

# NATURAL RESOURCES INVENTORY AND PLAN

Natural resources help define the Borough's character and are an essential element in maintaining a healthy, safe, and pleasant environment for Borough residents and businesses. This chapter provides an inventory of those resources, an analysis of their importance to the Borough, and recommendations for their management and protection, within the following framework:

- Inventory
  - Water Resources
    - Watersheds
    - Floodplains
    - Groundwater
  - Land Resources
    - Geology
    - Agricultural Soils
  - Biotic Resources
    - Woodlands
    - Riparian Buffers
    - Wetlands and Hydric Soils
    - Natural Diversity
- Resource Protection Measures
- Planning Implications
- Recommendations
- Links



# Inventory

## Water Resources

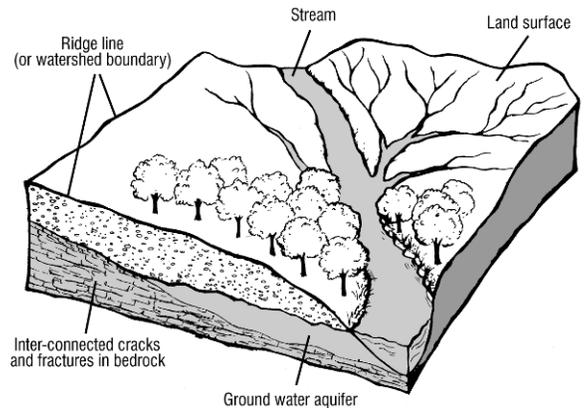
The creeks, streams, and rivers throughout Chester County have influenced development patterns and quality of life for centuries. Proper management of water resources is necessary to meet growing demands for its use, protect it from degradation, and sustain and/or improve water quality. Water resources discussed in this chapter include: watersheds, headwaters, streams, floodplains, and groundwater. Detailed mapping of water resources is found on Map 6-A within Appendix B.

### Watersheds

A watershed is defined as 1) an area of land that drains into a particular river or body of water; usually divided by topography or ridgelines or 2) the total area of land above a given point on a waterway that contributes surface runoff and groundwater to the flow at that point<sup>1</sup>. The precipitation that falls within a watershed flows from surrounding ridgelines toward, and becomes the source of, stream flow and groundwater (Figure 6-1).

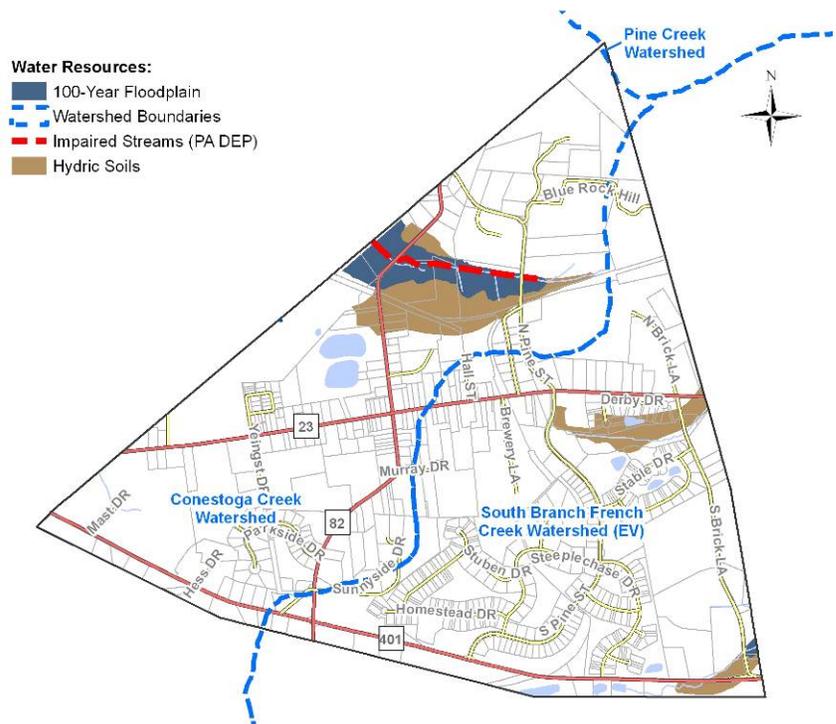
Roughly half of Elverson (51 percent, or 325 acres) is drained by tributaries of Conestoga Creek, which flows westward and eventually empties into the Susquehanna River (Figure 6-2). The eastern part of the Borough (49 percent, or 318 acres) is drained by tributaries to the South Branch French Creek, which flows eastward into French Creek. French Creek flows to the Schuylkill River, which drains into the Delaware River. At its northernmost point, less than 1 percent (about .16 acres) of the Borough is in the Pine Creek watershed. There are approximately 1.7 miles of streams in the Borough of Elverson.

Figure 6-1: Typical Watershed



Source: CCWRA, 2007

Figure 6-2: Water Resources



<sup>1</sup> Chester County Water Resources Authority *Watersheds*.

### Stream Order/Headwaters

Within a watershed, stream order refers to the relative position of a stream in a drainage network. The smallest streams in the network have no tributaries and are called first order streams. When two first order streams join, they form a second order stream; where two second order streams converge, they create a third order stream, and so on.

Headwaters are lower-order streams, typically first, second, and third ordered streams as shown on Figure 6-3. Elverson is a headwaters area, divided almost through the center by a watershed boundary, with only first and second order streams and multiple springs. Headwaters are important from a planning perspective because their watersheds often contain critical recharge areas. Additionally, these streams exhibit very low flows and their water quality is highly vulnerable to impacts from pollutants and runoff.

### Stream Designations

The Pennsylvania Department of Environmental Protection (PADEP) has put programs into effect to protect and improve water quality, promote preservation of higher quality streams, and achieve compliance with Chapter 93 of Pennsylvania’s Clean Streams Law and Federal water regulations. The following designations apply to streams and watersheds in the Borough:

#### Special Protection Waters

Chapter 93 of the Clean Streams Law designates Exceptional Value (EV) and High Quality (HQ) waterways. The South Branch French Creek is designated as EV, indicating outstanding ecological or recreation. This designation is used to increase protection measures along a designated watercourse.

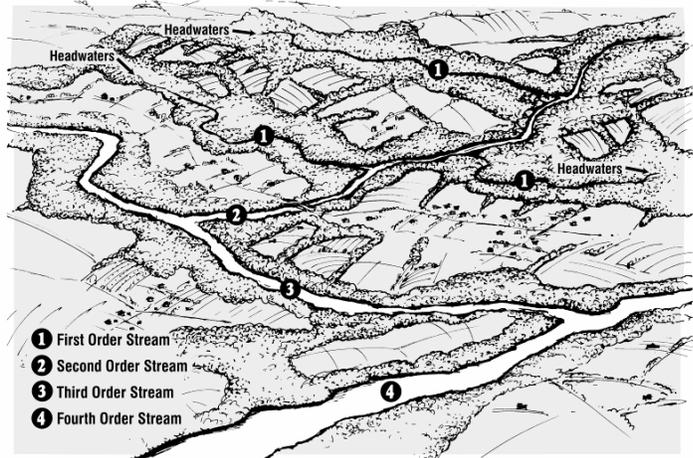
#### Impaired Streams

Impaired streams are sections of watercourses that do not meet Pennsylvania’s Chapter 93 use designations for water quality standards (in regard to sediment and nutrient load). A tributary of Conestoga Creek has been identified as impaired as indicated by the dashed red line on Figure 6-2 (also depicted on Map 6-A).

## Floodplains

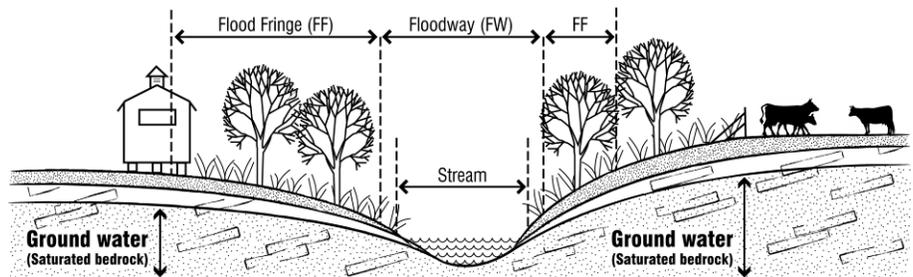
According to the Federal Emergency Management Agency (FEMA), a 100 year floodplain is defined as the flood elevation that has a one percent chance of being equaled or exceeded each year. FEMA’s definition of a floodplain is divided into two parts: the floodway and the flood fringe (Figure 6-4). An area of 100 year floodplain (about 16 acres) is located in Elverson along the tributary of Conestoga Creek in the northern triangle of the Borough (see Figure 6-2). According to FEMA, the floodway must be reserved to carry the base

Figure 6-3: Stream Ordering



Source: CCPC, 2004

Figure 6-4: Typical Floodplain



Source: CCPC, 2007

floodwaters without increasing the base flood elevation more than one foot. Any obstructions within the floodway that might raise the base flood elevation should be prohibited. In general, the floodplain should remain undeveloped and undisturbed to reduce hazards and to limit potential for erosion, downstream sedimentation, non-point source pollution, and alteration of the floodway.

In addition to its floodway and environmental functions, floodplain areas can provide recreational, scenic, and open space opportunities, particularly through the use of stream corridors to link existing parks and open space areas. However, use for passive recreation, such as hiking trails, must be balanced with flood control, other resource protection goals, and provision of critical habitat for wildlife.

## Groundwater

Groundwater is an indispensable resource that occupies the porous openings, fractures, and fissures of underground soils and rock units (geology), creating an aquifer. Groundwater becomes surface water when it is exposed to the atmosphere in creeks, rivers, and lakes. Elverson is entirely dependent on groundwater sources for its water supply.

### Southeastern Pennsylvania Groundwater Protected Area

Groundwater has been identified as a critical resource on a regional basis by the Delaware River Basin Commission through Resolution Number 80-18, which established the Southeastern Pennsylvania Groundwater Protected Area. This resolution requires a permit to develop a new groundwater withdrawal or expand an existing groundwater withdrawal within the area, if the new or increased withdrawal is more than 10,000 gallons a day over a 30-day period. The resolution includes the South Branch French Creek Watershed.

### Impervious Coverage

Impervious coverage refers to areas or structures that restrict the infiltration of stormwater and therefore reduce groundwater recharge (Figure 6-5). For example, an asphalt driveway, house, or storage shed restricts the infiltration of stormwater and increases runoff. Runoff occurs when there is more water than the land can absorb. The excess water flows across the surface of the land and into nearby creeks, streams, or ponds. A garden or wildflower meadow slows stormwater runoff, allowing for increased infiltration to groundwater.

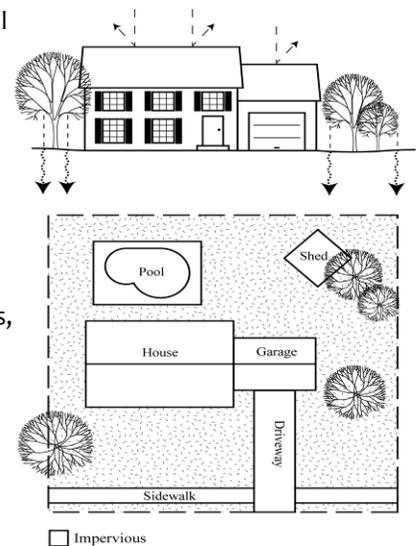
## Land Resources

Land resources should be protected not only for their production value (agriculture, forests, and meadows) but because inappropriate uses and poor maintenance practices can lead to the degradation of related water and biotic resources. Such degradation impacts the functions of these resources and increases hazards, such as flooding and reduced groundwater recharge. Land resources discussed below include geology, topography and steep slopes, and agricultural soils. Detailed mapping of land resources is found on Map 6-B within Appendix B.

Clean water is the cornerstone of healthy communities. It is impossible to overstate the value and importance of clean water for people, fish and wildlife. Our health, quality of life, economy and ecosystem depend on it.

*American Rivers*

Figure 6-5: Impervious Coverage

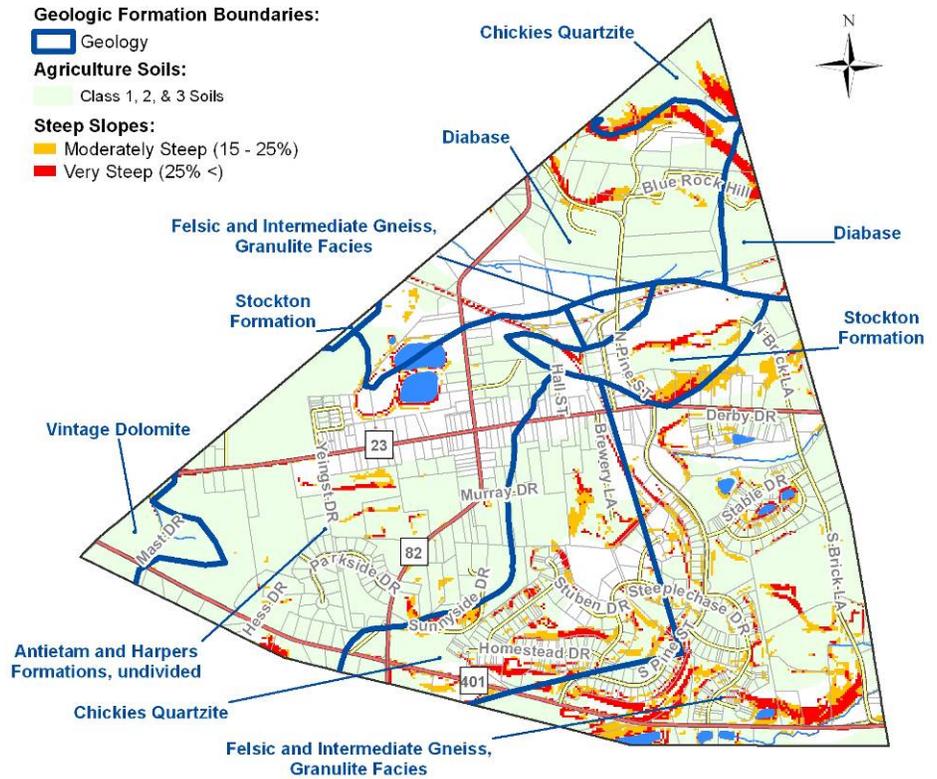


Source: CCPC, 2006

# Geology

Elverson Borough falls entirely within the Piedmont Province, a band of gently undulating to steeply rolling countryside that stretches from the Hudson River to Georgia, between the Atlantic Coastal Plain and the Blue Ridge Mountains. This Province is further divided into three physiographic sections, the Gettysburg-Newark Lowland, the Piedmont Lowland, and Piedmont Uplands. Elverson is located at the intersection of these three sections, as a result there are numerous different formations (6) within the small geographic area of the Borough: Chickies Quartzite, Diabase, Felsic and Intermediate Gneiss (granulite facies), Stockton Foundation, Antietam and Harpers (undivided), and Vintage Dolomite (Figure 6-6). The variable resistance to weathering and erosion of the underlying geology has led to a hilly to gently rolling landscape of low ridges and narrow valleys in the Borough.

Figure 6-6: Land Resources



The Borough’s geology influences a number of physical attributes, including slope, erosion and stability properties, groundwater yield, and foundation stability.

## Groundwater Yields and Foundation Stability

The geologic formations exhibit a wide range of groundwater yields as indicated in Figure 6-7. The geology and precipitation of an area largely determine the water-producing capability of an aquifer. Because the Borough, and much of the surrounding region, continues to rely on on-lot and community wells that draw from groundwater, the protection of the aquifer is of regional importance.

Figure 6-7: Reported Domestic Well Yields

Geologic Formation	Range (gallons per minute)	Median (gallons per minute)
Chickies Quartzite	<1 to 100	10
Diabase	<1 to 80	12
Felsic and Intermediate Gneiss, Granulite Facies	<1 to 400	12
Stockton	<1 to 270	130 (in sandstone) 20 (in shale)
Vintage Dolomite	<1 to 270	30
Antietam and Harpers Formations, undivided	<1 to 100	10

Source: Engineering Characteristics of the Rocks of Pennsylvania, Pennsylvania Geological Survey, 4th Series, Harrisburg, PA

Foundation stability for each of the geologic formations is good, indicating that bearing capacity is sufficient for the heaviest classes of construction, except where located on intensely fractured zones or solution openings.

### Steep Slopes

The Borough’s Land Use Ordinances define steep slopes as any area where the slope is greater than or equal to fifteen percent measured between consecutive intervals. Steep slopes are located primarily in the eastern half of the Borough. There is a concentration in the southeastern corner of the Borough along the French Creek tributaries, and in the northern triangle (Figure 6-6).

### Erosion

Steep slopes have shallow soils and are very vulnerable to erosion, particularly when vegetation has been disturbed. Once erosion has begun, it is difficult and expensive to control. Excessive erosion and sedimentation damages the ecosystem and threatens aquatic life. Erosion of steep slopes tends to spread along the side slopes, eventually threatening larger areas and multiple properties. Maintaining wooded or otherwise vegetated steep slopes provides a natural system of erosion protection, as well as wildlife habitat. In addition to the environmental issues, disturbance of steep slopes related to construction requires careful attention to structural design, vegetation removal, landscaping, and stormwater management and can therefore result in higher construction costs.

## Agricultural Soils

Agricultural soil classifications have been established by the United States Department of Agriculture (USDA) and the National Resource Conservation Service (NRCS) for “Prime Farmland” and “Farmland of Statewide Importance.” For the purposes of this Plan, Agricultural Soils are identified as Capability Units 1, 2, and 3 which account for about 72 percent (or 462 acres) of the Borough’s soils (Figure 6-6). In the absence of agriculture or development, these soils could support a richly mixed forest of Oak, Beech, and Hickory, and still do in the northern and southern portions of the Borough (Figure 6-8).

The characteristics that make agricultural soils suitable for agriculture or forest land also make it attractive for development. These soils are deep, not prone to erosion, nearly level, well-drained, and generally devoid of stones and rocks.

Because of the existing development patterns in Elverson, Borough policy has not focused on conservation of agricultural soils. Nevertheless, the impression of a small historic village surrounded by farmland still characterizes Elverson Borough.



*This farm along the border with Berks County includes prime agricultural soils and is under easement.*

## Biotic Resources

Biotic refers to plant and animal life and their habitats. Biotic resources are also a defining element of scenic character. This section discusses the importance of maintaining natural diversity and describes major habitat areas in the Borough. Biotic resources discussed in the section include woodlands, riparian buffers, and wetlands

and hydric soils. Detailed mapping of biotic resources is found on Map 6-C within Appendix B.

## Woodlands

Woodlands still account for about 20 percent of the land area in Elverson, most predominantly on the slopes of Thomas Hill and the low-lying areas surrounding the tributary of the Conestoga Creek (Figure 6-8). The relatively large and mature forest stands remaining in the Borough likely support a considerable variety of native vegetation and wildlife species.

Woodlands provide protective ground cover and stability for soils on steep slopes and contribute to water quality. Canopies of trees play an important role in reducing the amount and intensity of rainfall, providing shade, and reducing the impacts of temperature extremes. Woodlands serve as buffers from cold northwesterly winds, visual infringements, and noise while providing scenic quality and improving land value.

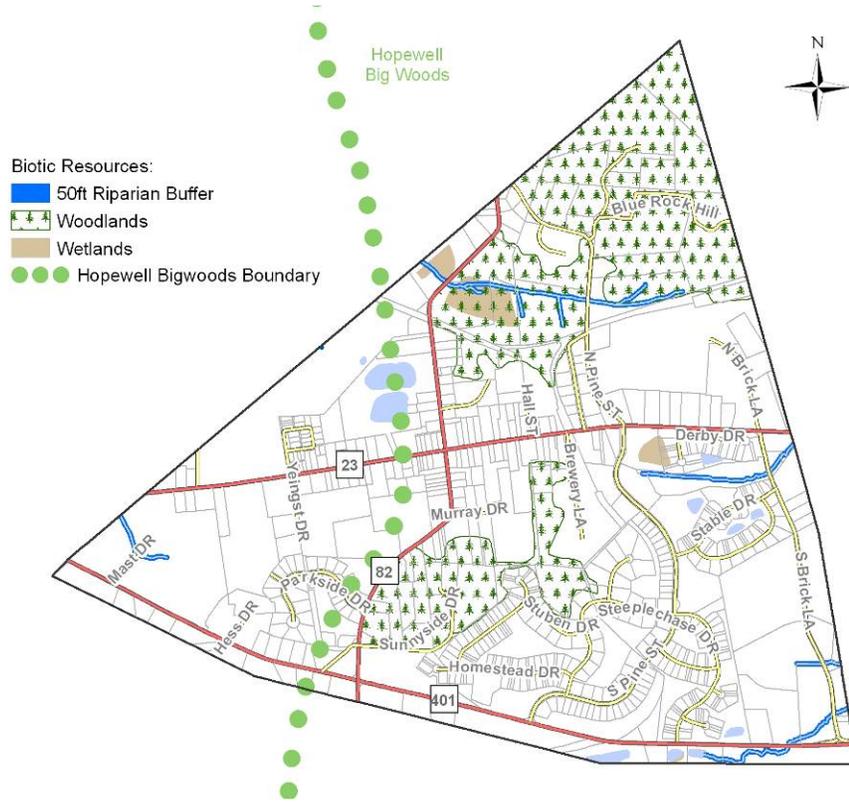
Woodlands are a critical component in maintaining natural diversity by providing vital habitat for native vegetation and wildlife. In some cases, a healthy forest ecosystem is critical to the survival of certain species of forest plants and wildlife.

### The Hopewell Big Woods

The Hopewell Big Woods is a vast area of forested land that encompasses portions of Berks, Montgomery, and Chester Counties. It was identified for conservation by the Natural Lands Trust (NLT) in 1998. The Hopewell Big Woods is comprised of three zones: 1) the forest zone, 2) the watershed zone, and 3) the greenway zone. The eastern two-thirds of the Borough are included within the Big Woods boundaries (Figure 6-8).

In November 2003, the Hopewell Big Woods Landscape Conservation Plan was completed. This plan includes a thorough inventory and analysis of the Big Woods and provides evidence that lead to recommendations for the preservation of 15,000 acres of unbroken forest (including 4,000 acres of old-growth forest) and the streams located in the upper reaches of the French Creek watershed.

Figure 6-8: Biotic Resources



## Pennsylvania Highlands

The Pennsylvania Highlands Region is a section of the Appalachian Mountains located in eastern Pennsylvania that is frequently cited as a candidate for extensive ecological preservation. The heavily forested region is seen as ecologically significant because, among other things, its dense forests serve to protect and supply clean drinking water to more than 15 million people, including large portions of both New Jersey and New York. The Pennsylvania Highlands have even been recognized by the U.S. Forest Service as a "landscape of national significance." The designated "Highlands" area includes the Borough as well as Elverson's Chester County neighbors, West Nantmeal and Warwick townships.

## Specimen Vegetation

Elverson's Land Use Ordinances define specimen trees as any tree equal to or exceeding 24 inches in diameter (at 4 ½ feet above ground level). This designation can include historic trees or hedgerows that define an area or provide a focal point or sense of community for the Borough. See Chapter 7: Historic and Scenic Resources.



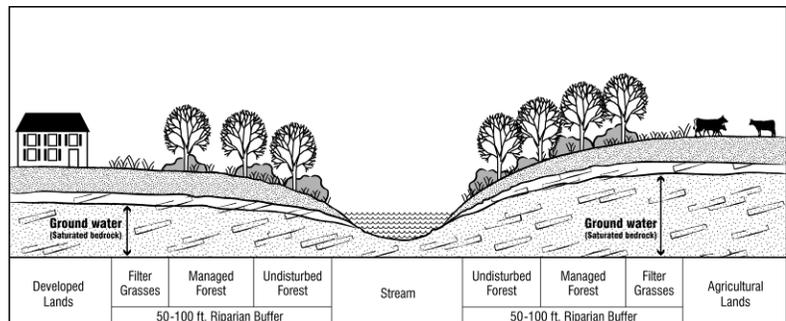
*A specimen tree adds to the historic and scenic quality of this property on Main Street.*

## Riparian Buffers

Riparian areas are the lands adjacent to water bodies that serve as a transition between aquatic and terrestrial environments and directly affect or are affected by that body of water. A riparian area that consists of mature vegetation, preferably including forest cover, can create an effective buffer between upland land uses and the receiving water body (Figure 6-9). A forested riparian buffer can provide multiple functions, reducing the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals while supplying food, cover, and thermal protection to fish and other wildlife.

Forested riparian buffers can also serve to slow stormwater runoff, improving flood control. To be most effective, buffers should ideally be at least 100 feet wide with stringent protection standards for the areas closest to the stream. However, functions such as nutrient and sediment removal can be provided in areas as narrow as 35 feet, while flood control requires buffers of at least 75 feet.<sup>2</sup> A fifty foot riparian buffer along all streams in the Borough is presented on Figure 6-8.

**Figure 6-9: Forested Riparian Buffer**



Source: CCPC, 2012

<sup>2</sup> Palone, R.S. and A.H. Todd. 1997. *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers*. United States Department of Agriculture: Forest Service.

## Wetlands and Hydric Soils

### Wetlands

Wetlands are low-lying areas inundated or saturated by water at a frequency and duration sufficient to support wetland vegetation. Wetlands offer key wildlife habitat, are important storage areas for surface and groundwater, and filter nutrients and sediments from runoff. The Army Corps of Engineers regulate wetlands under Section 404 of the Clean Water Act of 1977; the PADEP regulates wetlands under 25 PA Code § 105. From a regulatory standpoint, the presence of wetland areas is determined based on a site's soil, hydrology, and vegetation. Areas lacking any one of these three parameters are not wetlands.

The National Wetlands Inventory (NWI) identifies wetland areas based on aerial photography. There are about eight acres of NWI wetlands in the Borough (Figure 6-8). The NWI provides only a preliminary indication of wetlands; site-specific wetland studies are the only reliable method to accurately determine the full extent of wetlands in the Borough.

### Hydric Soils

Hydric soils contain high amounts of moisture that allow anaerobic processes (those that occur in the absence of oxygen) to thrive within the soil. These soils are typically found in low-lying areas and can serve as an indicator of possible wetland areas. Hydric soils account for about 45 acres in Elverson (see Figure 6-2). Hydric soils have a shallow depth to the underground water table, making them particularly sensitive to alteration and very susceptible to contamination of groundwater. Development in these areas is generally not appropriate.



*A significant wetland is located along North Chestnut Street.*

## Natural Diversity

Natural diversity is defined as the variety of plants and animals in a given habitat, or the variety of features found in a given population of one type of plant or animal. There are currently no species identified as rare, threatened, or endangered within Elverson. Information on Pennsylvania's rare, threatened, and endangered species is available from the Pennsylvania Natural Heritage Program at: [www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us).

### Native Vegetation

Native or indigenous vegetation is vegetation that currently or previously inhabited or grew in a specified location, and which was not introduced to that location as a result of human activity. Native species are adapted to environmental conditions of an area such as climate, soils, topography, winds, precipitation, wildlife, and other living organisms. A plant species that is native has already developed a series of cultural requirements to survive in these local conditions such as: hardiness, soil requirements, and resistance to biological disorders, drought, and flood conditions.

### Invasive Species: A Threat to Natural Diversity

Aside from the well understood threat of development and resulting loss of habitat, invasive species also threaten natural diversity. Invasive species are predominantly non-native tree, shrub, or herbaceous species that grow or reproduce aggressively, usually because they have few if any natural predators. Although there are native

invasive plant species, their growth rate is considerably limited as compared to invasive plant species as the native wildlife has adapted to become a natural control mechanism.

Across much of Chester County, including Elverson Borough, woodlands and wetlands are being overrun by invasive species. Characteristics of invasive species include a rapid growth rate, adaptability, high reproduction rate, and a lack of control mechanisms in the local environment. Invasive species displace native vegetation, typically offer reduced food and cover benefits to native wildlife, result in a reduction of plant and wildlife diversity, and impede the ability of woodlands to regenerate. Within woodlands, riparian areas, meadows, hedgerows, and along roadways, invasive species such as the Norway Maple, Multiflora Rose, Autumn Olive, Oriental Bittersweet, Japanese Honeysuckle, Japanese Knotweed, and Mile-a-Minute Weed are overrunning existing native species and becoming the dominant species. Within wetlands, invasive species such as Common Reed, Purple Loosestrife, and Reed Canary Grass can dominant the landscape, impairing the wildlife and filtration functions of the wetland.

A more recent invasive species threat is the emerald ash borer, an invasive insect pest from Southeast Asia. The insect was first detected in Michigan in 2002, and quickly spread. The emerald ash borer feeds exclusively on ash trees in North America, typically killing them within three to four years of infestation. Tens of millions of ash trees have been lost to this invasive pest. While infestations have not yet been reported within Chester County, they have been found in most Pennsylvania counties, including Bucks and Montgomery counties. Infestations can be reported to the Pennsylvania Department of Agriculture. Additional information on this species, its spread, and recommended management plans can be obtained from the PADCNr:

<http://www.dcnr.state.pa.us/forestry/insectsdisease/eab/index.htm>



*Japanese knotweed (above) and mile-a-minute weed (below) are invasive species seen throughout southeastern Pennsylvania.*



# Resource Protection Measures

Figure 6-10 provides a summary of the existing natural resource protection measures in Elverson Borough. Understanding the level of protection that is currently afforded by the Borough’s Land Use Ordinances is a key step in understanding where improvements are needed.

**Figure 6-10: Assessment of Current Natural Resource Protection Measures**

Ordinance Section	SLDO - Article VI Design Standards	Zoning Ordinance - Article IX Natural Features Conservation
<b>Water Resources</b>		
Floodplains/Floodplain Overlay District	§605	§ 901
<b>Land Resources</b>		
Steep Slope Conservation	n/a	§902
Erosion Control	§603	n/a
<b>Biotic Resources</b>		
Woodlands, Hedgerows, Specimen Trees	§625	§903
Riparian Buffers		
Wetlands and Wetlands Margins		

Ordinance Section	SLDO - Article VI Design Standards	Zoning Ordinance - Article IX Natural Features Conservation
<b>Biotic Resources (continued)</b>		
Timber Harvesting Plan		
Tree Replacement	§625	n/a
Tree Protection during Construction	§625	n/a

**Yes** Effective resource protection standards are in place.

**Limited** While standards are in place for the protection of the resource(s), additional standards should be adopted to meet the natural resources goal and objectives.

**No** No standards are in place for the protection of the resource(s).

The protection of natural resources is a high priority for municipalities throughout Chester County, not only for their environmental and aesthetic value but to meet state and federal requirements for their conservation and protection, and reduction in natural hazards such as flooding. Although Elverson is a Borough and an Urban Landscape, there are many acres of natural resources that have not been disturbed by development or otherwise, providing Elverson an opportunity to conserve and protect remaining natural resources.

According to the assessment of current natural resource protection standards (zoning subdivision and land development ordinance) and in Figure 6-10, there is a need for new or revised standards for a number of resources and related activities. These include steep slopes, erosion control, woodlands, riparian buffers, wetlands, timber harvesting, and tree replacement.

# Planning Implications

## Resource Relationship

Even at the Borough level, it is important to understand the connection between various natural resources. For example, the disturbance of an area of woodland on a steep slope will have a direct impact on the associated slope and the stream corridor at the bottom of the slope. The removal of vegetation will severely reduce the underlying soil's holding capacity, increasing erosion and sedimentation and significantly reducing the soil's infiltration capacity and therefore groundwater recharge and water quality. Although not always clearly physically connected, the status or condition of land, water, and biotic resources will impact the status or condition of adjacent or otherwise related resources within the Borough.

## Disturbance Limitations

The establishment of specific disturbance limitations is of particular importance in protecting natural resources. For some resources, the recommended disturbance allowance may be zero percent or no disturbance (as with floodplains and wetlands). In other cases there may be some allowance for disturbance, but an upper limit is recommended (as with woodlands and steep slopes). Disturbance limitations should

be reasonable and directly linked to protection of the resource which, in turn, should be clearly linked to health, safety, and welfare issues.

# Recommendations

The recommendations below detail how Elverson Borough can further protect and preserve natural resources, as well as enhance those resources where possible. Priorities for the implementation of these recommendations are established in Chapter 9, Implementation Measures. Implementation of the recommendations identified below will help Elverson Borough achieve its natural resources goal to:

Protect, maintain, restore, and enhance natural resource features, landscapes, and functions to sustain ecosystems, public health, and quality of life.

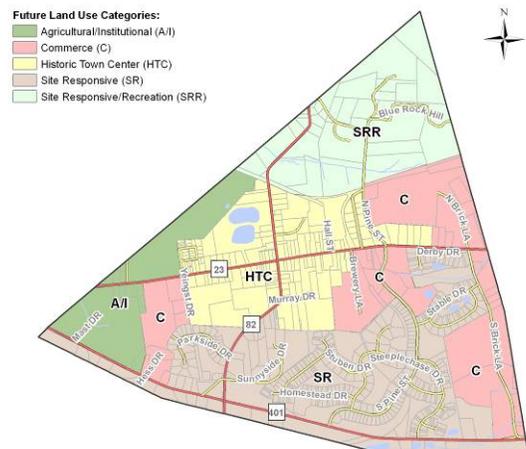
## 6-1. Revise land use ordinances to define and protect natural resources.

As indicated in Figure 6-10, there are several natural resources that are not addressed in the Borough’s land use ordinances, including riparian buffers and wetlands. The first step to preserve and/or protect water, land, and biotic resources is to provide clear definitions for these resources. The next step is to review and amend resource protection standards in ordinances to meet the resource goal and objectives of the Borough and address any applicable state and federal guidelines, such as the Chesapeake Bay Strategies. Disturbance limits would be a critical part of revisions, as would be illustrations for the clarification of terms that address design and/or spatial considerations.

## 6-2. Direct growth to the most appropriate areas, as identified in the Future Land Use Plan (Chapter 3) and supported by the Act 537 Plan and the land use ordinances.

The Future Land Use Plan identifies five land use categories and a vision for how growth and conservation should occur in each of these categories. In regard to developable acres, 89 of the 137 acres available for development are in the Site-Responsive (SR) or Site-Responsive/Recreation (SRR) land use categories, where the recommended development option is the Site Responsive Residential Community Option. The Site Responsive Residential Community Option prioritizes the protection of natural resources and retention of open space while accommodating growth at varying densities. The SR and SRR land use categories encompass the majority of natural resources in the Borough including steep slopes, wetlands, streams, and woodlands.

Figure 6-11: Future Land Use



**6-3. Encourage natural resource protection at the individual level through public education regarding the value of natural resources and protection strategies.**

The purview of the municipal website should be expanded to include educational materials regarding the value of natural resources and protection strategies. For example, an article could be included regarding the importance of native plant species in landscaping and screening scenarios, as well as a list of native plants that are available in the local nursery trade and invasive plants that should be avoided or removed. Educational materials (brochures, design guides, plant lists, etc.) should be made available at Borough Hall. The same materials should also be handed out at municipal events such as the community yard sale or Elverson Day. Natural resource brochures and related materials are available from the Penn State Cooperative Extension and the Pennsylvania Department of Conservation and Natural Resources.

**6-4. Revise land use ordinances to minimize the percentage of impervious surfaces permitted and encourage the use of porous paving and other pervious surfaces in certain applications.**

Impervious surfaces such as swimming pools and driveways impede the infiltration of surface water into the aquifer and increase the impact of stormwater runoff on surrounding properties. While it may be difficult or even impossible to reduce the permitted impervious surface percentages in the Historic Town Center (HTC) land use category because of associated lot sizes, there is more flexibility in the SR, SRR, Agricultural/Institutional (AI) and Commerce (C) land use categories. To further reduce the impact of new subdivisions and land development, the land use ordinances should also be amended to permit and/or promote the installation of pervious paving in appropriate applications such as residential, commercial, institutional, and light industrial land uses.

**6-5. Pursue an appropriate water balance with withdrawals and discharge within the Borough.**

As a headwaters area split between the Delaware and Susquehanna rivers, Elverson is in a unique position. Careful consideration should be given to decisions regarding water withdrawals and wastewater disposal, with the goal of balancing discharges and withdrawals within each watershed. As part of this, consideration must be given to the Southeastern Pennsylvania Groundwater Protection Area established by the Delaware River Basin Commission (DRBC). DRBC requires a permit for any proposed groundwater withdrawal of more than 10,000 gallons per day over a 30-day period in this area. This applies to the South Branch French Creek watershed in Elverson. See discussion on sewage and water facilities within Chapter 4: Community Facilities and Services for additional detail.

**6-6. Revise steep slope protection standards to include specific disturbance limitations for slopes greater than 15 percent.**

The disturbance of steep slopes can result in substantial economic and environmental impacts on subject properties as well as on adjacent and downstream properties. The Borough should amend their Natural Features Conservation standards to define slopes of 15-25 percent and 25 percent and

greater and include specific disturbance limitations for each category based on potential impacts.

**6-7. Encourage a continued partnership with the Chester County Conservation District (CCCD) and bring soil erosion and sedimentation regulations into compliance with CCCD recommendations and/or standards.**

CCCD is required to participate in the review of subdivisions or land development that meet specific disturbance thresholds. In addition, the CCCD can be a valuable resource to a municipality with an agricultural presence and/or concerns about the quality of their streams and potential flooding. The CCCD works with all municipalities in the County and, therefore, is familiar with technologies and strategies that have worked or those that should be avoided.

**6-8. Revise woodland management standards to require a timber harvesting permit. Expand plant lists to include recommended native plants and invasive plants to avoid. Include specific disturbance limitations for all woodland classifications.**

In accordance with Act 247, timber harvesting is a permitted use in every district in any municipality in the state, including Elverson Borough. To ensure that woodland resources are not removed at a rate inconsistent with the Borough's goal for resource protection, local ordinances can require a timber harvesting permit to limit the removal of woodlands and ensure that clear cutting does not occur.

The Borough should include or expand their recommended plant list(s) to include a variety of native plant materials (trees, shrubs, grasses, evergreen, deciduous) that would blend in with the locally indigenous flora and fauna. Perhaps more importantly, the Borough should include a list of invasive species that should be avoided, and preferably removed, from the local landscape. Two sources for plants lists include the Penn State Cooperative Extension and the Pennsylvania Department of Conservation and Natural Resources (PADCNR).

The Borough should develop a management plan to address the emerald ash borer due to its potential impacts to the woodlands and street trees within Elverson. Emerald ash borer infestations should be reported to the Pennsylvania Department of Agriculture. Additional information on this species, its spread, and recommended management plans can be obtained from the PADCNR: <http://www.dcnr.state.pa.us/forestry/insectsdisease/eab/index.htm>.

Keeping in mind that the Borough is a growth area and tree removal is often necessary to accommodate the higher densities and intensity of land uses, woodland conservation standards should be made more restrictive in the areas Elverson has identified for resource protection and where the Big Woods designation is found within the Borough.

**6-9. Revise the land use ordinances to include regulations that require the preservation of riparian buffer areas and the establishment of forested riparian buffers where the stream edge has been degraded.**

The protection of existing riparian forest buffers can preserve a stream that is thriving, while the establishment of a riparian forest buffer can rehabilitate a degraded stream. There are sections of streams in Elverson in each of those

conditions. The East Branch of the Conestoga River has been identified by the state as an impaired stream. The South Branch of the French Creek has been identified as EV or Exceptional Value because of its outstanding ecological or recreational value. The Borough should establish riparian buffer standards for these and other streams in the Borough that protect existing vegetated buffers and enhance degraded buffers as possible within the urbanized landscape of the Borough.

**6-10. Revise land use ordinances to reference federal and/or state wetland protection standards and require the establishment of a wetlands margin or buffer to increase the protection of wetlands.**

Currently there are no standards addressing the conservation and protection of wetlands in the Borough's land use ordinances. While most of the eight acres of NWI wetlands identified in the Borough are located adjacent to streams and or within floodplain areas and will benefit from protection standards for those related resources, standards should be established that require protection around the edges of wetlands. One option would be to require a 25-50 foot buffer or wetlands margin around identified wetlands that would limit the types of uses permitted. Such provisions could protect key attributes of the wetlands (such as wildlife habitat, storage of stormwater, and filtering of nutrients and sediment) by limiting disturbance and impervious cover. Another option would be to apply riparian buffer standards (discussed in Recommendation 6-9) to wetlands as well.

Further, the Borough should amend the plan requirements section (Article V) of the Subdivision and Land Development Ordinance to require that wetlands (and wetlands margins if applicable) be identified on the sketch plan (Section 400.1.I) and the preliminary plan (Section 401.4.L).

**6-11. Maintain an awareness of unique habitats and bio-diversity corridors, and encourage the protection, restoration, or establishment of viable habitat areas.**

Habitat preservation is directly related to the condition of natural resources in the Borough. By protecting or limiting the disturbance of steep slopes, woodlands, riparian buffers, and wetlands (Recommendations 6-6, 6-8, 6-9, 6-10) the Borough is effectively preserving habitat areas while promoting natural diversity. The importance of habitat protection and natural diversity could also be included with other educational materials on the Borough website and/or at community events (see Recommendation 6-3).

# Links

**Army Corps of Engineers (ACOE), Philadelphia District**  
[www.nap.usace.army.mil](http://www.nap.usace.army.mil)

**Chester County Conservation District**  
<http://www.chesco.org/index.aspx?nid=205>

**Chester County Water Resources Authority**  
[www.chesco.org/water](http://www.chesco.org/water)

**Federal Emergency Management Agency (FEMA)**  
[www.fema.gov](http://www.fema.gov)

**National Wetlands Inventory**  
[www.fws.gov/wetlands](http://www.fws.gov/wetlands)

**Natural Lands Trust**  
[www.natlands.org](http://www.natlands.org)

**Pennsylvania Cooperative Extension**  
<http://extension.psu.edu>

**Pennsylvania Department of Conservation and Natural Resources**  
[www.dcnr.state.pa.us](http://www.dcnr.state.pa.us)

**Pennsylvania Department of Environmental Protection**  
[www.depweb.state.pa.us](http://www.depweb.state.pa.us)

**Pennsylvania Natural Heritage Program**  
[www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us)

**U.S. Geological Survey (USGS)**  
[www.usgs.gov](http://www.usgs.gov)

**U.S. Natural Resources Conservation Service (NRCS)**  
[www.nrcs.usda.gov](http://www.nrcs.usda.gov)