

August 2014

The Mill Brook Preserve

A Plan for Its Creation and Management



Town and Village of New Paltz
Clean Water and Open Space
Protection Commission

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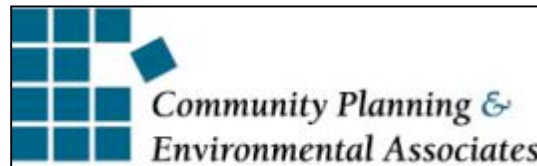
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- Peter Bienstock
- Steve Erman
- Floyd Kniffen
- David Lent
- John Orcutt, Sr. and Sunset Ridge LLC
- Woodland Pond at New Paltz

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- Save the Woods and Wetlands
- Wallkill Valley Land Trust
- Mayor Jason West, Village of New Paltz
- Former Mayor Terry Dungan, Village of New Paltz
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1.0 Introduction

The Mill Brook Area

Consisting of stream, wetland, and upland habitats nestled in the heart of the Village, the Mill Brook area is a spectacular setting that contributes much to the quality of life in the area. These contributions include: wildlife habitat, water pollution prevention, recreation, and provision of a unique “wilderness in the city” character due to the proximity of the urban Village. The tributaries and their surrounding lands make up one of the last remaining undeveloped areas in the Village of New Paltz.

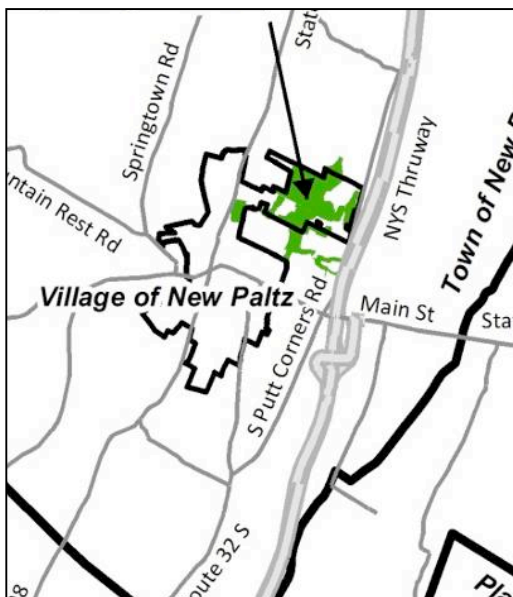
Wet meadows, marshes, wooded swamps, beaver ponds, woodland pools, and floodplains in the Mill Brook area are important for recreational and cultural amenities and as an important ecological connection to habitats outside the Village. The Mill Brook stream system connects to wetlands on the Wallkill River floodplain west of Route 32, as well as additional wetlands on either side of Henry W. DuBois Drive, as well as a wetland on the east side of Duzine Elementary School.

The stream’s watershed includes a large portion of the Village of New Paltz and extends into the Town of New Paltz, crossing the New York State Thruway. The Mill Brook, more formally known as Tributary 13, has two branches that flow through a mix of commercial and residential land uses. Several large wooded areas and a wetland complex can be found within the Mill Brook’s sub-watershed. Culverts are the only remaining connection between the Mill Brook and the extensive wetlands east of the Thruway.

In addition to undeveloped lands, the Mill Brook flows through both residential areas and Moriello Park. The remains of the original mill pond at Moriello Park has eutrophied into wet meadow and marsh. The stream flows through woodland patches ranging from a narrow riparian area to nearly 270 acres. It then flows between a commercial/industrial area along State Route 32 and the Wallkill Valley Rail Trail where it becomes very slow, terraced, and channelized. Beyond the Rail Trail, the Mill Brook



Wet meadow along the Mill Brook



1. Location of the Mill Brook Preserve

leaves the Route 32 area to flow through a mixture of residential, recreational, agricultural, wooded, and wetland areas, before merging with the Wallkill River approximately 1.5 miles north of the State Route 299 bridge.

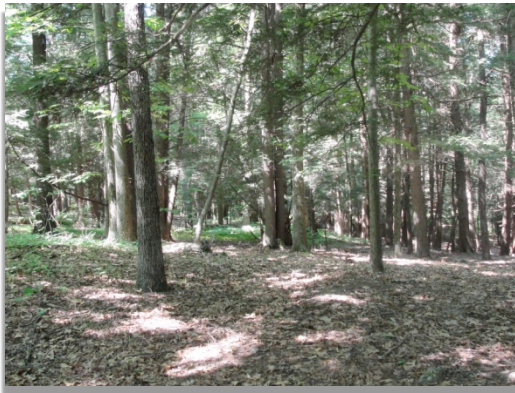
2.0 Vision and Goals

Mission Statement

This Plan provides policies and guidelines for the stewardship of the proposed Mill Brook Preserve. It will help the community protect, conserve and interpret the biological, recreational, and aesthetic resources of the landscape found here. The long-term mission is to preserve, restore and interpret natural plant and animal communities; to protect the landscape and character that is vital to defining the neighborhood and the entire Village and the Town of New Paltz; and to provide for management practices that maximize ecological, educational and recreational benefits while minimizing impacts of such use.

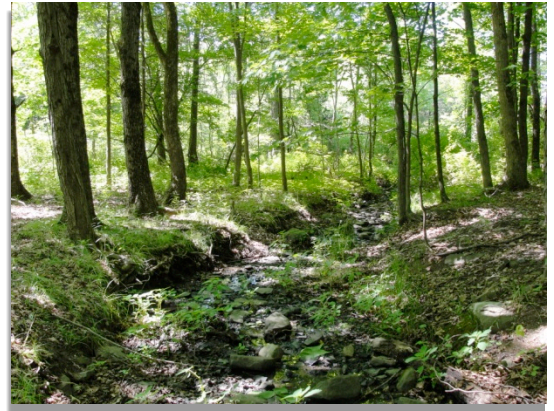
The mission of the proposed Mill Brook Preserve is to preserve open space, biodiversity and wildlife habitats, to allow the existing natural systems to provide flood protection, erosion control, drainage and other natural functions, and to provide recreational and educational opportunities for residents and visitors of New Paltz. The proposed preserve will be a model in the region for how urbanized areas can have a positive relationship with the local natural systems to make human and natural communities mutually supportive and sustainable. The Preserve will provide a retreat where people can recreate and contemplate the natural world.

•Cultural and Visual Amenities



Woodland Habitat

The Preserve area has historical importance, as well as having a role in the visual character of the area. One unique aspect of the Mill Brook area is that a visitor has a sense of a “wilderness in the city”. Due to topography, there is little outside visual or noise intrusion from the surrounding areas when one is near the stream and



A Tributary of the Mill Brook

wetlands.

•Economic Development

The proposed preserve offers amenities that will help build the local economy and tax base. Quality of life enhancements such as the proposed preserve not only make the area more attractive - and thus valuable for residents to be near - but can be used to market the area to attract businesses. Preserved open spaces add to property values and can be used to promote tourism and create additional support for new and existing businesses.

•Flooding, Erosion Control, and Drainage

As with most streams and wetlands, the Mill Brook and its associated ponds and wetlands have important roles in flood control, water quality, and pollution prevention.

•Biodiversity and Wildlife Habitats

The area has a diversity of wetland, riparian, and upland woodland habitats and is an important open space for wildlife. Given the fragmented and developed nature of the rest of the area, the Mill Brook acts as an important “habitat stepping stone” for wildlife, offering both year-round habitat and migratory stops for wildlife.



Goals and Principles

The goals for the proposed Mill Brook Preserve are to:

1. Preserve and restore where possible, ecological communities historically present and appropriate to the site and to maintain the maximum overall aquatic and upland diversity possible in the sub-watershed.
2. Minimize pollutant loads in the stream water compared to current levels and control invasive species.
3. Allow no net loss of wetlands.
4. Maintain corridors and linkages to natural communities by connecting wetlands, riparian buffers, and adjacent upland woodlands in the sub-watershed to meet recreation, water quality and biodiversity needs. In order to accomplish this, land beyond the borders of the proposed preserve must be considered.
5. Promote public awareness of and involvement (including recreational uses) in the proposed Mill Brook Preserve. Pedestrian access between Moriello Park and the core preserve area is a critical link between the Preserve, the Park, and beyond to the Wallkill Valley Rail Trail.
6. Maintain the “wilderness in the city” feeling of the area as this is an important character of the Mill Brook area that contributes significantly to the cultural and recreational experience.
7. Plan for appropriate transitions and buffers along edges to minimize conflicts.
8. Monitor and keep records and inventories to assure long-term effective management.
9. Ensure that infrastructure elements are designed to protect the natural and cultural resources, to protect the safety of users, to minimize adverse physical, biological, and aesthetic impacts, to enhance biological diversity, and to be sustainable and environmentally friendly.
10. Ensure that all design and management activities are adaptive, evolving in an iterative way to accommodate new knowledge and data about the Preserve.



3.0 Master Plan Process

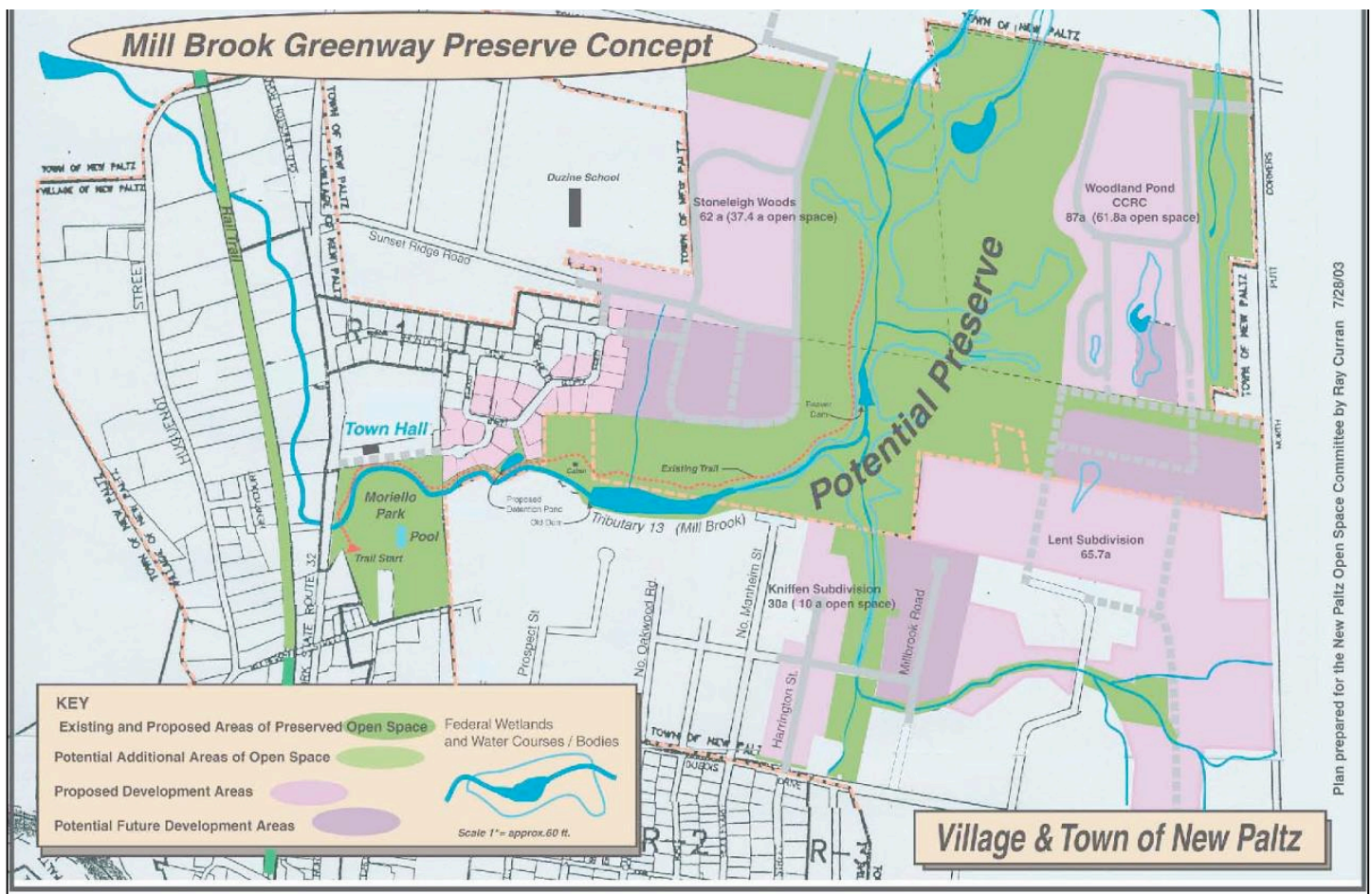
The Mill Brook (formally identified as Tributary 13 of the Wallkill River) has long been an undeveloped open space highly regarded by the public. Informally used for outdoor recreation, the land encompassing the Mill Brook and its associated wetlands is currently owned by several private landowners as well as both the Town and Village of New Paltz.

The Town of New Paltz Community Comprehensive Plan, adopted in 1995, cited the need to retain and protect the area's unique environmental features and natural resources. In recognition of this, the Town Board created the New Paltz Open Space Committee in 2000. The mission of the Committee was to define, inventory, and evaluate priority open space resources in the Town and Village, and work with the New Paltz community to recommend and promote a plan for the protection of these resources.

Building on this mission, the idea of creating a formal preserve was called for in the New Paltz Open Space Plan, adopted by the Town and Village in 2006. Following up on that recommendation, the Town and Village's Open Space Committee sought and received funding from the New York State's Hudson River Estuary Program to develop the preserve concept and a long-range management plan for the Mill Brook Preserve. The planning process was formally initiated by the New Paltz Open Space Committee in 2004. The first step was to determine appropriate potential preserve boundaries, and involve landowners and the public in identifying appropriate roles and amenities for the Preserve. Later steps included identifying recommended methods for permanently preserving this unique place.



The Open Space Committee developed this Plan based upon collaboration between landowners, neighbors, government, and the public. This Plan is the result of the public's goal to maintain an undeveloped area for people and wildlife, with trails and linkages to connect to Moriello Park, and to maintain the secluded stream corridor of Mill Brook. (In 2007, the ad hoc Open Space Committee was disbanded and the Town Board appointed a Clean Water and Open Space Protection Commission, which has continued to work on this plan).



Map 1. Original concept plan for the proposed Mill Brook Preserve from the 2006 New Paltz Open Space Plan

4.0 The Mill Brook Preserve and the Open Space Plan

The New Paltz Open Space Plan was created by a joint committee of citizens from both the Village and Town of New Paltz as a cooperative intermunicipal effort. Primarily funded through the Town, the Open Space Plan established that there is a great deal of public support for the preservation of open space in general, and the Mill Brook (Tributary 13) area in particular (Map 1). A public survey was conducted as part of the Open Space planning process in 2004. Of those who responded to that 2004 community survey¹:

- 77% said the Town and Village should actively pursue protecting open space as a strategy to keep New Paltz fiscally healthy and affordable.
- 66% supported concentrating development in or near the village center of New Paltz, and preserving open space in outlying areas.
- An overwhelming number (82%) supported policies to retain agricultural activity in our community.
- Over 2/3 of respondents (67%) favored some level of a tax increase to support open space protection.
- Of those who would accept a tax increase for open space, 2/3 supported a range of \$10 - \$100 per year. Another third supported a range of \$100 - \$300.
- Over 75% of the people believed the community should pursue innovative strategies to protect open space.

¹ Excerpt from the 2006 New Paltz Open Space Plan: A Framework for Conservation

The Open Space Plan also established a Top 10 list of Important Open Spaces. These were developed through a public workshop attended by over 100 residents in 2003. The number on the following list refers to the relative popularity of specific open spaces in New Paltz expressed by the workshop participants and included:

1. Scenic view from Route 299 west of the Wallkill River
2. Wallkill River and its floodplain
3. Swaartekill/Plutarch wetlands complex and aquifer
4. Village woodlands between Shivertown Road and Henry Dubois Road
5. Tributary 13 (desired to be renamed as the Mill Brook)
6. Kleinekill and Humpo Marsh
7. Woodland in the Shawangunk foothills
8. Lands between Huguenot Street and the Wallkill River
9. Open land between Route 299 and Libertyville Road
10. Open land between the Thruway, South Putt Corners Road, and Route 32 South

The proposed Mill Brook Preserve is a concept that meets the stated needs and desires of the community.

The Open Space Plan describes the proposed Mill Brook Preserve as a “Model Cooperative Planning Process.” As described in that Plan:

When four applications for several contiguous developments concurrently came before the Village and Town planning boards, members of the Open Space Committee envisioned the potential for cooperation amongst landowners, the Town, and Village to protect the important natural features, including wetlands surrounding Tributary 13 (historically known as the Mill Brook). A member of the Village planning board translated the idea into a concept plan for a preserve of up to 125 acres, featuring the Mill Brook and its associated wetlands as the primary natural feature.

In addition to establishing community support for preservation of the Mill Brook area, the Open Space Plan also outlines general land-use planning conservation thresholds² that are relevant to the long-term management of the Preserve. These are:

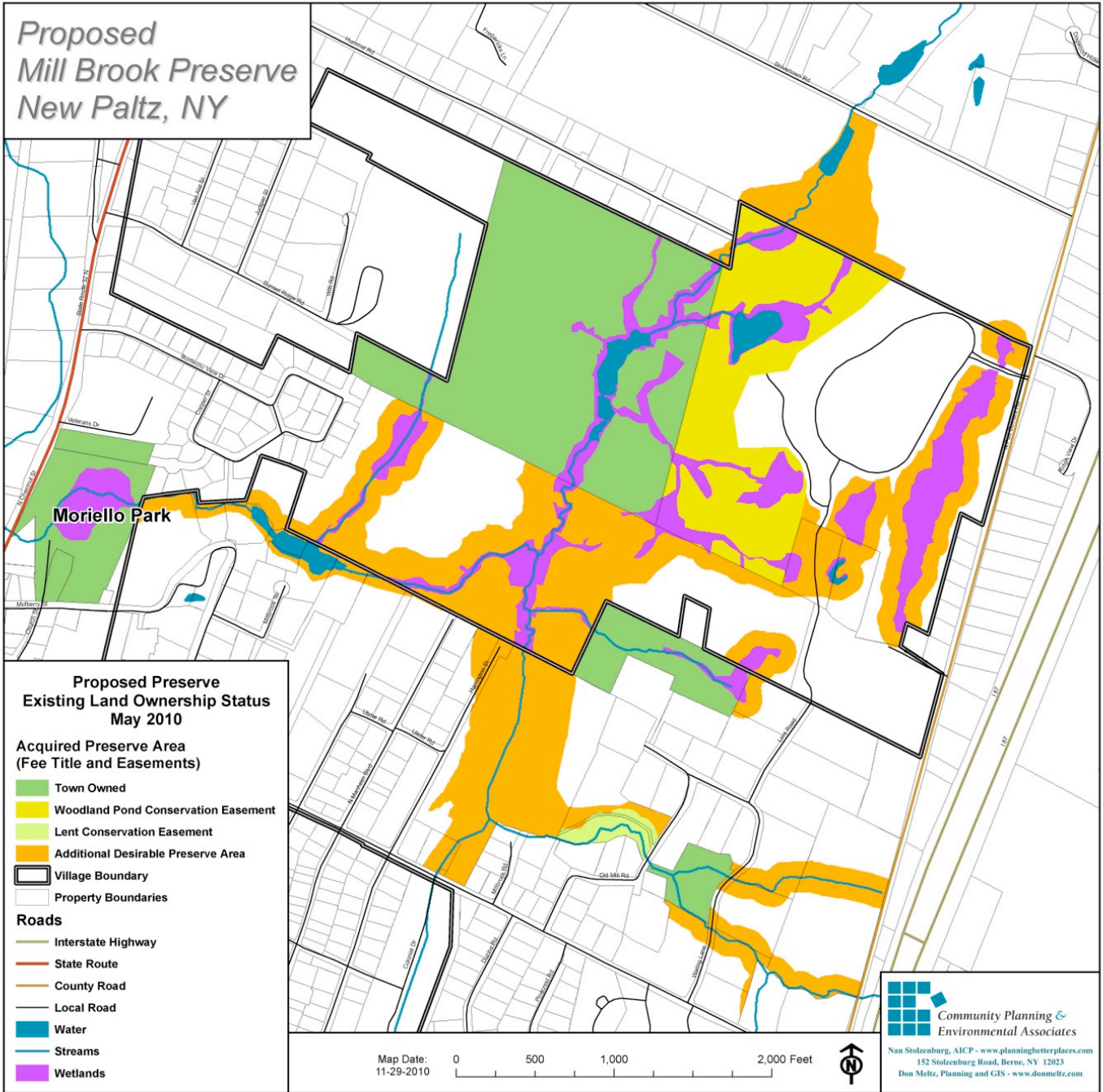
- Protect habitat patches of 55 hectares (138 acres) or greater;
- Preserve 20-60% of the total landscape for wildlife habitat;
- Have landscape buffers of 230-300 meters (755-985 feet) to protect large habitat patches;
- Have minimum riparian buffer of 100-meters (328 feet).
- Use habitat corridors and stepping stones to reduce fragmentation and increase connectivity.

The Open Space Committee adopted the Mill Brook Preserve concept as part of its open space strategy and conducted meetings with landowners, Village and Town officials to determine whether there was interest and support for the project. All parties agree there are many benefits of the concept - to protect the most important features of the landscape as well as create development that enhances and respects the surrounding open space. Landowners have recognized the financial benefits of the proposed preserve in an area where open space and natural landscapes are highly valued, and understand there are marketing opportunities when the open space features of their proposed developments are used as key selling points. With this knowledge, the Open Space Committee began a more concerted effort to identify potential preserve boundaries, involve landowners and the public, and outline a long-term protection and management strategy.

² Excerpt from the 2006 New Paltz Open Space Plan which adapted: *Conservation Thresholds for Land Use Planners*, Environmental Law Institute

Mill Brook Preserve Management Plan

This Plan establishes the long-term vision and goals for the proposed preserve and outlines a series of recommendations to be implemented over time. Development of this Preserve Plan was organized by the Open Space Committee, with later assistance from the Clean Water and Open Space Protection Commission, and had assistance from planning consultants, and utilized research and inventory information provided by students from SUNY New Paltz, the Village of New Paltz Environmental Conservation Committee, and Hudsonia, Ltd.



Map 2. Wetlands, streams, and proposed preserve landownership as of May, 2010

5.0 Landownership in the Mill Brook Area

Since the inception of the idea to conserve land in and around the Mill Brook, there has been some progress towards making the Preserve a reality. In addition to the planning process that included the Open Space Plan and development of this Management Plan, 126.2 acres of land have already been permanently conserved through easements or land purchases (See Map 8).

Conserved lands within the Mill Brook area include the 60-acre former “Sunset Ridge” property, located due east of Duzine Elementary School, which was purchased by the Town of New Paltz in 2010; a 35-acre portion of the Woodland Pond assisted living facility, conserved via a conservation easement held by the Wallkill

Valley Land Trust; 11 acres conveyed to the Town by David Lent as part of the subdivision of his property in the 2000's; and a 100-foot-wide conservation easement and trail easement along Tributary 13 that also is located on the Lent property, just west of Old Mill Road.

The Open Space Plan generally outlined potential boundaries for the proposed Mill Brook Preserve. This original concept included about 290 acres within that area. The preserve delineation process, as described in Chapter 8 of this Plan, fine-tuned those potential boundaries resulting in the Proposed Mill Brook Preserve Concept Map (see Map 9 and Map 7). The recommended potential boundaries described in this Plan for the proposed Mill Brook Preserve includes about 240 acres, with an additional 160 acres identified as important buffer lands which should be managed in a compatible way to ensure the ecological integrity of the Preserve.

Land uses within this larger 400 acre area are:

- 172 acres of undeveloped land (vacant parcels)
- 229 acres of developed land (residential and some community services)
- 126 acres of already conserved land, including 89 town-owned acres and 37 acres protected by conservation easements
- 111 acres of privately owned land on 30 parcels
-

The following lands are now permanently conserved (see Map 2):

- Town owned:
 - Moriello Park (15 acres)
 - Sunset Ridge Property acquired by the Town in 2010 (62.7 acres)
 - Lent subdivision: Two parcels, 3 and 8 acres
- Conservation Easements:
 - Woodland Pond (35 acres)
 - Lent Subdivision - includes trail easement (2.3 acres)
-



The Old Mill Pond at Moriello Park

6.0 Public Input

The New Paltz Open Space Committee long relied upon public input as a basis for long-term visions and goals for the community. The New Paltz Open Space Plan included both formal and informal public input derived from surveys and public meetings. Following that tradition, the public has been involved in the development of this Preserve Plan in a variety of ways. These were:

1. Letters sent introducing the preserve concept to landowners in the proposed area. This letter also proposed that individual meetings and future communication between landowners and Open Space Committee members and consultants take place.
2. Consultants from Community Planning & Environmental Associates telephoned and discussed the preserve concept with landowners.
3. Open Space Committee members met with and discussed the concept with the developers of Woodland Pond, Village Planning Board, Stoneleigh Woods developers, Shawangunk Reserve, Inc. owner Peter Bienstock, and other core property owners.



SUNY student collecting data at a beaver pond



Wet meadow along the Mill Brook

4. The Open Space Commission, with assistance from consultants and students from SUNY New Paltz, held a public visioning and planning meeting in February 2010 (see Appendix 14.0-A for results). This meeting explored the role a Mill Brook Preserve could play in the community, possible amenities at the Preserve that would be desired by the public, and identified specific locations of interest (see Map 9).
5. In May 2010, a SUNY New Paltz student conducted a planning survey that included residents of homes adjacent to the proposed preserve and pedestrians along Main Street in the Village of New Paltz. The Main Street portion of the survey included 30 individuals and 20 adjacent landowners participated. Appendix 14.0-A details the results of this survey effort (see also Kassay, 2010).
6. The Open Space Commission held a second public workshop in November 2010 to discuss the Draft Mill Brook Preserve Plan.
7. The final draft the Mill Brook Preserve Plan will be submitted to the Town of New Paltz Town Board and the Village of New Paltz Board of Trustees in September 2014.

7.0 Relationship to Other Planning Processes

There are other efforts underway in the New Paltz area and beyond that address open space that are relevant to the proposed Mill Brook Preserve. In addition to the Town and Village comprehensive plans and the 2006 Open Space Plan, a variety of other plans exist that relate to the proposed Mill Brook Preserve and regional environmental protection. These include the Shawangunk Mountains Scenic Byway Corridor Management Plan, the Ulster County Open Space Plan, adjacent town open space or comprehensive plans, and the Wallkill River Watershed Management Plan. These parallel processes have helped to highlight the importance of a regional approach and linkages across municipal borders.

Other plans which are relevant to the Preserve include the New York State Open Space Conservation Plan, the New York Statewide Comprehensive Outdoor Recreation Plan, various Hudson River greenway plans, the Ulster County Long-Range Transportation Plan, the Ulster County Priority Housing Strategies, Ulster County Intermunicipal Watershed Agreements, and the Palisades Interstate Park Commission's 21st Century Plan. In 2010, voters in New Paltz accepted a \$2 million bond referendum for purchase and protection of open spaces in the Town.

8.0 Proposed Boundaries

The Open Space Plan generally described and located the boundaries for the proposed Mill Brook Preserve. One major goal of this Plan is to develop more specific boundaries based on ecological needs: the premise of the preserve concept is to include lands needed to ensure ecological functioning of the stream, wetland and associated upland woodlands.

The boundary delineation process was initiated by understanding the watershed of the Mill Brook and its role in the larger Wallkill River Watershed (see Map 3). The roughly 1,300 acre sub-watershed of the Mill Brook is fragmented from the potentially available open space, either by the NYS Thruway or by existing development. Although not included in the potential preserve boundaries, other lands located in the watershed within the Town of New Paltz remain critical for water quality and environmental health. The recommendations included in this Plan address potential actions that should be taken to locate and enhance connections between different locations within the entire Mill Brook watershed.

There are approximately 345 acres of undeveloped open space contiguous with the Mill Brook. Because this area alone is not sufficient to sustain biodiversity, the delineation included steps to identify a core preserve area that includes as much of the riparian corridor, wetlands, and associated upland areas as possible. This core area was chosen to include examples of existing native ecosystems, to provide stream and wetland buffers, and to provide connections for both people and wildlife.

Drawing upon field observations and background materials provided by the Open Space Committee (including the Hudsonia report, SUNY student research projects and reports from the New Paltz Environmental Conservation Committee), the following concepts and natural elements were identified as being significant to creating the Preserve:

1. Identify a core area that can continue to support a healthy ecosystem that conserves as much of the biodiversity of the site as possible,
2. Provide corridors from the core preserve to both buffer streams and provide connections for people and wildlife, and
3. Include at least the following unique habitats and features:

- the complex of beaver wetlands and meadows,
- the hemlock stand,
- the calcareous areas containing unusual flora, especially near the old gravel pit,
- the habitat of the wood turtle (*Clemys insculpta*), and
- the woodland pool identified in the Hudsonia report as an important amphibian breeding site.

The proposed preserve has been delineated to accomplish these concepts. As shown on Map 9 and Maps 6 and 7, the proposed preserve includes two major areas: the core area and an extended area.

Core Preserve Area

The core area is considered to be the most critical land needed to maintain native species and habitats. It includes all water bodies, streams, and critical wetlands. It also includes a 325' to 600' buffer around those features to conserve potential beaver habitat, which has contributed significantly to the ecology and natural features of the Mill Brook area. Within this buffer, the potential boundary was adjusted to include only those areas that have hardwood trees and vegetation that could support beavers (no conifers). The core area represents a fragmented habitat but it is the critical lands needed to conserve and to reconnect to other existing fragments. The larger area to which this core land is a part is already fragmented with roads and both commercial and residential development. Thus full biodiversity is not likely to be attained with preservation of the core alone; it will, however allow maintenance of linked "steppingstone habitats".

Extended Preserve Area

This area includes steep slope areas and 100' buffers around water features that are outside the core area. A 100' buffer is considered to be the minimum distance needed to separate disturbed areas from stream banks, although the larger this buffer, the more advantageous it will be in preservation efforts.

The extended area also includes additional possible beaver habitats, since they are accessible from streams. Beaver activity over time has been of central importance in influencing the ecology, providing habitats, and contributing to the biodiversity of the area. To maintain the ecological functioning of the Preserve, the potential boundary thus also includes a buffer along the streams with a width that reflects at least the distance from streams needed to encompass 95% of the foraging activity of beavers. Data on beaver biology and habitat needs were drawn from the U.S Department of Interior, Fish and Wildlife Service, Habitat Suitability Index Model for the Beaver (1983). Excluded from this buffer area are outlying locations with coniferous vegetation that are not central to the core functioning of the Mill Brook area.

Possible Access Points and Trails

Although privately owned, residents have used the Mill Brook area for outdoor recreation for many years. As a result, a fairly extensive but informal trail system already exists along the stream and through the woodlands



Pond showing fresh mud from beavers



Trailhead at Moriello Park



Wallkill Rail Trail at Mulberry Street



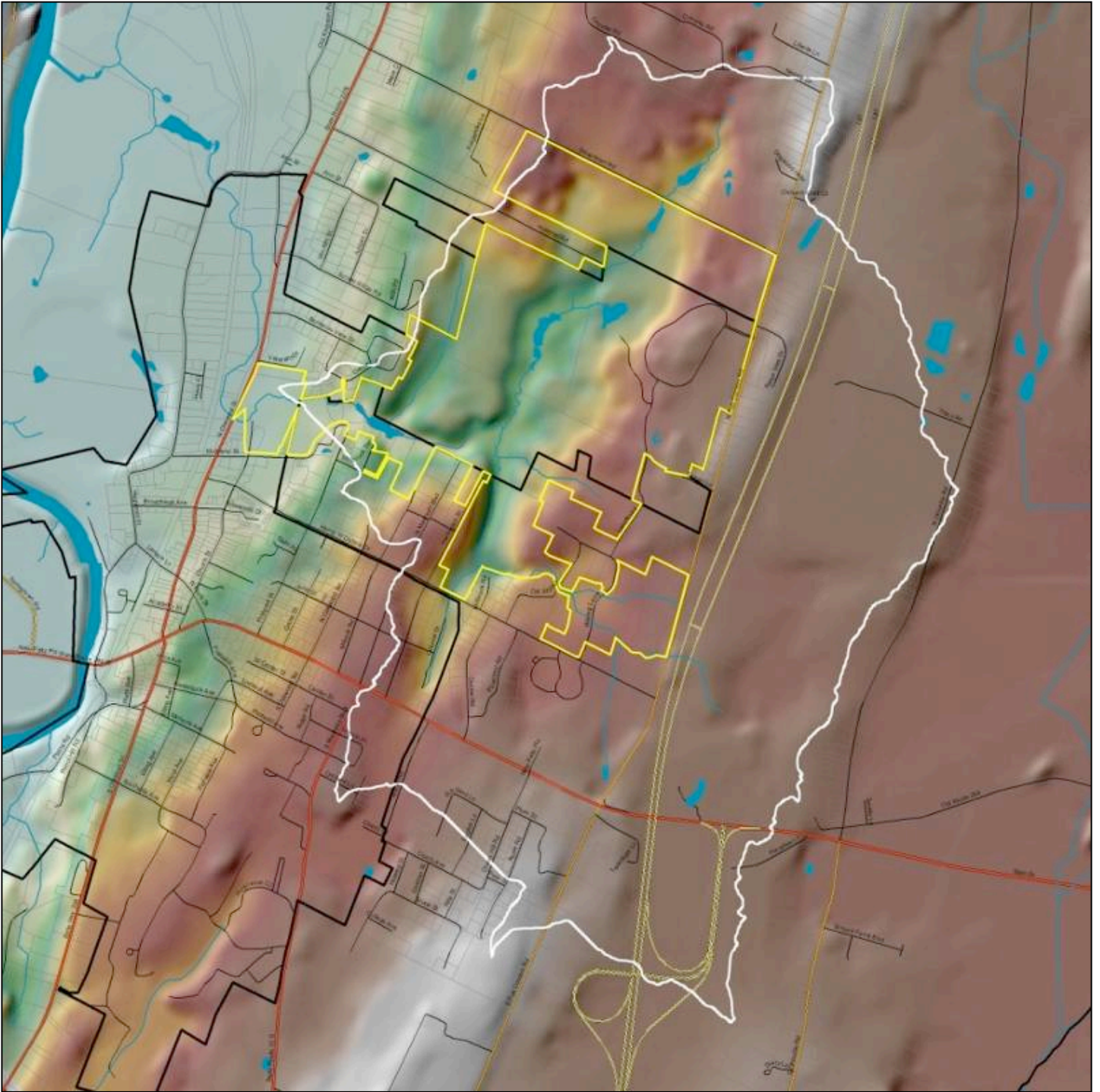
Trail near Duzine Elementary School



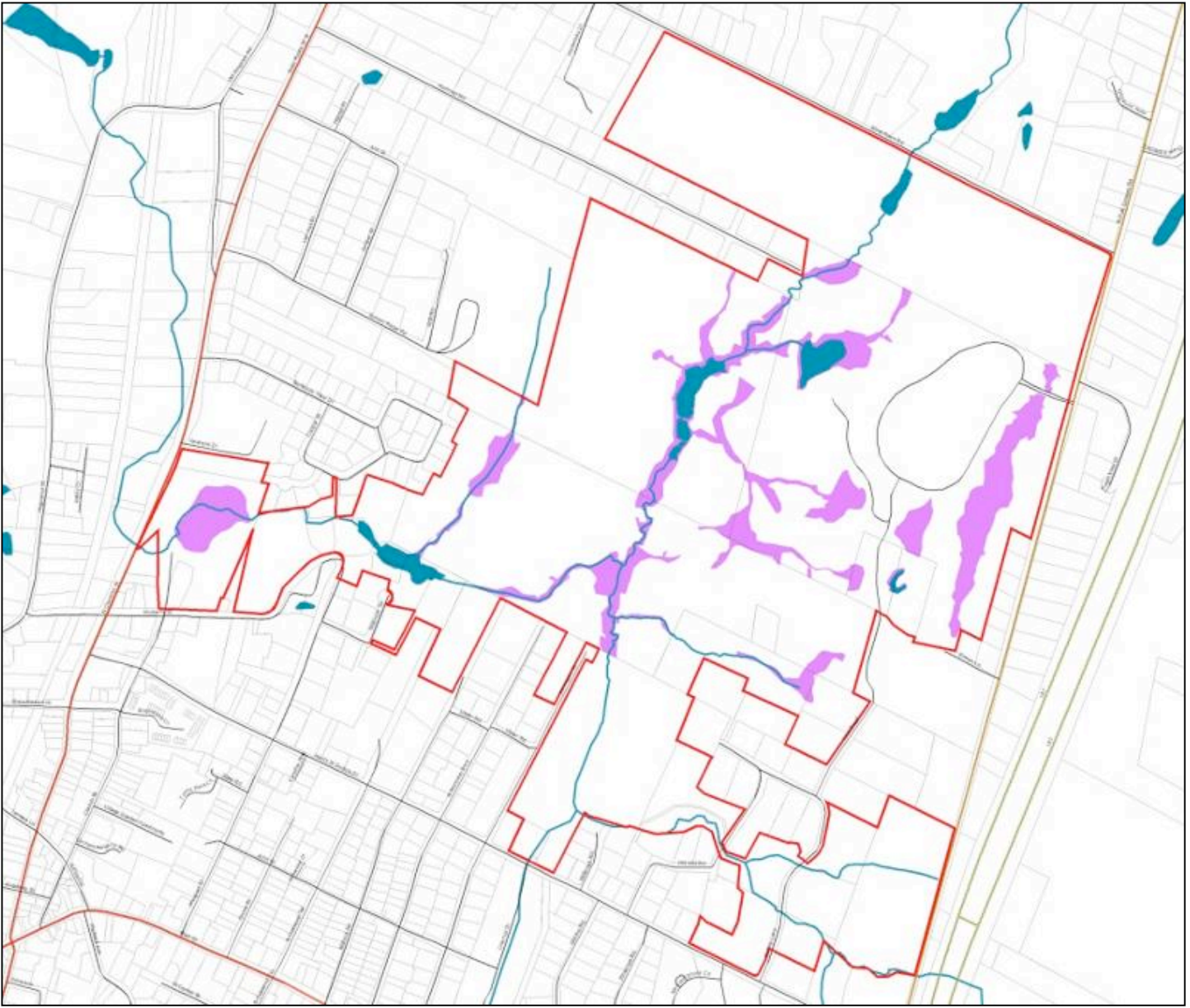
Sidewalk behind Woodland Pond Retirement Community

surrounding the Mill Brook. These trails were evaluated as part of this planning process for more formal inclusion in the pedestrian system of the Preserve. Public input helped identify locations of special importance to the community as well as potential parking and access points. Proposed trails and access points are illustrated in Map 7.

The following maps illustrate the evaluation taken to delineate appropriate boundaries of the proposed preserve.

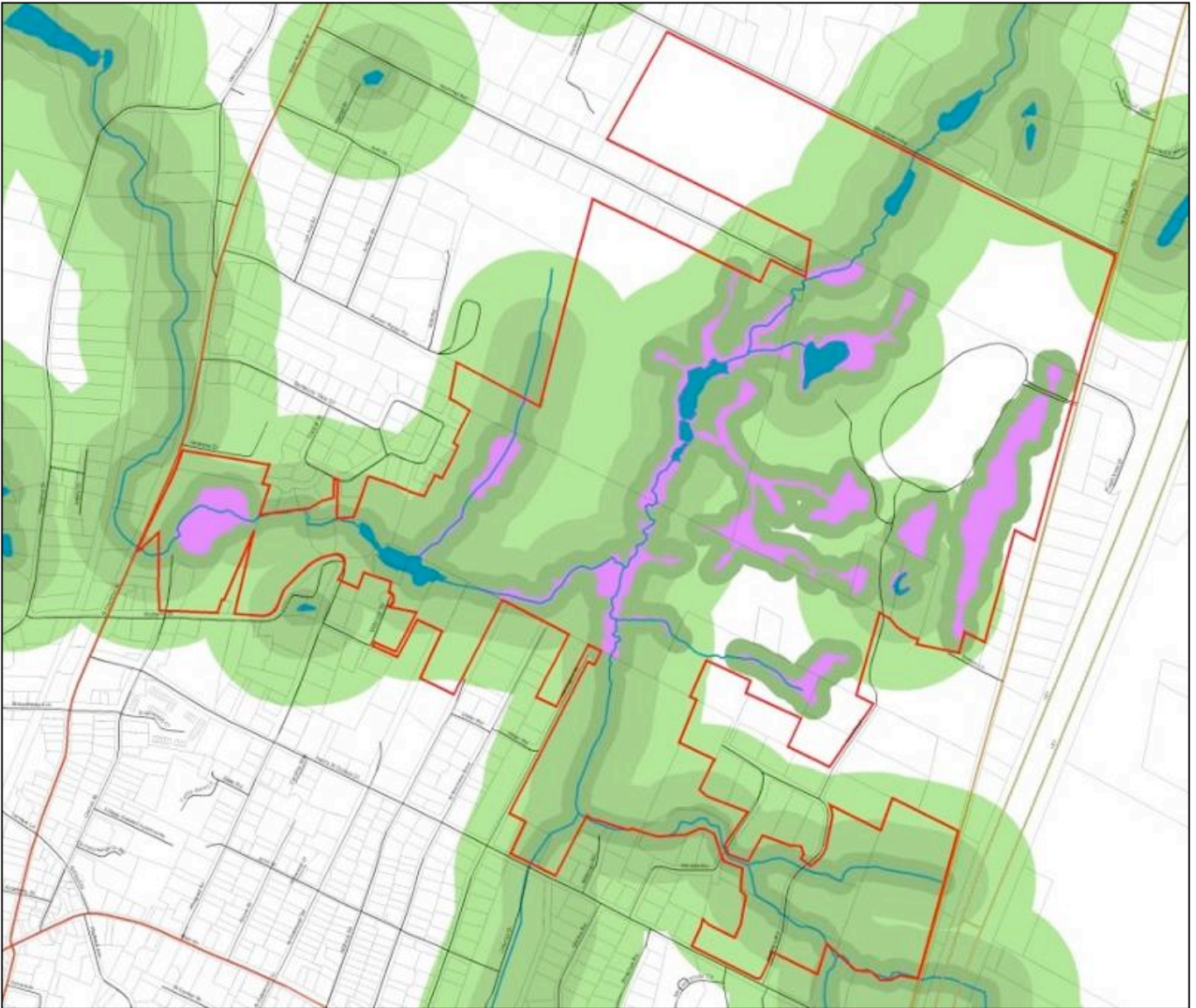


Map 3. The Mill Brook Watershed



Map 4. Wetlands, Streams and Wetland Boundaries

Water features shown in Map 4 (blue) and wetlands (purple) were delineated using the site plans from various development proposals and reports from Hudsonia.



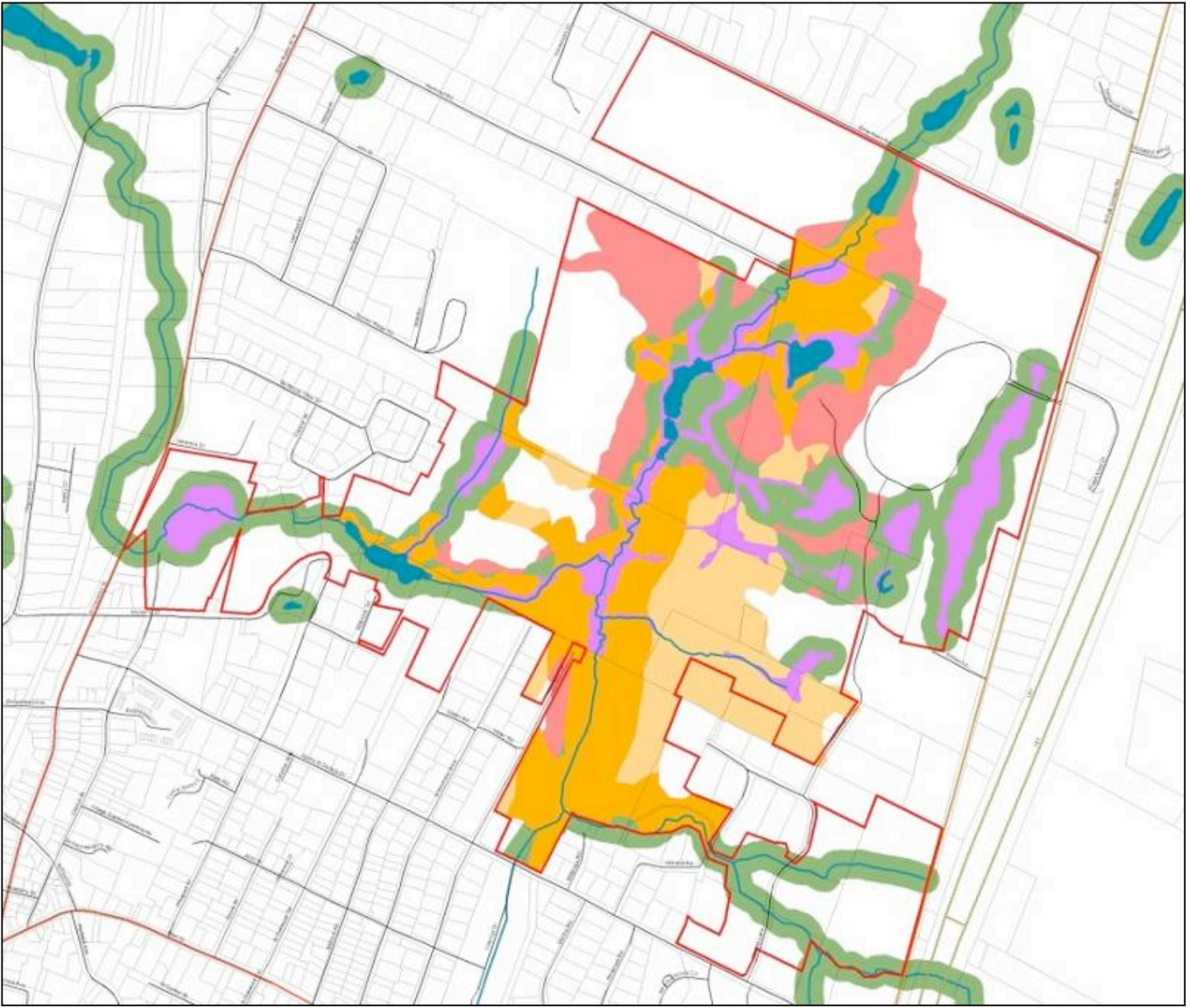
Map 5. Various Buffer Widths of Streams, Water and Wetlands

These buffers show various distances from the water and wetland features. 100, 325, and 650 foot buffers were generated for evaluation of wetland protection and beaver habitat.



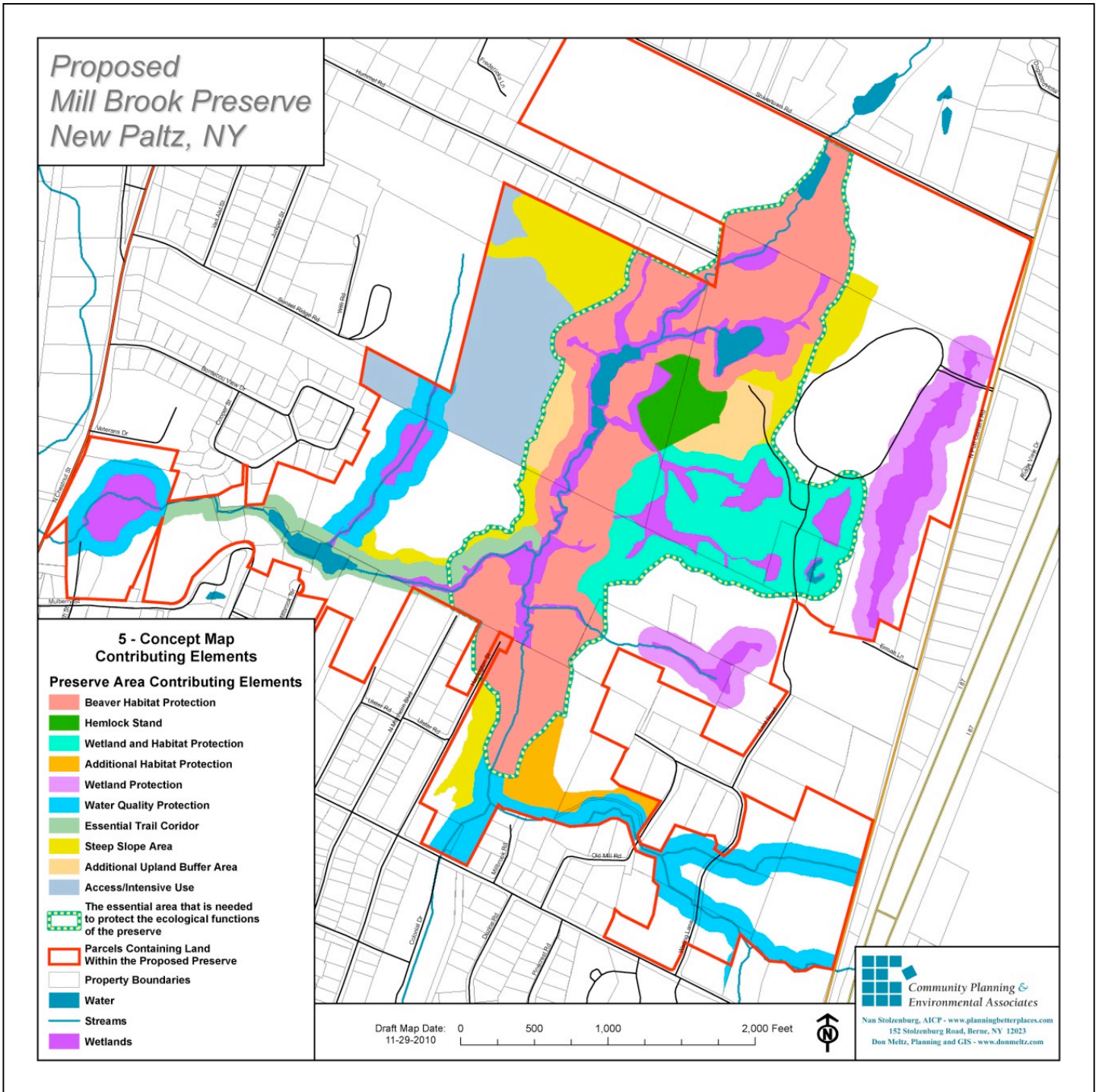
Map 6. Beaver Habitat including wetlands and potential forage areas

Land cover suitable for beaver habitat and other species was identified through aerial photo interpretation and site visits. The darker orange color denotes beaver forage areas within 325 feet of a stream or wetland.



Map 7. Important Upland Areas (Steep Slopes, Hemlock Stand, Trail Corridors, etc.)

Additional areas deemed worthy of protection (the red shaded areas) were added. These included an old growth hemlock stand, steep slopes adjacent to other sensitive areas, upland areas that were surrounded by other more sensitive areas, and various places deemed necessary for a complete, connected and functioning preserve.



Map 8. Site Ecology

The site ecology map shows the many different features used to evaluate the Mill Brook area and determine what lands are critical for inclusion in a preserve. The Plan includes:

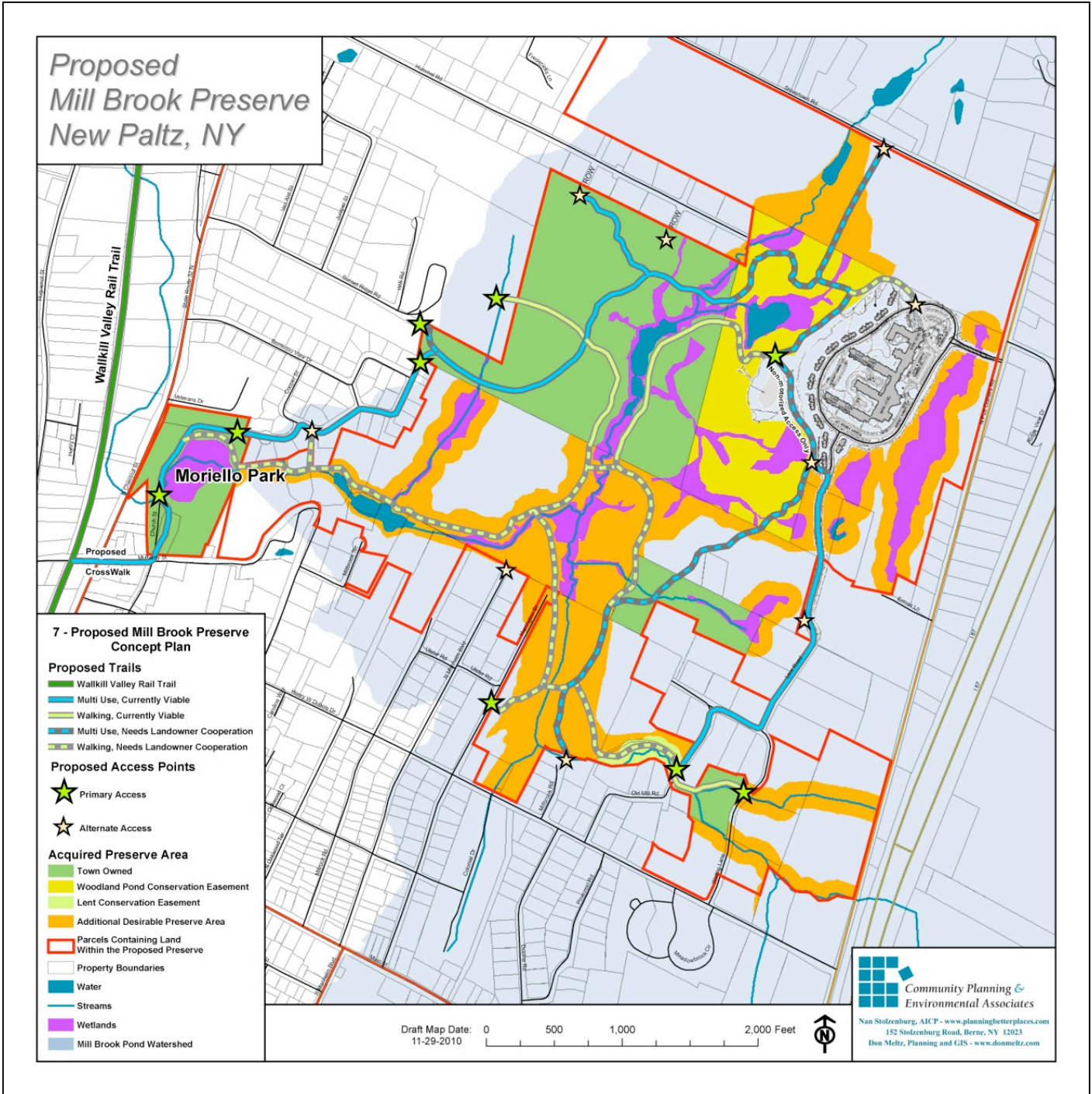
- water,
- wetlands,
- 100' buffers of wetlands,
- steep slopes adjacent to those buffers,
- a hemlock stand, existing
- potential beaver habitats and likely food sources,
- additional upland areas needed to support vernal pool breeding reptiles and amphibians.

Map 9 - Land Ownership Status and Desired Preserve Area

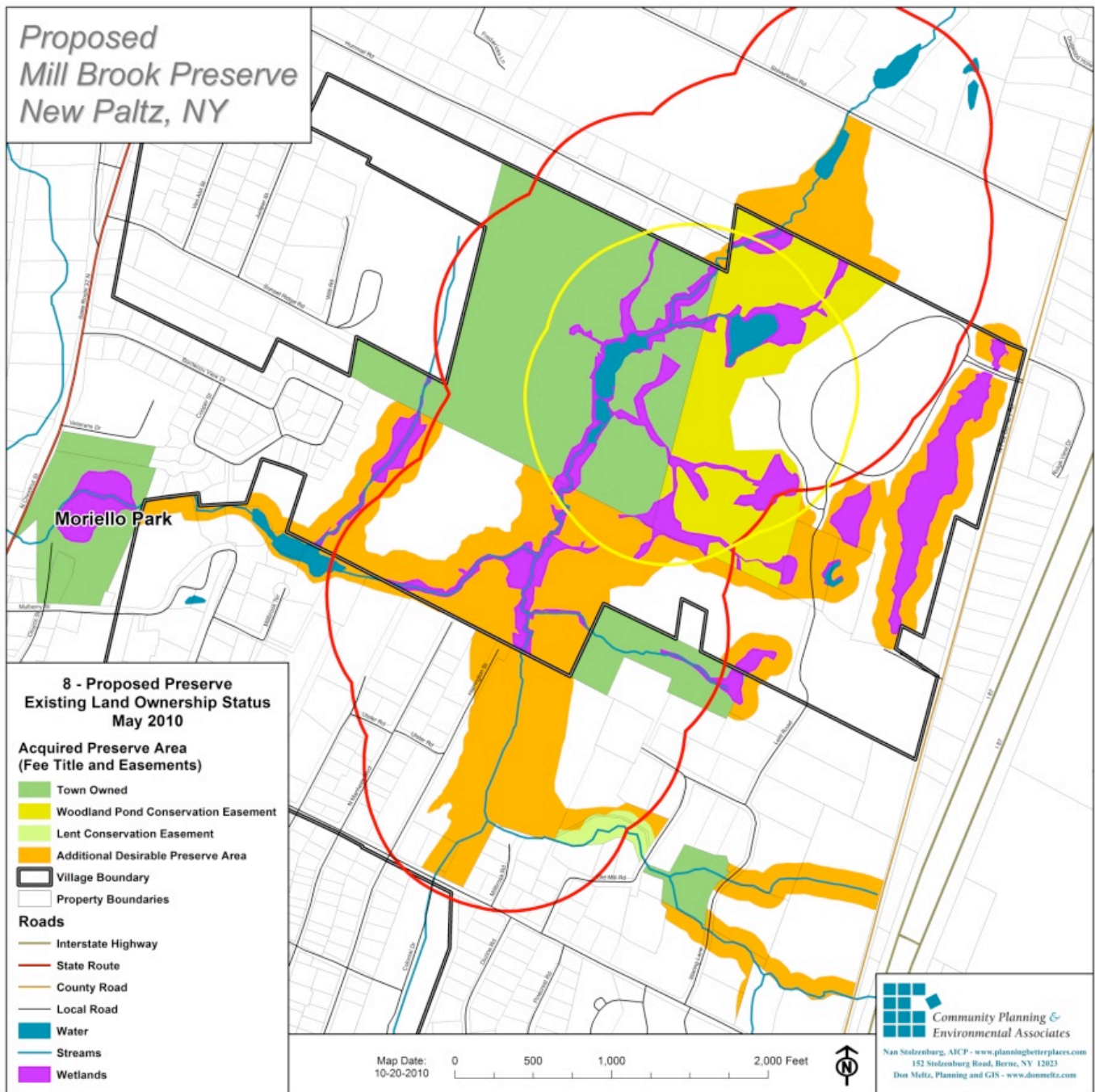
Other areas are added to provide connections between the various sensitive areas and extra buffers from already developed or potentially developable areas. The area identified as “essential trail corridor” is included because it is not only a stream buffer, but the only link between the proposed preserve and Moriello Park. The less ecologically sensitive areas on the Town-owned property were identified as useful for access, direct connection to the Preserve with Duzine Elementary School and possibly as a location suitable for intensive uses identified as desirable at the public workshop. Finally, several areas are shown in white on this Map 8 Concept Map, which areas include already developed lands such as the Woodland Pond facility, and properties left out of the proposed preserve boundaries due to their peripheral (non-core) nature, and in some cases due to requests by private landowners.

Concept Map

The following map (Map 10) shows the proposed boundaries of both the Preserve and Village boundaries (See also Section 12 for larger versions of all maps):



Map 10: Proposed Mill Brook Preserve Concept Plan



Map 11 -- Existing Land Ownership Status

New Paltz Open Space Plan Thresholds and the Mill Brook Preserve Concept

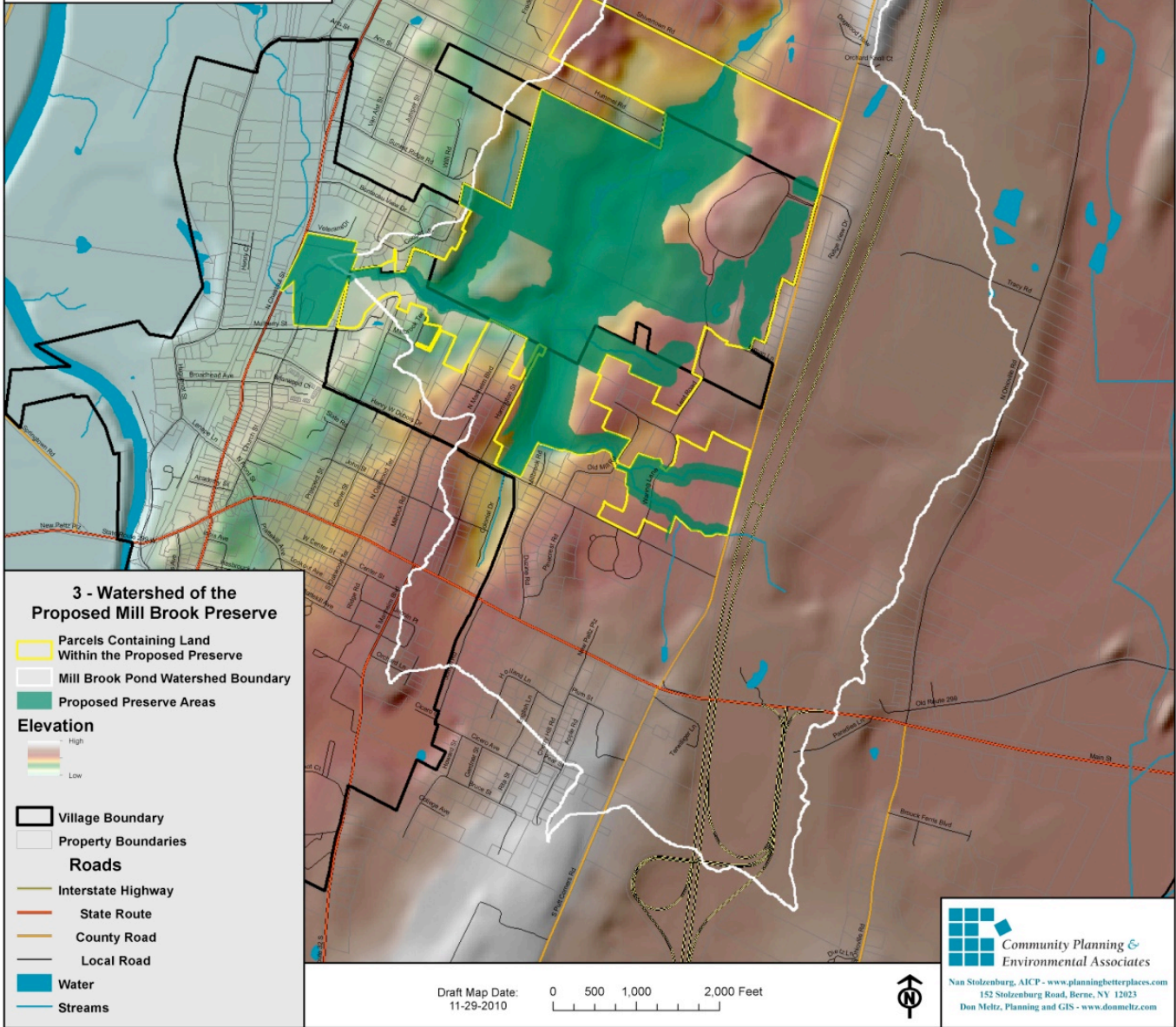
As mentioned above, the New Paltz Open Space Plan also established several general land use planning conservation thresholds. These thresholds addressed protection of large habitat patches, preserving larger areas for wildlife habitats, creating landscape buffers and riparian buffers, and use of corridors and stepping stones to increase connectivity. The proposed Mill Brook Preserve has been designed to help New Paltz meet these thresholds. The proposed preserve concept meets the New Paltz Open Space Plan thresholds as follows:

Protect habitat patches of 55 hectares (138 acres) or greater

This threshold is general and the type of habitat and specific characteristics would determine how large the patch should be. The Mill Brook analysis showed the beaver habitat being about 75 acres, and the Hemlock stand as about 5.25 acres. The proposed preserve already has 126 acres protected through ownership or

Map 11 - Watershed of the Proposed Mill Brook Preserve

Proposed Mill Brook Preserve New Paltz, NY



easements (including the Town Park property), with an additional 110 identified as desirable for protection. This threshold can be met.

- 1. Preserve 20-60% of the total landscape for wildlife habitat**
 About 50% of the Preserve is already conserved, and other properties could potentially be added. Thus the proposed preserve already meets this threshold.
- 2. Have landscape buffers of 230-300 meters (755-985 feet) to protect large habitat patches**
 Map 11 shows 755 foot buffers around the beaver habitat (red) and hemlock stand (yellow). The Mill Brook Preserve concept plan satisfies this threshold, except where Woodland Pond encroaches into the beaver habitat.
- 3. Have minimum riparian buffer of 100-meters (328 feet)**
 In some locations, the proposed Mill Brook Preserve offers New Paltz the opportunity to meet this threshold. In other locations, development has already occurred within these buffers.
- 4. Use habitat corridors and stepping stones to reduce fragmentation and increase connectivity.**

The proposed Mill Brook Preserve itself will be an important stepping-stone in the larger preservation landscape of the Village and Town. Stepping-stones are smaller habitats that are protected, restored and reconnected as part of a fundamental ecosystem across a broader landscape. The proposed Mill Brook Preserve can provide a strategic connectivity that will – in the long-term - increase the capacity of the area to protect biodiversity and build resilience against current and future threats.

9.0 Preserve Site Assessment

Watersheds

A watershed is any land area that contributes runoff water to a particular point along a waterway. Watersheds are important; creating a sense of place in the landscape.. A basin-wide watershed (such as the Wallkill River) can be broken down into sub-watersheds. Within sub-watersheds, catchments are the smallest unit. A catchment is defined as the area that drains an individual development site to its first intersection with a stream. The Mill Brook area is within the Hudson River Watershed Basin, and is one of many sub-watersheds of the Wallkill River. Further, the Mill Brook sub-watershed contains many catchment areas (See Maps 3 and 4).

Stream Order

An important concept central to watershed management is the spatial connection between a stream and its full watershed. Because a network of streams drains each watershed, one sub-watershed such as the Mill Brook is a part of and has an ecological role in the larger system. There are different kinds of streams within a sub-watershed, or even sometimes within a catchment area. The kind of stream within the watershed is an important feature in watershed management as well.

Streams can be classified according to their “order” in that network: the Mill Brook sub-watershed, contains both first- and second-order streams. A stream that has no tributaries or branches is called a first-order stream. When two first-order streams combine, a second-order stream is created, and so on. Headwater streams (or the start of a drainage area) can be both first- and second-order streams. They are the smallest streams, but crucial due to their dominance of the landscape via their sheer number and length.

First order streams are very vulnerable to watershed changes, and are heavily influenced by the amount of impervious surface area within the sub-watershed or catchment. What happens to first order streams is directly translated to second, third and higher order streams. Thus first order streams have an effect on the major receiving waters in turn. For these reasons, a watershed approach to protecting the Mill Brook area is important both locally and regionally.

The map below depicts the watershed boundaries for the Mill Brook. The area shown outlined in white is the full sub-watershed boundary for the Mill Brook. The green shading is the area identified as the most desirable for inclusion in the Preserve, and the yellow outline surrounds those properties that contain some portion of the proposed Preserve area.

Impervious Cover

The conversion of natural vegetation to rooftops, roads, parking lots, and lawns creates a layer of impervious surface in our landscape. Impervious cover directly influences urban streams in many ways. When an impervious surface is present, it can dramatically increase surface runoff during storm events. In urbanized areas, less rainfall is infiltrated through the soil and therefore more volume of water runs off. Runoff volume becomes greater, occurs more frequently and at higher magnitudes. As a result, less water is available for streams during dry periods and more is available during storms.

This fluctuation itself causes many ecological and biological changes in the stream. Years of research have shown that water fluctuation is inversely proportional to plant and amphibian density in urban wetlands. Declines in plant and amphibian density have been noted when more than 10% of a watershed becomes impervious. Research has shown that even above a 3.4% total impervious cover, significant increases in water level fluctuation, conductivity, fecal coliform bacteria and total phosphorus in urban wetlands results. When impervious cover exceeds 25%, stream impacts become more severe and difficult to mitigate.

A variety of other changes happen in urban streams when there is an increase in impervious cover. These changes can include stream channel enlargement, increased sediment loading due to more upstream erosion, dry weather water flow declines, a decline in the wetted perimeter of the stream at low flow, habitat loss, decline of water quality, reduction of aquatic diversity, and a decrease in wetland water quality and habitats. When imperviousness is in the ‘threatened’ 5 to 10% range, management efforts to avoid further stream impacts would be an important goal. When watershed imperviousness is lower (below 5-10 %), water quality degradation is likely caused by factors other than impervious land cover. Therefore, management efforts should be influenced by these conditions.

Impervious Cover and Watershed Quality in the Mill Brook Preserve

Map 12 identifies and analyzes the amount of impervious surface already within the Mill Brook watershed. It is broken down into the numerous smaller catchment areas that make up this watershed.

As noted, stream research generally indicates that at about 10% impervious cover, sensitive stream elements are lost from the system. A second threshold appears to exist at around 25% to 30% impervious cover, where most indicators of stream quality consistently shift to a “poor” condition.

“Sensitive streams” are defined to have a sub-watershed impervious cover of zero to 10%. These streams are high quality, stable, with excellent habitat structure, good-to-excellent water quality, and have diverse communities of fish and aquatic insects. “Impacted streams” have a watershed impervious cover ranging from 11% to 25% and show signs of degradation from erosion, channel widening, shifting stream water quality, and declining stream biodiversity.

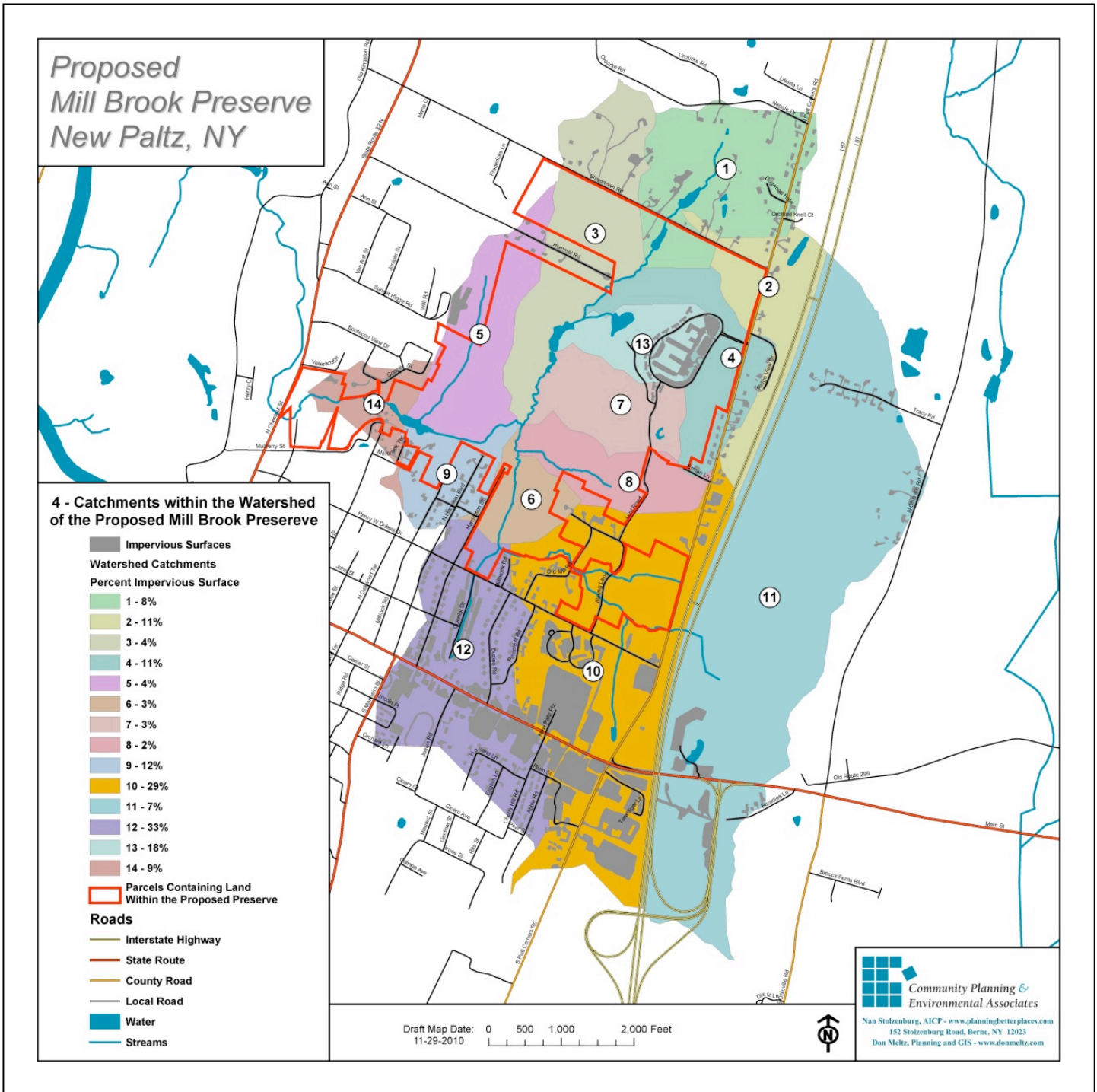
Approximately 13.8% of the Mill Brook sub-watershed is currently in impervious cover. The majority of impervious surface is located in the southern half of the Mill Brook watershed. This correlates to the impacted stream condition found as the water reaches the Town Park. Streams within the sub-watershed (catchments 1, 2 and 3) would currently be considered to be sensitive (in the higher reaches) to impacted (in the lower reaches and towards the Town Park at catchment 14). Studies conducted in the Mill Brook corroborate some degradation of water quality in the catchment 9 and 14 locations within the sub-watershed.



The Mill Brook from the Moriello Park Bridge



Foundation Remains



Map 12. Mill Brook Watershed Catchments.

Water Quality

Numerous water quality studies have been completed in the Mill Brook and its wetlands. Similar conclusions have been drawn by all of them; that water in the Mill Brook is generally good to slightly impaired quality depending on the location tested. These conclusions are drawn from physical, chemical and biological studies. Most recently, the 2009 Davis and Hochman study showed evidence of some water quality impairment in those sections closest to Moriello Park and in areas where residences are closest to the stream. This is potentially due to septic system leaching into the water, lack of vegetative or wetland buffers between residences and water, and/or increased impervious surfaces in that part of the watershed.

New York State’s stream classification designates Mill Brook as a class “C” stream. Certain waters of the state are protected on the basis of their classification. Streams and small water bodies located in the course of a stream that are designated as C(T) or higher (i.e., C(TS), B, or A) are collectively referred to as "protected streams," and are subject to the stream protection provisions of the New York State Protection of Waters regulations.

Water quality characteristics generally consistent with the established by New York State stream’s best uses are defined as and survival, but is not Although this classification quality standards to protect into the water, the stream itself is disturbances under New York contact recreation, but may be classification, the pH should be dissolved oxygen should never average never falling below 5.0 standards for temperature, “C” stream.



Hemlock woods near the Mill Brook

found in the studies were water quality standards for “C” streams. A “C” class fishing, aquatic life propagation designated as a trout stream. means that there are water against discharge of pollutants not protected against physical State Law. It can be suitable for limited. According to this between 6.5 and 8.5; the be below 4.0 ppm, with a daily ppm. There are no state phosphorous, or nitrogen in a

Summary of Water Quality Studies
2009 Davis and Hochman Study: Locations along Tributary 13 where there is no riparian buffer area between the stream and residential properties showed higher concentrations of sodium and chloride. Likely sources of this include some run-off or infiltration from leaky septic systems. Further, coliform bacteria were found in sampling sites and this is further indication of septic system leachate impairing the stream. The study shows the benefit of the wetland system in buffering and preventing water pollution.
2008 Hitner Study: “From the data gathered, the Mill Brook and Castor Stream appear to be in good overall health.”
2007 Zeoli Study: The 2007 study (Zeoli, 2007) showed water quality to be slightly impaired. This determination was made using water quality testing along with a macroinvertebrate study. A slightly impacted condition reflects good water quality but the macroinvertebrate species richness is slightly but significantly altered from a pristine state. This water quality determination also means that fish survival is generally not limited, but may be limiting to fish propagation.
2004 Cheo Study: Overall, the Mill Brook Stream in the Shawangunk Reserve at the end of North Manheim Boulevard appears to be somewhat healthy. The physical habitat assessment produced a “good to excellent” rating, although shelter for fish ranked only “fair to good.” The benthic macroinvertebrate analysis resulted in a “slightly impacted” rating. A chemical analysis of nutrients and pH indicated no impacts. An analysis of temperature and dissolved oxygen produced the results of most concern: much lower than desired percent oxygen saturation indicates some water quality impairment.

Wetlands and Soils, and Existing Vegetation

Wetlands within the preserve area have been described in various field inventories and studies (such as Stevens (2006)). Hudsonia, Ltd conducted the most complete wetland assessment of the proposed Mill Brook Preserve area in 2003.

Soils in the preserve area are derived from glacial till or lake deposits. Most are described in the Ulster County Soil Survey as being Somewhat Poorly Drained, Poorly Drained, or Very Poorly Drained. Many of these soils are considered wetland or potentially wetland soils. Preserve soils are also described as being calcareous or potentially calcareous. That means that the soils have moderate to high amounts of calcium compounds in them and more importantly, support plants and animals not found on non-calcareous soils. Calcareous soils support many species that are considered unique or rare in the Hudson Valley (Kiviat 2003).

The historical land use in the area was agricultural through the mid-20th century. Some areas still have shrubby vegetation common to agricultural and orchard fields that were abandoned 20 to 40 years ago. Other locations have mature forest, but signs of former agricultural activity can still be found. A dam impounds the large pond in the southwestern corner of the preserve area and other remnants of old dams, channelization, and other hydrological alterations to the streams and wetlands can be found in many places. These long-term land use and landscape changes shape the current vegetation and natural community character.

Wetland types within the preserve area include shrubby wet meadows, tree swamps, woodland pools, seeps, shrub swamp, marsh, constructed pond and beaver pond, floodplain swamp, and shallow hardwood swamps. Prominent plants and plant communities inventoried in these wetlands are shown below (from Kiviat 2003 and Stevens 2006).

There is a diversity of wetland habitats along the Mill Brook that includes shrubby and herbaceous wet meadows, a constructed pond bordered by clayey seepage meadows, wooded and shrubby seeps, beaver ponds and wooded swamps. The clayey seepage areas have a variety of uncommon species (see Table 1), which suggests that further biological surveys might yield rare plants or animals using these habitats. See Stephens (2006) for further detailed wetland descriptions.

Wetland Type	Prominent Plants
Shrubby wet meadow	Goldenrod, reed canary grass, other grasses, purple loosestrife, silky dogwood, bell's honeysuckle, elm, ash, red maple, multiflora rose, meadowsweet, arrow-leaved tearthumb
Wooded swamp	Ash, swamp white oak, red maple, elm, winterberry, silky dogwood, Bell's honeysuckle, tussock sedge, arrowwood, pin oak, water starwort
Woodland pool and seeps	Silky dogwood, gray dogwood, pin oak, multiflora rose, Bell's honeysuckle, buttonbush, purple loosestrife, common duckweed, watermeal, nannyberry, pin oak, buttonbush
Wet meadow	Purple loosestrife, reed canary grass, goldenrod, ash (sapling size), sedges, mountain mint, peat moss, sensitive fern, wintercress, tussock sedge, grasses, skunk cabbage, cattail, red cedar, elm, red maple, silky dogwood, gray dogwood, multiflora rose, arrowleaf tearthumb, rice cutgrass, common reed
Constructed pond and beaver pond	Watershield (an uncommon floating-levaved aquatic plant), water-purslane, rushes, spikerush, purple loosestrife, reed canary grass, silky dogwood, burreed in pond edges, common duckweed, liverwort, Nuttal's waterweed, needle spikerush, cone-spur bladderwort, watermeal, wooded swamp along edges, tussock sedge, cattail, winterberry, dead trees
Swamp	Purple loosestrife, multiflora rose, silky dogwood, Bell's honeysuckle, winged euonymus, red maple, elm, winterberry, ash,
Floodplain swamp	American hornbeam, swamp white oak, pin oak, multiflora rose, silky dogwood, common nettle, sedge, crested woodfern
Clayey Seepage areas	Knotted rush, narrow-panicked rush, fimbry, smooth panic-grass, beard-tongue, wandlike bush-clover, rose milkwort, seedbox, marsh speedwell, gray goldenrod, prairie willow.

The field inventory done by Kiviat (2003) concluded that the quality of wetlands on the site varies considerably. Some areas were considered poor, and dominated by invasive plants, while others were considered good, having adequate water flow, low abundances of invasive plants, and were well buffered by preserved lands. Invasive species including multiflora rose, purple loosestrife, Bell's honeysuckle, and reed canary grass were locally abundant, but not considered to cause unacceptable degradation of habitat or ecological functions.

Wetlands within the preserve area are interconnected to a high degree. These connections are both direct (streams) and indirect (flow along structures or groundwater) links. On-site wetlands are also connected to wetlands outside the potential preserve boundaries, and this connection is critical to maintain in the future. The Mill Brook connects to wetlands on the Wallkill River floodplain west of Route 32 as well as with links northward and eastward. The connection between the large wetland complex (Plutarch Swamp) east of the Thruway is limited to culverts, but an important link for waterfowl and other flying animals (birds, bats, insects)

likely still exists. The Thruway and North Putt Corners Road are primary barriers to movements of small terrestrial animals.

The calcareous habitats in the preserve area support species unique to that soil type. These include basswood, American prickly-ash, watershield, small-flowered agrimony, beardtongue, golden-saxifrage, wild yam, and knotted rush.

Other rare and uncommon plants observed on the site include small-flowered agrimony (a New York Natural Heritage Program Watch List), marsh speedwell, watershield, nannyberry, winterberry, crested woodfern, pine oak, and golden-saxifrage. These are scarce or regionally rare in the Hudson Valley.



There are no known rare or endangered plant species



inventoried in the Mill Brook area. Historical records from the New York State Department of Environmental Conservation do list two species of plants as rare and endangered species however. Prairie wedgrass is a plant species found in damp soil which was last documented along the Mill Brook in 1957. Puttyroot is a rare and endangered plant species last documented in the moist woodlands along the Mill Brook in 1932.

Woodlands within the preserve area include a red cedar grove, an impressive hemlock grove, and mature hardwoods.

Wildlife

The wood turtle was the only rare or vulnerable animal inventoried in the area by Kiviat. However, based on habitat types and availability, other species are probably supported including the spring peeper, wood frog, spotted sandpiper, marbled salamander, Jefferson salamander, four-toed salamander, and blue-spotted salamander. Suitable habitats exist for the northern cricket frog as well, and a local population of this species is about 4 km north of the Preserve. See Appendix 14-B for other inventoried species.

The proposed Mill Brook Preserve, although small, provides a wide variety of habitats for wildlife. Species of conservation concern found within the Preserve include:

Table 2. Species of Special Concern in the Proposed Mill Brook Preserve.

Species of Conservation Concern	Place	Rarity
Wood Turtle (<i>Clemmys Insculpta</i>)	Near streams	S3 (Species of Special Concern)
Spotted Turtle <i>Clemmys gutatta</i>	Near wetlands	S3 (Species of Special Concern)
Box Turtle (<i>Terrapene carolina carolina</i>)	Sunny pools of water	s3 (Species of Special Concern)
Northern Cricket frogs (<i>Acris crepitans</i>)	Near Marshes	S2 (NYS Threatened)
Spotted Salamander (<i>Ambystoma maculatum</i>)	Nearby vernal pools	Development Sensitive
Jefferson Salamander (<i>Ambystoma jeffersonianum</i>)	Nearby vernal pools	S3
Blue Spotted Salamander (<i>Ambystoma laterale</i>)	Nearby vernal pools	S3
Tiger salamanders (<i>Ambystoma tigrinum</i>)	Nearby vernal pools	S3
Cerulean Warblers (<i>Dendroica cerulea</i>)	Wetlands Nearby Hemlock Grove	S3

Mill Brook Preserve Management Plan

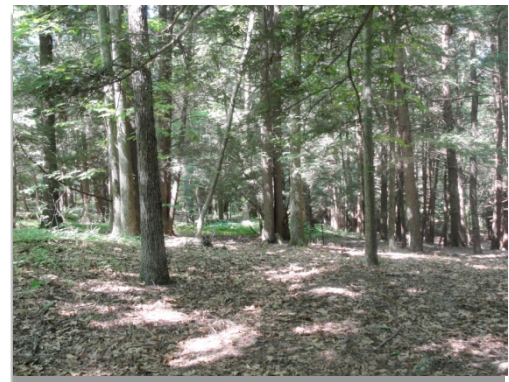
Species of Conservation Concern	Place	Rarity
Field Sparrows and Vesper Sparrows		S3



Trail in Moriello Park



Detention Pond for Drainage at Woodland Pond



Woodlands in the Proposed Mill Brook Preserve

Small Flowered Agrimony (<i>Agrimonia parviflora</i>)	Wet Clay Meadows, Calc. Wet Meadows	S3
Southern Dodder (<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>)	Wetlands, especially on Purple Loosestrife	NYS Endangered
Beaver (<i>Castornostor Canadensis</i>)	500 feet away from the heart shaped pond	
River Otter	Adjacent to the heart shaped pond	
Pileated Woodpecker	Near the old beaver pond	High Development Sensitivity
Coopers Hawk	In woodlands	Special Concern, Audubon Hudson River Valley Priority Bird List

In addition to Hudsonia, SUNY New Paltz, and other local field inventories, the New York State Breeding Bird Atlas identified several wildlife species of special concern and one threatened bird species during the 2000 to 2005 Atlas. The Village of New Paltz, including the entire area of the proposed Mill Brook Preserve is included in the Breeding Bird Atlas, Block 5762C. Species of special concern found in the area are the Coopers Hawk, Red-shouldered Hawk, and Osprey. Additionally, the Sedge Wren is a threatened species also found during that inventory. For comparison, the 1980 to 1985 Breeding Bird Atlas results for Block 5762C is included in Appendix 14-B. The species list is somewhat different between the two census years.

Hudson River Valley Priority Bird List. The National Audubon Society has developed a list of bird species considered to be of conservation priority. A species is included on the Hudson River Valley Priority Bird list if it is found in the Hudson Valley and on one of the following priority lists: State-listed Endangered, Threatened, or Special Concern; Audubon Watchlist (2007); Partners In Flight (PIF, 2005) - Continental Concern, Regional Concern, Continental Stewardship, Regional Stewardship in any of the Bird Conservation Regions in the Hudson Valley (BCRs 13, 14, 28, and 30); North Atlantic Shorebird Plan - Highly Imperiled or Species of High Concern; Mid-Atlantic, New England, Maritime Waterbird Working Group - High Concern, Moderate Concern. Appendix 14-B details bird species found during the Breeding Bird Atlas that are also considered part of the Hudson Valley Priority Bird List. The 1980-1985 Breeding Bird Atlas included 21 species listed on the Priority Bird List and the 2000-2005 Atlas included 25 species. See Appendix 14-B for an inventory of other wildlife species found on site.

10.0 Recommendations



Beaver Pond

The proposed Mill Brook Preserve does not exist in isolation from the surrounding village or town. Growth in the Village, as well as in the Town of New Paltz could have impacts on Preserve lands and long-term sustainability of the habitats. Therefore, this Plan takes a watershed approach to long-term preservation of the lands in order to preserve ecological functioning of the Mill Brook. Recommendations include many watershed-oriented protection methods that should be put to work in and around the proposed Mill Brook Preserve.

The primary short-term task to implement this Plan is for the Town and Village of New Paltz to acquire other lands within the potential preserve boundary either through easements or land purchases. Because protection of the land within the potential preserve boundaries is not a guarantee that the ecology of the area will be maintained however, care needs to be taken both within and outside the potential boundary to manage water quality and flow. Watershed planning, land conservation, erosion and sediment control, stormwater management, and on-site stewardship programs are all necessary in order to ensure long-term sustainability of the habitats and ecology.

Sustainable management and long-term stewardship recommendations that should be implemented are, in general to:

- use natural processes to manage forested areas wherever possible;
- encourage green planning and policy at the Town and Village level;
- prevent damage to land, water and cultural resources;
- use sustainable design principles in planning and constructing amenities on site; and to
- encourage visitors to enjoy and learn from the proposed preserve while protecting its environmental and cultural resources.

The Town and Village of New Paltz have important roles to play in creation and management of the Mill Brook Preserve. Both need to thoughtfully plan for new development as well as manage existing development that could impact the Preserve.

Planning and Management Recommendations

1. Continue to pursue acquisition of other properties from willing property owners within the preserve area as a priority activity. Of special importance are those lands along the Mill Brook that link the core area to Moriello Park (see Maps 7 and 8). These lands are critical not only for maintaining the ecology of the major part of the stream corridor, but the only natural link between the Preserve and the Wallkill Valley Rail Trail as well. Acquisition could be through land purchases, or use of bought or donated conservation easements and trail easements.

Lands outside the Village to the north of the Woodland Pond project are currently undeveloped and are part of the Mill Brook Watershed. These lands are important to the long-term maintenance of the ecological health of the stream and wetland complex downstream. Before future development is proposed, it is recommended that the following important questions be discussed and explored by the Town and Village of New Paltz:



Revegetation and Development at Woodland Pond

Within the Proposed Mill Brook Preserve Boundaries

- How to promote private and public stewardship to sustain the integrity of the habitats and biodiversity of the Preserve.
- How to maintain the integrity of streams and wetlands, along with necessary upland habitats.
- How to inform the public about the Preserve and involve them in recreating in the Preserve and assisting in its long-term care.
- How to acquire, through easements or purchase, the remaining lands needed as identified in this Plan.

Outside the Proposed Mill Brook Preserve Boundaries, within its Watershed

- What amount and where should development and impervious cover take place.
- What land use management techniques should be used.
- How to maintain the integrity of streams and wetlands, along with necessary upland habitats.
- What clearing and grading should take place during development and what long term maintenance practices should be implemented after development.

2. Seek to emulate natural processes when managing preserve lands and ecosystems. For example, if no beaver are present on the site, it may become necessary in the future to simulate beaver flooding of the

ponds. Without beaver, open water and wetlands existing now are likely to eventually fill in to eventually become a wet meadow and then wooded wetland. Manipulation of water levels to “flood” the pond areas may be needed if beaver are not present to accomplish this naturally.

3. Encourage residents, businesses, and other landowners within the watershed to use sustainable natural landscaping and landscape management techniques to minimize the need for chemical fertilizers, pesticides, and herbicides. Provide materials to educate people about the connection between use of these chemicals, water quality and the proposed Mill Brook Preserve.
4. Minimize impervious surfaces and storm water runoff by encouraging permeable paving techniques (pavers, permeable asphalt) for low traffic areas and parking lots, and green roof systems for buildings. Educate landowners about pervious options and include such discussions in all major development review processes conducted by Town and Village planning boards.█
5. Town and Village planning boards should apply watershed protection methods during permitting of new development. This should including buffers and use of stream corridor easements to mitigate development impacts on the Preserve. This is especially important when any future development could negatively impact the core preserve area.
6. Promote low impact development practices (See Box 1 below) on and off-site with existing and future land users adjacent to the proposed preserve.
7. Future stormwater management systems should maximize water recharge, with minimal water fluctuations to the wetlands and beaver pond in the core preserve area. Pre- and post-development runoff calculations on development within the watershed should be reviewed to understand and minimize potential changes.
8. Town and Village planning boards should incorporate use of Best Management Practices (BMPs), such as stormwater filtration systems, oil/grit separators, detention ponds, buffering filter strips and silt barriers for proposed facilities (i.e. parking lots) into site plans where significant amounts of pollutants (oil, antifreeze, brake fluid, cleanser) and fertilizers (domestic animal droppings, lawn care products, etc.) have the potential to enter Mill Brook.
9. For developments that may alter native vegetation, restoration and maintenance plans should be incorporated into plan approvals. New landscaping plans should work to prevent erosion, maintain biodiversity, assist in managing water flow, and provide screening to preserve the character of the area. The plan should include details on both ground cover and shrub/tree vegetation and should cover short term-planting and long-term management. (Such a restoration and management plan needs to take into consideration deer browsing.) Consider use of “critter crossings” to enhance wildlife travel and connectivity.
10. Preserve as many mature trees as possible. These trees play a role not only in watershed management, but have important aesthetic and wildlife habitat roles.
11. Removal of vegetation within the core area of the Preserve should occur only when no feasible alternative exists. If necessary, removal should be confined to the minimum in order to protect natural riparian areas and wetland buffers.█
12. Within the proposed preserve boundaries, develop short



Garden Behind Duzine Elementary School

and long-term measures for the restoration and enhancement of native vegetation and wildlife habitat. These measures should include plans for the elimination of undesirable non-native vegetation. Non-native plants should be removed gradually with priority given to removal of those exotics that compete with native vegetation, or exotics that do not have food or nesting value for wildlife.

13. The Town and Village of New Paltz should review and coordinate construction activities conducted by other local, state or federal agencies when proposed upstream of the Preserve. These activities could affect water flow or water quality. NYS Town Law 272-a requires other governmental agencies to consider local plans when capital improvements are proposed. Other agencies should be aware of the goals and policies as outlined in the Town and Village Comprehensive Plan, Open Space Plan, and this Preserve Plan.
14. Within the Preserve, any trails planned to cross wetlands and streams should be sited at locations having lower vulnerability. Minimize use of paved trails, in or directly bordering streams and wetlands. For trails that must be near these locations, use only pervious surfaces. Leave 100' of native undisturbed vegetation around all seeps and vernal pools. This includes no roads, curbs, storm drains, or other barriers that would prevent movement of wildlife. (See also recommendations under Trails, below)
15. At least one major vernal pool is identified within the proposed Mill Brook Preserve (located just to the south of the Woodland Pond development). Work to maintain as much of a 100' undisturbed buffer around this or other vernal pools. Work to maintain or restore native vegetation within an additional 750' of the pool. Woodlands within the 750' zone contain important vegetation for breeding amphibians. Work to maintain a minimum of 75% of these undisturbed upland habitats in this larger buffer. If other seeps or vernal pools are identified, include them with their 100' and 750' buffers on the Preserve map.
16. All erosion control programs in the Mill Brook watershed should include measures to minimize damage to streamside and wetland vegetation, wildlife, and habitats. Environmentally damaging materials, such as rubble, gunite, cement, sandbags, bulkheads, fences, and tires should not be used for permanent erosion control features within the Preserve. Use environmentally sensitive techniques such as naturalistic vegetation plantings and other bioengineering techniques rather than hard-edged structures such as retaining walls, concrete, or dumped rip-rap armoring. Rock, gabions or wire mesh may be used with overplanting to restore vegetation where vegetation measures alone are insufficient.
17. Site plans, special use permits, and subdivision applications for development within the Mill Brook Watershed should be carefully reviewed by local planning boards with emphasis on if and how the proposed site design of the project may impact the Mill Brook watershed, and not just the immediate area of the parcel. The goal is to maintain or enhance predevelopment stream and wetland habitat conditions with respect to recharge, hydrology, water temperature, and riparian condition. Physical and hydrological connections between the parcel being developed and the proposed Mill Brook Preserve need to clearly be understood. Subsequent project decision making needs to incorporate methods to manage stormwater, maintain water flow, habitats and vegetation, and minimize water pollution beyond the parcel in question. Of special importance off-site of the Preserve will be to maintain water flow, streamside vegetation, wetlands and wetland buffers, and natural vegetative and hydrological links to the rest of the complex. Planning boards should include environmental management plans as part of the permitting process for both the construction phase and for long-term management of stormwater from the site.
18. The Town and Village of New Paltz should consider using "interested agency" status during SEQRA reviews for projects in either municipality that could affect the Preserve in order to promote a watershed approach to long-term management of the Preserve.

19. The Town and Village of New Paltz should consider creating an overlay district within their respective zoning laws coincident with the Mill Brook watershed. This overlay would serve to elevate the importance of the proposed Mill Brook Preserve to land use applicants and residents alike. Overlay zones are commonly used to protect known environmental resources. Such zoning districts require specific standards for new development that are in addition to the underlying district. Overlay standards could include use of best management practices for watersheds, forests, streams, and wetlands. More specifically, possible development standards for development within the overlay consistent with this Plan include, but are not limited to:
- creation of a stream bank/wetland protection buffer zone of 100 feet from all wetlands and stream banks where natural vegetation is allowed to remain undisturbed.
 - prevention of stream bank or channel modifications which, individually or cumulatively, would adversely affect water holding capacity, flood flow, and water quality or produce other adverse impacts;
 - use of native vegetation for landscaping;
 - minimization of use of herbicides and pesticides through use of integrated pest management practices or prohibit them entirely;
 - review of visual impacts a development may have on the Preserve. The isolated and “wilderness in the city” character of the Preserve should be maintained. When a visual impact may occur, mitigation could include to the maximum extent practical, screening of new structures and use of landscaping with appropriate trees and shrubs to soften the view from the Preserve.
 - establishment of natural drainage and storm water treatment standards (for example, constructed wetlands, rain gardens, retention areas, dry wells, green roofs, and natural vegetated filter strips and drainage swales) that require use of existing natural features and hydrology of the landscape to filter and absorb storm water into the ground. If all rain water cannot be absorbed by the built landscape, standards should require detention of storm water with naturalized wet or dry detention basins which replicate a natural wetland or shallow pond system.
20. NYS DEC has been alerted to the possibility that a regulated wetland exists in the preserve area. Follow through and request that they make a formal determination whether the core wetland complex is subject to NYS Freshwater Wetlands jurisdiction. Consider hiring a consultant to delineate wetland boundaries and provide this information to DEC.

Stewardship Recommendations

Balancing Protection and Public Use

Public feedback indicates much support for the proposed Mill Brook Preserve. Strong opinions have been expressed about what role people want the Preserve to play in New Paltz. Overwhelmingly, the public is interested in having the proposed Mill Brook Preserve to be a place to protect habitats, be an educational resource to the community, and provide opportunities for low-impact recreational uses. Thus, the primary roles of the proposed preserve are:

- Habitat Protection, Restoration and Stewardship
- Trails – Walking, Low Impact/Access to nature with some hardened surface for bikes
- Education and Interpretation
- Research/Field Laboratory

Residents desire a balance between conservation and human uses. To accomplish this, the following are recommended:

1. Establish a “Friends of Mill Brook Preserve” (Friends) committee to assist in implementing this Plan. The role of this ad-hoc committee should be to implement this plan, seek funding, and coordinate Preserve-related activities. This committee could be either formally established through an Intermunicipal agreement between the Town and Village of New Paltz, or organized as an independent volunteer organization dedicated to maintaining and promoting the Mill Brook Preserve (The Wallkill Valley Rail Trail Association is an excellent model). This committee should consist of representatives from the Town and Village, as well as other organizations, such as SUNY New Paltz and the Duzine Elementary School. A broad range of preserve stakeholders such as bicyclists, hikers, educators, and local property owners should be asked to participate in the committee. This committee should work to encourage and develop a community awareness and support system for the Preserve. Special interest events and programs can be created such as (for example):



- Preserve Volunteer Patrol
- Adopt-A-Brook Program
- Preserve Clean Up Day
- Annual Habitat Restoration Programs

2. Develop a trail system as shown on Map 7. This plan envisions the Preserve as a unit linked together by the Mill Brook waterways and wetlands with a system of less formal hiking and limited hard-surface bicycle trails. The trail system proposed under this Plan is one element of a larger regional system and care should be taken to link the Preserve to other off-site locations.

In planning and designing trails for the Preserve, the following issues should be considered:

- Trail safety, aesthetics and impact on the natural environment.
- Appropriate trail surfaces, widths, and clearances.
- Type of trail to accommodate need. Most trails recommended for the Preserve are hiking/walking pathways with a more limited bicycle pathway proposed around the periphery. Trail use by equines may be feasible if future planning is done to manage horse manure and to prevent erosion of trail base that could result.
- Linkages to locations within and outside of the Preserve.

Access and Pedestrian Opportunities

Pedestrian Access and Parking – Map 7 indicates recommended access points to the Preserve. These locations were selected because they would require minimal improvements. The goal is to make as many connections to nearby residential streets and sidewalks so that pedestrians can walk to the Preserve. Some parking can be accommodated along existing streets, in small unimproved parking areas, or at Moriello Park (if appropriate pedestrian links can be made).

No motorized vehicles are recommended within the Preserve. Trails should use existing pathways to the maximum extent possible.

Parking lots should be appropriately located and built to minimize adverse impacts to the adjacent neighborhood. The parking lots should be designed to be limited in size and with safety in mind. Minimal signage should be used to mark the location. All access points should have a map of the Preserve, interpretive materials (such as in a Kiosk), and a mechanism for visitors to record plant or wildlife species observed while at the Preserve. Some access points associated with the bike path can have bike racks so people can park their

bikes and access the Preserve on foot. See Appendix 14-C for additional information on parking and preserve access.

Trails – the trail system can be relatively unimproved pathways with interpretive and locational signage. Widths of unimproved trails are recommended to be three to four feet wide and recommended to have dirt surfaces. As use of the Preserve increases, some pathways could be improved with gravel. Most surfaces however should be permeable.

As mentioned previously, one bike path is recommended. For safety, the bike path should be improved. While paving is not necessary, use of packed, but permeable materials such as crushed gravel would be recommended. In the future, the community could consider addition of gravel or other hard surfaces to provide handicap access. The bike trail may be able to also function as a handicap accessible pathway.

Linkages –In order to promote use of the proposed Mill Brook Preserve as both a destination and a route, it is recommended that the trail system link on-site pathways in the core area with Moriello Park, adjacent residential areas, and then further to connect to the Wallkill Valley Rail Trail via a pedestrian crossing across Route 32. Currently, a crosswalk is marked across Route 32. It is recommended that the markings be either moved to be closer to the intersection of Route 32 and Mulberry Street or if that is not feasible, create another crosswalk with markings so that there is more of a connection between the Rail Trail and access to Moriello Park trails.

Due to existing development, the most feasible route to connect the core preserve area with Moriello Park would be to connect the trail that already exists through the Park, go past the Town Hall and Community Center, and through Green Acres development (Cooper Street and Bonticou View Dr. area) along the public street to access points in the Preserve to the east (Shawangunk Reserve [Bienstock] property).

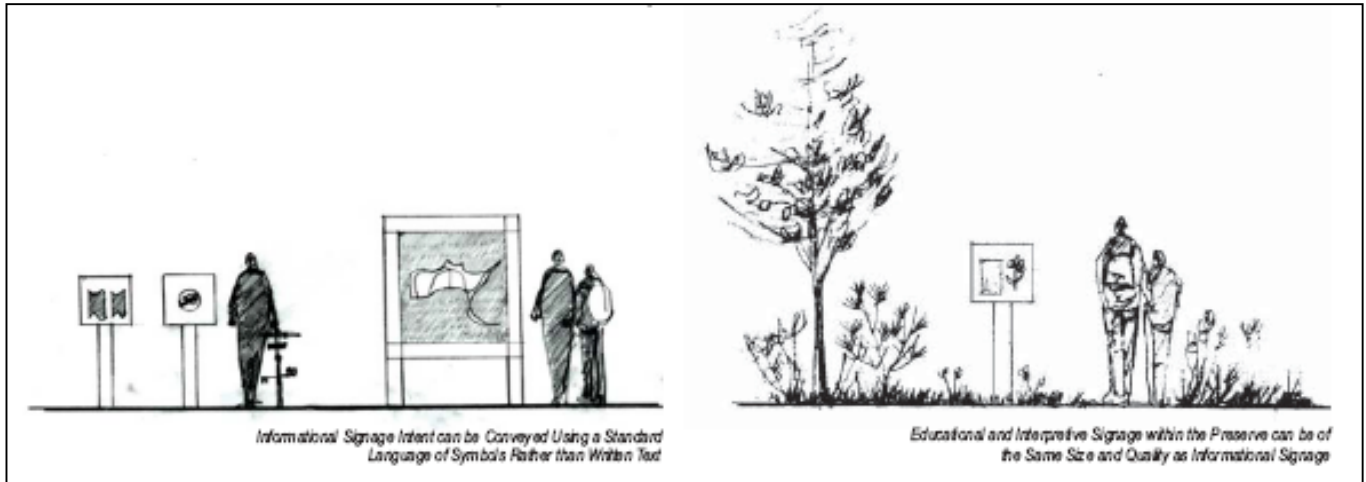
Long-term, a route along the stream from Moriello Park east through the Shawangunk Reserve (Bienstock) Property and to the other lands of the Preserve would be advantageous. This would keep visitors off residential streets, and within the Preserve. The difficulty in accomplishing this option should be recognized however. Already-developed residential parcels exist and there is little room to place a pathway or trail along the stream in this location. In the future, it is advisable for the Town and Village to reach out to these landowners and attempt to negotiate agreements with them to locate the trail towards the rear of their properties. For the foreseeable future, the route from the Park, along the residential street created in Green Acres, and back to the Preserve as shown on Map 7 is likely more achievable. The drainage easement that already exists in the new subdivision along Cooper Street may be a feasible access point. This would allow pedestrians to use the public sidewalks and the drainage easement to access the trails in the Preserve (See Concept Map).

1. Trail Construction - It is recommended that further research and/or retention of a professional experienced in trail and pathway building be done prior to design and construction of any trail. Any trail design however, should:
 - a. Avoid highly erosive soils, sensitive ecological systems, and expensive trail construction. Hiking or bicycle uses should be limited to designated trails.
 - b. Minimize removal of riparian vegetation and utilize natural features and boardwalks to discourage public access to sections of streams not directly accessed by trails.
 - c. Remove existing trails that adversely impact sensitive areas or show signs of significant compaction or erosion. These areas should be allowed to revegetate. Where possible, rather than creating new trails that may impact habitats, use existing pathways.
 - d. Use 4' to 8' of smoothly graded earth or crushed rock to accommodate runners and walkers for non-bicycle trails. Use of pervious surfaces is important. Trails passing closest to wetlands or other sensitive areas can be “primitive” with natural surfaces.
 - e. Incorporate best management practices (BMP's) for sediment control measures.

- f. Limit stream crossings. In order to make a pedestrian connected route, some stream crossings are recommended as shown on Map 7. Where wetland or stream crossings are unavoidable, crossings should be properly designed and placed at the narrowest wetland location. Trail design should always ensure that runoff water and drainage from the trail is collected in a stabilized area or sediment basin. Natural drainage patterns should not be disrupted or moved, as the runoff water and surface water may be providing moisture to wetlands down-slope or downstream. Good trail design can balance the desire to be near water with environmental protection by incorporating scenic viewpoints, vegetative buffer zones, and by minimizing the number of wetland crossings. See Best Management Practices for Erosion Control During Trail Maintenance and Construction (National Trails Training Partnership) for more technical information on proper construction of stream and water crossings.
 - g. Dogs should be required to be leashed in the Preserve, to avoid harassment of wildlife. Enforce and notice any Village of New Paltz leash laws with appropriate signage.
 - h. Consider installing scattered picnic tables and/or benches along trails in appropriate locations. Benches could be evenly spaced to provide areas for rest along the trail, or at specific scenic locations such as in the hemlock stand.
 - i. Identify locations that would be appropriate for fishing access areas and notice them with signage. There may be appropriate locations at the beaver pond.
 - j. Restrict bicycle use to the designated trails, roadways, and parking lots as identified on Map 7. Bicycle access was the one amenity where there were different opinions. Many people feel low-impact and non-paved pathways that do not allow for bicycle access are preferred. Others feel that provision of trails allowing for bicycle access were important. If a bike trail is to be provided, it should be of a hard surface but remain permeable. The bike trail should be built for 2-way bicycle/pedestrian traffic, with a 10' to 12' width built to bikeway standards, and with a maximum slope of 5%. Preserve access points/parking areas could have bike racks so that bicyclists can enter the interior of the Preserve. The recommended bike route allows for this use as a route that connects improved trails and existing streets together. Bike paths should use pervious surfaces such as gravel or low wood boardwalks. Consider use of planked walks that are only slightly raised off the ground to provide a smooth surface. These paths are essentially boardwalks without the elaborate piers or other footings. For wheelchairs and other use, the surface would qualify as "firm and stable" for accessibility. Like other boardwalks, this surfacing is often used for interpretive facilities in wet habitat areas.
 - k. Consider installing scattered picnic tables and/or benches along trails in appropriate locations. Benches could be evenly spaced to provide areas for rest along the trail, or at specific scenic locations such as in the hemlock stand
 - l. Consider use of environmentally-friendly construction materials for boardwalks such as recycled plastic lumber. Use of structural plastic offers a cost savings over the life of the boardwalk but as a 100% recycled product derived from plastic milk jugs and plastic soda bottles, it fits in with the overall design and environmental theme of the Preserve. (Ecoboard is a product that is made of 100% recycled plastic lumber with a 50 year guarantee that is inert in the environment and offers the structural strength via fiberglass filaments and/or fiberglass rebar.)
1. Develop an on-going ecological monitoring program. Monitoring activities should include biological, ecological and physical conditions of the stream, ponds, wetlands, and uplands. One important role of the Friends Committee would be to coordinate monitoring activities and keep records. The Friends Committee can encourage documented research and provide a coordinated archive of information to expand knowledge of the Preserve's natural resources. A report on the state of the Preserve could be submitted to the Town and Village periodically. Monitoring activities should involve the public in general, and SUNY New Paltz and elementary students from the nearby Duzine School in particular. Some monitoring considerations include:
 - a. Develop ongoing water quality, habitat, and wildlife inventory and monitoring projects.
 - b. Measure temperature, oxygen levels, nutrient levels

- c. Select sites to be monitored long-term
 - d. Establish mechanism to address concerns should testing identify problems with Village and Town
 - e. Involve visitors to the Preserve in inventory activities. This could include special activities such as late winter herpetological surveys (in March) to look for individuals, egg masses, or larvae of the wood frog, spotted salamander, Jefferson salamander, marbled salamander, and four-toed salamander. An informal monitoring system should also be set up so that visitors can record bird or mammal sightings while visiting the Preserve.
2. Enhance awareness of the proposed Mill Brook Preserve, its mission and its amenities to area residents through multi-media including websites, local newspapers, brochures, maps, and signage.
 3. Provide opportunities and create mechanisms to educate the public on the value of the Preserve and open space corridors.
 4. Develop educational outreach programs through local schools and special interest groups.
 5. Develop a comprehensive interpretive program for the entire Preserve to provide for a continuous, integrated educational experience for visitors. Involve the community and SUNY New Paltz students and faculty in development of this interpretive program. Work closely with Duzine School staff to develop the Preserve as an outdoor classroom for local children.
 6. Establish nature study and interpretive materials such as trail maps (see Map 7), signs, and brochures to facilitate public education.
 7. Allow for fishing opportunities within the Preserve. However, given the proximity to residential uses and open access, public recreational hunting is not recommended. However, it is recognized that the Town may feel it necessary to manage the ecology of the Preserve by controlling its deer population. Prior to initiating any hunting to cull the deer population, the Town should explore this activity through further study and discussion. In 2010, the Town began assessing its forest lands with a NYS DEC Forester and this may yield information that would contribute to the understanding of and need for deer population control.
 8. Adopt long-term interpretive plan with the following minimum components:
 - a. A signage program that addresses the design, size, and location of signs in the Preserve. Consider placing directional signs for trails or viewing locations, picnic areas, emergency access points, and include identification signs naming points of interest, and signs indicating the rules and regulations at major points of entry. The sign program should also address the issue of vandalism.
 - b. Interpretation of the ecosystems and habitats on-site. Work to help the public understand both the differences between, and the connections of the pond, wetland, and upland habitats.
 - c. An interpretive map showing points of entry, trails, structures or other amenities. Local schools and SUNY New Paltz should be encouraged to use the Preserve for research and teaching and share their results with the Friends Committee. School districts should be encouraged to use the Preserve as an outdoor classroom.
 9. All signs (e.g., interpretive, informational, directional, etc.) in the Preserve should have consistency in design, color and materials. Signs should blend with the natural environment. They should also help make people aware of rules for proper conduct and resource protection needs. All signage should be coordinated as part of an overall preserve signage plan.
 10. Interpretive exhibits should be developed to introduce visitors to various natural features at the Preserve. However, the provision of interpretive exhibits should not detract from the “wilderness in the city” experience. Kiosks, and small interpretive signs (such as a number post that corresponds to a map or

brochure with interpretive information can be placed at appropriate intervals in the Preserve.) Consider a variety of exhibit formats to appeal to diverse age groups and to provide interpretation of the Preserve.



11. As the interpretive program in the Preserve expands, care must be taken not to impact any one area. Long-term, plan for expanded use of the Preserve for guided tours and programs but care should be taken that these more intensive uses do not negatively impact either the resources, or the visitor experience. Periodic evaluation of the various interpretive activities and elements will be necessary to ensure that the interpretive program is meeting the needs first of the ecology of the Preserve, and then for user groups.

As public use increases, evaluate the feasibility of providing restroom facilities. Facilities could be connected to the Village of New Paltz sewer system, or they could be self-contained through use of composting toilets. (Solar-powered composting toilets are also available). Level of need, costs, long-term maintenance, and potential impacts to the environment are considerations to be included in this evaluation. Until there is a need for on-site facilities, consider allowing for public use of restrooms at existing facilities located on the periphery of the Preserve. These would include the Town Hall, Community Center, and Moriello Park.

Box 1. Low Impact Development Concepts.

Low Impact Development (LID) is a stormwater management approach with a basic principle that is modeled after nature: manage rainfall at the source using uniformly distributed decentralized micro-scale controls. LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Techniques are based on the premise that stormwater management should not be seen as stormwater disposal. Instead of conveying and managing / treating stormwater in large, costly end-of-pipe facilities located at the bottom of drainage areas, LID addresses stormwater through small, cost-effective landscape features located at the lot level. These landscape features, known as Integrated Management Practices (IMPs), are the building blocks of LID. Almost all components of the urban environment have the potential to serve as an IMP. This includes not only open space, but also rooftops, streetscapes, parking lots, sidewalks, and medians. LID is a versatile approach that can be applied equally well to new development, urban retrofits, and redevelopment / revitalization projects.

LID has numerous benefits and advantages over conventional stormwater management approaches. In short, it is a more environmentally sound technology and a more economically sustainable approach to addressing the adverse impacts of urbanization. By managing runoff close to its source through intelligent site design, LID can enhance the local environment, protect public health, and improve community livability - all while saving developers and local governments money. The need for such an approach has never been greater. Stormwater programs require that a wide array of complex and challenging ecosystem and human health protection goals be addressed. Many of these goals are not being met by conventional stormwater management technology, and communities are struggling with the economic reality of funding aging and ever-expanding stormwater infrastructure. The challenge of how to restore stream quality in watersheds that have already been densely developed is even more daunting. Simply relying on impervious reduction and/or conventional detention ponds to address these issues is not feasible, practical or sustainable. LID provides the key in its emphasis on controlling or at least minimizing the changes to the local hydrologic cycle or regime.

The LID approach includes five basic tools:

1. encourage conservation measures
2. promote impact minimization techniques such as impervious surface reduction
3. provide for strategic runoff timing by slowing flow using the landscape
4. use an array of integrated management practices to reduce and cleanse runoff
5. advocate pollution prevention measures to reduce the introduction of pollutants to the environment

For more information: www.lowimpactdevelopment.org or www.epa.gov/owow/nps/urban.html

11.0 Implementation and Funding

Coordination.

Implementation of this Plan must be a cooperative effort between the Town and Village of New Paltz and partners including the County, New York State (DEC and the Hudson Valley Greenway), Wallkill Valley Rail Trail, Wallkill Valley Land Trust, Save the Woods and Wetlands, New Paltz Clean Water and Open Space Protection Commission, and others. Cooperative working relationships with public and private entities are needed to ensure positive pursuit of the Preserve goals.

In addition to continuing dialogue with private landowners and seeking funding, the Open Space Commission should work with the local governments to spearhead establishment of the Friends of the Mill Brook Preserve Committee. Another important task for them is to help define the roles and responsibilities of the local governments related to the Preserve.

Potential roles for Town and Village of New Paltz local governments are:

- a. Support establishment of a Friends of Mill Brook Preserve Committee.
- b. Support grant applications and agree to have the Town and/or Village be lead agency for grant applications.
- c. Consider implementation of other funding mechanisms as suggested in this Plan.
- d. Assist in coordinating local government sponsored capital improvements in the Town and Village that are consistent with the preserve concepts.
- e. Ensure that Planning Board and Zoning Board of Appeals members are informed of the mission, goals, and recommendations of this Plan, and ensure that project reviews pay particular attention to potential impacts on the preserve area.
- f. Encourage inter-agency cooperation.
- g. Recognize the proposed Mill Brook Preserve in future municipal comprehensive plan updates.
- h. Consider local regulations and their compatibility with the Preserve and make adjustments as needed.

Funding

Helping make the Mill Brook Preserve a reality will require funding to pay for detailed planning, land acquisition, facility development, maintenance, and operations. A wide variety of potential funding sources and in-kind services must be pursued to support the Preserve. Many are described in this Plan, below. Funding sources to be considered include use of Town of New Paltz Open Space Bond monies, general fund subsidies, grants, donations, sponsorships, volunteer services, and in-kind services.

The ability of the Preserve to attract financial support will be greatly enhanced by its diverse uses and resources. Grants, sponsorships, endowments, and donations can be pursued that are aimed at promoting education, alternative transportation, conservation, historic/cultural resources, recreation, health, and community development. It is critical for the Friends Committee, together with the Open Space Commission and the Town and Village of New Paltz to develop short and long-range strategies for aggressively targeting revenue sources for the Preserve.

Funding for the Preserve should be planned for two general purposes. The first is operating expenses, which will become ongoing, somewhat predictable, and will include maintenance, administration, programs, planning, and possible debt financing for land acquisition. The second category of expenditure is for capital

improvements such as parking lot, trail and signage construction. It is important not to develop new facilities unless the financial resources are available to maintain them.

The following are some of the funding sources that should be pursued for implementation of the proposed Mill Brook Preserve:

Grants. Research and identify appropriate state and federal grant funds. The Friends Committee may want to consider hiring a professional grant writer to stay up-to-date with grant opportunities and assist in grant applications. (Note: The following list was compiled as of August, 2010. Grant programs frequently change. Not all opportunities are listed below. Further, those that are listed below may have no funding appropriated or available in the future.) Excellent sources for identifying grant opportunities are:

- www.smartgrowthny.org/grants.shtml
- www.grants.gov
- www.hudsongreenway.state.ny.us/GrantFunding/GrantsOverview.aspx
- www.hudsongreenway.state.ny.us/GrantFunding/OtherFunding.aspx
- www.nps.gov/nrcr/programs/rtca/index.htm
- www.nysparks.state.ny.us/grants/
- www.dec.ny.gov/pubs/grants.html

In addition, the following agencies sponsor grant programs that the proposed Mill Brook Preserve may be eligible for:

Federal

1. Department of Transportation Intermodal Surface Transportation Efficiency Act
2. Watershed Assistance Grants Program (WAG)
3. Cooperative Endangered Species Conservation Fund (US Fish and Wildlife Service)
4. Wildlife Conservation and Appreciate (Partnership For Wildlife) (US Fish and Wildlife Service)
5. Water Banks Program (USDA, NRCS)
6. Wetlands Grants (EPA)
7. North American Wetlands Conservation Fund (US Fish and Wildlife Service)
8. Urban Park and Recreation Recovery Program (NPS)
9. Recreational Trails Program (Federal Highway Administration)
10. Outdoor Recreation Acquisition, Development and Planning (Land and Water Conservation Fund Grants by the NPS)
11. Environmental Education Grants (EEG) (EPA)
12. Healthy Communities Grant Program (EPA)
13. FHWA Programs:
 - a. Safe Routes to School
 - b. Transportation, Community and System Preservation Program
 - c. Recreational Trail Program
14. Sustainable Community/Regional Planning Grant Program (HUD)
15. Land and Water Conservation Fund
16. Pittman – Robertson Program
- 17. Rivers, Trails and Conservation Assistance Program (NPS)**

18. Land and Water Conservation Fund (National Park Service via New York State Office of Parks):
<http://www.nysparks.state.ny.us/grants/programs/conserv.asp>
19. Farm Security and Rural Investment Act (Preserve Legacy Program)
20. Urban Preserver Program (USDA)

New York State Programs

1. Environmental Protection Fund (EPF)

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2. Clean Water State Revolving Fund (CWSRF)
3. Hudson River Estuary Grants Program (NYDEC): <http://www.dec.ny.gov/lands/5091.html>
4. New York State Conservation Partnership Program grants (NYSCPP), administered by the Land Trust Alliance in cooperation with NYS Department of Environmental Conservation Environmental Protection Fund (EPF): <http://www.landtrustalliance.org/community/Regions/northeast/nyscpp0809>
5. Acquisition Grant (NYS OPRHP): <http://www.nysparks.state.ny.us/grants/programs/acquisition.asp>
6. Greenway Communities Grant (Hudson River Valley Greenway Communities Council Grant Programs): <http://www.hudsongreenway.state.ny.us/funding/funding.htm>
7. Greenway Compact Grant Program (Hudson River Valley Greenway Communities Council Grant Programs): <http://www.hudsongreenway.state.ny.us/funding/funding.htm>
8. Greenway Conservancy Projects Grants Program (Greenway Conservancy for the Hudson River Valley, Inc.): <http://www.hudsongreenway.state.ny.us/funding/funding.htm>
9. and <http://www.hudsongreenway.state.ny.us/conserv/Trail%20Funding%20Guide.pdf>
10. Certified Local Government (CLG) Grants Program (OPRHP): <http://www.nysparks.state.ny.us/grants/programs/certified>
11. State Wildlife Grants (SWG) (Federal funds administered by the New York State Department of Environmental Conservation): <http://www.dec.ny.gov/lands/5285.html>
12. Biodiversity Grants Program (New York State Biodiversity Research Institute): <http://www.nysm.nysed.gov/bri/grants/index.html>
13. Historic Preservation Grant Program (OPRHP): <http://www.nysparks.state.ny.us/grants/programs/historic.asp>
14. Notes: This grant is funded by the Environmental Protection Fund. Terrestrial Invasive Species Education Grant Program (NYS DEC): <http://www.dec.ny.gov/animals/33358.html>

Private Foundations

- Active Living Resource Center (Active Living Fund)
- American Hiking Society
- Bikes Belong Coalition and Grants
- Captain Planet Foundation
- Kodak American Greenways Awards Program
- Kresge Foundation Green Building Initiative
- Parks and Trails New York
- REALTOR Association NAR Smart Growth Action Grants
- Surdna Foundation Community Revitalization Grants
- National Fish and Wildlife Foundation Grant Program: Challenge Grant:
(National Fish and Wildlife Service and The Plant Conservation Alliance): <http://www.nps.gov/plants/nfwf/index.htm>
- American Rivers and NOAA Community-Based Restoration Program River Grants: (National Oceanographic and Atmospheric Administration): <http://www.americanrivers.org/noaagrants>
- Black Rock Preserve Consortium Small Grants (Black Rock Preserve Consortium): <http://www.blackrockPreserve.org/docs/scientistresources/>
- Dyson Foundation Environmental Activities Funding (Dyson Foundation): <http://www.dysonfoundation.org/> Notes: program is currently on hold
- Dyson Foundation General Operating Support Grants (Dyson Foundation):



- http://www.dysonfoundation.org/programareas/programareas_show.htm?doc_id=328141
- Dyson Foundation Management Assistance Program mini-grants (Dyson Foundation):http://www.dysonfoundation.org/programareasinfo/programareasinfo_show.htm?doc_id=199928
- Hudson River Improvement Fund (Hudson River Foundation):<http://www.hudsonriver.org/hrif/default.htm>
- Citizen Action Program (Open Space Institute (OSI)):
- http://www.osiny.org/site/PageServer?pagename=Issues_citizenaction_II



Other Revenue Options. The Town and Village of New Paltz should support preserve planning, facilities, and programs in recognition that such programs are major components to positive resource management, economic development, and attainment of Comprehensive and Open Space Plan objectives. It is recommended that all revenue raising techniques be considered. Consider:



1. Using funds from the \$2 million Open Space Protection Bond passed by referendum in the Town of New Paltz by voters in 2006.
2. Offering in-kind services from highway departments or other staff as another important contributor to making this Plan a reality.
3. Establishing annual or multi-year general fund appropriations.
4. Petitioning the NYS Legislature to allow for a real estate transfer tax whose monies could be earmarked for the proposed Mill Brook Preserve, among other open space projects.
5. Establishing a Capital Reserve Fund that could be supported annually, and monies used for capital improvements at the Preserve.
6. Offering incentives for owners of land within the Preserve such as reduced tax assessment (lease of development rights).
7. Using of land purchase installment obligations

Establish mechanisms that allow for contributions from many interest groups and individuals. These private funds can be used to supplement and enrich grant-funded programs. Private contributions of materials or equipment, volunteers and similar types of assistance should also be considered "funding" sources. These contributions can play an important role in future preserve maintenance, development, and interpretation.

Consider establishing an "Adopt a Trail" program. This could give individuals and organizations the chance to sponsor or "own" a section of trail, or sponsors could be sought for various lengths of trail to raise funds. Sponsorships could be for one-year periods or lifetime for a larger donation.

Implementation Checklist

The following table could be used by the Town and Village of New Paltz and volunteers as a general checklist of steps and implementation actions.

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Action	Primary Responsibility	Time Frame
1. Acquire additional lands and easements	Open Space Commission, Town Board, Village Board	Years 1 - 3
2. Create Friends of Mill Brook Preserve to implement this plan	Town Board and Village Board, with Open Space Commission, community volunteers, neighbors	Year 1
3. Seek funds	Friends of Mill Brook Preserve, professional grant writer, support from Town and Village	Ongoing
4. Establish watershed-based preservation and protection programs as described in this plan. This includes programs on and off the Preserve, and with watershed landowners within the watershed	Friends of Mill Brook Preserve, with Open Space Commission, support from Town and Village, engineer and planners as needed	Year 2 onwards
5. Establish stewardship programs as described in this Plan:	Friends of Mill Brook Preserve to develop and coordinate with help from other community volunteers and professionals as needed.	Year 2 to 3 onwards
a. special interest events and programs		
b. develop walking trails, signage, etc.		
c. develop interpretive plan		
d. establish monitoring programs		
e. establish other education and Preserve awareness programs		
f. develop parking and bike access		
6. Evaluate Preserve usage by the public, facility and amenity needs, and update this Plan to reflect those needs and landscape conditions.	Friends of Mill Brook Preserve to develop and coordinate with help from other community volunteers and professionals as needed.	Year 5

12.0 – Mapping Workshop Results

9. Workshop Results (The following table is the key to the points identified on this map).

Map #	Action Proposed by the Public
1	Pond that is ecologically active, but silting
2	Natural Pond with Beavers
3	Former Town Pond
4	Human Dam
5	Beaver pond and dams
6	Duzine School Nature trail
7	There is public access to town property
8	This was a pond ~100 years ago, used to support pond farther downstream.
9	Waterfall – 30 to 40 foot drop
10	Three stream confluence
11	Swimming hole, skating
12	Parking
13	Outdoor class room
14	Remove old house
15	Remove abandoned car
16	Preserve hemlock stand
17	Remove old building
18	Remove old campsites
19	Playground
20	Children’s dig/build area
21	Bike Rack
22	Bike Rack
23	Dog Park
24	Discovery Farm
25	Picnic Tables
26	Picnic Tables
27	Picnic Tables
28	Picnic Tables
29	Diversion msystem from drainage pond. Prevent from going into beaver pond.
30	Observation area and educational kiosk
31	View of ridge from hemlock knoll (bench would be good)
32	Beaver dam
33	Beaver info study center. Small lean-to type structure with beaver info.
34	Nature education for elementary school children (interpretive trails, etc.)
35	Kiosk
36	Kiosk
37	Parking
38	X-C Ski/jogging/stroller/bike trail to connect with rail trail
39	Environmental Center
40	Archeological Dig – Old farm house

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41	Dam - Preserve and provide trail access
42	Parking
43	Parking
44	Parking
45	Parking
46	Trail up hill

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14.0 Appendix

Public Input

This section includes results from the public workshop and SUNY New Paltz Survey

Desired Role for Proposed Mill Brook Preserve to Play in New Paltz

Role of Mill Brook Preserve	No. of Stickers	Aggregation – Categories	Aggregation – Priority Stickers
Animal and plant habitat, Wildlife	5	Habitat protection and restoration	34
Back to nature, observe, restore habitat, natural ecosystem	7	Habitat protection and restoration	34
Bird, butterfly corridor	1	Habitat protection and restoration	34
Fragile ecology – needs bridges, boardwalks	2	Habitat protection and restoration	34
Habitat for birds and wildlife	3	Habitat protection and restoration	34
Harmony with the beavers		Habitat protection and restoration	34
Hemlock preservation		Habitat protection and restoration	34
Invasive species study should be done		Habitat protection and restoration	34
Inventory and removal of invasive species		Habitat protection and restoration	34
Limit number of trails – away from sensitive areas, perpendicular to the stream, not parallel		Habitat protection and restoration	34
Nature comes first, humans are second	4	Habitat protection and restoration	34
Open green space		Habitat protection and restoration	34
Pond at town hall – became marsh when dam gave way. Recreate it.	1	Habitat protection and restoration	34
Preserve natural state of habitats and wildlife (e. g. wetlands)	2	Habitat protection and restoration	34
Preserve open space, wildlife, watershed, surface water and ground water	4	Habitat protection and restoration	34
Renewal this – for flora and fauna to carry on as they always have. But not necessarily a sanctuary only.		Habitat protection and restoration	34
Role of wetlands, especially in relation to global warming, storm water, and aquifer protection		Habitat protection and restoration	34
Watershed management, educational land use practices, ecologically sensitive to fertilizers and leaky septic systems	4	Habitat protection and restoration	34
Wildlife corridor – connect it to the rail trail. Tunnel under 32.	2	Habitat protection and restoration	34
Wildlife habitat area		Habitat protection and restoration	34
Beaver study info center – use to educate public about beavers	5	Education	12

Mill Brook Preserve Management Plan

Role of Mill Brook Preserve	No. of Stickers	Aggregation – Categories	Aggregation – Priority Stickers
Classroom for children	2	Education	12
Community education – science	1	Education	12
Educational area for local schools		Education	12
Educational opportunities		Education	12
Educational projects that are interactive, for children	1	Education	12
Educational uses – nature walk, tree labels, stations		Education	12
Environmental center for education – now privately owned school	1	Education	12
Environmental education	1	Education	12
Guided walks that reflect changes in plant communities – to educate		Education	12
Research area – schools, Cornell	1	Education	12
Use site as a case study on education of invasives		Education	12
Cross-country skiing and snow shoeing	1	Hike/Bike/Ski	11
Hiking, dog walking, relaxing, scenery	1	Hike/Bike/Ski	11
Hiking, walking, snowshoeing	3	Hike/Bike/Ski	11
Limit some paths to summer only, some for winter only		Hike/Bike/Ski	11
Pathways – alternative to roads, and those that don't go anywhere	2	Hike/Bike/Ski	11
Peripheral bike paths, away from sensitive areas	1	Hike/Bike/Ski	11
Recreational amenities for community development – hiking, biking, xc skiing	3	Hike/Bike/Ski	11
"Park" instead of "Preserve" – Accessible for youth through various access points – mountain biking, etc., without strict limitations	2	Long term, multi-generational community amenity	5
Close place to have access		Long term, multi-generational community amenity	5
Multi-generation community amenity	1	Long term, multi-generational community amenity	5
Potential to be "Central Park" of New Paltz	2	Long term, multi-generational community amenity	5
Bird watching, variety of habitats, upland and marsh, ponds. Structures to facilitate that?	2	Enjoy wildlife	4
Opportunities for personal wilderness	2	Enjoy wildlife	4
Catalyst for Green development		Environmental Good	4
CO ² sink – Trees and greenery	1	Environmental Good	4
Mitigate flooding		Environmental Good	4
Promote healthy community – exercise, less driving		Environmental Good	4

Mill Brook Preserve Management Plan

Role of Mill Brook Preserve	No. of Stickers	Aggregation – Categories	Aggregation – Priority Stickers
Promote local stewardship and responsible home and business maintenance	2	Environmental Good	4
Purify watershed		Environmental Good	4
Recommended environmental practices, model care septic tanks, etc.	1	Environmental Good	4
Retrofit storm water controls from previous surrounding developments		Environmental Good	4
Get away from development, roads, highway	2	Escape	4
Peace and quite	1	Escape	4
Peaceful place		Escape	4
Stress relief – stimulating environment, wisdom, self-consciousness, gratitude and sense of place – aesthetic pleasure, alternative to how we live – values, spirituality, connected to nature/friends/family/togetherness	1	Escape	4
Access from Old Mill Road is important		Access to nature	3
Accessible for all age groups	1	Access to nature	3
Boardwalks for wetlands and ponds, for access to sensitive areas without impacts		Access to nature	3
Enjoyment of nature without need of vehicle	2	Access to nature	3
Having a wild natural place people can access from anywhere they live		Access to nature	3
Need a formal place to park for non-locals		Access to nature	3
Connect with neighboring communities via rail trail and other paths	1	Community Linkage	3
Link between Duzine and Woodland Pond – physical and program link	1	Community Linkage	3
Link neighborhoods to preserve and to each other	1	Community Linkage	3
Link to rail-trail via town hall		Community Linkage	3
Non-road access (footpath) between Woodland Pond and west side		Community Linkage	3
Unify community		Community Linkage	3
Greater awareness of man's effect on nature		Stewardship	3
Model for stewardship of nature	3	Stewardship	3
Exercise area	1	Exercise/ Health/Safety	1
Safety for all		Exercise/ Health/Safety	1
Water recharge area	1	Ground water recharge area	1
Artistic expression		Historic, cultural	1
Dams – Mills, water power, 1911 survey maps		Historic, cultural	1
Erman Lane – views of a warehouse, cultural history	1	Historic, cultural	1
Beaver activity study area		Research and Exploration	1

Mill Brook Preserve Management Plan

Role of Mill Brook Preserve	No. of Stickers	Aggregation – Categories	Aggregation – Priority Stickers
Different areas serving different roles		Multiple uses, multiple roles	0
Two levels of trailhead accessibility, one by car, one by bicycle		Multiple uses, multiple roles	0
Don't allow bikes – they'll be in the streams		Prioritize ecosystem needs over human needs	0
Limit bicycles – careful thought before introducing		Prioritize ecosystem needs over human needs	0
Careful of trailheads too close to peripheral land owners		Separation from neighbors	0
Sustainable farming		Sustainable farming	0
Streams and ponds		Water/wetlands	0
Boulders lurking in the woods (glacial) interpretation		Research and Exploration	
Place to explore with children, not all developed recreationally	1	Research and Exploration	1

Desired Amenities Identified at Public Workshop

Amenities at Mill Brook Preserve	No. of Stickers	Aggregation – Categories	Aggregation – Priority Stickers
Channel people to specific places to preserve habitat	1	Trails – low impact	15
Exclude bicycles or have multi-tiered trail system – footpaths and trails suitable for wheels, strollers, provide access for seniors	1	Trails – low impact	15
Seasonal trails based on ecological sensitivity and seasonal features	1	Trails – low impact	15
Trails – walking, hiking, not paved	6	Trails – low impact	15
Trails for hiking and snowshoeing	2	Trails – low impact	15
Trails for public access, cross-country skiing, walking, snowshoeing, but not too many, or invasive	1	Trails – low impact	15
Walking trail – loop throughout as well as end-to-end	3	Trails – low impact	15
Clean up junk and debris	2	Habitat restoration	14
Habitat areas #1 – Human use should work around the priority of habitat protection	2	Habitat restoration	14
Keep as wild as possible	1	Habitat restoration	14
Pollution-free environment	3	Habitat restoration	14
Regenerate nature, restore pond	4	Habitat restoration	14
Reintroduction of indigenous species	2	Habitat restoration	14
Sanctuary for mosquito-eating critters		Habitat restoration	14

Amenities at Mill Brook Preserve	No. of Stickers	Aggregation - Categories	Aggregation - Priority Stickers
Defined trail network – mapped and signed with defined surface like wood chips	2	Trails – hardened surface/structures	13
foot bridges as part of trail system	2	Trails – hardened surface/structures	13
Labyrinth trails		Trails – hardened surface/structures	13
One bike path – for transportation, connect to rail trail. A carriage trail.	1	Trails – hardened surface/structures	13
Protection of wet areas from trampling – raised walkways, bog bridges		Trails – hardened surface/structures	13
Stream crossings		Trails – hardened surface/structures	13
Trails, boardwalks	2	Trails – hardened surface/structures	13
Traverse trails designed to accommodate people traveling from one end of town to the other		Trails – hardened surface/structures	13
Wooden walkways or bridges over water	3	Trails – hardened surface/structures	13
Multiple non-motorized use trails	3	Trails – hardened surface/structures	13
Interpretive signage		Educational/interpretive signs/maps and kiosks	10
Interpretive signage		Educational/interpretive signs/maps and kiosks	10
Signage about local ecology	1	Educational/interpretive signs/maps and kiosks	10
Signage and maps – directional and interpretive. Well placed	3	Educational/interpretive signs/maps and kiosks	10
Signage to encourage people to stay on trails, do not disturb wildlife		Educational/interpretive signs/maps and kiosks	10
Tasteful signage		Educational/interpretive signs/maps and kiosks	10
Trails, signage, maps	4	Educational/interpretive signs/maps and kiosks	10
Brochure		Educational/interpretive signs/maps and kiosks	10
Educational kiosks	1	Educational/interpretive signs/maps and kiosks	10

Mill Brook Preserve Management Plan

Amenities at Mill Brook Preserve	No. of Stickers	Aggregation - Categories	Aggregation - Priority Stickers
Educational signs about negative human impact		Educational/interpretive signs/maps and kiosks	10
Kiosk at each entry point with trail uses, difficulty level, and overall Preserve info/map	1	Educational/interpretive signs/maps and kiosks	10
Kiosks, with maps and interpretation		Educational/interpretive signs/maps and kiosks	10
Map of trails marking if trails are bike, running, cross-country skiing, etc. friendly		Educational/interpretive signs/maps and kiosks	10
Access from Duzine and for other children	1	Access points	7
Emergency access to Bonticou View Drive, not Hummel Road		Access points	7
Interconnectivity, access points		Access points	7
Marked access points from all public streets	2	Access points	7
May not be an amenity if access isn't good. Access is critical to success		Access points	7
Multiple access points to be more community oriented	4	Access points	7
Discovery farm	1	Education center/school-age	6
Education center		Education center/school-age	6
Field studies with Duzine students	1	Education center/school-age	6
Formal nature center		Education center/school-age	6
Nature center, perhaps related to Duzine, educational program		Education center/school-age	6
Outdoor classroom	3	Education center/school-age	6
Imaginative children's playground	1	Education center/school-age	6
Outdoor theater		Education center/school-age	6
School gardens		Education center/school-age	6
Some school field expansion		Education center/school-age	6
Bicycle trail - loop throughout as well as end-to-end	1	Bike trails, amenities	5
Bicycle trail connections	2	Bike trails, amenities	5
Bike racks		Bike trails, amenities	5
Bike racks	1	Bike trails, amenities	5

Mill Brook Preserve Management Plan

Amenities at Mill Brook Preserve	No. of Stickers	Aggregation - Categories	Aggregation - Priority Stickers
Bike racks		Bike trails, amenities	5
Biking trails	1	Bike trails, amenities	5
Connection to community center behind town hall, to Rail Trail, to Woodland Pond	5	Trails - connection with rail trail, larger community	5
Pedestrian bridge over Route 32		Trails - connection with rail trail, larger community	5
Benches		Benches, sitting areas	4
Benches made of stone		Benches, sitting areas	4
Benches made of stone	1	Benches, sitting areas	4
Benches, or places to rest	1	Benches, sitting areas	4
Benches, sitting places - wooden, not too many		Benches, sitting areas	4
Picnic area by the pond		Benches, sitting areas	4
Picnic tables	1	Benches, sitting areas	4
Sitting area in the shade, with views	1	Benches, sitting areas	4
Baseline study and monitoring of nature	3	Research/baseline studies	3
Don't be too quick to prohibit hunting. May be a short season, or shotgun only, or small number of permits	2	Limited hunting	2
3-4 parking areas to connect and provide access	1	Parking	2
Parking - Shivertown, Hummel, Connection between Sunset and Hummel		Parking	2
Parking access		Parking	2
Parking areas - bike racks		Parking	2
Parking	1	Parking	2
Bird/wildlife observation areas	2	Wildlife observation station	2
Wildlife viewing decks - elevated		Wildlife observation station	2
Children's dig area	1	Children activity area	1
Dog park	1	Dog park/amenities	1
Exercise stations	1	Exercise stations	1
Catch and release fishing		Fishing	1
Fishing pond	1	Fishing	1

Mill Brook Preserve Management Plan

Amenities at Mill Brook Preserve	No. of Stickers	Aggregation - Categories	Aggregation - Priority Stickers
Handicap accessibility for part of trail system	1	Handicap accessibility	1
A preserve, not a park. Incompatible. No active sports or large gatherings.		Limit activities to very low impact	1
No ATVs, snowmobiles, camping, debris, mountain biking, paving	1	Limit activities to very low impact	1
No bikes		Limit activities to very low impact	1
No hunting - too many nearby residences		Limit activities to very low impact	1
No hunting or trapping		Limit activities to very low impact	1
No motorized vehicles		Limit activities to very low impact	1
No school field expansion		Limit activities to very low impact	1
All season activities	1	Multi use	1
Watershed management and conservation	1	Water quality monitoring/management	1
Cross-country skiing, not groomed, to keep people/dogs off tracks, snowshoeing		Cross-country skiing, snowshoeing	0
Cross-country skiing		Cross-country skiing, snowshoeing	0
Cross-country skiing		Cross-country skiing, snowshoeing	0
Snowshoeing		Cross-country skiing, snowshoeing	0
Horseback riding		Equestrian amenities	0
Care-takers		People to manage, maintain, build	0
Volunteer trail maintainers, engage people in stewardship, community service for high school students		People to manage, maintain, build	0
Bathroom, composting toilet		Restroom	0
Composting toilets		Restroom	0
Vegetation screens to maintain serenity		Screening	0
Ability to make it your own through experience		Self-exploration	0
Swimming hole		Swimming	0
Water quality monitoring - a role of this stream. The monitor for the community and watershed.		Water quality monitoring/management	0

Public Survey Conducted by SUNY New Paltz Student

The following are the results from the SUNY New Paltz survey (Rebecca Kassay, 2010):

“When asked if respondents had heard of the proposed Mill Brook Preserve previous to being confronted with the survey, less than 20% of the individuals from the “in town” sample group were aware, while 30% of those living in houses adjacent to the Preserve property had heard of the proposal. In total, 22% of respondents were aware of the proposed Mill Brook Preserve project. This is the most significant difference between at-home and in-town respondents throughout the data set, so the remainder of the results will be reported as a sum of the 20 “at home” respondents and the 30 “in town” respondents.

Within question number two, inquiring about roles the Preserve could assume within the community, three options were given in reference to whether the Preserve's planning should focus on nature conservation, public use, or an equal balance of the two land uses. Of these three options, nearly half of the individuals indicated desire for equal balance, and of the other half of the respondents, 17 indicated that they would like to see the Preserve focus on nature conservation, while 8 desired a focus on public use. The top five selections of appealing roles for the Preserve to take on are as follows:

1. On-site ecological/scientific education opportunities for local grade schools
2. Promotion of a healthier community through exercise opportunity and alternatives to driving
3. A local opportunity to "escape to nature" (without needing to drive out of town)
4. Multi-generational place of enjoyment, community, and social gathering
5. Place to practice environmental stewardship or community service

None of the options presented received so little interest as to possibly indicate a desire for the Preserve to avoid such roles. Within question number three, there was a pair of options that would help indicate whether or not individuals would like bicycles to be allowed in the Preserve. Of the respondents, 56% indicated that they would like for the trails to allow both foot and bicycle traffic, while 36% of respondents indicated that they would prefer trails allowing only foot traffic.

The top five selections of appealing amenities within the Preserve are as follows:

- Signage about local ecology (such as maps and kiosks)
- Area for a community/school garden
- Informal or basic outdoor classroom facilities
- Encouraging ecological research on the land
- Reintroduction of the area's absent indigenous (historically natural) species

Less than 10% of respondents indicated interest in composting toilets, trails allowing equestrian usage, or limited hunting during appropriate seasons if allowed by local regulations. Of the statements that asked respondents to rate by importance, there are only two outliers in the data. The highest rating average of importance was 1.4 out of 4, expressing desire for the integration of outdoor environmental education into local children's' schooling. The lowest rating average of importance was 3 out of 4 in response to the option of having a local place to go fishing.

The following ideas and comments were collected from participants:

- a. Engage residents with planned hikes, perhaps lead by individuals with knowledge of the local wildlife and ecology.
- b. Residents will be happier with minimal or no development on the land.
- c. School children should be interacting with nature as part of their education.
- d. The land should be patrolled and cleaned to optimize safety.
- e. Have one single paved/solid path through the Preserve for bikes with all other trails only allowing pedestrians.

Quite a few of the comments expressed gratitude both towards the surveyor and the Mill Brook planning board.

Conclusions

The data collected supports a variety of ideas pertaining to how the New Paltz community would optimally enjoy the proposed Mill Brook Preserve. First, the survey results show that a great majority of New Paltz community members are unaware of the efforts to establish the Mill Brook Preserve. Upon taking the survey, many subjects showed interest and excitement about the project. It is advised, then, to produce greater publicity about the Preserve. Advertising in local papers, putting up signs in shops, or tabling are some possibilities to raise awareness of and rally support for the project.

The results from question two suggest that the community would like to see a preserve that does contain aspects of recreation, but leans more towards nature conservation than public use. The top five most frequently desired roles of the Preserve should be taken into consideration during the planning process. These can provide insight into how the Preserve can be shaped within the New Paltz community in order for it to be best received and cherished by individuals and groups.

Answers within question three show a majority's desire for the permission of bicycles on trails within the Preserve, but there is a significant percentage of the population who would prefer that cycling be prohibited within the Preserve. If ecologically sound, some trails could allow both cyclists and pedestrians, while others do not allow bicycles to be ridden on them. This concept has worked within public nature areas such as Central Park in New York City. Much like the top five desired roles in question two, the top five chosen amenities should be taken into consideration when planning the Preserve. Their presence could draw a greater number and variety of individuals from the community to the Preserve.

From the section of the survey inquiring about what types of interaction with nature are important to community members, a lack of enthusiasm for a local fishing area is evident in the data. If it is a simple amenity to provide, the Preserve can plan for it, but the community does not seem to have strong wishes for it, so extra efforts towards making this possible might not be worthwhile. Conversely, it seems that many individuals would like to see children's education incorporate hands-on nature instruction or that regular classes be held in an outdoor environment. This concept was supported by the results of questions two, three, and the fill-in, as well, so it is highly recommended that the Preserve is partnered with local schools or holds frequent educational programs for children.

Lastly, the written-in ideas and comments by the community should be taken into account while planning the Preserve. These concepts are the result of individual thought and deep conversation about the land and what it could become, and the individuals who took the time and effort to note their thoughts are likely to be the same individuals who would frequent the Preserve.”

Natural Resource Inventory

2. Field Inventory of Wildlife, 2009-2010 (includes the SUNY New Paltz student research and inventory results)

Coopers Hawk (observed by consultants in the wooded habitats of the Preserve)

Bank Swallow

Belted Kingfisher

Black Vulture

Blue Jay

Red-bellied woodpecker

Downy woodpecker

American robin

Song sparrow

Ruffed grouse

Chickadee

Turkey

Crayfish

Fish, various species

Bullfrog

Green Frog

Muskrat

Northern Water Snake

Painted Turtle

Pickerel Frog

Snapping Turtle

Wood Turtle

Spring peeper

Redback salamander

Two-lined salamander

Garter snake

Painted turtles

White tail deer

Gray squirrels

Eastern chipmunk

Muskrat

Beaver (sign)

White-footed mouse

- Breeding Bird Atlas, NYS DEC 1980-1985: Block 5762C (includes all of the Village of New Paltz and part of the surrounding Town of New Paltz). **Species included in a shaded box are those listed on the National Audubon Hudson River Valley Priority Bird List.**

Canada Goose	<i>Branta canadensis</i>	Game Species
Spotted Sandpiper	<i>Actitis macularius</i>	Protected
Rock Pigeon	<i>Columba livia</i>	Unprotected
Mourning Dove	<i>Zenaida macroura</i>	Protected
Eastern Screech-Owl	<i>Megascops asio</i>	Protected
Great Horned Owl	<i>Bubo virginianus</i>	Protected
Common Nighthawk	<i>Chordeiles minor</i>	Protected-Special Concern
Chimney Swift	<i>Chaetura pelagica</i>	Protected
Belted Kingfisher	<i>Megaceryle alcyon</i>	Protected
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Protected-Special Concern
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	Protected
Downy Woodpecker	<i>Picoides pubescens</i>	Protected
Northern Flicker	<i>Colaptes auratus</i>	Protected
Eastern Wood-Pewee	<i>Contopus virens</i>	Protected
Alder Flycatcher	<i>Empidonax alnorum</i>	Protected
Willow Flycatcher	<i>Empidonax traillii</i>	Protected
Least Flycatcher	<i>Empidonax minimus</i>	Protected
Eastern Phoebe	<i>Sayornis phoebe</i>	Protected
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Protected
Warbling Vireo	<i>Vireo gilvus</i>	Protected
Red-eyed Vireo	<i>Vireo olivaceus</i>	Protected
Blue Jay	<i>Cyanocitta cristata</i>	Protected
American Crow	<i>Corvus brachyrhynchos</i>	Game Species
Purple Martin	<i>Progne subis</i>	Protected
Tree Swallow	<i>Tachycineta bicolor</i>	Protected
Barn Swallow	<i>Hirundo rustica</i>	Protected
Black-capped Chickadee	<i>Poecile atricapillus</i>	Protected
Tufted Titmouse	<i>Baeolophus bicolor</i>	Protected
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Protected
House Wren	<i>Troglodytes aedon</i>	Protected
Veery	<i>Catharus fuscescens</i>	Protected
Wood Thrush	<i>Hylocichla mustelina</i>	Protected
American Robin	<i>Turdus migratorius</i>	Protected
Gray Catbird	<i>Dumetella carolinensis</i>	Protected
Northern Mockingbird	<i>Mimus polyglottos</i>	Protected
European Starling	<i>Sturnus vulgaris</i>	Unprotected
Blue-winged Warbler	<i>Vermivora pinus</i>	Protected

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Yellow Warbler	<i>Dendroica petechia</i>	Protected
Black-and-white Warbler	<i>Mniotilta varia</i>	Protected
American Redstart	<i>Setophaga ruticilla</i>	Protected
Ovenbird	<i>Seiurus aurocapilla</i>	Protected
Common Yellowthroat	<i>Geothlypis trichas</i>	Protected
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Protected
Chipping Sparrow	<i>Spizella passerina</i>	Protected
Field Sparrow	<i>Spizella pusilla</i>	Protected
Song Sparrow	<i>Melospiza melodia</i>	Protected
Swamp Sparrow	<i>Melospiza georgiana</i>	Protected
Scarlet Tanager	<i>Piranga olivacea</i>	Protected
Northern Cardinal	<i>Cardinalis cardinalis</i>	Protected
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Protected
Indigo Bunting	<i>Passerina cyanea</i>	Protected
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Protected
Eastern Meadowlark	<i>Sturnella magna</i>	Protected
Common Grackle	<i>Quiscalus quiscula</i>	Protected
Brown-headed Cowbird	<i>Molothrus ater</i>	Protected
Baltimore Oriole	<i>Icterus galbula</i>	Protected
House Finch	<i>Carpodacus mexicanus</i>	Protected
American Goldfinch	<i>Spinus tristis</i>	Protected
House Sparrow	<i>Passer domesticus</i>	Unprotected

NYS Breeding Bird Atlas 2000, Block 5762C (includes all of the Village of New Paltz and part of the surrounding Town of New Paltz. Species included in a shaded box are those listed on the National Audubon Hudson River Valley Priority Bird List.

Swans, Geese, & Ducks (<i>Anatidae</i>)
Canada Goose (<i>Branta canadensis</i>)
Mute Swan (<i>Cygnus olor</i>)
Wood Duck (<i>Aix sponsa</i>)
Mallard (<i>Anas platyrhynchos</i>)
Partridges, Grouse, & Turkeys (<i>Phasianidae</i>)
Wild Turkey (<i>Meleagris gallopavo</i>)
Bitterns, Herons, & Allies (<i>Ardeidae</i>)
Great Blue Heron (<i>Ardea herodias</i>)
Green Heron (<i>Butorides virescens</i>)
Vultures (<i>Cathartidae</i>)
Turkey Vulture (<i>Cathartes aura</i>)
Kites, Eagles, Hawks, & Allies (<i>Accipitridae</i>)
Osprey (<i>Pandion haliaetus</i>) Species of Special Concern
Cooper's Hawk (<i>Accipiter cooperii</i>) Species of Special Concern
Red-shouldered Hawk (<i>Buteo lineatus</i>) Species of Special Concern
Broad-winged Hawk (<i>Buteo platypterus</i>)

Red-tailed Hawk (<i>Buteo jamaicensis</i>)
Rails, Gallinules, & Coots (<i>Rallidae</i>)
Virginia Rail (<i>Rallus limicola</i>)
Plovers & Lapwings (<i>Charidriidae</i>)
Killdeer (<i>Charadrius vociferus</i>)
Sandpipers, Phalaropes, & Allies (<i>Scolopacidae</i>)
Spotted Sandpiper (<i>Actitis macularius</i>)
American Woodcock (<i>Scolopax minor</i>)
Pigeons & Doves (<i>Columbidae</i>)
Rock Pigeon (<i>Columba livia</i>)
Mourning Dove (<i>Zenaida macroura</i>)
Cuckoos, Roadrunners, & Anis (<i>Cuculidae</i>)
Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)
Typical Owls(<i>Strigidae</i>)
Great Horned Owl (<i>Bubo virginianus</i>)
Barred Owl (<i>Strix varia</i>)
Swifts (<i>Apodidae</i>)
Chimney Swift (<i>Chaetura pelagica</i>)
Hummingbirds (<i>Trochilidae</i>)
Ruby-throated Hummingbird (<i>Archilochus colubris</i>)
Kingfishers (<i>Alcedinidae</i>)
Belted Kingfisher (<i>Megaceryle alcyon</i>)
Woodpeckers & Allies (<i>Picidae</i>)
Red-bellied Woodpecker (<i>Melanerpes carolinus</i>)
Downy Woodpecker (<i>Picoides pubescens</i>)
Hairy Woodpecker (<i>Picoides villosus</i>)
Northern Flicker (<i>Colaptes auratus</i>)
Pileated Woodpecker (<i>Dryocopus pileatus</i>)
Tyrant Flycatchers (<i>Tyrannidae</i>)
Eastern Wood-Pewee (<i>Contopus virens</i>)
Alder Flycatcher (<i>Empidonax alnorum</i>)
Willow Flycatcher (<i>Empidonax traillii</i>)
Eastern Phoebe (<i>Sayornis phoebe</i>)
Great Crested Flycatcher (<i>Myiarchus crinitus</i>)
Eastern Kingbird (<i>Tyrannus tyrannus</i>)
Vireos (<i>Vireonidae</i>)
Yellow-throated Vireo (<i>Vireo flavifrons</i>)
Warbling Vireo (<i>Vireo gilvus</i>)
Red-eyed Vireo (<i>Vireo olivaceus</i>)
Jays, Magpies, & Crows (<i>Corvidae</i>)
Blue Jay (<i>Cyanocitta cristata</i>)
American Crow (<i>Corvus brachyrhynchos</i>)
Fish Crow (<i>Corvus ossifragus</i>)
Swallows (<i>Hirundinidae</i>)
Purple Martin (<i>Progne subis</i>)
Tree Swallow (<i>Tachycineta bicolor</i>)
Northern Rough-winged Swallow (<i>Stelgidopteryx serripennis</i>)

Barn Swallow (<i>Hirundo rustica</i>)
Chickadees & Titmice (<i>Paridae</i>)
Black-capped Chickadee (<i>Poecile atricapillus</i>)
Tufted Titmouse (<i>Baeolophus bicolor</i>)
Nuthatches (<i>Sittidae</i>)
White-breasted Nuthatch (<i>Sitta carolinensis</i>)
Wrens (<i>Troglodytidae</i>)
Carolina Wren (<i>Thryothorus ludovicianus</i>)
House Wren (<i>Troglodytes aedon</i>)
Sedge Wren (<i>Cistothorus platensis</i>) Threatened Species
Old World Warblers & Gnatcatchers (<i>Sylviidae</i>)
Blue-gray Gnatcatcher (<i>Poliophtila caerulea</i>)
Thrushes (<i>Turdidae</i>)
Eastern Bluebird (<i>Sialia sialis</i>)
Veery (<i>Catharus fuscescens</i>)
Hermit Thrush (<i>Catharus guttatus</i>)
Wood Thrush (<i>Hylocichla mustelina</i>)
American Robin (<i>Turdus migratorius</i>)
Mockingbirds, Thrashers, & Allies (<i>Mimidae</i>)
Gray Catbird (<i>Dumetella carolinensis</i>)
Northern Mockingbird (<i>Mimus polyglottos</i>)
Starlings & Allies (<i>Sturnidae</i>)
European Starling (<i>Sturnus vulgaris</i>)
Waxwings (<i>Bombycillidae</i>)
Cedar Waxwing (<i>Bombycilla cedrorum</i>)
Wood Warblers (<i>Parulidae</i>)
Blue-winged Warbler (<i>Vermivora pinus</i>)
Yellow Warbler (<i>Dendroica petechia</i>)
Chestnut-sided Warbler (<i>Dendroica pensylvanica</i>)
Prairie Warbler (<i>Dendroica discolor</i>)
American Redstart (<i>Setophaga ruticilla</i>)
Ovenbird (<i>Seiurus aurocapilla</i>)
Common Yellowthroat (<i>Geothlypis trichas</i>)
Tanagers (<i>Thraupidae</i>)
Scarlet Tanager (<i>Piranga olivacea</i>)
Towhees, Buntings, Sparrows, & Allies (<i>Emberizidae</i>)
Eastern Towhee (<i>Pipilo erythrophthalmus</i>)
Chipping Sparrow (<i>Spizella passerina</i>)
Song Sparrow (<i>Melospiza melodia</i>)
Swamp Sparrow (<i>Melospiza georgiana</i>)
Grosbeaks & Buntings (<i>Cardinalidae</i>)
Northern Cardinal (<i>Cardinalis cardinalis</i>)
Rose-breasted Grosbeak (<i>Pheucticus ludovicianus</i>)
Indigo Bunting (<i>Passerina cyanea</i>)
Blackbirds (<i>Icteridae</i>)
Red-winged Blackbird (<i>Agelaius phoeniceus</i>)
Common Grackle (<i>Quiscalus quiscula</i>)

Brown-headed Cowbird (<i>Molothrus ater</i>)
Orchard Oriole (<i>Icterus spurius</i>)
Baltimore Oriole (<i>Icterus galbula</i>)
Finches (<i>Fringillidae</i>)
House Finch (<i>Carpodacus mexicanus</i>)
American Goldfinch (<i>Carduelis tristis</i>)
Old World Sparrows (<i>Passeridae</i>)
House Sparrow (<i>Passer domesticus</i>)

Parking and Preserve Access

As a result of the public input process, many sites were identified as potential access/parking areas for the proposed Mill Brook Preserve. Field evaluation of each of these sites narrowed down feasible locations to those shown on Map 10. Many of these locations intersect with residential streets. Access and parking need to be carefully designed so as not to negatively impact residents. Signage at these access points is envisioned to be non-illuminated, no more than three to five feet high, six to eight square feet in size, and designed with natural colors.

Given the environmental, aesthetic, and economic costs to constructed parking lots, this Plan recommends informal parking arrangements. Some access points will allow for minimal parking along certain residential streets and other areas could accommodate two to three-car gravel “pull-offs”. Signage should be provided to indicate suitable parking areas.

Major access points could be:

- Town-owned property along Waring Road could be feasible for a small, informal gravel pull off for two to three cars.



- Location south of Woodland Pond on George Danskin Drive where a trail access point may be appropriate.



- Location to the rear of the Woodland Pond development that may be appropriate for trail access. In 2013, a boy scout project constructed a trail in this area which opened up access to the pond overlook that had been created earlier by residents of Woodland Pond and the Bruderhof.



- Location at the end of Bonticou View Drive between Duzine School and the commercial structure may be appropriate trail access and parking area. Alternatively, an agreement with the school may allow for shared use of the existing parking lot. This is an excellent location for trail access given its proximity to the Duzine School and child care center nearby.



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- Location between the Duzine School and commercial building at the end of Bonticou View Drive could be appropriate for trail access and parking.



- Lot at Moriello Park is an excellent location for parking and access to trails in the park, Wallkill Valley Rail Trail, and future links with the proposed Mill Brook Preserve.



- Dead-end (hammerhead) road at the end of N. Manheim Blvd would be a location where two to three cars could park for access to the Preserve.

