Accesses

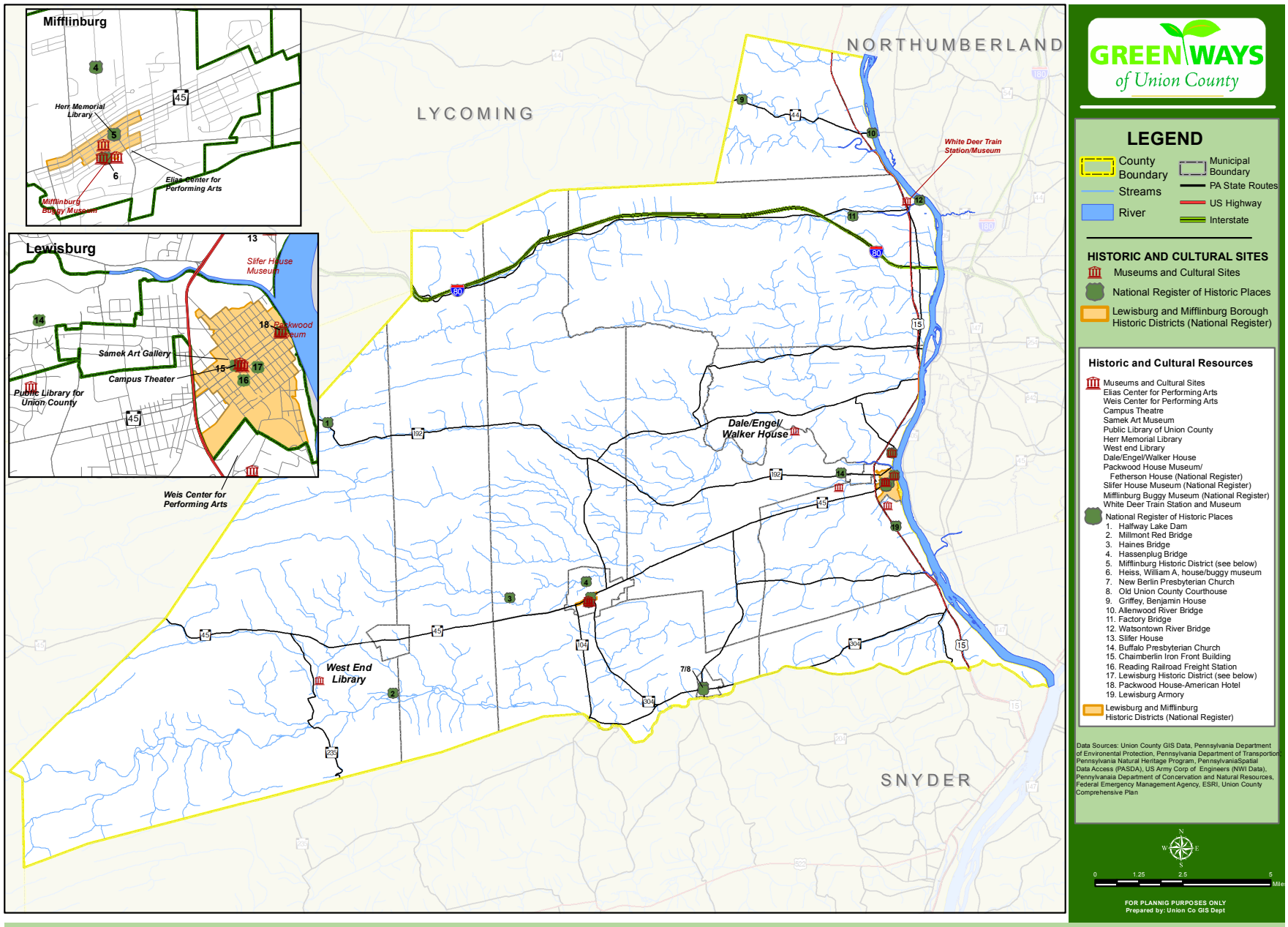
One thing not in abundance throughout Union County is public access points to waterways once outside of the state-owned forests, parks, and game lands. There is a fishing access on Penns Creek near Weikert that is owned by the PFBC and the Bald Eagle Forest District is working with the Northcentral Pennsylvania Conservancy to add another fishing and canoe access point on Penns Creek. The other public access areas on Penns Creek are at the Limestone Township picnic pavilion along Wildwood Road and at the Commons in New Berlin Borough. Through efforts of the Buffalo Creek Watershed Alliance (BCWA) and private landowners, there are three canoe access points on Buffalo Creek in Buffalo Township at Cowan, Mazeppa, and the Dale Engle Walker farm. On the West Branch of the Susquehanna River, there are no official Pennsylvania Fish and Boat Commission (PFBC) boat launches currently in Union County, although one will be constructed as a mitigation measure for the US Route 15 highway bypass south of Winfield, which should be open to the public by 2020. However several state-owned launch facilities are nearby for Union County boaters to access the river including the Shikellamy State Park Marina in Northumberland, the PFBC Chillisquaque ramp along State Route 405 south of Montandon, the Milton State Park access at West Milton, and the PFBC ramp off of State Route 405 in Watsontown. In Gregg Township along River Road on county-owned property at Great Stream Commons and the Byers farm, people have historically used two different areas for river access even though the land is private. Similarly in Lewisburg Borough, St. George Street extends to the river creating an emergency river access, but local residents have used it over the years as a canoe, kayak, and small boat launch. Lastly Bucknell University recently constructed a boat ramp called Bucknell Landing by the physical plant, but it is presently restricted to use by students and faculty. As it stands, a significant amount of stream and river frontage is privately-owned and does provide public access.

Conclusion

The conservation of natural resources, farmland, and open space is highly valued by county citizens. Overall Union County is fortunate to have 90% of its land area as undeveloped open space with almost 40% permanently protected. The Bald Eagle State Forest, three state parks, and four state game lands in the county create substantial habitat blocks that benefit wildlife and offer angling opportunities like Buffalo Creek, Rapid Run, Spring Creek, Spruce Run, White Deer Creek and the nationally renowned Penns Creek. The North Branch of Buffalo Creek, Spruce Run and White Deer Creek are also public drinking water supplies. The West Branch Susquehanna River is technically in Northumberland County, but is a great regional resource for water-based recreation like boating,canoeing, kayaking, and fishing; however, the river's water quality and overall ecosystem health have been the topic of debate in recent years.[6]

The bulk of the state-owned land is located considerable distance from where population density is the greatest and the majority of the open spaces near residential areas are privately-owned. This makes municipal parks, green spaces, trails and cultural and historic sites all that more important for supporting close to home recreation, physical activity, and intellectual stimulation that can contribute to healthier communities. According to data from a statewide survey Pennsylvanians still cite walking, scenic driving, visiting historic sites, and pic-

Figure 7. Historic and Cultural Resources



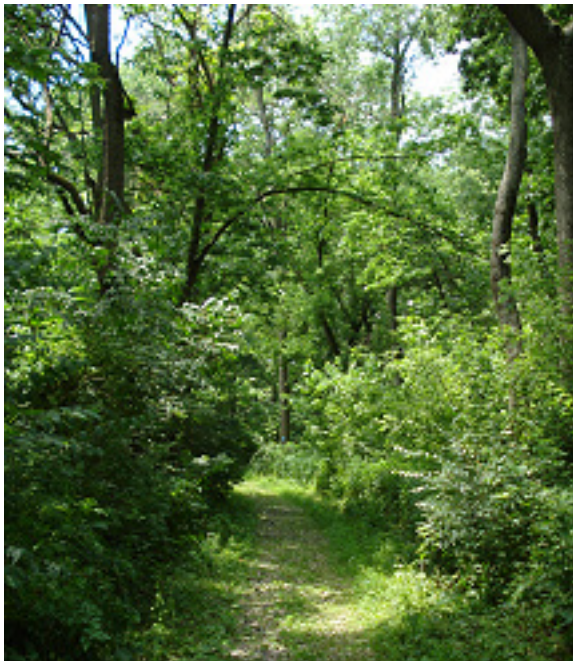
Historic and Cultural Resources

nicking as the most popular outdoor recreation activities. Nationally participation trends show kayak-related recreation, triathlons, and adventure racing trending upward, while snowshoeing, snowboarding, skiing and rafting are showing decreasing participation.[9] A report from the United States Forest Service notes that what people choose to do now for outdoor recreation is noticeably different from choices that were available to and made by previous generations as the variety and popularity of outdoor activities are more diverse now than at any time in the past.[10]

Many traditional outdoor activities like fishing and hunting are declining in participation. In Pennsylvania, for example, hunting is down 20% and fishing 17% since 1990, but other wildlife-related recreation is becoming increasingly popular like bird watching and nature photography. Nearly $3 billion is spent annually in the state on wildlife-related recreation.[7]

Trends do point toward overall continued growth in outdoor recreation, although changing demographics, lifestyles, technology, economic conditions, globalization, and altered landscapes will shape the participation rates and preferred activities. However most agree that public lands will remain critically important to supporting this expansion as private landowners remain concerned about limiting liability exposure and maintaining privacy. In Union County the majority of agricultural lands, forests, floodplains, wetlands, and riparian corridors, including those nearest to population centers, are privately-owned which significantly limits access for the general public.

The resources that have been identified in this chapter present nearly unlimited opportunities for the development of a permanent greenway and open space network for conservation purposes and to support outdoor recreation, tourism, and the economy but not without challenges. The next chapter in this plan will take into consideration these opportunities to articulate a vision, goals, and present a preferred greenway and open space framework.



Notes

1 http://www.portal.state.pa.us/portal/server.pt?open=514&objID=948195&mode=2

2 http://netapp.audubon.org/IBA/Site/1144

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4 http://www.dep.pa.gov/Business/Water/PointNonPointMgmt/WaterQuality/Pages/Integrated-Water-Quality-Report-2014.aspx#.VoQQGbYrKUl

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7 http://www.railstotrails.org/trailblog/2012/july/10/once-considered-wasteful-new-rail-trail-proves-very-useful-to-lewisburg-pa/

8 2014 Outdoor Recreation Participation Report. The Outdoor Foundation. http://www.outdoorfoundation.org/research.participation.2014.html

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