

## **Appendix F**

### **Natural Resource/Open Space Work Group Report**

July 2002, revised February 2004

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## **Goals of the Work Group**

The Natural Resource/Open Space work group has three goals:

- 1) to gather information and data about natural resources in Philipstown that will aid the comprehensive planning process;
- 2) to inform the plan and educate the community about the benefits and costs of land preservation;
- 3) and to make recommendations for the protection of natural resources.

## **Introduction**

Philipstown's open space provides important natural resources for the community-at-large; it supports native species, maintains natural ecological processes, and contributes to our health and quality of life. Scenic areas, recreational opportunities and rural character make Philipstown a unique home.

Philipstown's open space resources are its natural infrastructure. As with man-made infrastructure it should be a factor, balanced with other community goals, of determining the appropriate location, type and scale of development.

Our open space inventory shows that Philipstown is rich in natural resources. (see maps at the end of this report.) Because of significant conservation efforts over past decades as well as large tracts of still undeveloped lands held by private landowners, Philipstown is fortunate to have an abundance of high quality natural resources still intact.

This report examines the economics of open space, explains the importance of natural resources to Philipstown's future, describes the function of open space in supporting these natural resources, and offers recommendations that can be incorporated into the comprehensive plan to meet the community's goals for natural resource protection.

## **Methodology**

This report categorizes open space according to four natural resource functions – recreation, community character, habitat and surface and ground water supply. This report analyzes each of these functions. A brief description of the landscape elements that make up each function follows:

Recreation – land for hiking, fishing, hunting, boating.

Community Character - ridgelines, viewsheds, scenic places, historical and cultural sites

Surface and ground water resources – land that protects the quality and supply of surface water and aquifers such as steep slopes, wetlands, streams, hydric soils

Habitat – large unfragmented forests, significant ecological communities, sites of rare or endangered species, lands that promote biodiversity

Features that contribute to each of these functions were mapped and recommendations are made for a variety of ways the natural resources can be protected.

**Facts and Findings**

This section includes statistics on preserved lands in Philipstown, an outline of the connection between taxes, open space preservation and cost of community services, and a description and inventory of the natural resources in town.

**Statistics on Preserved Lands**

The following is a snapshot of the preserved acreage in Philipstown (outside of the Villages): (Data is provided by Putnam County Real Property Department and Philipstown Assessors Office May 2002)

Philipstown Total Acres	29,873 acres	
Untaxed parcels	13,883 acres	46.5% of acres are off the tax rolls This includes charitable & religious organizations & preserved lands
Total Assessed Value	\$830,483,814	
Total Value Untaxed Parcels	\$109,337,133	13% of assessed value is off the tax rolls
Total Acres	29,873 acres	
Total preserved acres	12,700 acres	42.5% of acres are preserved
Acres under conservation easement	1447 acres	
State owned land	9092 acres	
Assessed value of state owned land	\$28,732,400	average value per acre \$3160/acre

**Taxes and Cost of Community Services**

A Cost of Community Services (COCS) study is a tool for establishing the relationship between what a particular land use generates in taxes and what it requires in community services. It compares how much tax revenue a property generates with how much it costs the Town in community services. These services usually include schools, emergency services, and road maintenance. They may also include sewage disposal, water supply, and solid waste disposal.

As a follow-up to the comprehensive planning process the Town may elect to conduct a COCS study. However, at this stage we can draw general conclusions using numbers gathered from some other communities and make the following observations: COCS studies of the ratio between property taxes and the cost of services to the town in twenty-one towns in the

Northeast show an average of 1.15 for residential property; 0.37 for commercial property and 0.37 for open space.

To translate this into dollars and cents, the ratio of 1.15 means the town spends \$115 for every \$100 it receives in taxes for residential property. To take this to a specific level of taxes which may be more realistic - a residence with a valuation of \$300,000 may pay about \$8000 in taxes on average, but that residence costs the town \$9200 in services, based on the 1.15 ratio. In contrast, with an average ratio of 0.37 commercial property only requires \$37 in services for every \$100 it pays in, and this ratio is also true of open space. The most obvious reason for this difference is that the largest tax item is schools, which are needed only in connection with residential property.

A report from Ad Hoc Associates (1995) states in The Effects of Development and Land Conservation and on Property Taxes in Connecticut Towns, "The tax bills are generally highest in towns that are most developed and the lowest in towns that are most rural. The tax bill on the median-value house is, on average, higher in towns that have larger tax bases; more residents; more employment; more retail sales; more commercial, industrial and utility taxable property value; are more densely populated; and have a low percentage of their land in undeveloped forest." Obviously, development spurs residential growth, creating jobs, attracting new people to the town and the municipal government has to provide a number of services for which taxes must be raised.

**Philipstown and Payment in lieu of taxes for state owned land (PILOTS)**

Putnam County currently receives \$600,000 a year as an executive payment in lieu of taxes. The money is then apportioned to the towns, school districts and other special districts in Putnam, based on how much acreage the state owns. Below is the breakdown for 2001. (Data is provided by Putnam County Real Property Department and Philipstown Assessors Office)

PAYMENT IN LIEU OF TAXES (PILOTS) (May 2002)

\$43,000 to Philipstown	9070 acres	
\$222,000 to Haldane	10360 acres	(Haldane extends beyond border of Philipstown)
\$63,000 to Garrison	2954 acres	(Garrison extends beyond border of Philipstown)
\$328,000 payment in lieu of taxes to Philipstown		

ASSESSMENTS AND TAX RATES

\$28,732,400 is total assessed value of state owned land in Philipstown

\$3,160 per acre is the average assessed value of state owned park land

\$26.17/1000 is tax rate in Haldane for school, town, county and special districts (I.e. fire district)

\$18.52/1000 is tax rate in Garrison for school, town, county and special districts (I.e. fire district)

## POTENTIAL FOR MORE PILOTS

\$750,063 is a rough approximation of payment in lieu of taxes Philipstown could receive if NY State paid the Haldane tax rate for 9070 acres in Town at an average assessed value of \$3160.

\$474,724 is the payment using a conservative valuation of \$2000 per acre.

It should be noted that this PILOTS was determined over seven years ago, when the State owned much less land in Putnam County. Since 1996 the State has purchased over 4000 additional acres in Philipstown. As a result, Philipstown gets a larger percentage of the \$600K that comes to the County, but the total dollars coming to the County has not changed.

### **Open Space and cost to the town**

Some residents are convinced that preserving open space will cost the town much in uncollected taxes, and will require raising other taxes to support it. There are a number of studies that show that this is a misconception. The figures prove that it costs the community much less to keep land undeveloped than to develop it. But tax revenues are not the whole story. Protected open space increases the value of residential and commercial properties throughout the community, and studies indicate that property adjacent to open space commands a higher price.

Open space maintains the rural character of our community, making Philipstown an attractive place to live and have a business. It adds value by maintaining water and air quality and controlling flooding. For each of us it contributes something to our quality of life, however one chooses to define that "something" on which one cannot put a price tag. We should not base our land-use policy primarily on taxes, because doing so will result in a plan that does not consider the full range of concerns that must be addressed.

## **Natural Resources**

### **Surface and Ground Water Resources**

Surface and ground water resources refer to physical attributes within the town that contribute to water quality and quantity; these include aquifers, hydric soils, wetlands and streams, floodplains and steep slopes. Community members who were part of Philipstown 2020 identified the need to identify parcels of environmental significance and either preserve them, or develop them in a way that is sensitive to their significance.

The following elements are represented on the Surface and Ground Water Resource map at the end of this report. This work group report offers a brief commentary on each element. The overview of each of these elements is taken from the findings of the Metropolitan Conservation Alliance "Conservation Area Overlay District: A Model Local Law."

## **Aquifers**

### Overview

Aquifers are underground reservoirs of water, storing water for varying periods of time; they can function as a major source of ground water supply, including drinking water. Aquifers can also be a significant element for habitats for various species, as the source for springs and surface water that sustains vegetation.

The source of water for an aquifer is called its *recharge area*. Since this recharge area may be some distance from an aquifer, measures to protect ground water may extend far beyond the area directly over an aquifer. For example, precipitation falling on a hillside soaks into the ground, finding its way down into crevices in the bedrock and flowing down hill feeding an aquifer a mile away. It is therefore important to keep in mind the interrelationship between steep slopes, streams, wetlands and aquifers.

Aquifers are also affected by development activity that increases impermeable surfaces that cause increased runoff and prevents infiltration into the aquifer. (MCA, 2002).

### Observations

The Aquifer map at the end of this report shows the location of Philipstown's aquifers, but more analysis is needed to better understand their function and significance. The map indicates that all the aquifers in the town are in the Route 9 corridor. This follows because the road follows the valley, which is also where the geology to support aquifers is found. The highest yielding aquifers are in the Clove Creek Basin in the North Highlands. There has been a lot of development over the aquifers, potentially creating sources of contamination and changing the recharge area of the aquifers.

## **Wetlands & Hydric Soils**

### Overview

Wetlands are commonly referred to as marshes, swamps, bogs or vernal pools; they may be always flooded, or only seasonally, or even only once every few years. Vegetation and soil are the criteria for defining a wetland. (MCA, 2002)

Wetlands serve a variety of functions. Some of them are:

- a) providing surface water and recharging groundwater and aquifers
- b) controlling flooding and stormwater runoff
- a) acting as filters for surface water pollutants.
- b) supporting wildlife and vegetation, critical to a healthy ecosystem.

Hydric soils also play a similar role in recharging groundwater, controlling flooding and providing habitat. Hydric soils are anaerobic due to saturation through flooding or ponding and may also indicate a wetland, but require field checking for vegetation that defines a wetland.

### Observations

Wetlands and Hydric Soils are scattered throughout the Town as shown on the map. There are three general categories - National Wetlands, NYSDEC wetlands and

The Town's newly adopted wetlands ordinance requires a permit for activity within 100 feet of a wetland or waterway, and relates to wetlands of a quarter acre or more.

## **Floodplains**

### Overview

A floodplain is any area of land that is susceptible to being inundated by water as a result of a stream or waterway overflowing. Floodplains are characterized by the probability of their flooding; an “one-hundred year floodplain” has a one-percent chance of flooding in any given year.

Floodplains provide valuable functions: controlling runoff, decreasing the potential for catastrophic flooding, and allowing water to filter into the groundwater table. Floodplains also enhance water quality by capturing sediment and nutrients.

Vegetation and trees in the floodplain are important for stabilizing stream banks and thus reducing erosion. Floodplains also provide critical habitat for wildlife and aquatic species, serving as a transition zone between streams and uplands. (MCA, 2002)

### Observations

Flood plains generally follow streams and they exist along numerous creeks and streams in Town.

## **Steep slopes**

### Overview

Slopes are defined as a percentage of the amount the land rises over a horizontal distance. For example, a slope of 15% means that for every 100 feet of horizontal distance the land rises 15 feet.

Steep slopes are environmentally sensitive landforms, serving a multitude of roles, including such features as shallow soils over bedrock, bedrock features, groundwater seeps, or streams and wetlands found on or adjacent to steep slopes. Drainage patterns along slopes feed streams, wetlands and aquifers. Steep slopes also provide critical habitat for some wildlife species.

Disturbing steep slopes can aggravate erosion and sedimentation, disturbing habitats, altering drainage patterns, and damaging surface and subsurface hydrology and intensifying flooding.

### Observations

Philipstown’s local laws characterize steep slopes by three grades: Grade I is slopes between 15% - 24%, Grade II is slopes between 25 – 34% and Grade III is slopes over 35%.

The Steep Slopes and Streams map at the end of this report shows that steep slopes is perhaps Philipstown’s most dominant landscape.

## **Notes for Future Actions for preserving surface and ground water resources**

### Aquifers

The Town needs to better understand the aquifers, making use of the County’s aquifer study, and other sources such as USGS and the Highlands Regional Study update.

### Wetlands and Streams

The Town has just reviewed and updated its wetlands ordinance.



### Steep Slopes

The Town must address steep slopes, refining the current regulations, to address the need to have growth, but to protect the steep slopes, and the surface and ground water resources they impact. In particular the Town should consider what mitigation measures to put in place to protect slopes - both for water quality and quantity, and community character. It should also review what prohibitions to put in place with regards to disturbance of slopes.

### **Community Character Resources**

At the Philipstown 2020 workshop held in April 2001, community members were in agreement that community character is important to them because it preserves the ‘rural feeling of the town.’

Community character refers to physical attributes within the town that add special beauty or have special aesthetic value. These include ridgelines, views, scenic places, trails, stonewalls, large trees, dirt roads, the Hudson River shoreline, local treasures, and scenic viewsheds visible from both land and the river.

The following elements are represented on the Community Character Open Space Function map. Below is a brief commentary on each element.

#### **Ridgelines**

Ridgelines are areas along the tops of hills that are visible from many points within the Town. Philipstown’s ridgelines contribute significantly to the beauty of the Town and to its rugged, rural character. It is important that they be protected.

Fortunately, most of the Town’s ridgelines are located within preserved areas, including parks and eased lands. There are three notable exceptions, and consideration should be given as to how much protection should be provided for them. They are:

- 1) just to the north of the Appalachian Trail in Garrison, extending from Fort Defiance Hill to the northeast
- 2) north of Fahnestock, up to the border with Dutchess County
- 3) east of Route 9, north of the Bird and Bottle Inn

#### **Views**

“Views” refers to scenic areas that are visible from 25 or more points within the Town and therefore have a high profile. The Hudson Highlands are renowned for their breathtaking views, and Philipstown has some that are remarkable. Care must be given to make sure that future development does not destroy them. Again, many of the best views are already protected by either parkland or easements. Areas that are not protected and may warrant special treatment in the new comprehensive plan include:

- 1) the view from the Hudson River looking into the area east of Route 9D, south of Cold Spring, along the ridgeline accessed from Lane Gate Road
- 2) the view of Scofield Ridge

- 3) the view east from Route 9 towards East Mountain Road South
- 4) the view west from Route 9 across the Garrison Golf Club

### **Scenic Places**

Scenic places are not visible from as many different locations as views, but they are still areas of special beauty that may warrant an enhanced level of protection. The prior comprehensive plan included the identification of 30 such places along Route 9. The committee was not sure the scenic places noted on this list were particularly valuable. In addition, many other scenic places were identified in the 1991 Master Plan that have not yet been mapped. We suggest that as part of further open space planning efforts community members indicate what areas are of scenic significance to them. This input can then be used to generate a list that is more relevant.

### **Trails**

The community character map shows most of the major trails within the Town, although there are many smaller trails that are not shown. Trails allow the community to experience the wonder of our natural beauty and should be retained wherever possible. The majority of major trails in Philipstown are on protected lands.

### **Riverfront**

The shoreline along the Hudson River is a unique and valuable feature of Philipstown's character. Appendix H provides in depth discussion of the riverfront.

### **Local Treasures**

A local treasure is a unique natural or human-made feature that may or may not fit into one of the other categories, but is so highly valued by the community as to warrant the consideration for protection. While further community input is required, some possible candidates for local treasures are: Castle Rock, Indian Brook Falls, Breakneck Ridge, Constitution Marsh, Mekeel's Corner, Garrison Landing, Cold Spring waterfront, Dick's Castle.

### **Future actions for preserving community character**

**Preservation of views, ridgelines and scenic places:** Protecting these assets is not just a matter of implementing controls on new development on undeveloped parcels. Changes to an already developed parcel could significantly impact a view, ridgeline or scenic place.

**Trail preservation:** We believe that the new comprehensive plan should include language requiring that permit applicants identify any trails on their property, and that the presence of such trails should trigger a review designed to preserve continuity of trails. Relocating trails should be seen as an acceptable option available to the landowner.

As part of the inventory for the comprehensive plan and to work towards potential preservation targets we suggest the open space plan committee solicit community input at a forum about specific scenic places and local treasures to augment the 1991 Master Plan.

## **Habitat Resources**

Philipstown is fortunate to have a wide variety of high quality natural habitats. Community members who participated in Philipstown 2020 recognized the need to identify areas of environmental significance and either preserve them or develop them in a way that is sensitive to their significance.

Several terms are valuable for discussing importance of natural habitats in Philipstown: biodiversity, matrix forest and significant ecological communities. These are each defined and discussed below.

### **Biodiversity**

To recognize the value of particular habitats it is necessary to understand the features of a habitat, and how a variety of habitats, and the species that thrive within them, depend on each other. The interdependence of species, habitats and natural processes is referred to as *biodiversity*. The types of species included while considering biodiversity goes beyond just birds and mammals and includes: microorganisms, insects, fish, reptiles, amphibians, plants and trees.

Biodiversity is a more complicated environmental issue than, for example, protecting aquifers, steep slopes or wetlands. Because it deals with ecological systems – habitats, species and natural processes – it is not a simple matter of saving a species or mitigating some effect of development.

Human activities, if done without environmental consequences in mind, can pose a danger to biodiversity in Philipstown through:

- lost or fragmented habitats
- pollution of air, water and soil
- introduction of non-native plants and animals which displace native species

One of the first steps in maintaining biodiversity is to survey the town to assess likely areas that are significant to biodiversity. Hudsonia, Ltd. in cooperation with the NYS DEC's Hudson River Estuary Program has provided training to some residents in conducting a biodiversity assessment of the town. The Hudson Highlands Land Trust and Constitution Marsh Audubon Center and Sanctuary spearheaded this effort; they have mapped an area of 5000 acres in the northern part of town.

Biodiversity, and its application to land use planning, is still a relatively new field. It is not possible to predict the effects of losing any particular species or habitat, and we do not know what level of biodiversity is needed to maintain a healthy ecosystem. Nonetheless, it does seem wise to continue to better understand the biodiversity in Philipstown, and to maintain it as much as possible. (Kiviat and Stevens, 2001).

It is also an issue of regional value, since habitats do not recognize municipal borders. Neighboring communities of Fishkill, East Fishkill, Putnam Valley and Cortlandt are also conducting biodiversity assessments. Ideally, the information gathered in these towns can be amalgamated to form a cohesive picture of the area's biological resources and treasures.

**Matrix Forest**

The matrix forest block as defined by The Nature Conservancy (TNC) refers to a very large forest (between 15,000 – 25,000 acres in size) that is relatively unfragmented by roads or transmission lines or development. The size is defined by what area a forest needs to be able to withstand natural disturbances, and provide habitat for area-sensitive species. Natural disturbances within Philipstown include hurricanes, insect outbreaks, tornadoes, fires, ice storms, and floods.

The Natural Habitat map at the end of this report shows the extent of the matrix forest in Philipstown; this forest also extends into Putnam Valley, East Fishkill and Fishkill. The concept of the matrix forest underscores the regional importance of Philipstown's natural infrastructure. A variety of habitats and ecological communities within the matrix forest depend on it to continue to thrive.

A number of birds and reptiles that are listed in New York State as being of "Special Concern" depend upon the unfragmented habitat the Philipstown Matrix Forest provides. Sharp-shinned Hawk, Cooper's Hawk, Northern Goshawk, Red-Shouldered Hawk, Cerulean Warbler, Wood Turtle, Eastern Box Turtle and Eastern Hognose Snake can be found in Philipstown because of the significant forest cover and types that exist here. (NYS DEC Endangered Species List, 2004). The level to which the Philipstown Matrix Forest is important for the health of each of these species' populations is uncertain at this time, but it may become evident that we have one or more "responsibility species" occurring here. That is, a species of plant or animal that exists in relatively high numbers here, whose range is limited to this area, or whose range has its focal point in this area, such that, we have a responsibility to ensure the survival of the species or its New York population.

**Significant Ecological Communities**

New York Natural Heritage Program defines an ecological community as "a variable assemblage of interacting plant and animal populations that share a common environment." This program tracks rare plants and animals and significant ecological communities in the state.

The work group received data from the NY Natural Heritage Program on significant ecological communities that exist within the town. Examples of chestnut oak forest, Appalachian oak-hickory forest, oak-tulip tree forest and red cedar rocky summit occur locally. Communities range in size, and are contained within habitats. They depend on the matrix forest to remain viable.

Data on rare and endangered plant and animal species is not available to the public-at-large and specific sites cannot be indicated on maps in the plan. Bald Eagles, Peregrine Falcons, and Timber Rattlesnakes are all present in Philipstown because of the habitat(s) found here. The East Hudson Highlands, particularly Philipstown, is the only known location in New York for the Eastern Fence Lizard (this is a true responsibility species).

## **Recommendations for preserving natural resources**

One of the fundamental purposes of this comprehensive plan is to balance conservation and development. Our recommendations are framed with that firmly in mind. The majority of them seek to protect natural resources on a town-wide basis, not singling out any particular parcel or area. The open space work group offers the following recommendations at this point:

- 1) Review steep slopes legislation to better protect our aquifers and wetlands
- 2) Review wetlands ordinance and explore increasing buffers along streams
- 3) Review timber harvesting laws to better protect natural resources
- 4) Develop aquifer protection land use guidelines
- 5) Work to achieve greater payment in lieu of taxes for state owned land.
- 6) Encourage land use guidelines and zoning that retains unfragmented forest habitats.
- 7) Appoint an open space planning advisory committee to prepare an Open Space Plan and identify particular parcels that should be preserved. This committee, in conjunction with non-profit conservation organizations, will also work to identify funding mechanisms for preservation
- 8) Develop scenic area guidelines
- 9) Identify trail corridors through the Philipstown Greenway Committee
- 10) Encourage construction practices that conserve energy and resources
- 11) Increase knowledge and understanding of biodiversity and identify habitats within the town that maintain biodiversity
- 12) Work with Putnam Riverfront Alliance to improve access to the River

The open space work group suggests that the top priority should be protection of our water supply. This goal calls for safeguarding our steep slopes, wetlands and streams, and aquifers through tightening up land use regulations, stricter enforcement of existing codes, and preserving particular parcels.

When opportunities arise for preserving open space, land that serves multiple natural resource values should generally be given priority. In particular, land that is contiguous with already preserved land is a high priority

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